ORDER

8260.19C

Flight Procedures and Airspace

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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FOREWORD

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

It defines responsibilities, establishes criteria, and provides standards to assure effective and orderly processing of all types of procedures actions.

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

William H. Williams, Jr.
Director of Aviation System Standards

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Sample FAA Form 8260-10 2

APPENDIX 11. DEPARTURE PROCCEDURES / TAKEOFF MINIMUMS, FAA FORM 8260-15 (3 Pages)

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CHAPTER 1. ADMINISTRATIVE

SECTION 1. GENERAL

100. PURPOSE.

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

101. DISTRIBUTION.

This order is distributed to offices on special mailing list ZVN-826.

102. CANCELLATION.

a. *Order 8260.19B*, Flight Procedures and Airspace, dated December 18, 1991, is cancelled.

103. EXPLANATION OF CHANGES.

a. Use of maps and charts clarified.

b. ESV distribution modified.

c. Use of NOTAM system modified.

d. Airway NOTAM's introduced with examples.

e. Periodic (annual) SIAP review interval extended to two years; airway review interval to four years.

f. IAPA procedure development and storage clarified.

g. Instructions for reporting IAPA equipment or communications problems added.

h. All references to control zones changed to "Class B/C/D/E Surface Areas"; and references to transition areas changed to "Class E 700' airspace."

i. FIAO/ATC actions regarding MVA/MIA charts clarified.

j. Instructions regarding RNAV feeder routes incorporated.

k. Requirement for drawings with airspace packages deleted.

l. Rounding convention clarified.

m. Terminal DME fix designations clarified.

n. "LOC only" notation clarified.

o. Alternate minimums notation clarified.

p. Dual minimums notes clarified.

q. Inoperative component notes clarified.

r. AWOS instructions modified.

s. Additional Flight Data block instructions for LORAN-C added.

t. FAA Form 8260-2 controlling obstruction documentation clarified.

u. FAA Form 8260-9 ROC and HMAS documentation clarified.

v. FAA Form 8260-16 changeover point instructions clarified; flight inspection date and cancellation instructions clarified.

w. Numerous flight procedure references added to Appendix 1.

x. FAA 8260-series forms examples updated.

104. FORMS.

a. The following forms will be stocked at the FAA Logistics Center, AML-1, for use in the development and maintenance of flight procedures:

FAA FORM NUMBER	TITLE	NATIONAL STOCK NUMBER (NSN)	UNIT OF ISSUE
FAA Form 8260-1	Flight Procedures Standards Waiver	0052-00-661-8001	SH
FAA Form 8260-2	Radio Fix and Holding Data Record	0052-00-606-9001	SH
FAA Form 8260-3	ILS-Standard Instrument Approach Procedure	0052-00-691-2003	SH
FAA Form 8260-4	Radar-Standard Instrument Approach Procedure	0052-00-691-3001	SH
FAA Form 8260-5	Standard Instrument Approach Procedure	0052-00-677-7002	SH
FAA Form 8260-7	Special Instrument Approach Procedure	0052-00-684-3001	SH
FAA Form 8260-8	Form Letter for Coordination of SIAP	0052-00-683-5000	SH
FAA Form 8260-9	Standard Instrument Approach Procedure Data Record	0052-00-684-6000	SH
FAA Form 8260-10	Standard Instrument Approach Procedure (Continuation Sheet)	0052-00-691-4002	SH
FAA Form 8260-11	U.S. Army ILS Standard Instrument Approach Procedure	0052-00-803-1001	SH
FAA Form 8260-12	U.S. Army Radar Standard Instrument Approach Procedure	0052-00-803-2001	SH
FAA Form 8260-13	U.S. Army Standard Instrument Approach Procedure	0052-00-803-3001	SH
FAA Form 8260-15	Departure Procedures/Takeoff Minimums	0052-00-838-8001	SH
FAA Form 8260-16	Transmittal of Airways/Route Data	0052-00-634-4001	SH
FAA Form 8260-20	U.S. Army Standard Instrument Approach Procedure (Continuation Sheet)	0052-00-856-5000	SH
FAA Form 8260-21	U.S. Army Departure Procedures/Takeoff	0052-00-856-6000	SH
FAA Form 8260-22	MLS-Standard Instrument Approach Procedure	0052-00-889-8000	SH

b. *Computer Generated Forms.* Nearly all FAA forms used in the development of instrument procedures can be automated through the use of the PerFORM PRO Filler software package.

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

(2) Use of Automated Forms. The PerFORM PRO Filler software is the automated method for completing these flight procedures forms. This automated process allows each user to fill in forms completely and accurately, and to print the forms. AVN-220 provides

administrative control over future modification and distribution of the PerFORM PRO program. Direct recommendations for changes or modification to AVN-220.

(3) Equipment Requirements. Each user office must have access to the appropriate hardware/software to use this PerFORM PRO package. The required software is PerFORM PRO Filler which uses a graphic interface and provides a "graphical toolbox" for MS-DOS computers. A mouse is either essential or highly desirable. The Office of Aviation System Standards (AVN) has a license for this software package. Correct operation of PerFORM PRO Filler is based on the following minimum equipment/software assumptions:

Computer: 386 processor, 2MB RAM, VGA monitor.
Environment: Windows 3.0.
Printer: LaserJet III, or DeskJet family, with memory upgrade and PostScript™ cartridge. (If no cartridge is installed, or if another printer such as the NEC LC-890 is used, the program will work, but character spacing may be incorrect.)

(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.

(5) Program Features. This program allows the user to:

(a) Bring a copy of the form into the work area on the screen.

(b) Tab or select particular fields on the forms with a mouse and type in required data.

(c) Automatically fill in areas on the form by the computer using many designated fields which contain relatively constant data.

(d) Fill in forms completely and accurately with many automatic checks and entries.

(e) Fill forms with information from sources such as text files and databases.

(f) Print forms efficiently.

c. *IAPA Generated Forms.* Refer to chapter 2, section 13.

105. DEFINITIONS.

For the purpose of this order, Flight Procedures are identified as the functions for predetermining safe and practical methods of navigating aircraft which prescribe intended flight tracks, operational altitudes, and arrival/departure minimums. Flight Procedures are subdivided into six general categories as follows: instrument departure, en route, instrument approach, missed approach, holding, and fix descriptions. The following words have the meaning shown:

a. *Shall* - action is mandatory.

b. *Should* - action is recommended.

c. *May* - action is optional.

d. *Will* - indicates a presumption that action is to be taken.

e. *Miles* - nautical miles unless otherwise specified.

f. *Conterminous U.S.* - the District of Columbia and all States (except Alaska and Hawaii).

g. *FPB* - Regional Flight Procedures Branch.

h. *FIAO* - Flight Inspection Area Office.

i. *Nautical Mile* - One nautical mile is 6076.11548 feet.

j. *FS* - Flight Standards.

k. *IAPA* - Instrument Approach Procedures Automation.

l. *SIAP* - Standard Instrument Approach Procedure.

106. INFORMATION CURRENCY.

a. *Any deficiencies found, clarifications needed, or improvements* to be suggested regarding the content of this order shall be forwarded for consideration to AVN-12, Attention: Directives Management Officer, with an information copy to AVN-220. Your assistance is welcome. FAA Form 1320-19, Directive Feedback Information, is located in Appendix 3 of this order for your convenience. If an interpretation is urgently needed, you may call the originating office, AVN-220, for guidance, but you should also use the tearout sheet as a follow-up to verbal conversation.

b. *Use the "Other Comments" block* of this form to provide a complete explanation of why the suggested change is necessary. However, you may mark up a copy of the pertinent information or provide a handwritten note for consideration.

107-109. 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 establishment of terminal and en route flight procedures. The director has final authority to issue, amend, and terminate rules and regulations relating to standard instrument approach 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 Technical Programs Division (AFS-400). This activity is closely related to the functions of other Aviation Standards Offices; however, this order is primarily concerned with those offices having direct responsibility for the accomplishment of the Flight Procedures and Airspace Program. Following is a brief description of their activities.

111. TECHNICAL PROGRAMS DIVISION (AFS-400).

a. This division is the principal element of the Flight Standards Service governing policies for establishing and maintaining terminal and en route flight procedures; and, for using air navigation facilities, appliances, and systems. The division is responsible for approval/disapproval of field requests for waivers of standards.

b. The Flight Procedures Standards Branch (AFS-420) is the principal element within the Technical Programs Division with respect to the development of national policies concerning application of standards and criteria for overall accomplishments of the Flight Procedures Program and serves as the focal point within Flight Standards for all matters relating to airspace and cartographic programs. This branch serves as the division focal point in respect to approach aids, obstruction criteria, and approach procedures. This branch is responsible for review and evaluation of waiver requests prior to final division action.

c. The All Weather Operations Branch, AFS-410, is the principal element of this division with respect to the direction, control, and execution of all weather terminal area operations projects. It develops concepts and criteria for design, evaluation, and approval of Category I, II, and III approach and landing operations, as well as lower than standard takeoff minimums.

d. The Air Carrier Branch (AFS-220) is the principal element of the Air Transportation Division (AFS-200) with respect to the development of Standard Operations Specifications and the approval for U.S. air carriers to use instrument flight procedures at foreign airports.

e. The Commuter/Air Taxi Branch (AFS-250) is the principal Air Transportation Division element with respect to the development of standard operations specifications for commuter air carriers and air taxis.

112. OFFICE OF AVIATION SYSTEM STANDARDS (AVN).

The AVN is the principal element within Aviation Standards 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. The Flight Procedures Branch (AVN-220) is the principal element within the AVN with respect to the application of national policies, standards, and criteria pertinent to the design and development of instrument flight procedures. The Standards Development Branch (AVN-210) provides technical background in support of criteria revision and the development of new criteria, and provides evaluation of specific procedural problems as requested by regional Flight Procedures Branches, FIAOs, or headquarters offices.

113. FLIGHT PROCEDURES BRANCH (FPB).

Within each regional Flight Standards Division, the FPB:

a. *Coordinates* the regional inspection requirements, as necessary.

b. *Plans and coordinates* the regional Flight Procedures and Airspace Program by applying national policies, standards, and criteria.

c. *Coordinates* requests for new instrument procedures service with the appropriate regional divisions and other concerned offices, and *conducts* instrument procedures feasibility studies.

d. When further procedures development is warranted, *coordinates* submission by responsible offices of all pertinent data and supporting documents required for procedures development. Coordinates the assignment of priority with the FIAO for accomplishment of a SIAP request. Provides additional information upon written request from the FIAO or AVN-830. For LORAN-C and/or Microwave Landing System (MLS) SIAPs, sends requests to AVN-830; and, coordinates the assignment of priority with AVN-270 for accomplishment of the SIAP request.

e. *Determines* regional requirements for nonstandard application criteria to resolve operational problems (waivers).

f. *Evaluates and processes* industry comments on instrument procedures. Forwards recommendations to the FIAO.

g. *Coordinates* foreign instrument procedures programs when such activities are pertinent to regional responsibilities in accordance with FAA Order 8260.31, Foreign Terminal Instrument Procedures.

h. *Plans and coordinates* new or relocated navigational facilities.

i. *Coordinates* with other regional divisions and the FIAO to select a charting date consistent with priorities and workload, when a component of the National Airspace System (NAS) is to be commissioned, decommissioned, or altered.

j. *Coordinates* the planning and development of regional F&E budget submissions and programming actions.

k. *Analyzes* all obstruction evaluations to determine the effects on visual flight operations and on minimums or flight altitudes of all civil and U.S. Army instrument procedures. Requests FIAO assistance when deemed necessary.

l. *Evaluates* regional airport and airspace matters.

114. FLIGHT INSPECTION AREA OFFICE (FIAO).

a. *The FIAO is the principal AVN field element* with respect to the development, review, approval, and submission for publication of instrument flight procedures. The FIAO provides procedural development services and technical assistance in response to written requests for specific procedures development or verification of results of FPB studies of obstruction evaluation cases, when appropriate. Coordinates the assignment of priority with the FPB for accomplishment of a SIAP requested by the FPB.

b. *It is the responsibility of the FIAO* manager to provide for the timely accomplishment of assigned flight procedure programs and to ensure compliance with applicable standards and criteria. This office has the responsibility for determining the accuracy, adequacy, safety, and practicality of each procedure within its jurisdiction, and for providing an effective system of quality control to maintain acceptable standards of performance.

c. *The FIAO initiates* investigative and *completes* remedial action with respect to any deficiency or reported hazard, including restrictions or emergency revisions to procedures. The FIAO maintains liaison with the regional FPBs as well as other FAA offices and civil and military interests to ensure considerations of all requirements relating to the procedural use of navigation facilities. A suitable record system reflecting the status of each flight procedure with required supporting data shall be maintained within each FIAO.

115. NATIONAL FLIGHT PROCEDURES DEVELOPMENT BRANCH (AVN-830).

The National Flight Procedures Development Branch (NFPDB) was formed as a branch within AVN, to assist in the instrument procedures

development workload expected from implementation of the LORAN-C and MLS programs. In addition, NFPDB is responsible for the development, quality control, and approval of all instrument procedures within its jurisdiction and geographic area. Upon completion of instrument procedures development, NFPDB forwards documentation to the appropriate FIAO for flight check of the instrument procedures. It retains jurisdiction of the instrument procedures in its geographic area of responsibility. If the geographic area is other than NFPDB designated area, it will transfer responsibility to the appropriate FIAO after post-publication verification.

116. INDIVIDUAL.

Personnel assigned to 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 shall take the initiative in seeking 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.

117. STANDARDS DEVELOPMENT AND TECHNICAL ASSISTANCE.

a. *In the course of developing and providing formulation of TERPS criteria,* the Standards Development Branch (AVN-210) also provides to headquarters and field elements, technical assistance and insight of criteria from test data with respect to development, interpretation, and the use of instrument flight procedures standards and criteria.

b. *AVN-210 initiates flight test programs,* utilizing simulators and aircraft, to investigate and evaluate technical reports resulting from these research activities. These research facilities are available on a limited basis to specialists involved with the planning, implementation, and development of instrument flight procedures. In certain cases, access to background material and flight simulator facilities could assist FIAO personnel in resolving difficult procedure design problems of equivalent levels of safety, where a request for waiver of standards is under consideration.

c. *AVN-210 participates in the waiver review process,* and provides application and interpretation of collision risk model analysis. Normally, this service will be provided on an as-required basis. Requests for assistance will originate within headquarters or the FIAO; however, technical assistance will be made available to regional FPBs in support of regional planning and special projects. Information and data provided by AVN in support of waiver requests shall not be considered as approval or denial of a waiver action.

d. *AVN-210 will not honor regional requests for evaluations* based on prototype systems or facilities unless the proposal represents an active regional project. Requests for technical assistance shall be presented in writing, and should be specific with regard to the statement of the problem and the services required. Information copies of the regional request and the AVN evaluation will be forwarded to AFS-1.

118-119. RESERVED.

SECTION 3. INSTRUMENT APPROACH PROCEDURES AUTOMATION (IAPA) RESPONSIBILITIES

120. BACKGROUND.

a. *The FAA has developed IAPA* to automate the mechanics of the Instrument Flight Procedures Program to include the development, review, storage, and electronic transmittal of Instrument Flight Procedures with ancillary system benefits.

b. *The IAPA system standardizes* the application of criteria specified in Order 8260.3B, United States Standards for Terminal Instrument Procedures (TERPS), FAA Order 8260.19B, Flight Procedures and Airspace, other appropriate directives, advisory circulars, and Federal Aviation Regulations. IAPA applies established FAA TERPS software standards. IAPA software provides for application of standardized data and data accuracy standards in the development of instrument flight procedures.

c. *IAPA includes* obstacles, terrain, navaid, fix, holding, airport, and runway data that are available to system users. IAPA is included in the FAA's Information Resources Management Plan (IRMP). Procedures for controlling changes to this system will be in accordance with Order 1370.52, Information Resources Management, Policies and Procedures.

121. OFFICE OF AVIATION SYSTEM STANDARDS RESPONSIBILITY.

The Office of Aviation System Standards, AVN-1, is the office of primary interest and is responsible for overall functional management.

a. *The Flight Procedures and Inspection Division, AVN-200,* is responsible for policy guidance and administrative control of IAPA, as well as coordinating actions required to meet changing legal and user requirements. In addition, this division is responsible for:

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

(2) **Managing and reporting** on project schedules, costs, and other supporting resources for the AVS 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 IAPA system) 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 operational tests and evaluations of the information system.

b. *The Flight Procedures Branch, AVN-220,* is responsible for assuring the successful ongoing operation of the data system. In the performance of these responsibilities, the Flight Procedures Branch shall:

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

(2) **Develop necessary guidelines** for the control and dissemination of data from IAPA and other assigned systems.

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

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

(5) **Establish priorities** for task assignments, scheduling, and utilization of

personnel and physical resources.

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

(7) Conduct extensive operational testing and debugging, to assure system software is in conformance with the United States Standard for Terminal Instrument Procedures and other appropriate directives, advisory circulars, and Federal Aviation Regulations. Conduct final system certification of software before release to users.

(8) Identify training requirements for operator/user training on IAPA and monitor results of training.

(9) Review national user requirements, establish priorities, and approve system modifications.

c. *The Data Analysis Branch, AVN-240,* is responsible for establishing and maintaining the data base/Aircraft Management Information System (AMIS) in support of IAPA requirements.

d. *The Flight Inspection Area Offices (FIAOs)* are responsible for final certification of instrument flight procedures to include that:

(1) Data used to develop the instrument approach procedure was correct.

(2) The instrument approach procedure was developed in accordance with the FAA Order 8260.3B, United States Standard for Terminal Instrument Procedures; Order 8260.19B, Flight Procedures and Airspace; and other appropriate directives, advisory circulars, and Federal Aviation Regulations listed in appendix 1.

(3) The appropriate Flight Procedures Standards Waiver, if required, is on file.

122. OFFICE OF INFORMATION SERVICES RESPONSIBILITY.

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

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

b. *Providing* technical consultation and advice as required.

c. *Identifying* required computer operations, procuring equipment, providing telecommunications support, and other necessary ADP enhancement and support services for IAPA.

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

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

f. *Providing* preliminary testing of software to assure conformance with the United States Standard for Terminal Instrument Procedures and other appropriate directives, advisory circulars, and Federal Aviation Regulations as advised by the program office.

g. *Ensuring* that the provisions of Order 1600.54A, Security of FAA Automatic Data Processing Systems and Facilities, and OMB Circular A-71, Responsibilities for the Administration and Management of Automatic Data Processing Activities, in controlling security of computer programs and associated documentation are complied with.

123. OFFICE OF MANAGEMENT SYSTEMS RESPONSIBILITY.

Office of Management Systems, AMS-1, as stated in Order 1370.52, will develop governing policies and responsibilities for automatic data processing (ADP) program management.

124. ASSOCIATE ADMINISTRATOR FOR AIRWAY FACILITIES.

The Associate Administrator for Airway Facilities, AAF-1, is responsible for the determination of agency-wide priorities for use and control of telecommunications resources and for approving acquisition of additional resources needed to support IAPA. This responsibility is administered through the Telecommunications Management and Operations Division, ASM-300.

125. AIR TRAFFIC RESPONSIBILITY.

The National Flight Data Center (NFDC), ATM-600, is responsible for:

a. *Serving as the focal point* for the distribution of IAPA output to charting agencies.

b. *Providing* the data base as required by the Program Office.

c. *Serving* as the national focal point for data collection.

d. *Providing* technical assistance to the Program Office regarding data base standards, data base accuracy standards, and data base content and format.

126-199. RESERVED.

CHAPTER 2. GENERAL PROCEDURES

SECTION 1. GENERAL

200. GENERAL.

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

201. REQUESTS FOR INSTRUMENT FLIGHT PROCEDURES.

a. *Requests for approval and/or establishment of instrument flight procedures* may originate from many different sources. It may be a request from a state, city, airport manager, or an individual. It may also be from an air carrier, air taxi, military, commercial operator, Air Traffic Control (ATC), or FS personnel.

b. *All requests for instrument flight procedures received by any FAA office* shall be forwarded to the appropriate regional FPB for further handling. Requirements for approval of instrument approach procedures are contained in chapter 1 of TERPS. FPB requests for FIAO development action shall be in writing.

c. *Procedures with specific effective dates, and other urgent projects*, will be assigned priorities agreed upon by FPB and the FIAO involved. All other projects will be processed as workload permits, in order of FIAO receipt.

202. AIR TRAFFIC LETTERS OF AGREEMENT.

When letters of agreement affect or include flight procedures, they are coordinated between ATC facilities and the FPB (which is the focal point for FS coordination).

a. *When these letters are received*, the FPB shall review them to assure compatibility with published or planned flight procedures. These letters should be further coordinated with the FIAO responsible for the development of the procedures.

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

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

d. *Normally*, a letter of agreement is an agreement between two or more ATC facilities. Unless the FPB or FIAO is a party to the agreement, they are not signatories and do not approve or disapprove the agreement.

203. AIRPORT LIGHTING AND VISUAL AIDS.

a. *Operation of airport lighting and visual aids* is contained in Orders:

(1) 7110.10, Flight Services.

(2) 7110.65, Air Traffic Control.

(3) 7210.3, Facility Operation and Administration.

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

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

SECTION 2. AERONAUTICAL CHARTS

204. USE OF MAPS AND CHARTS.

a. *FIAOs shall maintain an adequate supply of current charts* to support the development of instrument procedures within their areas of responsibility. The 7 1/2 and 15 minute quadrangle topographic charts produced by the U.S. Geological Survey are normally the best source for determining terrain elevation. These charts do not depict the height of manmade objects or natural growth; therefore, use other data sources such as IAPA, AMIS, Quarterly Obstacle Memo, etc., in addition to on-site evaluations. The Sectional Aeronautical Chart and the VFR Terminal Area Chart are good supporting source documents; however, they may not depict all current information because of the extended charting cycle.

b. *Draw the final segment, circling areas, and missed approach segments* on the largest scale chart available, normally the 7 1/2 minute topographic chart. On precision approach procedures, the final approach segment, or portion thereof, should also be drawn on the Airport Obstruction Chart (OC) or an equivalent plan and profile chart. This paragraph applies for procedures developed manually; and on IAPA for terrain evaluation and airspace determination.

c. *Chart Documentation.* To satisfy flight inspection requirements, depict a layout of the feeder, initial, intermediate, procedure turn, final, and missed approach obstruction areas on a suitable chart. (See paragraph 204d below.) Identify controlling obstructions within each area and number them in accordance with the numbers assigned under section A of the data record. The local 1:500,000 series Sectional Aeronautical Chart, published by National Ocean Service or, the National Topographic 1:250,000 series map, published by U.S. Geological Survey, are recommended for this purpose. Use 1:250,000 series charts where the Sectional charts are not available.

d. *When Instrument Approach Procedures Automation (IAPA) is used*, manual construction of segments on charts is normally not required to satisfy flight inspection requirements. For these purposes, procedures specialists may reproduce the IAPA generated segment drawing onto clear plastic for overlay onto Sectional charts for flight inspection use. The maximum reproduction error allowed is +/- one percent. Print and file with the IAPA/manual forms a separate 1:500,000 (or 1:250,000 as appropriate) scale graphic copy of each segment of the complete procedure design. Use the IAPA lat/long grid lines to aid the flight inspection overlay effort.

205. AERONAUTICAL CHARTS AND PUBLICATIONS.

a. *Aeronautical charts used for air navigation are generally of two groups*: VFR charts and IFR charts. The VFR charts are the Sectional and VFR Terminal Area charts and the visual navigation chart. IFR charts are the En route Low and High Altitude, Area, Instrument Approach Procedure, SID, and STAR charts.

b. *The primary publication* which contains information related to instrument operations is the Airmen's Information Manual (AIM). FPB and AVN personnel conduct surveillance of the AIM to verify the accuracy and appropriateness of the information therein. For items in the AIM pertaining to flight procedures, the FPB acts as the regional focal point, and AVN-220 acts as the FIAO focal point.

c. *All FPB and FIAO personnel* should monitor charts or publications released by FAA which provide informative material, recommended or mandatory, to determine that safe operating practices and conditions are accurately described for aviation users.

d. *The FIAO is responsible* for the accuracy and completeness of flight data submitted by that office for publication, and shall review the resulting charts to assure correct portrayal. The FIAO serves as the focal point for questions about the data published on these charts.

e. *Any FAA personnel*, who find or are notified of discrepancies or errors in aeronautical charts and the AIM, should forward the information to the appropriate Regional FPB, the appropriate FIAO, or the National Flight Data Center (NFDC).

SECTION 3. ENVIRONMENTAL REQUIREMENTS

206. NOISE ABATEMENT.

The establishment of noise abatement procedures is the responsibility of Air Traffic Service. However, the Flight Standards Service has an input from an aircraft operational standpoint. The Flight Standards Division shall review noise abatement procedures for safety, practicality, and adherence with applicable criteria. These procedures should be coordinated with the appropriate FSDO and FIAO.

207. ENVIRONMENTAL IMPACTS.

FAA Order 1050.1D, Policies and Procedures for Considering Environmental Impacts, describes the requirements for documentation of environmental impact or lack of impact concerning actions taken by regional FPBs. In particular, appendix 4 of the document defines actions that require an environmental assessment or a declaration of categorical exclusion. See also paragraph 800.

SECTION 4. FACILITY UTILIZATION AND MONITORING

208.FREQUENCY SERVICE VOLUMES.

In establishing instrument flight procedures, consideration must be given to the type of navigation facilities available and to their limitations.

a. *All electronic navigation facilities are installed in accordance with frequency separation specified in distances and altitudes.* Specific frequency protected service volumes are contained in Handbook 6050.32, Manual of Regulations and Principles for FAA Spectrum Management. This order is primarily used by the Regional Spectrum Management Officer (SMO). Each FIAO should maintain a copy of Order 6050.32 on file to facilitate understanding and coordination of operational considerations associated with expended service volumes.

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

209. ATC USABLE DISTANCE AND ALTITUDE LIMITATIONS.

When a FIAO develops flight procedures which reach outside of the standard service volumes listed below, the submission and processing of an FAA Form 6050-4, Expanded Service Volume Request, is mandatory. Flight check measurements shall not be used as a substitute for an approved ESV. See figures 2-1, 2-2, and 2-3.

a. *VOR/VORTAC/TACAN*

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

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

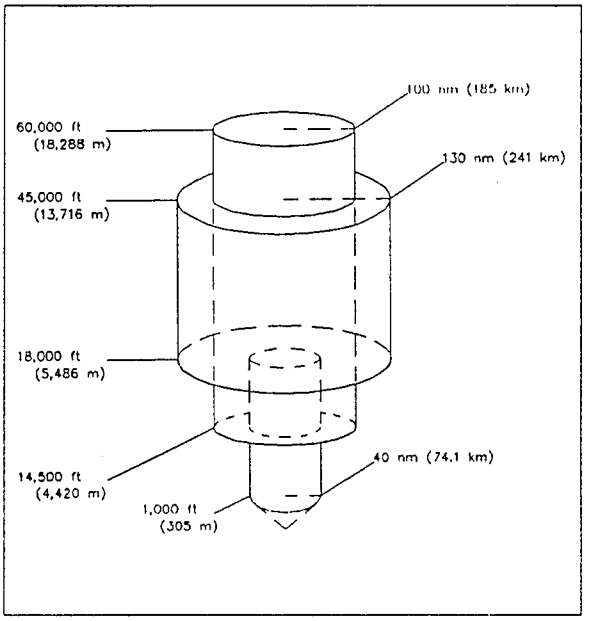


Figure 2-1 Standard Class L/H Service Volume

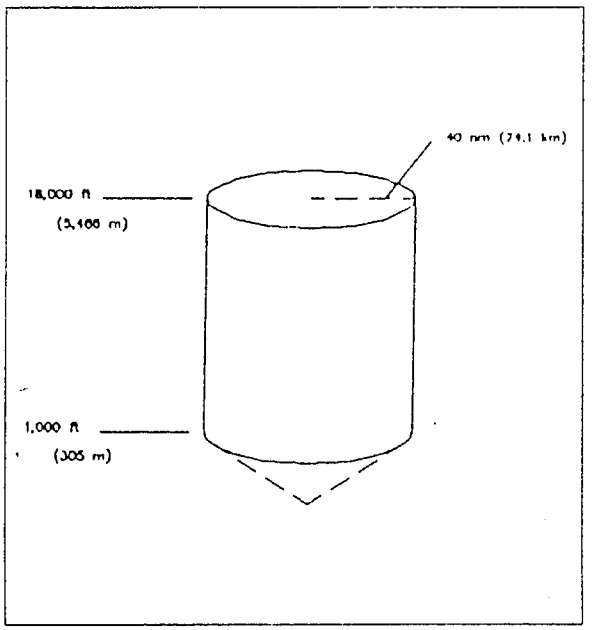


Figure 2-2 Standard Low Altitude Service Volume

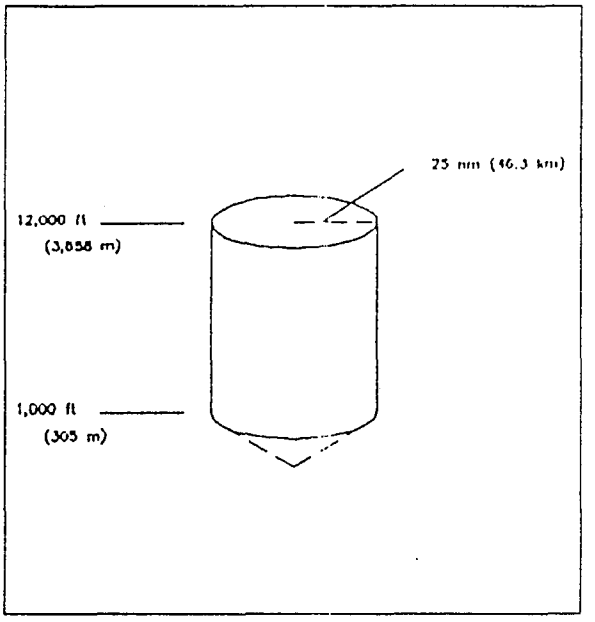


Figure 2-3 Standard Terminal Service Volume

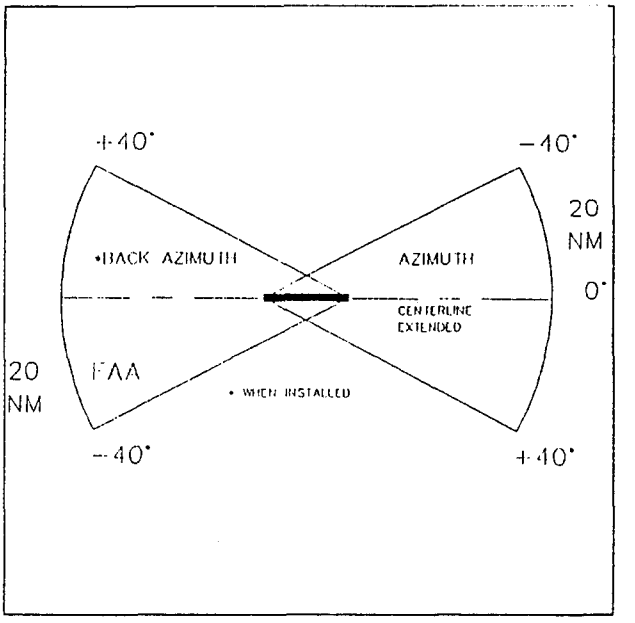


Figure 2-4 MLS Azimuth Coverage

b. *NDB*

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

c. *ILS*

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

d. *MLS*

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

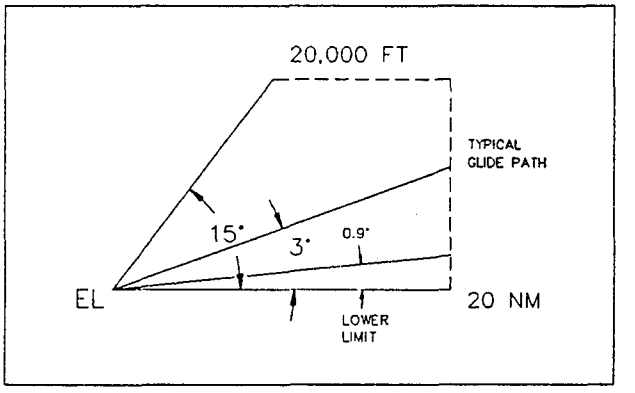


Figure 2-5 MLS Elevation Coverage

210. REQUESTS FOR EXPANDED SERVICE VOLUMES (ESV).

a. *When ATC requires use of NAVAIDS beyond limitations* cited in paragraph 209a through 209d above, ATC submits an ESV request, with a description of the flight procedure requiring it. This request is first reviewed by the SMO. The SMO applies the criteria contained in Order 6050.32. If the SMO disapproves the request, it is returned to the originator without further action. SMO approved or restricted ESVs are then reviewed by the FIAO.

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

c. *A requirement for an ESV* may be determined by the procedures specialist when developing an instrument procedure; e.g., the instrument procedure is proposed beyond SSV. In this case, the procedures specialist processes an FAA Form 6050-4 to obtain SMO and, in turn, flight inspection approval. An ESV request shall 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 FIAO initiates a revised FAA Form 6050-4 and explains the action in the REMARKS box of Part III; e.g., **"R-035 changed to R-038 due to variation change to 23E/85 effective 4 AUG 83."**

e. *Describe Holding patterns* by an arc enclosing two radials; e.g., **306-322°, 83nm,** and shall enclose the holding pattern.

f. *Preparation.* Instructions for preparation of an ESV request are in paragraph 902. Figure 9-2 is a sample request.

g. *Distribution.* The FAA Form 6050-4 is supplied in 6-sheet sets. See paragraph 902e for specific distribution instructions.

h. *FIAO Annual Review.* Review ESVs annually.

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* shall start and end at an approved navigational fix.

b. *The use of localizers for en route* instrument flight procedures shall 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 which causes a facility shutdown when performance deteriorates below established tolerances. A remote status indicator may also be provided through the use of a signal sampling receiver, microwave link, or telephone circuit. VOR, VORTAC, and ILS facilities as well as new NDBs and marker beacons, installed by the FAA, are provided with an internal monitoring feature. Older FAA NDBs and some nonfederal NDBs do not have the internal feature and monitoring is accomplished by other means.

b. *LORAN-C Local Area Monitors (LAMs)* are not "monitors" in the traditional sense of the word, but are strictly data-gathering devices. The data collected from a given LAM will be used to generate TD correction factors for landing locations within a 90-mile radius. The monitors will be located in VOR (or VORTAC) facilities to make use of existing communications capabilities. There is no interface with air traffic facilities. **Airports served only by LORAN-C SIAPs do not qualify for alternate minimums.**

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

(1) Category 1. Internal monitoring plus a status indicator installed at control point. (Reverts to a temporary Category 3 status when the control point is unmanned.)

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

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

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

213. UTILIZATION OF MONITORING CATEGORIES.

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

b. *Category 2* is a temporary condition not considered in procedures development. ATC is responsible for NOTAMing these facilities out of service when pilot reports indicate facility malfunction.

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

(1) **Alternate minimums** shall 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 812b.

(2) **When a facility is used to designate a stepdown fix,** alternate minimums shall 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** shall not be predicated on these facilities.

(5) **Navigational fixes developed from crossing radials of Category 3 facilities** shall not be used to break a minimum en route altitude (MEA) to a 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 shall 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.

75 Mhz markers may be utilized as the sole source of identification with the following limitations:

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

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

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

d. *Breaks in MEAs.* Fan markers shall not be used to define the point where an en route climb to a higher altitude is required. (Can be used as a break to a lower altitude).

SECTION 5. MAGNETIC VARIATION (MV) CHANGE

215. GENERAL.

Order 8260.25, Implementing Epoch Year Magnetic Variation Values, establishes the MV program. The following specific guidance is provided:

a. *The MVs of record* for navigational facilities (including military facilities) and airports are assigned and maintained by AVN-240. MVs of record are also available in the AMIS facility data base. For new or relocated facilities, and for new or revised procedures, the FIAO shall obtain the MV to be used from AVN-240. See figures 2-6 and 2-7. MVs will be assigned in whole degree increments and Epoch Years will be assigned in five-year increments; e.g., 85, 90, 95, etc.

b. *A list (by states) of navigational facilities* with a difference of 2 degrees or more between the MV of record and the nearest future Epoch Year value is sent to the FIAOs. This list shall be updated by AVN-240 whenever a new Epoch Year value is available. This list shall be used to implement MV changes.

c. *When the difference* between the MV of record and the nearest future Epoch Year value of any facility is 3 degrees or more, the MV of record shall be changed to the nearest future Epoch Year value. When the difference is less than 3 degrees, the FIAO shall consider implementing the nearest future value when workload permits.

d. *Airport standards require renumbering* when the runway number is more than 6 degrees from the magnetic alignment. This is usually done during the next routine repainting, or when the existing markings are obliterated by seal coats, overlays, or reconstruction.

e. *The impact of MV changes* can be considerable. The Airports Division may have to arrange repainting of runway numbers. Air Traffic may have to initiate revised SIDS, STARs, and substitute routes. Airway Facilities is involved in facility rotations. Since the FPB is defined as the focal point for coordination with the above divisions, the FIAO shall coordinate the workload requirements with the FPB and an effective date shall be agreed upon. Magnetic Variation changes which affect only terminal procedures may have an effective date established concurrent with publication of a specific procedural amendment.

f. *After the effective date has been agreed upon*, the FIAO shall advise AVN-240 of the effective date of the MV change. AVN-240 will then send an official MV change letter to ATO-240 with copies to the FPB , AVN-220, and FIAO.

216. FIAO ACTION.

a. *General.*

(1) Insure that the airport MV of record shall be the same as all facilities at that airport including all ILS components.

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

(3) Determine whether NOTAM action is necessary, when required procedure adjustment action or a change of MV of Record is not accomplished by the effective date of amended SIAPs or revised enroute charts.

(4) Use the assigned MV of Record (or as officially changed) in the development of instrument flight procedures - regardless of the MV shown on the chart being used.

b. *VOR, VOR/DME, and VORTAC facilities supporting enroute structure* which may or may not have SIAPs predicated on them:

(1) Modify all fixes and SIAPs. Modify all FAR Part 95 Direct and Off-Airway (Non-Part 95) routes with documented radial(s)/ bearing(s). Change ESVs. Make all modifications to meet an effective date that coincides with the en route change cycle.

U.S. Department of Transportation
Federal Aviation Administration

Memorandum

Subject: ACTION: Magnetic Variation Change

Date: AUG 27 1993

From: Supervisor, NAVAIDS Analysis Section, AVN-822

Reply to Attn of: Carole Jarvis (405) 954-5932

To: Manager, National Flight Data Center, ATM-600

Please publish the following in the National Flight Data Digest as soon as possible:

The magnetic variation of record for the following facilities will be revised effective concurrent with ILS RWY 18, ANDT 3:

NEW HAMPSHIRE

LOCATION	NAME	FACILITY	IDENT	ASSIGNED MAGNETIC VALUE	YEAR
LEBANON,	LEBANON MUNI	ARPT	KLEB	OLD 15°W NEW 16°W	1995
LEBANON,	LEBANON MUNI	ILS	DVR	OLD 16°W NEW 16°W	1995
LEBANON,	WHITE RIVER	LF/MF RBN	IVV	OLD 15°W NEW 16°W	1995

Michael Miressi

Figure 2-6 Magnetic Variation Change

U.S. Department of Transportation
Federal Aviation Administration

Memorandum

Subject: ACTION: Magnetic Variation Change

Date: AUG 27 1993

From: Supervisor, NAVAIDS Analysis Section, AVN-822

Reply to Attn of: Carole Jarvis (405) 954-5932

To: Manager, National Flight Data Center, ATM-600

Please publish the following in the National Flight Data Digest as soon as possible:

The magnetic variation of record for the following facilities will be revised effective 11 NOVEMBER 1993:

ALASKA

LOCATION	NAME	FACILITY	IDENT	ASSIGNED MAGNETIC VALUE	YEAR
PORT HEIDEN,	PORT HEIDEN	VOR/DME	*PTH	ASSIGN 18°E	1995

*NOTE: This a new facility not yet commissioned.

for Michael Miressi

Figure 2-7 Magnetic Variation Change

(2) **Coordinate changes** with ARTCC, approach control, and FPB in an attempt to eliminate routes, fixes, and SIAPs that are no longer required.

c. *Facilities not supporting en route structure:*

(1) **Initiate implementation of the nearest future Epoch Year MV** whenever any SIAP is established or amended. Process amendments as routine. The nearest future Epoch Year MV will become effective concurrent with publication of the amendment. See paragraphs 816n and o.

(2) **When multiple SIAPs are involved,** amend and process to become effective concurrent with the SIAP specified in the AVN-240 MV change letter.

(3) **Submit revisions** of all affected fixes with the SIAP(s). Change ESVs.

(4) **Radar and DF procedures** are to be amended when airport MV of record is changed. If the DF is remote from an off-airport site, obtain the MV for the antenna site from AVN-240; include MV and year in the lower right corner of the FAA Form 8260-10.

d. *Military facilities:*

(1) **MV changes for Army facilities** shall be accomplished in the same manner as for civil facilities; however, the installation commander's approval must be obtained.

(2) **When the need to change MV of other military facilities** is identified, the FIAO shall advise the FPB , which will notify the appropriate military representatives.

e. *Airports:*

(1) **Amend** SIAPs and FAA Forms 8260-15 which specify runway numbers.

(2) If **SIDs or STARs** contain runway numbers, ask the FPB to arrange for amendment of these procedures.

(3) **If repainting is not accomplished** on the required date, take appropriate NOTAM action.

217-219. RESERVED.

SECTION 6. NOTICES TO AIRMEN (NOTAMS)

220. GENERAL.

NOTAMs provide timely knowledge to airmen, and other aviation interests, of information or conditions which are essential to safety of flight. NOTAMs 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 FDC NOTAMs which are required to maintain the accuracy and currency of charted terminal and en route flight procedures.

221. NATIONAL NOTICE TO AIRMEN SYSTEM.

A National Notice to Airmen System has been established to provide airmen with the current status of the National Airspace System (NAS). Details for handling this information are contained in Order 7930.2, Notices to Airmen. The following is a brief summary of the services provided:

a. *FDC NOTAMs issued through the National Flight Data Center (NFDC)* are used to provide wide dissemination for flight procedures data and other time-critical information. They are numbered by NFDC to reflect the year of issuance and the sequence number for the calendar year, (e.g., 1/0445). FDC NOTAMs are transmitted on all Service A circuits, and stored in the Consolidated NOTAM System, after which they are entered in the Notices to Airmen Class II (mail distribution) publication until canceled.

b. *D NOTAMs Issued Under the Flight Service Stations' Accountability System* 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. 6/18).

222. NOTAM PROCESSING.

Emergency changes to instrument flight procedures, which have been charted and distributed, shall be processed as FDC NOTAMs and issued through NFDC. In order to identify procedural amendments that can be charted from the NOTAM information, FIAO personnel will prefix the text with an action code as follows:

a. *FI/P (Flight Information/Permanent).* This prefix shall be used when the amended procedure will be effective for more than 120 days. FI/P NOTAMs (P NOTAMs) contain information that is complete for charting purposes. Cartographic agencies will initiate immediate changes to charted information, based upon the P NOTAM data, prior to receiving from NFDC the formal amendment to the appropriate regulation. Only one SIAP shall be addressed per P NOTAM.

(1) The Chart Change Permanent (CCP) NOTAM is a sub-category of P NOTAM used to more effectively use the NOTAM system for changes to instrument procedures. This NOTAM differs from the traditional P NOTAM in that it does not require a complete review of the instrument procedure. Language in the bi-weekly transmittal letter allows charting agencies to use CCP NOTAMs as sources for changes to published SIAPs.

b. *FI/T (Flight Information/Temporary).* This prefix shall be used when the amended procedure will be effective for less than 120 days. If the condition is longer or becomes permanent, an amended FAA 8260-series form, incorporating the NOTAM material and any additional changes to the procedure, must be submitted prior to the expiration of the temporary timeframe.

223. SPECIAL HANDLING.

a. *Procedures which are being processed by NFDC* for publication in the bi-weekly transmittal letter, or are being *processed by cartographic agencies,* may be given special handling as a priority change to the FAA 8260-series form. Where such action is feasible, NFDC personnel, in coordination with the FIAO, will prepare an amended FAA 8260-series form and issue the form as either a "corrected copy" or as the next sequential amendment to the procedure.

b. *Special handling* shall be utilized only if the changes are limited to essential items that require priority processing. Routine procedural

changes are not acceptable for special handling.

224. USE OF NOTAM SYSTEM.

a. *Coordinate with* the affected AT facility and the appropriate regional offices; e.g. Flight Standards, for all FDC NOTAMs. (See also TERPS paragraph 150). The regional FPB normally will notify the airport manager at the affected location. Whenever practical, coordinate with regional FPB prior to issuance of the NOTAM: however do not delay safety of flight NOTAMs to complete this coordination.

b. FIAO quality assurance personnel *review all* NOTAMs prior to submission. AVN-220 reviews and approves all P NOTAMs prior to submission to the NFDC for publication. Prior to issuing the NOTAM to the U.S. NOTAM Office, NFDC checks the NOTAM for accuracy, completeness, etc. NFDC notifies AVN-220 and the FIAO of any discrepancies.

c. *Submit NOTAMs via IAPA or facsimile (FAX).* FIAO's are strongly encouraged to use IAPA for T or P NOTAMs as this establishes an audit trail and ensures AVN-220 review and approval of the P NOTAM. If T NOTAMs are sent via IAPA (or FAX 202-267-5322) to NFDC, call the NFDC area specialist and advise when a NOTAM has been sent. *All P NOTAMs should arrive* in AVN-220 prior to 1200 Central Time to insure proper time for review and forwarding to NFDC for that day's publication. After that time, issue only T NOTAMs and coordinate with AVN-220 during the next workday for a determination on converting the NOTAM to a permanent status. AVN-220 should forward NOTAMs to arrive at NFDC prior to 1530 Eastern Time.

d. *During NFDC non-duty hours,* T NOTAMs may be forward by FAX or telephone.

(1) **Write** the NOTAM; IAPA is a convenient means for creating a typewritten copy, but handwritten copy, telephone, or FAX are acceptable in emergencies.

(2) **Coordinate**, if possible, with regional FS and the affected AT facility.

(3) **Send NOTAM.** Transmit a legible copy of the NOTAM via FAX to the U.S. NOTAM Office. (202-267-3549).

(4) **Call** the USNOF (202-267-3390) to ensure receipt.

(5) **Coordinate** with AVN-220, regional FPB, and the affected AT facility, as necessary, during the next normal workday.

e. *CCP NOTAMs shall address* only limited aspects of the SIAP. They shall be submitted on IAPA, and shall contain all required changes to the procedure in clear and concise language.

(1) **There is no age limit on a SIAP submitted for CCP amendment** as long as the FIAO reviews it, ascertains that there are no violations of current TERPs criteria, and AVN-220 agrees there are no other safety of flight changes required to the procedure. Do not address minor non-safety related discrepancies to the SIAP in the CCP NOTAM.

(2) **The FIAO may issue CCPs for consecutive amendments** to the same procedure. All CCPs shall be sequentially lettered (Amendment 13A, 13B, 13C, etc.) as a suffix to the current amendment. To insure standardization, AVN-220 will review the status of each chart change P NOTAM before forwarding it to the NFDC for publication.

(3) **Both IAPA and manual procedures are eligible for CCP NOTAMs.**

(4) **Issue a T NOTAM and amend the SIAP as a priority** to the FIAO work schedule, when all changes and corrections cannot be accommodated using a CCP.

f. *FDC NOTAMs are NOT required* in the following cases:

(1) **When a D NOTAM 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.

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

(3) When a D NOTAM 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, shall be processed.

(4) When a D NOTAM 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 of the NOTAMed facility. Do not issue "Radar Required" NOTAMs on unusable or restricted airway segments.

(5) When a D NOTAM 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.

(6) When radio control of approach lights or runway lights is commissioned or the frequency is changed, Flight Inspection issues a D NOTAM in accordance with OA P 8200.1, United States Standard Flight Inspection Manual.

(7) Changes to SIDs and/or STARs, which require NOTAM publication, shall be sent by the ARTCC to the FSS Procedures in Washington, D.C. for L NOTAM issuance.

g. *Airway NOTAMs.* When a restriction or a change to an airway requires a NOTAM, forward a NOTAM to NFDC. NOTAMs reflecting airway changes within one or more ARTCC's airspace are issued under the affected ARTCC identifier as Center Area NOTAM (CAN) FDC NOTAMs on the NOTAM circuit.

(1) *If the airway NOTAM affects one but less than four ARTCCs,* send NFDC one NOTAM for each affected ARTCC; NFDC will then transmit the NOTAM(s) under each ARTCC's identifier. *If the NOTAM affects four or more ARTCCs,* send one NOTAM; NFDC will then transmit only one FDC NOTAM.

(2) *If the restriction will exceed* the time limit established in paragraph 232b, forward an updated FAA Form 8260-16 or 8260-2 simultaneously to NFDC for charting.

Examples:

<u>One ARTCC:</u>

"FDC 3/0001 ZBW FI/T AIRWAY ZBW.
V1 HARTFORD (HFD) VORTAC, CT TO MADISON (MAD) VOR/DME, CT MEA 3000.

REASON: TEMPORARY NEW TOWER. OE 93-ANE-1329."

<u>Two ARTCCs:</u>

"FDC 3/0001 ZBW FI/T AIRWAY ZBW ZNY.
V1 HARTFORD (HFD) VORTAC, CT TO DIXIE INT, NJ MEA 3000.

FDC 3/0002 ZNY FI/T AIRWAY ZBW ZNY.
V1 HARTFORD (HFD) VORTAC, CT TO DIXIE INT, NJ MEA 3000.

REASON: TEMPORARY NEW TOWER. OE 93-ANE-1329."

<u>Three ARTCCs:</u>

"FDC 3/0001 ZBW FI/T AIRWAY ZBW ZNY ZDC.
V1 HARTFORD (HFD) VORTAC, CT TO WATERLOO (ATR) VORTAC, DE MEA 3000.

FDC 3/0002 ZNY FI/T AIRWAY ZBW ZNY ZDC.
V1 HARTFORD (HFD) VORTAC, CT TO WATERLOO (ATR) VORTAC, DE MEA 3000.

FDC 3/0003 ZDC FI/T AIRWAY ZBW ZNY ZDC.
V1 HARTFORD (HFD) VORTAC, CT TO WATERLOO (ATR) VORTAC, DE MEA 3000.

REASON: TEMPORARY NEW TOWER. OE 93-ANE-1329."

Four or more ARTCCs:

"FDC 3/0001 FDC FI/T AIRWAY ZNY ZDC ZAT ZJX.
V1 DIXIE INT, NJ TO CRAIG (CRG) VORTAC, FL MEA 4000.

REASON: TEMPORARY NEW TOWER. OE 93-ANE-1329."

225. NOTAM CONTENT.

a. *FDC NOTAMs shall identify* the procedure being amended and the current amendment number. The NOTAM shall be as concise as possible, and shall 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 do not affect visibility minimums, do not require NOTAM action.

b. *The text* shall be prepared by the FIAO using plain language and contractions found in the terminal procedures books and the AIM. 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 which 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 FAA Order 7930.2, paragraph 7-4.

c. *For temporary obstructions,* include the type, elevation, distance, and direction from the airport or runway threshold, as appropriate, as the last line of the text.

d. *If the NOTAM contains permanent information* for charting, the last line of the NOTAM text shall identify it as the next sequential amendment, and the date of the NOTAM will become the effective date of that amendment.

e. *Include a reason for the NOTAM* following the NOTAM text. This will inform NFDC of the basis for the NOTAM.

Examples:

"FDC 9/____ ELP FI/P EL PASO INTL ARPT, EL PASO, TX.
ILS RWY 22 AMDT 10...
GS 3.0 DEGREES, TCH 51, GS ALT AT LOM 5155, GS ALT AT MM 4159.
THIS IS ILS RWY 22 AMDT 11.

REASON: 8240.47 EVALUATION OF RELOCATED GLIDE SLOPE."

"FDC 1/____ ORD FI/T CHICAGO O'HARE INTL, CHICAGO, IL.
VOR RWY 22R AMDT 8...
MDA 1400/HAT 750, VIS 1-1/2 ALL CATS. TEMPORARY CRANE 1100 MSL 1.2NM SE OF RWY 23. (Specify distances less than 1nm in feet.)

REASON: TEMPORARY CRANE FOR 90 DAYS. OE 91-AGL-1689."

"FDC 1/____GPT FI/T GULFPORT-BILOXI REGIONAL, GULFPORT, MS.
VOR RWY 31 AMDT 18...
S-31 MDA 720/HAT 693 ALL CATS. VIS CAT C 2, CAT D 2-1/2. CIRCLING MDA 720/HAA 692 ALL CATS. VIS CAT C 2, CAT D 2-1/2.

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

HI TACAN RWY 31 AMDT 1...
S-31 MDA 660/HAT 633 ALL CATS. VIS CAT C 1-3/4, CAT D 2, CAT E 2-1/4. MOBILE ALTIMETER SETTING MIMIMUMS S-31 MDA 880/HAT 853 ALL CATS. VIS CAT C 2-1/2, CAT D 2-3/4, CAT E 3. CIRCLING MDA 880/HAT 852 CAT C. TEMPORARY CRANE 410 MSL 1.5NM SE OF RWY 31.

REASON: TEMPORARY CRANE FOR 60 DAYS. OE 90-ACE-1453."

"FDC 1/____ LAN FI/T CAPITAL CITY, LANSING, MI.
ILS RWY 10R AMDT 8...
ILS RWY 28L AMDT 24...
VOR RWY 6 AMDT 23...
VOR RWY 24 AMDT 7...
RADAR-1 AMDT 13...
CIRCLING MDA 1420/HAA 559 ALL CATS.

REASON: NEW BUILDING, 1115 MSL. OE 91-AGL-2974."

"FDC 1/____ HPT FI/P HAMPTON MUNI, HAMPTON, IA.
VOR/DME RWY 35 ORIG...
MSA FROM MASON CITY VORTAC 3000.
DELETE: ACTIVATE MIRL RWY 17-35, CTAF.
THIS IS VOR/DME RWY 35 ORIG A.

REASON: NEW TOWER, 2049 MSL, OE 90-ACE-2286. LIGHT NOTE REDUNDANT TO CHARTING. THIS CANCELS FDC 1/2345."

"FDC 1/____ 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 5.

REASON: RUNWAYS RENUMBERED FOR MAGNETIC VARIATION CHANGE.

FDC 1/____ AXH FI/P HOUSTON-SOUTHWEST, HOUSTON, TX.
LOC/DME RWY 10 AMDT 2...
CHANGE ALL REFERENCE TO RWY 10-28 TO RWY 9-27.
THIS IS LOC/DME RWY 9 AMDT 3.

REASON: RUNWAYS RENUMBERED FOR MAGNETIC VARIATION CHANGE."

"FDC 1/____ FI/T AIRWAY CA.
V363 KRAUZ INT, CA TO PRADO INT, CA MEA 4500 SOUTH BOUND, 4000 NORTH BOUND.

REASON: NEW TOWER. OE 88-AWP-1449."

"FDC 1/____ FI/T AIRWAY PA,
V29-V147 EAST TEXAS /ETX/ VORTAC, PA. TO WILKES-BARRE /AVP/ VORTAC, PA. ADD MRA AT SLATT INT, PA 13000.

REASON: FLIGHT INSPECTION OF FACILITIES."

226. NOTAM FOLLOW-UP ACTION.

a. *Upon receipt of a P NOTAM,* the NFDC will incorporate the procedural changes to the current FAA 8260-series forms. NFDC will assign the NOTAM amendment number and effective date to the procedure, and will include completed forms in the current bi-weekly SIAP transmittal letter of changes for Federal Register publication. The FIAO shall retain a copy of the NOTAM and the FAA 8260-series forms received in the bi-weekly SIAP transmittal as permanent records of the emergency amendment.

b. *A hard copy of each chart change P NOTAM* shall be stapled to the current amendment, maintained in the procedures file, for each SIAP. When a new amendment is issued, all CCPs shall be included. **NFDC will cancel P NOTAMs following charting and distribution by cartographic agencies.**

227. NOTAM RESPONSIBILITY.

NOTAM follow-up services, provided by NFDC, are designed to expedite the publication of procedures amended by emergency action and to assist field personnel in the management of NOTAM issuances. Assistance in NOTAM handling by NFDC personnel in no way changes basic responsibilities for determining the need for NOTAM issuance, NOTAM content, or for the required follow-up actions. These responsibilities remain within AVN, and emergency type actions described above are not to be used as a substitute for accurate and timely program planning.

228-229. RESERVED.

SECTION 7. QUALITY/STANDARDIZATION OF INSTRUMENT FLIGHT PROCEDURES

230. FIAO ACTION.

a. *The FIAO is responsible for* the accuracy of procedures. The FIAO Flight Procedures Section Supervisor is responsible for conducting a review program which assures that each procedure processed conforms to applicable criteria and standards. Flight procedures do not require AVN-220 review prior to processing except FI/P NOTAMs.

b. *The FIAO's system of quality control* shall insure that all flight procedures submitted to NFDC for publication are of a professional quality that will not require corrections or changes following release. FIAOs may request a preliminary review by AVN-220.

c. *When unusual circumstances exist,* send flight procedures to AVN-220 for standardization review PRIOR TO submission for publication. AVN-220 will issue appropriate instructions to the FIAOs.

d. *Instrument charts produced by National Ocean Service* will be reviewed by the FIAO, upon receipt, for variations from information submitted for publication and for clarity of the graphic portrayal. Charting errors detected shall be forwarded directly to NFDC for corrective action. Charts which do not clearly portray the procedures should be referred through AVN-220 to AFS-420, with recommendations for charting improvements.

e. *Once IAPA-developed SIAPs have been reviewed,* and no changes are required, delete the IAPA workfile two weeks after publication.

231. AVN-220 ACTION.

a. *AVN-220 shall monitor procedures* on a surveillance basis.

b. *Preliminary reviews* may be conducted by AVN-220 upon request by the FIAO. When unusual circumstances exist, AVN-220 shall issue appropriate instructions to the FIAO concerned.

c. *FI/P NOTAMs* shall be reviewed by AVN-220 prior to issuance.

232-239. RESERVED.

SECTION 8. PERIODIC REVIEW OF INSTRUMENT 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 **assure** that requirements for obstacle clearance, navigational guidance, safety and practicality are met. **Immediately** comply with changes to criteria which relate to safety of flight. Use the review to assure compliance with all other changes to criteria. FIAOs should coordinate with FPB specialists for assistance in conducting reviews. FPBs can normally present current reviews of OEs, F&E and AIP projects pertinent to the review process.

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

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

d. *Sectional charts no longer* show all obstacles 200 feet or more AGL. In populated areas, only the highest obstacle in each of the four quadrants is portrayed, and an obstacle must be at least 300 feet AGL to be considered. Lower obstacles close to airports are shown if chart congestion permits. Use the latest sectional charts (where published) for reviews, but also consult all other sources of obstacle data, such as NOS obstacle lists and the IAPA data base. Use large scale maps when obstacles are near segment boundaries or when there is a need to obtain more accurate terrain information.

241. FIAO ACTION.

a. *SIAPs:*

(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.

(3) Assure that minimums meet criteria. Review SIAP forms for conformance to current standards. Check published SIAPs for correct portrayal.

(4) Verify current magnetic variation values with AVN-240.

(5) Consult with the regional FPB to verify continued need for SIAPs. Cancel SIAPs that are no longer required.

(6) Verify the validity of existing waivers. Coordinate the the FPB to cancel waivers no longer required.

b. *Airways, Airway Segments, and Routes:*

(1) Review at least once every four years.

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

(3) Consult with the FPB to verify continued need for off-airway and FAR Part 95 direct routes. Cancel routes that are no longer required.

c. *Fixes:*

(1) Review all fixes in conjunction with the associated SIAPs, airways, or routes. Assure that FAA Form 8260-2 entries for facility type, class, and monitoring category, radial/course/bearing, distances, least divergence angle, and charting requirements are correct. Verify holding requirements and controlling obstructions.

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

d. *All Procedures:*

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

(2) **Take remedial action** by NOTAM or revised FAA 8260-series form, as appropriate.

(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 SIAP amendments solely to correct an MSA altitude except when the MSA provides less than 950 feet of obstacle clearance.

242. FPB ACTION.

Annually review all SIAPs to determine continued need based on usage rate, economic need, etc. If no longer required, notify the FIAO to initiate cancellation action.

243-249. RESERVED.

SECTION 9. COMMUNICATIONS AND WEATHER

250. COMMUNICATIONS REQUIREMENTS.

FAA Handbook OA P 8200.1 (U.S. Standard Flight Inspection Manual), section 211, 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 shall 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-FAR Part 95 routes certified for a particular air carrier are the responsibility of appropriate Flight Standards District Office (FSDO) operations inspector.

251. USE OF UNICOM.

UNICOM may be used to satisfy the communications requirements of TERPs 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 TERPs 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 TERPs paragraph 122d. Special notes will be required on the approach charts. Examples of standard notes can be found in paragraph 814f.

253-259. RESERVED.

SECTION 10. NAVIGATIONAL FIXES

260. GENERAL.

Criteria for navigational fixes are contained in chapters 2 and 17 of TERPs. When using a VORTAC, 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 ATC 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 ATC'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 shall not be designated a compulsory reporting point.

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

262. UNPLANNED HOLDING AT DESIGNATED REPORTING POINTS.

a. *Where required for aircraft separation,* ATC may request aircraft to hold at any designated reporting point in a standard holding pattern at the MEA or the minimum reception altitude (MRA), whichever altitude is the higher, at locations where a minimum holding altitude has not been requested. For this reason, the conditions to be considered for holding (obstacle clearance, communications, and facility performance) must be reviewed whenever reporting points are established or revised, even though specific holding authorization has not been requested by 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 FAA Form 8260-2, Radio Fix and Holding Data Record.

263. REQUESTS FOR NAVIGATIONAL FIXES.

FAA Form 8260-2, Radio Fix and Holding Data Record, shall be used as the vehicle to transmit the ATC requests for the establishment, revision, or cancellation of navigational fixes, holding patterns, and/or reporting points. All requests from ATC facilities, civil and military, are forwarded through the appropriate ARTCC. The FIaO may initiate FAA Form 8260-2 for those navigational fixes which are required for the development of SIAPs. Other operationally required navigational fixes shall be coordinated with the appropriate ATC facility.

264. NAMING NAVIGATIONAL FIXES.

a. *Name* all intersections, DME fixes, and RNAV waypoints except those listed in paragraph 808a. Each name consists of a 5-letter pronouncable word for use as a computer code in the NAS. Include "WP" with the 5-letter name (ex: DAVID WP). Obtain 5-letter names from NFDC. Name intersections collocated with a facility (named in accordance with chapter 3 of Handbook 7400.2) the same as the facility. Name other facilities in accordance with Handbook 7400.2.

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

c. *SID and STAR procedures* that contain procedural changes require submission of revised source documents by ATC. These must be processed so as to arrive in NFDC at least 10 weeks prior to the desired publication date. If the fix name is changed, the procedures are amended through submission of a new FAA Form 8260-2, without the sequential amendment number being advanced. If the revised fix name is also in the name of the procedure, the procedure shall be renamed.

265. DOCUMENTING NAVIGATIONAL FIXES.

All named civil and military fixes shall be documented and approved on FAA Form 8260-2, Radio Fix and Holding Data Record. Instructions for entering data on FAA Form 8260-2 are contained in Chapter 9 of this Handbook.

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 which require the use of a facility beyond the COP. Figure 2-8 is an example of the proper and the improper method of designating a navigational fix in relation to COPs.

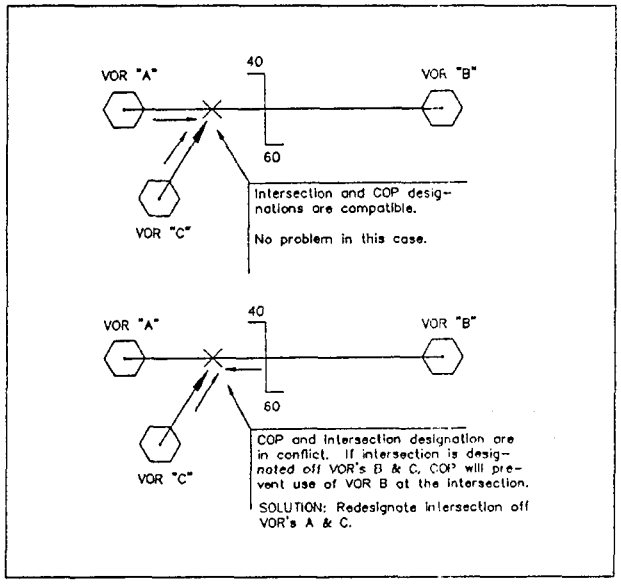


Figure 2-8

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

267. MINIMUM RECEPTION ALTITUDES (MRA).

At certain navigational fixes, VOR reception from an off-course facility may not be adequate at the lowest MEA associated with the route segment. In such cases when the MRA at the fix is higher than the MEA for instrument flight, the MRA shall be established for the fix and indicated on FAA forms 8260-2 and 8260-16. Once established, an MRA will not be revised unless the reception altitude is changed by 200 feet or more. See also 905d(2)(e).

268. FLIGHT INSPECTION.

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

269. MAXIMUM AUTHORIZED ALTITUDES (MAA).

MAAs are procedural limits which might be determined by technical limitations or such other factors as limited airspace or compatibility with other procedures. Where MAAs are required in connection with the publication of flight procedures, they are included on FAA Forms 8260-2 and 8260-16, or worksheets used to process the data. See also 905d(2)(e).

SECTION 11. OBSTACLE DATA ACCURACY

270. GENERAL.

The primary purpose of obstacle evaluation is to determine how an object will impact instrument flight procedures. The evaluations can provide accurate, consistent, and meaningful results and determinations only if FIAO and regional flight procedures specialists apply the same rules, criteria, and processes during development, review, and revision phases. This section establishes the minimum accuracy standards for obstacle data and its application in the development, review or revision of instrument procedures, and provides information on the application of the minimum accuracy standards. The minimum standards are to be applied by regional and FIAO specialists in all instrument procedures obstacle evaluations.

271. OBSTACLE DATA ACCURACY STANDARDS FOR INSTRUMENT PROCEDURES.

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

a. *Concept.* Obstacle data accuracy is not absolute, and the accuracy depends on the data source. The magnitude of the error does not preclude the use of these data, provided it is identified and accounted for. In some cases, upgrading obstacle accuracy can provide relief from operational restrictions in an instrument procedure. This will allow expenditure of funds for obstacle surveys in areas where benefit to the aviation community would result. In no case, however, will the application of obstacle data accuracy preempt the requirement for the flight check of an instrument procedure for discrepancies. For sources of obstacle data accuracy, see Appendix 2.

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

(1) +20' horizontal and +3' vertical accuracy. Precision final segment.

(2) +50' horizontal and +20' vertical accuracy. Nonprecision final segment; missed approach 40:1 surface evaluation; circling areas. For departures and SIDs: Zone 1/Section 1 and first 2nm of departure route.

(3) +250' horizontal and +50' vertical accuracy. Intermediate segment. For departures and SIDs: Zones 2 and 3; Section 2; and beyond first 2nm of departure route.

(4) +500' horizontal and +125' vertical accuracy; (1000' ROC and Special ROC); (nonmountainous). Initial segments; feeder segments; en route areas; missed approach holding/level surface evaluation; MSA; ESA; MVA; EOVM; MIA; DF Vector Areas. For SIDs: level route portion.

(5) +1000' horizontal and +250' vertical accuracy; (2000' ROC) (mountainous). Feeder segments; En route areas; ESAs, DF Vector Areas. For SIDs: level route portion.

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

(7) If the controlling obstacle elevation plus accuracy code adjustments **affects a minimum altitude or gradient,** and a higher order of accuracy could reduce an adverse operational effect, then take action to have the accuracy improved; or adjust the procedure accordingly. See paragraph 272.

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

(9) **The FPB,** in coordination with Air Traffic, shall determine the accuracy standard to apply in the evaluation of a proposed obstruction. The FPB shall provide the FIAO with the accuracy standard to be applied in the development/revision of any affected procedures.

c. *IAPA Data Base.* The IAPA obstruction base file (OBS1) contains obstacle location and elevation data as provided to the Office of Aviation System Standards by the National Ocean Service. The data contains both verified and unverified obstacles. Obstacles identified in the development, review, and revision of instrument procedures which are not contained within the IAPA data base shall be entered into the OBS1 file by the FIAO in accordance with the following:

(1) **Graph tablet terrain entries** shall be for terrain elevation only. When between contour lines, the next higher contour elevation minus 1 foot shall be used. For example, if the map contour interval is 20 feet and the basic elevation is 100 feet, then the entry would be 119 feet. Surveyed spot elevations shall be entered as stated on the map.

(2) **Manually entered obstacles** such as natural growth and manmade objects shall be entered in the OBS1 file. The MSL and AGL values shall be included with the other available data entries.

(3) **The accuracy standards in paragraph 271b** above shall be included in IAPA obstruction data entries made by the FIAO. When entering obstructions manually via the alpha-numeric keyboard, enter the appropriate horizontal and vertical accuracy errors in feet on OBS1, items 6 and 7.

272. APPLICATION.

Adjust the instrument procedure to meet the requirements of the minimum accuracy standards. When an altitude adjustment is required which would adversely affect the procedure minimums, the FIAO shall notify the FPB of the nature, magnitude, and rationale for the adjustment. The FPB will first review records to identify an existing source validating a higher level of accuracy and advise the FIAO of this data. Where this review fails to produce an improved accuracy source, the FPB may notify Airports Division for assistance relative to currently existing obstructions; or the Air Traffic Division when the review involves a proposed structure or modification to an existing structure being studied in the Obstruction Evaluation program. Although the FPB will keep the FIAO informed, the FIAO shall not delay further processing of affected procedures pending receipt of higher level accuracy data from the FPB unless otherwise jointly agreed between the FPB and the FIAO.

a. *Manual.* When manually developing the procedure, depict all obstacles identified on FAA Form 8260-9 in coordinates to the second, and assign the highest order of accuracy known for the data source. See paragraph 909.

b. *IAPA.* When using IAPA to develop the procedure, apply the accuracy standards as follows:

(1) **Obstacle accuracy standards** shall be applied when determining the altitude(s) to be charted. This is accomplished on the applicable segment menu; e.g., FINAL, CIRCLING, etc.

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

c. *Evaluation Sequence.* In either a. or b. above, first determine the controlling obstacle using raw obstacle data. Then add horizontal/vertical accuracy code adjustments to the raw values to determine the obstacle's most adverse location and elevation. Accuracy code adjustment is not applied to obstacles evaluated relative to TERPS paragraphs 289 or 332.

d. *"Controlling Obstacle"* has the following definitions for the purpose of application and documentation:

(1) For precision SIAP final segments, that obstacle which, having penetrated the obstacle clearance or transitional surface, requires the highest glideslope above 3 degrees and/or causes the most adverse DH adjustment. Where there are multiple penetrations, first determine the required DH adjustment for each obstacle using raw obstacle data. Then, having determined the controlling obstacle, recalculate the required DH adjustment using accuracy code adjusted data.

(2) **For nonprecision** final segments, intermediate, initials, holding, feeders, etc., the obstacle in the primary area (or secondary area equivalent) which has the highest elevation.

(3) **For missed approach** segments, that obstacle which, having penetrated a missed approach obstacle clearance surface, causes the most adverse adjustment to DH/MDA or MAP relocation.

(4) **For departures/SIDs,** that obstacle which, having penetrated the 40:1 Obstacle Identification Surface (OIS), causes the most adverse climb gradient and/or ceiling and visibility to be published.

273-279. RESERVED.

SECTION 12. WAIVER OF STANDARDS

280. GENERAL.

Requests for a waiver of flight procedures standards shall be submitted on FAA Form 8260-1. (See paragraph 903). A request for a waiver 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. The waiver requests may originate within the FIAO or the regional FPB .

281. WAIVER PROCESSING.

The office (FPB or FIAO) which identifies the requirement for a waiver of standards initiates the waiver request form and fills out the front of the form. Detailed instructions for completing the FAA Form 8260-1 are contained in chapter 9, section 3. Figure 9-1 provides an easy reference for forms processing and routing requirements.

a. *Before initiating the form,* the FPB and FIAO should coordinate informally to verify the need for a waiver and to reach agreement on the acceptability of the proposal.

b. *Forward the original* FAA Form 8260-1 and supporting data for coordination. Each coordinating office shall photocopy the original in sufficient quantity to meet their needs. The completed original package shall then be forwarded to the next coordinating office.

c. *Complete documentation and supporting data* must accompany the waiver request so reviewing offices can conduct an evaluation without additional research. FAA Form 8260-9, Standard Instrument Approach Procedure Data Record, or Instrument Approach Procedures (IAPA) common user file number shall be submitted with each request for a waiver of standards for instrument approach procedures. **The fact that the procedure has existed for a number of years is not considered to be sole justification for an equivalent level of safety.**

d. *Enter only one* waiver request on the waiver form.

e. *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.

f. *When a waiver is proposed for obstacle penetration* of ILS approach or straight missed approach surfaces, conduct a Collision Risk Model (CRM) study in accordance with Order VN 8260.4, ILS Obstacle Risk Analysis. The Standards Development Branch (AVN-540) provides application and interpretation of collision risk analysis. This service will be provided on an as-needed basis with requests originating within headquarters or the FIAO or the regional FPB.

g. *The Flight Procedures and Inspection Division (AVN-200)* shall review all waiver requests, include AVN-540 in the waiver review process, provide AVN endorsement, and forward documentation to AFS-400 for final action.

h. *The FIAO is responsible* for ensuring that an approved waiver of standards is on file within the FIAO for each instrument procedure requiring waiver action. Approval shall be obtained before the procedure is submitted to National Flight Data Center (NFDC) for publication.

282. WAIVERS FOR SPECIAL INSTRUMENT APPROACH PROCEDURES.

When a waiver is approved for a special instrument approach procedure, the FPB shall 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 air crew training may be required as an equivalent level of safety.

283. ANNUAL REVIEW OF WAIVERS.

The FPB shall review approved waivers at least once each calendar year to determine whether the waivers are still required. The FPB shall send a

consolidated list of current waivers to AFS-420 for review each January, with information copies to AVN-220, AVN-210, and the appropriate FIAO. Cancel unnecessary waivers in accordance with paragraph 284.

284. CANCELLATION OF PROCEDURES WAIVERS.

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

b. *Distribution of a canceled waiver* shall be made to the same organizations that received the approved waiver. See paragraph 903.

285-289. RESERVED.

SECTION 13. IAPA PROCEDURES DEVELOPMENT AND PROCESSING

290. GENERAL.

a. The FAA Instrument Approach Procedure Automation (IAPA) system has been developed and is being incrementally implemented. In addition to automated procedure development, the system provides for automated storage and transmittal of instrument flight procedures. This section contains instructions for implementing the IAPA system of SIAP development, storage, and transmittal.

b. Use guidelines and procedures identified in Order 1350.15B, Record Organization, Transfer, and Destruction Standards, to determine the correct disposition standards for all records created utilizing the IAPA system.

291. PROCEDURE DEVELOPMENT AND STORAGE. Except for procedures developed by Frankfurt FIAO, FIAOs should use the IAPA system to develop, store and transmit all civil, fixed-wing, original or amended nondirectional beacon (NDB) and Very High Frequency Omni-directional Range (VOR) SIAPs. Use of IAPA is not mandatory; however, it shall be used to the maximum extent permitted by equipment availability.

a. Waivers. The standardized, programmed criteria shall be applied to develop and store SIAPs using the design sequences of IAPA software. For nonstandard application of criteria, a waiver must be on file or initiated. SIAPs having design requirements or waivered construction that cannot be processed on IAPA must be completed manually.

b. *Other SIAP types* may be developed on IAPA, but shall not be stored or transmitted. Additional software programs to support these SIAPs will be implemented at a later date.

c. *Storage.* Procedures stored on IAPA become part of a permanent file. Extensive safeguards are programmed to protect this file. Procedures stored in error shall be deleted from the permanent file by notifying the IAPA Program Office through the IAPA mail system.

292. ELECTRONIC TRANSMITTAL. The IAPA transmittal system is a computer-generated message to the Flight Procedures Branch (AVN-220), and NFDC. This message states that a specified IAPA stored procedure is ready for processing. The FIAO, AVN-220, and NFDC can retrieve the FAA IAPA Form 8260-5, Standard Instrument Approach Procedure (with the appropriate FAR 97 subpart preprinted) for each IAPA stored procedure. All IAPA developed and stored procedures required to be processed through NFDC shall be electronically transmitted via IAPA.

a. *UICs and Passwords.* Individuals shall use their User Identification Code (UIC) and passwords in lieu of handwritten signatures when using the IAPA system to electronically transmit SIAPs. A procedure developed by a developmental specialist shall be reviewed and signed off by a journeyman specialist using his/her UIC.

b. *Retention.* The IAPA system will generate a DOT/FAA IAPA Form 8260-5 and a DOD/FAA IAPA SIAP Data Record (FAA Form 8260-9 equivalent) for each completed work file. A typed backup FAA Form 8260-5 or FAA Form 8260-9 is not required. Page 2 of the FAA IAPA Form 8260-5 has signature provisions for FIAO personnel. A signed hard copy of the FAA IAPA Form 8260-5 shall be retained in the FIAO per Order 1350.15B. Transmittal of the finished SIAP shall NOT be accomplished until required signatures are obtained.

c. *Coordination Copies.* FIAOs shall use unsigned copies of the FAA IAPA Form 8260-5 for all required SIAP coordination. Except for Alaskan Region (AAL), regional FPBs are able to obtain copies of FAA IAPA Form 8260-5 and the IAPA SIAP Data record on their IAPA terminals. FIAO personnel shall notify the FPB whenever there is a SIAP ready for coordination.

d. *Additional FAA 8260 forms* needed to accompany an IAPA developed SIAP shall be mailed concurrently with the time of electronic transmittal (with copies to AVN-220). AVN-220 shall acknowledge receipt of SIAPs sent by a FIAO, and perform a standardization review as

required. Approval of the SIAP is signified when signed-off by AVN-220.

e. *Acknowledgement and Sign-off.* NFDC and AVN-220 shall acknowledge procedure movement messages. NFDC shall sign-off on the specified IAPA stored procedures by entering a procedure effective date.

f. *Special SIAPs* may be developed and stored on IAPA but are not processed through NFDC; they can only be extracted on an FAA IAPA Form 8260-5. FIAOs shall transfer the data to FAA Form 8260-7, Special Instrument Approach Procedures, until IAPA is programmed to accommodate this form. Notify AVN-220 via the IAPA Mail System of any Special SIAPs stored or required to be deleted. The IAPA address for AVN-220 is AVNIAP.

g. *Other SIAP Types.* Use the IAPA system as a tool to develop other types of procedures. However, delete such procedures from the Common User File after storing and retrieving an extract. Notify AVN-220 via the IAPA Mail System to delete the file. The IAPA address for AVN-220 is **AVNIAP.**

h. *File Deletion.* Check the IAPA Batch Files for those procedures which have been "stashed" but not "sent." These files are suitable for deletion from the Common User File. If any can be deleted, send a mail message to AVN-220 (AVNIAP). Refer to the IAPA USERS MANUAL (IUM), chapter 3, for detailed instructions.

293. SIAP CORRECTION. SIAPs developed and processed on IAPA may require correction after NFDC reviews the procedure. FIAOs normally initiate corrective actions on the IAPA system. For P-NOTAM actions, or when corrections are minor and the procedure has other than "routine" as a suspense date, the FAA IAPA Form 8260-5 can be corrected using the following steps:

a. *Coordination.* NFDC and the FIAO shall coordinate and must agree upon the pen and ink changes to the FAA IAPA Form 8260-5 that will be published in the letter of transmittal.

b. *Extract.* NFDC will extract and make appropriate corrections to the IAPA Form 8260-5 and prepare it for future letter of transmittal processing.

c. *Graphic Copy.* The FIAO shall make a graphic copy of the IAPA procedure segments at the following scales:

(1) Separate 1:500,000 for each segment of the complete procedure design; and,

(2) Largest scale possible for the final, circling and missed approach segments.

d. *Documentation.* To document the procedure, the FIAO shall retain the FAA IAPA 8260-series forms, the graphic copies, and if a P-NOTAM were issued, a copy of the NOTAM for file. Upon receipt of the letter of transmittal, the FIAO shall file the corrected copy with the IAPA procedure forms.

e. *Deletion from Common User File.* After the procedure is published and is reviewed by the FIAO, the FIAO shall notify AVN-220 via IAPA electronic mail to delete the procedure from the common user (.CMN) file. Guidance for deleting procedures from the .CMN file is contained in the IAPA Users Manual.

f. *Subsequent Amendments.* Once the procedure is deleted from the .CMN file, the documentation on file at NFDC will not support further P-NOTAM action, except CCP NOTAMs, on the SIAP. Future amendments to the procedure require IAPA or manual processing, as appropriate.

294. IAPA USER ACCESS. Due to the nature of the IAPA system, precautions are necessary to ensure security of the system through limited access to authorized users. FAA Form 1370-24, Computer Access Data Request, is the vehicle used to control access to the IAPA system, as well as to any other FAA computer system. Its use is mandatory.

a. *The user's signature* signifies that the user has read and understands the "warning" message on the reverse side of the form, and also accepts

U.S. Department of Transportation
Federal Aviation Administration

COMPUTER DATA ACCESS REQUEST

READ THE "WARNING" AND "INSTRUCTIONS" ON THE REVERSE SIDE BEFORE COMPLETING THIS FORM.

A

1. TYPE OF ACTION (CHECK A BOX) ☐ NEW ☐ DELETE ☒ OTHER (SPECIFY) Journeyman Signoff

2. COMPUTER SYSTEM
☐ AMIS ☐ AR ☐ ASAS ☐ CPMIS ☐ DAFIS ☒ IAPA ☐ IPPS ☐ LIS ☐ M P ☐ (SPECIFY)

B

3. USER'S LAST NAME: Jones	FIRST: John	MIDDLE INITIAL: J.	4. TITLE: ASIP
5. RTG SYM.: AVN-841	6. TELEPHONE: (609)484-4797		
7. EMPLOYING OR CONTRACTING ORGANIZATION: Atlantic City FIAO	7A. COST CENTER CODE: 4952	14. FOR CONTRACTOR USE ONLY	
8. ORGANIZATION MAILING ADDRESS: FAA Technical Center, Bldg 301, Rm 407		NAME AND ADDRESS OF CONTRACTOR	
9. CITY: Atlantic City	10. STATE: NJ	11. ZIP: 08405	
SECURITY AGREEMENT: I certify that I have read and understand the "WARNING" message on the reverse side of this document. I accept the responsibility to safeguard my password. I will not divulge to unauthorized persons any of the sensitive/privacy data to which I am privileged.		CONTRACT NO	
12. SIGNATURE OF REQUESTER: John J. Jones	13. DATE REQSTD: 8/20/93	TASK NO.	EXPIRATION DATE

C

15. NAME OF CERTIFYING OFFICIAL - BRANCH MANAGER OR HIGHER: Joseph X. Doaks	16. TITLE: Manager	17. TELEPHONE: (609)484-4797
18. ORGANIZATION: Atlantic City FIAO	19. ROUTING SYMBOL: AVN-841	20. (RESERVED)
21. MAILING ADDRESS: FAA Technical Center, Bldg 301, Rm 407	22. CITY: Atlantic City	23. STATE: NJ / 24. ZIP: 08405

CERTIFICATION

THE ABOVE NAMED REQUESTER (USER) HAS BEEN BRIEFED AS TO THE RESTRICTIONS IN USING TERMINALS (CRT/VDT) FOR THE PROCESSING OF FEDERAL GOVERNMENT DATA FILES AND THE REQUIREMENT TO PROTECT THE CONFIDENTIALITY OF USER-ID/PASSWORD AND TO REPORT ANY COMPROMISES OR SUSPECTED COMPROMISES OF SAID USER-ID/PASSWORD. I AGREE TO PROMPTLY NOTIFY THE DATA SERVICES DIVISION (ATTN: AAC-303) OF ANY CHANGES IN THE STATUS OF THE REQUESTER'S EMPLOYMENT OR IN THE EVENT THAT REQUESTER NO LONGER HAS THE NEED TO KNOW CONCERNING THE ABOVE COMPUTER SYSTEM/SUBSYSTEM.

25. SIGNATURE OF CERTIFYING OFFICIAL: Joseph X. Doaks	26. DATE CERTIFIED: 8/20/93

PROGRAM MANAGER AUTHORIZATION

D

27. COMPUTER (MAINFRAME/CPU): ☐ IBM 3084 ☒ DATA GENERAL A B C D LEVEL/CLASS		28. SYSTEM CODE: 1A
29. TYPE OF SYSTEM: ☐ TSO ☐ COMPLETE ☐ NATURAL ☐ ADABAS ☐ INTERCOM ☐ OTHER (SPECIFY)		
30. NAME OF AUTHORIZING PROGRAM MANAGER: Dallas R. Mauch	31. TITLE: IAPA System Manager	32. TELEPHONE: (405)954-5871
33. ORGANIZATION: DOT/FAA - Office of Aviation System Standards, Flight Procedures and Inspection Division, Flight Procedures Branch		34. ROUTING SYMBOL: AVN-220
35. MAILING ADDRESS: P.O. Box 25082	36. CITY: Oklahoma City	37. STATE: OK / 38. ZIP: 73125
39. SIGNATURE OF AUTHORIZING PROGRAM MANAGER: Dallas R. Mauch		40. DATE AUTHORIZED: 8/27/93

DATA SERVICES DIVISION AAC-300

E

SYSTEM SOFTWARE		43. USER-ID AND PASSWORD	
41. SIGNATURE	42. DATE	USER-ID	PASSWORD

F

AAC-303	44. NAME AND TITLE OF OFFICIAL: SYSTEMS SECURITY OFFICER (SSO)	45. SIGNATURE AND DATE APPROVED

FAA 1370-24 (04-88)

Figure 2-9. Computer Data Access Request

responsibility for safeguarding his/her password.

b. *The manager's signature* signifies that the user has been briefed on system use restrictions, and that the manager agrees to notify AAC-300 of any user status changes.

c. *Instructions for completing* FAA Form 1370-24: (See figure 2-9).

(1) **Complete** blocks A, B, and C only.

(2) **Block A1** - Check NEW for a new user; DELETE for a user who no longer requires system access; and, OTHER for a user whose type of access authorization changes. Briefly explain the change required. Examples: adding user signature authority; former FAA user who retires and becomes a contract employee; or the user becomes FIAO manager with SEND authority.

(3) **Block A2** - enter "**X**" in the IAPA box.

(4) **Blocks B3-B11** - complete for all actions.

(5) **Block B7** - enter Cost Center Code 4952, not the individual FIAO cost center code.

(6) **Block B12** - only a DELETE action does not require the user's signature.

(7) **Block B14** - complete for FAA contract employees.

(8) **Send forms to AVN-220** after required signatures are obtained. AVN-220 will complete Block D and forward the forms to AAC-300. The user will be notified directly by AAC-300 when access authorization has been granted.

(9) **Direct inquiries** relating to these instructions to AVN-220 through the IAPA Representative and/or FIAO Manager.

295. ACCIDENTS AND INCIDENTS. If an accident or incident occurs on an IAPA developed procedure, **enter the Common User File** Option 3, **locate the procedure** using the Common User File Number, and **change the status** from "normal" to "**hold.**" This will effectively prevent the procedure from being deleted from the Common User File for a period of seven years.

296. REPORTING IAPA EQUIPMENT OR COMMUNICATIONS PROBLEMS.

a. The Office of Information Services (AMI-1), has established the Information Center (IC) to handle IAPA equipment or communications problems. The telephone number for this centralized office is (405)954-3000.

b. Initiate all problem calls through the IC relative to IAPA equipment or communications outages.

c. The IC maintains a log of problem calls and coordinates with the appropriate office or agency to resolve the issue. When the problem has been corrected, IC follows-up with the originating office to insure that the corrective action taken is adequate.

d. If the corrective action is considered inadequate, and IC cannot resolve the issue, contact AVN-220 for assistance.

297-299. RESERVED.

CHAPTER 3. EN ROUTE PROCEDURES

SECTION 1. GENERAL

300. GENERAL.

a. *The en route airspace structure of the National Airspace System* consists of three strata. The first, or lower stratum, is an "airway" structure which extends from the base of controlled airspace up to but not including 18,000 feet MSL. The second stratum contains identifiable jet routes as opposed to designated airways, and extends from 18,000 feet MSL to Flight Level (FL) 450. The third stratum, FL 450 and above, allows random operation.

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

301. PUBLICATION.

a. *En route minimum altitudes.* MEA (Minimum Enroute Altitude), MRA (Minimum Reception Altitude), MAA (Maximum Authorized Altitude), MOCA (Minimum Obstruction Clearance Altitudes), MCA (Minimum Crossing Altitudes), and COP (Changeover Point) are established by the Federal Aviation Administration for instrument flight along Federal Airways in FAR Part 95. They may be established for off-airway routes within the United States and its territories. The altitudes are established after it has been determined that the navigation aides to be used are adequate and so oriented on the airways or routes that signal coverage is acceptable, and that flight can be maintained within prescribed route widths.

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

302-309. RESERVED.

SECTION 2. CRITERIA APPLICATION AND DEVELOPMENT

310. CRITERIA APPLICATION.

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

311. DEVELOPMENT OF CRITERIA.

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

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

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

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

312-319. RESERVED.

SECTION 3. ESTABLISHMENT OF EN ROUTE AIRSPACE

320. RELATIONSHIP OF COP'S TO AIRSPACE DIMENSIONS.

Application of these criteria considers the location of the COP for determining the dimensions of the required associated airspace. When it is anticipated that the COP will be established beyond 51 nautical miles from the facility, the location of the COP should be determined by the FIAO during the development of airspace proposals within the region. On new facilities, a reasonably accurate estimate of the COP should be obtained during the site survey. Other data, such as MEA, MOCA, MRA, etc., should also be obtained at this time. This information will assure the completion of necessary airspace planning in the region, and will permit the description of all required airspace in the Notice of Proposed Rule Making (NPRM).

321. RELATIONSHIP OF MEAS TO CONTROLLED AIRSPACE FLOORS.

a. *Buffers.* MEAs for routes wholly within controlled airspace will normally provide for a buffer above the floor of controlled airspace. This buffer will be at least 300 feet within Class E airspace containing terminal instrument procedure segments (feeder, initial, intermediate, missed approach), and 500 feet within the low altitude airway structure. However, exceptions may be made which provide only 300 feet buffer below these airways where the lesser buffer area will permit retaining a cardinal altitude or otherwise result in a definite operational advantage. Establish these buffers to the nearest 100-foot increments: e.g., 1049.49 feet becomes 1000 and 1049.50 feet becomes 1100 feet. Refer to FAA Order 7400.2, Procedures for Handling Airspace Matters, paragraphs 20-1-1 and 24-2-1.

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

322-329. RESERVED.

SECTION 4. SUBSTITUTE EN ROUTE FLIGHT PROCEDURES

330. GENERAL.

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

b. *FPBs*, in coordination with ARTCCs, determine when the length of outages or other factors require publication of sub-routes. The FPB is the point of contact for any coordination between the FIAO and ARTCC.

c. *FIAO's* provide flight inspection services, obstacle clearance verification, certification, and final approval of substitute routes.

331. FORMAT.

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

332. FACILITIES USED.

Substitute routes should normally be based on VOR/VORTAC aids established and published for use in the altitude strata concerned. However, in the case of substitute routes in the upper airspace stratum, it may be necessary to establish routes by reference to VOR/VORTAC facilities utilized in the low altitude system. NDB facilities may only be utilized where VOR/VORTAC coverage is inadequate and ATC requirements necessitate use of such aids. Where operational necessity dictates, process an ESV request. (See paragraph 210). Temporary reporting points may be established in connection with the substitute routes, and where possible, a temporary reporting point will be established over the facility being shutdown.

333. CONTROLLED AIRSPACE.

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

334. FLIGHT INSPECTION.

Substitute routes are flight inspected in accordance with FAA Order OA P 8200.1. If substitute routes do not overlie existing routes, or are wider than existing routes (see figure 3-3), map studies are required to identify controlling obstacles. FIAOs shall document controlling obstacles on FAA Form 8260-16, Transmittal of Airways/Route Data. These forms shall be retained locally for future review. Flight inspection shall verify controlling obstacles.

335. PLANNING AND COORDINATION.

The regional Airway Facilities Division will provide the dates of proposed scheduled shutdowns to the FPB, who will maintain a schedule of shutdown within the region and the estimated duration of the outages. The FPBs shall forward this information to the FIAO having jurisdiction over the facility as far in advance as possible to enable them to submit the sub-routes to NFDC for publication. FPBs shall provide similar notification to FIAOs when publication of sub-routes is not related to scheduled outages.

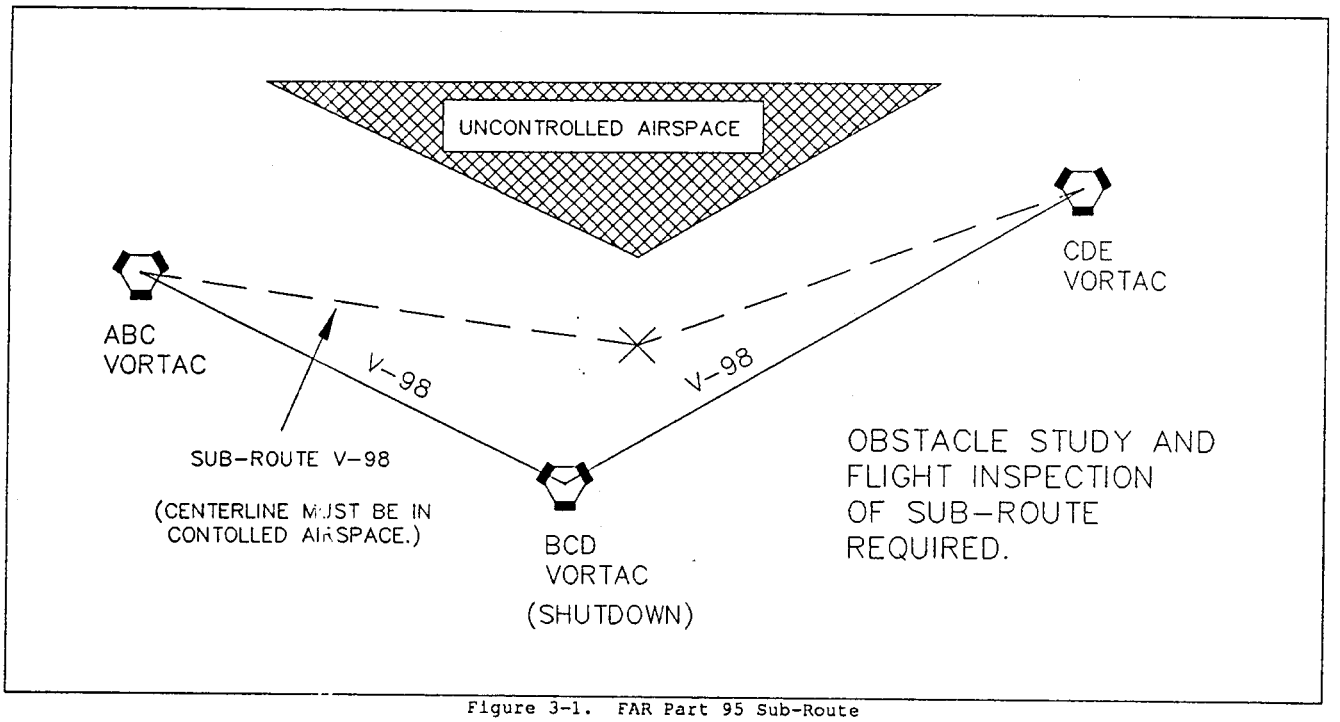


Figure 3-1. FAR Part 95 Sub-Route

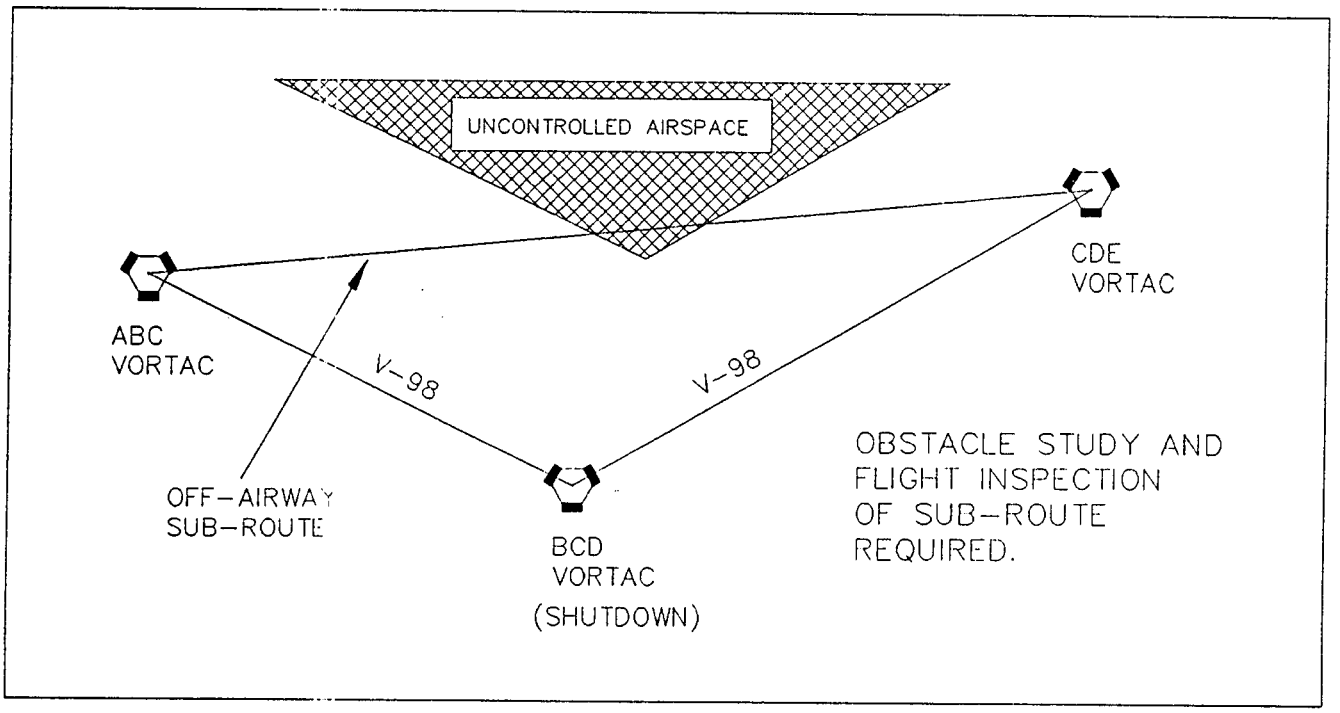
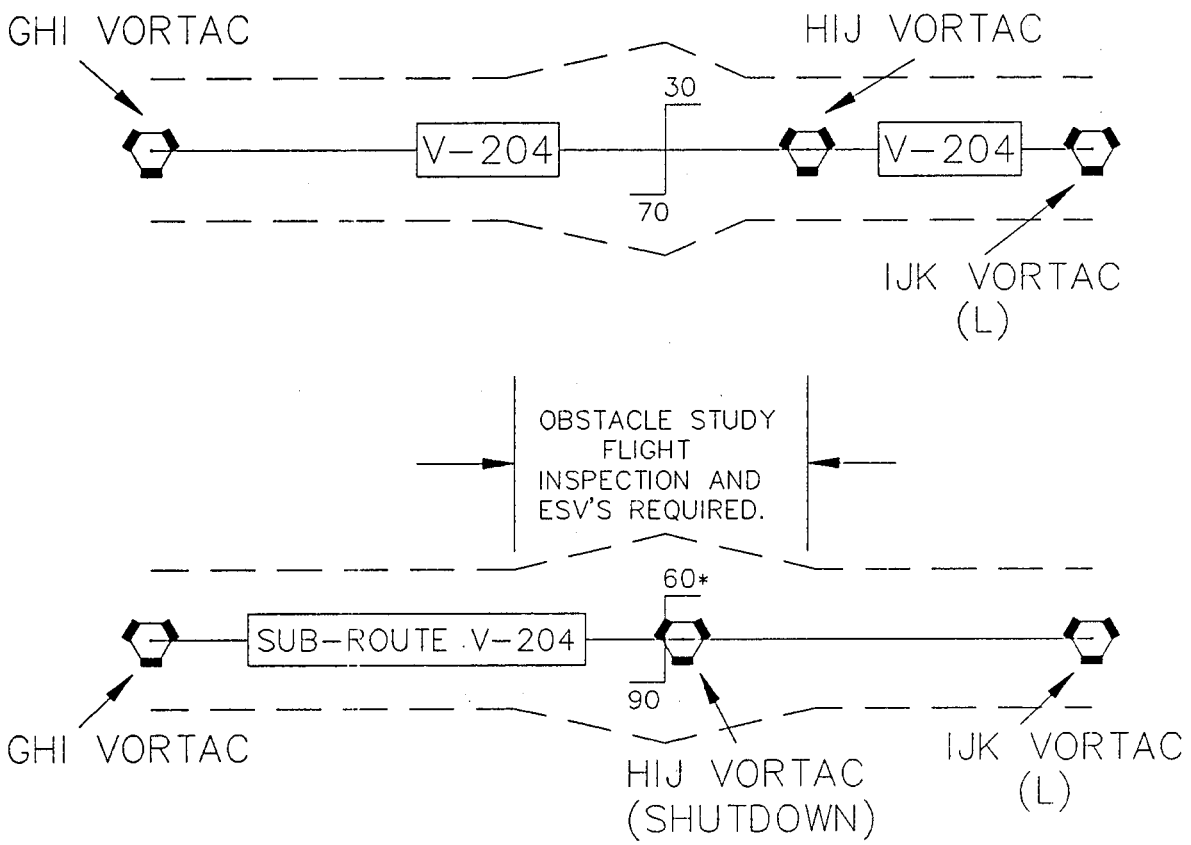


Figure 3-2. Non-Part 95 Sub-Route



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

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

SUBSTITUTE ROUTE STRUCTURE

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

LOW ALTITUDE

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

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

HIGH ALTITUDE

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

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

Approved: _____, _____**FIFO, Date** _____
N. Raptured, Manager

Figure 3-4. Substitute Route Structure

336. PROCESSING.

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

b. *Submissions.*

(1) ARTCC submissions in the format shown in figure 3-4 require the FIAO Manager's signature. The FIAO thereby approves these sub-routes for unscheduled use. This approval shall be submitted directly to the ARTCC concerned, with a copy to the FPB. See paragraph 338b.

(2) When the **FPB notifies the FIAO** that publication is required for a scheduled or extended unscheduled outage, the FIAO forwards the ARTCC submitted substitute routes to NFDC for publication. A copy shall be forwarded to AVN-220. See paragraph 338a.

337. PERIODIC REVIEW.

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

b. *FIAO:*

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

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

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

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

(3) Notify the ARTCC through the FPB of any amendments necessary.

338. DISTRIBUTION.

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

ATM-600	2 copies
FPB Staff	1 copy
ARTCC	1 copy
AVN-220	1 copy
FIAO	Original

b. *Non-Publication.*

FPB	1 copy
ARTCC	1 copy
FIAO	Original

339. RESERVED.

SECTION 5. OFF-AIRWAY ROUTES

340. ESTABLISHMENT.

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

a. *Process.* Normally requests for the establishment of off-airway routes are **initiated** by a scheduled air carrier operator through their Principal Operations Inspector. Upon receipt of a request for an off-airway route, the regional FPB will coordinate with the Air Traffic Division. The Air Traffic Division will process the route in accordance with Handbook 7400.2 to ascertain that there is no conflict in use of the airspace. Following AT coordinaton, the FPB shall evaluate the adequacy of off-airway routes. The following shall be considered:

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

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

(3) **Adequacy** of communications along the route.

If there is no objection, the FPB will refer the request to the FIAO for further development.

b. *FIAO Documentation.* Document MEAs and related procedural data on FAA Form 8260-16. Return a copy of the form indicating FIAO approval or disapproval to the FPB , who, in turn, will advise the FSDO of the results of its request.

341. LISTING.

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

342. OFF-AIRWAY DATA.

Satisfactory arrangements for obtaining and maintaining complete off-airway route information should be established. The following is suggested:

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

b. *Regional FPBs* shall provide the appropriate FIAO with off-airway route information within their assigned geographic area. When routes extend into adjacent regional jurisdictions, the FPB should forward pertinent route information to the other region or regions concerned.

c. *FIAOs* use this information for development of flight inspection requirements and for maintaining current records.

343. PROCESSING DATA TO NFDC.

FAA Form 8260-16, Transmittal of Airways/Route Data, shall be used to forward IFR off-airway data to NFDC. Off-airway non-Part 95 routes shall not be designated as special routes even though associated with special instrument approach procedures.

344-349. RESERVED.

SECTION 6. NEW OR REVISED JET ROUTES

350. COORDINATION PROCEDURES.

a. *The regional Air Traffic Division (ATD)* will provide the FPB with the Notice of Proposed Rule Making (NPRM) for new or revised routes. The FPB will request flight inspection by the appropriate FIAO or FIAOs, furnishing a copy of the NPRM.

b. *FIAO Action:* Forward preliminary evaluation results to the FPB for relay to the ATD. If the proposal is satisfactory, include changeover point information. If the route is not satisfactory, provide alternate recommendations.

351. PUBLICATION OF PROCEDURAL DATA.

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

b. *The ARTCC,* in conjunction with the regional System Management Branch (Axx-530), is responsible for developing airspace requirements for the routes published in FAR Parts 71 and 75, and the appropriate FIAO is responsible for developing the related procedural data published in FAR Part 95.

352-359. RESERVED.

SECTION 7. RADAR VECTORING ALTITUDE CHARTS

360. CHART PREPARATION.

Radar vectoring charts are developed for areas where there are numerous minimum vectoring altitudes (MVAs) due to variable terrain features or manmade obstacles. The responsible ATC facility determines whether its radar systems require vectoring charts. Where vectoring charts are required, the ATC facility develops the basic chart in accordance with instructions contained in the Facility Management Order 7210.3, or FAA Order 7210.37, En Route Minimum IFR Altitude (MIA) Sector Charts. FIAO personnel may be requested to participate in original chart development at the option of the ATC facility.

361. AREAS OF CONSIDERATION.

The area considered for obstacle clearance shall be the maximum range of the radar. This area may be subdivided into sectors to gain relief from obstacles which are clear of the area in which flight is to be conducted. There is no prescribed limit on the size, shape, or orientation of the sectors; however, they must be designed with consideration to aircraft maneuvering ability, obstacle clearance requirements, and air traffic flow requirements. To avoid excessively high minimum altitudes within a sector, prominent high obstacles may be isolated by enclosing the obstacle with a buffer area whose boundaries are at least three miles from the obstacle (five miles if 40 miles or more from the radar antenna). Vectoring charts should be designed to emphasize simplicity and safety in radar traffic control applications. Terminal MVA Charts shall be oriented to magnetic north. An example of a Terminal MVA Chart can be seen in order 7210.3, chapter 3, section 9.

362. OBSTACLE CLEARANCE.

Obstacle clearance shall be provided over all obstacles within the vectoring areas or sectors established by ATC on the Terminal MVA Chart or the En Route MIA Chart, irrespective of the coverage determined by flight inspection. Selected altitudes shall provide clearance over all obstacles outside of the sector within 3 miles of the sector boundaries (5 miles if 40 miles or more from the radar antenna). In areas of overlapping radar coverage, where data from an antenna more than 40 miles away may be used, only 5 miles clearance shall be applied. ATC facilities will apply 1000 feet of obstacle clearance in non-mountainous areas and 2000 feet in areas designated as mountainous in FAR Part 95. MVAs and MIAs should provide at least 300 feet above the floor of controlled airspace. Round off resultant altitudes to the nearest 100 feet. For example, 1149.49 feet becomes 1100 feet, and 1149.50 feet becomes 1200 feet.

NOTE: Controlled airspace considerations are the responsibility of ATC facilities. FIAO review shall assure that obstacle clearance requirements are met. It is the responsibility of the controller to determine that a target return is adequate for radar control purposes.

363. OBSTACLE CLEARANCE REDUCTION.

Where lower altitudes are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an instrument approach procedure, the FIAO may approve reductions to the minimum altitude in accordance with the following:

a. *ASR* - 1000 feet of obstacle clearance may be authorized in accordance with TERPS, paragraph 1041b(3).

b. *ARSR* - Reductions to not less than 1700 or 1500 feet of terrain clearance may be authorized with appropriate obstacle clearance in accordance with en route criteria contained in TERPS, paragraph 1720b(1) and (2).

c. *When approving altitudes with less than 2000 feet of obstacle clearance,* a record of such approval shall be maintained by the FIAO.

364. RADAR DATA PROCESSING (RDP).

ATC Centers are equipped with RDP that receives radar return from multiple antennas. MIA charts for these facilities shall provide obstacle clearance in accordance with paragraph 362 above or TERPS chapter 17.

365. CHART REVIEW AND APPROVAL.

a. *Civil Vectoring Charts.*

(1) **ATC Action.** The ATC facility prepares MVA/MIA charts, drawn directly on current sectional charts. It forwards a radar vectoring altitude chart package, consisting of two sectional chart MVA or MIA depictions and two FAA Form 7210-9, Minimum IFR Altitude/Minimum Vectoring Altitude Obstruction Documentation, through the FPB to the appropriate FIAO for review. 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 FIAO.

(2) **FIAO Action.** Review radar vectoring altitude chart packages only to ensure that obstacle clearance requirements are met. Coordinate any recommended adjustments in chart design, or necessary changes in vectoring altitudes or controlling obstructions, with the originating ATC facility. Upon completion of a satisfactory review, approve the chart over the signature of the FIAO manager on the Form 7210-9, and return it through the FPB to the ATC facility. Retain one copy of the MVA Chart or the MIA Chart, and FAA Form 7210-9.

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

366. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM).

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

b. *EOVM Verification.* The AT facility checks the original EOVM package and any subsequent changes for adequacy, and then coordinates, through the FPB, with the FIAO to verify the accuracy of its information. Annually, the AT facility will review the EOVM for adequacy and re-coordinate with the FIAO.

c. *FIAO Review.* Limit FIAO review of EOVMs to verification of contour elevations, mountain peaks, and other obstructions that are selected and depicted on a sectional chart by the AT facility and provided to the FIAO.

367-399. RESERVED.

CHAPTER 4. TERMINAL PROCEDURES

SECTION 1. GENERAL

400. GENERAL.

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

401. CATEGORIES OF INSTRUMENT APPROACH PROCEDURES.

Procedures published in the Federal Register under Part 97 are identified as "Standard Instrument Approach Procedures" (SIAPs). These procedures are available to all users. Instrument approach procedures authorized for use only by air carriers or some other segment of the aviation industry are not published in the Federal Register and are identified as "Special Procedures." Special Procedures may be developed based on aircraft performance, aircraft equipment, or crew training, and may also require the use of landing aids, communications or weather services not available for public use. See paragraph 833.

402. AIRSPACE REQUIREMENTS.

a. *Public use procedures* should not be established without the designation of controlled airspace in accordance with FAA Order 7400.2, Procedures for Handling Airspace Matters.

b. *Where an airport does not qualify for a Class B/C/D/E surface area* **(control zone),** designate Class E 700' airspace **(transition area).** In the latter case, landing minimums may be established below the floor of controlled airspace. A requirement for minor adjustment to existing controlled airspace, to fully encompass an instrument procedure, will not form the basis for withholding procedure publication. An approach procedure may be published prior to obtaining the optimum configuration of controlled airspace when the following conditions exist (see order 8260.26, paragraph 6d(1)):

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

(2) **The procedure turn area** out to the appropriate distance specified in chapter 5 is contained within existing controlled airspace.

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

c. *Special procedures* should, where possible, be established within controlled airspace in accordance with order 7400.2. Special procedures may be established and approved outside of controlled airspace where it is not possible to designate controlled airspace. In such cases, advise the appropriate FSDO that controlled airspace will not be provided. Do NOT use Special procedures as a temporary measure pending designation of controlled airspace for public use procedures.

403. CONTRACTUAL USE OF PRIVATE FACILITIES.

Private interests may arrange for the use of a privately owned navigational aid operated by air carriers. Such an arrangement requires a contractual agreement between the sponsor and the user regarding facility use. Refer all requests for contractual use of private navigation aids received by the FIAO to the FPB for processing.

404. TERPS APPLICATION.

Develop all instrument approach procedures, except foreign procedures developed in accordance with order 8260.31, in accordance with the provisions of TERPS and the guidelines contained herein. The following special provisions and guidelines apply to selected paragraphs of TERPS criteria. The paragraph numbers refer to identically numbered paragraphs in TERPS.

a. *Paragraph 5a(2), Simultaneous Procedures.* Where simultaneous operations are authorized to parallel runways, or conflicting runways having similar operational problems as parallel runways, note the authorization on each individual ILS procedure. Identify the procedure in accordance with TERPS paragraph 161.

b. *Paragraph 122a, Airport.* The runway lighting requirement does not apply to night instrument takeoff procedures.

c. *Paragraph 122c, Obstacle Marking and Lighting.* Do NOT deny instrument approach procedures due to inability to mark and light or remove obstacles which violate FAR Part 77 surfaces. Objects which penetrate Part 77 surfaces are normally studied by the regional FPB prior to construction or alteration. FPB recommendations for marking, lighting, or removal are made at that time. The intent of TERPS paragraph 122c is satisfied if the specialist coordinates with the FPB regarding objects identified during procedure studies for recommended action.

d. *Paragraph 151, Coordination Conflicts.* Regional FPBs shall make every effort to resolve coordination conflicts at the regional level. Objections received as a result of coordination or by direct inquiry shall be thoroughly evaluated by the regional staff. This evaluation should determine the validity of the comments and the course of action to be taken.

(1) *Acknowledge* the comments and have the FIAO amend or withdraw the procedure; or,

(2) *Determine* that the procedure is correct as submitted. All adverse comments received, through formal coordination, shall be answered in writing. Conflicts which cannot be resolved by the region shall be forwarded to AFS-200.

e. *Paragraph 160, Identification of Procedures.* Military operators have stated a requirement for TACAN instrument approach capability to a limited number of airports. These airports have a prescribed VOR procedure, based on a VORTAC facility, where TACAN equipped aircraft are expected to operate. VOR procedures at these locations may be executed by TACAN equipped aircraft when the procedure is identified as **"VOR or TACAN."** This informs both the pilot and the controller that an approach may be executed with aircraft equipped with only VOR or with only TACAN. Approval of the use of individual VOR procedures by TACAN equipped aircraft is subject to review for compliance with TERPS and flight check criteria. Take the following actions to implement this program:

(1) *Designate VOR/DME procedures,* predicated upon the use of VORTAC, as **"VOR/DME or TACAN"** provided flight inspection has determined that the TACAN and VOR components will support the procedure. These procedures require DME. Establish the missed approach clearance limit at a radial/DME fix in lieu of the VORTAC facility to accommodate aircraft equipped with only TACAN. NoFAF procedures identified ".../DME" are not authorized.

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

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

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

(b) **Add** DME fix capability to VHF intersections where required for TACAN use.

(c) **Ensure** that the procedure can be flown satisfactorily by reference to TACAN-only equipment.

(d) **Ensure** that the procedure can be flown satisfactorily by reference to VOR-only equipment.

(e) **Ensure** that holding is not authorized for TACAN equipped aircraft at the VORTAC. This also applies to VOR/DME or TACAN procedures.

f. *Paragraph 161, Straight-in-Procedure Identification.* When approaches meet straight-in criteria for multiple runways, identify the procedures.

Examples: **VOR RWY 14L/R**
NDB RWY 26L/C
VOR RWY 5/7

g. *Paragraph 162, Circling Procedures.*

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

Example: **NDB-A, VOR-B, LDA-C.**

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

Examples:

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

h. *Paragraph 172, Effective Dates.* See FAA Order 8260.26, Establishing and Scheduling Instrument Approach Procedures Effective Dates. FAA policy does not permit the issuance of complete civil instrument approach procedures by NOTAM. See paragraph 837 and 838.

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

j. *Paragraph 241, Altitude Selection.* The FAF altitude shall not be less than the highest MDA, including adjustments.

k. *Paragraph 250, Final Approach Segment.* For nonprecision approaches, the final approach segment area considered for obstacle clearance begins at the FAF and ends at the runway or missed approach point, whichever is encountered last. This concept applies to TERPS paragraphs 513, 523, 713, 953, and 1044. For precision approaches, the area considered for obstacle clearance begins at the precision final approach fix (PFAF) (i.e., glideslope intercept point) and ends at a point 200 feet outward from the threshold. See TERPS paragraph 930.

l. *Paragraph 261, Circling Approach Area Not Considered for Obstacle Clearance.* Sectorize the circling area only to deny circling within a prescribed area. For the purposes of this paragraph, provide only one circling MDA.

m. *Paragraph 270, Missed Approach Segment.* The missed approach altitude shall not be less than the highest MDA, including adjustments.

n. *Paragraph 275, 277b, 943, 945b, 1033, 1035b, Turning Missed Approach/Turning Area.*

(1) The missed approach segment must be constructed with consideration given to all categories of aircraft. Plotting only the highest or heaviest authorized aircraft category area will not assure proper area evaluation for lower categories. Construct turning areas for the lowest and highest aircraft categories for turns at the MAP; or for turns at the end of the straight portion of the combination straight and turning missed approach. Where obstacle penetrations exist, evaluate the appropriate area for each category to determine specific aircraft category impact. If obstacle penetrations exist, evaluate the area for each aircraft category to determine specific category impact.

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

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

p. *Paragraph 289, Obstacles Close to a Final Approach or Stepdown Fix.* The ROC to be subtracted from the minimum altitude at the fix shall include any minimums adjustments per TERPS paragraphs 323a, b, or c.

q. *Paragraph 311. Publication.* Do not publish approach Category E minimums for civil procedures unless specifically requested by the military or a valid requirement exists. Category E minimums will usually be the same as Category D, except that the larger circling and turning missed approach areas may result in higher minimums. Use TERPS Table 10 to establish Category E visibility minimums for civil procedures. See TERPS paragraph 813.

r. *Paragraph 323b, Remote Altimeter Setting Source.* Whether the use of a remote altimeter setting is primary or full-time, or secondary to a local source, establish the required visibility as stated in paragraph s.

s. *Paragraph 330, Establishment of Visibility Minimums.* For nonprecision approaches, use TERPS paragraphs 330c(1) and (2), and 332 to determine the minimum no-lights visibility. For precision approaches, TERPS paragraphs 330c(1), 332, and 350 apply.

(1) *Circling minimums* shall not be less than no-lights straight-in minimums.

(2) *Visibilities* based on the distance direct from MAP to threshold shall be rounded, as needed, to the next higher reportable value.

(a) When the visibility without light credit is less than three statute miles (sm), round the no-light visibility to the next higher quarter mile; e.g., 1.75 becomes 1.75 sm and 1.76 becomes 2 sm.

(b) When the visiblity without light credit is greater than three statute miles, round the no-light visibility to the next higher whole mile increment; e.g., 4.00 becomes 4 sm and 4.01 becomes 5 sm.

t. *Paragraph 333, Runway Visual Range (RVR).* RVR shall be authorized on adjacent runways, when segments of those runways are located within a 2000-foot radius of the transmissometer location and the requirements of TERPS paragraph 334 are met.

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

(a) **Category II and III rollout RVR.** Threshold plus 2000 feet of runway required within the 2000 foot circle.

(b) **Category I ILS and nonprecision touchdown RVR.** Threshold plus 1200 feet of runway required within the 2000 foot circle.

(c) **Midfield RVR.** 2000 feet coverage of runway centerline including the runway midpoint required within the 2000 foot circle.

(2) *When a transmissometer serves more than one runway* and a category II or III runway is involved, the touchdown RVR will be sited with respect to the Category II/III runway. RVR installations meeting requirements for use on adjacent runways may be utilized for reducing standard takeoff visibility.

(3) *The regional FPB shall:*

(a) **Ensure the FIAO is informed** of planned RVR installations, proposed commissioning dates, and runways to be served.

(b) **Advise the FIAO** of runways that meet the requirements for authorizing RVR.

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

(4) *The FIAO shall revise* affected procedures by the normal amendment process. NOTAM action is not required.

u. *Paragraph 334, Runway Requirement for Approval of RVR.* If runway markings are removed or obliterated subsequent to the commissioning of the RVR, the RVR minimums will be adjusted in accordance with order 8260.27. Before an adjustment is made to the minimums, the regional FPB should advise the airport

sponsor of the proposed course of action. Where corrective action cannot be accomplished within a reasonable length of time, the FIAO shall submit a revised procedure reflecting the adjustment to landing minimums.

v. *Paragraph 343, Visibility Reduction.* The RAIL portion of a MALSR or SSALR must be operating in order to retain visibility reductions authorized in TERPS, Table 9. Unattended approach light systems that have a radio control device, for a pilot to exercise control over the system, support the same minimums as light systems that are controlled from a ground position.

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

x. *Paragraph 370, Standard Takeoff Minimums.* The requirement to identify the location of the controlling obstacle is satisfied by listing the controlling obstacle on the FAA Form 8260-15.

y. *Paragraph 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.

z. *Paragraph 957, 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. An LDA, localizer-only, localizer back course, or SDF missed approach point shall be at least 3,000 feet prior to the localizer facility. For precision approaches, or where a glideslope is used, the DH/MAP shall be no closer to the localizer antenna than a point where the localizer is 400 feet wide. See OA P 8200.1, paragraph 217.3206a.

aa. *Paragraph 1201, Application.*

(1) **Apply** diverse departure criteria to all runways at airports where published or Special SIAPs 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 TERPS paragraph 1202 to develop a departure procedure for the affected runway(s) to the en route structure.

bb. *Paragraph 1202.* Defer application of this paragraph until further notice.

cc. *Paragraph 1202a(2), 1203a(2), 1203b(2)(a), and 1203c(2)(a).* Originate the OIS at the elevation of the DER. It may begin no higher than 35 feet above the DER when required by existing obstacles.

dd. *Paragraph 1202b(1), 1202c(1).* The "minimum altitude authorized for en route operations" is that altitude which allows en route obstacle clearance in conjunction with random (diverse) departures. Evaluate the 40:1 surface to an altitude equal to the highest obstacle elevation plus appropriate ROC. Evaluate obstacles as follows:

(1) **Construct** Zone 2 and 3 OIS radial extensions from a point on the runway centerline 2000ft from the start end of the runway out for a distance of 110nm for CONUS and 140nm for Alaska; construct the hemispherical boundaries accordingly. (The 110nm approximates the distance for a 40:1 surface to reach 16,500ft - 14,500ft for the highest CONUS terrain plus 2000ft ROC worst case. In Alaska, Mt. McKinley (20,320ft plus ROC) was used.)

(2) **Determine** the highest terrain/obstacle within this area; add appropriate ROC (Special ROC, etc.).

(3) **Divide** the results by 152ft/nm. (This determines the actual radius for the obstacle search. Anything beyond this radius will be cleared by the 40:1 surface).

(4) **Evaluate** the area out to this radius for 40:1 penetrations. Measure the distance to the obstacles as in chapter 12. (Suggest searching the area out to a 10nm radius first as most controlling obstacles are found in this area.)

(5) If there are **no penetrations**, diverse departures are authorized. Aircraft can be expected to safely depart in random directions from the airport to the altitude determined in (2) above.

(6) If there are **penetrations**, diverse departures are NOT allowed. Evaluate specific departure routes to avoid obstacles. TERPS paragraph 1203 applies.

ee. *Paragraph 1205a.* Defer application of this paragraph until further notice.

ff. *Paragraph 1205d.* Since application of paragraph 1205e is deferred, a note shall be necessary. See paragraph 835d(2)(a).

gg. *Paragraph 1205e.* Defer application of runway reduction until further study of practicality and method of implementation of this procedure has been completed.

hh. *Paragraph 1205f.* Delay expressing climb gradient in feet per minute pending an improved method of presentation, which is being developed.

ii. *Paragraph 1207a.* Defer application of this paragraph until further notice.

jj. *Paragraph 1501r.* Interpolate Tables 15-1 and 15-2, or use the next higher values.

kk. *Paragraph 1502g.* Establish only one stepdown fix in a LORAN SIAP final segment.

ll. *Paragraph 1512.*

(1) **RNAV Feeder Routes.** Except as stated below, establish waypoints for RNAV feeder route endpoints.

(a) To be used as RNAV feeder routes:

1 Establish RNAV waypoints at existing en route fixes. This will require completion of FAA Form 8260-2, and may require flight inspection.

2 Any approved facility may be used. If the associated initial segment is **NoPT**, collocate a waypoint with that facility; the facility shall not be the Reference Facility. If the associated initial segment is a **course reversal**, no feeder waypoint is necessary, and non-RNAV criteria may be applied.

(2) **Non-RNAV Feeder Routes.** When an RNAV feeder route is not possible or desired, establish a non-RNAV feeder route. Connect a non-RNAV feeder route to an RNAV course reversal.

(a) To be used as non-RNAV feeder fixes:

1 Do not use existing en route fixes.

2 Use any approved facility, including the Reference Facility.

(b) If it is operationally necessary to connect a non-RNAV feeder route to another RNAV feeder, or to an RNAV NoPT initial segment, process a waiver.

405. TERPS REVISION.

The process and format for submission of proposed changes to FAA Handbook 8260.3, United States Standard for Terminal Instrument Procedures (TERPS) shall be in accordance with FAA Order 1320.53, Policies and Procedures Standardization - Regulatory Standards and Compliance (AXR).

406. ADDITIONAL REFERENCES FOR PROCEDURE DEVELOPMENT.

a. *Microwave Landing Systems (MLS).* Criteria for MLS is published in FAA Order 8260.36, Civil Utilization of Microwave Landing Systems (MLS). Use this criteria for all new ILS procedures also. Identify approach procedures using these facilities as "MLS."

b. *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 parallel runway. The following conditions shall exist:

(1) **Runway centerlines** are separated by 1200 feet or less.

(2) **Only one final approach course** is published.

(3) **Course guidance** is provided on the runway centerline or within 3° of the runway centerline of the primary runway.

(4) **The procedure is identified** in accordance with TERPS, paragraph 161.

(5) **Final approach areas** shall be established for both runways and shall be determined by the approach guidance provided. Both final approach areas shall be used to determine the MDA to the sidestep runway.

(6) **Use** the same nonprecision obstacle clearance used for the primary runway to determine the published MDA for the sidestep maneuver.

(7) **Establish** published visibility in accordance with Table 6 or 11 of TERPS, whichever is higher.

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

(b) Visibility shall be increased 1/4 mile when the "sidestep" runway threshold is over 1000 feet closer to the FAF than the runway with course guidance.

Note: If descent gradient is exceeded, the side step maneuver shall NOT be authorized.

(8) **Sidestep minimums** shall be published in accordance with the example below:

Minimums block:

S-ILS 27L
S-LOC 27L
CIRCLING
SIDESTEP 27R

407-419. RESERVED.

SECTION 2. STANDARD INSTRUMENT APPROACH PROCEDURES

420. GENERAL.

SIAPS shall be established in accordance with TERPS and the policies set forth in this order. Instructions for completing SIAP forms are contained in chapter 8.

421. COORDINATION OF TERMINAL INSTRUMENT PROCEDURES.

Coordination requirements for terminal instrument procedures are set forth in TERPS, chapter 1, section 5. See paragraph 908 for a sample formatted letter to be used for coordination and instructions for processing. The letters are initiated by the FIAO and the responses are addressed to the regional FPB. Evaluation and disposition of user comments are the responsibility of the regional FPB with input from the FIAO as may be required. Valid user objections that cannot be resolved by the FPB should be referred to AFS-420 prior to procedure publication.

422. RADAR INSTRUMENT APPROACH PROCEDURES.

ATC personnel determine which runways require radar instrument approach procedures, and coordinate these requirements through the regional FPB to the FIAO.

423-429. RESERVED.

SECTION 3. VISUAL DESCENT POINT (VDP)

430. ESTABLISHMENT.

a. *Establish a VDP* on a nonprecision approach, providing the SIAP meets the requirements of TERPS paragraphs 250 and 251. A VDP shall be a DME fix only. Do not establish a VDP if penetrations of the VDP surface exist, or if obstacle data are not available.

b. *The VDP was created to define a point* where a normal descent (approximately 3°, with variation allowed from 212 to 400 feet per mile) would commence if the required visual reference were acquired. When a stepdown fix provides this service, there is no need to create an additional fix for this purpose, and VDP designation is not required.

c. *For chart clarity,* a VDP should ideally be at least two miles from a stepdown fix. In no case should it be less than one mile from stepdown fix or missed approach point.

d. *VDPs may be published* for any nonprecision straight-in approach. Do not establish a VDP for the localizer-only portion of an ILS approach.

431. TECHNICAL FACTORS.

a. *The VDP area is always centered* on the runway centerline extended.

b. *When the final approach course is not aligned on runway centerline,* the VDP may fall outside the VDP area and outside the light coverage of TERPS table 8. Upon reaching the VDP and acquiring visual reference, the pilot is expected to maneuver to runway centerline to complete the visual portion of the approach.

c. *When establishing a VDP* for a runway with a 3 bar, 2 angle VASI, use the lower angle.

d. *When dual MDAs exist,* one VDP may serve both MDAs, provided both descent gradients are within limits. If a VASI is installed, establish the VDP where the VASI angle meets the lower MDA. If the higher descent gradient exceeds 400 feet per mile, do not establish a VDP.

e. *Descent gradients from MDAs* established for part-time altimeter settings and published by Note, shall not exceed 400 feet per nautical mile.

f. *Do not adjust visibility minimums* to accommodate a VDP.

g. *To determine the termination point* for the VDP surface, computations shall include MDA minus adjusted ROC (if applicable). See TERPS paragraph 323a, b, or c.

h. *The DME source* shall be collocated with the final approach course facility.

i. *Do NOT establish* a VDP on a SIAP using a remote altimeter.

432. FAA FORM 8260-9 ENTRIES.

To facilitate review, entries may be required in the REMARKS section.

a. *When the VDP is associated with a visual glideslope indicator,* enter the angle, runway reference point (RRP) elevation, and the distance from RRP to threshold.

b. *If a VDP is not established,* give the reason; e.g., obstacles, too close to stepdown fix, no method of fixing, chart clutter, etc.

433-439. RESERVED.

SECTION 4. COMMERCIAL BROADCAST STATIONS

440. USE OF COMMERCIAL BROADCAST STATIONS.

a. *Existing Procedures.* In the past, special instrument approach procedures were approved utilizing commercial broadcast stations.

b. *New Procedures.* Do not develop new instrument approach procedures and IFR off-airway routes based on reception of a commercial broadcast station.

c. *Waiver Requirements.* Existing IFR procedures may be continued on a waiver basis; however, they should be canceled as soon as equivalent service can be provided by an approved air navigational facility.

441-449. RESERVED.

SECTION 5. DIRECTION FINDING (DF) PROCEDURES

450. GENERAL.

DF facilities have been established at air traffic facilities. Many of these have the capability to provide emergency approach procedure support where the DF antenna is suitably located with respect to an airport. If an approach procedure is feasible, it shall be developed by the FIAO at the request of the FPB. This section describes a modified procedure to provide maximum stability in the approach by utilizing small degrees of turns and descents.

451. FORMAT.

The DF approach procedure shall be documented and approved on FAA Form 8260-10, Standard Instrument Approach Procedure, and restrictively identified for emergency use only. A diagram showing the plan view of the procedure, including magnetic courses and minimum flight altitudes, shall be included. Minimum safe or sector altitudes shall be provided to 100 miles from the DF antenna. The appropriate ATC facility shall be named on FAA Form 8260-10 to identify the source of DF control. See appendix 10 for a DF example.

452. APPLICATION OF CRITERIA.

The basic DF approach procedure shall be formulated in accordance with TERPS, chapter 8. The approach pattern shall be modified in accordance with the following guidelines:

a. *Initial Approach Segment.* The initial approach for on-airport facilities includes all portions of the approach between the station passage and the final approach course. Approach procedures for DF facilities located off the airport shall have an intermediate segment, in accordance with TERPS paragraphs 812 and 813. The following is a description of the modified low altitude triangular pattern:

(1) **A 30° angle of divergence** exists between the outbound course and the reciprocal of the inbound course.

(2) **The outbound leg** is established as a three-minute leg.

(3) **The base leg** is formed by a 120° turn to position the aircraft 90° to the final approach course.

(4) **Two 45° turns** are provided to place the aircraft on final approach. These turns are depicted on the diagram and executed at the discretion of the DF operator.

b. *Minimum Altitudes.* Minimum altitudes shall be shown for each approach segment except for the portion between the 45° turns. The minimum altitude for the final approach segment is established in accordance with TERPS paragraph 321. Since these are emergency procedures, ceiling and visibility minimums shall not be established.

c. *Identification of Procedures.* Normally, only one approach procedure should be developed for each DF location. More than one procedure may be developed when procedures for low and high performance aircraft are not compatible. Procedures shall be numbered in accordance with TERPS paragraph 161.

453. DF VECTORING ALTITUDES.

Where a DF approach procedure is not authorized, DF vectoring altitudes may be developed for use by the controlling facility. Altitudes shall be entered on FAA Form 8260-10 and shall be identified as DF Vectoring Altitudes. Required obstacle clearance is 1000 feet. Altitudes shall be rounded to the next higher 20' increment. Minimum accuracy standards for controlling obstacles are stated in paragraph 271b.

454. DF VECTOR AREA.

a. *Criteria.* Construct the DF Vector Area in accordance with paragraph 428, and TERPS chapter 8.

b. *Sector radii.*

(1) **Outer** sector radius is 100nm.

(2) **Middle** sector radius is 40nm (Doppler), or 30nm (VHF/DF).

(3) **Other** distances may be used to sectorize around obstructions, and otherwise, if operationally justified.

(4) **Use a 20nm sector radius** for a low altitude SIAP, and the 30/40nm radius for high altitude penetrations.

(5) **Radii less than 10nm** should be used with caution due to the requirement for adjacent sector obstacle coverage stated in TERPS paragraph 810.

c. *Sector reduction.* Use a minimum number of sectors by combining sectors where possible.

NOTE: Remember that DF is for emergency use; and ATC is attempting to get the aircraft into radar coverage or a clear area where the aircraft can let down VFR.

d. *Minimum safe or sector altitudes* may be increased and combined with adjacent higher sectors when a height difference does not exceed 500 feet - UNLESS an operational requirement exists for lower altitudes (e.g., initial approach altitude for DF SIAP).

455. DISTRIBUTION.

The FIAO shall prepare and approve the FAA Form 8260-10, assign the effective date, and distribute it as follows:

Regional FPB	1 copy
FSS/Tower providing DF Service	1 copy
ARTCC	1 copy
AVN-220	1 copy
AVN-240	1 copy
ATM-600	1 copy
FIAO	Retain Original

456. CANCELLATION OF DF PROCEDURES.

When informed by the FPB that the DF procedure or DF Vectoring Area is no longer required, the FIAO shall take action to cancel the procedure.

457-459. RESERVED.

SECTION 6. CATEGORY II AND III ILS

460. GENERAL.

a. *Guidance.* The following directives contain criteria to be used in the development of ILS Category (CAT) II and III procedures:

(1) FAA Order 8260.3B, U.S. Standard for Terminal Instrument Procedures (TERPS), chapter 9.

(2) AC120-29, Criteria for Approving Category I and Category II Landing Minima for FAR 121 Operators, appendix 2.

(3) AC120-28C, Criteria for Approval of Category III Landing Weather Minima, paragraph 8.

(4) FAA Order OAP 8200.1, United States Standard Flight Inspection Manual, section 217.

(5) FAA Order 8240.45, Flight Inspection of Type II ILS Facilities Used for Category III Operations.

(6) FAA Order 6750.24B, Instrument Landing System (ILS) and Ancillary Electronic Configuration and Performance Requirements.

b. *Advise the general public* of airports authorized CAT I, II, and III minimums by publishing the appropriate FAR Part 97 SIAP. ILS minimums for CAT IIIa and IIIb are now authorized and shall be published when all requirements are met. CAT IIIc is still planned for the future, and therefore is not currently authorized. However, the provision for CAT IIIc minimums shall be included in the new minimums format of the SIAP to preclude further change at a later date.

c. *The minimum class of performance* (see order 6750.24) required for an ILS to support a published FAR Part 97 ILS Category II or III SIAP is as follows:

(1) Class II/T/2 for Category II operations.

(2) Class III/D/3 for Category III operations not less than RVR 700.

(3) Class III/E/3 for Category III operations not less than RVR 600.

(4) Class III/E/4 for Category III operations less than RVR 600.

d. *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 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.

461. ACTION.

a. *Regions.* Regional Airway Facilities Division, Regional FPB, and FIAO coordination is essential. Each FPB having planned CAT II and III ILS runways in its area of responsibility shall issue checklists to assure the system meets the necessary ground system and obstacle clearance requirements. See FAA Order 8400.8. The requirements for the marking of ILS glide slope (GS) and localizer (LOC) obstacle free zones, and procedures for insuring obstacle clearance with respect to aircraft on the ground, are contained in AC150/5300-13, Airport Design.

b. *The FIAO* shall amend ILS SIAPs when CAT II, III and/or III RVR minimums are authorized. Where only CAT II and III are authorized, CATs III and III would be indicated as not authorized (NA).

c. *FIAO.* Irregular pre-threshold terrain problems might adversely affect radar altimeter indications and thus affect autoland performance of some aircraft. Until or unless these aircraft demonstrate normal radar altimeter readings and acceptable autoland operations on that runway, and this fact is listed in their operations specifications, they cannot conduct CAT III autoland operations. When applicable, the FIAO shall use the following restrictive standard Note:

"CAT III special autoland evaluation required". Use of this Note should be the result of coordination between FIAO and the regional FPB. The FPB shall **coordinate the final determination** to use the note with the Technical Programs Division (AFS-400).

d. *The Data Analysis Branch, AVN-240,* shall maintain the current ILS performance classifications in the Aircraft Management Information System (AMIS) database. The regional Airway Facilities Division shall notify its Flight Standards Division and AVN-240 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.

e. *The FPB shall* notify the other regional Flight Standards Divisions, the Technical Programs Division (AFS-400), and the responsible FIAO by message when CAT II or III operations are authorized. The message shall identify the airport and the CAT II minimums with the lowest decision height and radio altimeter height that can be authorized. CAT III operations notification shall be sent by regional message identifying the CAT IIIa/b RVR minimums. Currently, FAR 91 operators receive CAT II approval based on FAA Order 8700.1, General Aviation Operations Inspector Handbook. When appropriate, this order will be revised to include FAR 91 CAT III approvals.

462. RADIO ALTIMETER HEIGHTS.

The methodology used in computing radio altimeter setting is contained in FAA Order 8260.23, Calculation of Radio Altimeter Height. Radio altimeter heights shall be established by utilizing the as-built approach light system (ALS) vertical profile drawings or drawings of equal accuracy. Terrain elevations on the runway centerline extended shall be used to compute radio altimeter heights.

463. NOTAM REQUIREMENTS.

When any component of the ILS system fails to meet the appropriate performance tolerances, Airways Facilities issues a NOTAM (D) for suspension of CAT II and III minimums. If the FIAO determines that the suspension will exist longer than 120 days or will be permanent, a temporary FDC NOTAM shall be issued by the FIAO followed by an amended FAA 8260-series form deleting CAT II and/or III minimums from the procedure.

464. WAIVER REQUIREMENTS.

When a region determines that a procedural waiver of standards is required, the regional FPB shall prepare a waiver request on FAA Form 8260-1, in accordance with chapter 2, section 12, of this order.

465-469. RESERVED.

SECTION 7. IFR DEPARTURE PROCEDURES

470. GENERAL.

a. *Establish takeoff minimums or develop IFR departure procedures* only for those airports with approved instrument approach procedures. Chapter 12 of TERPS requires application of diverse departure criteria to all runways authorized for instrument departures. Diverse criteria recognizes that aircraft may depart in any direction from each runway.

b. *When FIAO study reveals obstacles requiring climb gradients* greater than 200 feet per mile, obstacle avoidance procedures must be specified. These procedures may be: ceiling and visibility minimums to allow close-in obstacles to be seen and avoided; climb gradients greater than 200 feet per mile (see figure 4-1); detailed flight maneuvers; or, a combination of these methods.

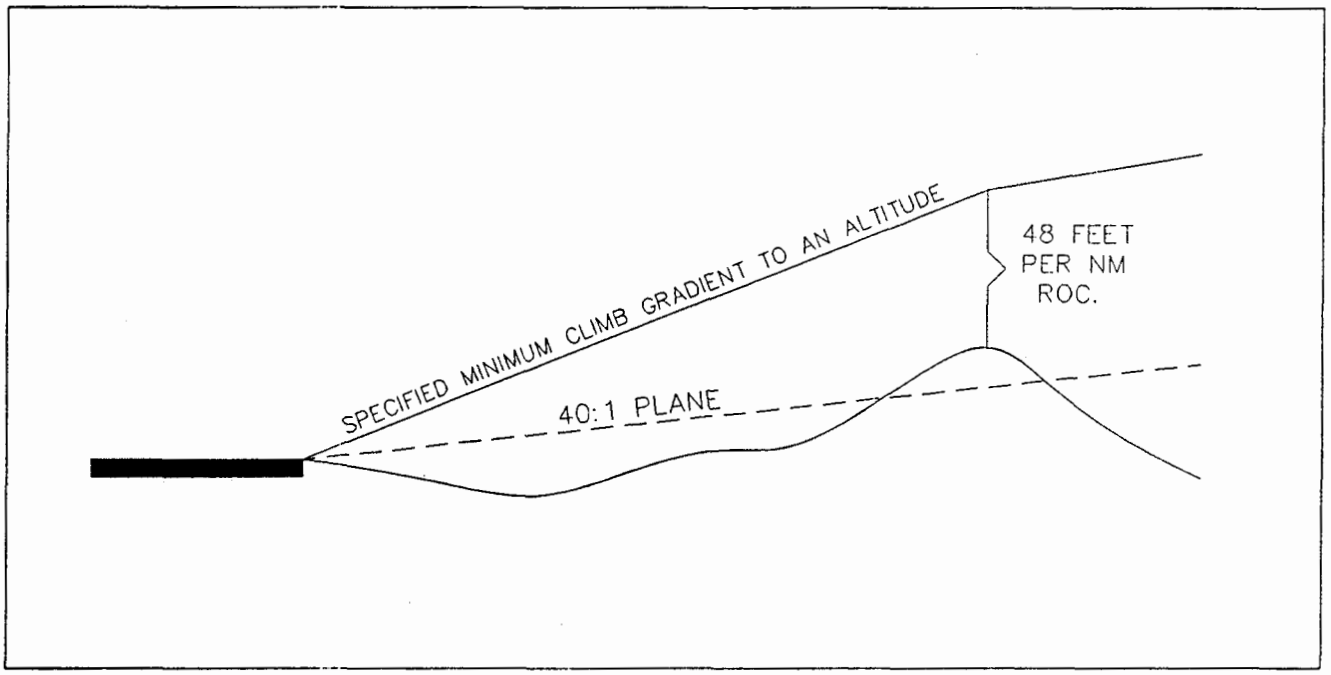


Figure 4-1 OBSTACLE PENETRATION OF 40:1 PLANE.

471. PUBLICATION.

a. *When detailed flight maneuvers are established for obstacle avoidance,* they are documented as "IFR DEPARTURE PROCEDURES" on FAA Forms 8260-7 or -15, as specified in paragraphs 833 and 835. This should include reference to SIDs and radar vectors when these are available. List the most frequently used procedures first. Use standard ATC phraseology as much as possible.

b. *Departure procedures* should place the aircraft in the en route strata expeditiously, but should also reflect the realities of ATC system requirements. FIAOs shall coordinate with the FPB and, if requested by the FPB, with ATC to assure, whenever practicable, that departure procedures reflect the commonly used routing out of each airport.

c. *"Runway heading"* is defined in the Pilot/Controller Glossary of the Airman's Information Manual (AIM) as "the magnetic direction that corresponds with the runway centerline extended, not the painted runway numbers." The glossary further states that pilots cleared to "fly or maintain runway heading" are expected to fly or maintain the heading that corresponds with the extended centerline of the departure runway (until otherwise instructed by ATC), and are not to apply drift correction; e.g., RWY 4, actual magnetic heading of the runway centerline 044, fly 044.

d. *Terminology.*

(1) Departure instructions shall specify **"Climb runway heading..."**. Alternatively, a specific heading may be used if necessary to avoid obstacles.

(2) Do NOT use the terminology "Climb to (altitude)..." without including a heading to fly. INSTEAD, use **"Climb runway heading (or specified heading) to (altitude)..."**.

(3) Do NOT use the terminology "Climb straight ahead...", as there is no guidance or reference definition of this phraseology for the pilot to apply.

472-479. RESERVED.

SECTION 8. STANDARD INSTRUMENT DEPARTURES (SIDs) AND STANDARD TERMINAL ARRIVAL ROUTES (STARs)

480. INTRODUCTION.

a. *Air Route Traffic Control Centers* submit SIDs and STARs through regional FPBs to FIAOs for review and approval.

b. *The FIAO is responsible for*: adherence to obstacle clearance requirements; accuracy of courses, distances and coordinates; clarity and practicality of the procedures; and assurance of navigational guidance adequacy. Any discrepancies, required adjustments, or improvements noted during the review process shall be coordinated with the sponsoring air traffic facility.

481. FIAO ACTION. FIAO action is based on an agreed upon priority between the FPB and the FIAO.

a. *SIDs.*

(1) Ensure that the SID terminates at a fix or route segment that will establish the aircraft in the en route environment.

(2) Ensure that the required 40:1 obstacle clearance is applied to all runways authorized instrument departures until the aircraft is established in the en route environment. The obstacle identification surface (OIS) areas, as defined in TERPS, chapter 12, shall be evaluated to assure obstacle clearance. If penetrations of the OIS exist, determine what restriction should be prescribed for each departure. When necessary, provide a climb gradient to an altitude that will enable an aircraft to safely overfly the obstacle.

(3) On Pilot-Nav SIDs, verify that minimum en route altitudes provide required obstacle clearance (MOCA), and meet MRA, communication and airspace requirements.

(4) A maximum or mandatory crossing altitude at a fix ("cross at or below" or "cross at") may require aircraft to level off at that altitude and reconfigure for level flight, prior to the fix. When a maximum or mandatory crossing altitude is utilized, the FIAO shall ensure that such level flight, and all subsequent flight, provides at least 1,000 feet obstacle clearance. See figures 4-2 and 4-3. The use of crossing altitudes should be discouraged when these altitudes mandate additional constraints.

(5) Climb gradients in feet per NM shall only be specified when required for obstacle clearance. A crossing altitude specified for noise abatement or traffic separation constitutes an ATC clearance. A pilot who cannot comply with a crossing altitude is required by FAR 91.75(a) to obtain an amended clearance.

(6) Different takeoff minimums or climb gradients than those specified on FAA Form 8260-15 may be required for some SIDs which do not overlie IFR departure procedures. Specify these minimums and gradients on the SID form, and authorize SID use on FAA Form 8260-15; e.g., **"Comply with SIDs or ...."**.

(7) SIDs using radar vectors may involve vector limitations due to obstacles. Sectors for unrestricted vectoring may be specified in the "REMARKS OR PROCEDURAL DATA NOTES NOT TO BE CHARTED" section of the SID form; e.g., **"Headings 190 CW 310 may be assigned with unrestricted climb to MVA"**, or in separate correspondence.

(8) Verify obstacle clearance requirements are met for lost communications instructions provided by the ARTCC. If the ARTCC did not provide lost communications instructions, and it is determined that obtacles/terrain present a potential problem, **coordinate** with the ARTCC for resolution of the matter.

b. *STARs.*

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

(2) Verify that minimum en route altitudes provide required obstacle clearance (MOCA), and meet MRA, communication and airspace requirements.

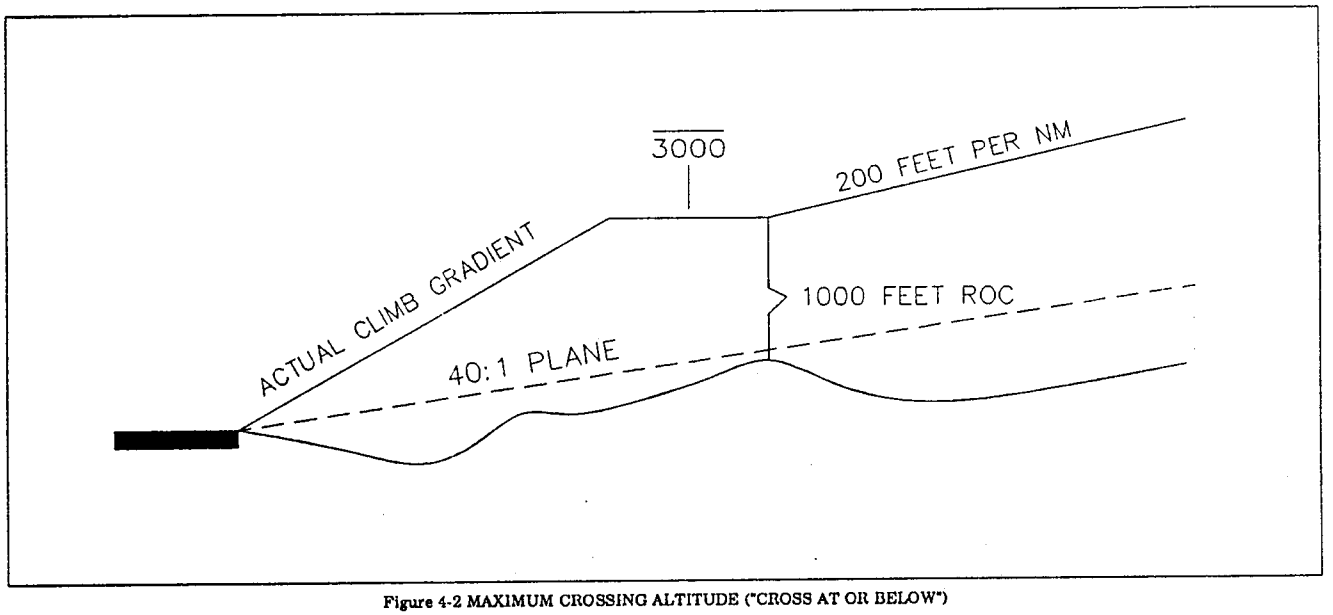


Figure 4-2 MAXIMUM CROSSING ALTITUDE ("CROSS AT OR BELOW")
NO OBSTACLE PENETRATION OF 40:1 PLANE.

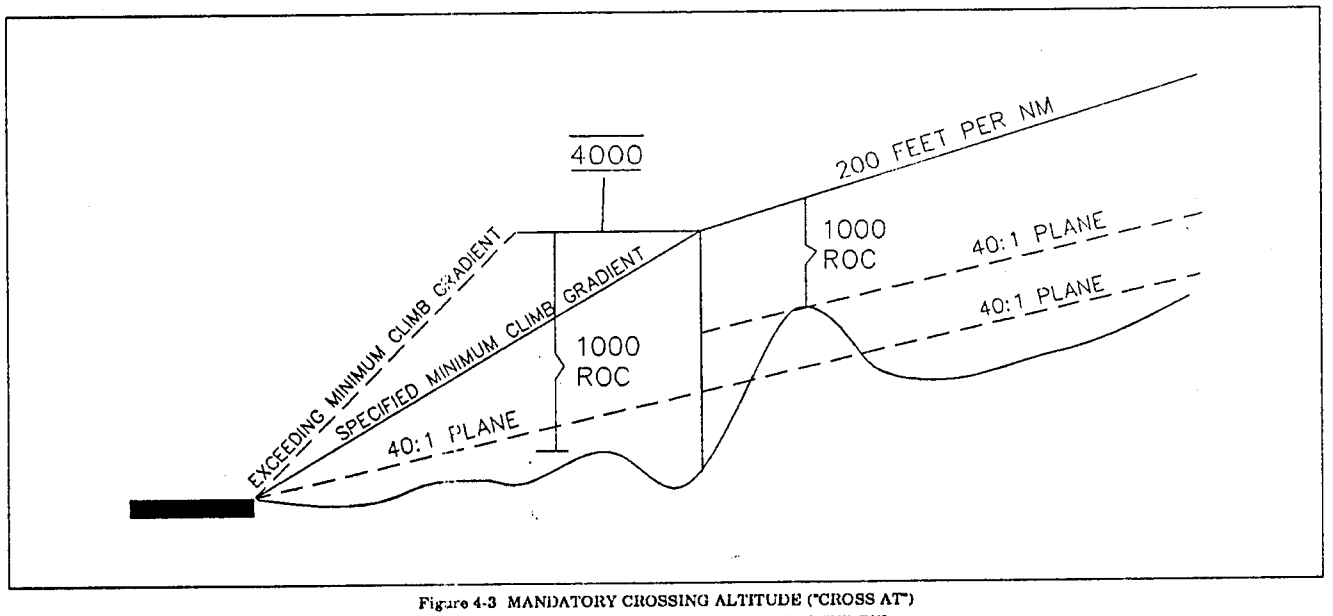


Figure 4-3 MANDATORY CROSSING ALTITUDE ("CROSS AT")
OBSTACLE PENETRATION OF 40:1 PLANE AFTER FIX

(3) **Verify** obstacle clearance requirements are met for lost communications instructions provided by the ARTCC. If the ARTCC did not provide lost communications instructions, and it is determined that obstacles/terrain present a potential problem, **coordinate** with the ARTCC for resolution of the matter.

(4) **Incorporate**, where possible, the STAR termination fix into the SIAP as a feeder/initial approach fix.

(5) **Verify** entered MAA from available documentation; e.g., Flight Inspection reports, ESV reports, etc.

c. *GENERAL.*

(1) **Review** from the pilot's standpoint. The procedure must be flyable and should be as simple as possible. The text should be clear, concise, and use standard phraseology.

(2) **Ensure** that facility performance will support the procedure. This may require preparation of materials such as maps and ESVs to support facility flight inspection.

(3) **Verify** the accuracy of courses, distances, and coordinates.

(4) **Return** the signed form through the FPB to the regional ATD for further processing.

(5) **Retain** a copy of each approved form with charts, computations, and supporting data to facilitate future reviews.

(6) **Include** normal distribution copies of FAA Form 8260-2 for ATM-600 and ARTCC in the package forwarded to the regional ATD.

482-499. RESERVED.

CHAPTER 5. AIRSPACE

SECTION 1. OBSTRUCTION EVALUATION (OE)

500. GENERAL.

Federal Aviation Regulation (FAR), Part 77, requires that the Administrator be notified prior to the construction or alteration of structures which might present a hazard to flight. FAA 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 Regional ATD has the responsibility to process all FAA Forms 7460-1 in accordance with FAR Part 77 and Order 7400.2, Procedures for Handling Airspace Matters. In this regard, responsible FS personnel shall ensure that a complete evaluation of the effect the proposed construction or alteration will have on aircraft operations is provided to ATC, and will assist ATC in reconciling apparent discrepancies in OE studies made by military services.

502. REVIEW OF NOTICES.

FS 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 FIAO may be helpful in formulating recommendations. The following should be considered:

a. *Effect on VFR Traffic.* The effect upon VFR routes, airports/terminal operations, or other concentrations of VFR traffic.

b. *Terminal Area IFR Operations.* The effect upon terminal area IFR operations; e.g., transitions, radar vectoring, holding, STARs, SIDs.

c. *Instrument Approach/Departure Procedures.* The effect upon any segment of a SIAP. Also, the effect upon any proposed SIAP or any departure restriction.

d. *En Route IFR Operations.* The effect upon MEAs, MOCAs, MCAs, MHAs, and turning areas.

e. *Navaid Interference.* If, in coordination with airway facilities and frequency management personnel, it is determined that there may be interference with facility performance, determine the effect upon any instrument flight procedure. This includes radio or navaid interference through intermodulation, overload, spurious or harmonic conditions which affect the receiver performance at an altitude or geographical location in the vicinity of an airport. Provide protection for all IFR areas and altitudes.

f. *Adjustments to Instrument Flight Procedures.* If it is determined the structure will have an effect on an instrument flight procedure, it should be stated what adjustments can be made without adversely affecting the procedure. FIAO specialists shall not amend a SIAP until receipt of the "Actual Notice of Construction," or other notification from the FPB relative to an obstacle which will have a procedural affect. If, during procedural review or while on a site visit, it becomes obvious for safety reasons that the existence of a previously unknown obstacle requires procedure minima to be raised, expedite accomplishment of the change by means of a NOTAM, and notify the affected FPB simultaneously. If NOTAM action is necessary after duty hours, initiate proper NOTAM action but provide next day notification to the FPB.

g. *Recommendations.* If the proposed construction or alteration will have an adverse effect on VFR or IFR aircraft operations, procedures, or minimum IFR flight altitudes, the FS evaluation should clearly state the extent of these effects.

h. *AC 70/7460-1 Obstruction Lighting and Marking.* FS personnel should be familiar with this handbook so that appropriate remarks can be made regarding the requirements therein. This is especially important where exemptions from lighting and marking standards have been requested by the applicant.

503. OBSTRUCTIONS UNDER SUBPART C, FAR 77.

Construction or alterations identified as obstructions based on the standards of Subpart C, FAR Part 77, although not automatically hazards to air navigation, are presumed to be hazards to air navigation until an FAA study has determined otherwise.

SECTION 2. DESIGNATION OF CONTROLLED AIRSPACE

504. GENERAL.

To afford separation from other aircraft all instrument flight procedures should be contained in controlled airspace to the maximum extent possible within the capabilities of the ATC system. DF procedures are exempt from this policy. For special procedures, refer to paragraph 402c.

505. AT RESPONSIBILITY.

It is the responsibility of the ATD to determine the type and amount of controlled airspace that can be established to encompass instrument flight procedures, including departures from the airport.

506. FIAO ACTION REQUIRED.

a. *Determine* airspace requirements for all original SIAPs. Analyze SIAP amendments, which affect any fix, course, or altitude, to determine if existing airspace must be extended or can be reduced. Similarly, analyze SIAP cancelations to determine if existing airspace can be reduced.

b. *FIAO analysis*, in accordance with the provisions of this section, shall include, in part, a determination of the minimum required length and width of the Class B/C/D/E Surface Area **(control zone)** extension, and/or any Class E 700' airspace **(transition area)** extension.

c. *Document data,* as described in paragraph 507k, on the FAA Form 8260-9, Standard Instrument Approach Procedure Data Record, which supports the SIAP being designed. (See paragraph 909 "Remarks" for forms completion guidance.) Forward this data to the appropriate regional AT office through the FPB. The FPB shall determine if further procedure development needs to be delayed pending any airspace action.

507. TERMINAL AIRSPACE.

The following criteria shall be used to determine the required minimum length and width of Class B/C/D/E Surface Area **(control zone)** and/or Class E 700' airspace **(transition area)** extensions.

a. *The requirement to designate controlled airspace* is contained in Order 7400.2, Part 6.

b. *The nearest hundred foot principle* shall be applied in determining the height of the controlling terrain. Example: A terrain elevation of 249.99' MSL would be considered as 200'; 250.00' MSL as 300'.

NOTE: Use of the following computation methods MUST consider the primary area of all applicable segments of any SIAP under analysis. Any arrival extensions must be the result of "worst-case scenario" analyses, reflecting the greatest amount of controlled airspace required.

c. *Class B/C/D/E Surface Area* ***(control zone)*** *Extensions.* Establish an extension of the Class B/C/D/E Surface Area **(control zone)** whenever a SIAP authorizes descent to an altitude less than 1000' above the surface at a point outside the basic surface area **(control zone).** Where multiple approach procedures are established utilizing the same approach course, the extension length and/or width shall be based on the approach, or approach combinations, requiring the greatest length and/or width respectively.

(1) Precision approach procedures. Where ILS/MLS procedures are involved, the 1000' point is established by determining the elevation of the highest terrain in the final approach primary area. Add 1000' to this figure and subtract the threshold/GPI elevation. Then divide the result by the GS tangent, and subtract the GPI to threshold distance. The result is the distance from the threshold to the 1000' point. See figure 5-1.

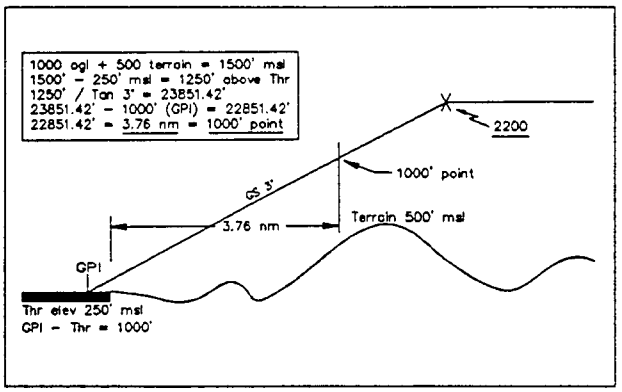


Figure 5-1

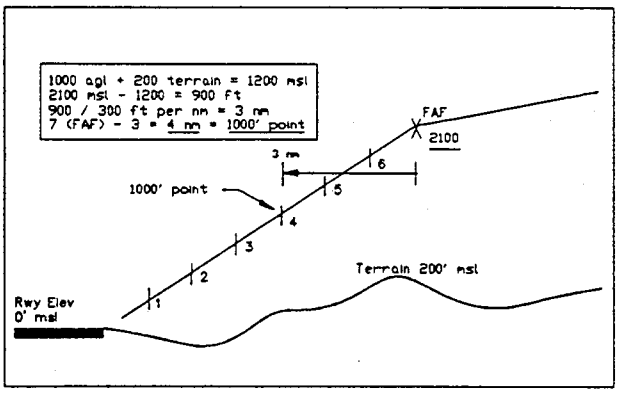


Figure 5-2

(a) When the **GS (or EL) is inoperative,** the altitude for flying the LOC-only (or AZ-only) may require an additional Class B/C/D/E Surface area **(control zone)** extension. Therefore, the 1000' point for LOC-only (or AZ-only) should be determined in the same manner as for nonprecision SIAPs. See paragraph 507c(2) thru (4).

(b) To locate a 1000' point in a segment **prior to the FAF**, apply the provisions of paragraphs 507c(2) thru (5), as appropriate.

(2) Non-precision approach procedures. (NoPT w/FAF):

(a) When the SIAP specifies a minimum **altitude at the FAF greater than 1000'** above the highest terrain in the final segment, the 1000' point is assumed to be inbound from the FAF at a distance determined by application of a descent gradient of 500'/nm for distances in excess of 7 nm from runway threshold, and 300'/nm for distances at/less than 7 nm from the runway threshold; i.e., use both gradients to compute the 1000' point when the final segment is longer than 7 nm. See figures 5-2 and 5-3.

(b) When the SIAP specifies a minimum **altitude at the IF greater than 1000'** above the highest terrain in the intermediate segment, the 1000' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent from the IF. See figure 5-4.

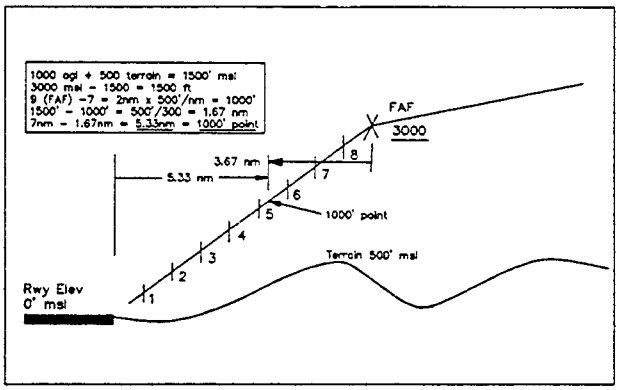


Figure 5-3

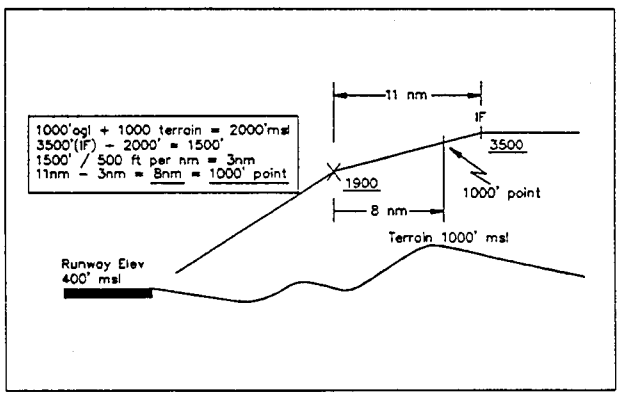


Figure 5-4

(3) Nonprecision approach procedures with Procedure Turn (PT):

(a) Procedure turn **over facility (on-airport, no-FAF):** Where a facility is located on the airport (NDB, VOR, VORTAC) and the SIAP does not incorporate FAF, the 1000' point is assumed to be 7 nm outbound beyond the facility for a 10-mile PT, and 5 nm outbound for a 5-mile PT.

(b) Procedure turn **over FAF:**

1 When the SIAP specifies a minimum **altitude at the FAF less than 1000'** above the highest terrain in the intermediate segment, the 1000' point is assumed to be 7 nm outbound beyond the FAF for a 10-mile PT, and 5 nm outbound for a 5-mile PT. See figure 5-5.

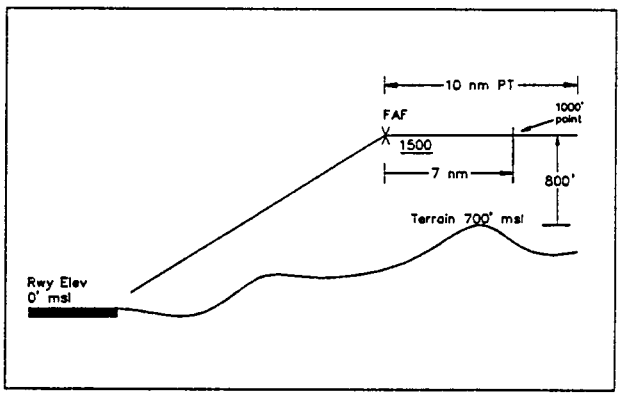


Figure 5-5

2 When the SIAP specifies a minimum **altitude at the FAF less than 1000'** above the highest terrain in the final segment, BUT **greater than 1000'** above the highest terrain in the intermediate segment, establish the 1000' point at the FAF.

3 When the SIAP specifies a minimum **altitude at the FAF greater than 1000'** above the highest terrain in the final segment, establish the 1000' 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 1000'** above the highest terrain in the intermediate segment, the 1000' point is assumed to be outbound beyond the FAF at a distance determined by application of a 200'/nm descent to the FAF. See figure 5-6.

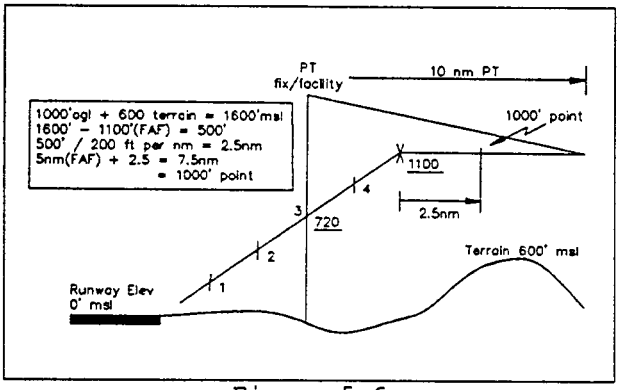


Figure 5-6

2 Where the SIAP specifies a minimum **altitude at the final stepdown fix less than 1000'** above the highest terrain in the final segment, while specifying a minimum **altitude at the FAF greater than 1000'** above the highest terrain in the intermediate segment, the 1000' point is assumed to be inbound from the FAF at a distance determined by application of a 300'/nm descent gradient from the FAF. Use 500'/nm descent gradient for the distance that the FAF exceeds 7nm from the threshold. See figure 5-7.

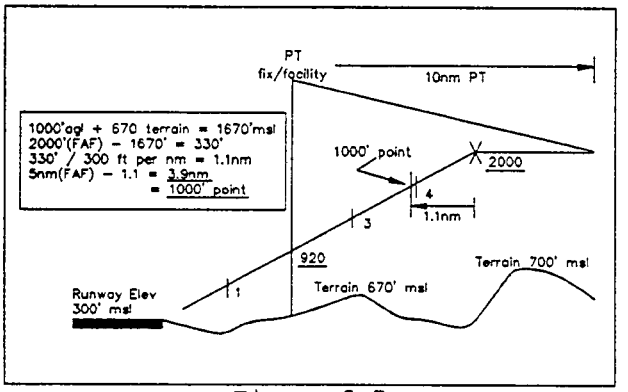


Figure 5-7

3 Where the SIAP specifies a minimum **altitude at the final stepdown fix greater than 1000'** above the highest terrain in the final segment, the 1000' point is assumed to be inbound from the final stepdown fix at a

distance determined by application of a 300'/nm descent gradient from the final stepdown fix. Use 500'/nm descent gradient for the distance that the stepdown fix exceeds 7nm from the threshold. See figure 5-8.

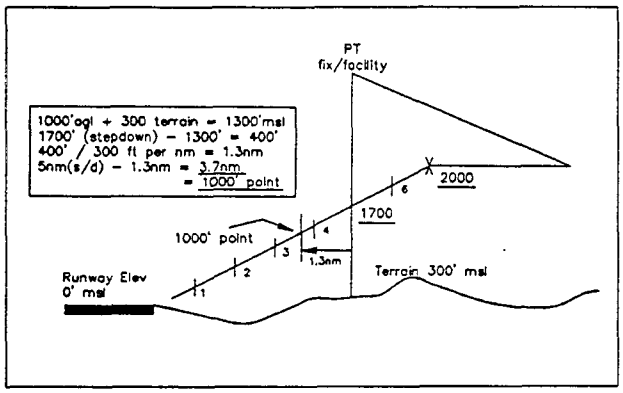


Figure 5-8

(d) Procedure turn over stepdown **PRIOR to the FAF:**

(*Condition:* Distance between the stepdown fix/facility and the FAF less than 5nm - see TERPS paragraph 244d).

1 If the PT **completion altitude** is equal to or greater than, BUT the minimum **altitude at the stepdown fix/facility** is less than, 1000 feet above the highest terrain in the segment underlying the course reversal, the 1000' point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg. See figure 5-9.

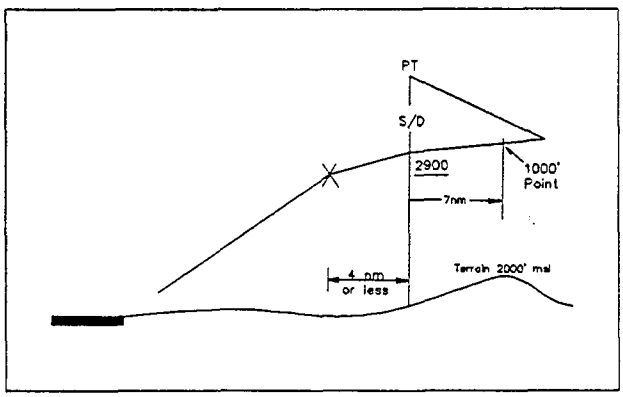


Figure 5-9

2 If the minimum **altitude at the stepdown fix/facility** is greater than 1000' above the highest terrain in the segment between the fix/facility and the FAF, the 1000' point is assumed to be inbound from the fix/facility at a distance determined by application of a 300'/nm descent from the stepdown fix/facility. See figure 5-10.

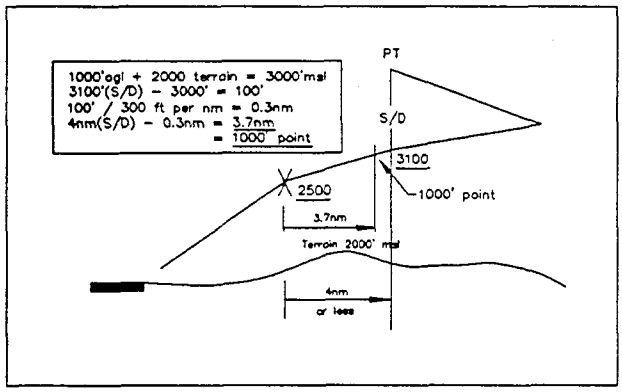


Figure 5-10

3 If the **1000' point is inside the FAF**, apply methodology in paragraph 507c(2)(a).

(*Condition:* Distance between the stepdown fix/facility and the FAF greater than 5nm - see TERPS paragraph 244e). Since the **fix/facility becomes the IF** in this case, apply methodology in paragraph 507c(3)(e) below.

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

(e) PT over the **IF:** (Intermediate Fix)

1 If the PT **completion altitude** is less than 1000' above the highest terrain in the segment underlying the course reversal, the 1000' point is in the PT maneuvering area.

2 If the PT **completion altitude** is greater than or equal to 1000' above the highest terrain in the segment underlying the course reversal, the 1000' point is assumed to be 7nm from the PT fix/facility on the inbound leg. See figure 5-11.

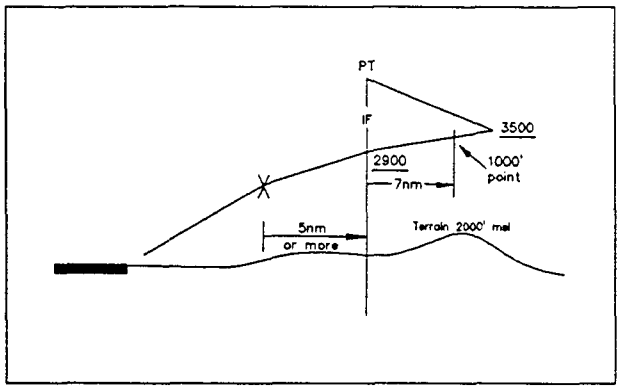


Figure 5-11

3 If the minimum **altitude at the IF** is greater than 1000' above the highest terrain in the segment underlying the course reversal, BUT less than or equal to 1000' above the highest terrain in the intermediate segment, the 1000' point is at the IF. See figure 5-12.

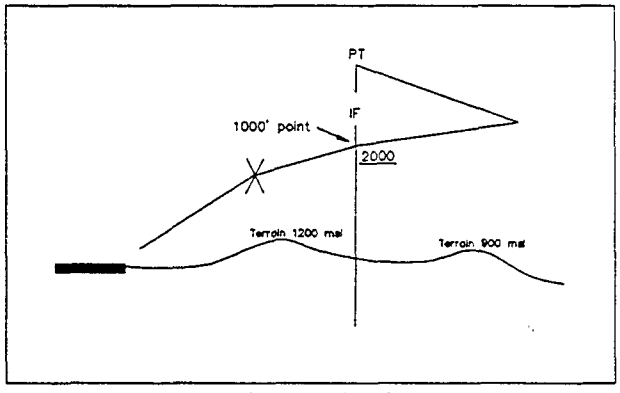


Figure 5-12

4 If the minimum **altitude at the IF** is greater than 1000' above the highest terrain in the intermediate segment, the 1000' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent from the IF. See figure 5-13.

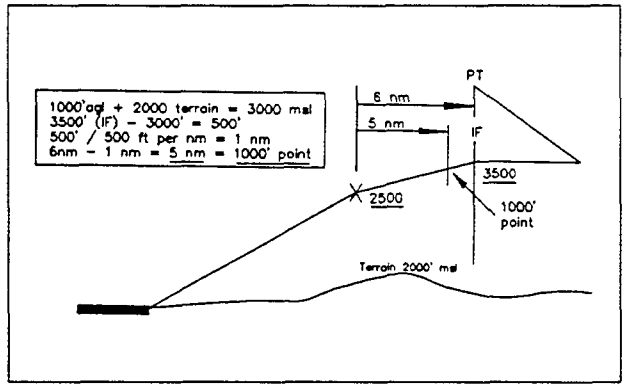


Figure 5-13

5 If the **1000' 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 1000' above the highest terrain in the final segment, the 1000' point is at the FAF.

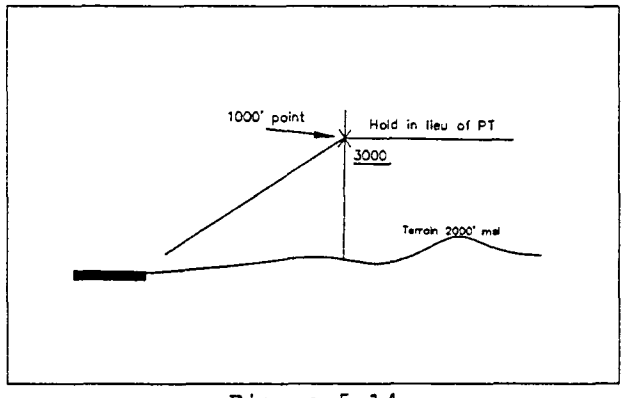


Figure 5-14

2 If the minimum **altitude at the FAF** is greater than 1000' 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, 1000' above the highest terrain underlying the course reversal, the 1000' point is assumed to be in the holding pattern area. The Class

B/C/D/E Surface Area (**control zone**) extension must encompass the entire holding pattern primary area.

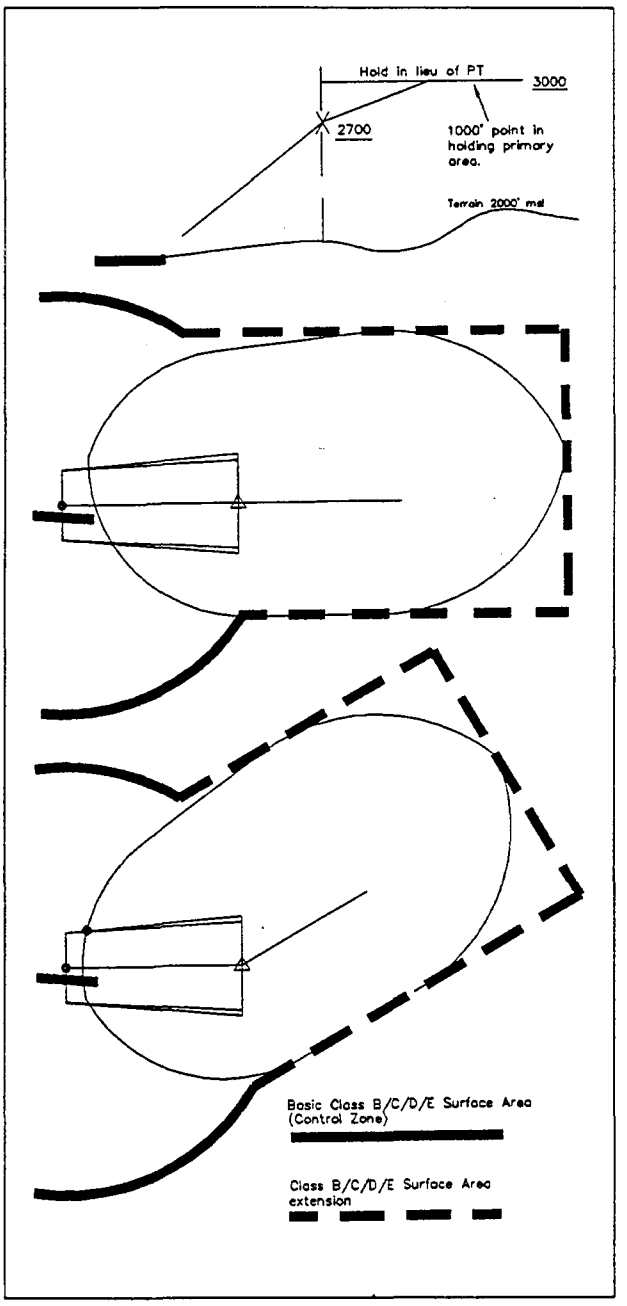


Figure 5-15

(b) At the IF:

1 If the minimum **altitude at the IF** is less than or equal to 1000' above the highest terrain in the intermediate segment, the 1000' point is at the IF. See figure 5-16.

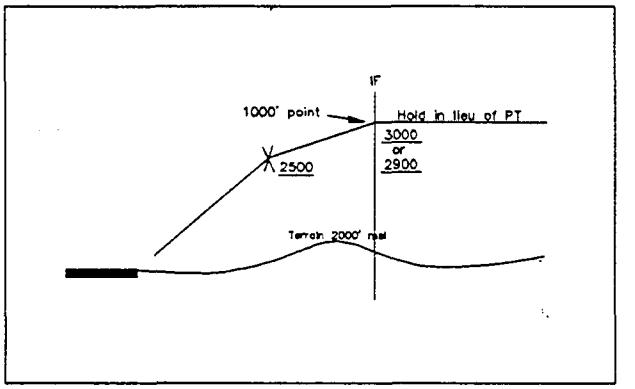


Figure 5-16

2 If the minimum **altitude at the IF** is greater than 1000' above the highest terrain in the intermediate segment, the 1000' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent from the IF. See figure 5-17.

3 If the minimum altitude at the IF AND at the FAF are greater than 1000' above the highest terrain in the intermediate segment, apply the methodology in paragraph 507c(2).

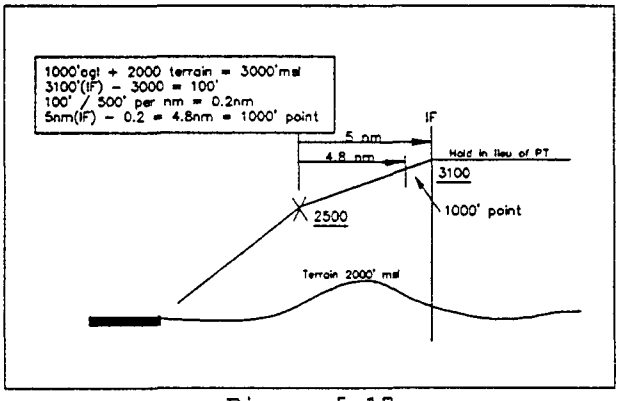


Figure 5-17

(5) General: For PT distances greater than 10nm (out to 15nm maximum), increase the distance to the assumed 1000' point 1 nm for each mile in excess 10 nm.

d. *Class B/C/D/E Surface Area* ***(control zone)*** *extension width.*

(1) ILS/MLS: The width of the Class B/C/D/E Surface Area **(control zone)** extension for ILS/MLS is established by determining the width of the precision final approach primary area at the point the aircraft reaches 1000' AGL. See paragraph 507c(1). The width of the extension shall not be less than 2 nautical miles (1 mile each side of the localizer/azimuth course) regardless of the width of the precision primary area at the 1000' point.

(a) Refer to figure 5-18: If the aircraft reaches 1000' AGL at point A, the width of the surface area **(control zone)** at point A is the same as the measured width of the ILS trapezoid at this point. Apply the provisions of paragraph 507c(1) to determine the distance from the threshold to the 1000' point; then subtract 200'. The resultant figure is then used as "D" in the precision for determining the half-width of the precision primary area:

1/2W = .15D + 500'.

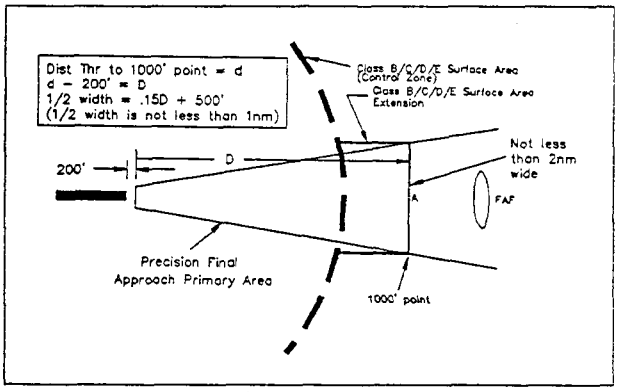


Figure 5-18

(b) Where the **1000' point is located in the intermediate segment,** additional analysis is required. Since the ILS or MLS FAF and the underlying LOC or AZ FAF may not be collocated, the respective intermediate segments may have different widths at any particular distance from the FAF. The **width** of the Class B/C/D/E Surface Area **(control zone)** extension at the 1000' point shall be the **greater** of the two segment widths. Use the guidance in TERPS chapter 2 for calculating the respective widths.

(2) Nonprecision: The width of the Class B/C/D/E Surface Area **(control zone)** extension for other than ILS/MLS is established by measuring the width the final approach primary area at the widest point between the basic surface area **(control zone)** and the point where the aircraft reaches 1000' AGL. For final segments which expand toward the basic surface area **(control zone)** boundary, the width is measured perpendicularly to centerline at the point where the course crosses the surface area **(control zone)** boundary. The width of the extension shall not be less than 2nm (1nm each side of segment centerline) regardless of the primary area width at the 1000' point.

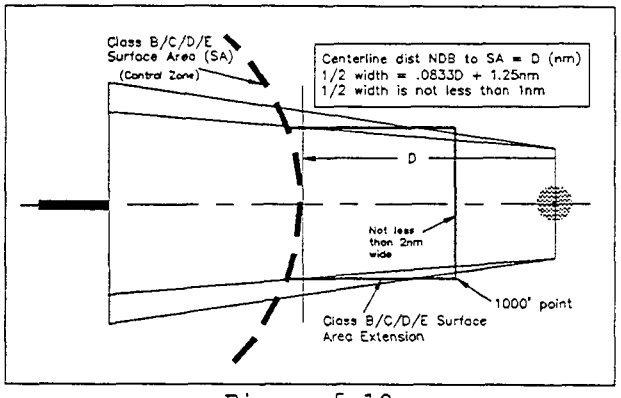


Figure 5-19

Where the 1000' point is located in the intermediate segment, determine the segment width abeam the 1000' point using the appropriate guidance in TERPS chapter 2.

e. *Class E 700' airspace arrival extensions.* A 700' Class E airspace **(transition area)** extension should be established whenever a SIAP authorizes descent to less than 1500' AGL. The **width** of the Class E 700' airspace (transition area) extension is established equal to the width of the initial, intermediate, or final primary area at the widest point between the basic Class E 700' airspace (transition area) and the point where the aircraft descends below 1500' AGL. The methods used to locate the 1500' point in a **precision final** are similar to those used to locate the 1000' point. Refer to paragraph 506c(1) and use 1500' in place of 1000'. For **other precision segments, or for LOC/AZ,** refer to 507e(1) through (3).

(1) NoPT: Apply the methodology contained in paragraphs 507c(2)(a) and (b); except, where a 300'/nm descent gradient was used, apply a 500'/nm for the 1500' point determination. In figure 5-20, the aircraft will reach 1500' AGL at 6 miles prior to the FAF using a 500'/nm descent gradient from the IF.

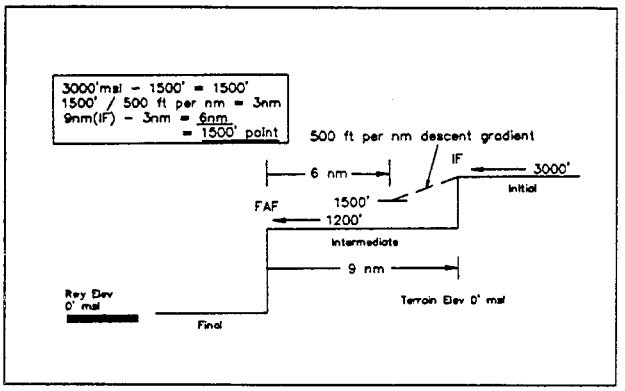


Figure 5-20

(2) Procedure Turn:

(a) On-airport **no-FAF:** For a **10-mile PT**, the 1500' point is assumed to be 7 miles from the PT fix or facility on the inbound leg. Similarly, for a **5-mile PT,** the 1500' point is assumed to be 5 miles from the PT fix or facility. HOWEVER, if the **PT completion altitude** is less than 1500 feet above the highest terrain in the final segment underlying the course reversal, then the 1500' point is in the PT maneuvering area. See paragraph 507k(7). See figure 5-21.

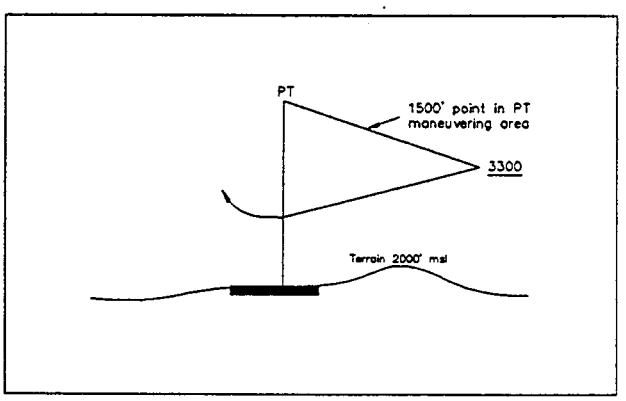


Figure 5-21

(b) PT over the **FAF:**

1 If the **PT completion altitude** is less than 1500' above the highest terrain in the intermediate segment, the 1500' point is in the PT maneuvering area. See paragraph 507k(7). See figure 5-22.

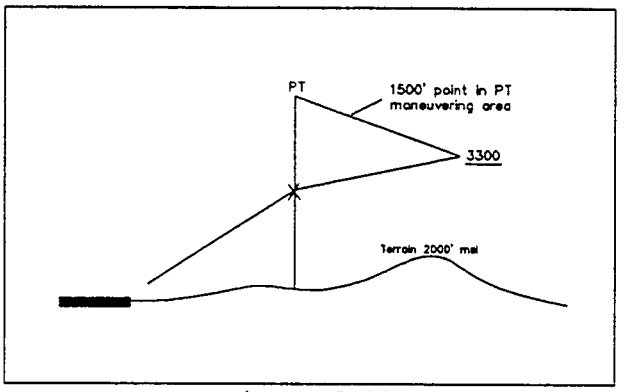


Figure 5-22

2 If the **PT completion altitude** is 1500' or more above the highest terrain in the intermediate segment, the 1500' point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5nm for a 5-mile PT). See figure 5-23.

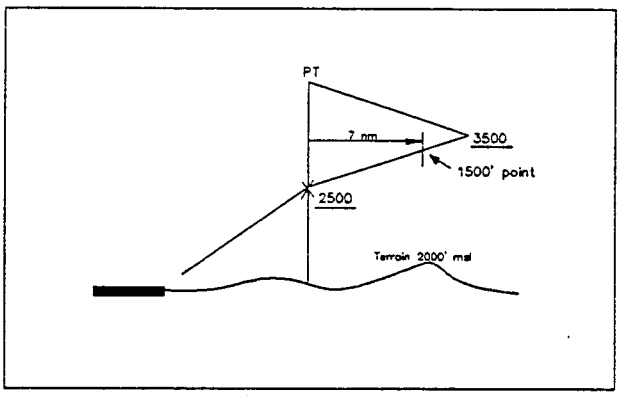


Figure 5-23

3 If the **FAF altitude** is greater than 1500' above the highest terrain in the final segment, the 1500' point is assumed to be inbound from the FAF at a distance determined by application of a 500'/nm descent gradient. See figure 5-24.

(c) PT over a stepdown fix **AFTER the FAF:**

1 If the **PT completion altitude** is less than 1500' above the highest terrain in the

segment underlying the course reversal, the 1500' point is in the PT maneuvering area. See paragraph 507k(7). See figure 5-25.

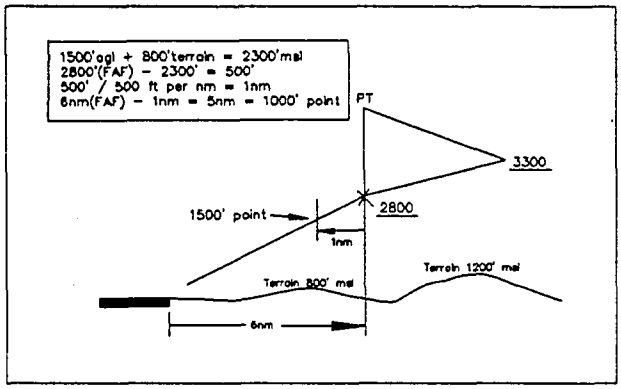


Figure 5-24

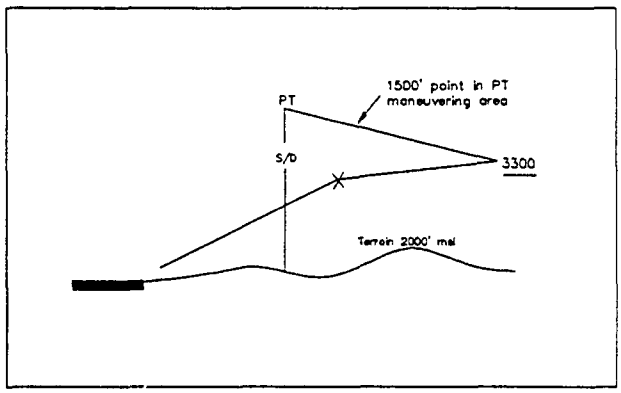


Figure 5-25

2 If the **PT completion altitude** is 1500' or more above the highest terrain in the segment underlying the course reversal, the 1500' point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5nm for a 5-mile PT). See figure 5-26.

3 If the **FAF altitude** is 1500' or more above the highest terrain in the segment underlying the course reversal or the final segment, the 1500' point is assumed to be inbound from the FAF at a distance determined by application of a 500'/nm descent gradient. See figure 5-27.

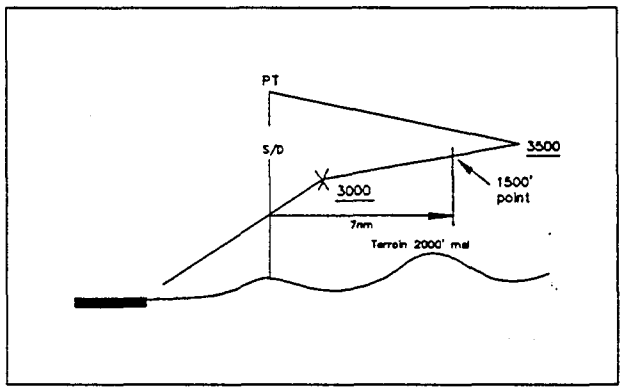


Figure 5-26

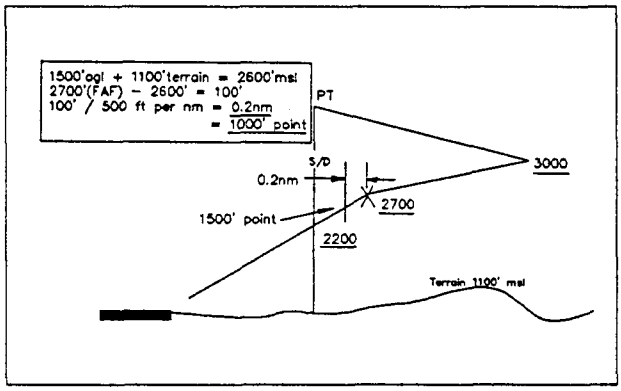


Figure 5-27

4 If the **stepdown fix/facility altitude** is 1500' or more above the highest terrain in the final segment, the 1500' point is assumed to be inbound from the stepdown fix/facility at a distance determined by application of a 500'/nm descent gradient. See figure 5-28.

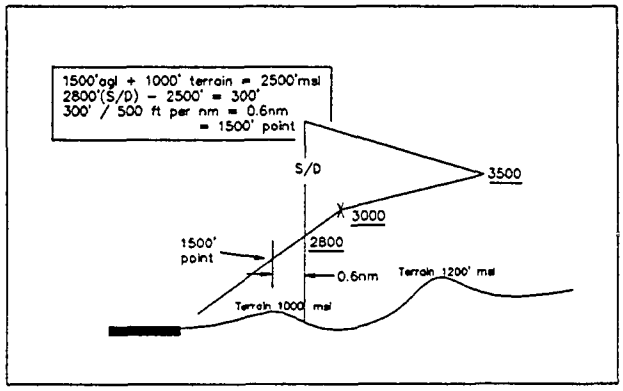


Figure 5-28

(d) PT over a stepdown fix **PRIOR to the FAF:**

(*Condition:* Distance between the stepdown fix/facility and the FAF less than 5nm - see TERPS paragraph 244d)

1 If the **PT completion altitude** is less than 1500' above the highest terrain in the segment underlying the course reversal, the 1500' point is in the PT maneuvering area. See paragraph 507k(7). See figure 5-29.

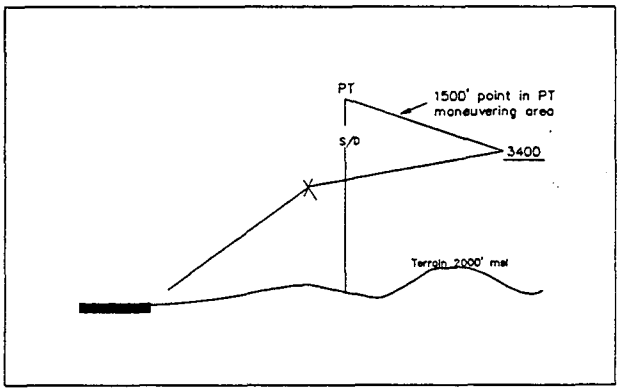


Figure 5-29

2 If the **PT completion altitude** is equal to or greater than, BUT the minimum altitude at the stepdown fix/facility is less than, 1500' above the highest terrain in the segment underlying the course reversal, the 1500' point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg. See figure 5-30.

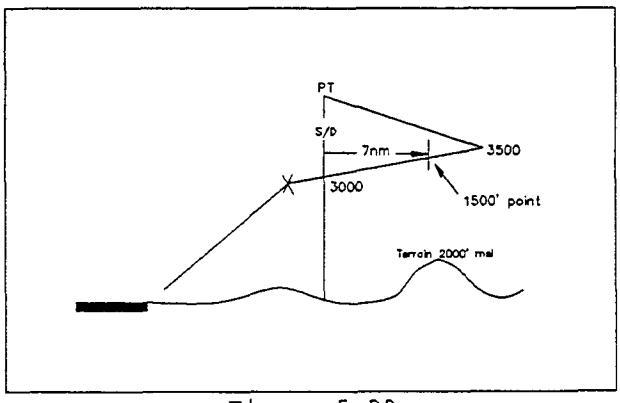


Figure 5-30

3 If the **stepdown fix/facility altitude** is 1500' or more above the highest terrain in the segment between the fix/facility and the FAF, the 1500' point is assumed to be inbound from the fix/facility at a distance determined by application of a 500'/nm descent gradient from the stepdown fix/facility. See figure 5-31.

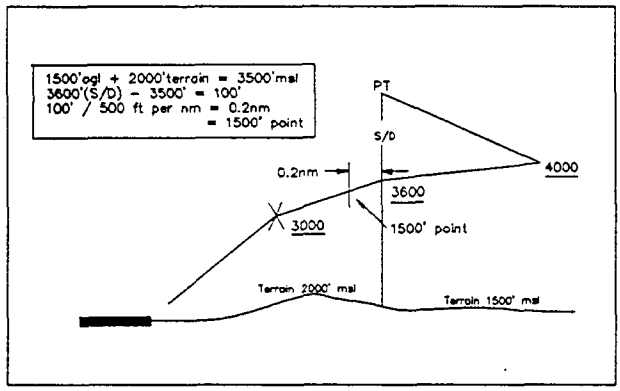


Figure 5-31

4 If the **1500' point is inside the FAF,** apply the methodology in paragraph 507c(2)(a) using a 500'/nm descent gradient.

(*Condition:* Distance between the stepdown fix/facility and the FAF greater than 5nm - see TERPS paragraph 244d). Since the **fix/facility becomes the IF** in this case, apply methodology for PT over the IF. See paragraph 507e(2)(e) below.

Note: Where the distance between the stepdown fix/facility and the FAF *equals* 5nm, either TERPS paragraph 244d or 244e may be applied; use the appropriate guidance in paragraph 507e(2)(d) above or paragraph 507e(2)(e) below accordingly.

(e) PT over the **IF:**

1 If the **PT completion altitude** is less than 1500' above the highest terrain in the segment underlying the course reversal, the 1500' point is in the PT maneuvering area. See paragraph 507k(7). See figure 5-32.

2 If the **PT completion altitude** is equal to or greater than 1500' above the highest terrain in the segment underlying the

course reversal, the 1500' point is assumed to be 7 miles from the IF on the PT inbound leg. See figure 5-33.

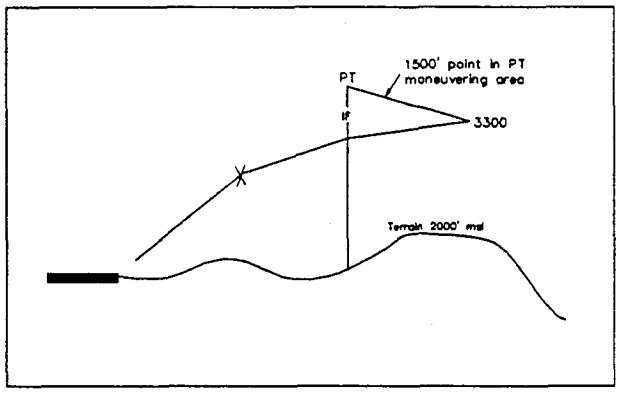


Figure 5-32

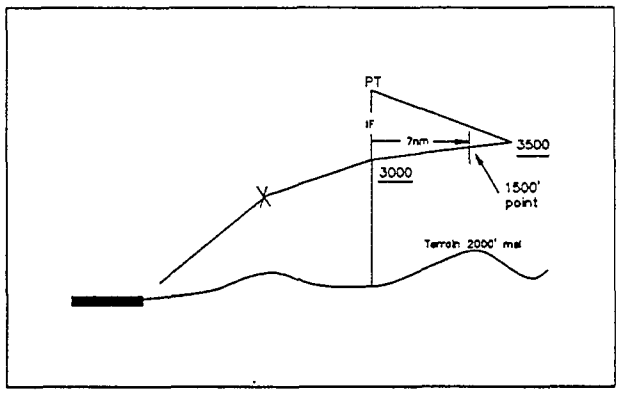


Figure 5-33

3 If the minimum **altitude at the IF** is equal to or greater than 1500' above the highest terrain underlying the course reversal, BUT less than 1500' above the highest terrain in the intermediate segment, the 1500' point is at the IF. See figure 5-34.

4 If the minimum **altitude at the IF** is greater than 1500' above the highest terrain in the intermediate segment, the 1500' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent gradient. See figure 5-35.

5 If the **1500' point is inside the FAF,** apply the methodology in paragraph 507c(2)(b) using a 500'/nm descent gradient.

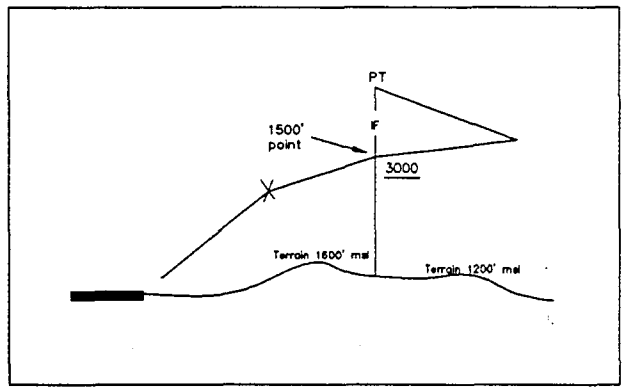


Figure 5-34

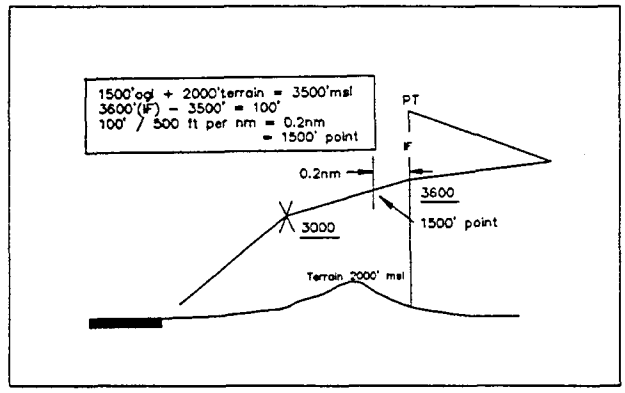


Figure 5-35

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

(a) At the **FAF:**

1 If the minimum **altitude at the FAF** is 1500' above the highest terrain in the final segment, the 1500' point is at the FAF. See figure 5-36.

2 If the minimum **altitude at the FAF** is greater than 1500' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500'/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, 1500' above the highest terrain in the segment underlying the course reversal, the 1500' point is assumed to be in the holding pattern area. The Class E 700'airspace **(transition area)** extension must encompass the entire holding pattern

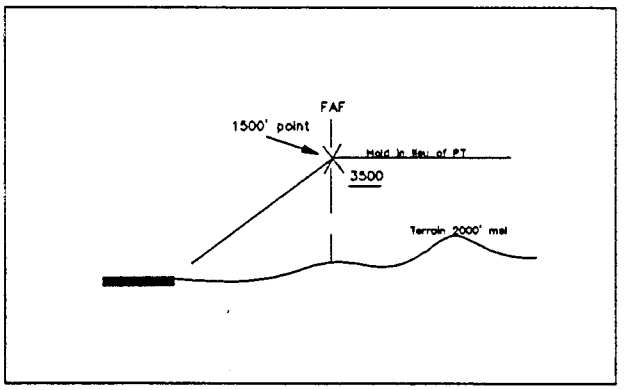


Figure 5-36

primary area. Use the pattern size appropriate to the highest holding speed at the published holding altitude. See paragraph 507k(11) and figure 5-37.

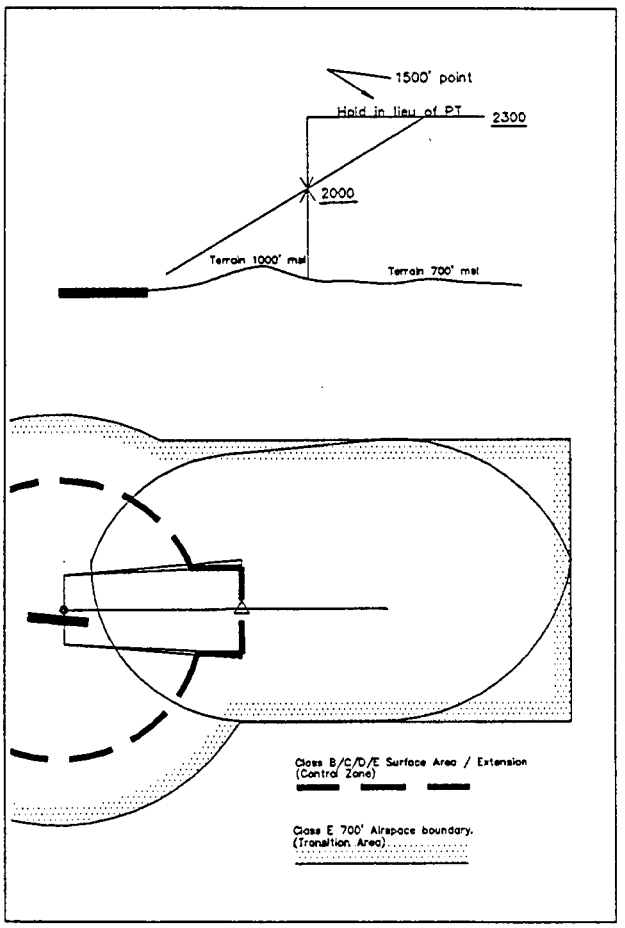


Figure 5-37

(b) At the IF:

1 If the minimum **altitude at the IF** equals 1500' above the highest terrain in the intermediate segment, the 1500' point is at the IF.

2 If the minimum **altitude at the IF** is less than 1500' above the highest terrain underlying the holding pattern, the 1500' point is in the holding pattern area. The Class E 700' 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(7). See figure 5-38. Provide the appropriate AT office a drawing clearly depicting the airspace required. See paragraph 507k(11).

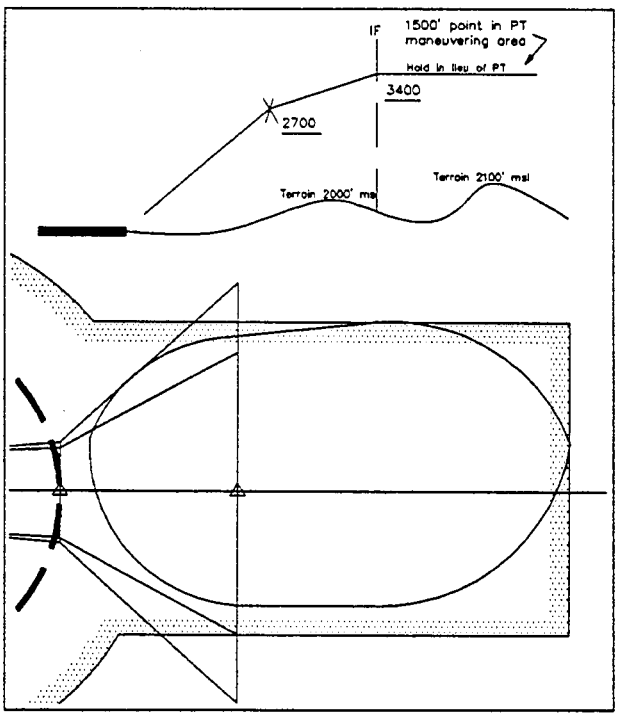


Figure 5-38

3 If the minimum **altitude at the IF** is greater than 1500' above the highest terrain in the intermediate segment, the 1500' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent gradient from the IF. See figure 5-39.

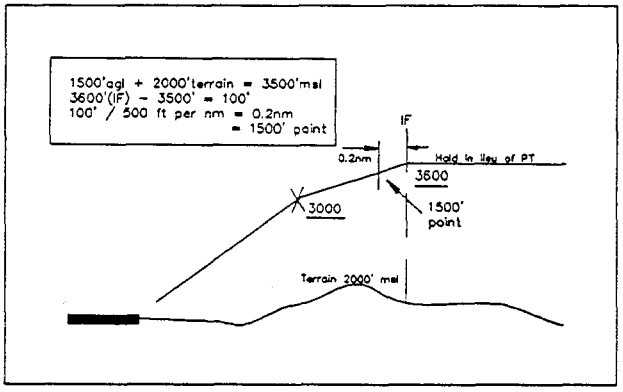


Figure 5-39

f. *Missed Approach:* Normally, it can be expected that the airspace required to encompass the SIAPs or SIDs 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 **(control zone)** extensions. Determine required airspace as follows:

(1) Draw the SIAP missed approach segment areas on a sectional chart (or any other chart depicting controlled airspace).

(2) Establish a 700' Class E airspace area (transition area) whenever a SIAP authorizes aircraft operation at/below 1500' AGL outside the basic Class B/C/D/E Surface Area **(control zone)**. Where the clearance limit is reached prior to the 1500' point, ensure the entire missed aproach primary area is contained within Class E 700' airspace **(transition area)**, including clearance limit holding, if required.

g. *HI-VOR or NDB (NoFAF)*

(1) 1000' point:

(a) If the penetration turn **completion altitude** is equal to 1000' above the highest terrain in the area prior to the 10-mile point, the 1000' point is at the 10-mile point.

(b) If the penetration turn **completion altitude** is greater than 1000' above the highest terrain in the area prior to the 10-mile point, the 1000' point is assumed to be inbound from the turn completion point at a distance determined by application of a 500'/nm descent gradient.

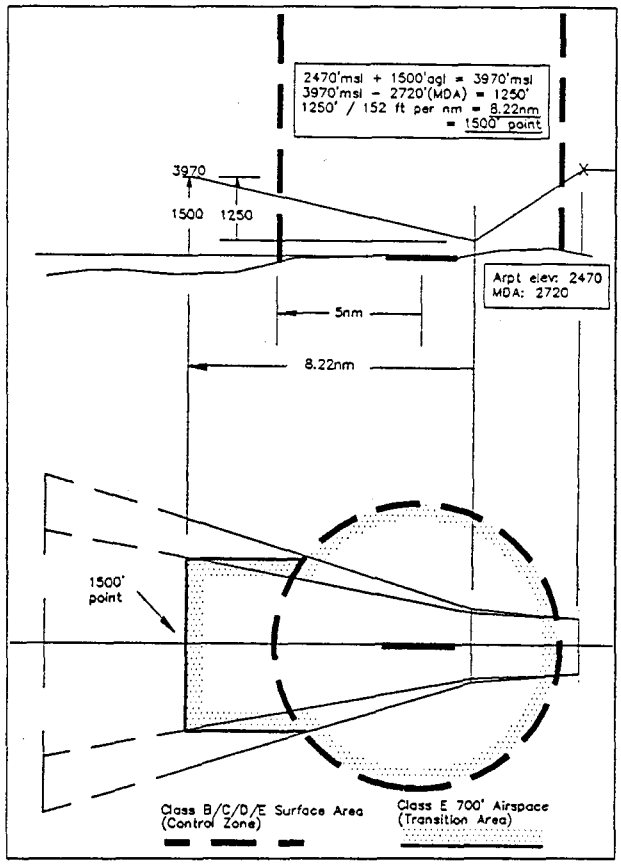


Figure 5-40

(2) 1500' point: Refer to TERPS Table 2. The distance to the point of penetration turn completion and the "distance turn commences" from Table 2 are assumed to be equal.

(a) If the penetration turn **completion altitude** is less than 1500' above the highest terrain underlying the penetration turn, the 1500' point is in the penetration turn area. Transition area boundaries must encompass the entire penetration turn area. Provide the appropriate ATC office a drawing clearly depicting the airspace required. See paragraph 507k(12).

(b) If the penetration turn **completion altitude** is greater than or equal to 1500' above the highest terrain underlying the penetration turn, AND less than 1500' above the highest terrain in the straight segment prior to the 10-mile point, the 1500' point is at the turn

completion point.

(c) If the penetration turn **completion altitude** is greater than 1500' above the highest terrain underlying the penetration turn in the straight segment prior to the 10-mile point, the 1500' point is assumed to be inbound from the turn completion point at a distance determined by application of a 500'/nm descent gradient.

(d) If the **FAF altitude** is greater than 1500' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500'/nm descent gradient from the FAF.

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

(1) 1000' point:

(a) If the penetration turn **completion altitude** is greater than 1000' above the highest terrain in the segment prior to the IF, the 1000' point is assumed to be inbound from the turn completion point at a distance determined by application of a 500'/nm descent gradient.

(b) If the penetration turn **completion altitude** equals 1000' above the highest terrain in the segment prior to the IF, the 1000' point is at the IF.

(c) If the **IF altitude** is greater than 1000' above the highest terrain in the intermediate segment, the 1000' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent gradient.

(d) If the **FAF altitude** is greater than 1000' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a).

(2) 1500' point:

(a) If the penetration turn **completion altitude** is less than 1500' above the highest terrain between the turn completion point and the IF, the 1500' point is in the penetration turn area.

(b) If the penetration turn **completion altitude** equals 1500' above the highest terrain between the turn completion point and the IF, the 1500' point is at the turn completion point.

(c) If the penetration turn **completion altitude** is greater than 1500' above the highest terrain between the turn completion point and the IF, the 1500' point is assumed to be inbound from the turn completion point at a distance determined by application of a 500'/nm descent gradient.

(d) If the **IF altitude** is greater than 1500' above the highest terrain in the intermediate segment, the 1500' point is assumed to be inbound from the IF at a distance determined by application of a 500'/nm descent gradient.

(e) If the **FAF altitude** is greater than 1500' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500'/nm descent gradient from the FAF.

i. *Radar vector to FAF (Radar Required).*

(1) If the **FAF altitude** is greater than 1000' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a).

(2) If the **FAF altitude** is less than 1000' above the highest terrain in the final segment,

the 1000' point is located PRIOR to the FAF. See paragraph 507k(4).

(3) If the **FAF altitude** is greater than 1500' above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500'/nm descent gradient from the FAF.

(4) If the **FAF altitude** is less than 1500' above the highest terrain in the final segment, the 1500' 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 1000' above the highest terrain in the intermediate segment, apply the methodology in paragraph 507c(2)(b).

(2) If the **IF altitude** is less than 1000' above the highest terrain in the intermediate segment, the 1000' point is located PRIOR to the IF. See paragraph 507k(4).

(3) If the **IF altitude** is less than 1500' above the highest terrain in the intermediate segment, the 1500' point is located PRIOR to the IF. See paragraph 507k(7).

(4) If the **1500' point is at/inside the IF,** apply the methodology in paragraph 507e(2)(b).

k. *Information to be Forwarded:* The following information, developed by the FIAO, shall be forwarded to the appropriate regional AT office through the FPB (see paragraphs 506 and 909 - REMARKS):

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

(2) FAF or IF coordinates (as appropriate).

(3) Distance from ARP (for circling-only), runway threshold (for straight-in), FAF, or IF, as appropriate, to the 1000' point. If applicable, state: **"1000' point located outside FAF** (or IF) **- see current MVA Chart,"** and leave (5) blank.

(4) Width of segment primary area at the 1000' point; highest terrain elevation in segment in which the 1000' point is located.

(5) True course (to the hundredth of a degree) of the segment in which the 1000' point is located.

(6) Distance from ARP (for circling-only), runway threshold (for straight-in), FAF, or IF, as appropriate, to the 1500' point. If applicable, state: **"1500' point located in the PT maneuvering area"**; or, **"1500' point located in holding pattern area"**; or, **"1500' point located outside IF - see current MVA Chart"**; or, **"1500' point located outside FAF - see current MVA Chart"**; and leave (7) blank. (The regional AT office will then establish the transition area in accordance with Order 7400.2)

(7) Width of the segment primary area at the 1500' point; highest terrain elevation in segment in which the 1500' point is located.

(8) True course (to the hundredth of a degree) of the segment in which the 1500' point is located.

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

(10) For hi-altitude penetrations, items 1 through 9 above, except item 2, apply. If applicable, state: **"1500' point located in the penetration turn area,"** and leave (8) blank.

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. *Conversion:* The appropriate Air Traffic office will convert the submitted nautical mile computations to statute miles to determine the actual dimensions required in accordance with Order 7400.2. However, the FIAO shall review airspace dockets to determine that the proposed airspace encompasses the appropriate portions of the SIAP consistent with the data forwarded in accordance with paragraph 507k.

SECTION 3. AIRPORT AIRSPACE ANALYSIS

508. GENERAL.

a. *The Federal Aviation Act of 1958,* sections 307, 308(b), 309 and 312 contains the basic authority for the FAA to conduct airport airspace analysis studies which culminate in an agency determination. In order for the FAA to fulfill its obligations pursuant to the Act, FAR, Part 157, Notice of Construction, Alteration, Activation and Deactivation 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 may be advised as to the effects a 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 are: those eligible for Airport Improvement Programs (AIP) which are submitted to the Agency pursuant to Order 5100.38A, Airport Improvement Program (AIP) Handbook; the Military Construction Program (MCP), submitted to the agency for review pursuant to section 308(b) of the Act and Department of Defense Directive 5030.17; the designation of instrument landing runways normally associated with airports under AIP agreements; and, changes in airport operating status from VFR to IFR.

c. *The procedures* are applicable to all participating offices. Therefore, all FS personnel directly involved in airport airspace analysis shall be familiar with procedures contained in Order 7400.2, part 3.

509. FLIGHT STANDARDS INPUTS IN ESTABLISHMENT OF AIRPORTS AND HELIPORTS.

Since the term "airports" includes small isolated airports (including ultralight flight parks), heliports, and large airports, the problems associated with proposed establishment of airports are varied. Generally, however, it may be stated that the FS study of all proposed airports or heliports relates 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.

a. *Questions to be Considered in the FS Analysis.* It is not intended that the study be confined to these questions. It is recognized that some proposals will present unique problems which 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 confliction 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 windrose data? Is instrument runway aligned with IFR windrose data?

b. *Heliport Establishment.* All proposals for the establishment of heliports must be given an on-site operational evaluation by operations specialists or inspectors, preferably those who are qualified on helicopters. Proposed heliports to be located in congested areas, or any rooftop heliport, should be evaluated by helicopter qualified operations inspectors.

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 an FS position be developed and forwarded to the appropriate AT division/branch or 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 handbook, "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 which is used or intended to be used for the landing and taking off of aircraft. 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 handbook, "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, FS has 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.

From time to time, FS personnel in the region or district offices may receive requests for assistance in the development of airport zoning acts (state) or ordinances (local). Such inquiries at regional office level should be referred to airports personnel, and in the field to the appropriate airport engineer. 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, and the National Association of State Aviation Officials, and the National Institute of Municipal Law Offices. Airports personnel are well versed with the model legislation which has been developed, and have been instructed in the dissemination of the material contained therein.

SECTION 4. CONTROLLED FIRING AREAS

513. DESCRIPTION.

A controlled firing area is an area in which firing of ordnance, lasers, etc., is conducted under controlled conditions so as to eliminate the hazard to aircraft. Activity within such an area will be disseminated as a NOTAM.

514. ESTABLISHMENT OF CONTROLLED FIRING AREAS.

The FAA has the authority for final decision in regard to the establishment of controlled firing areas. Presently, however, this is not accomplished through publication of rules, regulations, or orders. Requests for these areas are coordinated and processed by representatives of ATC without rulemaking procedures.

515. PRECAUTIONS.

In controlled firing areas, the responsibility for safety will be entirely with the using organization, which will conduct its firing so as to eliminate the hazard to aircraft. Generally, the control necessary to assure safety to aircraft is dependent upon the type of activity, terrain, and other factors involved. The precautions required to eliminate the hazard must be determined individually for each activity requested. Precautionary measures considered to be the minimum required are set forth in Order 7400.2, paragraph 840.

516. FS REVIEW AND COORDINATION.

a. *Considerations.* The following facts must be considered in the review and coordination of proposed controlled firing area letters of agreement:

(1) There are no flight restrictions within controlled firing areas.

(2) These areas are not depicted on aeronautical charts.

(3) All pilots are not aware of the locations of these areas.

b. *Review.* In view of the above, the restrictions and provisions should be carefully reviewed to assure that all facts have been considered, and that an adequate level of safety will be maintained. The type and volume of IFR traffic are usually well known to ATC personnel. However, the type of local VFR operations is usually best known by FS personnel.

SECTION 5. RESTRICTED AREAS

517. GENERAL.

A restricted area is airspace designated under FAR 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.

a. *Obstacle Clearance.* Restricted areas as such are not considered obstacles to the establishment of instrument flight procedures. However, obstacle clearance shall be provided over terrain and/or man-made obstacles within the restricted area which underlies the flight procedure clearance area.

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 nonparticipating 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 Air Traffic Control Services."

521. FLIGHT STANDARDS ACTION.

Conduct studies to determine the effect of the proposed action on existing or proposed flight operations both IFR and VFR. Forward the results of these studies and an FS position to the appropriate AT division/branch.

522-599. RESERVED.

CHAPTER 6. MILITARY PROCEDURES

600. GENERAL.

FAA Handbook 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS), specifies that the U.S. Navy, Air Force, and Coast Guard are responsible for the establishment and approval of instrument procedures as well as the review and approval of radar MVA chart for airports under their respective jurisdiction. This responsibility also applies to the approval of deviations from standards.

a. *U.S. Army* procedural requirements shall be processed in accordance with Order 8260.15C, U.S. Army Terminal Instrument Procedures Service.

b. *U.S. Air Force* procedural requirements shall be processed in accordance with Order 8360.32A, U.S. Air Force Terminal Instrument Procedures Service.

601. REVIEW AND COORDINATION.

Where instrument approach procedures are forwarded for coordination, the FIFO shall accomplish the following:

a. *Review for compatibility* with planned or existing civil en route and/or terminal instrument flight procedures from an operational standpoint.

b. *Review to determine*, from available data, that the facilities utilized will support the procedures. If the procedure is predicated on a new facility or sufficient facility performance data is not available, a facility flight check should be requested. FIFO concurrence with the procedure should not be delayed pending any required flight check.

c. *Note any discrepancies* and bring them to the attention of the authority submitting the procedures for coordination - even though review of the procedure to determine compliance with TERPS criteria is not a responsibility of the FIFO.

602. FAA ACCEPTANCE.

FAA accepts military procedures for civil use unless the note **"Not for Civil Use"** is annotated on the procedure by the military.

603. ASSISTANCE.

Where a military command requests technical assistance concerning criteria, or in determining an equivalent level of safety related to a waiver, every effort should be made to honor the request commensurate with present workload.

604-699. RESERVED.

CHAPTER 7. PLANNING

SECTION 1. GENERAL

700. GENERAL.

a. *The development of effective and efficient flight procedures* is closely related to the facility establishment and airport programs and requires active participation by FPB personnel in the planning, programming, and budgeting of navigation facilities and airport development plans. Instrument procedures often determine the alignment and location of navigation facilities as well as the locations, marking, and lighting of airport landing and maneuvering areas.

b. *The allocation of funds* frequently depends on the determination that efficient procedures can be developed and can be justified on the basis of operational benefits (landing minimums) or safety improvements. Therefore, the operational planning associated with facility installations and airport development, particularly in large terminal areas, is one of the most important responsibilities of the Flight Standards, Flight Procedures and Airspace Program.

SECTION 2. PLANNING STANDARDS

701. PLANNING STANDARDS.

a. *Facility Establishment.* Airway Planning Standards contain the criteria for the establishment of air navigation facilities. These criteria are based, in part, on air traffic demand since the volume of traffic provides a measurable indication of the need for air navigation facilities and other aeronautical services.

b. *Standards Limitations.* They do not, however, cover all situations which may arise and are not to be used as a sole determination in denying a service where there is a demonstrated operational or ATC requirement. An aeronautical requirement may exist for facilities that cannot be adequately measured by a consideration of air traffic demand alone. Similarly, air traffic demand does not in itself always constitute a requirement for an air navigation facility. These situations must be individually evaluated to determine whether the benefits to be gained are commensurate with the cost of the facility or service. Benefit/cost ratios have been established by System Plans & Programs Division (ATR-100). Phase I deals with value vs. cost; Phase II includes other factors such as weather, etc. In most instances, the establishment criteria, in addition to the traffic volume, require an operational improvement in the form of lower altitudes or reduced visibilities with respect to IFR operations or a minimum safety rating with respect to visual aids which are required to resolve safety problems.

c. *Responsibility.* The primary responsibility for determining that a location meets the air traffic volume requirements rests with Air Traffic Plans and Requirements Service (ATR-1). The responsibility for identifying improvements to operational minimums or for establishing safety requirements rests with Flight Standards Service (AFS-1).

702. DETERMINATION OF OPERATIONAL BENEFITS/IMPROVEMENTS.

a. *General.* An operational benefit/improvement is considered to exist: when IFR operations can be authorized where none existed previously; where a reduction of IFR minimums on existing procedures can be achieved; where an additional navaid will provide lower minimums than those authorized on existing adjacent facilities; or, where a reduction in minimums cannot be achieved, an improvement in operational safety can be demonstrated.

b. *Criteria.* A reduction of at least 100' in descent altitude or a reduction of 1/4 mile in visibility requirements should be indicated to adequately support an operational benefit. Where a reduction of less than 100' in descent altitude is anticipated, additional justification should be provided to show that other improvements in the overall operation can be achieved with the additional facilities. Such improvements might include simplification of operating procedures; reduction of flight time; improved course guidance; improved runway alignment; or elimination of criteria waiver, etc. FS personnel are expected to provide this type of supporting information during the planning phases for new navaids.

c. *Determination.* A final determination that the anticipated benefits can actually be achieved is necessarily dependent upon the demonstrated performance of the facility at the time of commissioning; however a reasonable evaluation can be made for planning purposes based on the best information available at the time.

SECTION 3. SAFETY RATINGS

703. DEVELOPMENT OF SAFETY RATINGS.

a. *The Airway Planning Standards* consider the programming of VASI (Visual Approach Slope Indicator) and REIL (Runway End Identifier Lights) visual aids for VFR use provided the runway meets a minimum number of landings and a minimum safety rating. Although not specifically considered in the planning standards for VFR use, an economy approach light system may be considered to resolve a safety problem where the cost of the system is commensurate with the improvement desired, and the REIL or VASI will not provide the necessary service. The criteria for developing the safety rating are contained in Order 8260.18, Establishing Requirements for Visual Approach Aids.

b. *In those cases where visual aids are considered essential to operational safety* and the runway does not meet the traffic volume requirement, additional justification should be provided, highlighting the visual deficiencies as they exist and the improvements that will be achieved. FPB personnel are responsible for developing the principal justification for programming visual aids. Records should be maintained for each runway rated showing how the rating was developed and the conditions that required the installation of the visual aid.

SECTION 4. AIRWAY PLANNING

704. GENERAL.

a. *The primary responsibility* for the establishment, amendment, or deletion of airways/jet routes rests with Air Traffic Service based on air traffic demand and user requirement. The FPB is required to participate in airway planning with respect to navigational signal coverage over designated routes, development of MEAs and related data, and the siting of electronic facilities. Frequently terrain factors or site availability dictate the siting of an electronic facility; however, there are instances where the en route facility can be located so as to provide a terminal instrument approach capability in addition to the en route service.

b. *The FPB representative* should be cognizant of operational requirements and environmental conditions in the en route and terminal areas that need to be considered in order to develop sound recommendations for optimum facility siting. Situations will arise where the FPB considers that a change in airway planning is necessary or desirable. Such changes could result from facility restrictions, lack of facility coverage, need for lower MEAs, improvement in airway alignment, and elimination of criteria waivers, etc. Every effort should be made to develop recommendations in coordination with appropriate airway facilities and ATC so that full consideration of local problems will be reflected in regional planning.

SECTION 5. TERMINAL PLANNING

705. GENERAL.

a. *Responsibility.* The primary responsibility for identifying airport locations that qualify for new terminal navigational facilities (except radar) rests with Flight Standards. The regional FPB is required to participate in terminal planning with respect to the type of facilities required for the intended operations, development of instrument procedures, operational minimums and the establishment of priorities for procurement and installation of planned facilities. The FS representative should be cognizant of operational requirements and environmental conditions in the terminal areas that need to be considered in order to develop sound recommendations for facility selection and optimum facility siting.

b. *Planning Changes.* Situations will arise where the FPB considers that a change in terminal planning is necessary or desirable. Such changes could result, for example, from facility restrictions, changes in airport operations, the need for improvement in instrument procedures, safety considerations, and elimination of criteria waivers.

706. REQUIREMENTS FOR OUTER COMPASS LOCATORS FOR NEW ILS INSTALLATIONS.

In achieving the goals of reducing the total establishment costs for instrument landing systems, emphasis has been placed on providing only those components and services which are essential to the basic operational need. In this respect, the compass locator has not been considered a required item for many new ILS locations and will be included as a component only where it is properly justified. This criteria specifies conditions that must be considered to properly justify the installation of compass locators in conjunction with new ILS facilities. The term "transition" is used for convenience throughout this section in lieu of feeder route and initial approach segment associated with instrument approach procedure construction.

a. *General Criteria.*

(1) Compass locators are not required at locations where satisfactory transitions can be established to the LOC course from supporting navaids unless holding at the compass locator is required.

(2) Compass locators are not required in an ASR environment where radar service can be provided on a continuous basis. Where radar service is utilized for transitioning to the ILS, vectors to a point within the normal ILS clearance area are required to eliminate the procedure turn (NoPT). This does not impose a radar fixing requirement as a condition for executing the approach procedure.

(3) An OM by itself shall not be utilized to identify the point from which holding or procedure turn is to be executed. See paragraph 214.

(4) A procedure turn may be authorized from an intersection that overlies the OM or is established outside of the OM location. For planning purposes, the accuracy of the intersection should not exceed plus or minus one mile.

(5) Transitions shall not be established outside of the normal clearance and buffer areas unless they have been flight checked and the minimum localizer clearance requirements are met.

(6) Transitions to the LOC course which permit a straight-in approach (NoPT) will be established in accordance with criteria for localizer intercept angles and length of intermediate segment described in TERPS, paragraph 922, and depicted in figure 7-5. Although criteria permit localizer intercept of 15° at one mile from the OM, it is recommended that all intercepts be established no less than three miles nor more than 10 miles from the OM. In no case, will a straight-in approach be authorized from a transition that proceeds from a facility/fix directly to an OM or LOM unless the facility/fix is established on the localizer course.

b. *Satisfactory Transitions.* The standard for localizer usable distance/coverage is 18 miles within ±10° of the localizer course, and 10 miles for that area between 10° and 35° either side of the course. In determining the need for a compass locator, facility performance data may not be available for the development of transitions. Figures 7-1, 7-2, and 7-3 depict normal clearance areas with a two-mile buffer area established around the perimeter. These figures will be used for determining the need for a compass locator during initial facility planning and for the development of original procedures when flight check data is not available. The following general guidelines will apply:

(1) When a VOR or NDB fix exists within the shaded area shown in figure 7-1, transitions may be established to a fix on the localizer course from which a procedure turn can be executed.

(2) When a VOR or NDB is located within the shaded area shown in figure 7-2 and a fix can be established at the OM location in accordance with paragraph a(4), a transition may be established to the fix from which a procedure turn can be executed.

(3) When a VOR, NDB, or satisfactory fix exists or can be established within the shaded area shown in figure 7-3, a transition may be established to the localizer course and a procedure turn is not required.

(4) Criteria for fix accuracy is contained in TERPs, paragraph 287.

c. *Locations that Qualify for a Compass Locator.* In determining the need for a compass locator, the local traffic flow, location of supporting facilities, and local terrain features must be considered. A compass locator may be planned for new ILS installations where one or more of the following conditions exist:

(1) In a nonradar environment where a transition cannot be established in accordance with paragraph b.

(2) In a nonradar environment where satisfactory transitions can be established in accordance with paragraph b, but the flow of traffic is such that operational requirements cannot be satisfied and the lack of a compass locator would result in an unacceptable delay to arriving aircraft.

(3) In a radar environment where radar service cannot be provided on a continuous basis or where radar service will result in a prohibitive controller workload or would require additional positions and personnel to provide the radar service.

(4) In an area of precipitous or unusual terrain where special procedural design is required.

d. Approach Procedure Design. To the extent possible, ILS approach procedures shall be designed to eliminate the compass locator as a required facility for the execution of the approach. Transitions shall be established in accordance with the following:

(1) Original Procedures. In designing original procedures prior to ILS commissioning, transitions shall be limited to those which can be established in accordance with the general guidelines contained in paragraph b above unless a compass locator is programmed.

(2) Revised Procedures. Following facility commissioning, additional transitions originating outside of the normal clearance and buffer areas may be established if they are found to be satisfactory through flight inspection evaluation.

(3) Use of DME. The use of DME to provide arc transitions or to provide additional means of identifying fixes is encouraged to provide flexibility for users that are DME equipped; however, DME shall not be used as the sole means for identifying fixes or establishing transitions except on an interim basis. If DME is the only means of providing transitions or fixes, a compass locator shall be provided. If the compass locator will not be available at the time of facility commissioning, the original ILS procedure may be identified as ILS/DME until such time that a compass locator can be programmed and installed.

e. *Action.* The FPB should make a map study at all planned or programmed ILS locations to determine if a compass locator is required.

Priority should be given to approved ILS projects. Following this determination, all requirements for locators shall be included in the F&E budget or submitted as a reprogramming action, as appropriate. Justification for each locator shall be provided by the FPB by including an appropriate statement for each location as follows:

(1) Nonradar location - conforms to FAA Order 8260.19B, paragraph 706c(1) and (2).

(2) Radar location - conforms to FAA Order 8260.19B, paragraph 706c(3).

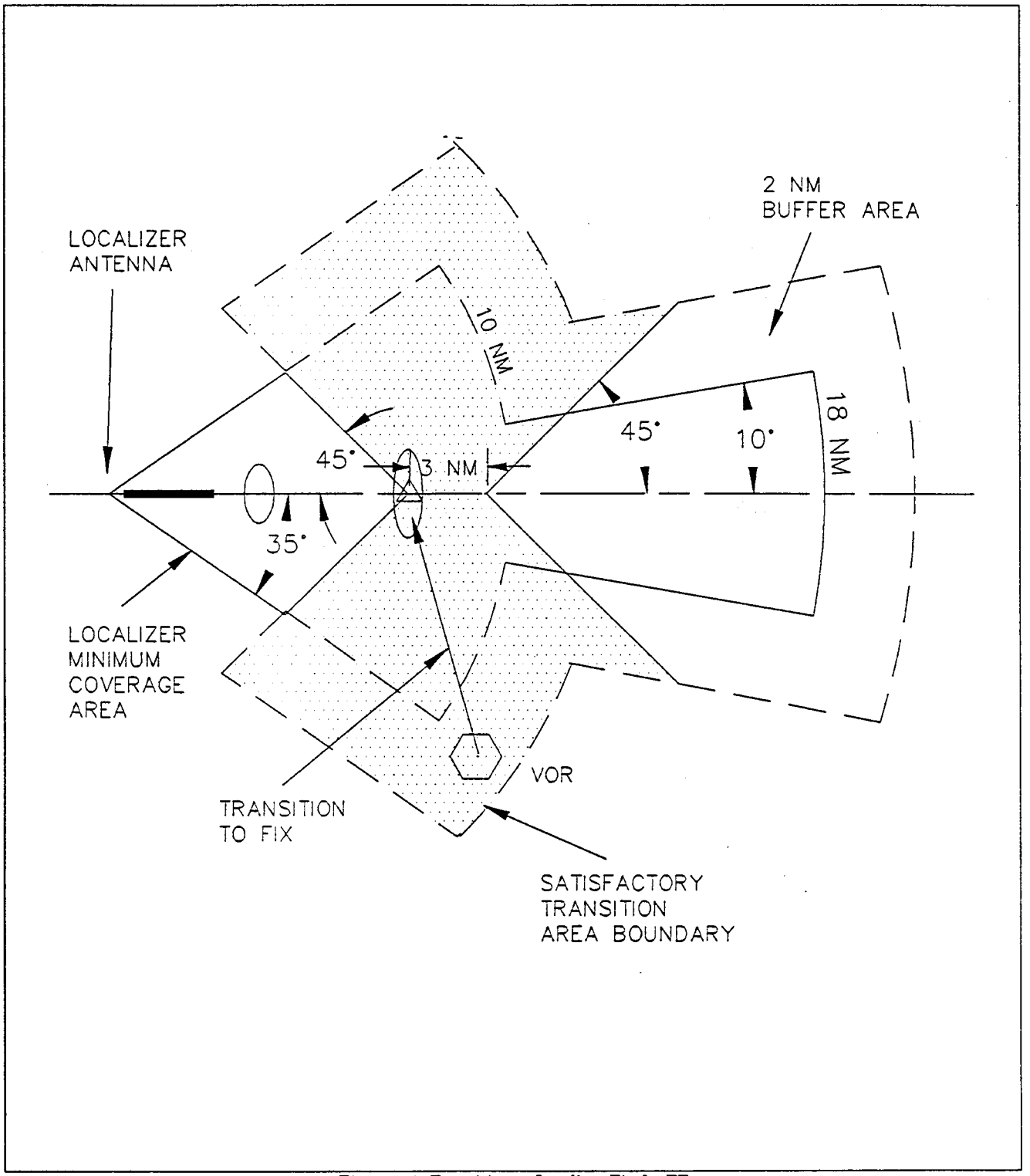


Figure 7-1 Transition to Localizer Fix for PT

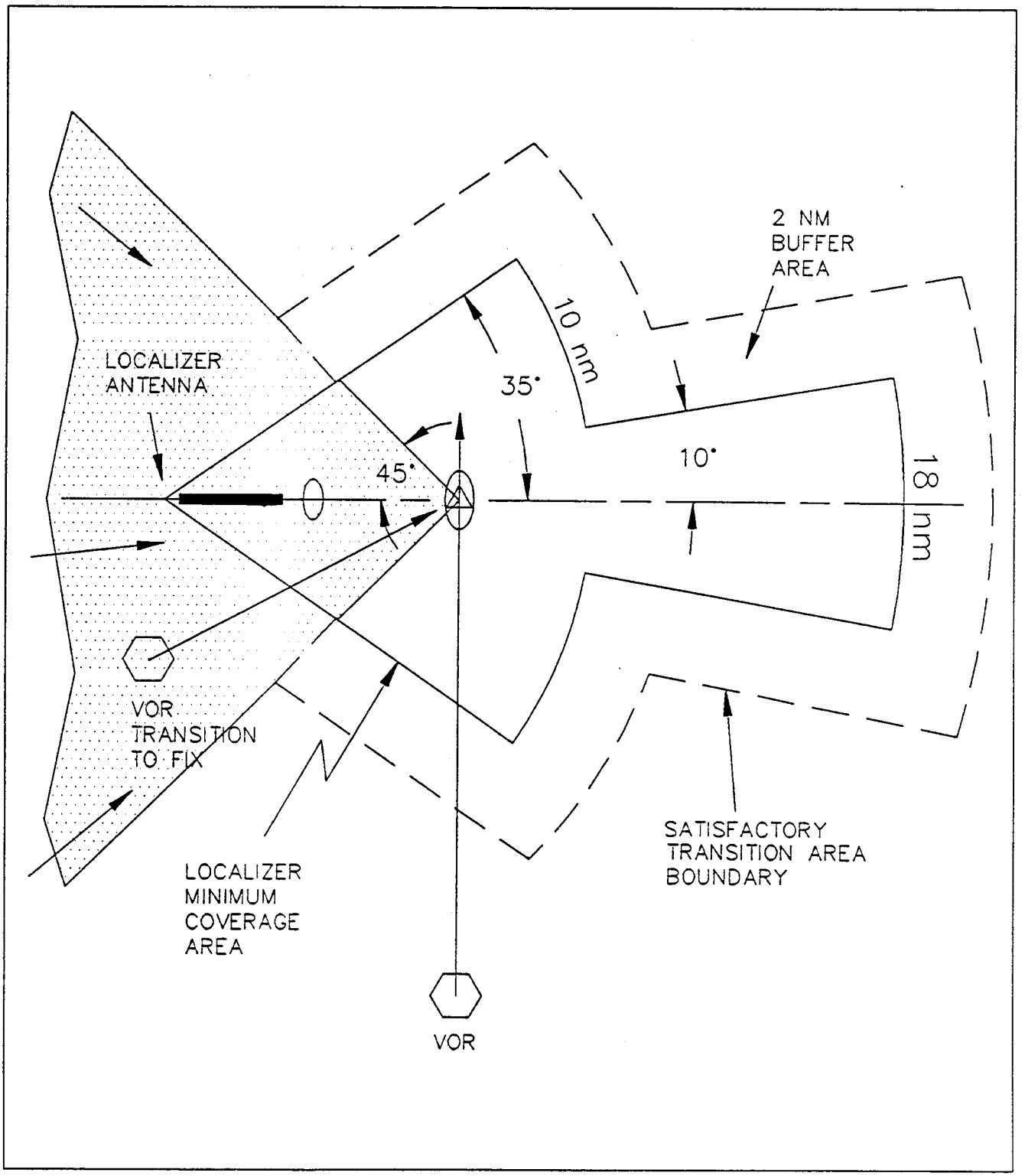


Figure 7-2 Transition to OM for PT

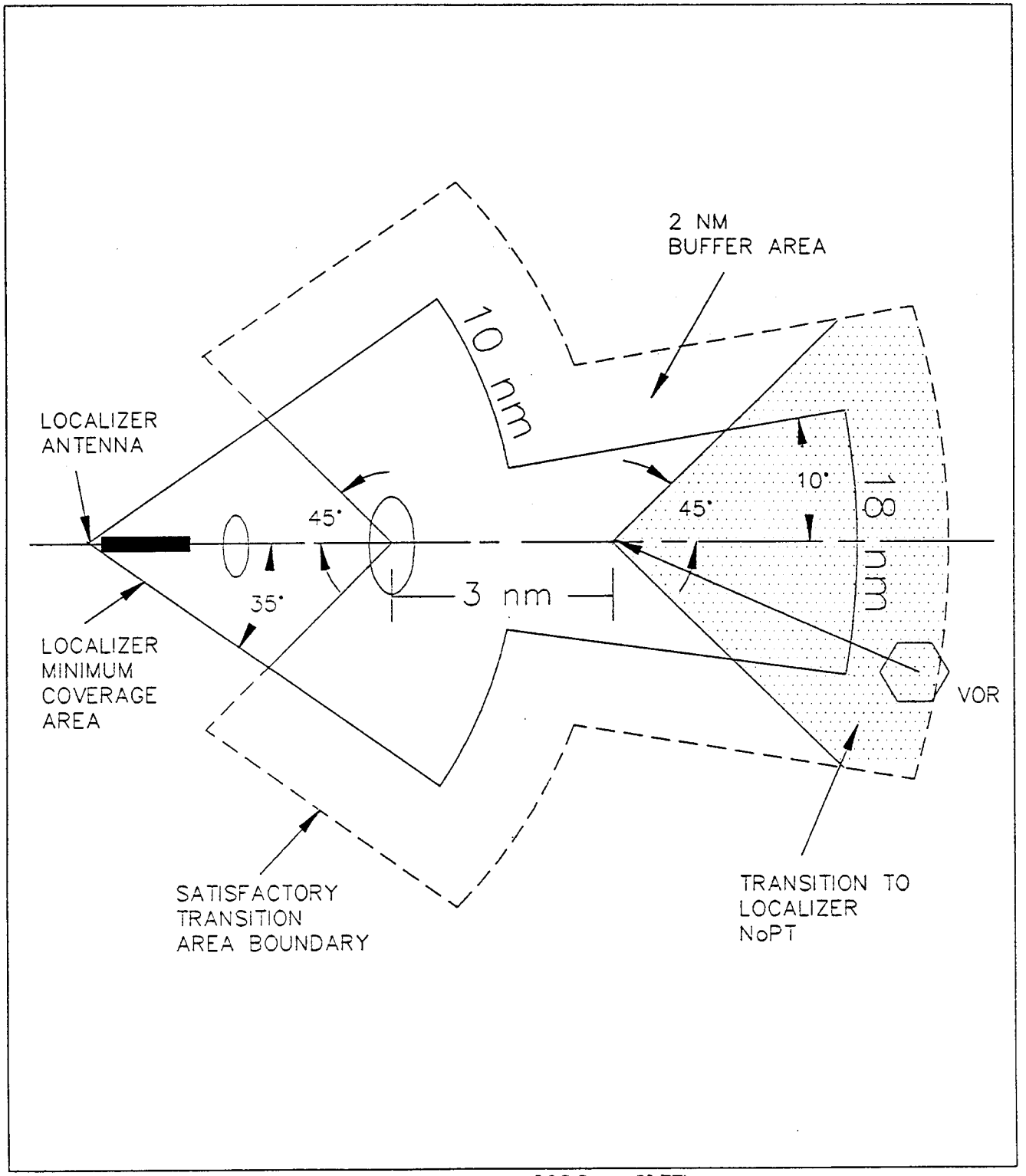


Figure 7-3 Transition to LOC Course (NoPT)

SECTION 6. AIRPORT PLANNING

707. GENERAL.

a. *Familiarity.* Since runway location, configuration, and alignment with respect to associated navigation facilities determines the IFR capability of an airport, FPB personnel should be thoroughly familiar with all airports existing or planned in their areas of responsibility. Regional and FIFO specialists should have access to all available material relative to airport planning and development and be familiar with the AIP projects for which they are responsible.

b. *Airport Master Plans* or amendments to such plans, coordinated by the Airports Division, should be routed through the appropriate FPB office for review and comment. Regional FPB personnel should develop necessary coordination procedures with Airports Division personnel.

SECTION 7. PRIVATE AID

708. GENERAL.

a. *Informal Discussions.* Regional FPB personnel will frequently be called upon by municipalities, private interests, or other government agencies for recommendations relative to the location and type of instrument approach facilities most practicable. This type of cooperation is encouraged. However, it should be made clear that informal discussions with sponsors of private facilities (non-federal) are advisory in nature and do not necessarily represent the FAA's official position nor commit it to a particular course of action.

b. *Proposal Process.* Before private facilities can be installed and operated for private or public IFR procedural use, the proposal must be processed for airspace analysis, and frequency study and allocation. Also, agreements for the inspection and acceptance must be drawn in accordance with FAR Part 171 or other applicable Administration directives.

c. *Sponsor Advice.* Occasions will arise where a sponsor will seek advice concerning the use of a new type of navigation facility or a type that is not approved for use by the FAA. In these situations, field personnel shall make no commitment with respect to the acceptability, installation, or procedural use of such facilities. Refer inquiries of this nature to the Washington program office for information and advice concerning appropriate handling of such matters. Sponsors of private facilities should be advised to direct formal requests or inquiries, relating to the approval and use of private facilities, to the appropriate region for necessary review and processing.

SECTION 8. BUDGET SUPPORT

709. BUDGET SUPPORT.

a. *FPB personnel* shall participate in the development of annual F&E budget submissions and reprogramming actions, to the extent necessary to ensure that full consideration is given to operational requirements and necessary priorities with respect to new facilities, facility relocation, and facility improvements. Additionally, FPB shall determine that justifications for such budget actions, which are based on improvements to operational minimums and/or safety considerations, are fully and accurately stated in the regional requests.

b. *The annual F&E budget* and reprogramming actions are reviewed in Washington Headquarters by the affected services. The regional FS input is an important factor in determining the merit of a regional request. Accordingly, procedures should be developed by the regions to have all reprogramming requests (Forms 2500-70) Cost Estimates (RIS: BU-2500-5) routed through the appropriate FPB for technical review and division concurrence.

710-799. RESERVED.

CHAPTER 8. INSTRUMENT APPROACH PROCEDURES DATA TRANSMITTAL SYSTEM

SECTION 1. GENERAL

800. GENERAL.

a. *Forms.* FAA Forms in the 8260-series are utilized for the publication of manually developed instrument flight procedures. Instrument Approach Procedures Automation (IAPA) utilizes electronically generated 8260-series equivalent forms for the same purpose. National Ocean Service (NOS) and other charting agencies publish instrument flight charts based on data contained on these forms.

b. *General design requirements.* Instrument approach procedures must provide a smooth transition from the en route structure, and provide the pilot with sufficient information to effect a safe instrument approach to a landing or missed approach. In the interest of safety, these charts must be easy to interpret. The speed of modern aircraft demands that greater simplicity, minimum cockpit workload, and ease of interpretation be incorporated in the design of the instrument procedure. Criteria utilized in the design of standard instrument procedures is contained in FAA Order 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS).

Note: Attempts to apply all possible options permitted by criteria to obtain lowest possible minimums, should not be made if the resultant procedure is overly complex and only a minor operational benefit is gained.

c. *Give full consideration to the environmental impact* of procedures on local communities. Avoid schools, churches, hospitals, stadiums, rest homes, populous residential areas, and other noise sensitive areas whenever possible due to the potential for adverse environmental impact. Where the location of facilities and the flow of air traffic will permit, utilize the highest possible altitudes consistent with optimum descent rates in all segments of approach procedures to provide the least noise interference. See also paragraph 207.

SECTION 2. FORM USE AND PREPARATION

801. USE OF FORMS.

a. *Procedures Published in FAR, Part 97.* SIAPs authorized for public use are published as rules in the Federal Register by reference to FAA standard forms. An index of all SIAP originations, amendments, and cancellations is published in the Federal Register to provide public notice of the rulemaking actions. All requests for new instrument procedure service are approved by the Regional FPB after coordination within the region and prior to development by the FIAO.

b. *Camera-Ready Copies.* Manually developed instrument approach procedures are prepared on the forms listed below as typed, camera-ready copies suitable for reproduction. IAPA-developed instrument approach procedures are prepared on computer generated 8260-series equivalent forms which are camera-ready and suitable for reproduction. After the procedures are developed and approved by the FIAO, they are reviewed by the AVN, and issued as rules by the Technical Programs Division (AFS-420) for the Director, Flight Standards Service (AFS-1).

(1) ILS Standard Instrument Approach Procedure, FAA Form 8260-3 (ILS, MLS and ILS/DME).

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

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

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

(5) IAPA developed forms.

c. *Special Use Procedures.* Special instrument approach procedures are developed for individual operators and are issued to the user through Operations Specifications or Letters of Authorization. They may be predicated on private or public-use navigation facilities and usually contain conditional authorizations that apply to the individual operator(s). The use of the special instrument approach procedure is not encouraged and shall be avoided when an equivalent service can be provided with the use of a public use procedure.

(1) _____ Special Instrument Approach Procedure, FAA Form 8260-7, is **developed** by the FIAO upon request of the FPB and reviewed by AVN.

(2) The **approving authority** for a special instrument approach procedure is the Manager, Flight Standards Division, of the region having jurisdiction over the airport, or his designated representative.

(3) **Coordination, reproduction, and distribution** are accomplished by the regional FPB.

802. FORM PREPARATION.

a. *Preparation.* FAA Form 8260-3 has the title information and appropriate FAR 97 subpart pre-printed. When MLS procedures are documented, delete the term "ILS" and type the desired equipment acronym in its space. FAA Form 8260-4 has the title information and appropriate FAR 97 subpart pre-printed. On FAA Form 8260-5 enter the type of procedure, as listed below, in the space preceding the phrase "Standard Instrument Approach Procedure". For DF procedures on FAA Form 8260-10, enter **"Emergency DF"** and leave FAR subpart **blank**.

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

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

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

(3) 97.27 NDB and NDB/DME.

(4) 97.29 ILS, ILS/DME, MLS, MLS/DME and MLS/RNAV.

(5) 97.31 RADAR.

(6) 97.33 VOR/DME RNAV, LORAN RNAV, GPS RNAV.

(7) 97.35 COPTER (including COPTER LORAN, COPTER GPS, etc.)

c. *Combined Charting.* Some charting agencies combine certain instrument approach procedures on one chart where procedural data are compatible. Where an NDB or compass locator is established at an ILS outer marker site, the individual ILS and NDB procedures should be developed in a manner that will permit combined charting, provided TERPS criteria can be complied with for both procedures. Different types of civil instrument approach procedures shall not be combined on SIAP forms or on NOS approach charts, except for "VOR or TACAN" and "VOR/DME or TACAN" SIAPs predicated on VORTAC facilities. Where Army offices request combined procedures based on different types of facilities, separate but compatible procedures shall be documented on the appropriate forms. Combining of instrument approach procedures on military charts will then be accomplished as a cartographic function of the Defense Mapping Agency.

d. *IAPA Forms.* Guidance for preparation of IAPA generated 8260-series equivalent forms is contained in appropriate sections of the IAPA Users Manual.

803. AIRPORT DATA REQUIREMENTS FOR INITIAL INSTRUMENT APPROACH PROCEDURE SERVICE.

a. *Pre-Request Action.* The regional FPB shall ensure that an airspace analysis of the airport has been accomplished as required by Order 7400.2, Procedures for Handling Airspace Matters, and TERPS paragraph 122a before requesting the FIAO to establish the initial instrument approach procedure to an airport. Instrument approach service shall not be authorized for an airport that is restricted to VFR operations until it is reclassified as an IFR airport by the region. The intent of this paragraph is to establish the minimum data required to construct a procedure after IFR operations are approved. Accordingly, regions should accept less data during the initial approval stage when approval is in question and the submitted layout plan or drawing is adequate for determining IFR status.

b. *Data Requirements.* In order to construct initial instrument approach procedures and publish approach charts in accordance with Inter-Agency Air Cartographic Committee (IACC) specifications, data, in addition to that supplied on the FAA 8260-series forms, are required unless a current OC chart exists for the airport. If a current OC chart is not available, the regional FPB is responsible to see that engineering plans or other accurate airport drawings containing tie points to section corners, bench marks, or other specific geographic or topographic landmarks are provided.

c. *Processing.* FPBs shall forward such plans or drawings to AVN-240 for evaluation and coordination of any changes required, prior to inclusion into the AMIS/IAPA data base and use in procedure construction.

d. *Data Elements.* These plans shall also include the following data elements to the desired accuracy as indicated:

(1) Type runway surface, length, width, station points, true azimuth, and runway end/threshold coordinates to the nearest hundredth of a second.

(2) The elevation of the highest point of an airport's usable runways (airport elevation), and, if straight-in minimums are desired, the highest centerline elevation in the first 3000 feet of the runway beginning at the threshold (touchdown zone elevation) - to the nearest foot above mean sea level; and, the elevation of the runway ends/thresholds - to the nearest tenth of a foot.

(3) Beacon and control tower location by latitude and longitude to the nearest hundredth of a second, and height/elevation to the nearest foot if installed.

(4) NAVAID location by latitude/ longitude to the nearest hundredth of a second; and by relation to the runway in Cartesian (X,Y) coordinates if located on the airport.

(5) Location of helicopter landing area if IFR helicopter operations are involved.

(6) Airport approach and runway lighting using approved terminology to describe the lighting systems; e.g., MALS for Medium Intensity Approach Light System, RCLS for Runway Centerline Light System, etc.

(7) Instrument landing system (ILS) engineering plans indicating the location of the various system components.

e. *The sponsor* of a public use, military, or special instrument approach procedure is expected to provide the necessary airport data to the regional FPB when required. SIAP development shall be delayed until this information has been provided.

804. COURSE AND DISTANCE INFORMATION.

a. *Application.* Magnetic variation shall be applied to terminal routes as follows:

(1) **Facility to Facility:** Variation of the first facility applies.

(2) **Dog leg:** Variation of each facility forming the route applies to its segment.

(3) **Fix to Facility or Facility to Fix:** Variation of the facility applies.

(4) **Dead Reckoning:** Variation of the next facility providing course guidance applies.

b. *Calculations* should be made using the most accurate data available (bearings and distances to two decimal places). Magnetic variation of record, in whole degrees, is then applied. Final results are rounded by NOS to the nearest whole digit.

c. *Rounding.* Where rounding to the "nearest" value is appropriate, and except where otherwise required, round numerical values .01 through .49 DOWN, and .50 through .99 UP. This applies to distances, elevations, altitudes, degrees, etc. For example, 1100.49' becomes 1100', while 1100.50' becomes 1101'. Similarly, 131.49° becomes 131°, while 131.50° becomes 132°.

805. COMMUNICATIONS DATA.

a. *Communications requirements and frequencies* for inclusion on instrument approach procedures charts will be provided by NFDC in accordance with Order 7910.2, "Frequencies Listed on Instrument Approach Procedure Charts."

b. *Where specific local communication requirements exist* for published instrument approach procedures, and where these data are not currently charted, enter one of the following notes under "Additional Flight Data":

(1) **Where approach control service is provided by ARTCC** through a remote site: **"Chart Indianapolis Center frequency."**

(2) **Where approach control service is provided through the controlling FSS** by LRCO or RCO. The controlling FSS will be indicated: **"Chart Indianapolis Radio LRCO (RCO)."**

806. NOS OBSTACLE DATA.

The Airspace and Obstruction section of NOS maintains an obstruction data file. This section compiles and maintains a record of verified obstacles which are 200 feet or more above ground level. It also has information on a number of unverified obstacles which are below this height and is documenting information on certain terrain elevations. NOS will research its files on a time-available basis when a request for obstacle data is received from a FIAO. Direct communications between the FIAO and NOS is authorized for this purpose. Requests for obstacle data within a designated geographical area should identify the area desired by geographical coordinates or by a specified radius from an airport reference point (ARP) or navigation facility. See paragraph 271c.

807. TERMINAL ROUTES GENERAL.

Terminal routes consist of feeder, initial, and intermediate approach segments. They provide aircraft guidance from the en route airway structure to the final approach fix. A minimum number of routes required to satisfactorily transition the aircraft to the terminal environment shall be specified.

a. *Non-Radar Routes.* Since radar vectoring is an approved method of providing procedure entry, the number of non-radar routes shall be limited where radar vectoring is provided on a 24-hour basis. Where practical, at least one non-radar route shall be provided to ensure transition from the en route structure in the event of radar/communications failure. Radar vectoring may be provided through any approach segment up to and including the final approach fix (intermediate fix with ARSR).

b. *Transition.* Instrument approach procedures shall NOT be developed that require **"DME or RADAR"** as the sole means for procedure entry if any other type of transition is available, unless specifically requested by ATC. It is not necessary to designate terminal routes which coincide with segments of the en route structure; however, these routes shall be designated when a lower altitude is authorized or when clarity is essential. With the exception of arc feeder or arc initial approach segments, terminal routes originating on an airway require the establishment of a named fix to identify the starting point of the route. The fix shall be common to the en route structure and instrument approach procedure.

c. *Turn Limitation.* When a procedure turn or holding pattern entry is not authorized, and airways or routes which are not specified as terminal routes lead to the fix where the intermediate segment begins, the procedure must ensure that the angular limitation on turns over the intermediate fix is not exceeded. This is not mandatory when ATC agrees to provide full-time radar vectoring service for these routes.

d. *Charting.* All terminal routes listed in the Terminal Routes section of the 8260 series forms will be charted or identified in the plan view of the instrument approach chart. Where a procedure turn or holding pattern entry is not authorized, the procedure shall identify the point where the profile begins.

e. *Feeder Routes.* Where feeder routes are required to transition from the en route structure they will terminate at an initial approach fix or at the facility from which a procedure turn or holding pattern entry is authorized. En route obstacle clearance criteria apply to feeder routes.

f. *Multiple DME Sources.* When an ILS (or LOC or LDA) facility has collocated DME, it is necessary to reduce the potential for confusion with other DME sources in the terminal area. Failure to tune to the ILS DME when inbound can result in incorrect fix indications. Apply the following guidance:

(1) **Delete** the requirement to use two DME facilities on ILS or LOC/LDA procedures wherever possible.

(2) **Delete DME arcs to LOC/LDA courses** at locations where radar vectoring is possible. In some locations, this may require a Note: **"Radar Required."** Where radar is not available, delete DME arcs where an alternate means of procedure entry is available.

(3) **DME frequencies are paired** with the frequencies of the VOR, localizer, or MLS. When a **non-paired** DME is used in a VOR/DME, ILS/DME, etc., procedure, **simultaneous reception** of both facilities must be assured. This requires a standard Note indicating the DME location and the identification of both facilities: **"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 standard Note: **"Simultaneous reception of ABC NDB and XYZ DME required."**

(4) **On procedures using two DME facilities,** one of which is associated with a LOC or LDA, and both of which are forward of an aircraft on the LOC/LDA course, the following **profile Note** is required: **"Use I-XXX DME when on the LOC/LDA course."** This applies to front and back course procedures regardless of glide slope availability. In Additional Flight Data, indicate that the note is to be charted in profile.

(5) Similar precautions may be necessary for **MLS**. Evaluate each situation and take the appropriate action.

g. *Initial Approach Segments.*

(1) Initial Approach Segments not requiring a course reversal. Evaluate the flow of air traffic to determine the need for routes which do not require a course reversal. Where a course reversal exists on a SIAP, each initial approach segment for which a course reversal is *not required* shall include a designation of **"NoPT"**. 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 811a(3).

(2) Specify an arrival sector from which course reversal shall not be made when NoPT designations will result in an excessive number of terminal routes as follows:

"NoPT for arrival on ABC VORTAC airway radials 302 CW 096."

(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 paragraphs 232a(1) and (2)) shall join the intermediate segment at a common intermediate fix where possible.

(4) Arc Initial Approach Segment. Requirements for arc initial approach segments shall 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 utilized on a very limited basis or have not been fully accepted by the user. Utilization of long arcs or the use of multiple arcs has contributed to undesirable chart clutter with minimum operational advantage.

(a) An arc initial segment in a **radar environment** shall not be authorized unless it is operationally required.

(b) When a DME arc segment of an approach lies along an arc which traverses an area of **unusable radial information,** the provisions of OA P8200.1, paragraph 214.3 apply.

(c) Arc initial segments should be authorized via the **shortest routing** when flight time can be reduced.

(d) Arc initial segments shall be designated by **CW** for clockwise and **CCW** for counter-clockwise.

(e) Arc initial segments shall be designed to satisfy requirements for executing the instrument approach. They shall 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 shall be predicated only on **collocated facilities** providing azimuth and DME information. Arc initial segments shall not be authorized on DME collocated with ILS or localizer facilities due to the lack of constant azimuth information. See Order 6050.32, appendix III, section 2 for collocation parameters.

h. *Lead Radials.* In addition to the angle of interception requirements of TERPS paragraph 232a(1), a 2 mile lead radial (1 mile for Copter procedures) shall 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. *Identification of Initial Approach Fix (IAF).* Because of military requirements, IAFs shall be identified on civil public-use procedures.

j. *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 shall be included in the Terminal Routes

block. In this situation, **(NoPT)** shall be added 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 shall 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 is not authorized, the intermediate segment shall be included in the profile view of the instrument approach chart and entries pertaining to these segments shall be included in the Terminal Routes section, and on line 4 of the form 8260. The only exception will be when radar vectoring is required to the FAF.

808. TERMINAL FIXES.

Named terminal fixes shall be documented on FAA Form 8260-2. Named facilities do not require this documentation unless holding is established. See also paragraph 264.

a. *Restriction.* The following fixes should NOT be named unless naming is required for control of aircraft, such as when used as a clearance limit, for holding, or for procedural clarity:

(1) DME only fixes.

(2) Starting and ending points of arc initial or feeder segments.

(3) Points where feeder or initial routes intercept the final approach course extended prior to the initial or intermediate fix. A dog-leg route description is preferable.

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. If the list would be too large, show only types of procedures and airports served. Maintain the "Chart Publication" section of the 8260-2 in current status to ensure correct charting of the fix.

c. *DME References.* When designating fixes on Form 8260-3, -4, -5 and -7, include DME references to the hundredth of a nautical mile 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 collocated** with course facility, identify fix and facility providing DME:

JOANI/ABC 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

(4) **Unnamed DME fixes** shall be described clearly: Specify NDB bearings "FROM" the facility.

ABC R-259/4.00
ABC VORTAC R-259/4.00 (Enter "VORTAC" if required for clarity.)
DEF 072/23.00 (Facility is DEF NDB/DME)
6.51 DME (Exclude the DME identification when there is no doubt that course guidance and DME are from the same facility)

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 **"ARNET"** or **"NIXON"** where ever else it occurs on the form ensures that the fix will be charted correctly on both the plan view and the profile sections of the approach chart. When 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 DME) **"CLIMB TO 3600 DIRECT MORIS LOM AND HOLD."** Example: (Fix name: DAVEE INT/16 DME) **"CLIMB TO 3600, THEN CLIMBING RIGHT TURN TO 4000 VIA ABC VORTAC R-180 TO DAVEE INT/16 DME AND HOLD."**

e. *When no fix overlies an LOM,* the identifier may be used: **AB LOM**. Use the identifier on NDB procedures. In all other cases, when a named fix is at the LOM, use that name: **ABBAH LOM**. Use the named fix on LOC and ILS procedures.

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. *Design SIAPs, utilizing crossing courses for fix identification* along the inbound course, to minimize cockpit tuning requirements as prescribed in TERPS paragraph 288c.

SECTION 3. COMPLETION OF FAA FORMS 8260-3/5

809. GENERAL.

This section contains information applicable to the completion of FAA 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.

810. TERMINAL ROUTES.

The information described in the Terminal Route section along with data entered on line 1 or 2 is used to develop the plan view of the instrument approach chart.

a. *From-To columns.* Routes shall be listed from fix to fix. Terminal routes that do not provide a NoPT capability should be established direct to the fix or facility from which the course reversal is authorized. Enter the name of the fix to which an arc segment connects in the "TO" column. If there is no named fix, enter the appropriate fix description in accordance with paragraph 808c.

(1) **IAF** designations shall be entered in the "FROM" column after each initial approach fix. Describe RNAV ATD fixes with respect to the next waypoint: **5.00 ATD from NIXON WP.**

(2) **NoPT** shall be entered in the "TO" column for initial segments that permit elimination of the procedure turn. The intermediate segment shall only be designated NoPT if necessary to clarify the procedure. A segment after a course reversal fix shall not be designated NoPT.

(3) **CW** for clockwise or **CCW** for counter-clockwise shall be entered in the "FROM" column for arc segments.

(4) **Feeder or initial routes based on dog-leg segments,** where there is no altitude change between segments, shall be entered on one line and described fix to fix. For a dog-leg to a DME fix on a localizer course, enter only the DME fix; e.g., **IAG 10.00 DME.** The localizer course is specified in the course/distance column. See paragraph 810b(3) below.

(5) If an **altitude change** occurs where a feeder or initial joins the next segment, specify each segment on separate lines. A combined initial/intermediate segment entry is authorized only when there is **no altitude change** between the segments.

(6) **Multiple initial segments** which connect at a common IF require separate line entries for each initial segment, and a single entry for the intermediate segment, irrespective of the segment altitudes.

b. *Course/Distance column.* Specify the course and distance for each route segment. Enter the actual magnetic course to the hundredth of a degree, and distance to the hundredth of a mile. NOS 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 **single route defined from fix to fix via two segments** (dogleg), and there is no altitude change between segments, the course, distance and guidance shall be identified for each segment in one single entry.

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 utilized 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)**.

c. *ALT Column.* Enter the altitude authorized for the route. When the routing requires a course reversal, the altitude authorized shall not be lower than the procedure turn altitude. The altitude authorized for any terminal route shall 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 whenever possible. Optimum descent gradients shall be used where feasible for noise considerations and as a means to conserve airspace.

811. LINES 1 THROUGH 8.

a. *Line 1.*

(1) **Enter procedure turn 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) **Delete all pre-printed information** on line 1, when a teardrop course reversal is specified, and enter the data in accordance with the following examples:

Collocated facility:
Teardrop R-160 outbnd, R-355 inbound, 4300 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, 3000 ft. to KENNEDY OM/INT.

(3) Enter "NA" following "PT" when a procedure turn is not authorized.

b. *Line 2.*

(1) For purposes of **standardization,** instrument approach procedures should authorize a standard PT where a **course reversal** is required. TERPS paragraph 234e establishes conditions for utilizing a **holding pattern** in lieu of a PT; however, the requirements of paragraphs 234e(1) and (2), and paragraph 292 must be met. When a holding pattern is authorized, establish the direction of holding based on the **inbound course** as shown in figure 8-1. Enter holding data on line 2 in accordance with the following example:

Hold SE OMEGA LOM, RT, 313.09 inbound, 1600 ft. in lieu of PT (IAF).

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

Figure 8-1. Holding Pattern Directions

(2) On **procedures that do not authorize a PT or holding pattern,** enter the fix/facility from which the profile is to start. The profile shall include the intermediate fix and may be extended to include all fixes established on the final approach course extended for clarity. (The exception is when radar vectoring is required to the FAF.)

Profile starts at STING.

(3) When an **obstacle in the PT entry zone** precludes early descent to PT altitude, place an attention symbol after the PT fix on line 1 and enter the restrictive note on line 2. (IAPA places this note in "Profile Notes" on the IAPA equivalent form 8260-3/5.)

***Maintain 12000 or above until established outbound for PT.**

c. *Line 3.*

(1) Enter the final approach course (FAC) on all procedures. Enter the exact electronic course to a hundredth of a degree. NOS 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. For MLS with a curved path in the final segment, enter the course after the rollpoint (RP).

(b) NDB and RNAV procedures - enter the course established by FIAO computation.

(c) VOR and TACAN procedures - enter the electronic radial or its reciprocal as established by flight inspection that delivers the aircraft to the runway threshold or desired aiming point. See paragraph 816i. If other than the plotted magnetic course, enter the plotted and electronic values in Remarks section FAA Form 8260-9, or IAPA Data Record. See paragraph 909c(8).

(2) Enter FAF where applicable. On ILS/MLS forms, a FAF must be published for the time-distance requirements of the LOC/AZ-only and circling portions of the procedure, and also for application of FAR Part 121.651. The OM location is normally identified as the LOC FAF for charting purposes. A FAF shall be entered for all procedures, except those procedures without a FAF that utilize on-airport facilities, or ILS/MLS procedures that do not authorize LOC/AZ-only or circling. On RNAV forms, enter the named FAWP; if the FAF is an ATD fix, enter the ATD distance from the named MAP.

KAREN WP; or, **5 ATD from DAVID WP.**

(3) Enter the distance from the FAF to the MAP in miles and hundredths. Enter a dash when the time/distance table is not required for determination of the MAP, such as when the MAP is a facility, fix or WP. Leave **blank** for on-airport NoFAF SIAPs.

(4) Enter the distance from the FAF to the runway landing threshold, or abeam, if straight-in minimums are authorized, to the nearest hundredth of a mile. (NOS will round to the nearest 0.1 mile for publication.) Leave **blank** for circling-only and on-airport NoFAF SIAPs, and COPTER point-in-space approaches.

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 shall be the first fix/ facility entered on line 4. See paragraph 807j(3).

(1) Fix altitudes established on ILS for LOC-only use should be coincident with the glide slope when possible. Where the stepdown fix altitude is not within 20 feet of the glide slope, annotate it for LOC use as follows:

MIN ALT CAROL 1600*
*LOC only

Note: This notation is not used when the nonprecision FAF altitude is the same as GS intercept altitude.

(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.

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, 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, if established.

(5) For procedures with a stepdown fix, enter the lowest MDA at the stepdown fix authorized for aircraft that cannot receive the stepdown fix. If an MDA increase is required when a remote altimeter setting is used, the

stepdown fix should be annotated to reflect the necessary altitude adjustment as follows:

MIN ALT PAULA 1420*
***1540 when using (location) altimeter setting.** (IAPA places the "*" symbol after the fix name.)

e. *Line 5. (Form 8260-3).* Enter distance in miles and hundredths to the threshold from the FAF or OM and MM. On Category II and III ILS procedures, enter distance in feet to the threshold from the IM, 150 HAT and 100 HAT points; enter a **dash** if not appropriate. On Category I, II, III, enter distance in feet from the threshold to a point abeam the GS antenna (for ILS), and abeam the elevation antenna (for MLS).

f. *Line 6. (Form 8260-3).*

(1) Enter minimum **GS/GP intercept altitude,** rounded to the next higher 100-foot increment. This altitude shall not be less than the elevation of the GS/GP at the OM or FAF.

(2) If a fix or facility is located on the final approach course **between** the precision FAF (GS/GP intercept) and the OM, enter the name of the fix or facility and the GS/GP elevation in feet.

(3) Enter the **elevation of the GS/GP** in feet at the OM, MM, and the IM. If a IM is not installed, enter a **dash.**

(4) **GS/GP altitude computations** shall include earth curvature (EC) values. EC shall not be used to determine obstacle clearance. The formula for determining EC is:

EC(ft) = (distance in NM from GS/GP ant)^2 x .8833

g. *Line 7. (Form 8260-3).*

(1) Enter **commissioned angle** for the GS/GP to nearest hundredth of a degree. The commissioned angle shall be used to make calculations entered in lines 5, 6, and 7.

(2) Enter the **threshold crossing height (TCH).** 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 FAA Order 8260.34, enter in accordance with the following example:

TCH 32 at displaced THR; 67 at runway end.

(a) Use the **runway crown elevation** opposite the GS antenna for TCH computations when it is determined that the lateral terrain gradient between the GS/GP antenna site and runway is relatively smooth and uniform, regardless of gradient percentage. See TERPS figure 129A, appendix 2. When terrain drops off or rises rapidly between the GS antenna and the runway, the TCH computations will be based on the **ground elevation of the GS antenna site.** See TERPS figure 129, appendix 2. Computation results shall be rounded to the nearest foot.

(b) The character of the terrain, effective GS elevation, and TCH will be **determined by agreement** between Airway Facilities and FPB personnel.

Note: Flight inspection, as well as instrument data bases, shall be based upon the same GP orientation elevation. Use AMIS as the official data source.

(c) Paragraph (a) above does NOT apply to facilities flight inspected under Order 8240.47. For these facilities, the RDH is the TCH.

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 shall 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 shall be used. When the MSA facility is an LOM, enter only the identification and type of facility.

(2) Enter the MSA information **clockwise by sectors,** if used. Sectors are referenced to bearings from the primary omni-directional navaid as follows:

MSA from OAK VORTAC 360-170 4900, 170-360 3700.

(3) Provide a **single MSA** only when the altitude difference between all sectors does not exceed 300 feet, as follows:

MSA from XYZ VORTAC 7700.

(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, 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 shall be identical for each procedure.

(6) MSAs are for **emergency use only.** Do not amend procedures solely to revise an MSA except when the MSA provides less than 950 feet of obstacle clearance.

812. TAKEOFF AND ALTERNATE MINIMUMS.

a. *Takeoff Minimums.* Where takeoff minimums for all runways at the airport are standard, check the "STD" box. If takeoff minimums for any runway are other than standard or if IFR departure procedures are in effect at the airport, check the box titled "See FAA Form 8260-15 for this Airport." Complete Form 8260-15 in accordance with guidelines contained in paragraph 835. For COPTER procedures, leave both boxes **blank.** SIAP amendments specifically to address origination or cancellation of an FAA Form 8260-15 are no longer necessary. NOS will take action based solely upon the 8260-15 form.

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 shall 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. Alternate minimums are NOT authorized on **LORAN-C SIAPs.**

(3) **Enter alternate minimums** in the space provided. If sufficient space is not available in the Alternate Minimums block for all necessary data, the entry may be continued in the NOTES section or placed entirely on Form 8260-10. If continued in the NOTES section, separate the data from the landing minima notes by placing the data to the right side of the block. When necessary to use Form 8260-10, state: **"Continued on Page 2"** in the Alternate Minimums block.

(4) When alternate minimums are standard, enter the word **"Standard"**; when not authorized, place an **"X"** in the "NA" box. When part-time, or higher than standard for some categories, enter **"Standard #"** and annotate the appropriate condition by separate standard Note:

 # NA when control tower closed.
 # CAT D 1000-3

(5) When alternate minimums are **non-standard**; e.g., higher than standard for all categories, 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 FAA 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

813. MINIMUMS.

a. *General.* Minimums are entered 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. Straight-in minimums shall not be denied nor canceled in order to circumvent grant agreements that have been established under airport development programs. If criteria does 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**, white-out 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. *On runways under 4,000 feet long,* the regional FPB shall coordinate with the airport sponsor/operator to determine what categories of aircraft use the airport. Where it can be clearly determined that the airport is not to be used by Category D aircraft, Category D minimums shall not be authorized; enter **NA** in the VIS column for Category D aircraft.

f. *Make no entry in the Category E boxes,* except where a valid military requirement exists. When Category E minimums are authorized, a 15-mile procedure turn is required. TERPS table 10 shall be used to establish Category E minimums. However, these minimums shall not be lower than civil Category D minimums. ILS Category II or III minimums shall not be authorized for Category E military aircraft.

g. *Type of Minimums.* The types of minimums are preprinted on Form 8260-3. On Forms 8260-4/5/7, types of minimums shall be entered as **"S- (Runway No.)"** for straight-in minimums and **"Circling"** for circling minimums.

h. *DH/MDA.* Enter the Decision Height (DH) or Minimum Descent Altitude (MDA) authorized by criteria as an MSL value in each of the appropriate DH/MDA boxes by category of aircraft. MDAs shall always be established in 20 foot increments. See TERPS paragraph 322.

i. *VIS.* Enter the visibilities authorized by TERPS, chapter 3. RVR authorized on runways to which straight-in minimums are published shall be listed in feet; e.g., **4000, 2400, 1800,** etc. See paragraph 404 of this handbook for guidance on using RVR on adjacent runways.

j. *HAT/HAA.*

(1) **HAT.** Enter height above touchdown zone elevation when straight-in minimums are authorized. When evaluating host nation procedures, where TDZE is not available, use runway threshold elevation on an interim basis to determine HAT. If neither is available, use airport elevation. For COPTER procedures white-out "HAT" and enter **"HAL"** (or **"HAS"** for point-in-space procedures).

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

k. *ILS Category II and Category III.* When Category II and Category III minimums are authorized, they shall be included in the NOTE section immediately below the MINIMUMS boxes. These minimums shall be indicated as follows:

(1) ***"Category II ILS Special Aircrew and Aircraft Certification Required.*** **S-ILS 32L: DH 806 MSL, 151 RA, RVR 1600, HAT 150; CAT A,B,C,D. S-ILS 32L: DH 756 MSL, 104 RA, RVR 1200, HAT 100; CAT A,B,C,D."**

(2) ***"Category III ILS Special Aircrew and Aircraft Certification Required.*** **S-ILS 32L: CAT IIIA RVR 700; CAT A,B,C,D. CAT IIIB RVR 600; CAT A,B,C,D. CAT IIIC NA."**

1. *Dual Minimums.* Dual minimums, when authorized, shall be entered in boxes constructed below the preprinted minimums section. Dual minimums shall not be authorized unless a 60 foot operational advantage is obtained or a reduction in visibility can be achieved. To avoid proliferation of dual minimums, all IFR aircraft are assumed to have at least one VOR receiver. Dual minimums based on a stepdown fix combined with local and remote altimeter settings could result in four sets of minimums. **However,** only two sets of minimums shall be published on the 8260 forms. 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 404q.

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 DH 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, use standard Note: **"When local altimeter setting not received, use (location) altimeter setting and increase all DH/MDA's 60 feet, 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 within a standard Note: **"When local altimeter setting not received, use (location) altimeter setting: increase DH to 287 feet and all visibilities 1/4 mile; increase all MDA's 60 feet and all visibilities 1/2 mile."**

3 Where precision and nonprecision visibility adjustments differ and visibility is NOT affected in all categories, apply the greatest visibility increase only to those categories which are affected and define application within a standard Note: **"When local altimeter setting not received, use (location) altimeter setting: increase DH to 287 feet and visibility CAT D 1/4 mile; increase all MDAs 60 feet and visibility CATs C and D 1/2 mile."**

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

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

(a) **When a procedure DOES contain a stepdown fix,** but has only local altimeter setting minimums, enter the straight-in and circling minimums required **without** the stepdown fix in the first set of boxes. Enter both 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 standard Note: **"When local altimeter setting not received, use (location) altimeter setting."**

(3) On procedures where the course

guidance and stepdown fix are obtained from **different VOR facilities,** two sets of minimums shall be published.

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

(5) If the facility providing course guidance has DME, and the procedure IS NOT identified: ".../DME", use the title: "**DME MINIMUMS**" if the fix is not named. However, if the fix is named, use the fix name to identify the minimums: "**NIXON FIX MINIMUMS.**" The latter title also applies where the fix is identified by a crossing radial/bearing.

(6) If, as in (5) above, and the procedure IS identified ".../DME", publish only one set of minimums.

(7) On procedures where the course guidance and the stepdown fix are obtained from **facilities which are of different types,** publish two sets of minimums. Use one of the following titles to identify the dual minimums:

(a) On procedures where the fix is predicated on DME only: **"DME MINIMUMS".**

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

(c) 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 shall be identified on the video map or map overlay.

m. *Limitations on Landing Minimums.* 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 FIAO shall 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, shall be operating to support night minimums (see AC150/5340-24). 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 AC150/5345-50.

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

(a) If unable to authorize night minimums, use standard Note: **"Procedure NA at night."**

(b) If increased night visibility is required by environmental conditions, such as extraneous lighting, use standard Note: **"Night visibility minimum ____ miles."**

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

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

(3) Inoperative Components and Visual Aids. The Inoperative Components and Visual Aids Table advises 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:

(a) When credit has not been given to a visual aid to reduce visibility, use standard 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. Use standard Note: **"Inoperative Table does not apply."**

(c) When the inoperative table applies only to a few cases, use standard Note: **"Inoperative table does not apply to CAT D"**; or, **"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 standard Note: **"For inoperative ALSF, increase S-7 CAT D visibility to 1 3/4"**; or, **"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 standard 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) No MM. The ILS DH may be adjusted to a HAT above 200' for reasons which are not related to the loss of the MM. TERPS does not require a HAT more than 250' when the MM is inoperative. Accordingly, there may be a situation when the 50' adjustment required by the inoperative table is not appropriate. In such an event, a clarifying Note is necessary. The following are sample situations and the standard Notes to use:

1. When the established DH is already at HAT 250' or more, no adjustment for inoperative MM is required. Use standard Note: **"DH not increased for inoperative MM."** Scenarios in which this might take place are:

- Offset localizer
- Facility performance restriction
- Obstacle clearance penetrations in the final or missed approach areas.
- A threshold crossing height (TCH) waiver.

2. When the DH is established at HAT between 200' and 250', the adjustment for inoperative MM varies and the resultant HAT will not exceed 250'. Scenarios in which this might take place are:

- DH restriction between HAT 200' and 250' due to facility performance.
- HAT between 200' and 250' due to obstacle clearance penetration in the missed approach area.
- HAT below 250' due to TCH waiver.

[*Example Condition*: Established DH 1220, HAT 220] Use standard Note: **"DH increased to 1250 for inoperative MM."**

3. When the HAT is at least 250', and MM is not installed, a Note is NOT appropriate.

(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.

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-hr. 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. Use standard Note: **"When local altimeter not received, except for operators with approved weather reporting service, use Oakland altimeter setting and increase all MDAs 120 feet, and all visibilities 1/2 mile."** Where appropriate, define application to DH and/or MDA, or address when visibility is NOT affected in all categories, within the standard Note. See paragraphs 813l(1)(a)1 and 2.

(c) When an altimeter setting is provided at **uncontrolled airports**, use standard Notes described in paragraph 814e.

(d) When the use of remote altimeter setting **cannot be authorized**, use standard Note: **"When Valle altimeter setting not received, procedure NA."**

(e) Include **state identifiers** if confusion is possible. Use standard Note: **"When local altimeter not received, use Springfield, MO altimeter setting and increase all MDAs 80 feet, and all visibilities 1/2 mile."** Where appropriate, define application to DH and/or MDA, or address when visibility is NOT affected in all categories, within the standard Note. See paragraphs 813l(1)(a)1 and 2.

(f) The adjustment for a remote altimeter setting source is **cumulative**; i.e., it is additional to any inoperative component adjustment, terminal segment MRA adjustment, or altitude increase to insure communication reception.

(g) Round part-time altimeter adjustment values to the **next higher 20'** increment when publishing a Note to increase all MDAs by a specified amount. For example, if the adjustment value is 202.35', specify to increase all MDAs by 220'.

NOTE: Remember to use the part-time altimeter adjustment when determining descent gradient from a stepdown fix in final.

(5) Circling Conditions and Restrictions. Circling minimums shall not be sectorized to provide more than one circling minimum for each aircraft category. The higher minimums required for the complete circling area shall be established, or circling minimums shall be denied in the sector requiring higher minimums. When the higher minimums are authorized, a Note is not required; however, if circling is restricted in a portion of the circling area, use standard Note: **"Circling NA E of RWY 17-35"** or **"Circling NA NW of RWYs 9 and 18."**

(6) ILS restrictions. Publish restrictions to ILS LOC and GS in the NOTES section. No Note is required for an unusable LOC back course, or for a LOC lateral coverage restriction with no terminal route through the restricted area.

(a) If the LOC will not provide adequate course guidance in the area between the MM and runway threshold, use standard Note: **"ILS unusable from MM inbound."**

(b) When the GS will not provide satisfactory vertical guidance, restrict its use above or below a specific altitude. Use standard Note: **"GS unusable below/above (altitude)."**

(c) When GS indications can be received on a LOC back course approach, use standard Note: **"Disregard GS indications."**

(d) When the rate of reversal in the GS exceeds the tolerances of FAA Handbook OA P 8200.1 (Flight Inspection Manual), section 217, establish a restriction for autopilot coupled approach 50 feet above the point where the out-of-tolerance condition exists. Use standard Note: **"Autopilot coupled approach NA below 540'."**

(e) When terrain, obstacles, descent gradient, etc., do not allow the use of a LOC procedure associated with the ILS when the GS is not used, place **NA** in the visibility column for each LOC category affected. If, in such an instance, another procedure should be used instead, use standard Note: **"When GS not used, use LOC RWY 26 procedure."** When circling is authorized, but the LOC procedure associated with the ILS is "NA", use standard Note: **"Circling requires descent on GS to MDA."**

(7) Simultaneous Approaches. ILS approach procedures which meet the requirements for simultaneous approaches shall be annotated as to which runways are authorized for simultaneous operations. For example, if simultaneous approaches are authorized to runways 27L and 27R, **each** ILS SIAP shall refer to the other ILS SIAP. Use standard Note: **"Simultaneous approach authorized with RWY 27R"** (to be noted on ILS RWY 27L SIAP).

(8) Radio controlled Lights. At many locations, lighting aids are radio controlled by the pilot. This is part of a national energy savings program initiated by the FAA. A standard keying system to activate the lights is described in AC150/5340-27, and is also published in the Airman's Information Manual and the National Ocean Survey Approach Chart Legend. AC90-42 establishes Common Traffic Advisory Frequencies (CTAF) to be used at uncontrolled airports including those with part-time towers. Radio control of airport lighting systems from aircraft should be used only at airports where ATC facilities are not in operation. **Existing systems** that utilize frequencies other than the CTAF may continue to be used. However, airport operators should be encouraged to change to an established CTAF as soon as possible. All **new radio control systems** shall comply with the following if visibility credit for approach lights is to be given:

(a) The radio frequency used to activate the approach lights is an established CTAF in accordance with AC90-42.

(b) The procedure used to activate the approach lights is in accordance with AC150/5340-27.

(9) Night landing minimums shall NOT be authorized unless the requirements of AC150/5340-27 are met. See also paragraphs 813m(1) and (2). Use standard Note: **"Procedure NA at night."**

(10) PCL Note Charting. Pilot Control Lighting (PCL) is depicted on National Ocean Service (NOS) SIAP charts by the use of negative symbology. NOS obtains information for adding the symbology to SIAPs from NFDC's National Flight Data Digest (NFDD). FIAOs shall review each published procedure to insure that PCL charting is correct.

(11) Lights by prior arrangement. When the operation of lights must be arranged for before flight, use standard Note: **"Procedure NA at night except by prior arrangement for runway lights."**

(12) Lights on Request. At some locations, lights are only available by radio contact with an FBO, airport manager, etc. Use standard Note: **"Request MIRL Rwy 7/22, and VASI Rwy 22 - CTAF"** (or appropriate frequency if other than CTAF).

(13) All **Special SIAPs** issued on Form 8260-7 shall, until further advised, **continue** to have light activation Notes. Use standard Note: **"Activate MALSR Rwy 25, MIRL Rwy 7-25** (as appropriate) **- CTAF"** (or designated frequency.)

814. NOTES.

Note: See also paragraphs 252, 404, 805b, 807f, 812b, 813k, 813l, 813m (1) through (13), 832b and d, and 833g.

a. *General.* Notes pertaining to conditional use of a procedure and/or notes restricting the use of a procedure shall be entered in the NOTES section of Forms 8250-3, -4, -5, and -7. Notes and data entered in this section are items which should appear on the published chart as a Note. If sufficient space is not available on the form for all necessary notes, they may be continued on the Form 8260-10. When it is necessary to use Form 8260-10, state: **"Continued on page 2."**

b. *Note Restriction.* SIAPs shall NOT contain notes which may be construed as regulating traffic. Notes such as "VFR practice approaches NA," if required, should be in the Airport Remarks section of the Airport/Facility Directory (A/FD). Notes regarding delays due to traffic also belong in the A/FD.

c. *Avoid caution notes* about obstacles. Notes such as: "High Terrain all quadrants"; "Steeply rising terrain to 5300 4 miles SW of approach course"; or, "50' unlighted trees south of RWY 9 THR" are NOT appropriate.

d. *Avoid listing specific times* in notes whenever possible, since a change in hours of operation would require amended procedures. Instead, refer to the situation directly relating to the cause. Use standard Note: **"When control tower closed" or, "at night."** When there is NO ALTERNATIVE, times may be used if the airport operator provides assurance that the hours will not change. Most operators adjust UTC hours of operation so that local hours remain the same whether or not daylight saving time is in effect. In such cases, it is appropriate to use local time in notes.

e. *When a local altimeter setting is available at an uncontrolled airport,* including those with part-time towers, the setting will be obtained on the established CTAF for that airport whenever possible. The NFDC is responsible for designating and publishing the CTAF (see AC90-42, and AIM chapter 4). In such cases, a Note may be required. Some operators provide approved weather reporting services, full-time or part-time, to their own company aircraft or on a contract basis to others.

NOTE: The phrase "except for operators with approved weather reporting service" is used only when such service is available.

Conditions that require notes and the associated standard Notes are as follows:

(1) At airports with a **part-time tower and an FSS,** the CTAF will be a tower frequency and will be monitored by the FSS whenever the tower is closed. No note should be needed if full-time altimeter setting service is provided.

(2) At airports with an **FSS and no tower,** the CTAF is an FSS frequency. No note is needed for a full-time FSS. For a part-time FSS, use standard Note: **"Obtain local altimeter setting on CTAF; when not received, use (location) altimeter setting and increase all MDAs 80 feet, and all visibilities 1/2 mile."** Where appropriate, define application to DH and/or MDA, or address when visibility is NOT affected in all categories, within the standard Note. See paragraphs 8131(1)(a)1 and 2. If a remote altimeter source cannot be approved, end the note: **"...; when not received, procedure NA."**

(3) At airports with a **part-time tower and no FSS,** the CTAF will be a tower frequency even when the only altimeter source is UNICOM. In such cases use of UNICOM is authorized provided the note gives an alternate course of action if UNICOM is not contacted. Use standard Note: **"When control tower closed, obtain local altimeter setting on UNICOM; when not received,** (alternative action)."

(4) At airports with **no tower or FSS,** with the altimeter setting available on UNICOM, the CTAF is UNICOM. An alternate course of action is required. Use standard Note: **"Obtain local altimeter setting on CTAF; when not received,** (alternate action)."

(5) When using remote CTAF altimeter, use standard Note: **"Obtain West Allis altimeter setting on CTAF (122.8); when not received,** (alternate action)."

(6) Multiple altimeter sources shall not result in more than two sets of minimums. If the chosen combination of local and/or remote sources does **not provide full-time coverage,** deny use of the procedure when no altimeter setting is available. Use standard Note: **"When control tower closed, obtain local altimeter setting on CTAF; when not received, use Smith altimeter setting and increase all MDAs 140 feet, and all visibilities 1/2 mile; when neither received, procedure NA."** Where appropriate, define application to DH and/or MDA, or address when visibility is NOT affected in all categories, within the standard Note. See paragraphs 8131(1)(a)1 and 2.

f. *Automated Weather Observing System (AWOS)/Automated Surface Observing System (ASOS).*

(1) AWOS is an FAA sponsored, off the shelf, automatic observation system. The weather and altimeter information is forwarded to the pilot via discrete VHF radio frequency or on a NAVAID, and may be available on commercial telephone access. Additionally, many FAA maintained AWOS-3's are connected to the Service A FSS weather distribution network. AWOS is classified into **four basic levels:**

(a) AWOS-A: reports altimeter setting only.

(b) AWOS-1: reports altimeter setting, wind, temperature, dewpoint, and density altitude.

(c) AWOS-2: reports the same information as AWOS-1 plus visibility.

(d) AWOS-3: reports the same information as AWOS-2 plus cloud/ceiling data.

(2) ASOS is a National Weather Service sponsored automatic observation program designed to replace current observation sites which use human observers. ASOS locations will have commercial telephone access, discrete VHF air-to-ground frequency, and will be connected to the Service A FSS weather distribution network.

(3) AWOS-3/ASOS transmitted on Service A does NOT require a backup altimeter source, and no notes are required on the procedure.

(4) AWOS-A, -1, -2, and AWOS-3 not transmitted on Service A DO require backup altimeter sources. Do NOT publish backup altimeter source information as a second set of minimums, or increase visibility for the AWOS backup altimeter source. Use standard Note: **"If local altimeter setting not received, use (location) altimeter setting and increase all MDAs 100 feet."** Where appropriate, define application to DH and/or MDA within the standard Note. See paragraphs 8131(1)(a)1 and 2. If a suitable backup altimeter source is not available, deny use of the SIAP. Use standard Note: **"If local altimeter setting not received, procedure NA."** Use these standard Notes where AWOS is transmitted over an NDB.

(5) AWOS may be used as a remote secondary altimeter source when data is available to Flight Service Station (FSS) specialists and ATC facilities through Service A.

(6) AWOS/ASOS at a remote location may be used as a primary altimeter source for an airport. Use standard note: **"Use (location) altimeter setting."** However, AWOS -A, -1, -2, and AWOS -3 not transmitted on Service A still require backup altimeter setting sources. Use standard Note: **"Use (location) altimeter setting; if not received, use (location) altimeter setting and increase all MDAs 100 feet." Where appropriate, define application to DH and/or MDA within the standard Note. See paragraphs 8131(1)(a)1 and 2.** When an airport uses a remote AWOS/ASOS as a primary altimeter source, flight inspection insures AWOS/ASOS discrete frequency reception at the IAF.

(7) AWOS-3/ASOS may be used as a remote secondary altimeter source and to support alternate minimums at an airport when:

(a) AWOS-3/ASOS is installed and commissioned.

(b) AWOS-3/ASOS data is available to FSS specialists and ATC through **Service A** for flight planning purposes.

(8) When the AWOS/ASOS information is transmitted over a discrete frequency (not CTAF) or the voice portion of a local NDB or VOR, AWOS is receivable within 25nm of the AWOS site, at or above 3000' AGL. If AWOS/ASOS is located on the voice portion of a NAVAID, flight inspection checks for interference; this check is performed prior to test transmissions.

(9) Paragraph 816q contains **AWOS/ASOS charting guidance.**

g. *ASR or ARSR* may be available to provide assistance in vectoring to the approach course, identifying fixes, or to provide instrument approaches. Include standard Notes to inform the pilot of these capabilities:

(1) When ASR and/or PAR approaches are published for the airport, use standard Note: **"ASR" or "ASR/PAR"** - as appropriate.

(2) Where radar is the only method of procedure entry or determining a terminal fix, use standard Note: **"Radar required."**

NOTE: "Radar required" procedures should be avoided whenever possible.

(3) When conditions of paragraphs (1) and (2) exist at an airport, BOTH Notes apply.

h. *Equipment Requirement Notes.* Determine the need for equipment notes after evaluating all SIAP segments, including missed approach. 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. VOR, ILS, or other non-ADF approaches may require ADF for procedure entry or missed approach. Use standard Note: **"ADF required."** If radar vectoring is available, use standard Note: **"ADF or radar required."**

i. *Approach Light Plane Penetrations.* Notes advising of approach light plane penetrations shall NOT be processed. When there are penetrations of the approach light plane, the responsible region shall take action to either remove the obstacle or modify the system to accommodate the obstacle. If this is not possible, the regional Airway Facilities Division processes an installation waiver. **Existing notes** referring to approach light penetrations shall 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. The following guidelines apply:

(1) Where a holding pattern is established at a final approach fix in lieu of a conventional procedure turn, the minimum holding altitude shall meet the altitude limitation requirements of TERPS paragraph 234e(1).

(2) 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 shall meet the descent gradient requirements of TERPS paragraph 234e(2).

(3) 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 shall conform to the altitude or descent gradient requirements of paragraph (1) or (2) above.

(4) Where a holding pattern is established for the missed approach at an intermediate or final approach fix, and a holding pattern is NOT used in lieu of a procedure turn, a conventional procedure turn shall also be established to permit pilot flexibility in executing a course reversal, and descent to final approach fix altitude.

k. *LORAN Magnetic Variation.* For pilot use, state the magnetic variation of the airport of intended landing. Use standard Note: **"Use 20E magnetic variation".**

l. When the missed approach point is more than two statute miles from the airport, use standard Note: **"Fly visual to airport, 220° - 2.5 miles."**

815. 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 straight ahead missed approach is the most desirable. Turning missed approaches should require as few turns as possible. Each missed approach (except radar) shall terminate at a clearance limit (fix or facility).

b. *Clearance limit altitudes* specified in missed approach instructions may be rounded to nearest 100' increments. **Other altitudes** used in the missed approach should also use 100' increments. If this causes construction difficulties, use of 50' increments is the preferred alternative, with use of 20' increments the last resort.

c. *Missed Approach Point.* On precision procedures the MAP is established by the DH. 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 (DH), 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) **FAA Form 8260-3.** For the precision portion of the ILS procedure, the MAP is preprinted on the form as: **"ILS: at the DH."** 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 813m(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) **FAA 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.

d. *RNAV.* Do NOT list coordinates for LORAN, nor radial/DME for VOR/DME RNAV. Enter the name of the MAP WP or the ATD from the Runway WP as appropriate as follows:

BONLI WP; or, 1 ATD from RUNEY WP.

e. *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.

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..."**.

(1) Where the **missed approach course** differs from the final course: **"Climb to 2800 via ABC R-180 to ABC VORTAC and hold."**

(2) When the **missed approach point** is also the missed approach holding fix and straight-ahead climb is not practical: **"Climbing right turn to 2500 in ABC VOR holding pattern."** In some cases, a straight-ahead climb or climb via a specified course/heading to an altitude, prior to returning to the holding fix, may be necessary for aircraft with larger turning radii. When this occurs, use the terminology in (3) below.

(3) **When obstacles in a turning missed approach area** require an initial straight-ahead climb: **"Climb to 3100 then climbing left turn to 4000 direct ABC VOR and hold."**

(4) **When obstacles preclude** a straight-ahead climb and require an immediate turn: **"Climbing right turn to 4000 direct ABC VOR"** or **"Climbing right turn to 4000 via heading 070 then direct ABC VOR and hold."**

(5) **ILS/MLS and LOC/AZ missed approach procedures** requiring a turn of more than 15° shall **specify an altitude** that is at least 400 feet above the TDZE prior to commencing a turn. Round the resulting altitude to the next higher 100 foot increment: **"Climb to 1200 then climbing left turn to 3100 via heading 070 and ABC R-167 to ABC VOR and hold."** See also paragraph 815b for rounding guidance.

(6) **If the procedure serves VOR as well as TACAN** equipped aircraft, address TACAN requirements also: **"Climb to 5500 via ABC R-111 then climbing right turn to 6000 direct ABC VORTAC and hold (TACAN aircraft continue via ABC R-280 to CAROL 10 DME and hold W, LT, 100 inbound.)"**

(7) **LOC courses are specified** in compass points, and NDB courses as bearings to or from: **"Climb to 3000 via I-ABC NE course and 350 bearing to DEF NDB and hold."**

(8) **When the missed approach** requires no specific direction of turn: **"Climb to 7000 via ABC R-197 then direct ABC VOR and hold."**

(9) **RNAV missed approach routing**

may be via courses or direct.

Examples: **"Climb to 5000 via 080 course to SANDY WP and hold."**; or, **"Climbing left turn to 5000 direct CHERL WP and hold."**

f. *Missed Approach Holding.* When holding is specified as part of the missed approach instructions, include holding details under Additional Flight Data. Holding is not specified when missed approach is to the FAF or IF used in holding in lieu of PT. Holding is not specified when the missed approach is to an en route fix at an altitude sufficient to permit holding and en route flight. In the latter case, ensure that holding on the missed approach course that leads to the fix is satisfactory.

g. *Alternate Missed Approach.* Alternate missed approaches may be established when required by ATC. Alternate missed approach procedures shall not be charted. When authorized, they shall be preceded by the words: **"...or when directed by ATC."** If holding is authorized on the alternate missed approach, include holding details immediately following the alternate missed approach instructions. Alternate missed approaches should be discouraged in a radar environment.

816. ADDITIONAL FLIGHT DATA.

When additional information or data is essential to clarify the charting of a procedure or when the procedures specialist wants information charted, but does not want it to appear on the chart as a note, the necessary information/data shall be entered in the Additional Flight Data section. Specific instructions to chart data shall be held to a minimum. (See also paragraphs 805b and 815f.)

a. *If sufficient space is not available* on the form for all necessary data, it may be continued in the NOTES section or on Form 8260-10. When necessary to use Form 8260-10, state: **"Continued on page 2."**

b. *Visual aids and runway information* once printed on the approach chart may be omitted from the additional flight data section on future amendments. Other items such as holding information, restricted area data, final approach course alignment, etc., shall be retained when amending a procedure.

c. *Holding.* When primary missed approach instructions provide for holding, enter Additional Flight Data as follows: **"Hold SE, RT, 313 inbound."**

d. The *nonprecision controlling obstacle* in the primary and/or secondary area of the FAS shall be shown as the FAS Obstacle. In the event a stepdown fix is used in the final approach segment, the controlling obstacle between the stepdown fix and the runway shall be shown as the FAS obstacle. Designate the obstacle location to the nearest second. Use standard Note: **"FAS Obst: 317 Tower 364227/891523"**

e. To identify certain *significant obstacles* in or near the instrument approach area, include locations and heights under additional flight data. If, in the opinion of the procedures specialist, these obstacles could be **critical to flight safety,** they should be prefaced by the word **"Chart."** However, if the data is being furnished only as information, it shall NOT be prefaced by the word "Chart." Charting agencies will chart any item marked "Chart." Any item listed without indicating "Chart" will be reviewed by the charting agencies and will be charted if it meets their charting specifications. Use standard Note: **"Chart 2674 Antenna 372219/ 941657"** or **"2674 Antenna 372219/ 941657."**

f. *Obstacles close to a final approach or stepdown fix* considered under TERPS paragraph 289, shall be handled as follows:

(1) When paragraph 289 is applied to multiple obstacles, document only the highest obstacle in the 7:1 area.

(2) List the obstacle under Additional Flight Data as: **"374 antenna 352416/881253."** It shall NOT be identified as a "paragraph 289 obstacle." The following entry shall also be made in the Remarks section of the Form 8260-9: **"TERPS paragraph 289 applied to 374 antenna 352416/881253."**

Note: Do NOT document takeoff obstacles on the 8260-9 or in Additional Flight Data.

g. *Installed visual aids* must be correctly shown on the aerodrome sketch.

(1) **On initial procedures for a new IFR airport,** enter all approved lighting aids at the airport which could assist the pilot conducting the approach, such as runway lights, approach lights, VASI, REIL, etc.: **"HIRL RWY 18-36, MIRL RWY 3-21, VASI RWY 36, REIL RWY 21"** Do NOT identify unlighted runways.

(2) If the present AL chart has **incomplete or incorrect aerodrome data,** or **new facilities are added** which are the reason for the amendment, use standard Note: **"Chart HIRL Rwy 9-27 vice MIRL."**; **"VASI Rwys 24, 35."**; **"Chart MALSR Rwy 18 vice MALSF."** If facilities affecting the SIAP are removed, use standard Note: **"Delete MALSR Rwy 36."**

h. Specify *final approach course alignment* if OTHER than the following:

(1) For **straight-in** approaches, runway centerline at threshold, as follows:

"FAC crosses RWY C/L extended 3180 from THLD"; or, **"FAC 450L of RWY C/L extended 3000 from THLD."** (Left or right as used in the latter case is as viewed by the pilot.)

(2) For **circling** approaches, to the on-airport facility, or to the Airport Reference Point if the facility is off-airport, as follows:

"FAC crosses intersection of RWYs 9-27 and 18-36."

i. When a *flight check radial* is used for the final approach course instead of the plotted radial, use the following Note: **"FAC is a flight check value."** See also paragraph 811c(1)(c).

j. When a procedure maneuvering area encompasses a *Warning, Restricted or Prohibited Area,* use the following Note: **"Chart R-2567."**

k. When *simultaneous approaches* are authorized, each approach shall include a note requiring the depiction of the adjacent localizer. Use standard Note: **"Depict LOC RWY 27R"**

l. *RNAV Glide Slope.*

(1) **When an RNAV procedure requires specific data** to use glide slope equipment, use standard Notes:

"Glide slope computer setting 3.08°."
"Horizontal distance MDA to MAP on GS 2.71NM."
"Reference facility elevation XYZ VORTAC 1160." (VOR/DME RNAV only).
"NIXON WP elevation 774 " (Runway WP elevation; 50' above threshold).

(2) **For VOR/DME RNAV,** if the constraints specified in TERPs paragraph 1523f exist, publish ONLY the reference facility elevation data.

m. *RESERVED.*

n. *Magnetic Variation.* Except as provided in paragraph 804, enter the magnetic variation value upon which the procedure design and documentation is based. Ensure that it is the variation upon which the final approach radial, bearing or course is predicated.

(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 **non-VOR/DME RNAV SIAPs,** enter the officially assigned variation value of the airport served by the SIAP. See paragraph 814k.

o. Enter the *Epoch Year* of the variation value as designated by AVN-240. See paragraph 221c(1).

p. For *COPTER point-in-space SIAPs* serving more than one landing area, list available landing areas, landing area elevations, the courses in hundredths of a degree, and distances from the MAP in hundredths of a mile as follows:

Chevron Heliport, 10, 090.02/2.81
Phi Heliport, 20, 087.11/2.32
Garden Island Seaplane Base, 26, 129.08/14.92.

q. Where a *VDP is established* on a SIAP, identify the location of the VDP as follows:

Chart VDP at ___ DME.
Distance VDP to THR___ miles.

r. *On LORAN-C SIAPs*, include a reference bearing/distance to one nearby navigational aid.

(1) If the SIAP has a course reversal, define the bearing/distance from the IAF.

(2) If the SIAP has no course reversal, define the bearing/distance from the FAF or IF (or the common IF for multiple terminal routes).

Chart in planview ABC VORTAC to NIXON WP R-128/12.62NM; or, **Chart in planview XYZ NDB to ECKLS WP Brg 083 FROM/16.65NM.**

(3) Where a non-RNAV feeder segment is established, no reference bearing/distance is required.

s. *For MLS,* enter the following data:

(1) Boresite AZ (mag)

(2) Limits of coverage; e.g., 300M to 060M

(3) Height above EL antenna for all WPs from FAF to MAP:

PFAF(1590), TP(1496), RP (1183), DH(194), RWY WP(44)

t. *For MLS,* describe the curved path including radius and direction of turn, course before and after the turn, along-track distance from each WP:

1.25NM arc to RP
RT 351 deg to 133 deg
6.58 ATD from PFAF
6.33 ATD from TP
0.50 ATD from DH

817. LOWER BLOCKS

a. *City and State.* Enter city and state name. The official two letter state abbreviations shall be used.

b. *Airport - Elevation / TDZE.*

(1) Enter the official **airport name** (as stated on Form 5010-1) and **airport elevation** (as stated in the AMIS/IAPA data base). Submit supporting data with the procedure for verification if a change is indicated. For multiple COPTER point-in-space SIAPs, enter "**various heliports.**"

(2) Enter **Touchdown Zone Elevation (TDZE)** (as stated in the AMIS/IAPA data base) for the runway designated in the procedure title whenever straight-in minimums are authorized. Add TDZE for sidestep runway, if applicable. Leave the TDZE **blank** if straight-in minimums are not authorized. For COPTER point-in-space SIAPs, leave TDZE **blank**. See paragraph 816p.

c. *Facility Ident.* 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 RNAV procedures, enter the identification of the SIAP reference facility. For LORAN RNAV procedures, enter the master/secondary station designation, followed by the Group Repetition Interval (GRI).

Example: **MWX 9960.**

d. *Proc. No.* Enter procedure identification as determined by TERPS chapter 1, section 6, and paragraph 802 of this order. When DME is required for the final approach, include "**/DME**" as part of the identification; e.g., VOR/DME, ILS/DME, LOC/DME, LDA/DME, NDB/DME.

Note: DME is an MLS component and is not required as part of MLS procedure identification.

e. *Amdt. No.* Enter "**Original**" or the amendment number as appropriate. The amendment number shall 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 cancelled and an original established.

(1) **Cancellation** of an existing procedure and establishment of an original procedure is required when:

(a) The city name is changed.

(b) The procedure identification is changed from a LOC procedure to ILS.

(c) The procedure identification is changed from an ILS procedure to LOC.

(d) Procedure ID changed from VOR-A to VOR-B, etc.

(e) Procedure ID changed to reflect a change in equipment required to fly the procedure; e.g., VOR to VOR/DME, ILS/DME to ILS.

(f) The facility providing final course guidance is relocated, if this changes the published final approach course.

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

(h) Straight-in minimums are added or deleted which require change to procedure ID; e.g., NDB Rwy 28 to NDB-A.

(2) **Amendment** of a procedure is required when:

(a) The identification of the facility providing final approach course guidance is changed.

(b) Equipment is added to or deleted from the procedure which does NOT change the procedure ID; e.g., adding "DME Required" Note.

(c) Procedure ID changes from VOR/DME to VOR/DME or TACAN, or vice-versa; or, from SDF to LOC, or vice-versa.

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

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

(f) Any published distance is changed which:

1 Requires a change to the Time/Distance Table.

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

(g) Any minimums change.

(h) Airport elevation is changed where ceiling and/or visibility is affected.

(i) Frequencies are changed in Notes on the 8260-3, -4, -5, -7, or military equivalent.

(j) Lighting changes occur which affect published visibility.

(3) A **delayed amendment**, not requiring immediate amendment action, BUT which shall be processed at the next opportunity, is required when:

(a) The airport name is changed.

(b) The airport elevation/ TDZE is changed BUT published ceiling and/or visibility is NOT affected.

(c) Lighting changes occur which do NOT affect published visibility.

(d) Safety of flight is no factor.

(e) Any published distance is changed which is less than or equal to 0.5nm for distances outside the FAF, or less than or equal to 0.1nm for distances inside the FAF.

(4) **No amendment** is required when frequencies are changed which were NOT entered in Notes on the 8260-3, -4, -5, -7, or military equivalent.

f. *Effective Date.* The effective date of the procedure will **normally be added by NFDC.** The only time the effective date shall be entered by the FIAO is when a **specific** effective date is

required; e.g., a facility Mag Var rotation. Due to the heavy workload associated with the 56-day airspace charting dates, NFDC will normally schedule routine procedures amendments for charting dates which do not coincide with the 56-day cycle. When an effective date is required which is **earlier** than can be routinely assigned by NFDC, contact AVN-220 to determine the appropriate course of action to expedite publication.

(1) **Original Procedures.** The effective date of original procedures shall be in accordance with Order 8260.26; except that the 28-day change notice will not be published for Alaskan procedures.

(2) **Emergency Action (NOTAM) Revisions.** The effective date of a procedure which is revised by a FDC FI/P NOTAM is the date of the NOTAM issuance. Revision of the appropriate 8260 form will be prepared and processed by NFDC. A copy of the P/NOTAM shall be considered a permanent part of the history of the procedure.

(3) **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 9 weeks after receipt of the SIAP in NFDC. Procedures which contain an en route fix name change or re-identification shall 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 shall be held at the FIAO 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 SIAP is original, enter **None**; otherwise, enter **Original** or amendment number as appropriate.

(3) *Dated:* If SIAP is original, leave **blank**; otherwise, enter previous amendment date.

818-830. RESERVED.

SECTION 4. COMPLETION OF FAA FORMS 8260-4/-7/-10/-15

831. GENERAL.

This section contains information applicable to the completion of Forms 8260-4, 8260-7, 8260-10, and 8260-15. Basic guidance on the completion of Forms 8260-4/7/10 is covered in section 2, and only items which differ from that guidance are contained in this section. Complete instructions are included for the Form 8260-15, Departure Procedures/Takeoff Minimums.

832. FAA 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 certified for ATC use by the FIAO, this data shall not be repeated on the FAA 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 FAA Form 8260-9. See also paragraph 832d(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 FAA Form 8260-9. See also paragraph 832d(2).

b. *Radar Missed Approach Point and Missed Approach Instructions.* A missed approach point and missed approach instructions shall be provided for each runway authorized radar straight-in landing minimums. A missed approach point and missed approach instructions shall also be provided when only circling minimums are authorized. This data should be included in the missed approach section of the Form 8260-4. Radar missed approach procedures should return the aircraft to a fix or facility without a requirement for radar guidance. If sufficient space is not available, only the missed approach point data should be included and the missed approach instructions placed in the NOTES section or on the 8260-10 continuation sheet.

c. *Approach Minimums.* The minimums section shall be completed as indicated in paragraph 813.

d. *Radar Notes.*

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

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

(a) Calculations are made using:

- FAF altitude

- Touchdown zone elevation (airport elevation for circling-only approaches or missed approach point elevation for point-in-space approaches)

- Distance from FAF to threshold when straight-in authorized (distance from FAF to missed approach point when circling-only minimums are authorized, or for point-in-space approaches). Recommended altitudes shall be rounded to the **nearest** 20-foot increment.

(b) For ASR circling-only approaches, calculations to airport elevation could result in recommended altitudes exceeding 400 feet per mile descent gradient. If this occurs, adjust the recommended altitudes so the descent gradient (before rounding) does not exceed 400 feet per mile. Consider relocating the MAP or moving the FAF outward from the runway to achieve an acceptable descent gradient.

(c) The following example calculation illustrates two descent gradients due to a stepdown fix. If ROC would permit a stepdown fix altitude BELOW the normal gradient, raise the minimum altitude at the stepdown fix to preserve a constant gradient.

[*Example Condition:* FAF 7.8 miles from threshold, minimum altitude 9000, minimum altitude 3 mile fix 7300. TDZE 6172. MDA 6800.]

9000-7300 divided by 4.8 = 354 feet per NM.
0.80 x 354=283.

9000-283 = 8717 at 7 miles = 8720.

8717-354 = 8363 at 6 miles = 8360.

8363-354 = 8009 at 5 miles = 8000.

8009-354 = 7655 at 4 miles = 7660.

7655-354 = 7301 at 3 miles = 7300.

7300-6162 divided by 3 = 376 feet per NM.

7300-376 = 6924 at 2 miles = 6920.

6924-376 = 6548 at 1 mile = NOT USED: Below MDA.

Example FAA Form 8260-4 entry:

"Rwy 17: **FAF 7.8 miles from threshold (at LACKI OM), minimum altitude 9000, minimum altitude 3 mile fix 7300, final approach course 168. Recommended altitude 7 miles 8720, 6 miles 8360, 5 miles 8000, 4 miles 7660, 3 miles 7300, 2 miles 6920."** (No underline is currently possible using the computer generated 8260-series forms.)

(3) When **segments prior to the FAF** are required, establish the fixes and minimum altitudes in a note preceding the Note cited above: **"9.4 miles from threshold, minimum altitude 9000."**

(4) **Define the final approach course** in the NOTES section when circling is the only minimum authorized: **"FAF 6 miles from runway intersection, minimum altitude 8000, final approach course 060 aligned to intersection of runways 2 and 15."**

(5) **If radar availability is limited,** use standard Note: **"When control tower closed, ASR NA."** (This is a radar SIAP Note only - not to be used on other SIAP types.)

(6) Lost communications instructions shall be entered as follows: **"As directed by ATC on initial contact."**

e. *Additional Flight Data.*

(1) Enter the **TDZE** in the pre-printed 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 THR to RPI** in feet for PAR approach procedures.

(4) Enter the **facility magnetic variation and Epoch Year** as obtained from AVN-250.

f. *City and State Section.* Data shall be the same as Forms 8260-3/5/7 except as follows:

(1) **Facility name.** Enter the identifier of the controlling facility and the type of radar; e.g., **"COS ASR," "TBN ASR/PAR."**

(2) **Procedure number.** Radar procedures shall be numbered in sequence; e.g., **"Radar 1, Radar 2, etc."** Runway numbers shall be shown in the minimums section.

833. FAA FORM 8260-7, SPECIAL INSTRUMENT APPROACH PROCEDURE.

a. *Requests for Special IAPs.* All requests for special instrument approach procedures are forwarded to the regional FPB for approval. If the request is found acceptable, and after coordination with the other operational divisions, the FPB shall forward the request to the FIAO for procedural development. The FPB shall coordinate the priority for development with the FIAO.

b. *Responsibility.* The FPB is responsible for determining requirements for the development of

"special" IAPs. Normally the special procedure will be utilized only to provide instrument service to an air carrier or air taxi operator where an equivalent service cannot be provided by a public use approach procedure. Special procedures are not to be used as a temporary measure pending designation of controlled airspace for public use procedures (See paragraph 402). The FPB is also responsible for the coordination, reproduction, and distribution of special IAPs.

c. *Completing Form 8260-7.* Instructions for completion of forms 8260-3/5/10 are also applicable to Form 8260-7, except as follows:

(1) If use of a **named fix** which is not an en route fix is required for the special procedure, the fix shall be documented on a Form 8260-2 and processed in the normal manner. The FPB shall provide a copy to the user.

(2) **IFR Departure Procedure/Takeoff Minimums,** if required, shall be included in the NOTES section of the Form 8260-7 when no public SIAP serves the airport. This form will be incorporated as an amendment to the operations specifications of the certificate holder. If a public SIAP exists for the airport, instructions contained in paragraph 835c(2) apply. Use FAA Form 8260-10 if sufficient space is not available.

d. *Approval.*

(1) **Following quality review,** the Procedures Specialist shall sign the original Form 8260-7 in the upper portion of the space under "developed by". Pending revision of the form, the term **"recommended by"** shall be inserted in the lower half of this space which shall be signed by the FIAO Manager. Forward the completed form to the regional Flight Standards Division for final approval.

e. *Printing and Distribution.* The FPB shall provide for reproduction of the special procedure and shall 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) Regional Air Traffic Division.

(4) Air Traffic facility exercising control at the airport of concern.

(5) ATA and ALPA/APA if intended for air carrier use.

(6) Courtesy copy to Jeppesen Sanderson, Inc. and other cartographic agencies that may request copy service.

(7) ATM-600.

(8) AVN-220.

(9) FIAO.

(10) Airport Manager.

f. *Radar Special Procedures.* If there is a requirement for a radar special procedure, use FAA 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.

g. *Limitations on the Use of Special Procedures.*

(1) The Form 8260-7 is utilized for the design of special instrument approach charts and is NOT intended for cockpit use. The requirement that the procedure be charted is specified in the heading of the form. Add the following statement in the NOTES section of the Form 8260-7 restricting the use of the form: **"Specification only - Not for Cockpit Use."**

(2) Where a special procedure requires certain crew qualifications, training or other special considerations in order to execute the approach, the regional FPB shall add the following statement in the NOTES section of the Form 8260-7 restricting the use of that procedure to a particular operator: **"For use by ABC Airlines only."** If more than one user is authorized the same special procedure and there are no differences in the procedure design, the

FPB shall maintain a list of authorized users. This will preclude amendments to the 8260-7 form when users are added.

(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 in accordance with Order 8260.31. In such cases, the FTIP may be documented on Forms 8260-7 and processed in accordance with Order 8260.31.

834. FAA FORM 8260-10. CONTINUATION SHEET.

a. *Use.* FAA Form 8260-10 is used as a continuation sheet for Forms 8260-3, 4, 5, or 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 shall be completed as follows:

(1) **Enter the type procedure** and FAR Part numbers as required.

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

(3) **Enter the city, state, airport, etc.,** identical to the information presented on Page 1 of the SIAP.

(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 Form 8260-3/4/5/7 shall be page number one, with additional Forms 8260-10 numbered sequentially.

b. *Certification.* The last page shall be the only page certified except for special instrument procedures, which shall be certified on the reverse side of the basic Form 8260-7.

835. FAA FORM 8260-15, DEPARTURE PROCEDURES/TAKEOFF MINIMUMS.

a. The *FAA Form 8260-15 documents and facilitates* transmittal of non-standard takeoff minimums and/or IFR departure procedures. It shall be used to transmit IFR departure procedures to operators with special instrument approach procedures (Form 8260-7) if public use SIAPs (FAR 97) are also authorized at the same location. At airports served only by special instrument procedures, document takeoff minimums and departure procedures on Form 8260-7.

b. *Use Form 8260-15 when:*

(1) **Any runway** requires higher than standard takeoff minimums.

(2) **IFR departure procedures** are required at an airport.

(3) **A SID is published,** and pilots must comply with the SID for obstacle avoidance.

(4) **Denying lower than standard takeoff minimums.** When touchdown and rollout RVR is available on runways with centerline lights and either RVR is installed on a baseline GREATER than 250 feet, deny takeoff minimums lower than RVR 1200/1000 by adding the following standard Note on Form 8260-15:

"RWY 27R, Air Carrier reduction below RVR 1200/1000 NA."

c. *Forms 8260-3, -4, -5, and -7.*

(1) **If the takeoff minimums are standard** for all runways, and IFR departure procedures are not required, check the **"STD"** box. Standard takeoff minimums shall apply and the Form 8260-15 is not used. If takeoff minimums are standard for all runways, but IFR departure procedures ARE required, the Form 8260-15 is used. See paragraph 835e.

(2) **If the Form 8260-15 is used,** check the box entitled, **"See FAA Form 8260-15 for this airport."**

d. *FIAO preparation of Form 8260-15.*

(1) **Coordinated With.** Enter **"X"** in the appropriate spaces. Type in other required coordination. Coordination shall be identical with the approach procedure coordination as outlined in paragraph 837d.

(2) **Body of Form.** Enter, as required, the following four headings in the order listed:

(a) "TAKEOFF MINIMUMS".

1. List runways authorized standard takeoff minimums.

2. Immediately below, list any deviations from standard minimums; e.g., restrictions.

(aa) When obstacles preclude standard takeoff minimums, provide higher than standard takeoff minimums or standard minimums with a climb gradient. Use standard Note: **Rwy 9, 400-2, or Standard with minimum climb of 235' per NM to 1500.**

3. Following the deviations, list remaining runways with ceiling and visibility minimums.

4. When low, close-in obstacles cause a climb gradient to less than 200 feet above DER (see TERPS paragraph 1205d), inform the pilot of the obstacle(s)' height (AGL) and location relative to the DER. Use standard note: **"50'AGL trees 120' left of departure end of runway"**; or, **"50'AGL bldg 500' from departure end of runway, 350' right of centerline."**

(b) "IFR DEPARTURE PROCEDURES." List the required departure procedures.

(c) "TAKEOFF OBSTACLES." Identify the location of controlling obstacles.

1. These obstacles, found only in Zone 1/Section 1, are defined as those which require higher than standard takeoff minimums or standard minimums with a climb gradient.

2. List the runway affected, elevation and type of obstacle, and the coordinates to the nearest second; e.g., **"RWY 32: 1449 Terrain 341402/861932."**

(d) "DEPARTURE OBSTACLES." Identify the location of controlling obstacles.

1. These obstacles, found outside Zone 1/Section 1 but within subsequent departure trapezoids, are defined as those which require non-standard takeoff minimums and/or a climb gradient to be published. However, if no ceiling/visibility is required, the controlling obstacle is that which causes the departure routing to be established. In the latter case, the obstacle might not be in the departure trapezoid.

2. List the runway affected, elevation and type of obstacle, and the coordinates to the nearest second; e.g., **"RWY 32: 2049 Terrain 341548/862101."**

(3) Developed By. The procedures specialist developing the data shall sign in the "developed by" space which also includes date and FIAO.

(4) Approved By. The FIAO manager shall sign in the "approved by" space which also includes date and FIAO.

(5) City, State / Airport. Complete this block with the same location and airport name as the associated approach procedure(s).

(6) Effective Date / Amdt No. The **effective date** should normally be concurrent with a SIAP amendment.

(a) If the Form 8260-15 represents a **concurrent action,** place an attention symbol (* for example) in the effective date space and enter the following in the body of the form: **" * Concurrent with (SIAP and amendment number)."**

(b) Enter **"Routine"** when submitting a Form 8260-15 submitted without an accompanying change to the associated SIAP(s).

e. *Process the 8260-15 forms* as specified in paragraph 840, except ATM-600 receives the original only.

f. *Cancellation of Form 8260-15.* When all takeoff minimums for an airport become standard and no restrictions, special provisions, or departure procedures are required, the Form 8260-15 shall be canceled. **To cancel:**

(1) Enter city, state, airport, effective date of current amendment, and amendment number on the bottom line of a blank Form 8260-15.

(2) Enter "Canceled effective ____" in the center of the form.

(3) Beneath this entry, explain the desired cancellation date, or enter: **"Routine."**

g. *Charting agencies* will add the takeoff minimums and departure procedures, and add the "T" symbol to the SIAP charts, based on an original Form 8260-15. They will delete the takeoff minimums and departure procedures, and delete the "T" symbol from the SIAP charts, based on a Form 8260-15 cancelation. **SIAP amendments** are NOT required for these purposes. However, at the time of the next SIAP amendment, update the "Takeoff" block on the SIAP form accordingly.

SECTION 5. CERTIFICATION, PROCESSING AND REVIEW

836. GENERAL.

Certification, processing, and review of instrument approach procedures shall be accomplished as outlined in this section.

837. CERTIFICATION AND DISTRIBUTION OF SIAPs.

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

a. *All Affected Procedures Reviewed.* Enter **"X"** in the appropriate space.

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 shall be identified; e.g., **AF survey, ALP, OC, Map Study, AVN, NOS, etc.** If sufficient space is not available to list coordinates of all new facilities, the space under "Changes" shall be utilized.

c. *Required Effective Date.* The effective date for manually developed or IAPA procedures should be either "Routine", "Proposed", "Concurrent", or "Hard".

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

(2) Proposed Dates. Use proposed dates *only* when facility commissioning or decommissioning is involved. This includes SIAP originals, amendments and cancellations. Refer to FAA Order 8260.26B for further guidance. Enter a proposed date as: **"P12/08/91"**.

(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 concurrent date as **"C12/08/91"**, or the airspace docket number as: **"C91-AGL-29"**. 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 91-AGL-29."**

(4) Hard Dates. Issue hard dates *only* for facility rotations. Enter a hard date as **"12/08/91."**

(5) Deviations. Deviations from these guidelines require a Memorandum/letter from the requesting office; e.g., FPB, regional AT, etc., through the FIAO to AVN-220 detailing justification. See Order 8260.26B, paragraph 8.

d. *Coordinated With.* Coordinate all original processing and revisions to instrument approach 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 parties as necessary. Coordinate procedures with ATA and with ALPA if the airport is served by scheduled air carriers. Coordinate with APA (Allied Pilots Association) for procedures at airports utilized by American Airlines. This coordination action is required to provide advance notice to the user organizations that a change to FAR Part 97 is being initiated. Users 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 permits sufficient time to amend or withdraw the paperwork prior to publication. See paragraph 908 for further guidance.

(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 and signature** of the **airspace system inspection pilot** who conducted the flight check and the date. A signature in this block *certifies* that the SIAP meets flight inspection requirements. In the absence of the flight inspection pilot, the

flight inspection **section supervisor** shall sign this block. Enter the name, title and signature of the **flight operations/scheduling section supervisor** who makes the determination that an amendment does NOT require a confirming flight inspection. Include the date of the most recent flight inspection of the facility and SIAP. Use the word **"pending"** if the procedure is submitted prior to flight check under Order 8260.26B or if publication is required on a specific charting cycle date. **Record copies** maintained in the FIAO shall be signed by the flight inspection pilot upon completion of all flight inspection requirements.

f. *Developed By.* Enter the name and signature of the procedures specialist responsible for developing the SIAP, and the date signed. Authority to sign in this block is assigned to: airspace system inspection pilots, GS-2181-13 or higher; and supervisors, regardless of job series. The signature in this block *certifies* that:

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

(2) The SIAP was developed in accordance with appropriate policies, directives, standards, and criteria. (See special instructions for FAA Form 8260-7 in paragraph 833.)

g. *Approved By.* Enter the name and signature of the FIAO manager. The signature in this block *certifies* that the SIAP:

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

(2) Was flight checked in accordance with applicable directives and standards. "Pending" SIAPs forwarded under FAA Order 8260.26B, Establishing and Scheduling Instrument Approach Procedures Effective Dates, will be flight checked at a later date.

(3) Is approved for proposed rulemaking action (FAR Part 97) and publication.

(4) Was developed using the most accurate data available.

h. *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.

i. *Simultaneous NOTAM Cancellation.* In the event the revision supports an FDC NOTAM which will be canceled on the effective date of the revision, the following Note shall be added in the lower part of the REASONS block: **"This cancels FDC 9/175."**

838. CANCELLATION OF INSTRUMENT APPROACH PROCEDURES.

Cancellation of instrument approach procedures shall be accomplished on the same form number as required for documentation of the SIAP.

a. *Entries.* All items on the front side of the forms shall be left blank, except type of procedure and the CITY, STATE line. This line shall duplicate the currently effective SIAP. The following notation shall be typed in the NOTES section: **"Procedure canceled effective _____"** (NFDC will fill in the date.) If applicable, enter in the lower portion of the REASONS block: **"Concurrent with VOR Rwy 18, Original."**

b. *IAPA.* The methodology for cancellation of IAPA generated procedures is contained in the IAPA USERS MANUAL (IUM), chapter 3, paragraph 3.5.4.

839. MINOR REVISIONS TO SIAPs.

Except for IAPA procedures forms, minor changes to instrument approach procedures on existing manual forms may be made providing the form can be reproduced and the changes can be made so that the panel will be camera-ready.

840. PROCESSING.

The AVN system of quality control is designed to ensure that policy and standards are uniformly applied, and that procedures are complete and accurate. The objective is to develop instrument procedures that can be can be published without change after final review. When the FIAO quality review is completed, the procedure shall be forwarded to NFDC for publication.

a. *SIAP Transmittal.* Authority to transmit SIAPs rests with the FIAO manager. When electronically transmitting IAPA generated SIAPs, use the user identification code (UIC) and password assigned to the FIAO manager. Use of the UIC and password shall be in accordance with the security provisions of Order 1600.54, Security of FAA Automatic Data Processing Systems and Facilities.

b. *Distribution.* The FIAO shall distribute public-use SIAPs as follows:

ATM-600	Orig. + 2 copies
AVN-220	1 copy
FPB	1 copy
Users (Paragraph 837d)	1 copy
FIAO	1 copy

(Refer to paragraph 833c for Special SIAP distribution channels.)

841. FIAO AND FPB REVIEW OF SIAPs AND CHARTS.
FIAOs and FPBs shall review and check FAA Forms 8260-3/4/5/10, and the associated aeronautical charts published by National Ocean Service (NOS) for variations from information submitted for publication. The FPB shall immediately report any variance or charting discrepancies identified to the attention of the FIAO. If safety of flight is involved, the FIAO shall be responsible for notifying the NFDC to initiate appropriate emergency action (Chart Correction NOTAM) to amend the procedure or to suspend its use until corrected charts can be issued. See paragraph 237.

842-899. RESERVED.

CHAPTER 9. FORMS AND FORM USE

SECTION 1. PROCEDURES FORM PROCESSING

900. INTRODUCTION.

This section provides a centralized source of guidance for Flight Standards personnel responsible for processing flight procedures forms.

901. FIAO ACTION.

a. *Forms Routing.* The following figure provides easy routing reference for FIAO forms processing. Specific directive references are included for further guidance.

b. *Frankfurt IFIO* shall process Army forms as required by the U.S. Army Aeronautical Services Detachment, Europe (USAASDE).

FAA Form	ATM-600	AVN-220	Regional FPB	ARTCC	ATCT	ATA, ALPA, APA, AOPA, NBAA, and FSDO.	FIAO Work File	Ref. (8260.19 para. unless noted.)
8260-1 (except Army)	FIAO or Regional FPB originates. Send to appropriate office for endorsement; thence thru AVN-200 to AFS-400. All offices make their own copies. Completed Orig returns to FIAO.						1	274, 903
8260-1 (Cancelation)	FIAO, Regional FPB, or AFS-400 cancels, giving date and reason. Send copies to same offices receiving approved waiver.							277, 903
8260-2 (except Army)	Orig & 2	1	1	1	1	*	1	904 - 907
	* For Special procedures, Regional FPB distributes to users.							
8260-3/4/5/15 8260-10 (Continuation)	Orig & 2	1	1	1	1	1	1	840
8260-10 (DF)	1	1	1	1	1 to DF control facility		Orig	432
8260-7		1	Orig				1	833
	Orig to Regional FS Division. After approving, FPB distributes:							
	1	1		1	1	as appropriate	1	
8260-9		1	1				Orig	909
8260-16	Orig + 2	1	1	1		*	1	910
	To ATP-230: 1 copy if associated with an airspace action. * For Off-Airway routes, Regional FPB distributes to users.							

FAA Form	ATM-600	AVN-220	Regional FPB	ARTCC	ATCT	ATA, ALPA, APA, AOPA, NBAA, and FSDO.	FIAO Work File	Ref. (8260.19 para. unless noted.)
ARMY: 8260-1/2/9/ 11/12/13/ 20/21		1	1				1	8260.15C paras 11b & 11c.
	All except -9: Orig to USAASA and 1 copy to the DARR. 8260-9: 1 copy to USAASA and 1 copy to DARR.							
USAF: 8260-11/12/ 13/20		1	1				1	8260.32A para 9f.
	FIAO obtains local Commander's endorsement, then sends Orig & 3 to the Major Command TERPS Office (MAJCOM/SCF).							
8260-2	Include 4 copies of -2 for each USAF fix.							
8260-9	Include 3 copies of -9 for each SIAP.							
7100-1/2/3/4 (SID/STAR)		1					1	461
	FIAO returns signed forms to ARTCC (or as preferred by Regional FPB)							
Substitute Routes	For publication: 2	1	1	1			Orig	314
	Non-publication:		1	1				
6050-4 (ESV)	Multiple form. Routing is specified on each page. 1 copy to AVN-240.							902

Figure 9-1

SECTION 2. EXPANDED SERVICE VOLUME REQUEST, FAA FORM 6050-4

902. PREPARATION OF FAA FORM 6050-4. Figure 9-2 is an example of a completed FAA Form 6050-4. See also paragraph 210.

a. *Part I.* This is to be completed by the originating office. State the office, airspace docket number (if this request is associated with airspace action), and the state in which the navigational facility is located. Check establish, revision, or cancel, as appropriate.

(1) Facility Data. Enter the navigational facility name (as charted) and identifier; the facility and class; the city where the facility is located; and, the frequency/channel of the facility.

(2) Expanded Service Volume Data. Enter the radial, distance, minimum and maximum MSL altitudes desired, and the operational use (requirement) of the request. Enter the name and signature of the individual initiating the request, the individual's office, and the date of the request.

b. *Part II.* To be completed by the Regional Spectrum Management Officer (SMO).

c. *Part III.* To be completed by the FIAO. Check approved, disapproved, or restricted, as appropriate. In remarks, state how the approval, disapproval, or restricted determination was made (restricted is relative to the requested data). Enter the name and signature of the individual responsible for FIAO action, the FIAO office, and the date.

d. *Cancellation.* The originating office effects ESV cancellation by completing an FAA Form 6050-4 and checking "cancel" in Part I. If the cancellation originates in the FIAO, enter "CANCELED" in Part III of the FIAO copy and enter the name and signature of the individual responsible for FIAO action, the FIAO office, and the date. (The stamp used for cancellation of FAA Form 8260-2 may be used for this purpose.)

e. *Distribution.* Disseminate approved, revised or canceled ESV requests as follows. Reproduce and include one copy to AVN-820. Forward copies 3-6 to the FPB for distribution to regional offices and ASM-500.

Copy 1 - Air traffic facility having jurisdiction over the procedure which required the ESV.
Copy 2 - Retain in the FIAO.
Copy 3 - Spectrum Engineering Division, ASM-500.
Copy 4 - Region SMO.
Copy 5 - Region ATD.
Copy 6 - Region FPB.

f. *Disapproved ESV requests.* Return to the originating office through the SMO.

EXPANDED SERVICE VOLUME REQUEST

PART I - *(FOR USE BY REQUESTING OFFICE)*

FROM (Originating Office)	AIRSPACE DOCKET NUMBER		
OKC FIFO		X	EXPANDED SERVICE VOLUME
		X	ESTABLISH
	STATE		REVISION
	CO		CANCEL

FACILITY DATA

CHART NAME	LOCATION (City)
GUNNISON (GUC)	GUNNISON
TYPE/CLASS	**FREQUENCY**
H-VORTAC	114.9 CHAN 96

EXPANDED SERVICE VOLUME DATA

RADIAL	DISTANCE	ALTITUDE		REQUIREMENT
		MINIMUM	MAXIMUM	
062	140	18000	37000	Off Airway Route - Frontier AL

SIGNATURE	FACILITY	DATE
F. P. SPECIALIST	OKC FIFO	7/14/82

PART II - *(FOR USE BY FREQUENCY MANAGEMENT OFFICER)*

EXPANDED SERVICE VOLUME ☒ APPROVED ☐ DISAPPROVED ☐ RESTRICTED

REMARKS (Distance, Altitude Restrictions, etc.)

SIGNATURE	ROUTING SYMBOL	DATE
F. M. OFFICER	ANM-426	7/26/82

PART III - *(FOR USE BY FLIGHT INSPECTION FIELD OFFICE)*

EXPANDED SERVICE VOLUME ☒ APPROVED ☐ DISAPPROVED ☐ RESTRICTED

REMARKS

Flight inspection satisfactory:

GUC to GUC R-062/140 @ 18000.
GUC R-062/140 to GUC @ 37000.

SIGNATURE	ROUTING SYMBOL	DATE
F. P. CHIEF	OKC FIFO	8/9/82

FAA Form 6050-4 (4-78) SUPERSEDES PREVIOUS EDITION

RETURN TO ORIGINATOR

Figure 9-2

SECTION 3. FLIGHT PROCEDURES STANDARDS WAIVER, FAA FORM 8260-1 (RIS:FS8220-7)

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

Itemized instructions for completing FAA Form 8260-1 are as follows: (See figures 9-3 through 9-5a for examples of completed waiver forms.)

a. *Date:* Enter the date the originating office prepared the form.

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., **"Penetration of 20:1 and 34:1 slopes. TERPS paragraph 332."** Request only ONE waiver of standards on each form. 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.

d. *Item 3: Reason for Waiver.* The reason for the waiver shall be clear and concise. If the waiver for an existing procedure is being revised, the effective date of the original procedure shall be included. Include full justification for the waiver; e.g., **"To allow visibility reduction to 1/2 mile for MALSR approach light system."**

e. *Item 4: Equivalent Level of Safety Provided.* Complete this item in all cases. Clearly state the equivalent level of safety.

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

f. *Item 5: How Relocation or Additional Facilities Will Affect Waiver Requirement.* Enter statements in this item to indicate that considerations have been given to relocation, programming, or reprogramming action to alleviate the requirement of a waiver of standards. Normally, the 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 whom this waiver will be coordinated.

h. *Item 7: Submitted By.* The office (FIAO or FPB) that initiated the waiver request shall complete this item.

i. *Item 8: Regional/FIAO Endorsement.*

(1) **If the FIAO initiates the waiver,** the FPB completes this section. **If the FPB initiates the waiver,** the FIAO completes this section. The endorsing office shall add any comments that will support the waiver or assist in its evaluation, and forward it to AVN-200.

(2) **If,** subsequent to the informal coordination stated in paragraph 274a, **the endorsing office considers the waiver unnecessary,** it shall so indicate and return the waiver to the originator.

j. *Item 9: AVN Endorsement.* The Flight Procedures and Inspection Division, AVN-200, shall coordinate internally as necessary, check the appropriate box, add any useful comments, and forward the waiver with accompanying technical data to AFS-400. AVN-200 shall distribute waiver origination and/or cancellation forms to AVN-540 which is the office responsible for the waiver computer automation files.

k. *Item 10: AFO Action.*

(1) The Technical Programs Division, AFS-400, shall indicate Washington Headquarters action, add any appropriate comments, and distribute the completed form as follows: (See also figure 9-1)

FIAO	Original
Regional FS Division	Copy
AVN-200	Copy
AFS-400	Copy

Each division (AVN-200 and AFS-400) shall distribute copies to the appropriate offices within its organization.

l. *Cancellation of a waiver* may be done by the initiating office or by AFS-400. The canceling office shall enter a signed statement to that effect, with the effective date and reason for cancellation. (See figure 9-3A.) The canceling office shall then distribute copies to the same organizations that received the approved waiver.

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

Reports Identification Symbol FS 8220-7

Date 4/8/77

1. Flight Procedure Identification

Schellville, CA, Sonoma Valley, LOC/DME RWY 20

2. Waiver Required And Applicable Standard

TERPS paragraph 288c: "One stepdown fix is authorized in the intermediate segment."

This procedure requires the use of three stepdown fixes in the intermediate segment.

3. Reason For Waiver *(Justification for nonstandard treatment)*

To retain the present straight-in approach HAT 657. Limitation to one intermediate stepdown fix would require a 340 foot increase in MDA and permit circling only, with visibility increased to 1 1/4 CAT A, 1 1/2 CAT B, and 3 miles CAT C and D.

Use of multiple stepdown fixes was not subject to waiver before publication of FAAH 8260.3B.

4. Equivalent Level of Safety Provided

1. Fixes are limited to DME with resulting low cockpit workload.
2. Descent gradient in the intermediate segment is nearly constant, varying from 285.7 to 300'/nm. This contributes to safety by encouraging establishment of a stabilized descent through the intermediate segment.
3. Obstacle clearance exceeds requirements in all segments.

5. How Relocation Or Additional Facilities Will Affect Waiver Requirement

These fixes are mandated by terrain in the intermediate segment.

6. Coordination With User Organizations *(Specify)*

ATA, ALPA, AOPA, NBAA, SAC FSDO.

7. SUBMITTED BY

Office Identification	Title	Signature
STS FIFO	Manager	D. T. Hatch

FAA Form 8260-1 (6-85) Supersedes Previous Edition

Figure 9-3

8. REGIONAL/FIFO ENDORSEMENT	X	Approval Recommended
		Not Recommended
		Not Required

Comments

Air carrier and general aviation user comments are entirely favorable.

Date	Routing Symbol	Signature
4/10/77	AMW-220	Chief, FIP Staff

9. AVN ENDORSEMENT	X	Approval Recommended
		Not Recommended
		Not Required

Comments

Date	Routing Symbol	Signature
5/27/77	AFS-520	Chief, Flight Procedures Branch

10. AFO ACTION	X	Approved
		Disapproved
		Not Required

Comments

This waiver is cancelled effective 9/16/83.
Change 4 to TERPS permits multiple DME fixes.

Jim E. Dean
Manager, MRY FIFO

Date	Routing Symbol	Signature
11/28/77	AFS-700	Chief, Aircraft Programs Division

Figure 9-3a

U.S. Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

Reports Identification Symbol FS 8220-7

Date: 5/10/84

1. Flight Procedure Identification

Bealeton, VA, Bealeton Intl, ILS RWY 18R

2. Waiver Required And Applicable Standard

TERPS paragraphs 935 and 938b(1)
Obstacles penetrate the final approach obstacle clearance surface.

3. Reason For Waiver *(Justification for nonstandard treatment)*

To retain 200' HAT and 1/2 mile visibility without raising the 2.75 degree glide slope angle.

Trees penetrating the surface by 10' were identified on an obstacle survey. These trees are on private property and the owner refuses to allow trimming.

4. Equivalent Level of Safety Provided

1. The trees are at the extreme right edge of the approach area, where the localizer needle would be off-scale to the left.
2. The localizer-only MDA has been raised to provide the required obstacle clearance.
3. Compared to most obstacles, these trees should be considered frangible.
4. A favorable CRM Report is attached.

5. How Relocation Or Additional Facilities Will Affect Waiver Requirement

Retaining the commissioned glide slope angle, and relocating the glide slope antenna and threshold, would reduce runway length unacceptably.

6. Coordination With User Organizations *(Specify)*

ATA, ALPA, NBAA, AOPA, FRR FSDO.

7. SUBMITTED BY

Office Identification	Title	Signature
AAA-220	Manager, Flight Procedures Branch	O. T. Door

FAA Form 8260-1 (6-85) Supersedes Previous Edition

Figure 9-4

8. REGIONAL/FIFO ENDORSEMENT		
	X	Approval Recommended
		Not Recommended
		Not Required

Comments

ATC requires the 2.75 degree glide slope angle to retain a cardinal altitude at the outer marker.

Date	Routing Symbol	Signature
5/13/84	IAD FIFO	Manager

9. AVN ENDORSEMENT		
		Approval Recommended
	X	Not Recommended
		Not Required

Comments

The quoted equivalent level of safety is not adequate in this case.

Alternate courses of action are available. Waiver approval would establish an unacceptable precedent.

Date	Routing Symbol	Signature
6/23/84	AVN-200	Manager, Flight Procedures and Inspection Division

10. AFO ACTION		
		Approved
	X	Disapproved
		Not Required

Comments

The decision height must be increased in accordance with TERPS paragraph 938b(1) until action to provide required obstacle clearance is completed.

Date	Routing Symbol	Signature
11/1/84	AFS-400	Manager, Technical Programs Division

Figure 9-4a

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

Reports Identification Symbol FS 8220-7

Date 6/7/84

1. Flight Procedure Identification

SMURF VHF/DME FIX, AZ

2. Waiver Required And Applicable Standard

TERPS paragraph 1761: Minimum divergence angle.
Divergence angle of relocated intersection is 40 degrees. Criteria requires 42 degrees.

3. Reason For Waiver *(Justification for nonstandard treatment)*

Relocation of SMURF to the intersection of V4 and V293 is part of a package requested by PIX ARTCC to improve airway structure and allow more efficient use of airspace. SMURF must be an intersection to allow MEA changes for non-DME equipped aircraft.

4. Equivalent Level of Safety Provided

1. Obstacle clearance is not derogated by increased fix error. SMURF is not used below 6000 and there is no terrain as high as 4000 within 13 miles of the fix.
2. Flight check shows both facilities in tolerance.
3. Holding is not authorized.
4. DME is available from both facilities forming the fix, improving accuracy for DME equipped aircraft.

5. How Relocation Or Additional Facilities Will Affect Waiver Requirement

A radial of GHQ VOR would meet angle criteria, but would require aircraft on V4 to use two off-course facilities.

6. Coordination With User Organizations *(Specify)*

PHX ARTCC, AWM-530

7. SUBMITTED BY

Office Identification	Title	Signature
FLG FIFO	Manager	L. Supremo

FAA Form 8260-1 (6-85) Supersedes Previous Edition

Figure 9-5

8. REGIONAL/FIFO ENDORSEMENT	X	Approval Recommended
		Not Recommended
		Not Required

Comments

Relocation of this fix will expedite traffic flow in and out of the Clifton-Morenci terminal complex.

Date	Routing Symbol	Signature
6/11/86	AWM-220	Manager, Flight Procedures Branch

9. AVN ENDORSEMENT	X	Approval Recommended
		Not Recommended
		Not Required

Comments

Date	Routing Symbol	Signature
7/16/86	AVN-200	Manager, Flight Procedures and Inspection Division

10. AFO ACTION	X	Approved
		Disapproved
		Not Required

Comments

Date	Routing Symbol	Signature
12/24/86	AFS-400	Manager, Technical Programs Division

Figure 9-5a

SECTION 4. RADIO FIX AND HOLDING DATA RECORD FAA FORM 8260-2

904. INTRODUCTION.

a. *General.* All civil and military named fixes and holding patterns shall be documented on FAA Form 8260-2. Named facilities do not require this documentation unless holding is established. See also paragraph 833c(1). FAA Forms 8260-2 may be initiated by either Air Traffic facilities or the FIAO. When initiated by Air Traffic facilities, the forms shall be submitted through the regional FPB to the FIAO for review, approval, and processing. When initiated by the FIAO, the information shall be coordinated with the appropriate AT facilities. The forms shall be distributed in accordance with paragraph 905o.

b. *Entries.* All radial/course/bearing entries are magnetic unless otherwise noted. Distances less than one mile shall 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 FAA Handbook 7350.6, Location Identifiers.

905. PREPARATION OF FAA FORM 8260-2.

a. *AIRSPACE DOCKET NUMBER.* Enter the docket number when the request is associated with an airspace action. If no docket number, leave **blank.** A docket number is required when a compulsory reporting point is established, modified, or canceled.

b. *NAME.* Enter the name of the approved fix. Intersection (INT) after the name of the fix is not necessary. See paragraph 264.

(1) DESIGNATOR. When the fix is a navigation facility, include the facility; e.g., **DENVER VORTAC, JACKSON VOR, RHONE OM, AVON NDB, ARUBA LOM, BONLI FM.**

(2) MULTIPLE DESCRIPTION. When a fix is identified by more than one method, include these methods in the fix type blocks. When an **RNAV waypoint** is collocated with another type of fix, use the same name for both.

(3) FIX TYPE. Enter the fix type(s) in the appropriate box(es), e.g., **DME, VHF, VHF/LF, LF,** or combinations thereof. List the following above the fix type boxes: for an *RNAV waypoint*, enter an **X** followed by **WP**; for *MLS*, enter an **X** followed by **MLS**; for *MLS RNAV*, enter an **X** followed by **MLS WP**; for a *RADAR Fix*, enter an **X** followed by **RADAR.** If *facility only*, no entry is required in "Fix Type" boxes.

c. *STATE.* Enter the two letter identifier of the state in which the fix is located. If the fix location is offshore, the name of the nearest state shall be used. Use **GU** for Guam. If the fix is outside the U.S. CTA/FIR, use **OA** for Offshore Atlantic, **OG** for Offshore Gulf of Mexico, or **OP** for Pacific.

d. *BLOCK 1. RADIO FIX.*

(1) TYPE OF ACTION. Enter in the appropriate box the type of action being taken. This is applicable to block 1 only, and NOT to be confused with block 2, HOLDING.

(2) FACILITY BLOCKS. 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 airways, list the source facility farthest from the fix as Facility 1, and the crossing source facility as Facility 2. If a third facility is involved, list it as Facility 3. If more than three facility blocks are required, enter the additional facility information in the REMARKS section. **Terminal:** The facility providing positive course guidance is Facility 1. If the fix is *DME,* list the DME source, if other than facility 1, as Facility 2. If the fix is an *intersection,* list the crossing course facility as Facility 2. If a third facility is involved, list it as Facility 3. If more than three facility blocks are required, enter the additional facility information in the REMARKS section.

For a VOR/DME RNAV waypoint, list the reference facility information in Facility 1 block. Leave facility blocks **blank** for non-VOR/DME RNAV waypoints.

(a) NAME. Enter the name and identifier of the navigational facility, or the name (radio call) of the ATC facility, which is used to form this fix; e.g., **DENVER (DEN); ROONEY APPROACH.**

(b) TYPE/CLASS/CATEGORY. Enter the SSV Class, the facility type nomenclature and monitoring category of each facility used to form this fix; e.g., **H-VORTAC-1, L-VOR-1/3, LOC-1, LOC/DME-1, MH-NDB-1, H-NDB-4, LOM-4, MLS-1, MLS/DME-1, MLS/PDME-1, ASR, ARSR.**

(c) RADIAL/COURSE/BEARING. Enter the radial, course, or bearing from each facility used to form this fix to the nearest hundredth of a degree. *Localizer* entries are in compass points and true course from the antenna; e.g., **NW CRS (324.45).** For *MLS*, enter AZ bearing to the nearest hundredth of a degree. For *VOR/DME RNAV*, the calculated azimuth from the reference facility forming the RWY WP is used **unless** flight inspection requires a different azimuth. In parentheses, enter the **true** radial/course/bearing to the nearest hundredth of a degree. Enter a **dash** if radial/course/bearing is not defined.

(d) DME DISTANCE. When a *DME Fix* is designated, enter the DME distance to the nearest hundredth of a mile from the facility providing DME information. Compute terminal courses and distances from the same hundredth of a mile. If the facility providing DME information is not collocated with the facility providing course guidance, list both facilities. See paragraph 807g(4)(g). Enter a **dash** when DME is not part of the fix makeup from an off-course facility used to define an intersection UNLESS the crossing radial is part of an airway segment.

1 For *MLS*, enter along-track distance, if applicable; e.g., **ATD 4.13.** See figure 9-10.

2 For *VOR/DME RNAV*, use the calculated distance from the reference facility to the RWY WP regardless of flight inspection findings.

3 For a *radar fix*, enter the distance from the fix to the threshold (straight-in minimums). Distance shall be entered to the nearest tenth of a mile in the following format: **"5.8 RADAR*, 6 RADAR*".** The asterisk denotes that an entry in the REMARKS section is required. When circling-only radar minimums are authorized, state the distance from the fix to the nearest landing surface; or, if an on-airport facility is the missed approach point, from the fix to the facility.

4 If the fix is *en route*, charting agencies will round to the nearest mile for en route charts.

(e) MRA/MAA. See also paragraphs 267 and 269. The Minimum Reception Altitude (MRA) is usually based on electronic signal strength determined by flight inspection of the navigational facility. The MAA is the Maximum Authorized Altitude for use of the fix. The specialist shall consider all possible uses of the fix, request flight inspection of the lowest altitude that may be used, and insure procedure design is compatible with any limitations imposed. MRA/MAAs assigned shall be consistent with signal strength, facility volume, air traffic requirements, and air/ground communications. Enter all MRA/MAAs in hundreds of feet; e.g., 8700/45000 shall be entered as **87/450.** When the fix is a facility, enter a **dash** for MRA; e.g., **-/120.** Fixes shall reflect the airspace structure in which they are used; e.g., low altitude **10/45, 10/120, 70/175;** high altitude **180/450.**

(f) DISTANCE FROM FACILITY. When the fix is an intersection, enter the distance from the governing facility to the nearest mile. The definition of governing facility is contained in TERPS paragraph 1760. When the fix is not an intersection, leave **blank.**

(g) LEAST DIVERGENCE ANGLE. Enter the **smallest** angle formed by the radials/courses/bearings of the facilities used to form this fix. True radials, courses, and bearings, as used in HP-97 and IAPA calculations, provide the most accurate determination of actual divergence angle. Use the true divergence angle

(in whole degrees). When the fix is formed by more than two facilities, the least angle may not meet criteria. Determine whether the fix is satisfactory by examining how it is used. Consider the flight path, and what course indications will actually be used by the pilot. When the divergence angle is less than 30 degrees (45 degrees for holding), include a note in the REMARKS section indicating the terminal fix criteria used; e.g., **TERPS paragraph 287(c).** When the fix is not an intersection, leave **blank.**

(h) AIR/GROUND COMMUNICATIONS. Enter the ground station(s) providing communications, and check the appropriate frequency range box(es). Enter the lowest altitude at which satisfactory communications are provided at this fix. The procedures specialist must ensure available communications at fix use altitudes. If the communications altitude is higher than the fix MRA, holding altitudes and/or use of the fix as an ATC reporting point may be restricted. Flight inspection and ESV forms provide a source for this data.

(i) MRA OF OTHER FACILITIES AT THIS FIX. See also paragraphs 267 and 269. Enter the facility identification, type and class, radial, course, or bearing, DME distance, and the MRA/MAA of other facilities whose radials, courses, or bearings intersect this fix and could be used as substitutes during the shutdown of the primary facility or for other purposes. Data entered in these blocks shall be to the same order of accuracy as data entered in Block 1A. Enter the FIAO which conducted flight inspection verification and the verification date. When not applicable, leave **blank.**

(j) AUTHORIZED USE OF THIS FIX. Enter the use of this fix in the appropriate boxes. Check low boxes for fix use below 18000; high for 18000 and above (this also applies to Blocks 4A and 5). If the fix is compulsory, see also paragraph 905a. If an MCA or MRA is established at the fix, check the "flag required" box and enter the flag note in the space provided. The flag note box provided on this form is used for MCA or MRA notes at the fix. Any change in an en route MCA or MRA shall be submitted as an amendment to the airway on Form 8260-16.

(k) RADIO FIX IS. Check the approved, disapproved, or restricted box. Check the restricted box when this fix requires an MRA or MCA, or its use is limited to an individual operator on a Special SIAP or non-Part 95 routing. Military-only fixes or fixes associated with Special SIAPs shall include an operational note in the REMARKS section; e.g., **"Restricted - Aspen Airways."** When the restricted box is checked, the approved and disapproved boxes are left blank.

e. *BLOCK 2. HOLDING.*

(1) **TYPE OF ACTION.** Enter the type of action being taken in the appropriate box. This is applicable to block 2 only, and not to be confused with block 1, RADIO FIX. When no action is being taken, leave **blank** on originals and check NO CHANGE on revisions.

(a) HOLDING REQUIRED. Enter the holding direction (as determined in figure 8-1), the identification and type of navigational facility providing course guidance. For **RNAV,** enter only **"MLS"** or **"WP"** in the "type" column. Enter the radial/course/bearing in hundredths of a degree from the WP or navigational facility on which holding is predicated, the course inbound in hundredths of a degree, the direction of turn, and the time and/or the longest DME leg length outbound from the fix for each pattern. For **RNAV,** enter the time and/or the longest leg length outbound from the fix for each pattern.

1 When a specific holding pattern is not required, leave **blank.** If more than 3 holding patterns are required, and all turns are in the same direction, the word **ALL** may be used to indicate holding in all directions. All directions in this sense shall be confined to designated airway and routes; and when used, the words **"Airway Radials"** shall be inserted in the column headed RAD/CRS/BRG. When holding is authorized in all directions, the highest minimum holding altitude shall necessarily be applied to all holding patterns. If more than 3 holding patterns are required and each is described individually, enter the additional holding pattern information in the REMARKS section.

(b) HOLDING ALTITUDES. Enter the minimum and maximum holding altitudes

authorized for each aircraft speed category and for each holding pattern. Authorized altitudes shall be no lower than the lowest altitude requested by ATC. When holding accommodates civil jets, include speed categories 200-230K or 265K, as appropriate; when holding above 14,000 feet, use 265K. See Figure A4-6 and FAA Handbook 7130.3, Holding Pattern Criteria, Figure 1. The minimum and maximum holding altitudes for speed categories should be consistent, if feasible. When no holding is specified, leave **blank.** Enter all holding altitudes in hundreds of feet; e.g., 8700/45000 shall be entered as **87/450.**

1 Multiple use holding. When documenting holding patterns which are also used for holding in lieu of PT, the minimum holding altitude specified shall not be less than that used in the SIAP, and the controlling obstacle shall include the applicable accuracy code adjustment. Where the holding pattern has multiple uses, enter the highest minimum altitude determined from all applications as the minimum holding altitude.

(c) REASON FOR NONSTANDARD HOLDING. When holding with left turns, state the reason; e.g., **Terrain.** If standard, leave **blank.**

(d) HOLDING IS. Indicate whether holding is approved, disapproved, or restricted.

1 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. Holding approval for en route fixes indicates approval of unplanned holding.

2 When unplanned holding is not recommended, holding should be disapproved or restricted. When planned or unplanned holding is restricted, add an appropriate note in the REMARKS section; e.g., **"Holding limited to established pattern(s)"; "Unplanned holding NA 090 CW 220"; "Unplanned holding NA on R-120 CW 272"; "Unplanned holding authorized at or above 5000'."**

3 En route fixes which also serve as missed approach clearance limits shall permit holding and en route flight. If holding is not specified, assure that the aircraft can hold on the missed approach course leading to the fix and document the controlling obstacle in Block 7.

f. *BLOCK 3. REMARKS.* The foregoing instructions recommend several uses for this section. Additional uses are as follows:

(1) **FIX USE.** List all airways that use the fix. List all terminal procedures that use the fix by city/state, and SIAP ID (include airport name if necessary). This assists charting agencies, and helps assure that affected airways or procedures are not overlooked when the fix is modified. Explain special fix or holding charting requirements. See also paragraph 808b.

(2) **LATITUDE/LONGITUDE.** Enter the fix or WP latitude and longitude in the lower left corner of the space, computed using the primary means of identifying the fix, and accurate to at least the nearest hundredth of a second; e.g., **380254.32/1035554.49.** En route fixes shall be calculated using the exact true courses between facilities making up the airway segment. If the fix is also used in a terminal procedure, then terminal priorities shall prevail.

(a) If the fix can be formed in more than one manner, show the facilities used to calculate the coordinates given, and record only one set of coordinates on the form.

(b) A few nonstandard situations exist in which the same facility serves two closely spaced parallel ILS localizers or MLS azimuths. For *OM/MM/IM*, use actual coordinates if the facility resides on the loc/az centerline. Otherwise, establish marker coordinates where the fix/marker major axis intersects the loc/az centerline. For *LOM/LMM/LIM*, use actual coordinates if the facility resides on the loc/az centerline or is within one-half the commissioned width of the loc/az from centerline. Otherwise, establish fix/marker coordinates where the marker major axis intersects the loc/az centerline.

(3) REQUIREMENTS FOR CHARTING. When it is necessary to clarify fix charting requirements (fix associated with specific SIAPs, SIDs, STARs, airways), specify which facilities are to be charted on certain charts; e.g.,

"FAC 1 & 4 CHART EN ROUTE LOW, FAC 1, 2, & 4 SID CHARTING." When it is necessary to clarify the charting requirements for holding pattern(s), list holding pattern charting.

(4) MINIMUM TURNING ALTITUDE (MTA). When an MTA is required by TERPS paragraph 1714(c), enter the MTA in the REMARKS section.

(5) Radar Fix. If applicable, explain reference "*" from Block 1, DME DISTANCE; e.g., **" * RADAR FIX 5.8 NM FROM AER 13, MERCY, NE."**

g. *BLOCK 4. AIR TRAFFIC REQUESTS APPROVAL OF REFERENCED FIX FOR:*

(1) NAME. Enter the name of the approved fix. See paragraph 905b. This block will assist in correlating front and back sides of the form when using PerFORM PRO to make two-sided copies.

(2) REPORTING POINT. Indicate whether a compulsory or an on-request reporting point is required. Indicate the airspace structure for which the fix is desired.
See also paragraph 905a.

(3) HOLDING. Enter the minimum and maximum holding altitudes authorized by air traffic and required for each aircraft speed category and for each holding pattern. Enter the template number of the holding pattern required for the highest altitude authorized in low and high strata for each speed category and for each holding pattern. When no holding is specified, leave **blank.** For **VOR/DME RNAV,** the distance from the WP to the reference facility shall be applied as the "fix-to-NAVAID distance" in figure 3 of FAA Handbook 7130.3, Holding Pattern Criteria. For **non-VOR/DME RNAV,** use the "15-29.9NM" distance column for terminal holding, and the "30 NM and over" distance column for en route holding in figure 3 of FAA Handbook 7130.3.

(4) HOLDING AREAS. Indicate whether all holding is completely within controlled airspace and clear of restricted or warning areas. When holding is not completely within controlled airspace or clear of restricted or warning areas, an entry shall be made in the REMARKS section indicating the action required by ATC. Example: **"Prior coordination required with controlling agency for holding over R-5503A/B and/or Brush Creek MOA."** When no holding is authorized, leave **blank.**

h. *BLOCK 5. CHART PUBLICATION.* Indicate whether charting is required or not required. For a "special" SIAP, check "not required." If no longer required, leave the "requested" block **blank.** When required, indicate the fix charting requirements for Terminal (AREA), Standard Instrument Departure (SID), Approach Landing Charts (AL), En Route Low, and En Route High. Use the JAL column for all military SIAP charting, low and high. Indicate the holding charting requirements for Terminal (AREA), SID, JAL, and AL. When additional charting requirements are needed, such as EN ROUTE holding, indicate the requirement in the NOTE section. If additional space is required, use the REMARKS section. See paragraph 907e.

i. *BLOCK 6. INITIATED.* Enter the date, sponsoring facility, and the name and signature of the individual who initiated this form.

j. *BLOCK 7. CONTROLLING OBSTRUCTIONS.*

(1) Documentation. Enter the aircraft **speed category** (if the minimum altitudes for all speed categories are the same, show only the highest speed category); the **controlling obstruction** (obstacle description and NOS obstacle number if applicable); **coordinates** (to the hundredth of a second); **MSL elevation** (to the nearest foot); **criteria** (pattern template number, P-4, P-8, etc., corresponding to the minimum holding altitude established for each speed category); the **determination** (method used to determine the controlling obstruction) for each pattern - e.g., map study, IAPA, etc. Enter the **study date** and the **name** of the individual who conducted the study.

NOTE: No entries are required for patterns in the high altitude strata within the CONUS.

(2) Holding Pattern Analysis. 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 ROC to obstacles within each template area. Some time may be saved by **initially** evaluating the patterns for the highest and lowest altitudes requested relative to the highest speed group. If the **same controlling obstacle or minimum holding altitude** results, **document** the obstacle and the associated smaller pattern template number; the evaluation is then **complete**. If, however, the minimum holding altitudes **differ**, a more detailed incremental analysis is necessary.

(3) Unusable Holding Altitudes. Where unusable holding altitudes are found, **document** the controlling obstacle and associated pattern template number for the first usable holding altitude **above and/or below** the unusable altitude(s), and restrict holding accordingly. Record multiple obstacle information in one pattern row (e.g., Pattern 1,2,3); use subsequent rows if available, or use REMARKS. Restrict holding in the REMARKS section; e.g., "**Holding restricted to 5000'**"; "**Holding not authorized above 6000'**"; "**Holding not authorized from 2100 through 3900', or from 6100 through 8000'**"; "**Holding not authorized below 5000'**".

(4) Climb-In-Hold. Evaluate climb-in-hold, as appropriate, IAW FAAH 7130.3, Holding Pattern Criteria, paragraph 35. Document in REMARKS; e.g., "**Climb-in-hold evaluated (265K).**" Indicate in parentheses the speed group required by paragraph 35. Handle new obstacles discovered as a result of this process on a case-by-case basis in coordination with AVN-220.

k. *BLOCK8. FLIGHT INSPECTION.* Enter the FIAO which conducted flight inspection verification and the verification date. If flight inspection records are not available and the facilities are inspected by SAFI, "**SAFI**" may be entered provided the fix falls within the operational service volume for all the facilities listed. The word "**Pending**" is appropriate for facility rotations for which hard dates are established; and, may be used for any fix on original/amended SIAPs forwarded under the provisions of Order 8260.26B. Any changes required as a result of flight inspection findings would necessitate a revised 8260-2. Leave **blank** for oceanic waypoints identified by long range navigation equipment.

l. *BLOCK 9. REVISION RECORD.* Enter the revision number, the revision date, and the superseded revision number and date. When the fix is an original, enter "**Original**" and the date. The date of FIAO approval is also the revision date.

m. *BLOCK 10. REASON FOR REVISION.* State the reason(s) for the revision. When the fix is an original, leave **blank.** If applicable, enter: "**Concurrent with Jackson Hole WY VOR/DME Rwy 36, Amdt 16.**"

n. *BLOCK 11. FIAO APPROVAL.* Enter the date, FIAO, and the name and signature of the individual approving this form.

o. *BLOCK 12. DISTRIBUTION.*

(1) Distribute the approved 8260-2s for fixes, including military fixes (except Army) and fixes associated with Special SIAPs, as follows:

ATM-600	Orig. + 2 cys
FPB	1 copy
ARTCC	1 copy
ATCT (if appropriate)	1 copy
AVN-220	1 copy
FIAO	1 copy

(2) Enter the routing symbol in the box(es) for the specific office to which distribution is made.

(a) For U.S. Army fixes, distribute 8260-2s as specified in Order 8260.15.

(b) For fixes associated with Special SIAPs, the FPB shall distribute copies of 8260-2s to intended users.

(c) For fixes associated with SIDs or STARs, include normal distribution copies for ATM-600 and ARTCC in the package forwarded to the regional ATD.

p. *BLOCK 13. WASHINGTON ACTION.* This space is reserved for NFDC use.

906. CANCELLATION.

a. *FIX CANCELLATION.* When cancellations are necessary, it is recommended that a copy of the existing 8260-2 be stamped **CANCELED.** Assure that the canceled stamp includes a signature, date, and the name of the FIAO taking action.

b. *HOLDING CANCELLATION.* When holding cancellations are necessary, a revision is required. In Block 2, HOLDING, check the **CANCEL** box and in Block 2D, check the **DISAPPROVED** box. When more than one holding pattern is established and you wish to cancel an individual holding pattern and retain the other(s), a **revision** is required. In this case, check the **MODIFY** box in Block 2, HOLDING, and identify the modification in Block 10, REASON FOR REVISION.

c. *DISTRIBUTION.* Distribution shall be in accordance with paragraph 905o of this order.

907. GENERAL.

a. *SIAP Cancellation.* Whenever a SIAP is canceled, process a revision or cancellation of 8260-2s for fixes associated with that SIAP.

b. *En Route Fixes.* When it is determined that an established en route fix is to be used on another type of chart for the first time, the 8260-2 must be amended to include an **X** under the appropriate heading opposite **FIX REQUESTED** in Block 5, CHART PUBLICATION.

c. *SIAP Fixes.* Do not establish a named fix for the following unless required for control of aircraft:

(1) DME only Fix. Do NOT forward 8260-2s for unnamed DME Fixes.

(2) Starting and ending points of arc initial or feeder segments.

(3) Points where initial or feeder segments intercept the final course prior to the intermediate or initial fix.

d. *Chart Clutter.* Consider also chart clutter and chart usability prior to establishing any named fixes.

e. *Proper Charting.* When processing 8260-2s for any type of action, research all appropriate publications (AL, JAL, AREA, SID STAR, PROFILE DESCENT, EN ROUTE LOW, and EN ROUTE HIGH) to assure proper charting is or will be accomplished.

f. *Military Procedures.* The requirement to document and name all holding fixes on 8260-2s also applies to military procedures. Controlling obstacles and flight inspection must be documented.

g. *Fix Name Change.* If the FIAO initiates a fix name change, process a revised 8260-2 and explain in REMARKS; e.g., **"Name changed from LESLI to WALLS."** If ATM-600 changes the fix name by a National Flight Data Digest (NFDD) item, only a pen and ink change is required on the file copies of the 8260-2. NO SIAP amendment is necessary when a SIAP fix name is changed.

SECTION 5. FORM LETTER FOR COORDINATION OF SIAPs

908. PREPARATION OF COORDINATION LETTER.

a. *Standard Form Letter.* A transmittal is required to distribute FAA Forms 8260-3/4/5/15 to public users for comment. Comments shall be considered before the procedure is forwarded for publication. See paragraph 421. The standard letter format may apply not only to requests for user comment, but also to contacts within the administration. All replies shall be directed to the regional FPB office.

b. *Comment Date.* The date requested for submission of comments may be established based on the needs of the receiving office. However, at least 20 working days shall be allowed for reply.

U.S. Department of Transportation
Federal Aviation Administration

Aviation Standards National Field Office

P.O. Box 25082
Oklahoma City, Oklahoma 73125

Executive Assistant
National Business Aircraft Assn.
1200 Eighteenth St., N.W.
Washington, D.C. 20036

Dear Sir:

Please review the attached instrument approach procedure/procedures.

Original procedures contain new information not previously published. Amendments to existing procedures list the proposed changes on the reverse side of the instrument approach procedures.

Your comments may be made on this transmittal letter in the space provided below or by separate statement. The instrument approach procedure may also be retained for your files.

Your reply should be received no later than _____; otherwise, we will assume that you concur with this proposal. Reply should be addressed to the following office:

FAA Great Lakes Regional Office, Attn. AGL-220
2300 East Devon Avenue
Des Plaines, IL 60018

L.D. Fantin
Acting Manager, Battle Creek Flight
Inspection Field Office

Attachment

REMARKS_____

_____

Signature_____

Title_____

Figure 9-6
Standard Form Letter

SECTION 6. STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD, FAA FORM 8260-9 (RIS: FS 8260-7)

909. PREPARATION OF FAA FORM 8260-9.

The Standard Instrument Approach Procedure Data Record, FAA Form 8260-9, and the IAPA Data Record shall be prepared in accordance with the instructions below for each instrument approach procedure developed by Flight Inspection Field Offices. 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 **"(IAF)"** in the "From" column. For ILS SIAPs which have separate intermediate and final segments for ILS and LOC, 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 the FAA Forms 8260-3/4/5/7. Enter the **PT completion distance** in the "From" column opposite the intermediate or final segment, as appropriate. Enter the actual **missed approach point** in the "To" column for the final/stepdown segments. Enter **"GS Intcp"** in the "From" column and **"DH"** in the "To" column for precision final.

(c) Obstruction. Enter controlling obstruction type (tower, trees, terrain, etc.) and NOS obstacle number, if available, within each approach segment on one line; enter segment highest terrain data (if different) on the next. Make only one entry if terrain is controlling obstruction. Number each obstruction and segment highest terrain sequentially as they appear on the form in blocks 1 to 4. To satisfy Flight Inspection requirements, and for documentation purposes, manually **number** each obstruction/segment terrain data element on the IAPA generated 8260-9 form in the same manner. Corresponding numbers shall be used to identify the controlling obstructions/ terrain on an accompanying chart or IAPA/Tektronix hardcopy of the SIAP. (See Chart Documentation below). **For obstructions/ terrain common to other segments,** enter only the obstruction number in the "obstruction" column for each subsequent repetition, leaving the "coordinates" column **blank**, but completing remaining column entries.

(d) Coordinates. Enter controlling obstacle and/or terrain coordinates in degrees, minutes and seconds; e.g., **411532/943028.**

(e) Elev MSL. 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. Terrain used for airspace evaluation has no accuracy code assigned.

(f) ROC. Enter required obstruction clearance (ROC) for each segment and any required altitude adjustment. See paragraph 272a and b. For ILS/MLS, where appropriate, enter **"ASC"** (all surfaces clear). Where obstacle penetrations cause DH adjustment, enter the slope penetrated; e.g., **34:1**. Where obstacles require a glideslope higher than 3°, enter the slope supporting the higher glideslope; e.g., **31.9:1** (for a 3.2° glideslope). Document obstacle penetrations per paragraph 909a(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. The following **codes** should be used: **RA** - remote altimeter; **AS** - airspace; **AT** -air traffic; **AC** - accuracy code; **SI** - straight-in mins; **XL** - excessive length of final; **PR** - precipitous terrain; **HAA** - circling minimum HAA; **MA** - missed approach; **PT** - procedure turn; **DG** - descent gradient; **GS** - glideslope, etc.

For example: **AC50, AT100, AS1500, etc.** If necessary explain the code used in Part C - REMARKS. For ILS/MLS, where obstacles require a glideslope higher than 3°, 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). These values shall then be rounded as appropriate to hundreds of feet. Enter the computed and rounded values, separated by a "/"; e.g., **2554/2600**. 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 shall be the **higher** rounded value, and shall match the respective altitudes shown on the corresponding FAA Form 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 final/stepdown and circling shall be rounded to the next higher 20-foot increment. For ILS/MLS, enter DH and HAT values separated by a "/"; e.g., **1718/200**.

(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. Enter **"Hold-in-Lieu-of"** in the space above "Procedure Turn" as appropriate. Enter the **Hold-in-Lieu-of-PT facility/fix** in the "From" column, and the **holding template number** in the "To" column. Allow two lines for obstruction/ airspace evaluation entries.

(3) BLOCK 3:

(a) Identify the missed approach point (MAP). For ILS/MLS, list both precision and nonprecision MAPs (if not collocated), listing precision first. Enter the elevation of the missed approach surface (HMAS) at the MAP: enter the HMAS for ILS/MLS first, then for LOC/AZ. Separate both figures with a "/". For the LOC portion of an ILS with a stepdown, enter the surface elevation associated with the lowest MDA. Elaborate in REMARKS as necessary.

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

(c) Document the controlling obstacle (see paragraph 272d(3)), including 40:1 surface penetrations and 1000' level surface penetrations, by obstacle type, coordinates and elevation. Specify the controlling obstruction, coordinates, and elevation where a climb gradient is required for ILS CATs II or III.

(d) Enter **"ASC"** in the "ROC" column. Enter the clearance limit altitude in hundreds of feet MSL. Elaborate in REMARKS, if necessary.

(4) BLOCK 4: Enter the circling data for each category of aircraft authorized by the procedure. The required height above the airport (HAA), the straight-in MDA, or the circling ROC may determine the minimum circling altitude. When the minimum altitude has been established, enter the resulting HAA in the "actual" block. If two HAA's are available, enter both HAA's separated by a "/". Enter controlling obstacle type and NOS obstacle number. Enter controlling obstacle coordinates to the nearest 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' increment. If use of a remote altimeter requires a higher minimum circling altitude, enter both values separated by a "/" (or only the remote altimeter value, if applicable).

(5) BLOCK 5: Identify the navaid on which MSAs are predicated, the type of obstructions and their location by reference to bearing and distance (nearest 0.1nm) from the navaid. 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° - 360°) and only the one controlling obstacle.

(6) City/State, Airport, SIAP Data: Enter city/state, airport elevation, etc., as on FAA Forms 8260-3/4/5/7. Enter facility identification and type. 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 (A/FD).

(2) BLOCK 2: Identify the facility providing local weather reporting service, the location with reference to the airport served by the procedure, and the hours that weather service is available to the public. Split the boxes as necessary to indicate multiple sources. For record purposes, "ESSA" is now **NWS** (National Weather Service). "FAA" requires a weather observer. Enter AWOS, including level, SAWRS, LAWRS, ASOS, etc., in "Other".

(3) BLOCK 3: Identify by location identifier the altimeter setting source (or sources separated by a "/"). If the altimeter setting is derived from a remote source, indicate the distance to 0.01nm and clock hours of remote service. Indicate the resulting altitude raw adjustment (ROC increase) to 0.01 feet. Use this value rounded to the nearest whole foot increment in the "ALT.ADJ." column in Part A.

(4) BLOCK 4: Identify the primary navaid (facility providing final approach guidance) and the point providing Category 1 monitoring service. Space is provided to show hours of operation by Category 1 and Category 3 monitoring service at part-time monitoring points. The secondary navaid is used to provide the same information for supporting navaids utilized for descent fixes in the final approach segment. Alternate minimums shall not be established lower than the crossing altitude of a fix predicated on a Category 3 monitored navaid, either primary or secondary.

(5) BLOCK 5: Specify the floor of controlled airspace underlying the final approach course (FAC). Identify the type of controlled airspace and the hours of operation for control zones.

(6) BLOCK 6: Indicate the available approach and runway lighting for the airport and list the runways served by each type of lighting aid. Complete preprinted entries on computer generated form. Enter VASI, PAPI, etc., data in "Other". Enter **"(PCL)"** in the respective block when pilot controlled lights are available.

(7) BLOCK 7: 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.

(8) BLOCK 8: List each runway served by runway visual range (RVR) in the approach and roll out ends. Enter midfield RVR data on first line: e.g., **"Midfield 31"**.

(9) BLOCK 9: Provide GS/GP information as indicated for all ILS/MLS procedures to the following accuracy: GS/GP angle - nearest .01°; distance THR to GS/GP Ant -nearest foot; elevation RWY THR and GS/GP Ant - 0.1 foot; TCH - nearest 0.1 foot. These values shall agree with the AMIS database.

(10) BLOCK 10: 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 ILS/MLS, or where the FAC is directly aligned to the runway threshold. For distances from threshold between 3000' and 5200', enter the specific value. For those final approaches that parallel the runway centerline extended or intersect the centerline more than 5,200' from the threshold, specify "3000' from c/line" as well as the distance between the FAC and the centerline extended at that point. For circling or point in space alignment, explain in REMARKS.

(11) BLOCK 11: Specify the total number of waivers approved for each approach procedure and the dates of Washington approval. Where no waivers have been issued indicate **"None"** in the

"Number of Waivers on File" box.

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 811c(1)(c) and 816f.

(1) For visibility computations, make an entry only if a Paragraph 332 surface is penetrated: **"Para 332, 34:1 penetration".**

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

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

(4) For RNAV SIAPs, state the type and coordinates of the obstacle penetrating the RNAV Descent Angle Obstacle Slope.

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

(6) Enter airspace data required by paragraph 507k. Carry this information forward until amended.

(7) When flight inspection determines TCH in accordance with FAA Order 8260.47, enter: **"Flight Check RDH __ft., (Order 8260.47)."**

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

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

(9) Enter EDA high/low terrain data, if appropriate, including coordinates and elevation, for each RASS evaluated and used. (Data may be entered on front side if room allows.) If appropriate, identify the RASS by ICAO airport ID:

EDA (KEWR) 404353/741525 280'MSL
404000/740760 0'MSL

d. *PART D: PREPARED BY.* Enter the name and title of the FIAO representative responsible for preparing the data record; the date prepared; and, the originating office.

e. *PART E: Instrument Approach Procedure.* Disregard the pre-printed "Part E: Instrument Approach Procedure" section on manual forms. Continue REMARKS as necessary here and in the corresponding block on computer generated forms. A graphic sketch of the plan and profile views of the approach procedure and the operational minimums as envisioned by the Procedures Specialist shall be depicted on a separate 8 1/2" x 11" sheet. This graphic presentation becomes part of the FIAO file, and is required to test the validity of the narrative procedure and to uncover any potential charting problems prior to formal publication. A copy of the published approach and landing chart shall be attached to the Form 8260-9 as part of the permanent record.

f. *Distribution.* Completed copies of the FAA Form 8260-9 shall be retained with the associated SIAP and distributed as follows:

FIAO	Original
FPB	1 copy
AVN-220	1 copy
U.S. Army	As required

SECTION 7. TRANSMITTAL OF AIRWAYS-ROUTE DATA, FAA FORM 8260-16

910. PREPARATION OF FAA FORM 8260-16.

This form serves as a transmittal sheet of en route procedural data to be published under Part 95. It may be used by Flight Inspection Field Offices as a record of current en route information.

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.

b. *FROM/TO.* Each segment (fix to fix) shall be listed, unless succeeding segments have no significant changes. Segments must be separated at facilities, flagged fixes, and changes of MEA, MOCA, or MAA. All airways and routes terminate at the U.S. control area boundary (route alignment may be explained in REMARKS).

(1) **Route segments** are normally listed from West to East for even numbered airways, or South to North for odd numbered airways. When amending published routes, follow the order of listing in the semi-annual consolidation of Part 95 routes.

(2) **Fixes** are identified by name, state, and type, in the sequence used in the semi-annual consolidation.

c. *ROUTINE OR DOCKET NO.* Enter the docket number when the request is associated with an airspace action. If processing is to be routine, leave **blank.**

d. *CONTROLLING TERRAIN/ OBSTRUCTION AND COORDINATES.* When controlled airspace is a factor in MEA determination, make two entries: the highest terrain and the highest tree or man-made obstacle (if above the highest terrain). Use the " @ " to identify which obstacle controls the MEA, even though MRA may require a higher altitude. Show coordinates to the minute (seconds optional). Annotate a controlling obstacle that is in the secondary area, and show the required obstacle clearance. No entry is required for jet 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 feet below MEAs should not be published unless they allow use of a cardinal altitude within 25 statute miles of a facility. If a MOCA is not to be published, line it out (the figure will still be legible for office record purposes).

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.

g. *CHANGEOVER POINT.* 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 which meet en route VHF intersection criteria. Establish a named DME fix on all dogleg airways which do not meet VHF intersection criteria.

h. *FIX MRA/MCA.* Entries here are referred to the appropriate fix by an attention symbol **(*).** The same information is required on the FAA Form 8260-2 for the fix. Show the direction of flight for MCAs.

i. *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)

TRANSMITTAL OF AIRWAYS/ROUTE DATA

Reports Identification Symbol
FS 8220-6

Page 1 of 1 Pages

AIRWAY NO. OR ROUTE	FROM / TO	ROUTINE OR DOCKET NO.	CONTROLLING @ TERRAIN/OBSTRUCTION AND COORDINATES	MRA / MOCA	MAA / MEA	CHANGE OVER POINT	FIX MRA/MCA	REMARKS	FLIGHT INSPECTION DATES
V123	DONAL, VA INT	92-AEA-152	Terrain 549 @ 384100/775511	1600	17500		* MRA 3000		3/12/92
	Funai, VA VORTAC		Stack 762 382150/773105	~~1800~~	2000				
V123	Funai, VA VORTAC	92-AEA-152	Terrain 850 390100/784311	2000	17500			1200 floor	3/12/92
	SHIRL, VA DME Fix		Tower 1560 @ 385601/781241	~~2600~~	4000NE 2600SW				
V45 V234	PINAP, HI INT		Ships 200 throughout area	7000	4500	50 HRT	* MCA 5500N	Lower MEA & MCA	SAFI
	CANRY, HI INT			1200	7000				
J345	Lost Wages, NV VOR			23000	45000			MEA Gap 32 NM 126 LWG - 159 UPC Raise MEA; add Gap	5/24/88 6/2/92
	Up Creek, CO VORTAC				23000				
Part 95 Direct	Rightoff, WY VORTAC		Terrain (sec) 440700/1112301	7000	17500	MP			6/15/89
	Farin, ID LOM		ROC 1250	~~8000~~	8000				
Off-Airway Non-95	Frigidest, MT VOR		Terrain 4300 440700/1071101	6000	27000	MP		FGD direct YZA. Wolf Air Taxi. Add user: Lonslo Air	7/15/91
	US/Canada Border		OC reduced 300	~~6000~~	6000				

DATE	OFFICE	TITLE	SIGNATURE
	ABC FIFO	Manager	Quint E. Sential

FAA Form 8260-16 (6-74) FORMERLY FAA FORM 3495

Figure 9-7
Transmittal of Airways/Route Data

(1) **To assist charting agencies,** when segments are amended or canceled, describe the changes in this section or elsewhere on the form as appropriate.

j. *FLIGHT INSPECTION DATES.* Enter the date of the original flight inspection, if available. Use **"Pending"** for new/relocated facility dockets. If flight inspection records are not available and the facilities are inspected by SAFI, enter **"SAFI"**. Use additional lines to log subsequent flight inspection, 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.

k. *DISTRIBUTION.* The approved FAA Form 8260-16 shall be prepared by the FIAO and distributed as follows:

ATM-600	Original and 2 cys.
ATP-240	1 copy (if associated with an airspace action)
FPB	1 copy
ARTCC	1 copy
AVN-220	1 copy
FIAO	1 copy

l. *Examples:* Figure 9-15 contains a consolidated group of examples that can be used when completing FAA Form 8260-16.

m. *CANCELLATION.* Airways cancellation is accomplished through the rule making process. Regions publish a Notice of Proposed Rulemaking (NPRM), and upon publication of the final rule, NFDC removes the affected airways from Part 95. Procedure specialists remove or line through, as appropriate, the FAA Form 8260-16 entries referenced in the final rule.

911-999. RESERVED.

APPENDIX 1. FLIGHT PROCEDURES REFERENCES

APPENDIX 1. FLIGHT PROCEDURES REFERENCES

The following documents form the basic reference library for flight procedures activities.

ORDERS AND NOTICES

Number	Subject
1000.1	Policy Statement of the FAA
1010.59	Omni-directional Approach Lighting System
1050.1	Policies and Procedures for Considering Environmental Impacts.
1720.23	Distribution of Aeronautical Charts and Related Flight Information Publications
1800.56	Administration of Aviation Standards Activities - Program Guidelines
2500.24	Call for Estimates - F&E
5010.4	Airport Safety Data Program
5100.38	Airport Improvement Program (AIP) Handbook
6000.1	Certification and Operation of Military-Maintained Air Navigation Facilities in the NAS
6000.20	Waiver of Criteria for Establishment and Maintenance of Airway Facilities
6030.1	FAA Policy on Facility Relocations Occasioned by Airport Improvements or Changes
6030.18	Mobile Air Traffic Control, Navigational Aid, Communication and Power System
6030.20	Electrical Power Policy
6050.32	Manual of Regulations and Procedures for FAA Spectrum Mangement
6560.10	Runway Visual Range (RVR)
6750.7	Category II ILS Program
6750.16	Siting Criteria for Instrument Landing Systems
6750.24	ILS and Ancillary Electronic Component Configuration and Performance Requirement
6750.49	Maintenance of ILS Facilities
6850.2	Visual Guidance Lighting Systems
6850.5	Maintenance of Lighted Navigational Aids.
6850.9	Revised Approach Light Criteria
6950.2	Electric Power Policy Implementation at National Airspace System Facilities
6980.12	Provision of Remote Monitor for Electrical Power and/or Remote Start of Engine Generators
6980.26	Battery Backup Power Systems - Theory and Selection Guidelines
7030.1	Protected Airspace for Instrument Approach Procedures
7031.2	APS #1 Terminal Air Navigation Facilities and ATC Services
7031.3	APS #2 Air Route Traffic Control
7031.20	Scheduling of Changes to Components of the NAS
7032.5	Airport Surface Detection Equipment
7100.5	Substitute Airways and Routes
7100.8	Standard Instrument Departure (SID)
7100.9	Standard Terminal Arrival (STAR)
7110.10	Flight Services
7110.19	Designation of Taxiways as Temporary Runways
7110.22	Arrival and Departure Handling of High Performance Aircraft
7110.65	Air Traffic Control
7110.79	Charted Visual Flight Procedures
7110.88	Local Flow Traffic Management-Optimum Descent Procedures
7130.1	Protected Airspace Associated with Military High Altitude Instrument Approaches
7130.3	Holding Pattern Criteria
AT P 7130.8	Development of Holding Pattern Criteria
7210.3	Facility Operations and Administration
7210.37	En Route Minimum IFR Altitude (MIA) Sector Charts

7232.5	Reduced Operating Hours of Operation for Airport Traffic Control Towers/Approach ontrol Facilities
7350.2	Air Traffic Operational Coding System
7350.5	Location Identifiers
7400.2	Procedures for Handling Airspace Matters
7900.2	Reporting of Electronic Navigation Aids and Communication Facilities Data to the NFDC
7910.2	Frequencies Listed on Instrument Approach Procedure Charts
7930.2	Notices to Airmen (NOTAMs)
OA P 8200.1	United States Standard Flight Inspection Manual
8240.45	Flight Inspection of Category II ILS Facilities Used for Category III Operation
8240.47	Determination of ILS Glidepath Angle, Reference Datum Heights, and Ground Point of Intercept
VN 8240.1A	NAVAID Facility and Airport Data Processing
FSNFO 8260.1C	SIAP Obstacle Verification
8260.3B	United States Standard for Terminal Instrument Procedures (TERPS)
VN 8260.4	ILS Obstacle Risk Analysis
FSNSO 8260.6A	Processing of Procedures Work Unit and Use of AC Form 8260-4, Flight Procedures Control
8260.15C	U.S. Army Technical Instrument Procedures Service
8260.16	Airport Obstruction Surveys
8260.18	Establishing Requirements for Visual Approach Aids
8260.19B	Flight Procedures and Airspace
8260.23	Calculation of Radio Altimeter Height
8260.25	Implementing Epoch Year Magnetic Variation Values
8260.26	Establishing and Scheduling Instrument Approach Procedures Effective Dates
8260.27	Effect of Runway Markings on SIAP Visibility Minimums
8260.30	IFR Approval of Microwave Landing Systems (MLS)
8260.31	Foreign Terminal Instrument Procedures
8260.32	U.S. Air Force Terminal Instrument Procedure Service
8260.33	Instrument Approach Procedures Automation (IAPA) Program
8260.34	Glide Slope Threshold Crossing Height Requirements
8260.36	Civil Utilization of Microwave Landing System (MLS)
8260.37	Heliport Civil Utilization of Collocated Microwave Landing System (MLS).
8400.3	Minimum Operating Standards for Touchdown Zone and Centerline Lighting
8400.8	Procedures for Approval of Facilities for FAR Part 121 and Part 135 CAT III Operations
8430.1	Air Carrier Inspector's Handbook Part 135
8430.6	Air Carrier Operations Inspector's Handbook
8700.1	General Aviation Operations Inspector's Handbook

ADVISORY CIRCULARS

Number	**Subject**
61-27	Instrument Flying Handbook
70-2	Airspace Utilization Considerations in the Proposed Construction, Alteration, Activation and Deactivation of Airports
70/7460-1	Obstruction Marking and Lighting
70/7460-2	Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace
73-2	IFR Helicopter Operations in the Northeast Corridor
90-42	Traffic Advisory Practices at Airports Without Operating Control Towers
90-45A	Approval of Area Navigation systems for Use in the U.S. National Airspace System

90-80	Approval of Airborne Radar Approach (ARA) for Helicopters to Offshore Platforms
91-14	Altimeter Setting Sources
91-16	Category II Operations-General Aviation Airplanes
91-54	Automatic Reporting Systems-Altimeter Setting and Other Operational Data
97-1	Runway Visual Range (RVR)
120-28	Criteria for Approval of Category III Landing Weather Minima
120-29	Criteria for Approving Category I and Category II Landing Minima for FAR 121 Operators
150/5070-6	Airport Master Plans
150/5200-28	Notices to Airmen for Airport Operators
150/5300-13	Airport Design
150/5340-1	Marking of Paved Areas on Airports
150/5340-4	Installation Details for Runway Centerline and Touchdown Zone Lighting Systems
150/5340-14	Economy Approach Lighting Aids
150/5340-17	Standby Power for Non-FAA Airport Lighting Systems
150/5340-18	Standards for Airport Sigh Systems
150/5340-19	Taxiway Centerline Lighting Systems
150/5340-24	Runway and Taxiway Edge Lighting Systems
150/5340-26	Maintenance of Airport Visual Aid Facilities
150/5340-27	Air-to-Ground Radio Control of Airport Lighting Systems
150/5340-39	FAA Specification L-853 Runway and Taxiway Centerline Retroreflective Markers
150/5390-2	Heliport Design
170-9	Criteria for Acceptance of Ownership and Servicing of Civil Aviation Interest(s) Navigational and Air Traffic Control Systems and Equipment
170-13	Approach Lighting System Configurations and Energy Conservation

FEDERAL AVIATION REGULATIONS (FARs)

FAR 1	Definitions and Abbreviations
FAR 71	Designations of Federal Airways, Area Low Routes, Controlled Airspace, and Reporting Points
FAR 73	Special Use Airspace
FAR 75	Establishment of Jet Routes and Area High Routes
FAR 77	Objects Affecting Navigable Airspace
FAR 91	General Operating and Flight Rules
FAR 93	Special Air Traffic Rules and Airport Traffic Pattern
FAR 95	IFR Altitudes
FAR 97	Standard Instrument Approach Procedures
FAR 103	Ultralight Vehicles; Operating Requirements
FAR 121	Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators
FAR 125	Certification and Operations of Airplanes Having a Seating Capacity of 20 or More Passengers or Maximum Payload Capacity of 6000 Pounds or More
FAR 129	Operations of Foreign Air Carriers
FAR 135	Air Taxi Operators and Commercial Operators
FAR 152	Airport Aid Program
FAR 157	Notice of Construction, Alteration, Activation and Deactivation of Airports
FAR 171	Non-Federal Navigation Facilities

OTHER PUBLICATIONS

Airman's Information Manual (AIM)
Airport/Facility Directories (A/FD)
Airport Master Record - FAA Form 5010.1
Airspace Dockets
Area Charts
Ceiling-Visibility Climatological Study and System Enhancement Factors, June 1975
Federal Air Traffic Activity
Graphics Notices and Supplemental Data
LORAN Airport Screening Model
LORAN Site Evaluation System (LSES)
Low and High Altitude En Route Charts
National Flight Data Digest (NFDD)
National Plan of Integrated Airport System (NPIAS)
NOS Quarterly Obstacle Memo - Digital Obstacle File
Notices to Airmen (NOTAMs)
OC Charts
Sectional and Terminal Area Charts
SIAPs, SIDs, STARs, FTIPs
Transmittal Letters (Instrument Approach Procedures)
USGS Topographical Charts

APPENDIX 2. OBSTACLE ACCURACY STANDARDS, CODES, AND SOURCES

APPENDIX 2. OBSTACLE ACCURACY STANDARDS, CODES AND SOURCES

100. UNITED STATES NATIONAL MAP ACCURACY STANDARDS.

With a view to the utmost economy and expedition in producing maps which fulfill not only the broad needs for standard or principal maps, but also the reasonable particular needs of individual agencies, standards of accuracy for published maps are defined as follows:

a. *Horizontal accuracy.* For maps on publication scales larger than 1:20,000, not more than 10 percent of the points tested shall be in error by more than 1/30 inch, measured on the publication scale; for maps on publication scales of 1:20,000 or smaller, 1/50 inch. These limits of accuracy shall apply in all cases to positions of well-defined points only. Well-defined points are those that are easily visible or recoverable on the ground, such as the following: monuments or markers, such as bench marks, property boundary monuments; intersections of roads, railroads, etc.; corners of large buildings or structures (or center points of small buildings); etc. In general what is well defined will also be determined by what is plottable on the scale of the map within 1/100 inch. Thus, while the intersection of two roads or property lines meeting at right angles would come within a sensible interpretation, identification of the intersection of such lines meeting at an acute angle would obviously not be practicable within 1/100 inch. Similarly, features not identifiable upon the ground within close limits are not to be considered as test points within the limits quoted, even though their positions may be scaled closely upon the map. In this class would come timber lines, soil boundaries, etc.

b. *Vertical accuracy,* as applied to contour maps on all publication scales, shall be such that not more than 10 percent of the elevations tested shall be in error more than one-half the contour interval. In checking elevations taken from the map, the apparent vertical error may be decreased by assuming a horizontal displacement within the permissible horizontal error for a map of that scale.

c. *Map accuracy testing* may be accomplished by comparing the positions of points whose locations or elevations are shown upon it with corresponding positions as determined by surveys of a higher accuracy. Tests shall be made by the producing agency, which shall also determine which of its maps are to be tested, and the extent of such testing.

d. *Published maps* meeting these accuracy requirements shall note this fact on their legends, as follows: **"This map complies with National Map Accuracy Standards."**

e. *Published maps* whose errors exceed those stated before shall omit from their legends all mention of standard accuracy.

f. *Enlargements.* When a published map is a considerable enlargement of a map drawing (manuscript) or of a published map, that fact shall be stated in the legend. For example, **"This map is an enlargement of a 1:20,000-scale map drawing,"** or **"This map is an enlargement of a 1:24,000-scale published map."**

g. *Data Interchange.* To facilitate ready interchange and use of basic information for map construction among all Federal mapmaking agencies, manuscript maps and published maps, wherever economically feasible and consistent with intended map use, shall conform to latitude and longitude boundary size, being 15, 7.5, or 3-3/4 minutes of latitude and longitude.

101. ACCURACY CODES AND SOURCES.

a. *Accuracy Codes.* The following accuracy codes were identified for application by a joint DOD/DOC/DOT task group in 1979:

HORIZONTAL

Code	Tolerance	
1	+20'	(6 m)
2	+50'	(15 m)
3	+100'	(30 m)
4	+250'	(75 m)
5	+500'	(150 m)
6	+1000'	(300 m)
7	+1/2 NM	(900 m)
8	+1 NM	(1800 m)
9	Unknown	

VERTICAL

Code	Tolerance	
A	+3'	(1 m)
B	+10'	(3 m)
C	+20'	(6 m)
D	+50'	(15 m)
E	+125'	(38 m)
F	+250'	(75 m)
G	+500'	(150 m)
H	+1000'	(300 m)
I	Unknown	

b. *Sources.* The task group was provided specified accuracies from each of the following sources:

(1) Department of Commerce. Charting information is verified and published by the NOS.

(a) Airport Obstruction Chart (OC) obstacle accuracies quoted by NOS are:

1 Flight path and transitional areas +20' (6 m) horizontally and +2' (1 m) vertically out to 20,000'(6100m). **Code 1A.**

2 Flight path and transitional area +40' (12 m) horizontally and +20'(6 m) vertically beyond 20,000' (6100 m). **Code 2C.**

3 Horizontal surface area +20' (6 m) horizontally and +5' (1.5 m) vertically. **Code 1B.**

4 Conical surface +40' (12 m) horizontally and +20' (6 m) vertically. **Code 2C.**

5 Radio and TV towers +20-40' (6-12 m) horizontally, as in 1 and 2 above, but +40' (12 m) horizontally and +10' (3m) vertically if not surveyed for an OC chart. **Code 2B.** (Radio and TV towers are accurate vertically to +2'(.6 m) anywhere on the OC survey if they penetrate a surface; thus coded **2A**).

(b) World Aeronautical (WAC) Chart, Sectional Chart, and VFR Terminal Chart.

1 **Terrain features** which are not marked as spot elevations:

Chart	Horizontal	Vertical*	Code
WAC	+1700'(500 m)	+500'(150 m)	7G
Sec	+900' (275 m)	+250'(75 m)	6F
VFR	+500' (150 m)	+250'(75 m)	5F

*1/2 contour line

2 When **obstacles or mountain peaks** are specifically marked by a spot elevation, the vertical accuracy changes to +3' (1 m). Thus vertical accuracy code becomes "**A.**"

3 When these charts are used to **establish coordinates**, it must be recognized that Inter-Agency Air Cartographic Committee (IACC) charting standards permit displacement of objects to provide for relative depiction. To account for these additional errors, the horizontal accuracy factors shall be **doubled** for man-made obstacles depicted on WAC, Sectional, and VFR charts.

(2) Department of Defense.

(a) Defense Mapping Agency Aerospace Center: (Outside U.S. Only)

1 Defense Mapping Agency's **taped terrain data** from 1:350,000 charts, +500' (150 m) horizontally and +100' (30 m) vertically. **Code 5E.**

2 **Automated Obstruction File,** varied accuracy. Use **Code 5E** unless verified to a higher accuracy.

3 **Digitized terrain data** with correlated lat/long of adjacent tapes (UNIVAC 1108 - St. Louis). **Code 4D.**

(b) Air Force Communication Agency. Terrain and structures from Air Force

Form 1530. Accuracy varied. Use **Code 5E** unless verified to a higher accuracy.

(3) Department of Transportation. FAA obstacle data for terrain structures are recorded on airspace, airport, and procedures records. If the original source is Obstruction Clearance (OC) or aero charts, accuracies in paragraph 101b(1)(a) above are appropriate. Other accuracies are as follows:

(a) Field inspections that employ a theodolite, +50' (15 m) horizontally and +20' (6 m) vertically. **Code 2C.**

(b) Obstruction evaluations; All obstacles, unless verified to a higher accuracy. **Code 4D.**

(c) Quarterly Obstacle Memo - Digital Obstacle File, depending upon data source. **Code 1A to 8H.**

(d) Airport Field Offices (AFO) may assign their own codes to obstacles on engineering drawings furnished to Flight Standards.

(e) Airway Facility (AF) Division Field Survey; navigation aids. **Code 1A.** Other obstacles, unless verified to a higher accuracy. **Code 2B.**

(f) Flight inspection fly-by, +250' (75 m) horizontally and +50' (15 m) vertically. **Code 4D.**

(g) Estimated by airport owner or operator +1/2 NM (900 m) horizontally and +500' (150 m) vertically. **Code 7G.**

(4) Department of Interior. U.S. Geological Survey data in magnetic tape files are claimed to be accurate to +1000'(300 m) horizontally and +100'(30 m) vertically. **Code 6E.** For the following charts, when obstacles or mountain peaks are specifically marked by a spot elevation, the vertical accuracy changes to +3' (1 m). Thus vertical accuracy code becomes **"A"**. Otherwise, these charts have the following accuracies:

(a) Topographical charts (1:250,000 scale), +1000'(300 m) horizontally and +100'(30 m) vertically. **Code 6E.**

(b) Topographical charts (1:62,500 or 1:63,360 scale), +150'(45 m) horizontally and +50'(15 m) vertically. **Code 4D.**

(c) Topographical charts (1:24,000 scale) (7 1/2 min. Quadseries), +40' (12 m) horizontally and +20'(6 m) vertically. **Code 2C.**

APPENDIX 3. DIRECTIVE FEEDBACK INFORMATION FAA FORM 1320-19

APPENDIX 3. DIRECTIVE FEEDBACK INFORMATION, FAA FORM 1320-19

U.S. Department
of Transportation

Federal Aviation
Administration

Directive Feedback Information

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order _____

To: Directives Management Officer, AVN-12

(Please check all appropriate line items)

O An error (procedural or typographical) has been noted in paragraph _____ on page _____.

O Recommend paragraph _____ on page _____ be changed as follows:
(attach separate sheet if necessary)

O In a future change to this directive, please include coverage on the following subject
(briefly describe what you want added):

O Other comments:

O I would like to discuss the above. Please contact me.

Submitted by:_____ Date:_____

FTS Telephone Number: _____ Routing Symbol: _____

FAA Form 1320—19 (6-89)

APPENDIX 4. RADIO FIX AND HOLDING DATA RECORD FAA FORM 8260-2

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME	X	WP		
			DME	VHF	
91-ANM-31	JASIN		VHF/LF	LF	CO

1. RADIO FIX	TYPE OF ACTION (check one)	X	ESTABLISH	CANCEL
			MODIFY	NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	DENVER (DEN)		
TYPE / CLASS / CATEGORY	H-VORTAC-1		
RADIAL / COURSE / BEARING	312.92 (324.92)		
DME DISTANCE (from)	15.13		
MRA/MAA	65/175		

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
	DEN APP/ DEP CON BJC TOWER			HF		
			X	VHF		
			X	UHF	6500	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X	X				
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED	RESTRICTED
2. HOLDING	TYPE OF ACTION *(Check one)*		X	ESTABLISH	CANCEL
				MODIFY	NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1	NW		WP	313	133	L	- / 4
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1		90/140	90/140		
2					
3					

C. REASON FOR NONSTANDARD HOLDING: TERRAIN

D. HOLDING IS *(Check one)*	APPROVED	DISAPPROVED	X	RESTRICTED

3. REMARKS:

FIX USE: JEFFCO, DENVER, CO - RNAV RWY 29R

JASIN WP COLLOCATED WITH JASIN INT.

HOLDING LIMITED TO ESTABLISHED PATTERN.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 400019.41/1050424.01

FAA Form 8260 - 2 (computer generated)

Figure A4-1

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME				
	JACKSON VOR/DME		DME	VHF	WY
			VHF/LF	LF	

1. RADIO FIX	TYPE OF ACTION (check one)		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	JACKSON (JAC)		
TYPE / CLASS / CATEGORY	L-VOR/DME-1		
RADIAL / COURSE / BEARING	-		
DME DISTANCE (from)	-		
MRA/MAA	-/250 #		

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
	IDA FSS ZLC ARTCC			HF		
			X	VHF		
			X	UHF	6000	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE
	IDA	L-VOR/DME	067		130/250	SEA FIFO	1/29/75

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X	X	X	X	X	X
HIGH		X	X	X			

FLAG NOTE: MCA V330 13100W, V520 14300W

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

2. HOLDING	TYPE OF ACTION *(Check one)*		ESTABLISH		CANCEL
			MODIFY	X	NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1	S	JAC	VOR/DME	184	004	R	1-1 1/2 / -
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1		140/250	140	145/250	
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*		APPROVED		DISAPPROVED	X	RESTRICTED

3. REMARKS: FIX USE: JACKSON, WY - ILS RWY 18
VOR/DME RWY 36
VOR-A
V328, V330, V465, V520

ESV APPROVED 6/29/85.
HOLDING LIMITED TO ESTABLISHED PATTERN.
MINIMUM TURNING ALTITUDES: AIRCRAFT PROCEEDING: MLD V465 JAC V330 IDA, OR MLD V465 JAC V520 DBS, OR IDA V330 JAC V520 DBS, MUST MAINTAIN 15800 OR HIGHER UNTIL ESTABLISHED ON CENTERLINE OF V330 OR V520 W BOUND.
AIRCRAFT PROCEEDING: BPI V328 JAC V520 DBS, OR BPI V328 JAC V330 IDA, OR BPI V328 JAC V465 MLD, MUST MAINTAIN 14300 OR HIGHER UNTIL ESTABLISHED ON CENTERLINE OF V330, V465, OR V520.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

AIRCRAFT PROCEEDING: BPI V328 JAC V465 DNW MUST MAINTAIN 15000 OR HIGHER UNTIL ESTABLISHED ON CENTERLINE OF V465.

LAT/LONG: 433630.10/1104402.00

FAA Form 8260 - 2 (computer generated)

Figure A4-2

4. AIR TRAFFIC REQUESTS APPROVAL OF REFERENCED FIX FOR:	NAME: JACKSON VOR/DME

A. REPORTING POINT		COMPULSORY	AIRSPACE STRUCTURE FOR WHICH FIX IS DESIRED	X	LOW ALTITUDE
	X	ON REQUEST		X	HIGH ALTITUDE

B. HOLDING

PAT.	SPEED 170 - 175	AIRSPACE L	AIRSPACE H	SPEED 200 - 230	AIRSPACE L	AIRSPACE H	SPEED 265	AIRSPACE L	AIRSPACE H	SPEED 310	AIRSPACE L	AIRSPACE H
1	140/250	8	11	140	8		145/250	16	20			
2												
3												

C. HOLDING AREAS		YES	NO
	COMPLETELY WITHIN CONTROLLED AIRSPACE *(If answer is "NO" indicate Air Traffic action required in item 3 "REMARKS")*	X	
	CLEAR OF RESTRICTED / WARNING AREAS	X	

5. CHART PUBLICATION	X	REQUIRED
		NOT REQUIRED

		TERMINAL	SID	STAR	JAL	AL	ENROUTE LOW	ENROUTE HIGH
FIX	PRESENT					X	X	X
	REQUESTED					X	X	X
HOLDING	PRESENT					X	NOTE:: HOLDING EN ROUTE LOW	
	REQUESTED					X		

6. INITIATED	DATE: 02/07/89	FACILITY: SEA FIFO	SIGNATURE: N. FALLIBLE

7. CONTROLLING OBSTRUCTIONS

PATTERN	AIRCRAFT	OBSTRUCTION	COORDINATES	ELEVATION (msl)	CRITERIA	DETERMINATION
1	200-230 265	TERRAIN TERRAIN	434304/1104900 434307/1104904	11523 12514	P-13 P-16	MAP STUDY AND FLT CK.
2						
3						

DATE CHECKED: 02/07/89	CHECKED BY: N. FALLIBLE

8. FLIGHT INSPECTION:

	LOW ALTITUDE	HIGH ALTITUDE
FIDO / FIFO	SEA	SEA
VALIDATION DATES	6/29/89	6/29/89

9. REVISION RECORD

REVISION NO.	DATE OF REVISION:
5	7/6/89
SUPERSEDES: 4	DATED: 11/15/77

10. REASON FOR REVISION:
CHANGE MCA V330.
REVISE MTA'S.
CHANGE CONTROLLING OBSTRUCTION FOR HOLDING.
ADDED 265K SPEED CATEGORY.

11. FIFO APPROVAL	DATE: 07/06/89	FIFO: SEA	SIGNATURE: L. SUPREMO

12. DISTRIBUTION *(No. of copies)*	NFDC: ATM-600	REGION/AREA: ANM-220	ARTCC: ZLC	AVN: AVN-220	FIFO: SEA	OTHER: ATCT

13. WASHINGTON ACTION	NOT REQUIRED		
	COMPLETED	DATE	EFFECTIVE

Figure A4-2a

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME	X	RADAR		
		X	DME	VHF	
	FUZZY		VHF/LF	LF	AR

1. RADIO FIX	TYPE OF ACTION (check one)	X	ESTABLISH		CANCEL
			MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	HIGHHAT (HGH)	NUTTY APPROACH	
TYPE / CLASS / CATEGORY	L-VORTAC-1	ASR	
RADIAL / COURSE / BEARING	049.00 (056.00)	-	
DME DISTANCE (from)	8.00	5.0 RADAR *	
MRA/MAA	16/175	16/100	

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
				HF		
			X	VHF		
	NUTTY ATCT		X	UHF	1600	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X		X	X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED
2. HOLDING	TYPE OF ACTION *(Check one)*			ESTABLISH		CANCEL
				MODIFY		NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1							/
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1					
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*		APPROVED	X	DISAPPROVED		RESTRICTED

3. REMARKS:

FIX USE: NORTH LITTLE ROCK, AR - VOR RWY 35
VOR/DME RWY 35

*FUZZY RADAR 5.0 NM RADAR FIX AER 35, NORTH LITTLE ROCK, AR.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 362743.81/0940534.91

FAA Form 8260 - 2 (computer generated)

Figure A4-3

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME	X	RADAR		
			DME	VHF	
	BUZZY		VHF/LF	LF	NE

1. RADIO FIX	TYPE OF ACTION (check one)	X	ESTABLISH	CANCEL
			MODIFY	NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	MERCY (I-MCE)	ROONEY APPROACH	
TYPE / CLASS / CATEGORY	LOC-1	ASR	
RADIAL / COURSE / BEARING	NW CRS (324.45)	-	
DME DISTANCE (from)	-	5.8 RADAR *	
MRA/MAA	10/45	10/100	

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
				HF		
			X	VHF		
	ROONEY ATCT		X	UHF	1000	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X		X	X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

2. HOLDING	TYPE OF ACTION *(Check one)*		ESTABLISH	CANCEL
			MODIFY	NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1							/
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1					
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*		APPROVED	X	DISAPPROVED		RESTRICTED

3. REMARKS:

FIX USE: MERCY, NE - LOC RWY 13.

***BUZZY RADAR 5.8 NM RADAR FIX AER 13, MERCY, NE.**

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 410246.21/0973251.61

FAA Form 8260 - 2 (computer generated)

Figure A4-4

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME				
		X	DME	X VHF	
	ROMEN LOM		VHF/LF	LF	CA

1. RADIO FIX	TYPE OF ACTION (check one)		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	ROMEN (OS)	LOS ANGELES (I-HBQ)	SEAL BEACH (SLI)
TYPE / CLASS / CATEGORY	LOM-1	LOC/DME-1	L-VORTAC-1
RADIAL / COURSE / BEARING	-	E CRS (083.00)	299.35 (313.35)
DME DISTANCE (from)	-	8.14	-
MRA/MAA	-/175	17/175 *	17/175

B. DISTANCE FROM FACILITY: 16 LEAST DIVERGENCE ANGLE: 50

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT
				HF	
			X	VHF	
	LAX APCH, TOWER, HHR FSS		X	UHF	1700 MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X	X	X	X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

2. HOLDING	TYPE OF ACTION *(Check one)*		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1	E	I-HBQ	LOC	W CRS	249	L	1 / 5
2	E	I-OSS	LOC	W CRS	249	L	1 / 5
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1		22/140	22/140		
2		22/140	22/140		
3					

C. REASON FOR NONSTANDARD HOLDING: TO AVOID PARALLEL RUNWAYS.

D. HOLDING IS *(Check one)*		APPROVED		DISAPPROVED	X	RESTRICTED

3. REMARKS:

FIX USE:

LOS ANGELES INTL	CHART FACILITIES	CHART HOLDING
ILS RWY 24L	1,2,3	PAT 1
ILS RWY 24R	1,3,4	PAT 2
MUTHA TWO STAR	1,2,3,4	

	FACILITY 4
NAME	LOS ANGELES (I-OSS)
TYPE / CLASS	LOC/DME-1
RADIAL/CRS	E CRS (083.00)
D.M.E DIST.	8.09
M.R.A / M.A.A	17/175 *

HOLDING LIMITED TO ESTABLISHED PATTERNS.
* ESV'S: I-HQB & I-OSS TO 85 NM TO 25000, 4/13/89.
FIX COLLOCATED WITH ROMEN LOM.

LAT/LONG: 335753.61/1191637.41

FAA Form 8260 - 2 (computer generated)

Figure A4-5

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME				
		X	DME	VHF	
	SMITH		VHF/LF	LF	AK

1. RADIO FIX	TYPE OF ACTION (check one)	X	ESTABLISH		CANCEL
			MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	BONELLI (BLI)	MDONLY (MDK)	
TYPE / CLASS / CATEGORY	MH-NDB-1/3	T-VOR/DME-1/3	
RADIAL / COURSE / BEARING	333.00 (358.00)	-	
DME DISTANCE (from)	-	6.00	
MRA/MAA	10/175	10/125	

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE: 22

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
	ZAN ARTCC			HF		
	UNICOM		X	VHF	1000	MSL
				UHF		

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X		X	X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*		APPROVED		DISAPPROVED	X	RESTRICTED
2. HOLDING	TYPE OF ACTION *(Check one)*			ESTABLISH		CANCEL
				MODIFY		NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1							/
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1					
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*		APPROVED	X	DISAPPROVED		RESTRICTED

3. REMARKS:

FIX USE: BONELLI, AK - NDB/DME RWY 16.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 613016.21/1673239.61

FAA Form 8260 - 2 (computer generated)

Figure A4-6

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME	X	WP		
			DME	VHF	
	JOINR		VHF/LF	LF	LA

1. RADIO FIX	TYPE OF ACTION (check one)		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME			
TYPE / CLASS / CATEGORY			
RADIAL / COURSE / BEARING			
DME DISTANCE (from)			
MRA/MAA			

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON		HF	AT	
			X	VHF		
	ZHU ARTCC		X	UHF	1500	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X	X				
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

2. HOLDING	TYPE OF ACTION *(Check one)*		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1	W		WP	267.02	087.02	R	1 / 4
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1		15/70			
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*		APPROVED		DISAPPROVED	X	RESTRICTED

3. REMARKS:

FIX USE: VENICE, LA - COPTER LORAN RNAV 087

LORAN-C WAYPOINT

HOLDING LIMITED TO ESTABLISHED PATTERN FOR HELICOPTERS ONLY.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 291549.48/893333.56

FAA Form 8260 - 2 (computer generated)

Figure A4-7

4. AIR TRAFFIC REQUESTS APPROVAL OF REFERENCED FIX FOR:			NAME: JOINR	
A. REPORTING POINT		COMPULSORY	AIRSPACE STRUCTURE FOR WHICH FIX IS DESIRED	X LOW ALTITUDE
	X	ON REQUEST		HIGH ALTITUDE

B. HOLDING

PAT.	SPEED	AIRSPACE		SPEED	AIRSPACE		SPEED	AIRSPACE		SPEED	AIRSPACE	
	170 - 175	L	H	200 - 230	L	H	265	L	H	310	L	H
1	15/70	4										
2												
3												

C. HOLDING AREAS		YES	NO
	COMPLETELY WITHIN CONTROLLED AIRSPACE *(If answer is "NO" indicate Air Traffic action required in item 3 "REMARKS")*	X	
	CLEAR OF RESTRICTED / WARNING AREAS	X	

5. CHART PUBLICATION		
	X	REQUIRED
		NOT REQUIRED

		TERMINAL	SID	STAR	JAL	AL	ENROUTE LOW	ENROUTE HIGH
FIX	PRESENT							
	REQUESTED					X		
HOLDING	PRESENT						NOTE::	
	REQUESTED					X		

6. INITIATED	DATE: 09/04/90	FACILITY: AVN-270	SIGNATURE: HENDER S. WILLIAMS

7. CONTROLLING OBSTRUCTIONS

PATTERN	AIRCRAFT	OBSTRUCTION	COORDINATES	ELEVATION (msl)	CRITERIA	DETERMINATION
1	170-175	TERRAIN/TREE	291549/893334	104	P-4	MAP STUDY
2						
3						

DATE CHECKED: 08/30/90	CHECKED BY: A. COLDMAN

8. FLIGHT INSPECTION:	LOW ALTITUDE	HIGH ALTITUDE
FIDO / FIFO	OKC FIFO	
VALIDATION DATES	ON FILE	

9. REVISION RECORD	
REVISION NO. 1	DATE OF REVISION: 09/04/90
SUPERSEDES: ORIGINAL	DATED: 08/05/87

10. REASON FOR REVISION:

UPDATE FORM
NEW CONTROLLING OBSTACLE

11. FIFO APPROVAL	DATE: 09/04/90	FIFO:	SIGNATURE: HENDER S. WILLIAMS

12. DISTRIBUTION *(No. of copies)*	NFDC: ATM-613	REGION/AREA: ASW-220	ARTCC: ZHU	AVN: AVN-220	FIFO: OKC	OTHER:

13. WASHINGTON ACTION	NOT REQUIRED		
	COMPLETED	DATE	EFFECTIVE

Figure A4-7a

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME				
		X	DME	X VHF	
	CELIN		VHF/LF	LF	TX

1. RADIO FIX	TYPE OF ACTION (check one)		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	BLUE RIDGE (BUJ)	DALLAS-FORT WORTH (DFW)	
TYPE / CLASS / CATEGORY	L-VORTAC-1	H-VORTAC-1	
RADIAL / COURSE / BEARING	260.17 (268.17)	015.17 (023.17)	
DME DISTANCE (from)	23.00	-	
MRA/MAA	28/175	28/175	

B. DISTANCE FROM FACILITY: 26 LEAST DIVERGENCE ANGLE: 65

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON		AT	
			HF		
			X VHF		
	REGIONAL APP CON		X UHF	2800	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X			X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

2. HOLDING	TYPE OF ACTION *(Check one)*		ESTABLISH		CANCEL
			MODIFY	X	NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1							/
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1					
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS *(Check one)*	X	APPROVED		DISAPPROVED		RESTRICTED

3. REMARKS:

FIX USE: V66-278
HEAVN ARRIVAL, DALLAS-FORT WORTH, TX
UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 2800'.

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D M E DIST.	
M R A / M A A	

LAT/LONG: 331612.20/964918.10

FAA Form 8260 - 2 (computer generated)

Figure A4-8

4. AIR TRAFFIC REQUESTS APPROVAL OF REFERENCED FIX FOR:			NAME: CELIN	
A. REPORTING POINT		COMPULSORY	AIRSPACE STRUCTURE FOR WHICH FIX IS DESIRED	X LOW ALTITUDE
	X	ON REQUEST		HIGH ALTITUDE

B. HOLDING

PAT.	SPEED	AIRSPACE		SPEED	AIRSPACE		SPEED	AIRSPACE		SPEED	AIRSPACE	
	170 - 175	L	H	200 - 230	L	H	265	L	H	310	L	H
1												
2												
3												

C. HOLDING AREAS		YES	NO
	COMPLETELY WITHIN CONTROLLED AIRSPACE *(If answer is "NO" indicate Air Traffic action required in item 3 "REMARKS")*	X	
	CLEAR OF RESTRICTED / WARNING AREAS	X	

5. CHART PUBLICATION		
	X	REQUIRED
		NOT REQUIRED

		TERMINAL	SID	STAR	JAL	AL	ENROUTE LOW	ENROUTE HIGH
FIX	PRESENT			X				
	REQUESTED			X				
HOLDING	PRESENT					X	NOTE::	
	REQUESTED					X		

6. INITIATED	DATE: 09/02/92	FACILITY: AVN-270	SIGNATURE: W. HINDSIGHT

7. CONTROLLING OBSTRUCTIONS

PATTERN	AIRCRAFT	OBSTRUCTION	COORDINATES	ELEVATION (msl)	CRITERIA	DETERMINATION
1	200-230	TOWER	331610/964917	1849	P-14	MAP STUDY
2						
3						

DATE CHECKED: 07/13/92	CHECKED BY: D. PUGNOSE

8. FLIGHT INSPECTION:	LOW ALTITUDE	HIGH ALTITUDE
FIDO / FIFO	OKC FIFO	
VALIDATION DATES	7/28/92	

9. REVISION RECORD	
REVISION NO. 3	DATE OF REVISION: 9/2/92
SUPERSEDES: 2	DATED: 12/22/80

10. REASON FOR REVISION:

LUE VOR/DME DELETED FROM FIX MAKEUP DUE TO FACILITY DECOMMISSIONING.
DFW VORTAC ADDED TO FIX MAKEUP.
CHANGED MRA TO MATCH AIRWAY MEA.
DOCUMENTED UNPLANNED HOLDING.

11. FIFO APPROVAL	DATE: 09/02/92	FIFO: AVN-270	SIGNATURE: W. HINDSIGHT

12. DISTRIBUTION *(No. of copies)*	NFDC: ATM-600	REGION/AREA: ASW-220	ARTCC: ZFW	AVN: AVN-220	FIFO: OKC	OTHER: DFW ATCT

13. WASHINGTON ACTION	NOT REQUIRED		
	COMPLETED	DATE	EFFECTIVE

Figure A4-8a

RADIO FIX AND HOLDING DATA RECORD

AIRSPACE DOCKET	FIX				STATE
	NAME				
	Arsenal	X	DME	VHF	Iowa
			VHF/LF	LF	

1. RADIO FIX	TYPE OF ACTION (check one)		ESTABLISH		CANCEL
		X	MODIFY		NO CHANGE

A. FACILITY TYPE	FACILITY 1	FACILITY 2	FACILITY 3
NAME	Davenport (CVA)	412924.9	
TYPE / CLASS / CATEGORY	L-BVORTAC-1	902943.9	
RADIAL / COURSE / BEARING	178.4		
DME DISTANCE (from)	13.1		
MRA/MAA	26/175		

B. DISTANCE FROM FACILITY: LEAST DIVERGENCE ANGLE:

C. AIR/GROUND COMMUNICATIONS	WITH	SATISFACTORY ON			AT	
	MZV TOWER ZAU ARTCC			HF		
			X	VHF		
			X	UHF	2000	MSL

D. MRA OF OTHER FACILITIES AT THIS FIX	FACILITY	TYPE/CLASS	RADIAL CRS	DME	MRA/MAA	CHECKED BY	DATE

E. AUTHORIZED USE OF THIS FIX

AIRSPACE	COMPULSORY	ON REQUEST	HOLDING	ALT. CHANGE	ARRIVAL	DEPARTURE	FLAG REQ'D
LOW		X	X	X	X		
HIGH							

FLAG NOTE:

F. RADIO FIX IS (Check one)	X	APPROVED		DISAPPROVED		RESTRICTED
2. HOLDING		TYPE OF ACTION (Check one)		ESTABLISH		CANCEL
			X	MODIFY		NO CHANGE

A. HOLDING REQUIRED

PAT.	DIRECTION	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L or R)	TIME / DME OUTBOUND
1	SE		W/P	146	326	R	- / 4
2							/
3							/

B. HOLDING ALTITUDES

PATTERN	ALL AIRCRAFT	170 - 175 K	200 - 230 K	265 K	310 K
1		26/170	26/170		
2					
3					

C. REASON FOR NONSTANDARD HOLDING:

D. HOLDING IS (Check one)	X	APPROVED		DISAPPROVED		RESTRICTED

3. REMARKS: FAF DVN RNAV RWY 32

Missed approach holdi. g fix DVN RNAV RWY 14

	FACILITY 4
NAME	
TYPE / CLASS	
RADIAL/CRS	
D.M.E DIST.	
M.R.A./M.A.A.	

CANCELLED
BTL FIFO

7/1/91
DATE

John Q. Smith
SIGNATURE

LAT/LONG:

FAA Form 8260 - 2 (computer generated)

Figure A4-9

APPENDIX 5. ILS - STANDARD INSTRUMENT APPROACH PROCEDURE FAA FORM 8260-3

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE
FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
CGT VORTAC (IAF)	LUMPY/ORD 14.00 DME/RADAR	356/9.81 (CGT R-356) & 320.08/10.02	5000*
LUMPY	KITTS /ORD 11.00 DME/RADAR	320.08/3.00 (I-RVG)	4000
KITTS	GRETI /ORD 8.09 DME/RADAR	320.08/2.91 (I-RVG)	3000
GRETI	JOCKY LOM/INT/ORD 6.58 DME	320.08/1.51 (I-RVG)	2600 #

MANDATORY

MISSED APPROACH

ILS: AT THE DH. LOC: 5.61 MILES AFTER JOCKY OR AT ORD 1.00 DME FIX.

CLIMB TO 1200, THEN CLIMBING LEFT TURN TO 4000 VIA DPA R-085 TO DPA VOR/DME AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD W, RT, 068 INBOUND.
FAS OBST: 794 BLDG 415436/875136
CHART MIDWAY AIRPORT

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT LUMPY.
3. FAC: 320.08 FAF: JOCKY DIST FAF TO MAP: 5.61 THLD: 5.61
4. MIN. ALT: LUMPY 5000*, KITTS 4000, GRETI 3000, JOCKY MANDATORY 2600
5. DIST TO THLD FROM OM: 5.61 MM: 0.62 IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: 1074
6. MIN GS INCPT: 5000* GS ALT AT: LUMPY 5000, KITTS 4000 OM: 2514 MM: 894 IM: ____
7. GS ANGLE: 3.00 TCH: 58
8. MSA FROM: RV LOM 360-180, 3400; 180-360, 2600

MAG VAR: 0 EPOCH YEAR: 85

MINIMUMS

TAKEOFF: ____ STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A ____ ILS: STANDARD LOC: STANDARD

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 32L	856	1800	200	856	1800	200	856	1800	200	856	2000	200			
S-LOC 32L	1060	2400	404	1060	2400	404	1060	4000	404	1060	4000	404			
CIRCLING	1160	1	493	1160	1	493	1160	1 1/2	493	1220	2	551			

NOTES: ASR
DME OR RADAR REQUIRED
*4000 WHEN AUTHORIZED BY ATC
SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 32R

CITY AND STATE	ELEVATION: 667 TDZE: 656 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
CHICO, IL	HAIRY INTL	I-RVG	ILS RWY 32L, AMDT 21	AMDT: 20
				DATED: 3/18/89

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Figure A5-1

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
LISON INT	FND NDB/BAL 8.8 DME	095.02/20.11	2500
BAL VORTAC	FND NDB	330.23/8.82	2500
EMI VORTAC (IAF)	FND NDB (NoPT)	151.43/15.62	2500
R-042 BAL VORTAC CCW (IAF)	FND NDB (NoPT)	15 DME ARC & 152.36/6.21 (I-FND) (BAL LR-340)	2500
FND NDB	TRUTH OM/BAL 5.10 DME	152.36/3.73 (I-FND)	2000 #

MANDATORY

MISSED APPROACH

ILS: AT THE DH. CIRCLING: 3.79 MILES AFTER TRUTH OR AT 1.30 DME FIX.

CLIMB TO 600 THEN CLIMBING LEFT TURN TO 2000 VIA BAL R-105 TO BOAST INT/11 DME AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD E, LT, 285 INBOUND.
FAS OBST: 428 TREE 391415/764302
CHART: 1259 ANTENNA 391713/764516

1. PT L SIDE OF COURSE 332.36 OUTBOUND 2500 FT WITHIN 10 MILES OF FND NDB (IAF)
2.
3. FAC: 152.36 FAF: TRUTH DIST FAF TO MAP: 3.79 THLD: 3.79
4. MIN. ALT: FND NDB 2500, TRUTH MANDATORY 2000
5. DIST TO THLD FROM OM: 3.78 MM: 0.51 IM: 150 HAT: 100 HAT: GS ANT: 1200
6. MIN GS INCPT: 2500 GS ALT AT: OM: 1435 MM: 367 IM:
7. GS ANGLE: 3.00 TCH: 59
8. MSA FROM: BAL VORTAC 2400

MAG VAR: 8W EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] ILS: STANDARD @ LOC: NA

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 15R	340	2400	200	340	2400	200	340	2400	200	340	2400	200			
S-LOC		NA			NA			NA			NA				
CIRCLING	680	1	524	680	1	524	680	1 1/2	524	760	2	604			

NOTES: AUTOPILOT COUPLED APPROACH NA.
GS UNUSABLE BELOW 310'.
CIRCLING NA SW OF RWYS 10 & 33L.
CIRCLING REQUIRES DESCENT ON GS TO MDA.

@ CAT D 700-2
ASR
DME FROM BAL VORTAC. SIMULTANEOUS RECEPTION OF I-BAL AND BAL DME REQUIRED.

CITY AND STATE	ELEVATION: 156 TDZE: 140 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: ILS RWY 15
GARRETT, MD	GARRETT INTL	I-FND	ILS RWY 15R, AMDT 5	AMDT: 4
				DATED: 3 AUG 80

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Figure A5-2

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
TESSY INT (IAF)	LOMMA INT (NOPT)	161.21/12.82 (GJT R-341)	9300
MACKS (IAF)	LOMMA (NOPT)	111.31/7.59 (I-GJT)	9000
R-217 GJT VORTAC CW (IAF)	R-276 GJT VORTAC	14 DME ARC	11000
R-276 GJT VORTAC CW	LOMMA (NOPT)	14 DME ARC (GJT LR-330)	9000
LOMMA	FRUITA NDB/INT	111.31/6.41 (I-GJT)	7600
FRU NDB	RHONE OM/INT	111.31/4.40 (I-GJT)	6300

MISSED APPROACH

ILS: AT THE DH. LOC: 3.91 MILES AFTER RHONE OR AT 1.80 DME FIX.

CLIMB TO 5600 THEN CLIMBING RIGHT TURN TO 10000 DIRECT GJT VORTAC AND HOLD; OR WHEN DIRECTED BY ATC, CLIMB TO 5600, THEN CLIMBING RIGHT TURN TO 8000 DIRECT FRU NDB AND HOLD W, RT, 111 INBOUND.

ADDITIONAL FLIGHT DATA:
HOLD SW, RT, 052 INBOUND.
FAS OBST: 4909 TERRAIN 390855/1083321
CHART: 7205 TOWER 390331/1084613

1. PT L SIDE OF COURSE 291.31 OUTBOUND 8000 FT WITHIN 10 MILES OF FRUITA (IAF)
2.
3. FAC: 111.31 FAF: RHONE DIST FAF TO MAP: 3.91 THLD: 4.51
4. MIN. ALT: FRUITA 7600, RHONE 6300 # # LOC ONLY
5. DIST TO THLD FROM OM: 4.51 MM: 0.61 IM: 150 HAT: 100 HAT: GS ANT: 1152
6. MIN GS INCPT: 7600 GS ALT AT: FRUITA 7564 OM: 6201 MM: 5058 IM:
7. GS ANGLE: 2.75 TCH: 60
8. MSA FROM: FRU NDB 045-135 11500, 135-225 10700, 225-045 10100

MAG VAR: 14E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] ILS: @ LOC: STANDARD $

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 11	5032	1/2	200	5032	1/2	200	5032	1/2	200	5032	1/2	200			
S-LOC 11	5180	1/2	348	5180	1/2	348	5180	1/2	348	5180	3/4	348			
CIRCLING	5380	1	522	5440	1	582	5460	1 3/4	602	5540	2 1/4	682			

NOTES: USE I-GJT DME WHEN ON LOCALIZER COURSE.

@ CAT A,B,C 700-2, CAT D 700-2 1/4
$ CAT D 800-2 1/4

CITY AND STATE	ELEVATION: 4858 TDZE: 4832 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
GRAND BOULDER, CO	HOOKER FIELD	I-GJT	ILS RWY 11, AMDT 11, 15 SEP 89	AMDT: 10
				DATED: 15 OCT 88

FAA FORM 8260 - 3 (computer generated) PAGE OF PAGES

Figure A5-3

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
GEP VORTAC	GREYS INT/I-MSP 10.50 DME	137.12/27.45	4000
FGT VORTAC (IAF)	GREYS (NOPT)	035.31/12.21	4000
PRESS INT (IAF)	GREYS (NOPT)	250.01/4.61 (HDG) & 296.36/5.48 (I-MSP)	4000
ETTER INT (IAF)	GREYS (NOPT)	005.03/3.60 (HDG) & 296.36/4.82 (I-MSP)	4000
GREYS	NARCO LOM/I-SP 5.71 DME	296.36/4.82 (I-MSP)	2700

MISSED APPROACH

ILS: AT THE DH. LOC: 5.48 MILES AFTER NARCO OR AT I-MSP 0.22 DME FIX.

CLIMB TO 1500, THEN CLIMBING LEFT TURN TO 4000 DIRECT FGT VORTAC AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD S, RT, 358.00 INBOUND.
FAS OBST: 1029 TREES 445125/930953
DO NOT CHART EAGAN FIX ON CAT II SIAP.

1. PT NA SIDE OF COURSE OUTBOUND FT WITHIN MILES OF (IAF)
2. HOLD SE GREYS, RT, 296.36 INBOUND, 4000 FT IN LIEU OF PT (IAF).
3. FAC: 296.36 FAF: NARCO DIST FAF TO MAP: 5.48 THLD: 5.48
4. MIN. ALT: GREYS 4000, NARCO 2700, EAGAN/ I-MSP 2.21 DME/RADAR 1340 # # LOC ONLY
5. DIST TO THLD FROM OM: 5.51 MM: 0.50 IM: 0.22 150 HAT: 1968 100 HAT: 1014 GS ANT: 1003
6. MIN GS INCPT: 2700 GS ALT AT: OM: 2643 MM: 1014 IM: 916
7. GS ANGLE: 3.00 TCH: 52
8. MSA FROM: MS LOM 330-060 3400, 060-330 2800

MAG VAR: 5E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] ILS: STANDARD @ LOC: STANDARD $

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S - I L S 29L	1023	1800	200	1023	1800	200	1023	1800	200	1023	1800	200	1023	2400	200
S - L O C 29L	1340	2400	517	1340	2400	517	1340	5000	517	1340	6000	517	1340	6000	517
CIRCLING	1360	1	519	1360	1	519	1360	1 1/2	519	1460	2	619	1800	3	959
EAGAN FIX MINIMUMS															
S-LOC 29L	1280	2400	457	1280	2400	457	1280	4000	457	1280	5000	457	1280	5000	457
CIRCLING	1360	1	519	1360	1	519	1360	1 1/2	519	1460	2	619	1800	3	959

NOTES: FOR INOPERATIVE ALSF: INCREASE S-ILS CAT E VISIBILITY TO RVR 4000;
INCREASE S-LOC CAT E VISIBILITY TO 1 3/4.
CATEGORY II ILS SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED.
S-ILS 29L: DH 973 MSL, RA NA, RVR 1600, HAT 150; CAT A,B,C,D.
S-ILS 29L: DH 923 MSL, RA NA, RVR 1200, HAT 100; CAT A,B,C,D.

@ CAT D 700-2, CAT E 1000-3
$ CAT E 1000-3

ASR

CITY AND STATE	ELEVATION: 841 TDZE: 823 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
MINNEHAHA, MN	MINNEHAHA MUNI	I-MSP	ILS RWY 29L, AMDT 38	AMDT: 37
				DATED: 29 NOV 89

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Figure A5-4

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
SUNOL INT/OAK 21.00 DME (IAF)	GROVE INT/OAK 11.71 DME	229/0.71 (HDG) & 275.11/8.82 (I-OAK)	3500 *
GROVE	HAYZE INT/OAK 9.00 DME	275.11/2.71 (I-OAK)	2700
HAYZE	CASES OM/OAK 5.00 DME	275.11/4.02 (I-OAK)	1500

MISSED APPROACH

ILS: AT THE DH. LOC: 4.21 MILES AFTER CASES OR AT DME FIX.

CLIMB TO 500 THEN CLIMBING RIGHT TURN TO 3000 VIA OAK R-313 TO PEERE INT AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD SE, RT, 313.00 INBOUND.
FAS OBST:
RWY 27R - 142 TOWER 374300/1221110
RWY 27L - 153 TOWER 374230/1221038

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT GROVE.
3. FAC: 275.11 FAF: CASES DIST FAF TO MAP: 4.21 THLD: 4.21
4. MIN. ALT: GROVE 3500 *, HAYZE 2700 #, CASES 1500 # # LOC ONLY
5. DIST TO THLD FROM OM: 4.21 MM: 0.49 IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: 989
6. MIN GS INCPT: 3500 * GS ALT AT: HAYZE 2619 OM: 1353 MM: 222 IM: ____
7. GS ANGLE: 2.90 TCH: 51
8. MSA FROM: OAK VORTAC 350-170 4900, 170-350 3700

MAG VAR: 17E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: ____ STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A ____ ILS: STANDARD @ LOC: STANDARD $

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 27R	254	1	250	254	1	250	254	1	250	254	1	250			
S-LOC 27R	400	1	396	400	1	396	400	1	396	400	1 1/4	396			
CIRCLING	500	1	494	540	1	534	680	2	674	680	2 1/4	674			
SIDESTEP 27L	420	1	415	420	1	415	420	1 1/4	415	420	2	415			

NOTES: INOPERATIVE TABLE DOES NOT APPLY.
AUTOPILOT COUPLED APPROACH NA BELOW 350'.
* 3000 WHEN AUTHORIZED BY ATC.

@ CAT C 700-2, CAT D 700-2 1/4
$ CAT D 800-2 1/4

CITY AND STATE	ELEVATION: 6 TDZE: 27R 4 / 27L 5 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
OAKTREE, CA	METROPOLE INTL	I-OAK	ILS RWY 27R, AMDT 31	AMDT: 30
				DATED: 9 JUN 88

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Figure A5-5

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
CSN VORTAC (IAF)	MOSBY INT (NOPT)	083.00/20.61	3000
BRV VORTAC (IAF)	MOSBY (NOPT)	359.08/23.31	3000
MOSBY	TILLE LOM	010.03/7.71 (I-IAD)	1900

MISSED APPROACH

ILS: AT THE DH. LOC: 4.61 MILES AFTER TILLE OR AT DME FIX.

CLIMB TO 800 THEN CLIMBING RIGHT TURN TO 3000 VIA AML R-040 TO ASPER INT/AML 14.7 DME AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD NE, RT, 220.00 INBOUND.
FAS OBST: 430 TREE 385212/772543
DEPICT LOC RWY 1L.

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. HOLD S TILLE, LT, 010.01 INBOUND, 1900 FT IN LIEU OF PT (IAF).
3. FAC: 010.01 FAF: TILLE DIST FAF TO MAP: 4.61 THLD: 4.61
4. MIN. ALT: TILLE 1900
5. DIST TO THLD FROM OM: 4.61 MM: 0.49 IM: 850 150 HAT: 1812 100 HAT: 858 GS ANT: 1050
6. MIN GS INCPT: 1900 GS ALT AT: ____ OM: 1849 MM: 536 IM: 413
7. GS ANGLE: 3.00 TCH: 55
8. MSA FROM: AML VORTAC 360-180 2300, 180-270 2600, 270-360 3400

MAG VAR: 9W EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [X] STANDARD [ ] SEE FAA FORM 8260-15 FOR THIS AIRPORT | ALTERNATE: N A [ ] | ILS: STANDARD | LOC: STANDARD

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 1R	513	1800	200	513	1800	200	513	1800	200	513	1800	200			
S-LOC 1R	680	2400	367	680	2400	367	680	2400	367	680	4000	367			
CIRCLING	840	1	527	840	1	527	840	1 1/2	527	880	2	567			

NOTES: CATEGORY II ILS SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED. S-ILS 1R: DH 463 MSL, 145 RA, RVR 1600, HAT 150; CAT A,B,C,D. S-ILS 1R: DH 413 MSL, 100 RA, RVR 1200, HAT 100, CAT A,B,C,D. CATEGORY III ILS SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED. S-ILS 1R: CAT IIIA RVR 700; CAT A,B,C,D. CAT IIIB RVR 600; CAT A,B,C,D. CAT IIIC NA.

SIMULTANEOUS APPROACHES AUTHORIZED WITH RWY 1L.

CITY AND STATE	ELEVATION: 313 TDZE: 313 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
WASHINGTON, DC	DULLSVILLE INTL	I-IAD	ILS RWY 1R, AMDT 21	AMDT: 20
				DATED: 24 AUG 88

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Figure A5-6

U. S. Department of Transportation
Federal Aviation Administration

ILS - STANDARD INSTRUMENTAPPROACH PROCEDURE

FAR PART 97.29

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
ENDAL INT (IAF)	KEIPY INT (NOPT)	227.12/6.81 (I-TRI)	5000
KEIPY	MOCCA LOM/INT	227.12/9.72 (I-TRI)	3600
DAMAS INT	SEMET INT	273.01/12.22 (TR BRG 093)	6000
SEMET	MOCCA	273.01/9.83	4100

MISSED APPROACH

ILS: AT THE DH. LOC: 6.00 MILES AFTER MOCCA OR AT DME FIX.

CLIMB TO 3600 DIRECT BOOIE LOM/INT AND HOLD; OR WHEN DIRECTED BY ATC, CLIMB TO 2000 THEN CLIMBING LEFT TURN TO 6000 VIA HEADING 180 AND HMV VORTAC R-233 TO AFTEN INT AND HOLD NE, RT, 047 INBOUND.

ADDITIONAL FLIGHT DATA:
HOLD SW, RT, 047 INBOUND.
FAS OBST: 1950 TREES 363204/822106
DO NOT CHART EAVER INT ON CAT II SIAP.

1. PT R SIDE OF COURSE 047.12 OUTBOUND 4100 FT WITHIN 10 MILES OF MOCCA (IAF)
2.
3. FAC: 227.12 FAF: MOCCA DIST FAF TO MAP: 6.00 THLD: 6.00
4. MIN. ALT: MOCCA 3600, EAVER INT 2400 * *LOC ONLY
5. DIST TO THLD FROM OM: 6.00 MM: 0.50 IM: 870 150 HAT: 1812 100 HAT: 858 GS ANT: 1051
6. MIN GS INCPT: 3600 GS ALT AT: OM: 3509 MM: 1745 IM: 1619
7. GS ANGLE: 3.00 TCH: 55
8. MSA FROM: TR LOM 270-090 5400, 090-180 7400, 180-270 6300

MAG VAR: 4W EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] ILS: # $ LOC: # $

CATEGORY =====>	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/HAA
S-ILS 23	1718	1800	200	1718	1800	200	1718	1800	200	1718	1800	200			
S-LOC 23	2400	4000	882	2400	4000	882	2400	2 1/4	882	2400	2 1/2	882			
CIRCLING	2400	1 1/4	881	2400	1 1/4	881	2400	2 3/4	881	2400	3	881			
EAVER INT MINIMUMS															
S-LOC 23	2200	2400	682	2200	2400	682	2200	1 1/2	682	2200	1 3/4	682			
CIRCLING	2260	1	741	2260	1 1/4	741	2320	2 1/4	801	2320	2 1/2	801			

NOTES: ASR
CIRCLING NA N OF RWYS 9 AND 23.

CAT A,B 900-1 1/4, CAT C 900-2 3/4, CAT D 900-3
$ NA WHEN TOWER CLOSED

CONTINUED ON PAGE 2.

CITY AND STATE	ELEVATION: 1519 TDZE: 1518 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
KINGS, TN	SPORT CITY	I-TRI	ILS RWY 23, AMDT 22	AMDT: 21 DATED: 4 AUG 88

FAA FORM 8260 - 3 (computer generated)

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

ILS **STANDARD INSTRUMENT APPROACH PROCEDURE**

FLIGHT STANDARDS SERVICE - FAR PART 97. 29

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.

NOTES: (CONTINUED)

WHEN TOWER CLOSED:

1. ALSF-1 OPERATES AS SSALS.
2. INCREASE S-ILS VISIBILITY TO RVR 4000 ALL CATS.
3. INCREASE S-LOC CAT AB VISIBILITY TO RVR 6000, CAT C TO 2 3/4, CAT D TO 3.
4. INOPERATIVE TABLE DOES NOT APPLY TO S-ILS OR S-LOC VISIBILITIES.
5. INCREASE EAVER INT S-LOC CAT AB VISIBILITY TO RVR 4000, CAT C 2, CAT D 2 1/4.
6. FOR INOPERATIVE SSALS, INCREASE EAVER INT S-LOC CAT A,B VISIBILITY TO RVR 5000.

CATEGORY II ILS SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED.
S-ILS-23: DH 1668 MSL, 192 RA, RVR 1600, HAT 150; CAT A,B,C,D.
S-ILS-23: DH 1618 MSL, 139 RA, RVR 1200, HAT 100: CAT A,B,C,D.

WHEN TOWER CLOSED CAT II NA.

CITY AND STATE	ELEVATION: 1619 TDZE: 1618 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
KINGS, TN	SPORT CITY	I-TRI	ILS RWY 23, AMDT 22	AMDT: 21
				DATED: 4 AUG 88

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Figure A5-7a

APPENDIX 6. RADAR - STANDARD INSTRUMENT APPROACH PROCEDURE FAA FORM 8260-4

U.S. DEPARTMENT OF TRANSPORTATION -- FEDERAL AVIATION ADMINISTRATION

RADAR -- STANDARD INSTRUMENT APPROACH PROCEDURE -- FLIGHT STANDARDS SERVICE -- FAR PART 97.31

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. *Altitudes are minimum altitudes unless otherwise* indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

Initial approach minimum altitude(s) shall correspond with those established for enroute operation in the particular area or as set forth below. Positive identification must be established with the radar controller. From initial contact with radar to final authorized landing minimums, the instructions of the radar controller are mandatory except when; (A) Visual contact is established on final approach at or before descent to the authorized landing minimums; or (B) at pilot's discretion if it appears desirable to discontinue the approach.

Except when the radar controller may direct otherwise prior to final approach, a missed approach shall be executed as provided below when; (A) communications on final approach is lost for more than 5 seconds *during a precision approach, or for more than 30 seconds during* a surveillance approach; (B) directed by radar controllers; (C) visual contact is not established upon descent to authorized landing minimums; or (D) if landing is not accomplished.

RADAR TERMINAL AREA MANEUVERING SECTORS AND ALTITUDES (Sectors and distances measured from radar antenna)

FROM	TO	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE
		AS ESTABLISHED BY THE CURRENT CLEKINS ASR MINIMUM VECTORING ALTITUDE CHART.									

MISSED APPROACH

MAP: RWY 5R, 10L, 18, 23L, 28R, 36 THRESHOLD.

SEE PAGE 2 FOR MISSED APPROACH INSTRUCTIONS.

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT | ALTERNATE: N A [ ] STANDARD

CATEGORY	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA
S-5R	1180	2400	404	1180	2400	404	1180	4000	404	1180	5000	404			
S-10L	1220	1	438	1220	1	438	1220	1 1/4	438	1220	1 1/2	438			
S-18	1220	1	435	1220	1	435	1220	1 1/4	435	1220	1 1/2	435			
S-23L	1240	5000	455	1240	5000	455	1240	5000	455	1240	5000	455			
S-28R	1240	2400	448	1240	2400	448	1240	4000	448	1240	5000	448			
S-36	1220	1	431	1220	1	431	1220	1 1/4	431	1220	1 1/2	431			
CIRCLING	1300	1	508	1300	1	508	1300	1 1/2	508	1360	2	568			

NOTES: RWY 5R: FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2600; FINAL APPROACH COURSE 057. RECOMMENDED ALTITUDE 5 MILES 2300, 4 MILES 2000, 3 MILES 1700, 2 MILES 1400.
RWY 10L: FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2000; FINAL APPROACH COURSE 100. RECOMMENDED ALTITUDE 5 MILES 1800, 4 MILES 1600, 3 MILES 1400.
RWY 18: FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2600; FINAL APPROACH COURSE 186. RECOMMENDED ALTITUDE 5 MILES 2300, 4 MILES 2000, 3 MILES 1700, 2 MILES 1400.
RWY 23L: FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2600; MINIMUM ALTITUDE 4 MILE FIX 1900; FINAL APPROACH COURSE 237. RECOMMENDED ALTITUDE 5 MILES 2260, 4 MILES 1900, 3 MILES 1620, 2 MILES 1340.
RWY 28R: IF 12 MILES FROM THRESHOLD ON RUNWAY CENTERLINE EXTENDED; FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2600, MINIMUM ALTITUDE 2 MILE FIX 1400; (CONT'D PG 2)

LOST COMMUNICATIONS (ALL RWYS): AS DIRECTED BY ATC ON INITIAL CONTACT.

ADDITIONAL FLIGHT DATA

TDZE: 776	RWY: 5R	TDZE: 782	RWY: 10L
TDZE: 785	RWY: 18	TDZE: 785	RWY: 23L
TDZE: 792	RWY: 28R	TDZE: 789	RWY: 36

FAS OBSTACLES:
RWY 5R - 927 STACK 412009/815634
RWY 10L - 967 BLDG 412506/815403
RWY 18 - 925 BLDG 412744/815111
RWY 23L - 930 STACK 412442/814932
RWY 28R - 937 W/T 412449/814630

MAG VAR: 7W EPOCH YEAR: 90

CITY AND STATE	ELEVATION: 792 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
HOPLAND, OH	HOPLAND-CLEKINS INTL	CLE ASR	RADAR-1, AMDT 29	AMDT: 28 DATED: 14 FEB 88

FAA FORM 8260 - 4 (computer generated) *Page* 1 of 2

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RADAR

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 31

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

RWY 28R (CONT'D): FINAL APPROACH COURSE 280. RECOMMENDED ALTITUDE 5 MILES 2300, 4 MILES 2000, 3 MILES 1700, 2 MILES 1400.
RWY 36: FAF 6 MILES FROM THRESHOLD, MINIMUM ALTITUDE 2600; MINIMUM ALTITUDE 2 MILE FIX 1400; FINAL APPROACH COURSE 004.
RECOMMENDED ALTITUDE 5 MILES 2300, 4 MILES 2000, 3 MILES 1700, 2 MILES 1400.

S-5R: FOR INOPERATIVE ALSF-1, INCREASE CAT D VISIBILITY TO RVR 6000.
S-23L: INOPERATIVE TABLE DOES NOT APPLY TO CAT A,B,C.
FOR INOPERATIVE MALSR, INCREASE CAT D VISIBILITY TO RVR 6000.

MISSED APPROACH INSTRUCTIONS:
RWY 5R & 10L: CLIMBING LEFT TURN TO 3000 VIA 360 HEADING AND CXR R-286 TO CRIBS INT AND HOLD E, RT, 286 INBOUND.
RWY 36: CLIMB TO 3000 VIA 360 HEADING AND CXR R-286 TO CRIBS INT AND HOLD E, RT, 286 INBOUND.
RWY 18 & 23L: CLIMBING RIGHT TURN TO 3000 DIRECT DJB VORTAC AND HOLD W, RT, 077 INBOUND.
RWY 28R: CLIMBING LEFT TURN TO 3000 DIRECT DJB VORTAC AND HOLD W, RT, 077 INBOUND.

CITY AND STATE	ELEVATION: 792 TDZE: AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
HOPLAND, OH	HOPLAND-CLEKINS INTL	CLE ASR	RADAR-1, AMDT 29	AMDT: 28
				DATED: 02/14/88

FAA FORM 8260 - 10 (computer generated) Page 2 of 2 Pages

Figure A6-1a

U.S. DEPARTMENT OF TRANSPORTATION -- FEDERAL AVIATION ADMINISTRATION

RADAR -- STANDARD INSTRUMENT APPROACH PROCEDURE -- FLIGHT STANDARDS SERVICE -- FAR PART 97.31

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

Initial approach minimum altitude(s) shall correspond with those established for enroute operation in the particular area or as set forth below. Positive identification must be established with the radar controller. From initial contact with radar to final authorized landing minimums, the instructions of the radar controller are mandatory except when; (A) Visual contact is established on final approach at or before descent to the authorized landing minimums; or (B) at pilot's discretion if it appears desirable to discontinue the approach.

Except when the radar controller may direct otherwise prior to final approach, a missed approach shall be executed as provided below when; (A) communications on final approach is lost for more than 5 seconds during a precision approach, or for more than 30 seconds during a surveillance approach; (B) directed by radar controllers; (C) visual contact is not established upon descent to authorized landing minimums; or (D) if landing is not accomplished.

RADAR TERMINAL AREA MANEUVERING SECTORS AND ALTITUDES (Sectors and distances measured from radar antenna)

FROM	TO	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE
AS ESTABLISHED BY THE CURRENT GALENA ASR MINIMUM VECTORING ALTITUDE CHART.											

MISSED APPROACH

MAP: PAR RWYS 7, 25 - DH

ASR RWY 7 - 1/4 MI. FROM THRESHOLD
ASR RWY 25 - THRESHOLD

SEE PAGE 2 FOR MISSED APPROACH INSTRUCTIONS.

MINIMUMS

TAKEOFF: X STANDARD | SEE FAA FORM 8260-15 FOR THIS AIRPORT | ALTERNATE: N A | STANDARD

CATEGORY	A			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA
PAR S-7	399	1	250	399	1	250	399	1	250	399	1	250	399	1	250
PAR S-25	352	1/2	200	352	1/2	200	352	1/2	200	352	1/2	200	352	1/2	200
ASR S-7	440	1	291	440	1	291	440	1	291	440	1	291	440	1	291
ASR S-25	500	1	348	500	1	348	500	1	348	500	1	348	500	1	348
CIRCLING	540	1	388	620	1	468	620	1 1/2	468	720	2	568	720	2	568

NOTES:

PAR RWY 7: FAF 5.25 MILES FROM THRESHOLD. GLIDE SLOPE INTERCEPT ALTITUDE 1600. FINAL APPROACH COURSE 068.

PAR RWY 25:FAF 5.25 MILES FROM THRESHOLD. GLIDE SLOPE INTERCEPT ALTITUDE 1600. FINAL APPROACH COURSE 248.

ASR RWY 7: FAF 5.25 MILES FROM THRESHOLD, MINIMUM ALTITUDE 1600; FINAL APPROACH COURSE 068. RECOMMENDED ALTITUDE 5 MILES 1540, 4 MILES 1260, 3 MILES 980, 2 MILES 700.

ASR RWY 25: FAF 5.25 MILES FROM THRESHOLD, MINIMUM ALTITUDE 1600; MINIMUM ALTITUDE 2.5 MILE FIX 600; FINAL APPROACH COURSE 248. RECOMMENDED ALTITUDE 5 MILES 1500, 4 MILES 1140, 3 MILES 780, 2.5 MILES 600, 2 MILES 520.

LOST COMMUNICATIONS (ALL RWYS): AS DIRECTED BY ATC ON INITIAL CONTACT.

ADDITIONAL FLIGHT DATA

TDZE: 149	RWY: 7	TDZE: 152	RWY: 25
TDZE:	RWY:	TDZE:	RWY:

FAS OBST:
PAR RWY 7: 179 TREE 644409/1565733
PAR RWY 25: 161 ROAD 644410/1565436
ASR RWY 7: 187 ANTENNA 644418/1565724
ASR RWY 25: 238 NDB 644417/1564823
PAR RWY 7: GS 2.50 / TCH 34 / RPI 772
PAR RWY 25: GS 2.50 / TCH 36 / RPI 827

MAG VAR: 23E EPOCH YEAR: 85

CITY AND STATE	ELEVATION: / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
STARDUST, AK	152 GALAXY	GAL ASR/PAR	RADAR-1, AMDT 7	AMDT: 6 DATED: 13 MAY 88

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Figure A6-2

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RADAR **STANDARD INSTRUMENT APPROACH PROCEDURE**

FLIGHT STANDARDS SERVICE - FAR PART 97. 31

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

PAR RWY 25: GS 2.50 / TCH 36 / RPI 827

INOPERATIVE TABLE DOES NOT APPLY TO ASR S-25 CAT A,B,C.
FOR INOPERATIVE ALSF-1, INCREASE ASR S-25 CAT D,E VISIBILITY TO 3/4.
INOPERATIVE ASR: PAR IS AVAILABLE ONLY IF AIRCRAFT HAS OPERABLE TACAN, OR VOR AND DME.
PAR RWY 7: EXECUTE VOR/DME OR TACAN RWY 7 APPROACH AND REPORT 12 DME INBOUND ON FINAL APPROACH FOR PAR PICKUP.
PAR RWY 25: EXECUTE VOR/DME OR TACAN RWY 25 APPROACH AND REPORT 4 DME INBOUND ON FINAL APPROACH FOR PAR PICKUP.

VASI RWY 7: VASI NOT COINCIDENT WITH PAR RWY 7.

MISSED APPROACH INSTRUCTIONS:
RWY 7: CLIMB TO 3000 DIRECT GAL VORTAC OR BZP NDB AND HOLD NE, LT, 246 INBOUND; OR HOLD SW, RT, 066 INBOUND. TACAN AIRCRAFT CLIMB TO 4000 VIA GAL R-065 TO GROFF/20 DME AND HOLD SW, RT, 065 INBOUND.
RWY 25: CLIMB TO 1500, THEN CLIMBING RIGHT TURN TO 3000 DIRECT GAL VORTAC OR BZP NDB AND HOLD NE, LT, 246 INBOUND; OR HOLD SW, RT, 066 INBOUND. TACAN AIRCRAFT CLIMB TO 3000 VIA GAL R-245 TO DOWDI/20 DME AND HOLD NE, RT, 245 INBOUND.

ALTERNATE MISSED APPROACH INSTRUCTIONS:
RWYS 7 & 25: CLIMB TO 3000, THEN AS DIRECTED BY ATC.

CITY AND STATE	ELEVATION: 152 TDZE: AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
STARDUST, AK	GALAXY	GAL ASR/PA	RADAR-1, AMDT 7	AMDT: 6
				DATED: 05/06/88

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Figure A6-2a

APPENDIX 7. STANDARD INSTRUMENT APPROACH PROCEDURE FAA FORM 8260-5

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LOC/BC

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 25

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BUXOM INT/RADAR/I-IAP 12.31 DME (IAF)	LEVEE INT/I-IAP 9.50 DME	099.08/2.81 (I-IAP)	3000
LEVEE	PORTA INT/I-IAP 3.69 DME	099.08/5.81 (I-IAP)	1500

MISSED APPROACH

MAP: 3.21 MILES AFTER PORTA OR AT I-IAP 0.48 DME

CLIMBING LEFT TURN TO 4000 VIA BTG R-160 TO BTG VORTAC; OR, WHEN DIRECTED BY ATC, CLIMB TO 900 THEN CLIMBING RIGHT TURN TO 4000 VIA UBG R-040 TO UBG VORTAC.

ADDITIONAL FLIGHT DATA:

FAS OBST: 120 TREE 453540/1223736
CHART: 298 BRIDGE 453742/1223951
CHART VDP AT 1.3 DME.
DISTANCE VDP TO THR 1.5 MILES.

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT BUXOM.
3. FAC 099.08 FAF PORTA DIST FAF TO MAP 3.21 THLD 4.00
4. MIN. ALT BUXOM 3000, LEVEE 3000, PORTA 1500
8. MSA FROM: BTG VORTAC 310-120 6100, 120-310 3400

MAG VAR: 20E EPOCH YEAR: 80

MINIMUMS

TAKEOFF: ____ STANDARD X SEE FAA FORM 8260-15 FOR THIS AIRPORT

ALTERNATE: N A ____ STANDARD @ @ CAT D 1000-3, CAT E 1100-3

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-LOC 10L	380	1	355	380	1	355	380	1	355	380	1	355	380	1	355
CIRCLING	720	1	694	740	1	714	740	2	714	980	3	954	1060	3	1034

NOTES: INOPERATIVE TABLE DOES NOT APPLY TO CATS A,B,C.
RADAR REQUIRED.

CITY AND STATE	ELEVATION: 26 TDZE: 25 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
ROSELAND, OR	ROSELAND INTL	I-IAP	LOC BC RWY 10L, AMDT 13	AMDT 12
				DATE 5 MAY 88

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Figure A7-1

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LOC

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 25

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
MAMMY INT/I-LUK 7.61 DME /RADAR	DEFTS INT/I-LUK 4.60 DME	025.11/3.01 (I-LUK)	2000

MISSED APPROACH

MAP: 4.11 MILES AFTER DEFTS OR AT I-LUK 0.49 DME

CLIMBING RIGHT TURN TO 2600 DIRECT LUK NDB AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD NE, RT, 230 INBOUND.
FAS OBST: 990 ANTENNA 390348/842630
CHART: 1185 TOWERS 390031/842637

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT MAMMY.
3. FAC 025.11 FAF DEFTS DIST FAF TO MAP 4.11 THLD 4.79
4. MIN. ALT MAMMY 2500, DEFTS 2000
8. MSA FROM: CVG VORTAC 2900

MAG VAR: 4W EPOCH YEAR: 90

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] # CAT A,B 900-2 CAT C,D 900-2 3/4

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-2R	1240	1	758	1240	1 1/4	758	1240	2 1/4	758	1240	2 1/2	758			
CIRCLING	1300	1	817	1300	1 1/4	877	1300	2 1/2	877	1300	2 3/4	877			

NOTES: DISREGARD GS INDICATIONS.
RADAR AND ADF REQUIRED.

WHEN CONTROL TOWER CLOSED, ALTERNATE MINIMUMS NA.

CITY AND STATE	ELEVATION: 483 TDZE: 482 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
SIN CITY, OH	SUNKEN LUNKEN FIELD	I-LUK	LOC BC RWY 2R, AMDT 7	AMDT 6
				DATE 28 AUG 88

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Figure A7-2

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LOC/DME

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 25

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BOI 22.00 DME/RADAR (IAF)	17.00 DME	278.01/4.91 (I-BOI)	6800
17.00 DME	11.00 DME	278.01/6.00 (I-BOI)	5900
11.00 DME	7.00 DME	278.01/4.00 (I-BOI)	4900

MISSED APPROACH

MAP: I-BOI 0.51 DME

CLIMB TO 4500 VIA BOI VORTAC R-278 TO JIMMI/12 DME AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD W, RT, 098.01 INBOUND.
FAS OBST: 3039 TERRAIN 433228/1161024
3059 TERRAIN 433223/1160942

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT 17.00 DME.
3. FAC 278.01 FAF 7.00 DME DIST FAF TO MAP - THLD 5.39
4. MIN. ALT 17.00 DME 6800, 11.00 DME 5900, 7.00 DME 4900, 3.50 DME 3600
8. MSA FROM: BOI VORTAC 130-300 6500, 300-130 9400

MAG VAR: 17E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] STANDARD # # CAT E 900-3

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA
S-28L	3300	3/4	446	3300	3/4	446	3300	1 1/4	446	3300	1 1/2	446	3300	1/1/2	446
SIDESTEP 28R	3300	1	442	3300	1	442	3300	1/1/2	442	3300	2	442	3300	2	442
CIRCLING	3300	1	442	3320	1	462	3320	1 1/2	462	3420	2	562	3680	3	822

NOTES: DISREGARD GS INDICATIONS.
CIRCLING NA NORTH OF RWY 10L-28R.
INOPERATIVE TABLE DOES NOT APPLY TO S-28L CAT C.
RADAR REQUIRED.
DME FROM BOI VORTAC. SIMULTANEOUS RECEPTION OF I-BOI AND BOI DME REQUIRED.

CITY AND STATE	ELEVATION: 2858 TDZE: 28L 2854 28R 2858 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
BOSS, ID	BOSS AIR TERMINAL	I-BOI	LOC/DME BC RWY 28L, AMDT 5	AMDT 4
				DATE 3 JUL 88

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Figure A7-3

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

NDB

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 27

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
CGT VORTAC (IAF)	ROANN INT/ORD 13.60 DME/ RADAR	356.02/11.61 (CGT R-356) & 320.01/8.82 (ID BRG 140)	4000 *
ROANN	ID LOM	320.01/6.91	2700

MISSED APPROACH

MAP: 6.00 MILES AFTER ID LOM

CLIMBING RIGHT TURN TO 4000 VIA ORD R-089 TO LAIRD INT AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD E, RT, 269 INBOUND.
FAS OBST: 852 CONTROL TOWER 415838/875416

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT ROANN.
3. FAC 320.01 FAF ID LOM DIST FAF TO MAP 6.00 THLD 6.00
4. MIN. ALT ROANN 4000 *, ID LOM 2700, ORD 2.50 DME/RADAR 1220
8. MSA FROM: ID LOM 360-180 3400, 180-360 2600

MAG VAR: 0 EPOCH YEAR: 80

MINIMUMS

TAKEOFF: | | STANDARD | X | SEE FAA FORM 8260-15 FOR THIS AIRPORT | ALTERNATE: N A | X |

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-32R	1220	4000	567	1220	4000	567	1220	5000	567	1220	1 1/2	567			
CIRCLING	1220	1	553	1220	1	553	1220	1 1/2	553	1220	2	553			
RADAR OR DME MINIMUMS															
S-32R	1160	4000	507	1160	4000	507	1160	5000	507	1160	6000	507			
CIRCLING	1160	1	493	1160	1	493	1160	1 1/2	493	1220	2	553			

NOTES: RADAR OR DME REQUIRED.
* 2700 WHEN AUTHORIZED BY ATC.

CITY AND STATE	ELEVATION: 667 TDZE: 653 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
CAGO, IL	HARE INTERNATIONAL	ID	NDB RWY 32R, AMDT 19	AMDT 18
				DATE 9 AUG 88

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Figure A7-4

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

NDB/DME

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 27

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
GJT VORTAC	RGB NDB/DME	046.03/57.51	13000
RGB NDB/DME	REFRY/8.00 DME	072.00/8.00	13000
EKR VORTAC	REFRY	136.02/36.21	13000
RLG VORTAC (IAF)	RGB 072.00/23	220.02/44.82	13000
RGB 072.00/23	17.00 DME	252.00/6.00 (RGB Brg 072)	11200
17.00 DME	13.00 DME	252.00/4.00 (RGB Brg 072)	10500
13.00 DME	REFRY	252.00/5.00 (RGB Brg 072)	9500

MISSED APPROACH

MAP: RGB NDB/DME

CLIMB TO 3 DME VIA RGB BRG 252, THEN CLIMBING RIGHT TURN DIRECT RGB NDB/DME, CONTINUE CLIMB TO 13000 IN HOLDING PATTERN.

ADDITIONAL FLIGHT DATA:

HOLD E. LT, 252.00 INBOUND.
FAS OBST: 5961 TERRAIN 393047/1074204
MIRL RWY 8-26
REIL, VASI RWYS 8,26

1. PT R SIDE OF COURSE 072.0 OUTBOUND 12500 FT WITHIN 15 MILES OF REFRY/8.00 DME * (IAF)
2. * MAINTAIN 13000 OR ABOVE UNTIL ESTABLISHED OUTBOUND FOR PT.
3. FAC 252.00 FAF REFRY DIST FAF TO MAP - THLD
4. MIN. ALT 17.00 DME 11200, 13.00 DME 10500, REFRY 9500, 3.00 DME 7500
8. MSA FROM: RGB NDB/DME 12900

MAG VAR: 13E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: STANDARD X SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
CIRCLING	6400	1	848	6400	1 1/4	848	6400	2 1/2	848		NA				

NOTES: CIRCLING NA S OF RWY 8-26.
OBTAIN LOCAL ALTIMETER SETTING ON CTAF; WHEN NOT RECEIVED, PROCEDURE NA.

CITY AND STATE	ELEVATION: 5552 TDZE: - AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
EIFFEL, CO	PARIS COUNTY	RGB	NDB/DME-A, ORIGINAL	AMDT NONE
				DATE

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Figure A7-5

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SDF

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 25

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BELGO INT	CALIN LOM	116.03/13.02	3000
MILTO INT	CALIN LOM	055.04/26.11	3000
STE VORTAC (IAF)	FLAVN INT (NOPT)	257.00/24.61	3000
FLAVN	CALIN LOM	338.02/6.81	2700

MISSED APPROACH

MAP: 4.00 MILES AFTER CALIN LOM

CLIMB TO 3000, THEN LEFT TURN DIRECT DU LOM AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD S, RT, 338.02 INBOUND.
FAS OBST: 1421 SILO 443705/900956

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. HOLD S DU LOM, RT, 338.02 INBOUND, 3000 FT IN LIEU OF PT (IAF).
3. FAC 338.02 FAF CALIN LOM DIST FAF TO MAP 4.00 THLD 4.00
4. MIN. ALT CALIN LOM 2700
6. MSA FROM: DU LOM 315-135 3000, 135-315 2500

MAG VAR: 0 EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [X]

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-34	1680	1	423	1680	1	423	1680	1 1/4	423	1680	1 1/4	423			
CIRCLING	1740	1	463	1740	1	463	1740	1 1/2	463	1840	2	563			
WAUSAU ALTIMETER SETTING MINIMUMS															
S-34	1800	1	543	1800	1	543	1800	1 1/4	543	1800	1 1/4	543			
CIRCLING	1860	1	583	1860	1	583	1880	1 1/2	603	1900	2	623			

NOTES: OBTAIN LOCAL ALTIMETER SETTING ON CTAF; WHEN NOT RECEIVED, USE WAUSAU ALTIMETER SETTING.
INOPERATIVE TABLE DOES NOT APPLY.
ADF REQUIRED.

CITY AND STATE	ELEVATION: 1277 TDZE: 1257 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
MARSH, WI	MARSH MUNICIPAL	DUS	SDF RWY 34, AMDT 4	AMDT 3
				DATE 20 DEC 84

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Figure A7-6

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

VOR/DME RNAV **STANDARD INSTRUMENT APPROACH PROCEDURE**

FLIGHT STANDARDS SERVICE - FAR PART 97. 33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
SLAPS WP (IAF)	3.00 ATD FROM AVCAT WP	079.03/5.00	4300

MISSED APPROACH

MAP: AVCAT WP

CLIMBING LEFT TURN TO 4700 DIRECT TO LBB VORTAC.

ADDITIONAL FLIGHT DATA:

FAS OBST: 3384 CONTROL TOWER 333958/1014911
FAF: 3.00 ATD 333942.50/1015318.93
CHART: 3576 TOWER 333716/1015353

GLIDE SLOPE COMPUTER SETTING 3.12
HORIZONTAL DISTANCE MDA TO MAP ON GS 1.21NM.
REFERENCE FACILITY ELEVATION LBB VOR/DME 3320.

AVCAT WP ELEV 3306'

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT SLAPS WP.
3. FAC 079.03 FAF 3.00 ATD FROM AVCAT WP DIST FAF TO MAP - THLD 3.00
4. MIN. ALT SLAPS WP 4700, 3.00 ATD FROM AVCAT WP 4300
6. MSA FROM: AVCAT WP 5200

MAG VAR: 11E EPOCH YEAR: 75

MINIMUMS

TAKEOFF: X STANDARD ____ SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A ____ STANDARD

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-8	3640	1	384	3640	1	384	3640	1	384	3640	1 1/4	384			
CIRCLING	3720	1	439	3740	1	459	3740	1 1/2	459	3840	2	559			

NOTES: RADAR REQUIRED.

CITY AND STATE	ELEVATION: 3281 TDZE: 3256 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP RNAV RWY 8
LOOBUCK, TX	LOOBUCK INTERNATIONAL	LBB	VOR/DME RNAV RWY 8, AMDT 2	AMDT 1
				DATE 23 FEB 78

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U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

VOR/DME RNAV

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BERGG WP (IAF)	HANNS WP	093.00/15.81	3000
HANNS WP	5.00 ATD FROM JAPAN WP	047.12/6.00	2400

MISSED APPROACH

MAP: JAPAN WP

CLIMB TO 3000 VIA COURSE 047 TO HEDDS WP AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD NE, RT, 227.12 INBOUND.
FAS OBST: 1014 TREE 362105/922949
FAF: 5.00 ATD 361847.03/923329.11

REFERENCE FACILITY ELEVATION FLP VOR/DME 780.

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. HOLD SW HANNS WP, RT, 047.12 INBOUND, 3000 FT IN LIEU OF PT (IAF).
3. FAC 047.12 FAF 5.00 ATD FROM JAPAN WP DIST FAF TO MAP - THLD 5.00
4. MIN. ALT HANNS WP 3000, 5.00 ATD FROM JAPAN WP 2400
6. MSA FROM: JAPAN WP 2700

MAG VAR: 3E EPOCH YEAR: 90

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [X]

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-5	1280	1	352	1280	1	352	1280	1	352		NA				
CIRCLING	1400	1	472	1400	1	472	1420	1 1/2	492		NA				
HARRISON ALTIMETER SETTING MINIMUMS															
S-5	1420	1	492	1420	1	492	1420	1 1/4	492		NA				
CIRCLING	1540	1	612	1540	1	612	1560	1 3/4	632		NA				

NOTES:
OBTAIN LOCAL ALTIMETER SETTING ON CTAF; WHEN NOT RECEIVED, USE HARRISON ALTIMETER SETTING.

CITY AND STATE	ELEVATION: 928 TDZE: 928 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP RNAV RWY 5
MOUNTAIN CABIN, AR	CABIN COUNTY REGIONAL	FLP	VOR/DME RNAV RWY 5, AMDT 1	AMDT ORIGINAL
				DATE 3 MAY 90

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Figure A7-8

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LORAN RNAV

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
SCAPO WP (IAF)	WETTR WP	099.00/8.55	3300

MISSED APPROACH

MAP: PONCO WP

CLIMBING LEFT TURN TO 4000 VIA COURSE 348 TO BATTLEGROUND WP AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD NW, RT, 149.00 INBOUND.
FAS OBST: 635 TOWER 453605/1224115
FAF: 6.00 ATD 453836.41/1224439.78

GLIDE SLOPE COMPUTER SETTING 3.20 DEGREES.
HORIZONTAL DISTANCE MDA TO MAP ON GS 2.45NM.
PONCO WP ELEVATION 69.

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT WETTR WP.
3. FAC 099.00 FAF 6.00 ATD FROM PONCO WP DIST FAF TO MAP - THLD 6.00
4. MIN. ALT WETTR WP 3300, 6 .00 ATD FROM PONCO WP 2100
8. MSA FROM: PONCO WP 5600

MAG VAR: 20E EPOCH YEAR: 80

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] # CAT A,B 900-2, CAT C 900-2 1/2, CAT D 1000-3

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-10R	900	2400	880	900	4000	880	900	2	880	900	2 1/4	880			
CIRCLING	900	1	873	900	1 1/4	873	900	2 1/2	873	980	3	953			

NOTES: USE 20E MAGNETIC VARIATION.

CITY AND STATE	ELEVATION: 27 TDZE: 20 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
STORMLAND, OR	STORMLAND INTL	MWX 9940	LORAN RNAV RWY 10R, ORIGINAL	AMDT NONE
				DATE

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Figure A7-9

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LORAN RNAV

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BATTLEGROUND WP	WHAMY WP	126.03/17.61	3500

MISSED APPROACH

MAP: BACUP WP

CLIMBING RIGHT TURN TO 4000 VIA COURSE 334 TO BATTLEGROUND WP AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD NW, RT, 149.00 INBOUND.
FAS OBST: 664 TOWER 453248/1223353
806 TREE 453515/1222606
FAF: 5.00 ATD 453237.75/1222748.29
BACUP WP ELEVATION 75.

1. PT NA SIDE OF COURSE OUTBOUND FT WITHIN MILES OF (IAF)
2. HOLD E WHAMY WP, LT, 279.02 INBOUND, 3500 FT IN LIEU OF PT (IAF).
3. FAC 279.02 FAF 5.00 ATD FROM BACUP WP DIST FAF TO MAP - THLD 5.00
4. MIN. ALT WHAMY WP 3500, 5.00 ATD FROM BACUP WP 2000
8. MSA FROM: BACUP WP 5700

MAG VAR: 20E EPOCH YEAR: 80

MINIMUMS

TAKEOFF: STANDARD X SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A STANDARD # # CAT D 1000-3

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-28R	700	5000	673	700	5000	673	700	1 1/2	673	700	1 3/4	673			
CIRCLING	720	1	693	740	1	713	740	2	713	980	3	953			

NOTES: INOPERATIVE TABLE DOES NOT APPLY TO CATS A AND B.
USE 20E MAGNETIC VARIATION.

CITY AND STATE	ELEVATION: 27 TDZE: 27 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
STORMLAND, OR	STORMLAND INTL	MWX 9940	LORAN RNAV RWY 28R, ORIGINAL	AMDT NONE
				DATE

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Figure A7-10

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

LORAN RNAV

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
OPAUL WP	ALGER WP	280.09/17.11	2000

MISSED APPROACH

MAP: LAKKS WP

CLIMBING LEFT TURN TO 2000 VIA 083 COURSE TO OPAUL WP AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD E, RT, 263.00 INBOUND.
FAS OBST: 80 BOATS 300334/900148

GLIDE SLOPE COMPUTER SETTING 3.16 DEGREES.
HORIZONTAL DISTANCE MDA TO MAP ON GS 0.84NM.
LAKKS WP ELEVATION 59.

1. PT NA SIDE OF COURSE OUTBOUND FT WITHIN MILES OF (IAF)
2. HOLD N ALGER WP, LT, 175.03 INBOUND, 1700 FT IN LIEU OF PT (IAF).
3. FAC 175.03 FAF ALGER WP DIST FAF TO MAP - THLD 4.90
4. MIN. ALT ALGER WP 1700
6. MSA FROM: LAKKS WP 2100

MAG VAR: 4E EPOCH YEAR: 65

MINIMUMS

TAKEOFF: [ ] STANDARD [X] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [ ] STANDARD #

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-18R	340	1/2	331	340	1/2	331	340	1/2	331	340	1	331			
CIRCLING	460	1	451	460	1	451	500	1 1/2	491	600	2	591			

NOTES: WHEN CONTROL TOWER CLOSED PROCEDURE NA.
FOR INOPERATIVE MALSR, INCREASE CAT D VISIBILITY TO 1 1/4.
USE 4E MAGNETIC VARIATION.

NA WHEN CONTROL TOWER CLOSED.

CITY AND STATE	ELEVATION: 9 TDZE: 9 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
NEW LAKEFRONT, LA	ORLEANS INTL	MWX7980	LORAN RNAV RWY 18R, ORIGINAL	AMDT NONE
				DATE

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Figure A7-11

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

VOR

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 23

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
HENNA INT	MGY VOR	318.02/15.68	2700
MIZZA INT	MGY VOR	065.03/12.39	2700
RID VORTAC	MGY VOR	111.01/30.11	2700

MISSED APPROACH

MAP: MGY VOR

CLIMBING LEFT TURN TO 3000 VIA MGY VOR R-138 TO HENNA INT AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD SW, LT, 055.00 INBOUND.
FAS OBST: 1140 ANTENNA 393801/841340
FAC CROSSES RWY C/L EXTENDED 3000 FROM THLD.
CHART MALS RWY 20.

1. PT R SIDE OF COURSE 030.0 OUTBOUND 2700 FT WITHIN 10 MILES OF MGY VOR (IAF)
2.
3. FAC 210.03 FAF DIST FAF TO MAP THLD
4. MIN. ALT NANSY 4 RADAR 2000
6. MSA FROM: MGY VOR 3100

MAG VAR: 3W EPOCH YEAR: 80

MINIMUMS

TAKEOFF: STANDARD X SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-20	2000	1 1/4	1039	2000	1 1/2	1039	2000	3	1039	2000	3	1039			
CIRCLING	2000	1 1/4	1038	2000	1 1/2	1038	2000	3	1038	2000	3	1038			
NANSY RADAR FIX MINIMUMS															
S-20	1460	3/4	499	1460	3/4	499	1460	1 1/4	499	1460	1 1/2	499			
CIRCLING	1480	1	518	1480	1	518	1500	1 1/2	538	1740	2 1/2	778			

NOTES: USE WRIGHT-PATTERSON ALTIMETER SETTING.
INOPERATIVE TABLE DOES NOT APPLY TO VOR MINIMUMS.
INOPERATIVE TABLE DOES NOT APPLY TO S-20 CAT C FOR NANSY RADAR FIX MINIMUMS.

CITY AND STATE	ELEVATION: 962 TDZE: 961 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
CLAYTON, OH	CLAYTON-DAYTON GENERAL	MGY	VOR RWY 20, AMDT 7	AMDT 6 DATE 20 JUL 90

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Figure A7-12

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

VOR/DME

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 23

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
ARCHH/GJT 40.00 DME	OAB VOR/DME	237.02/8.42	8000
EDLES/HVE 39.00 DME	OAB VOR/DME	047.03/10.21	8000
OAB VOR/DME	VANNE/6.00 DME	137.00/6.00	8000
ATLET/GJT 40.00 DME (IAF)	CALDE/13.71 DME (NOPT)	217.00/8.91 (GJT R-217)	8000
ANIUM INT (IAF)	CALDE (NOPT)	037.00/9.81 (GJT R-217) (OAB LR-139)	8000
CALDE	VANNE	317.00/7.70 (OAB R-137)	6600
VANNE	FURLO/4.91 DME	317.00/1.10 (OAB R-137)	6300

MISSED APPROACH

MAP: OAB R-137/0.50 DME

CLIMBING LEFT TURN TO 6700 VIA OAB R-286, THEN RIGHT TURN TO 8000 DIRECT OAB VOR/DME AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD W, LT, 106.00 INBOUND.
FAS OBST: 5279 TREES 384114/1094121
CHART R-6413
VASI RWYS 15, 33

1. PT L SIDE OF COURSE 137.0 OUTBOUND 8000 FT WITHIN 10 MILES OF VANNE (IAF)
2.
3. FAC 317.00 FAF FURLO DIST FAF TO MAP - THLD 4.51
4. MIN. ALT VANNE 6600, FURLO 6300
6. MSA FROM: OAB VOR/DME 060-150 13400, 150-240 7400, 240-330 10000, 330-060 10600

MAG VAR: 15E EPOCH YEAR: 75

MINIMUMS

TAKEOFF: STANDARD X SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-33	5880	1 1/4	1333	5880	1 1/2	1333	5880	3	1333	5880	3	1333			
CIRCLING	5880	1 1/4	1306	5880	1 1/2	1306	5880	3	1306	5880	3	1306			

NOTES: USE GRAND JUNCTION ALTIMETER SETTING.
OPERATORS WITH APPROVED WEATHER REPORTING SERVICE USE LOCAL ALTIMETER SETTING, AND REDUCE ALL MDAS 300'.
PROCEDURE NA WHEN R-6413 IN OPERATION.

CITY AND STATE	ELEVATION: 4574 TDZE: 4547 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
MOABITE, UT	MOABITE FIELD	OAB	VOR/DME RWY 33, AMDT 2	AMDT 1
				DATE 14 FEB 80

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Figure A7-13

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

VOR/DME

STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE - FAR PART 97. 23

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
SHIRT INT (IAF)	KURLE/6.01 DME (NOPT)	270.00/0.41 (HDG) & 224.02/9.81 (MXQ R-044)	2600
HENNA INT	MXQ VOR/DME	085.02/8.61	2600
MXQ VOR/DME	KURLE	044.03/6.00	2600

MISSED APPROACH

MAP: MXQ R-044/1.31 DME

CLIMBING RIGHT TURN TO 4000 VIA HEADING 310 THEN DIRECT NXQ VOR/DME AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD NE, RT, 224.03 INBOUND.
FAS OBST: 1195 TREES 392646/834601
FAC CROSSES RWY C/L EXTENDED 3000 FROM THLD.
CHART: R-5503

1. PT L SIDE OF COURSE 044.0 OUTBOUND 2600 FT WITHIN 10 MILES OF KURLE (IAF)
2.
3. FAC 224.02 FAF KURLE DIST FAF TO MAP - THLD 5.21
4. MIN. ALT KURLE 2600
8. MSA FROM: MXQ VOR/DME 360-270 2600, 270-360 3100

MAG VAR: 3W EPOCH YEAR: 80

MINIMUMS

TAKEOFF: X STANDARD SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA	MDA	VIS	HAT/ HAA
S-22	1460	2400	389	1460	2400	389	1460	2400	389	1460	5000	389			
CIRCLING	1580	1	509	1580	1	509	1580	1 1/2	509	1640	2	569			
WRIGHT-PATTERSON AFB ALTIMETER SETTING MINIMUMS															
S-22	1560	2400	489	1560	2400	489	1560	4000	489	1560	5000	489			
CIRCLING	1700	1	629	1700	1	629	1700	1 3/4	629	1740	2	669			

NOTES: OBTAIN LOCAL ALTIMETER SETTING, RUNWAY LIGHTS, AND APPROACH LIGHTS ON CTAF.
PROCEDURE NA SATURDAY/SUNDAY OR HOLIDAYS EXCEPT BY PRIOR ARRANGEMENT.
FOR INOPERATIVE ALSF-1, INCREASE S-22 CAT D VISIBILITY TO RVR 6000.

CITY AND STATE	ELEVATION: 1071 TDZE: 1071 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP
MINGTON, OH	EXPRESS REGIONAL	MXQ	VOR/DME RWY 22, AMDT 2	AMDT 1
				DATE 24 JUN 82

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Figure A7-14

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
[X] YES [ ] NO		*

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
[ ]	[ ]	[ ]	[ ]	[X]	[X]	[X] DAY ATCT, ZID, AMGR.

FLIGHT CHECKED BY		
NAME: I. WEAR NOTIES	FIFO AVX	DATE: 10/07/09
DEVELOPED BY		
NAME: HAN DRON	FIFO AVX	DATE: 10/10/85
APPROVED BY		
NAME: IAM N. CHARGE MANAGER	FIFO AVX	DATE: 10/11/85

CHANGES:
1. FAC; PT OUTBOUND COURSE; HOLDING INBOUND COURSE; MAP; TERMINAL ROUTE COURSE/DISTANCE.
2. DELETED VDP.

* EFFECTIVE CONCURRENT WITH VOR RWY 4, AMDT 2.

REASONS:
1. IAPA COMPUTATION.
2. SIAP USES REMOTE ALTIMETER.

Figure A7-14a

APPENDIX 8. SPECIAL INSTRUMENT APPROACH PROCEDURE FAA FORM 8260-7

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION -- FLIGHT STANDARDS SERVICE

COPTER VOR/DME

SPECIAL INSTRUMENT APPROACH PROCEDURE -- FLIGHT STANDARDS SERVICE

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be conducted in accordance with a charted instrument approach procedure predicated on the specifications contained herein, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
LFT VORTAC (IAF)	LLA VORTAC R-059/20.00	180.01/21.08	1600
R-020 LLA VORTAC CW (IAF)	R-059 LLA VORTAC	20 DME ARC	1600
R-150 LLA VORTAC CCW (IAF)	R-059 LLA VORTAC	20 DME ARC	1600
LLA VORTAC R-059/20.00	GROPH 18.00 DME	239.00/2.00 (LLA R-059)	1200

MISSED APPROACH

MAP: LLA R-059/15.00

CLIMB TO 1600 DIRECT LLA VORTAC.

1. PT NA SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT LLA R-059/20.00
3. FAC: 239.00 FAF: GROPH 18.00 DME DIST FAF TO MAP: - THLD: ____
4. MIN. ALT: R-059/20.00 1600, GROPH 1200
5. DIST TO THLD FROM OM: ____ MM: ____ IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: ____ GS ALT AT: ____ OM: ____ MM: ____ IM: ____
7. GS ANGLE: ____ TCH: ____
8. MSA FROM: LLA VORTAC 280-010 2800, 010-280 1700

ADDITIONAL FLIGHT DATA: SEE BACK FOR LISTING OF HELIPORTS SERVED.

FAS OBST: 50 TERRAIN 294600/920630

MAG VAR: 7E EPOCH YEAR: 85

MINIMUMS

TAKEOFF: [X] STANDARD [ ] SEE FAA FORM 8260-15 FOR THIS AIRPORT ALTERNATE: N A [X]

CATEGORY =====>	COPTER			B			C			D			E		
	DH/ MDA	VIS	HAT/HAA	DH/ MDA	VIS	HAT/ HAA	DH/ MDA	VIS	HAT/ HAA	DH/ MDA	VIS	HAT/ HAA	DH/ MDA	VIS	HAT/ HAA
H-239	300	3/4	295												
LAFAYETTE ALTIMETER SETTING MINIMUMS															
H-239	420	3/4	415												

NOTES: WHEN LOCAL ALTIMETER SETTING NOT RECEIVED, USE LAFAYETTE ALTIMETER SETTING.
PROCEED VFR FROM MAP TO LANDING AREA, OR CONDUCT THE SPECIFIED MISSED APPROACH PROCEDURE.
NIGHT VISIBILITY MINIMUM 1 MILE.

CITY AND STATE	ELEVATION: TDZE: AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
OIL PATCH, LA	Various Heliports	LLA	COPTER VOR/DME 239, AMDT 7	AMDT: 6
				DATED: 4/30/87

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Figure A8-1

NOTES CONTINUED: ADDITIONAL FLIGHT DATA (CONT'D):
HELICOPTER LOGISTICS - OIL PATCH (7R4) LANDING AREA, 10, 306.01/2.51.
PETROL AIR (LA33)- LANDING AREA, 20, 292.02/2.52.
ABC HELICOPTERS - OIL PATCH TERMINAL (2L43) LANDING AREA, 26, 335.03/3.83.

AIR CARRIER NOTES:

The procedure on the other side and the foregoing data are hereby:

FLIGHT CHECKED BY		
NAME: I. M. FEARLESS	FIFO LFT	DATE: 11 Mar 91
DEVELOPED BY		
NAME: I. TERPSDIT	FIFO LFT	DATE: 1 Mar 91
RECOMMENDED BY		
NAME: I. M. WRIGHT MANAGER	FIFO LFT	DATE: 12 Mar 91
APPROVED BY		
NAME: I. GESSO	REGION, FLT STANDARDS ASO	DATE: 03/28/91

OPERATIONS SPECIFICATIONS -- AIRPORT

_____ holding Air Carrier Operating Certificate No. _____ hereby acknowledges receipt of Operations Specifications to operate into and out of the airport named on the other side as a ☐ Regular, ☐ Refueling, ☐ Alternate, ☐ Provisional for _____ airport with the following type aircraft:

Unless otherwise authorized in the Operations Specifications - Airport, an instrument approach of this type shall be conducted in accordance with the procedure specified on the other side and the air carrier minimums specified above with the following exceptions:

DATE: _____ RECEIVED FOR THE AIR CARRIER BY: _____ TITLE: _____
SIGNATURE

AMENDMENT NO. _____

BY DIRECTION OF THE ADMINISTRATOR _____ _____
SIGNATURE TITLE

EFFECTIVE DATE: _____

Figure A8-1a

APPENDIX 9. STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD FAA FORM 8260-9

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
FEEDER	HENNA INT	MXQ VOR/DME	1. TWR (36-2345)	392704/835002	1321 (1A)	1000		2321/2300
			2. TERRAIN	392703/835003	1139		AS1500	2639/2600
FEEDER	MXQ VOR/DME	KURLE/6.01 DME	1.		1321 (1A)	1000		2321/2300
			3. TERRAIN	392949/834137	1139		AS1500	2639/2600
INITIAL (DR)	SHIRT INT	R-044/11.00 DME	4. TWR (36-3456)	393909/833945	1337 (1A)	1000		2337/2300
		(NOPT)	3.		1139		AS1500	2639/2600
INTERMEDIATE	R-044/11.00 DME	KURLE/6.01 DME	5. BLDG (36-4567)	393633/834209	823 (4D)	500	AC50, DG1200	1373/2600
			6. TERRAIN	393634/834208	999		AS1000	1999/2000
FINAL	KURLE/6.01 DME	R-044/1.30 DME	7. 100' TREES	392646/834601	1195 (2C)	250		1445/1460
			8. TERRAIN	393849/834558	1095			
							RA 109	1554/1560
	KURLE/6.01 DME	10 NM	9. TWR (36-4321)	393008/835032	1380 (1A)	1000		2380/2400
2. PROCEDURE TURN			3.		1139		AS1500	2635/2600
3. MISSED APPROACH MAP:	R-044/1.30	MXQ VOR/DME				ASC		
ELEV:	1201							

4. CIRCLING AREA	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL							
CATEGORY A	1.3 NM	350	509 / 629	10. TWR (36-3421)	392647/834842	1278 (1A)	300	/ RA109	1580 / 1700
CATEGORY B	1.5 NM	450	509 / 629	10.		1278 (1A)	300	/ RA109	1580 / 1700
CATEGORY C	1.7 NM	450	509 / 629	10.		1278 (1A)	300	/ RA109	1580 / 1700
CATEGORY D	2.3 NM	550	569 / 669	1.		1321 (1A)	300	HAA / RA109	1640 / 1740
CATEGORY E	4.5 NM	550							

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: MXQ VOR/DME

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
360-090	TWR (36-0684)	162/4.1	1405 (4D)	2500	180-270	TWR (36-0020)	263/24.8	1569 (2C)	2600
090-180	TWR (36-0274)	137/8.7	1502 (4D)	2600	270-360	TWR (36-0043)	312/27.6	2049 (4D)	3100

CITY AND STATE	AIRPORT & ELEVATION 1071	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
MINGTON, OH	EXPRESS REGIONAL	MXQ VOR/DME	VOR/DME RWY 22, AMDT 2	AGL

FAA Form 8260 - 9 (computer generated)

Figure A9-1

NOTES / EXPLANATIONS FROM OPPOSITE SIDE OF FORM:
AIRSPACE DATA:
1. RWY 22 THR: 392633.58/834711.02
2. FAF COORDS: 393018.52/834259.56
3. DIST THR TO 1000' PT: 2.32 NM
4. WIDTH FINAL SEGMENT AT 1000' PT: 2.26 NM
   HI TERRAIN FINAL SEGMENT: 1095 MSL
5. FINAL SEGMENT TRUE COURSE: 221.03
6. DIST FAF TO 1500' PT: 4.07 NM
7. WIDTH INTERMEDIATE SEGMENT AT 1500' PT: 4.60 NM
   HI TERRAIN INTERMEDIATE SEGMENT: 999 MSL
8. INTERMEDIATE SEGMENT TRUE COURSE: 221.03
9. HI TERRAIN IN PT AREA: 1135 MSL

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH:	2. WEATHER SERVICE	3. ALTIMETER SETTING
DAY ATCT	[ ] ESSA [ ] FAA [ ] A/C OTHER: SAWRS	SOURCE: SAWRS/FFO
		DISTANCE: 0/26.78
SATISFACTORY ON: [X] VHF [X] UHF [ ] HF	LOCATION: ON AIRPORT	HOURS REMOTE OPERATION: 1600 SAT - 1600 MON
	HRS OPTN: 24	ADJUSTMENT: 108.91

4. MONITOR STATUS	PRIMARY	SECONDARY
	NAVAID: MXQ VOR/DME	NAVAID:
	MONITOR POINT: DISPATCH CENTER	MONITOR POINT:
	HRS OPTN: CAT. 1 1600 MON - 1600 SAT; CAT. 3	HRS OPTN: CAT. 1; CAT. 3

5. AIRSPACE				
FLOOR OF CONTROLLED AIRSPACE UNDER FAC			[X]	CONTROL AREA
[X]	CONTROL ZONE: 24	HOURS OPTN	[X]	TRANSITION AREA

6. APPROACH & RUNWAY LIGHTING				
		ALS	[X]	REIL 22
		(S) SALS	[X]	TDZ
	[X]	MALS 4, 22	[X]	C/LINE 4-22
		HIRL	[X]	OTHER (Specify) VASI 4,22
		MIRL		

7. RUNWAY MARKINGS	8. RUNWAY VISUAL RANGE
ALL WEATHER PIR-G 22	APPROACH 22
INSTRUMENT NPI-G 4	ROLL OUT

9. GLIDE SLOPE		
	G S ANGLE:	ELEV RWY THRESHOLD:
	DISTANCE FROM RWY:	ELEV GS ANTENNA:
		THRESHOLD CROSSING HEIGHT:

10. FINAL APPROACH COURSE AIMING			
		RUNWAY THRESHOLD	3000 F T. FROM THRESHOLD
	[X]	ON CENTERLINE	F T. FROM CENTERLINE

11. WAIVERS OF STANDARDS	NUMBER OF WAIVERS ON FILE	DATES OF APPROVAL
	NONE	

PART C - REMARKS: NO VDP DUE TO OBSTACLE PENETRATIONS.
MAP PRIOR TO THR TO REDUCE MDA.
TERPS PARAGRAPH 289 APPLIED TO 1235 TREES 392950/834137.
CALL CTAF FOR WX, HIRL, ALSF-1; PPR FOR SAME 1600 SAT - 1600 MON.
PCL: REIL - 5 CLICKS, VASI - 5 CLICKS, PAUSE, 3 MORE CLICKS; ALL OFF - 7 CLICKS.
SIAP NA 1600 SAT - 1600 MON (+ HOL) EXCEPT BY PPR.

PART D - PREPARED BY:	DATE:
HAN DRON	01/23/86
TITLE: AIRSPACE SYSTEM INSPECTION PILOT	OFFICE: XXX FIFO

Figure A9-1a

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
FEEDER	DAMAS INT	SEMET INT	1. 100' TREES	363030/815910	4347 (2C)	1500 $	AT153	6000/6000
			2. TERRAIN	363030/815910	4247		AS1500	
	SEMET	MOCCA LOM/INT	3. 100' TREES	363640/821705	2504 (2C)	1500 $	PT96	4004/4100 #
			4. TERRAIN	363640/821705	2404		AS1500	
INITIAL	ENDAL INT	KEIPY INT	5. 100' TREES	364110/821145	3210 (2C)	1000	AT790	5000/5000
			6. TERRAIN	364110/821145	3110		AS1000	
INTERMEDIATE: ILS	KEIPY (10 NM)	GS INTCP	7. 100' TREES	363900/821615	2709 (2C)	500	GS391	3600/3600
			8. TERRAIN	363900/821615	2609		AS1000	3609/3600
INTERMEDIATE: LOC	KEIPY (10 NM)	MOCCA	7.		2709 (2C)	500		
			8.		2609		AS1000	3609/3600
FINAL: ILS	GS INTCP	DH				ASC		1718/200
			9. TERRAIN	363305/822037	2050			
FINAL: LOC	MOCCA	EAVER INT	10. 100' TREES	363305/822037	2150 (2C)	250		2400/2400
			9.		2050			
STEPDOWN	EAVER	THR	11. 100' TREES	363204/822106	1950 (2C)	250		2200/2200
			12. TERRAIN	363204/822106	1850			
			7.		2709 (2C)	1000	GS391	4100/4100
2. PROCEDURE TURN	MOCCA	10 NM	8.		2609		AS1500	4109/4100
3. MISSED APPROACH MAP:	DH/THR	BOOIE LOM/INT				ASC		
		AFTEN INT						
ELEV:	1593							

4. CIRCLING AREA	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL							
CATEGORY A	1.3 NM	350	881/741	13. TREE (OC)	363017/822433	1956 (2C)	300	SI /	2400/2260
CATEGORY B	1.5 NM	450	881/741	13.		1956 (2C)	300	SI /	2400/2260
CATEGORY C	1.7 NM	450	881/801	14. TREE (OC)	363017/822434	2004 (2C)	300	SI /	2400/2320
CATEGORY D	2.3 NM	550	881/801	14.		2004 (2C)	300	SI /	2400/2320
CATEGORY E	4.5 NM	550							

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: MOCCA LOM

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
360-090	100' TREES	038/20.1	4308	5400	180-270	100' TREES	180/25.3	5290	6300
090-180	100' TREES	165/29.2	6367	7400	270-360	TWR (43-3456)	327/25.4	4406	5500

CITY AND STATE	AIRPORT & ELEVATION 1519	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
KINGS, TN	SPORT CITY	I-TRI	ILS RWY 23, AMDT 22	ASO

FAA Form 8260 - 9 (computer generated)

Figure A9-2

NOTES / EXPLANATIONS FROM OPPOSITE SIDE OF FORM:
AIRSPACE DATA:
1. RWY 23 COORDS: 362853.18/822403.05
2. FAF COORDS: 363319.30/821905.00
3. DIST THR TO 1000' PT: 4.81 NM.
4. WIDTH FINAL SEGMENT AT 1000' PT: 1.60 NM.
   HI TERRAIN FINAL SEGMENT: 2050 MSL.
5. FINAL SEGMENT TRUE COURSE: 223.12
6. DIST FAF TO 1500' PT: 8.8 NM.
7. WIDTH INTERMEDIATE SEGMENT AT 1500' PT: 7.3 NM.
   HI TERRAIN INTERMEDIATE SEGMENT: 2609 MSL.
8. INTERMEDIATE SEGMENT TRUE COURSE: 223.12
9. HI TERRAIN IN PT AREA: 2609 MSL.

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH:	2. WEATHER SERVICE	3. ALTIMETER SETTING
TRI APPCON	[X] ESSA [ ] FAA [ ] A/C OTHER:	SOURCE: TRI ATCT
		DISTANCE: ON AIRPORT
SATISFACTORY ON: [X] VHF [X] UHF [ ] HF	LOCATION: ON AIRPORT	HOURS REMOTE OPERATION:
	HRS OPTN: 24	ADJUSTMENT:

4. MONITOR STATUS	PRIMARY		SECONDARY	
	NAVAID: I-TRI		NAVAID: MOCCA LOM	
	MONITOR POINT: TRI ATCT		MONITOR POINT: TRI ATCT	
	HRS OPTN: CAT. 1	0630-2300 (LCL)	HRS OPTN: CAT. 1	0630-2300 (LCL)
	CAT. 3	2300-0630 (LCL)	CAT. 3	2300-0630 (LCL)

5. AIRSPACE	FLOOR OF CONTROLLED AIRSPACE UNDER FAC			
	[X] CONTROL ZONE: 16.5	HOURS OPTN	[X]	CONTROL AREA
				TRANSITION AREA

6. APPROACH & RUNWAY LIGHTING				
	[ ]	ALS	[X]	REIL 23
	[ ]	(S) SALS	[ ]	TDZ
	[X]	MALS 5, 23, 9, 27	[X]	C/LINE 23
	[X]	HIRL 5-23	[X]	OTHER (Specify) VASI 5
	[ ]	MIRL		

7. RUNWAY MARKINGS	8. RUNWAY VISUAL RANGE
ALL WEATHER PIR-G 5-23	APPROACH 23*
INSTRUMENT NPI-G 9-27	ROLL OUT 23

9. GLIDE SLOPE		
	G S ANGLE: 3.00	ELEV RWY THRESHOLD: 1518.38
	DISTANCE FROM RWY: 1050	ELEV GS ANTENNA: 1513.2/ RWY ABM 1518.4
		THRESHOLD CROSSING HEIGHT: 55.0

10. FINAL APPROACH COURSE AIMING			
	[X]	RUNWAY THRESHOLD	F T. FROM THRESHOLD
	[X]	ON CENTERLINE	F T. FROM CENTERLINE

11. WAIVERS OF STANDARDS	NUMBER OF WAIVERS ON FILE	DATES OF APPROVAL
	1	2/18/77

PART C - REMARKS: $ - DESIGNATED MOUNTAINOUS TERRAIN REDUCED CLEARANCE 1500' ROC.
- PT REQUIRED: DG FROM MOCCA AT 4100 = 430 FT/NM.
TOWER CLOSED 2300-0630 (LCL); ALSF-1 BECOMES SSALS; ALTERNATE MINIMA NA.
WAIVER: GS EQUIPMENT SHELTER LESS THAN 250 FT FROM CENTERLINE (242'). NO EFFECT ON MINIMUMS.
* US WEATHER BUREAU PROVIDES RWY 22 APPROACH RVR READOUT 24 HOURS.

PART D - PREPARED BY:	DATE:
S. I. APPROCHE	03/30/89
TITLE: AERONAUTICAL INFORMATION SPECIALIST	OFFICE: ABC FIFO

Figure A9-2a

APPENDIX 10. EMERGENCY DF APPROACH PROCEDURE FAA FORM 8260-10

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

EMERGENCY DF APPROACH PROCEDURE

FLIGHT STANDARDS SERVICE

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

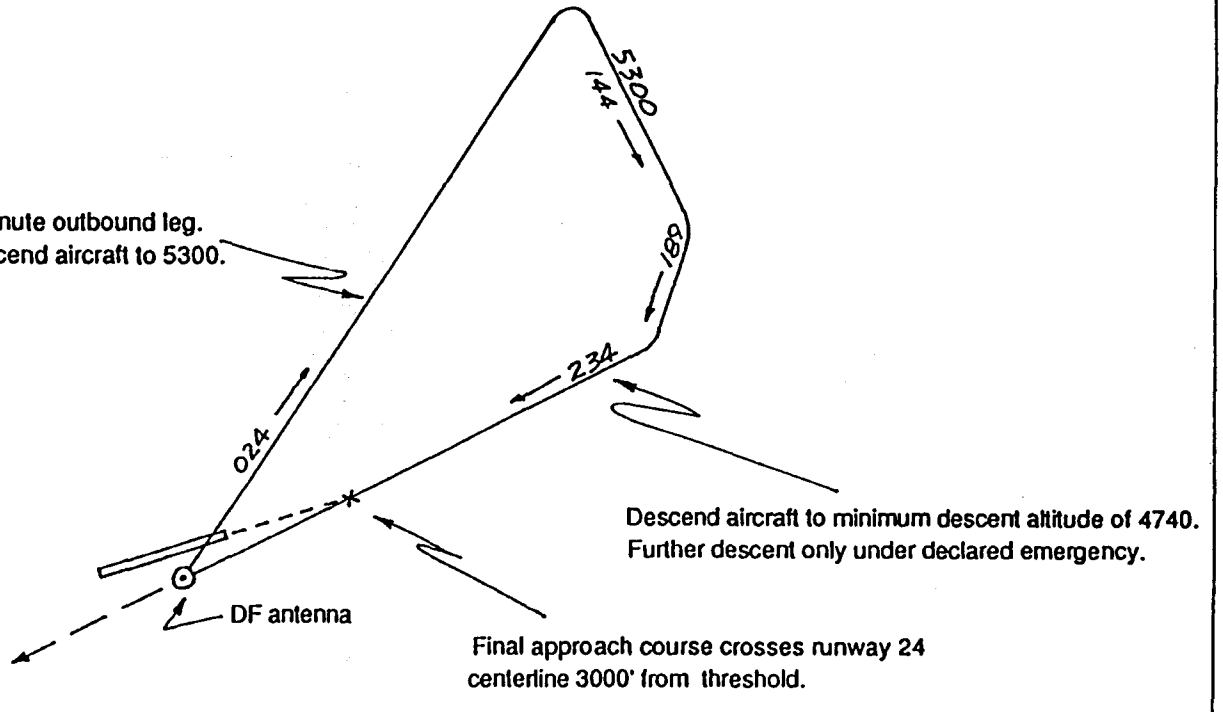
BEARINGS AND DISTANCES ARE FROM THE DF ANTENNA. SECTOR ALTITUDES REFLECT OBSTACLE CLEARANCE ONLY, NOT FACILITY COVERAGE.

TRANSITION TO DF ANTENNA

SECTOR	DISTANCE	MEA
360-360	100 NM	10100
360-360	40 NM	7400
090-360	40 NM	6900
360-360	20 NM	6300

MISSED APPROACH:

AFTER PASSING DF ANTENNA, CLIMB TO 6300 ON COURSE 234 WITHIN 10 MILES.



DF CONTROL FROM: ANTIOCH FSS

MAG VAR: 11 E EPOCH YR: 85

CITY AND STATE	ELEVATION: 3965 TDZE: 3949 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
ANTIOCH, NE	ANTIOCH COUNTY AIRPORT	AOQ DF	DF RWY 24, AMDT 6, 8/7/91 LOW ALTITUDE (MAX 150K)	AMDT: 5 DATED: 7/14/89

FAA FORM 8260 - 10 (computer generated) Page 1 of 1 Pages

Figure A10-1

APPENDIX 11.
DEPARTURE PROCEDURES / TAKEOFF MINIMUMS
FAA FORM 8260-15

U.S. DEPARTMENT of TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

DEPARTURE PROCEDURES / TAKEOFF MINIMUMS

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles, except visibilities which are in statute miles or in feet RVR.

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X ZID, CVG ATCT, LUK TOWER, AMGR.

TAKEOFF MINIMUMS:

RWYs 2L, 2R, 6 400-1 or Standard with minimum climb of 400' per NM to 1800.
RWYs 20L, 20R, 24 300-1

RWY 20L - 150' AGL tower 3000' from departure end of runway, 600' right of centerline.
RWY 20R - 150' AGL tower 3000' from departure end of runway, 600' left of centerline.
RWY 24 - 130' AGL trees 2430' from departure end of runway.

IFR DEPARTURE PROCEDURE:

RWYs 2L, 2R, 6, 20L, 20R, 24 - Climb to 1800 before turning on course.

TAKEOFF OBSTACLES:

RWY 2L - 866 Tree 390752/842457
RWY 2R - 856 Tree 390756/842433
RWY 6 - 749 Tree 390638/842345
RWY 20L - 716 Tree 390446/842511
RWY 20R - 895 Tree 390505/842627
RWY 24 - 831 Tree 390555/842637

DEPARTURE OBSTACLES:

RWY 20L - 1047 Antenna 390452/842651
RWYs 2L, 2R, 20R, 24 - 1796 Tower 390659/842315

* Concurrent with ILS RWY 20L, Amdt 13.

DEVELOPED BY		APPROVED BY	
SIGNATURE: I. M. WRONG	DATE: 06/30/91 FIFO: ANY	SIGNATURE: I. M. WRIGHT	DATE: 06/30/91 FIFO: ANY

CITY AND STATE	AIRPORT	EFFECTIVE DATE	AMDT. NO.
ROSETOWN, OH	ROSETOWN MUNI AIRPORT	* Routine	6

FAA FORM 8260 - 15 (computer generated)

Figure A11-1

U.S. DEPARTMENT of TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

DEPARTURE PROCEDURES / TAKEOFF MINIMUMS

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles, except visibilities which are in statute miles or in feet RVR.

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X SEA FSDO, ZLX, ARPT MGR.

TAKEOFF MINIMUMS:

RWYs 3, 7, 21, 25, 34 Standard
RWY 16 NA

IFR DEPARTURE PROCEDURE:

RWYs 3 and 7 turn left, RWYs 21, 25, 34 turn right, direct PIH VORTAC.
Aircraft departing on PIH VORTAC R-235 CW R-016 climb on course.
All others continue climb on R-235 to 6000, then climbing right turn direct PIH VORTAC, cross at or above 7300.

TAKEOFF OBSTACLES:

DEPARTURE OBSTACLES:

RWYS 3, 7, 21, 25, 34: 9271 TERRAIN 424600/1120830

* Concurrent with Airspace Docket ANM-91-28

DEVELOPED BY		APPROVED BY	
SIGNATURE: I. M. WRONG	DATE: 06/30/91 FIFO: ANY	SIGNATURE: I. M. WRIGHT	DATE: 06/30/91 FIFO: ANY

CITY AND STATE	AIRPORT	EFFECTIVE DATE	AMDT. NO.
ATHOL, ID	HENLEY MUNICIPAL	*	1

FAA FORM 8260 - 15 (computer generated)

Figure A11-2

*U.S. GOVERNMENT PRINTING OFFICE:1994-301-719/95817