



**Federal Aviation  
Administration**

**UNITED STATES GOVERNMENT SPECIFICATIONS**

**FLIGHT INFORMATION PUBLICATION  
INSTRUMENT APPROACH  
PROCEDURES**

**IAC 4  
7 May 2026**

**Prepared by the Interagency Air Committee (IAC)**



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FOR THE  
FLIGHT INFORMATION PUBLICATION  
INSTRUMENT APPROACH PROCEDURES**

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These specifications have been developed by the Interagency Air Committee (IAC), composed of representatives of the Department of Defense and the Federal Aviation Administration, for use in the preparation of the United States Government Flight Information Publication Instrument Approach Procedures. These specifications shall be complied with, without deviation, until such time as they are amended by formal IAC action.

Changes to these specifications will be provided when necessitated by new requirements or through development action of the IAC.

Questions of interpretation that arise in the use of these specifications shall be referred to the Chair, Interagency Air Committee.

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**CHANGES APPLIED TO CURRENT EDITION**

**REQUIREMENT DOCUMENTS**

- a. None applied this edition

**EDITORIAL CHANGES**

- a. EC 25-22 - Communications on CVFP Charts
- b. EC 25-23 - UNICOM on IAPs
- c. EC 26-02 - VGSI Lighting on Airport Sketches
- d. EC 26-04 - Removal of Circling Symbol References from TPP Legend

**CHANGES APPLIED 2 MARCH 2026**

**REQUIREMENT DOCUMENTS**

- a. RD 904 - Charting of Updated Initial Climb Area (ICA) Criteria

**EDITORIAL CHANGES**

- a. None applied this edition

**CHANGES APPLIED 28 NOVEMBER 2025**

**REQUIREMENT DOCUMENTS**

- a. RD 903 - Removal of the note “IAF ARM APPROACH MODE PRIOR TO IAF” from the IAP Specifications

**EDITORIAL CHANGES**

- a. EC 25-16 - VCOA Explanatory Guidance
- b. EC 25-19 - Dual Minimums on IAPs
- c. EC 25-20 - Decision Height in Military Radar Mins

**CHANGES APPLIED 7 OCTOBER 2025**

**REQUIREMENT DOCUMENTS**

- a. RD 897 - Runway Lighting Notes on Instrument Approach Procedures and Airport Diagrams
- b. RD 899 - Documenting DoD Exceptions and Differences to IAC specifications

**EDITORIAL CHANGES**

- a. None applied this edition

**CHANGES APPLIED 18 SEPTEMBER 2025**

**REQUIREMENT DOCUMENTS**

- a. None applied this edition

**EDITORIAL CHANGES**

- a. EC 25-06 - Update to DVA Location and Standardization of TPP Minimums
- b. EC 25-08 - IAPs with Sidestep Minimums
- c. EC 25-09 - Text Size for Notes on IAPs
- d. EC 25-12 - Part-Time Frequency Depiction in TPP

**CHANGES APPLIED 14 AUGUST 2025****REQUIREMENT DOCUMENTS**

- a. None applied this edition

**EDITORIAL CHANGES**

- a. EC 25-07 - Overruns on Airport Sketches

**CHANGES APPLIED 25 JULY 2025****REQUIREMENT DOCUMENTS**

- a. RD 853 - Surface Elevation on Copter Procedures
- b. RD 888 - Guidance for Processing Minima-Related notes on IAPs

**EDITORIAL CHANGES**

- a. None applied this edition

**CHANGES APPLIED TO 27 JUNE 2025****REQUIREMENT DOCUMENTS**

- a. RD 893 - Removal of Redundant Communication Data on Instrument Approach Procedure (IAP) Charts

**EDITORIAL CHANGES**

- a. None applied this edition

**CHANGES APPLIED 12 JUNE 2025****REQUIREMENT DOCUMENTS**

- a. RD 890 - MSA Airport Identifiers
- b. RD 894 - Removal of Insets on Copter Point-In-Space Procedures

**EDITORIAL CHANGES**

- a. EC 24-14 - Charting of Alternate Airport Minimums
- b. EC 24-16 - Alternate Minimums TPP Legend Information
- c. EC 25-04 - Removal of Control Tower Elevation

**CHANGES APPLIED 13 MAY 2025****REQUIREMENT DOCUMENTS**

- a. RD 878 - Removal of Taxiway Data from IAP Airport Sketch
- b. RD 879 - Removal of Circling Icons from Terminal Procedures Publication (TPP)
- c. RD 882 - Extended Final Approach Course on Copter Point-in-Space Procedures
- d. RD 883 - Identification of Radius-to-Fix (RF) Legs on Instrument Approach Procedures (IAPs)
- e. RD 884 - Removal of 67:1 Slope Obstacles on Instrument Approach Procedures (IAP) and Removal of the Highest Obstacles from IAPs and Airport Diagrams (AD)
- f. RD 889 - Airport Location Identifiers on Terminal Chart Products
- g. RD 892 - Formatting of Communication Data in Bottom Briefing Strip of Instrument Approach Procedures (IAPs)

**EDITORIAL CHANGES**

- a. None applied this edition

**CHANGES APPLIED 11 MARCH 2025****REQUIREMENT DOCUMENTS**

- a. None applied to this edition

**EDITORIAL CHANGES**

- a. EC 24-19 - IAC 4 Appendix Updates

**CHANGES APPLIED 8 JANUARY 2025**

In this edition of IAC 4, all Airport Diagram specifications have been removed. IAC 9 is a new specification that consolidates all information pertaining to Airport Diagrams from IAC 4. It will be the primary specification for Airport Diagrams going forward.

**CHANGES APPLIED TO 28 OCTOBER 2024****REQUIREMENT DOCUMENTS**

- a. None applied to this edition

**EDITORIAL CHANGES**

- a. EC 24-07 - Runway Landing Distance

**CHANGES APPLIED TO 4 SEPTEMBER 2024****REQUIREMENT DOCUMENTS**

- a. None applied to this edition

**EDITORIAL CHANGES**

- a. EC 24-05 - NAVAID Leaders on RNAV Charts
- b. EC 24-06 - Missed Approach Procedure Track

**CHANGES APPLIED TO 16 AUGUST 2024**

**REQUIREMENT DOCUMENTS**

- a. RD 868 - Revised Charting Depiction for Stopways, Overruns, and Blast pads on Airport Diagrams

**EDITORIAL CHANGES**

- a. EC 24-09 - Airport Surveillance System Note

**CHANGES APPLIED TO 17 JUNE 2024**

**REQUIREMENT DOCUMENTS**

- a. RD 875 - Removal of Contour Lines from IAPs

**EDITORIAL CHANGES**

- a. EC 24-03 - Part-Time Ramp Control Frequencies



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## AMENDMENT OF SPECIFICATIONS

### 1. PROCEDURE

- a. Recommendations for amendments to specifications from the Department of Defense shall be directed to:

National Geospatial-Intelligence Agency  
7500 GEOINT Drive  
Springfield, VA 22150-7500

- b. Recommendations for amendments to specifications from the Federal Aviation Administration shall be directed to:

Federal Aviation Administration  
Aeronautical Information Services  
SSMC-4 Sta # 4503  
1305 East-West Highway  
Silver Spring, MD 20910

### 2. AMENDMENT SYSTEM

- a. Change to the specifications will be issued at the effective date of the latest Requirement Document (RD) and / or Editorial Change (EC).
- b. The Specification will be dated, indicated along the upper margin of each page, to reflect the most current change.

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## CHAPTER 1 GENERAL

### 1.1 PURPOSE AND SCOPE

#### 1.1.1 General

An Instrument Approach Procedure (IAP) Chart provides a pilot with information necessary for an orderly transition from en route flight to a safe and expeditious approach to either land or execute a missed approach at an airport under Instrument Flight Rules. Charted Visual Flight Procedures (CVFP) have been developed to provide a pictorial display of visual arrival routes/altitudes to enhance noise abatement at some locations. The word airport as used within these specifications is synonymous with the word heliport.

#### 1.1.2 Purpose

The purpose of these specifications is to provide appropriate guidelines to ensure uniformity and standardization of content and portrayal techniques in the preparation and production of Low Altitude IAP charts and CVFP charts for use by both civil and military pilots.

### 1.2 REQUIREMENTS

#### 1.2.1 General

Low Altitude Instrument Approach Procedures Charts shall be prepared for all civil, military and civil/military airports within the United States, Puerto Rico and the Virgin Islands for which Standard Instrument Approach Procedures have been established and designated. CVFP charts shall be prepared similarly, but shall also apply to other areas of the world as needed, e.g., Caribbean, Pacific, etc.

#### 1.2.2 Quality and Accuracy

The highest standards of accuracy in plotting, reproduction and currency of information shall be maintained.

Although the digital chart files are compiled in accordance with these specifications, the final product may vary slightly in appearance due to differences in printing techniques/processes and/or digital display technique.

#### 1.2.3 Color

IAP Charts and CVFP charts and associated textual material shall be printed in black color. Terrain will be printed in brown color. Various screens and percentages of color, as specified, shall be used to obtain a suitable contrast.

All supplemental information, both textual and graphic, will be in solid color unless otherwise specified.

#### 1.2.4 Symbolization

Symbolization used in the preparation of the IAP Charts and CVFP charts shall be in accordance with the Aeronautical Information/Chart Symbols included herein and in the appendices. Additionally for CVFP charts, symbology used in IAC Specification 2 may be used and landmarks can be depicted pictorially, as required.

The symbols contained in this manual have been developed for use in the production of U.S. Government aeronautical charts and publications.

These symbols have been developed through the United States Government Interagency Air Committee (IAC), and their supporting technical groups, for the purpose of standardization of the aeronautical symbols portrayed on charts and publications used by both military and civil aviation.

### 1.2.5 Type Styles

The use of capital letters is intended unless otherwise specified as C/L (capital and lower case letters) or lower case.

All type unless otherwise specified shall be Futura Medium or as indicated in the various appendices.

### 1.2.6 Department of Defense (DoD) Exceptions and Differences

The National Geospatial-Intelligence Agency (NGA), as the DoD member of the Interagency Air Committee, has authority to take exception to any specified charting requirement. A footnote may be used to identify when NGA has taken an exception to a requirement in this specification. The footnote will be placed at the bottom left of the applicable page. Clarifying remarks may be added to the footnote, as applicable.

**Figure 1.1 DoD Exception**

#### **3.5.2.14 Landing Direction Indicator**

Wind cone, landing tee, and/or tetrahedron shall be shown in proper location.<sup>1</sup>

1. RD 862 - NGA will not depict Landing Direction Indicators.

Minor charting differences will be indicated in the specification text with the agency to which it applies, i.e., (FAA) or (NGA).

## 1.3 SPECIFICATION APPENDICES

Appendices are included within these specifications for use in layout, format and content of the various IAP Charts and CVFP charts. Appendices do not necessarily reflect all possible operational content.

## CHAPTER 2 FORMAT AND LAYOUT

### 2.1 GENERAL

Charts shall be designed and published to accommodate all IAPs and CVFPs. All charts shall be oriented to true north. Information shall be presented in textual, tabulated and graphic form, normally printed to read parallel to the top edge of the publication.

### 2.2 SIZE AND DIMENSIONS

The trim size and dimensions of the finished charts shall be as shown in the appendices.

#### 2.2.1 IAP Charts

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

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## CHAPTER 3 CONTENT

### 3.1 GENERAL

Instrument Approach Procedures and Charted Visual Flight Procedures are designed to provide the pilot with all electronic navigational aid information, together with procedural and other pertinent data required to execute the procedure.

### 3.2 LEGENDS

The legends shall define and depict all symbols used in the presentation of IAP charts and CVFP charts and provide general information and a listing of all abbreviations.

#### 3.2.1 IAP Planview Symbols

References:

[Appendix 10](#) - Legend – IAP Planview

#### 3.2.2 IAP Profile Symbols

References:

[Appendix 11](#) - Legend – IAP Profile

### 3.3 MINIMUMS

#### 3.3.1 IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors)

A listing of airports with Diverse Vector Area (Radar Vectors), IFR takeoff minimums other than standard, and obstacle departure procedures (ODPs) designed specifically to assist pilots in avoiding obstacles during the climb to the minimum enroute altitude, Takeoff Obstacle Notes and Visual Climb Over Airport (VOCA) procedures shall be provided. An explanatory note will precede the listing, on the first page only. Layout, format, content arrangement, type size and style shall be in accordance with the appendices.

Civil airports within each volume shall be arranged in alphabetical order by the associated city name. Military airports shall be arranged in alphabetical order by the official airport name. When the first word of a city name (civil) or airport name (military) is abbreviated, it will be arranged in alphabetical order by the abbreviation, as shown in the authoritative database, with the exception of the abbreviation “St”, e.g., St Louis, which will be arranged by the complete name Saint Louis.

References:

[Appendix 1](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - Legacy ICA

[Appendix 2](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - ICA

[Appendix 3](#) - Diverse Vector Area (Radar Vectors) Example

### 3.3.1.1 Format

#### 3.3.1.1.1 Civilian Airports

Page format shall be a listing of information in the following order:

- City and State, airport name extracted verbatim from the authoritative database, airport location identifier(s) (see Section [3.3.1.1.3](#)) in parentheses, Diverse Vector Area (Radar Vectors), Takeoff Minimums and (Obstacle) Departure Procedure.

##### 3.3.1.1.1.1 Diverse Vector Area (Radar Vectors)

- Diverse Vector Area (Radar Vectors) title, amendment number, AIRAC date of the last procedural revision, date of last revision in parentheses (in Julian date format), office of responsibility (FAA, FAA-O), Diverse Vector Area instructions.

##### 3.3.1.1.1.2 Takeoff Minimums and (Obstacle) Departure Procedures

- Takeoff Minimums and (Obstacle) Departure Procedure title, amendment number, AIRAC date of the last procedural revision, date of last revision in parentheses (in Julian date format), office of responsibility (FAA, FAA-O), Takeoff Minimums, Departure Procedure, VCOA, Takeoff Obstacle Notes.
- Takeoff Obstacle Notes will list one obstacle note per line.
- When the procedure source document does not indicate ICA for design and evaluation, bold the header as shown on [Appendix 1](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - Legacy ICA.
- When the procedure source document indicates ICA for design and evaluation, bold/underline the header as shown on [Appendix 2](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - ICA.

### 3.3.1.1.2 Military Airports

Page format shall be a listing of information (when provided) in the following order:

- Official airport name extracted verbatim from the authoritative database, ICAO airport location identifier in parentheses, city and state, amendment number, AIRAC date of the last procedural revision, date of last revision in parentheses (in Julian date format), office of responsibility (USAF, USSF, USN or USA), Take-off Minimums, Departure Procedure, Takeoff Obstacles, VCOA, Takeoff Obstacle Notes.
- Takeoff Obstacle Notes will list one obstacle note per line.
- When the procedure source document does not indicate ICA for design and evaluation, bold the header as shown on [Appendix 1](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - Legacy ICA.
- When the procedure source document indicates ICA for design and evaluation, bold/underline the header as shown on [Appendix 2](#) - IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) - ICA.

### 3.3.1.1.3 Airports Identifiers

The airport identifier shall be placed in parentheses immediately to the right of the airport name.

Civil airports within the Contiguous U.S. shall be identified with their FAA airport identifier. Civil airports outside the Contiguous U.S. shall be shown with both the FAA identifier followed by the ICAO location indicator.

### 3.3.2 IFR Alternate Airport Minimums

A columnar tabulation of airports with IFR alternate minimums other than standard (standard for nonprecision approaches is 800-2 and for precision approaches is 600-2) shall be provided. An explanatory note will precede the listing, on the first page only. Layout, format, content arrangement, type size and style shall be in accordance with the appendices. Procedure titles shall be listed in accordance with IAC 17 Terminal Procedures Publication (TPP) Table 2.2, Order of Index Entries.

Civil airports within each volume shall be arranged in alphabetical order by the associated city name. Military airports shall be arranged in alphabetical order by the official airport name. When the first word of a city name (civil) or airport name (military) is abbreviated, it will be arranged in alphabetical order by the abbreviation, as shown in the authoritative database, with the exception of the abbreviation “St”, e.g., St Louis, which will be arranged by the complete name Saint Louis.

References:

[Appendix 4](#) - IFR Alternate Airport Minimums

IAC 17 - Table 2.2, Order of Index Entries

#### 3.3.2.1 Format

##### 3.3.2.1.1 Civil Airports

Page format shall be a two-column listing information in the following order:

- City and state, airport name extracted verbatim from the authoritative database, domestic airport location identifier in parentheses (airports outside of Contiguous U.S. will also list ICAO identifier in parentheses), Alternate Minimums.

##### 3.3.2.1.2 Military Airports

Page format shall be a two-column listing information in the following order:

- Airport name extracted verbatim from the authoritative database, ICAO airport location identifier in parentheses, city and state, Alternate Minimums.

##### 3.3.2.1.3 Airport Identifiers

The airport identifier shall be placed in parentheses immediately to the right of the airport name.

Airports within the Contiguous U.S. shall be identified with their FAA airport identifier. Airports outside the Contiguous U.S. shall be shown with both the FAA airport identifier followed by the ICAO airport identifier.

### 3.3.3 Radar Instrument Approach Minimums

References:

[Appendix 5](#) - Radar Instrument Approach Minimums

#### 3.3.3.1 General

Layout, format, content arrangement, type size and style shall be in accordance with the appendices.

#### 3.3.3.2 Arrangement of Information

Civil radar instrument approach minimums shall be arranged in alphabetical order by associated city name. Military radar approach minimums shall be arranged in alphabetical order by the official airport name. When the first word of a city name (civil) or airport name (military) is abbreviated, it will be arranged in alphabetical order by the abbreviation, as shown in the authoritative database, with the exception of the abbreviation “St”, e.g., St Louis, which will be arranged by the complete name Saint Louis.

##### 3.3.3.2.1 Civil Airports

Page format shall be a listing of information in the following order:

- **Line 1:** City and state, amendment number, AIRAC date of last procedural revision, date of last revision in parentheses (in Julian date format), office of responsibility (FAA, FAA-O), airport elevation (positioned by itself and right justified).
- **Line 2:** Airport Name extracted verbatim from the authoritative database, airport location identifier(s) in parentheses. See Section [3.3.3.2.3](#).
- **Line 3:** Radar frequencies (APP CON), prefaced by the heading “RADAR”, “RADAR-1” or “RADAR-2” in agreement with the procedure source document. The “A” and “T” negative symbols for IFR Alternate Airport Minimums and IFR Takeoff Minimums, indicating other than standard minimums apply, shall be shown after the RADAR frequencies. The letters “NA” (not authorized) shall be shown immediately following the “A” symbol when IFR alternate minimums are not authorized. Radar minimums follow.

##### 3.3.3.2.2 Military Airports

Page format shall be a listing of information (when provided) in the following order:

- **Line 1:** Official airport name extracted verbatim from the authoritative database, ICAO airport location identifier in parentheses, City and State, amendment number, date of last revision (in Julian date format), office of responsibility (USAF, USSF, USN or USA), airport elevation (positioned by itself and right justified).
- **Line 2:** Radar frequencies, prefaced by the heading “RADAR”, “RADAR-1” or “RADAR-2” in agreement with the procedure source document. Radar minimums follow.

### 3.3.3.2.3 Airport Identifiers

Civil airports within the Contiguous U.S. shall be identified with their FAA airport identifier. Civil airports outside the Contiguous U.S. shall be shown with both the FAA airport identifier followed by the ICAO location indicator.

### 3.3.3.3 Column Headings

The following columnar headings shall be underlined and be shown on the next line after the radar communications frequencies.

- RWY (Runway)
- GP/TCH/RPI (Glidepath/Threshold Crossing Height/Runway Point of Intercept)
- CAT (Category)
- DA/MDA-VIS (Decision Altitude/Minimum Descent Altitude-Visibility)
- HAT/HAA (Height above Touchdown/Height Above Airport)
- CEIL-VIS (Ceiling-Visibility)
- If required, CAT, DH (or DA)/MDA-VIS, HAT/HAA, and CEIL-VIS may be shown in a two column format.

### 3.3.3.4 Minima

Minima data will be listed under the columnar heading in accordance with the following criteria:

#### 3.3.3.4.1 Minima Data

Minima data for each type of radar approach shall be shown in the following order: PAR, PAR w/o GS, ASR, and CIRCLING.

#### 3.3.3.4.2 PAR Approaches

PAR Approaches - The runway with the lowest CEIL-VIS value shall be listed first. The Glide Slope (GS) angle shall be listed in degrees and tenths, followed by TCH and RPI.

#### 3.3.3.4.3 ASR Approaches

ASR, PAR w/o GS and CIRCLING Approaches - For ASR and PAR w/o GS: The runway with the lowest CEIL-VIS values shall be listed first. If CEIL-VIS values are the same then the following hierarchy will be used.

1. Lowest HAT
2. Lowest DA/DH
3. Runway number

For CIRCLING, Runway numbers will be used unless all runways have an approach, then "ALL RWY" will be used.

#### 3.3.3.4.4 Categories with the Same Minima

Categories that have the same minima shall be shown as a single entry.

#### 3.3.3.4.5 Categories with Different Minima

Categories that have different minima for the same runway shall be listed in alphabetical order.

### 3.3.3.4.6 Runway Data

Data for each runway shall be complete before listing another runway.

### 3.3.3.5 Missed Approach Climb Rate

Radar Missed Approach Climb Rate will be shown when required, located below the radar minima. Minimum climb rates shall be shown as vertical velocity in feet per minute (FPM) in 60 knot increments, from 60 knots to 360 knots or as requested.

**Table 3.1 Missed Approach Climb Rate**

CAUTION - Missed apch climb rate to 0000'							
RWY	Knots	60	120	180	240	300	360
PAR 3L	FPM	000	000	000	000	000	000
ASR 3L, 3R	FPM	000	000	000	000	000	000

### 3.3.3.6 Informational Notes

Informational notes will follow the minima data or, if required, the radar missed approach climb rate.

The current status or usability of radio communications and operational value of the radar data will be footnoted by a superscripted letter. The footnoted remarks will follow the above data.

## 3.4 INSTRUMENT APPROACH PROCEDURE (IAP) CHARTS

### 3.4.1 General

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

#### 3.4.1.1 Scale

A scale of 1:500,000 shall be used. However, if necessary for a better portrayal of the procedure, a different scale may be used. (1:750,000 and 1:250,000 are most preferable.)

#### 3.4.1.2 Projection

Projection shall be Lambert Conformal, Polyconic, or Polar Stereographic.

#### 3.4.1.3 Horizontal Datum

Charts referenced to a horizontal datum other than North American Datum 1983 (NAD 83) or World Geodetic Survey 1984 (WGS 84) will show a note, e.g., "Horizontal Datum: WGS 72", indicating the datum used, in 7 point type centered above the bottom neatline in the planview.

### 3.4.1.4 Chart Sections

The IAPs (charts) shall be divided into various sections as follows:

- Briefing Strips
- Planview
- Missed Approach Icons
- Profile
- Minima Data
- Airport Sketch

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

### 3.4.1.5 Reference Mark Symbol Hierarchy

Reference Marks on IAPs will be applied using the following hierarchy:

1. \* (9 pt)
2. # (7 pt)
3. †
4. \*\*
5. ##
6. ††

### 3.4.2 Margin Information

Type size, style, and position shall be shown in accordance with the appendix unless otherwise stated below.

References:

[Appendix 7](#) - Margin Data

#### 3.4.2.1 Procedure Title

The title of the instrument approach procedure shall be abbreviated, e.g., ILS, RNAV, NDB, etc. Approaches. The title will be positioned flush right, immediately above the airport name in the top margin, and immediately below the airport name in the bottom margin.

Each procedure shall be named and numbered, as indicated on the procedure form. Note: Procedure title may refer to a geographic feature, e.g., BAY ILS/DME.

#### 3.4.2.2 Amendment Number

The amendment number of the procedure, as indicated on the narrative procedure form, shall be shown abbreviated, e.g., Amdt 3.

The amendment number will be shown in the bottom margin only, flush left, immediately below the geographic location name.

Original procedures shall be indicated as “Orig”, with the same placement as indicated above for amendment numbers.

The AIRAC date of the latest procedural (upnumber or upletter) revision applied to the chart shall be shown adjacent to and two spaces to the right of the amendment number or “Orig” as appropriate, as shown in the appendices.

The latest revision date (Julian), which reflects a chart revision of any type, shall be shown in the upper right hand corner, above the procedure name, preferably on the same line as the geographic name and chart reference number, as shown in the appendices.

### **3.4.2.3 Chart Reference Number**

The chart reference number shall be preceded by the series code “AL” and dash followed by the abbreviated name of the appropriate authority for the procedure, placed inside parentheses, e.g., AL-000 (FAA). Procedures developed by an authorized non-FAA service provider will carry the designation (FAA-O) placed inside the parentheses, e.g., AL-000 (FAA-O). Military procedures do not show a chart reference number, but do show the appropriate authority for the procedure, e.g., (USN).

The chart reference number shall be shown in the top margin only, centered, on the same line as the geographic location name.

### **3.4.2.4 Geographic Location Name**

The geographic location name shall be the city and state name with which the airport is associated, positioned flush left, immediately above the top briefing strip and immediately below the bottom neatline.

### **3.4.2.5 Airport Name**

The airport name will be extracted verbatim from the authoritative database. The airport name will be shown flush right, immediately above the top neatline and immediately below the bottom neatline.

### **3.4.2.6 Airport Location Identifier**

The FAA airport location identifier shall be shown in parentheses positioned immediately following the airport name at the top and bottom of each civil and joint-use Instrument Approach Procedure chart. Civil and Joint-use airports outside the contiguous United States will be shown with the FAA airport designated identifier followed by the ICAO location indicator. Military airports that are not joint-use will be shown with only the ICAO location indicator.

To distinguish between the number zero and the letter “O”, a slash shall be shown through the zero.

### **3.4.2.7 Geographic Coordinates**

Coordinates used shall be those of the airport reference point expressed to the nearest minute. The geographic coordinates will be in the bottom margin only, centered, on the Amendment number line. If there is no room on this line, then the geographic coordinates will be centered immediately below the bottom neatline.

### 3.4.3 Briefing Strips

The Briefing Strip box will consist of three stacked strips of information running from left to right immediately above the planview.

References:

[Appendix 8](#) - Briefing Strips

[Appendix 9](#) - Briefing Strips - Copter

#### 3.4.3.1 Top Briefing Strip

The top briefing strip will contain procedural information in three separate boxes, in the following sequence from left to right:

- **Box 1:** The primary navigation type (VOR, LOC, NDB, RNAV, etc.) with its identifier and frequency/channel. If applicable, WAAS, the WAAS Channel Number, and the WAAS Reference Path indicator shall be shown stacked top to bottom. If the primary navigation type is GBAS, then the following information shall be stacked top to bottom: GBAS, CH NNNN, RPI XXXX. If there is not a primary Navigation Box required, the first box shall be removed.
- **Box 2:** The inbound Approach Course (APP CRS) shall be shown.
- **Box 3:** Stacked top to bottom, the runway landing distance (Rwy Ldg), the Touchdown Zone Elevation (TDZE), and the Airport Elevation (Apt Elev) or, in the case of Copter Point-in-Space (Proceed VFR) procedures, the Surface Elevation (Sfc Elev) shall be shown in place of TDZE. Runway landing distance will be determined by comparing the total runway length with the displaced threshold accounted for against the published Declared Distance Landing Distance Available (LDA). The shortest of these lengths, either the published Declared Distance LDA housed in the authoritative database or the total runway length minus displaced threshold on the approach end of the runway, will be charted. Numbers will be bolded. For Circling approaches, use N/A in bold type for Rwy Ldg and TDZE. For charts that have sidestep lines of minima listed on the procedure form, the entire briefing strip may be widened to show stacked information for each runway as shown in [Appendix 62](#) - Sidestep Minimums.

**Figure 3.1 Expanded Briefing Strip Example**

LOC/DME I-SJC	APP CRS	Rwy Ldg	30L <b>7614</b>	30R <b>7597</b>	29 <b>4599</b>
<b>110.9</b>	<b>303°</b>	TDZE	<b>57</b>	<b>55</b>	<b>52</b>
Chan <b>46</b>		Apt Elev	<b>62</b>	<b>62</b>	<b>62</b>

#### 3.4.3.2 Middle Briefing Strip

The middle briefing strip will contain information in three separate boxes, when available, in the following sequence from left to right:

- Notes
- Approach Lighting System
- Missed Approach Procedure text

Standard size shall be maintained, but size adjustment may be made for charting circumstances, e.g., excessive notes, more space needed in planview.

### 3.4.3.2.1 Notes Section

#### 3.4.3.2.1.1 Equipment/Requirements Box

When requested on the procedure source document, a separate Equipment/Requirement notes box shall be shown at the top of the existing briefing strip notes section. This box, separated from the larger procedure notes box by a 2 weight (.006") solid line, shall list equipment requirements notes for conventional procedures and requirements notes for Performance Based Navigation (PBN) procedures.

**Figure 3.2 Equipment Requirements Box**

RADAR required for procedure entry.	
▼	Simultaneous approach authorized with Rwy 21L. # RVR 1800 authorized with use of FD or AP or HUD to DA.

When the procedure source document requests both a PBN requirement note and a conventional equipment requirement note, two equipment/requirements boxes shall be used. PBN notes shall be listed in the first box, then conventional equipment requirement notes in the second box.

**Figure 3.3 Two Equipment/Requirement Boxes**

RNAV 1. From RYEDR and CPBBO: RNAV-1-DME/DME/IRU or GPS required. Aircraft not DME/DME/IRU or GPS equipped - RADAR required for procedure entry.	
▼	Simultaneous approach authorized. DME or RADAR required. ** RVR 1800 authorized with use of FD or AP or HUD to DA.

#### 3.4.3.2.1.2 Briefing Strip Symbols

References:

[Appendix 8](#) - Briefing Strips

##### 3.4.3.2.1.2.1 IFR Takeoff Minimums (“T”)

The negative “T” symbol shall be shown in the upper left corner of the Notes section of the briefing strip when an entry is published in the TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS) section of the TPP, regardless of what that entry contains.

##### 3.4.3.2.1.2.2 IFR Alternate (“A”) Airport

The negative “A” symbol shall be shown in the upper left corner (or below the “T” symbol, if present), of the Notes section of the briefing strip when IFR Alternate Minimums are published for the procedures. The letters “NA” (Not Authorized) shall be shown immediately following the “A” symbol when IFR Alternate Minimums are not authorized.

##### 3.4.3.2.1.2.3 WAAS Symbol

If applicable, the negative “W” symbol for WAAS reception limitations shall be shown below any “A” and “T” symbols.

#### 3.4.3.2.1.2.4 Cold Temperature Airport

A negative snowflake symbol and associated temperature shall be shown below all of the above applicable symbols when indicated in the authoritative source database.

**Figure 3.4 Cold Temperature Airport**

❄ -17°C

#### 3.4.3.2.1.3 “ASR”, “PAR” or “ASR/PAR”

“ASR”, “PAR” or “ASR/PAR” shall be shown immediately below the Takeoff and Alternate symbols to indicate published Radar Instrument Approach Minimums.

#### 3.4.3.2.1.4 Notes

##### 3.4.3.2.1.4.1 Nonstandard IFR Alternate Airport and IFR Takeoff Minimums

Notes pertaining to nonstandard IFR Alternate Airport and IFR Takeoff Minimums shall be placed only with the nonstandard minimums in the appropriate columnar tabulation in the index of supplementary information.

##### 3.4.3.2.1.4.2 Landing Minima Data

Notes pertaining to landing minima data shall be shown in the Notes Section on the left side of the second/middle briefing strip.

##### 3.4.3.2.1.4.3 Order of Briefing Strip Notes

Briefing strip notes shall be placed in the order they appear on the procedure source document. Exception shall be made when the source document has a note that is referenced with an attention symbol. The note shall then be placed last in the sequence preferably on its own line.

Notes specifically identified for planview or profile charting will not be shown in the briefing strip.

##### 3.4.3.2.1.4.4 Notes Exclusions

Notes, published on a single-source document (e.g., FAA Form 8260) that generates more than one chart depiction, must not be shown on the charts to which they do not apply. (For instance: Circling notes must not be published on depictions which do not support circling minimums. Notes referring to a localizer procedure must not be shown on depictions which do not support localizer minima. Helicopter notes, inoperative component notes revising minima or notes referring to remote altimeter usage must not be depicted on standard CAT II, CAT II & III or SA CAT I, SA CAT II, or SA CAT I & II portrayals.)

#### 3.4.3.2.2 Approach Lighting System

When applicable, the approach lighting system name, miniature graphic, and its charting icon will be shown. Multiple approach lighting systems may be shown for approaches that have sidestep lines of minima listed on the procedure form. Each box will include the proper runway identification as shown in [Appendix 62](#) - Sidestep Minimums.

### 3.4.3.2.3 Missed Approach Procedure Text

The title MISSED APPROACH shall be shown along with a textual description of the primary missed approach procedure.

When the primary missed approach procedure contains the text “or as directed by ATC” or “when authorized by ATC”, this portion of the instructions will not be charted.

When the primary missed approach also includes instructions for TACAN aircraft, they will be included in the primary missed approach procedure text in parentheses as shown in the Appendices.

### 3.4.3.3 Bottom Briefing Strip

The bottom briefing strip will contain communications information when available, in separate boxes, in the following sequence from left to right:

- ATIS, D-ATIS, AFIS (AK Only) or ASOS/AWOS frequencies (when available, ATIS or AFIS will be the only local weather frequency/s published)
- The primary Approach Control (APP CON) name and frequencies
- The Control Tower (TOWER) name and frequencies, to include Precision Runway Monitor (PRM) and frequency
- Ground Control (GND CON) frequencies
- Clearance Delivery (CLNC DEL) frequencies
- Ground Communications Outlet (GCO) frequency
- CTAF, shown in parentheses when shares a frequency, e.g., UNICOM 122.8 (CTAF)
- UNICOM or AUNICOM frequency (part-time and non-towered airports only)
- Controller Pilot Data Link Communication (CPDLC)

Frequencies will be bolded. A bolded box will be placed around the Control Tower name and frequencies. Hours of operation shall not be shown. Part-time frequencies will be annotated with a star after the communication title.

Departure ATIS, CLNC DEL, and the availability of CPDLC will not be charted when the information is shown on the corresponding airport diagram.

References:

[Appendix 8](#) - Briefing Strips

#### 3.4.3.3.1 Approach Control (APP CON)

When the primary approach service is provided by other than Approach Control, e.g., FSS (Radio), Tower, Center, the appropriate air traffic facility call name shall be used.

At airports located in the contiguous U.S., FSS (Radio) will not be shown. At airports located outside the contiguous U.S. where communications are provided by FSS, its availability will be indicated by RADIO plus the appropriate frequency.

### **3.4.3.3.2 Weather Communications**

#### **3.4.3.3.2.1 Automatic Terminal Information Services (ATIS)**

When the service is provided on one frequency for both arrival and departure information, it shall be shown, e.g., ATIS 111.8. When the service is provided on more than one frequency for both arrival and departure information, both (or all) frequencies shall be shown, e.g., ATIS 113.9 124.1. When the service provided is either arrival and/or departure on different frequencies, both frequencies shall be shown under the appropriate heading, i.e., ARR or DEP. Departure ATIS will not be charted when the information is shown on the corresponding airport diagram. If the service is digital and listed as D-ATIS in the authoritative source database, “D-ATIS” shall be shown.

#### **3.4.3.3.2.2 (AK Only) Automated Flight Information Services (AFIS)**

AFIS shall be shown by the letters “AFIS” followed by the specific frequency/s.

#### **3.4.3.3.2.3 Remote Weather Frequencies**

When a remote civil AWOS/ASOS is specified on the FAA Form 8260 for charting, the airport location identifier and frequencies will be charted on all IAP charts in the series. Civil airports located outside the Contiguous U.S will also include the ICAO identifier, e.g., ORT/PAOR.

When a remote military ATIS is specified on the FAA Form 8260 for charting, only the ICAO identifier and frequencies will be charted on all IAP charts in the series.

When a local AWOS/ASOS is commissioned at an airport where a remoted ASOS/AWOS/ATIS is still specified for charting on any 8260 in the series, the local AWOS/ASOS will be added to the briefing strip along with the remoted AWOS/ASOS/ATIS.

### **3.4.3.3.3 Clearance Delivery (CLNC DEL) Frequencies**

There are three ways CLNC DEL frequencies can be shown:

- Towered airports with a CLNC DEL frequency/s.
- Towered airports that list a primary CLNC DEL and a secondary CLNC DEL when the tower is closed. The secondary CLNC DEL will include the frequency, and the note “(When twr closed)”.
- Untowered airports that have a remoted APP CON and CLNC DEL will show the CLNC DEL without the remoted city name.

CLNC DEL will not be charted when the information is shown on the corresponding airport diagram.

### **3.4.3.3.4 Controller Pilot Data Link Communications (CPDLC)**

When CPDLC service is provided, “CPDLC” shall be shown, except when the information is shown on the corresponding airport diagram

#### 3.4.3.3.5 Non-Towered Airport

When there is not a tower or FSS located on the airport or the tower or FSS on the airport is part-time, the availability of a UNICOM facility at the airport shall be indicated by the word UNICOM, plus the appropriate frequency. If the UNICOM system is automated, it shall be indicated by the word AUNICOM, plus the appropriate frequency.

#### 3.4.3.3.6 Primary VHF & UHF Frequencies

The primary VHF and UHF frequencies only shall be shown in conjunction with and on a second line centered under the air traffic facility name.

When requested, frequencies may be sectorized. The sectors can be listed by cardinal or ordinal directions (e.g., N, NE), bearings (e.g., 090°-224°), and runways (e.g., 16R-34L, 16C). The sectored information will be indicated within parentheses to the right of the appropriate frequency.

#### 3.4.3.3.7 Pilot Activated Airport Lighting

Pilot capability to activate airport lighting systems shall be shown using negative symbols following the applicable frequency, e.g., 122.70.

Hours of operation shall not be shown.

### 3.4.4 Planview

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

[Appendix 10](#) - Legend – IAP Planview

#### 3.4.4.1 General

The planview of the IAP charts shall be concerned with the portrayal of instrument approach procedure information, en route facilities, feeder facilities, approach facilities, missed approach, terminal routings and related base detail.

The en route and feeder facilities shall be used for depicting terminal routes from NAVAIDs, fixes and intersections to the initial approach facility or fix.

Reference to the en route low altitude structure pertains to both the Flight Information Publication En route Low Altitude Chart and the IFR Area Chart.

All textual data and numerical values within the planview shall be shown using 7 point type unless otherwise stated.

#### 3.4.4.2 Hydrography

Hydrographic features shall be shown. Outlines or names shall not be shown.

Criteria depiction of hydrographic features:

- Oceans
- Significant rivers and streams: When depicted as a perennial double line (not braided) feature on a Sectional/Tactical/Pilotage chart.
- Significant lakes: When depicted as a perennial water area measuring a minimum of 3.0 NM in a straight line direction on a Sectional/Tactical/Pilotage chart.
- If only one river or one small lake is involved, not located in the immediate airport vicinity, the hydrographic information requirement may be waived.

Hydrographic features shall be limited to within the inner distance ring when the concentric ring format is employed.

Hydrographic features shall not be shown within inset boxes.

### 3.4.4.3 Relief (Contours)

Relief (Contours) shall be shown if:

- Terrain within the planview area exceeds 4,000 feet above the airport elevation, or
- Terrain within the planview and within a 6 NM radius of the Airport Reference Point (ARP) rises to 2,000 feet or more above the airport elevation.

When an airport meets either of the above criteria, terrain will be charted by use of contours and gradient tints of brown on all IAPs for that airport. However, if an IAP chart for the airport does not meet the initial contour value below, then contours will not be charted on that specific IAP chart.

Relief shall not be shown in inset boxes. Relief shall be limited to within the inner distance ring when the concentric ring format is employed.

References:

[Appendix 33](#) - ILS with Relief (Contours) Depicted

#### 3.4.4.3.1 Contour Values

The initial contour value (lowest elevation) will be at least 500 feet above the airport elevation. The initial contour value may be less than 500 feet if needed to depict a rise in terrain close to the runway end.

The next contour value depicted will be at a 1000 foot increment, e.g., 1000/2000/3000, not 1500/2500/3500.

Subsequent contour intervals will be constant and at the most suitable intervals, 1000 foot or 2000 foot, to adequately depict the rising terrain.

#### 3.4.4.3.2 Contour Layers and Values

Contour values will be shown with a brown tint that is darker than the darkest tint used for the contour layers.

Contour layers will be shown in no more than five brown tints, with consecutively darker tints used for consecutively higher elevation contour layers.

#### 3.4.4.4 Cultural Features

Cultural features shall not be shown, e.g., roads, railroads, populated places, etc.

#### 3.4.4.5 International Boundary

International boundaries shall be shown by a 3 weight (.006") dashed line.

International boundaries shall be identified with country name in solid color, positioned adjacent and parallel to the boundary, within the country area.

#### 3.4.4.6 Procedure Obstacles (Man-made, Terrain, and Vegetation)

Obstacles that are provided on the procedure source document in the Additional Flight Data section shall be depicted when they are specifically indicated for charting (prefaced by the word "CHART"). Adverse Assumption Obstacles (AAO) listed on the procedure source document will not be charted. Obstacles identified as vegetation or ships shall be indicated by a doubtful accuracy symbol ± following the elevation value. Man-made obstacles shall be considered verified and, when charted, shall not be indicated by a doubtful accuracy symbol following the elevation value.

Obstacles shall be symbolized as indicated in the appendix. Obstacles shall be positioned in their exact coordinate location. The elevation of the top of the obstacle above mean sea level shall be shown to the nearest foot.

Obstacles shall be limited to within the inner distance ring when the concentric ring format is used.

Obstacles shall not be shown within inset boxes.

References:

[Appendix 10](#) - Legend – IAP Planview

#### 3.4.4.7 Airports

Airports shall be shown to scale by a pattern of all runways that exist in the authoritative source database (including those indicated as "closed" runways by remark). If an airport has parallel runways in close proximity to each other, the lineweight of the runways may be reduced to a minimum of 4 weight (.010") to ensure the runway pattern is distinguishable.

Heliports shall be shown by the circle H symbol.

Seaplane bases shall be symbolized as shown in [Appendix 10](#) - Legend – IAP Planview. The symbol shall only be shown in the planview when it is strictly a seaplane base. If there is a seaplane landing area as part of an airport, the Seaplane Base symbol will not be used in the planview.

Airports other than the airport of intended landing will be shown only when requested on the procedure source document. These airports will be shown by pattern and name only, using 5 point type C/L. The airport name will be extracted verbatim from the authoritative database.

#### 3.4.4.8 Special Use Airspace (SUA)

SUA that falls within the area of coverage of the instrument approach procedure chart shall be shown only when designated by the approving authority.

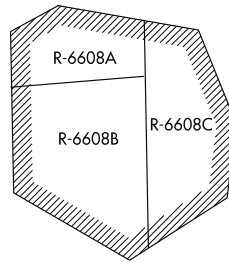
SUA shall be portrayed by a 2 weight (.006") diagonal line pattern, .10" in width, positioned so as to have the lines in a NE to SW direction. In no case will the portrayal of SUA obliterate the functional procedural data. Should an area be too small to portray the specified width, the width shall be proportionately reduced in size to adequately portray the area.

SUA outer boundaries shall be depicted by a 3 weight (.006") line.

SUA internal boundaries shall be depicted by a 1 weight (.005") line to separate the individual SUA areas.

SUA shall be identified by the designated number and/or name of the area, e.g., P-1234, R-1235, CYR 123, YUKON 1 MOA.

**Figure 3.5 Special Use Airspace**



References:

**Appendix 10** - Legend – IAP Planview

#### 3.4.4.9 Air Defense Identification Zone (ADIZ)

When designated on the procedure source document, ADIZ boundaries that fall within the area of coverage of the instrument approach procedure chart planview shall be shown.

ADIZ boundaries shall be portrayed by a 4 weight line (.010"). The diameter of the dots is .015". The width of the symbol is .05". Identification shall be placed within or along the boundary. In no case, will the portrayal of the ADIZ obliterate the functional procedural data.

**Figure 3.6 Air Defense Identification Zone (ADIZ) Boundary**

CONTIGUOUS U.S. ADIZ

References:

**Appendix 10** - Legend – IAP Planview

#### 3.4.4.10 Scale

Normally, all information between the planview neatlines, including base detail, shall be shown to scale.

In the event a facility falls beyond (but no more than .25" beyond) the established neatline of the planview, this facility may be brought, or moved, within the planview neatlines, thereby retaining the chart to scale and precluding the use of the concentric ring format. Mileages, bearings, etc., to or from this facility shall, however, be accurate.

When concentric rings are not used, all NAVAIDs shall be identified by name, frequency, identifier and code, enclosed within a box. Intersections shall be shown by reporting point symbol when shown on the En route Low Altitude Chart as part of the airway structure, and by the intersection of radials/bearings when not part of the airway structure.

When concentric rings are used, information beyond the 10 NM distance ring shall not be depicted to scale.

Depiction of the procedure track and/or terminal routes may be shown not to scale if it will enhance and depict the procedure more clearly. Such a depiction may be necessary due to distances involved in some procedures which would extend beyond the neatline or border of the planview. Those segments of the track not to scale shall be broken by the scale break symbol illustrated in [Appendix 10](#) - Legend – IAP Planview. Multiple scale break symbols can be used when along the same bearing.

#### 3.4.4.10.1 Terminal Route/Procedure Track Inset Box

A portion of the terminal route and/or procedure track may be shown in an inset box on procedures covering a large geographical area or containing multiple routes, and when the use of scale breaks is not adequate for a clear depiction.

References:

[Appendix 52](#) - RNAV (RNP) with Inset

##### 3.4.4.10.1.1 Inset Reference Box

A 2 weight (.006”) dashed line box will encompass the common point of the route to be shown in the inset box. Contours, hydrography, and obstacles that lie within the parameters of the inset reference box will be shown.

The inset reference box will be clearly labeled “SEE INSET FOR ROUTING TO (COMMON POINT).”

Box size is not fixed but will be of a size to encompass the standard note and common point.

**Figure 3.7 Inset Reference Box**



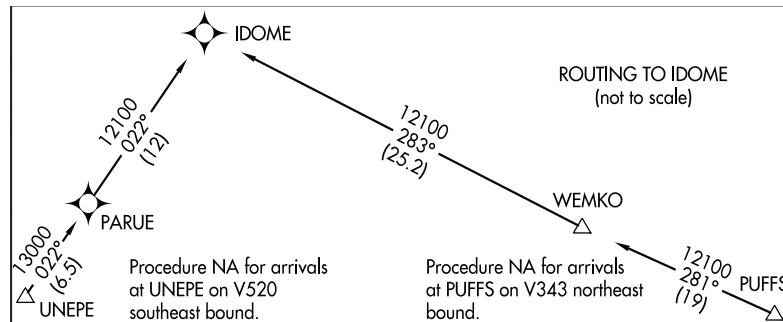
##### 3.4.4.10.1.2 Inset Box

The preferred location of the inset box is along the neatline and as close to the common point as possible.

The 2 weight (.006”) inset box will be clearly labeled “ROUTING TO (COMMON POINT).” If the inset is not depicted to the same scale as the chart, the routing note will be followed by “(not to scale).”

The inset box will include all fix-specific information. When space allows, procedure NA notes that only apply to points within the inset box will be included within the parameters of the box. Contours, hydrography, and obstacles will not be shown in the inset box.

**Figure 3.8 Inset Box**



### 3.4.4.11 Notched Planview

The planview may be ‘extended’ on the bottom, on either the right or left side, to allow a larger geographic area to be depicted. “White space” in both the minima box and the airport sketch shall be eliminated, resulting in a ‘notched’ planview.

### 3.4.4.12 Concentric Rings

The planview may be depicted with or without concentric rings.

The planview will be depicted without concentric rings when all the procedural and terminal route information can be depicted to scale between the neatlines. The use of scale breaks is preferable to the concentric ring depiction.

Concentric rings may be used when all procedural and terminal route information cannot be depicted to scale, including facilities that form fixes/intersections not a part of the enroute low altitude airway structure or are used for the missed approach.

A 10NM distance ring shall only be shown when use of concentric ring depiction is necessary.

#### 3.4.4.12.1 Inner Ring (10 NM Distance Ring)

A ring 1.45" radius with a .010" line shall be shown, centered and labeled “10 NM” within the planview. This ring shall be referred to as the inner ring or the 10 NM distance ring.

- The 10 NM distance ring may be replaced (in whole or in part) by a DME arc, when required, and where the arc distance is 8 to 12 miles. In such cases, the DME arc shall be shown as a .020" solid line.
- The 10 NM distance ring shall be cut back or broken so that the 10 NM distance ring and the DME arc will not cross or intersect one another. When the DME arc and the 10 NM distance ring are coincidental, or tend to be, the 10 NM distance ring shall be cut back to effect a break in the continuity.

The NAVAID upon which the final approach of the instrument approach procedure is based shall be positioned in the center of the inner ring. All other information shall be positioned in relation to this facility. Exception shall be made when the location of the airport, radio aid to navigation and/or procedure pattern necessitates that the ring be centered on other facilities or geographical points for better portrayal of the instrument approach procedure. Portions of the ring may be deleted to avoid overprinting of information.

#### **3.4.4.12.2 Middle Ring (Feeder Facilities)**

The middle ring shall be concentric with the inner ring, having a radius of 1.70" and symbolized by a .007" dashed line. The dashes shall be .20" long with a .10" space between the dashes. The line may be broken as required to show facilities, fixes and intersections as clearly as possible. The label "FEEDER FACILITIES" shall be in line with the labels on other rings.

Feeder facilities/fixes shown on the middle ring shall be those utilized by the air traffic controller to direct aircraft to intervening facilities/fixes between the en route structure and the initial approach fix.

Feeder facilities shall be placed on the middle ring (except when their location will plot within the 10 NM distance ring) at the point where their magnetic bearing relationship between the feeder facility and the primary facility or fix will be maintained, but the distance may not necessarily be to scale. In congested areas, the bearing relationship may be altered for better portrayal.

When the DME arc is shown in lieu of the ring and is other than the normal 10 NM inner ring, the middle ring, when required, shall be displaced and equally positioned between the DME arc and the outer ring.

NAVAIDs shown on the middle ring shall be identified by name, frequency and call sign (Channel number for TACAN, VORTAC, VOR/DME, and DME), but shall not be boxed unless the NAVAID is utilized as part of the procedure, in which case it will be shown in accordance with Section [3.4.4.22](#) - Bearing Lines.

Intersections shown on the middle ring shall be shown by the intersection of radials from or bearings to the NAVAIDs which establish them. These NAVAIDs shall be shown on the outer (en route facility) ring except when they will plot to scale within the 10 NM distance ring, and be identified by name, frequency and call sign (Channel number for TACAN and VORTAC), but not boxed, except when located within the 10 NM distance ring.

If feeder facilities are not utilized for terminal routes, missed approach facilities/fixes or holding patterns, then the middle (feeder facility) ring shall not be shown.

#### **3.4.4.12.3 Outer Ring (En route Facilities)**

An outer ring labeled "EN ROUTE FACILITIES" shall be concentric with the inner and middle rings, having a radius of 2.10" and symbolized in the same manner as the middle ring, using .25" dashes with a .10" space between the dashes. This ring may be broken, as required, to show facilities, fixes and intersections as clearly as possible. The label "EN ROUTE FACILITIES" shall be positioned in line with the labels on the other rings.

En route facilities shall be those NAVAIDs, fixes and intersections which are part of the en route low altitude airway structure. Terminal routing, giving bearing, distance and altitude information direct or via feeder facilities to other facilities/fixes, shall be shown.

En route facilities shall be positioned on the outer ring in the same manner as feeder facilities are on the middle ring, i.e., the facility symbol shall be positioned at the point of intersection of the magnetic bearing from the primary facility or fix to the en route facility on the outer ring.

En route facilities shall be identified by name only. Intersections shall be shown using the same reporting point symbol and name as used on the En route Low Altitude chart. NAVAIDs and intersections/fixes identified by the approving authority as an Initial Approach Fix (IAF) shall be identified by the letters IAF within parentheses and, where named, positioned normally above the name or adjacent, as appropriate, depending upon space considerations.

When en route facilities are used in a dual capacity, such as a transition facility and missed approach facility, they shall be identified by name, frequency, call sign and code (Channel number for VORTAC, TACAN, VOR/DME, and DME) within a communication data box.

En route facilities not utilized in the approach procedure, and which would normally be positioned on the outer ring, may be positioned in the space between the outer ring and the plan-view neatline. This may be done when the facility is employed in the designation and formation of en route and/or feeder fixes and intersections germane to terminal routes or missed approaches. This technique will obviate the need to position multiple facilities, fixes or intersections within close proximity of each other, within or between the concentric rings, thereby retaining the integrity of the chart format.

#### **3.4.4.13 Terminal Routes**

Terminal routes shall be shown, when included as part of the procedure, as an approved terminal route from a facility/fix.

- Discretion must be exercised in portraying the length of terminal routes, depending on the position of the facility/fix, so as to adequately depict the terminal route from and toward the appropriate facility/fix.
- Where the terminal route destination may be in question due to intervening fixes or length of route, a clarifier may be added following the altitude. Names or facility types (all CAPS) will suffice, e.g., 2300 to BATOU, 3600 to VORTAC.
- Terminal routes with a dogleg turn shall graphically illustrate this dogleg turn.

Terminal routes shall be shown as 4 weight (.010") arrowed line extending from the en route facility/feeder facility symbol along the magnetic bearing line toward the initial approach facility/fix or another facility/fix.

Terminal routes identified as No Procedure Turn (NoPT) or beginning at an Initial Approach Fix (IAF) shall be shown using an 8 weight (.020") line. When the procedure source document indicates a NoPT the letters "NoPT" shall be shown adjacent and parallel to the terminal route. When the beginning of a NoPT route is designated as an IAF, the abbreviation shall also be used to identify this fix/facility.

Terminal routes (except Radius-to-fix legs and DME arcs) shall include the bearing, distance and minimum altitude. The arrowed line shall be broken for insertion of bearing values.

- The magnetic bearing value shall be shown on and breaking the terminal route. Bearing values shall be given to the nearest degree, using three digits, e.g., 061°.
- The distance shall be shown to the nearest tenth of a nautical mile, enclosed within parentheses, e.g., (16.4), positioned directly below the bearing value.
- The minimum altitude shall be positioned directly above the magnetic bearing value.
- Dogleg routes shall have leadered route information with reference to the terminating point and both segments stacked on two or more lines as shown below.

**Figure 3.9 Dogleg**

3200 NoPT to RYENS  
140° (3.1) and 210° (1.6)

- Dogleg route segments based on a heading as specified by (HDG) on the procedure source document shall indicate “hdg” on the route segment as shown below.

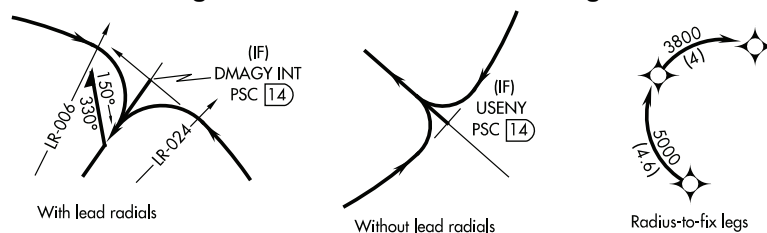
**Figure 3.10 Dogleg Segment Based on Heading**

3200 NoPT to LOM  
290° hdg (7.8) and  
353° (10.3)

- Terminal routing normally ends at the FAF/PFAF, but RNAV (RNP) charts shall have routing information included all the way to the runway end.
- Radius-to-fix legs on RNAV (RNP) procedures shall be shown with distance and altitude information only; no track value shall be shown. DME arc routes shall be shown with altitude, “NoPT” designation if provided, and DME arc value only.

Terminal routes that are DME arcs or Radius-to-fix legs (RF) shall be shown as smooth arcs from a designated start point to a designated terminus. Arc origin (center point) will be identified on the procedure source document (NAVAID for DME arc, CNF for RF leg). RF routes will have an appropriate arrowhead at each terminal point. DME arcs that conclude at a fix on a procedure track will be filleted (curved) into the track so as not to obliterate the fix. If lead radials/bearings are identified by the procedure, the curve will begin at the point.

**Figure 3.11 DME Arcs and RF Legs**



In congested areas, the informational data may be positioned in a clear area and related to the terminal route by a 1 weight (.005") arrowed leader line.

On precision approaches when descent on the glide slope is authorized after interception without a procedure turn, a note providing the minimum altitude and distance to the glide slope intercept point shall be shown along the terminal route in lieu of that described above. When this NoPT note is shown, the overall distance to the LOM shall be provided below the NoPT note in parentheses.

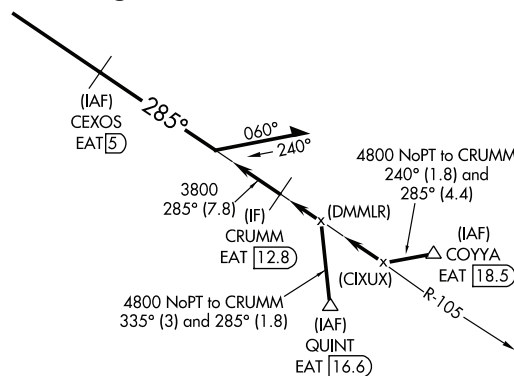
VOR changeover points, other than midpoint (plus or minus one mile) shall be shown when so identified and submitted by the approving authority.

#### 3.4.4.14 Procedure Track

The procedure track shall be indicated by an 8 weight (.020") line, broken for bearing values and navigational symbols. The inbound bearing, in 9 point type, and directional arrow, shall be positioned on the final approach track to indicate direction of flight. Outbound procedure bearing, shown on and breaking the radial/bearing line, shall be shown using the appropriate radial, outbound localizer course or an outbound heading shown in the same method as depicting a radial. A degree sign shall be shown with all headings/bearings/courses.

The procedure track may be coincident with one or more IAF terminal routes. In this case, the route(s) may be shown shortened (or broken and not extending completely to an intermediate or final approach fix) indicating the direction (with an arrowhead) toward the fix. Discretion must be exercised in portraying the length of these tracks so as to adequately depict the track from and toward the appropriate facility/fix.

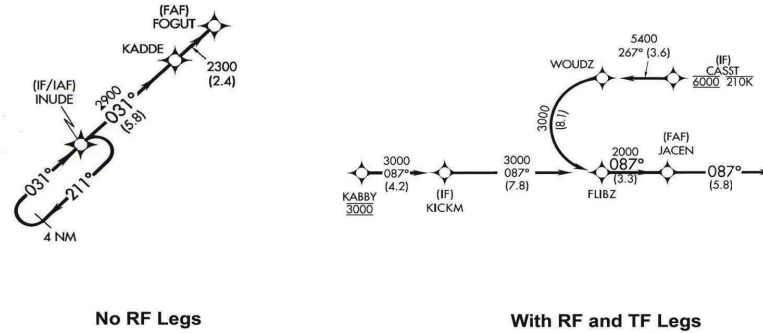
**Figure 3.12 Procedure Track**



Positioning, type size and style shall be as specified for terminal routes. If the terminal route occurs where the procedure track can't be broken, i.e., after the start of the procedure profile, the route information will be stacked with a 9 point type course value when space allows, or leadered where it does not. All leadered information will be stacked together in 7 point type.

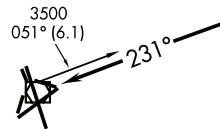
In the final approach segment, if the course value would repeat the bearing shown, it may be omitted, showing only the altitude and distance unless the procedure contains one or more Radius-to-Fix (RF) legs. Then, all bearing values will be shown on the entire final approach segment to easily differentiate the RF legs from all other segments.

**Figure 3.13 Procedure Track Type**



If a feeder terminal route is coincident with the procedure track, but going in the opposite direction, the terminal route line may be offset parallel to the procedure track so as not to overrun it.

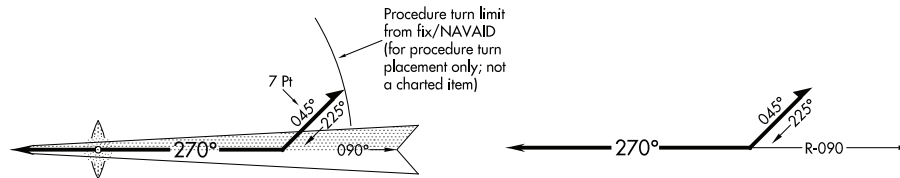
**Figure 3.14 Offset Feeder Route**



**3.4.4.14.1 Procedure Turn Barb**

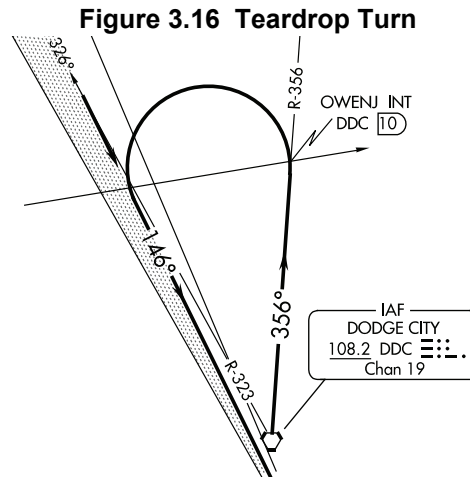
The procedure turn shall be shown by a barb symbol as illustrated below. The barb shall be a half arrowhead .10" long and .05" wide positioned on the maneuvering side. The tip of the barb shall be shown at the procedure turn limit listed on the procedure source document (e.g., 10 NM, 15 NM). Inbound and outbound 45° off-course bearing values (a directional arrow with the inbound value only) shall be shown on either side of the procedure turn barb in 7 point type.

**Figure 3.15 Procedure Turn Barb**



**3.4.4.14.2 Procedures Using Teardrop or Holding Pattern**

Procedures using a teardrop or holding pattern configuration shall be shown in their entirety and shall include both inbound and outbound bearings. See Section 3.4.4.20 for a detailed explanation of Holding Patterns.



References:

**Appendix 34** - Teardrop Turn

**3.4.4.14.3 ILS Components**

Components of an ILS that are not specifically part of the procedure, but are requested for charting on the procedure source document, will be shown in screened color.

**3.4.4.15 Restrictive Altitudes and Airspeeds Along the Procedure Track**

Restrictive altitudes that deviate from the route altitude and airspeeds along the procedure track shall be shown paired with their respective fix/facility.

**Table 3.2 Restrictive Altitudes and Airspeeds**

Type	Description	Altitude	Speed
Minimum	Minimum altitude/speed shall be depicted as an underlined number	<u>2300</u>	<u>170K</u>
Maximum	Maximum altitude/speed shall be depicted as a number with a line above it	<u>4800</u>	<u>170K</u>
Mandatory	Mandatory altitude/speed shall be depicted as a number with a line above and below it	<u>5500</u>	<u>170K</u>
Block	Block altitudes shall be depicted with two altitudes with a line above and below	<u>7500</u> <u>5500</u>	NA

Restrictive altitudes that deviate from the route altitude and airspeeds at the same point (fix, intersection, waypoint, DME, NAVAID) shall be shown side by side with altitude listed first, e.g., 12000 250K.

References:

**Appendix 10** - Legend – IAP Planview

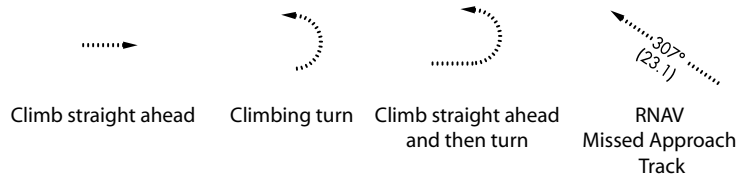
**3.4.4.16 Missed Approach Procedure Track**

To distinguish the runway from the procedure track, an arrow shall be positioned on the end of the final approach track, just short of the end of the runway, or where the missed approach begins. When a turn is required, the missed approach track shall be curved to indicate the proper direction. A definite break shall appear between the final approach arrow and the beginning of the missed approach track. The missed approach track shall be placed so as to clear the runway pattern and radio facilities on or near the airport. The missed approach track shall be symbolized as indicated below and shall begin at the missed approach point.

Non-RNAV charts shall not show heading or course figures. The track symbol will be oriented to reflect the given heading or course.

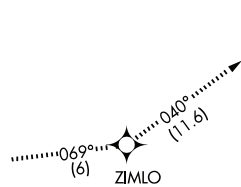
On RNAV procedures, legs in the missed approach procedure will be depicted with the course, and/or distance, in the same manner as terminal routes.

**Figure 3.17 Missed Approach Track**



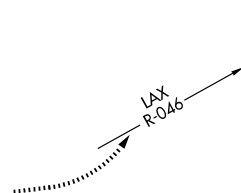
If any portion of the missed approach procedure track is off the chart, the missed approach track shall be extended to the chart border, maintaining proper orientation.

**Figure 3.18 Missed Approach Procedure Track Off Chart**



On non-RNAV charts, if a radial/bearing is being used to navigate to the missed approach procedure track endpoint off the chart, the radial/bearing shall be shown to the chart border.

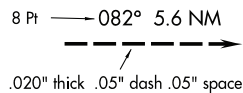
**Figure 3.19 Missed Approach Procedure Track Endpoint Off Chart Using Radial/Bearing**



### 3.4.4.17 Visual Procedure Track

Instrument approach procedures, including Copter approach procedures, that terminate or have missed approaches prior to the airport/heliport, and are authorized to proceed visually, shall depict the visual flight path by the dashed line symbol illustrated, from the missed approach point to the airport.

**Figure 3.20 Visual Procedure Track**



On RNAV charts where the visual track may only apply to LNAV/VNAV, the visual procedure track line will not be shown in the planview. There will be a note directed to that portion of the procedure track.

**Figure 3.21 Visual Track Applies to LNAV/VNAV Only**

LNAV/VNAV  
Fly Visual  
208° 2.4 NM

### 3.4.4.18 Notes

Notes shall be held to an absolute minimum and shall be based on user requirements consistent with a safe execution of the procedure.

Appropriate explanatory notes, when required, shall be placed along the procedure track or in any open area of the planview, using 7 point type (C/L). Notes specifically referring to a fix or facility shall be shown in close proximity to that fix or facility whenever possible.

When ADF, DME, RADAR, or any combination of these are required for the execution of the procedure entry from the en route environment, a note “ADF REQUIRED” or “DME REQUIRED” or “RADAR REQUIRED”, as appropriate, shall be shown in 14 point type positioned in a clear area of the planview. Planview placement of subject note will be specifically denoted on the procedure source document in the format “Chart planview note: RADAR REQUIRED.” Any radar or equipment notes not specified for planview charting shall be depicted in the briefing strip.

When “CHART PLANVIEW NOTE: NOT FOR CIVIL USE” is denoted on the procedure source document, the note shall be shown in 14 point type and positioned in a clear area of the planview.

### 3.4.4.19 Minimum Safe Altitudes (MSA)

MSAs provided in source documentation shall be shown for each airport where instrument approach procedures have been established. MSAs will not be depicted on procedures where Terminal Arrival Areas (TAA) have been established for all sectors.

MSAs shall be provided as a 3 weight (.006") circular diagram positioned normally in the lower right corner of the planview. The appropriate symbol of the NAVAID/waypoint/airport on which the MSA is predicated shall be positioned at the center of the circle. When the MSA is predicated on an airport reference point, the symbol for the type airport, i.e., civil, military, joint-use, shall be used.

- The magnetic courses forming the sectors shall be shown in their proper magnetic orientation within the circle as inbound magnetic bearings using a 1 weight (.005") arrowed line.
- The magnetic bearing value shall be shown centered on the bearing line.
- The MSA values shall be shown enclosed in a 1 weight (.005") box, centrally positioned within the sector.
- The MSA diagram shall be identified by the letters "MSA," the NAVAID/waypoint/airport location identifier, and the applicable mileage, e.g., MSA ABC 25 NM, positioned outside and along the upper portion of the circle. When an airport location identifier is required, civil and joint-use airports within the contiguous U.S. shall depict the FAA designated airport location identifier. Civil and joint-use airports outside the contiguous U.S. shall depict the FAA designated airport location identifier and the ICAO location indicator, separated by a slash. Military airports that are not joint-use shall depict only the ICAO location indicator.
- MSAs with the same altitude value for each of the four sectors shall be shown by the boxed altitude value applicable to all sectors centrally positioned within the circle and above the NAVAID/waypoint/airport symbol.

An Emergency Safe Altitude for 100 NM may be depicted at the option of the approving authority. When a minimum safe altitude for 100 NM is required, it shall be depicted by a common note, e.g., Emergency Safe Altitude 100 NM 0000. The term "Emergency Safe Altitude" is used to ensure added distinction between the 25 NM and 100 NM radius. Sectors are not used for Emergency Safe Altitudes.

References:

[Appendix 10](#) - Legend – IAP Planview

#### **3.4.4.20 Holding Patterns**

##### **3.4.4.20.1 General**

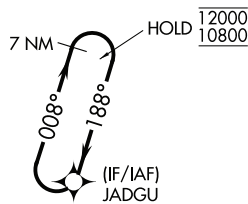
Holding patterns shall be shown only when identified and submitted with the procedure source document.

Holding patterns shall be depicted with a racetrack type symbol. Line pattern or line weight will be determined by holding usage. The symbol may be expanded laterally, when required, to include mileage fixes, intersections, or other facilities upon which the holding pattern may be premised. When the arrival holding pattern is shown in the planview and not affixed to the beginning of the approach track, a .007" lead arrow shall be shown leading from the approach side of the holding pattern to the initial approach fix or facility. The arrow may be curved in order to properly depict the flight path from the holding pattern to the initial approach point. Holding patterns shall be oriented on the proper flight path bearing or radial, and both inbound and outbound bearings (including degree sign) must be shown, except where the nearness of the procedure track bearing may preclude the need for the holding pattern bearing. When the holding is on a VOR facility, the outbound radial will also be depicted.

Holding patterns with maximum restricted airspeeds that deviate from the standard will have the maximum airspeed shown in parentheses inside the holding pattern racetrack symbol.

When a maximum holding pattern altitude restriction is requested on the procedure source document, the minimum and maximum holding pattern altitudes will be shown as a block altitude outside the holding pattern symbol with the word "HOLD". A leader line will be used.

**Figure 3.22 Holding Pattern Altitude Restrictions**



RNAV holding patterns will be supplemented with a leg length as defined by the procedure source document. A 2 weight (.006") line, 0.2" in length will be placed at the end of the outbound leg perpendicular to the leg. The leg length shall be shown in nautical miles, e.g., 4 NM.

Non-RNAV hold-in-lieu of procedure turn holding patterns will be supplemented with the timing value specified on the source document, e.g., 1 min. The timing value will be shown inside the holding pattern symbol. In some cases, a distance limit may be specified on the source document. When indicated, it will be shown as a 2 weight (.006") line, 0.2" in length will be placed at the end of the outbound leg perpendicular to the leg, e.g., 4 NM.

If two types of holds are requested for the same point, e.g. procedural/missed, arrival/missed, with matching inbound and outbound legs, an order of precedence will be followed. Procedural holding pattern shall be depicted in lieu of either arrival or missed. Arrival holding pattern shall be depicted in lieu of missed.

**3.4.4.20.2 Missed Approach Inset Box**

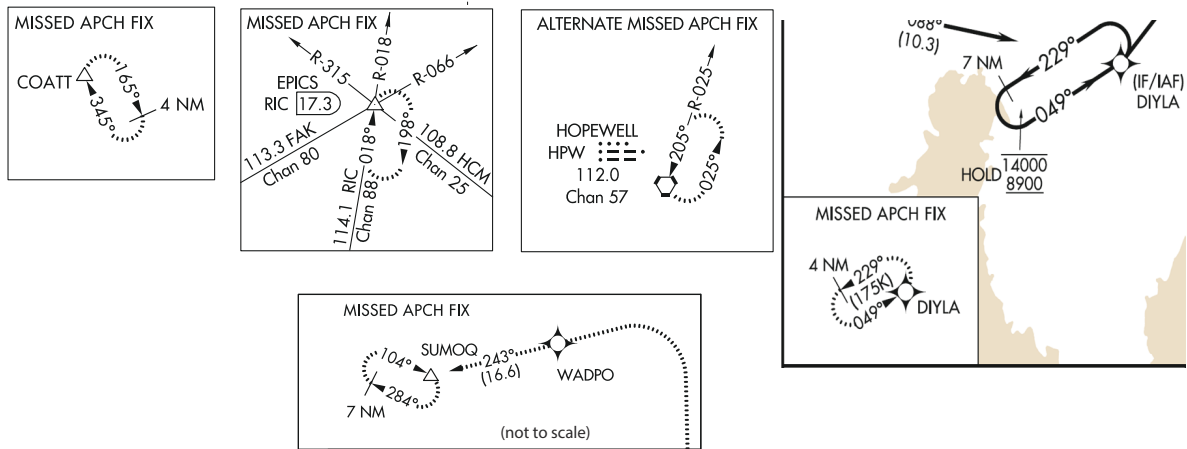
The following types of missed approach holding patterns will be shown as a boxed inset within the planview:

- All alternate missed approach holding patterns.
- Missed approach holding patterns that lie outside the geographic parameters of the planview and are unable to be shown with a scale break.
- Missed approach holding pattern when the missed approach holding pattern is also used for another segment of the approach (i.e., arrival holding) at the same point and the holding pattern information is not identical.

The boxed inset will be clearly labeled (MISSED APCH FIX, ALTERNATE MISSED APCH FIX, or if necessary such labels as TACAN MISSED APCH FIX, CAT E MISSED APCH FIX may be applied).

- The preferred location of the boxed inset is a corner of the planview in the proximity of the actual missed approach point.
- Wherever possible, the box shall be placed away from the path of the missed approach track to avoid the appearance of a “to scale” depiction.
- The inset box for the primary missed approach may be expanded to include multiple maneuvers that would otherwise fall outside the planview. If the track is not depicted to scale, the inset box will include a “(not to scale)” note.

**Figure 3.23 Missed Approach Inset Box Examples**



### 3.4.4.20.3 Arrival Holding Patterns with Altitude Restrictions

Arrival Holding Patterns with an altitude restriction that deviate from the inbound or outbound leg from the holding pattern will have the altitude shown outside the racetrack symbol with the word "HOLD" preceding the prescribed altitude. A leader line between the holding altitude and the holding altitude type will be shown. Minimum altitudes will be shown with an underline, maximum altitudes will be shown with a line above the type and mandatory altitudes will have a line above and below the altitude type.

References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.21 Radial Lines

All radials pertinent to the procedure, missed approach, or holding patterns shall be shown and identified. Radial lines shall be shown by 2 weight (.006") arrowed line emanating from the facility with the values positioned on and breaking the arrowed line, preceded by the letter "R." The radial value shall be in three digits, e.g., R-000. Lead radials, when identified and submitted with the procedure, shall be additionally identified with the letters "LR" preceding the numerical value, e.g., LR-053. A degree sign shall not be shown with radial values.

In congested areas, radial values may be placed in a clear area and related to the radial by a 1 weight (.005") arrowed leader line.

### 3.4.4.22 Bearing Lines

Bearing lines shall be shown by a 2 weight (.006") line and are normally pointing to the facility. Exceptions will be when an outbound bearing is needed for a procedure turn depiction or an outbound bearing is requested in the missed approach instructions. Bearing values shall be shown using three digits positioned on and breaking the arrowed line. A degree symbol shall be shown with all bearing values.

In congested areas, values may be placed in a clear area and related to the bearing line by a 1 weight (.005") arrowed leader line.

### 3.4.4.23 NAVAIDs - General

All NAVAIDs that are to be portrayed within the planview borders shall use the appropriate symbol as shown in [Appendix 10](#). The NAVAID symbology will be used in cases where the same point is also used as a waypoint on the same procedure. NAVAIDs shall be plotted in their exact geographic position except as provided in Section [3.4.4.10](#) - Scale.

References:

[Appendix 10](#) - Legend – IAP Planview

#### 3.4.4.23.1 NAVAIDs Used on Non-RNAV Charts

The NAVAID symbol shall be accompanied by a data box containing all pertinent information for that NAVAID. A leader will extend from the data box to the symbol. The leader shall be a straight 3 weight (.006") line.

Boxes shall be of a size consistent with the informational data contained therein. The procedure facility (primary) NAVAID box shall be 7 weight (.015"). All others shall be 3 weight (.006").

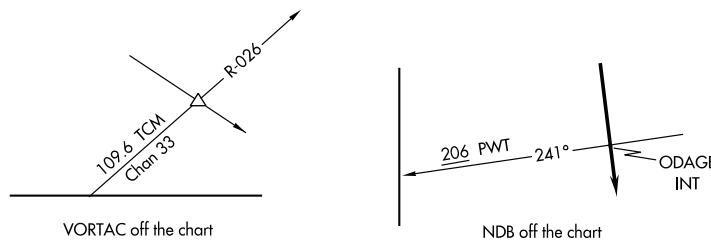
#### 3.4.4.23.2 NAVAIDs Used on RNAV Charts

NAVAIDs used on RNAV charts shall use the appropriate symbol and be identified by name and ident. When necessary, the NAVAID name and ident may be leadered to the NAVAID symbol by a lightning type leader.

#### 3.4.4.23.3 NAVAIDs Off the Chart

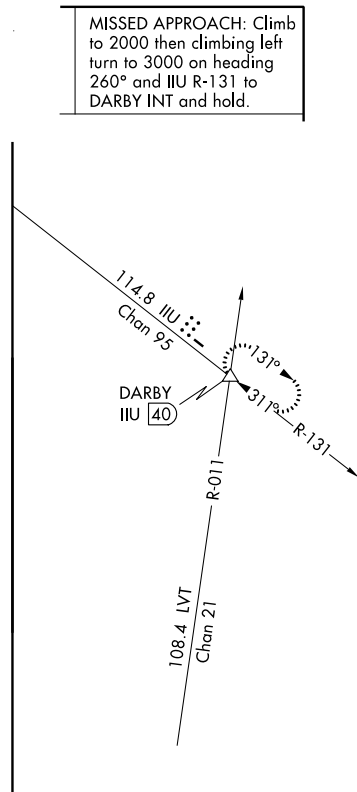
Those NAVAIDs that are utilized in the procedure solely for fix make-up, but are located off the chart shall be portrayed by a radial line emanating from the chart border to the fix or a bearing line from the fix to the chart border. Frequency and identification of the NAVAID shall be shown above the line and Channel below. Information may be leadered where necessary.

**Figure 3.24 NAVAIDs Off the Chart**



A NAVAID utilized in the primary missed approach or TACAN missed approach that is off the chart but is also used for navigation to the MAP will additionally include the Morse Code after the NAVAID identification above the radial line. If the NAVAID off the chart is depicted in more than one location on the chart, then the Morse Code along the radial will only be shown in the planview.

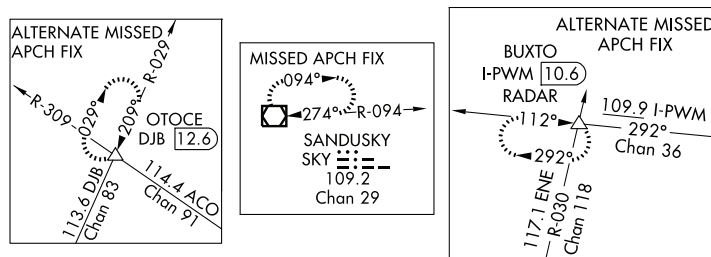
**Figure 3.25 Morse Code on NAVAID Off the Chart**



**3.4.4.23.4 NAVAIDs Used in Missed/Alternate Missed Approach Holding**

Those NAVAIDs utilized as the missed/alternate missed approach hold and shown in a boxed inset shall be identified by name, location identifier, morse code, frequency and channel. NAVAIDs utilized as holding fix make-ups shall be portrayed the same as NAVAIDs off the chart.

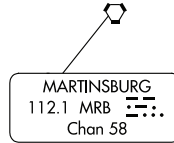
**Figure 3.26 Missed Approach Box Inset**



### 3.4.4.23.5 Arrangement of Data Within Data Box

Arrangement of the data within the data box shall be in the following sequence: name, frequency, call or identification and Morse Code. Channel numbers for TACAN, VORTAC, VOR/DME, and DME shall be abbreviated “Chan” using C/L type followed by the channel number, positioned below other data within the box.

**Figure 3.27 Arrangement of Data in the NAVAID Box**



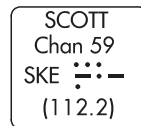
When the DME operates in the “Y” mode, the “Y” will be enclosed in parentheses and positioned immediately following the channel number, e.g., Chan 00(Y).

When the degree of localizer offset is provided, it will be displayed on the bottom line of type as “LOC offset X.XX°”.

For GLS procedures, the text ‘GBAS RPI’, the RPI, and its Morse Code will be shown in the facility box without a pointer line.

For DME and TACAN facilities, the data shall be shown as follows with the paired VHF frequencies, if available, on the last line of the data box in parentheses.

**Figure 3.28 DME or TACAN NAVAID Box**



#### 3.4.4.23.5.1 Frequencies Without Voice Capability

Frequencies without voice capability shall be underlined, with the exception of TACAN and DME, using a 2 weight (.006") line, the length of the frequency numbers.

### 3.4.4.23.6 NAVAIDs Identified as Initial Approach Fix (IAF) or Intermediate Fix (IF)

NAVAIDs identified by the approving authority as an initial approach fix (IAF) and/or an intermediate fix (IF), shall be identified by the letters “IAF”, “IF”, or “IF/IAF” positioned on and breaking the top line of the identification box. Identification boxes that have the top line broken for other information, e.g., LOM, shall have the letters “/IAF” following the letters “LOM”. If there is no identification box, the letters, in parentheses, will be placed above the NAVAID name.

### 3.4.4.24 Marker Beacons

Marker beacons shall be positioned in their exact geographical positions oriented perpendicular to the procedure track. If the marker beacon is assigned a name and identification code, this data will be enclosed within a data box and leadered to the symbol. Marker beacons identified on the procedure as fan markers shall show the code “FM” breaking the top line of the box. If no box exists, the “FM” will go after the name and be placed adjacent to the symbol.

**Figure 3.29 Marker Beacon**



Marker beacons of an instrument landing system shall be identified by the letters “IM” (inner marker), “MM” (middle marker) or “OM” (outer marker) positioned adjacent to the symbol. If assigned a name, the name will precede the identifier, e.g., NIKEE OM. If the marker is collocated with a compass locator, a data box will be used as outlined in Section 3.4.4.26.

**Figure 3.30 Named Outer Marker**



Marker beacons that are not specifically a part of the procedure, but are requested for charting on the procedure source document, will be shown in screened color.

References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.25 Non-Directional Radio Beacons (NDB)

NDBs shall be plotted in their exact geographical position using the appropriate symbol.

NDBs that are paired with DME shall be shown with the NDB/DME symbol as indicated in [Appendix 10](#). The DME channel shall be identified within the NDB communications box and below the NDB data and on a separate line. Paired frequency data shall be shown in parentheses, e.g., DME Chan 30 (109.3).

When LF and UHF NDBs are collocated, both frequencies shall be shown, positioning the UHF frequencies first, and the LF frequency directly beneath.

When NDBs are paired with marker beacons on the ILS course, they shall be treated as LOM/LMM as outlined in Section 3.4.4.26.

References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.26 Compass Locators / Marker Beacons

Compass locators are similar to NDBs but use a 20% reduced NDB symbol. Data box arrangement shall be the same as an NDB. Compass locators are typically collocated with a marker beacon of an ILS course.

When collocated with the outer marker/middle marker, compass locators shall be identified as “LOM” or “LMM” centered on and breaking the top line of the data box.

**Figure 3.31 Compass Locators/Marker Beacons**



References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.27 VOR, VORTAC, VOR/DME, DME

VORs, VORTACs, VOR/DMEs, and DMEs shall be plotted in their exact geographic position, using the appropriate symbol, as indicated in the appendix. Data boxes shall contain information as outlined in Section [3.4.4.23.5](#).

References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.28 TACAN

TACAN facilities shown shall be plotted in their exact geographic position using the appropriate symbol as indicated in the appendix.

The TACAN initial approach fix shall be indicated by a distance measuring fix line, using a 2 weight (.006") line .2" long, centered across the radial. The fix line shall be formed from the TACAN transmitter and labeled with the letters “IAF” within parentheses and the TACAN identifier and nautical mile distance indicated.

References:

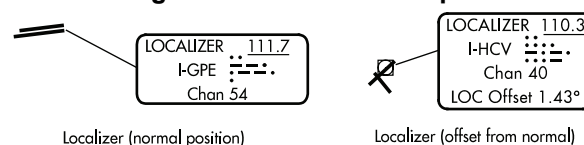
[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.29 Instrument Landing System (ILS)

Only those components of the Instrument Landing System utilized in the instrument approach procedure shall be shown.

The localizer course shall be shown by the symbol illustrated in the appendix. The localizer course symbol shall be centered on the magnetic bearing as projected outward from the transmitter site, cleared for the runway, the patterned portion of the symbol shall be positioned on the right for front courses, and on the left for back courses. However, a transmitter symbol shall not be graphically depicted on the chart except when offset from its normal position off the end of the runway on the centerline. If the transmitter symbol is not required, the data box leader will point to the exact geographical position of the transmitter site.

**Figure 3.32 Localizer Depiction**



The Outer Marker (OM), Middle Marker (MM) and Inner Marker (IM) beacon symbols shall be centered across, and perpendicular to, the localizer course.

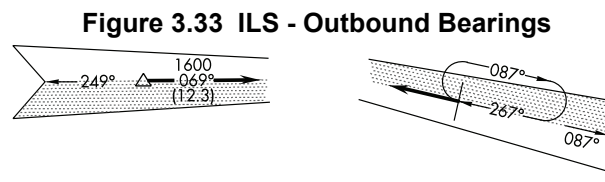
On ILS procedures, glideslope frequencies will not be shown.

Procedures based on the back course of the localizer shall have the words “BACK COURSE” displayed in the planview using 14 point type.

Procedures that use a back course from a localizer that is not the procedure facility (primary) shall be identified as “BACK COURSE” positioned parallel to the course using 7 point type. See [Appendix 39](#) - LOC/DME – Back Course Used Other than as Procedure Facility (Primary).

Simplified Directional Facilities (SDF) course shall be shown the same as the ILS localizer course except that the course symbol shall be left open, void of any pattern.

The outbound bearing shall be depicted in the outer extremity of the localizer symbol. The localizer symbol shall typically end in a “V” shape within the planview. Where space is a consideration, the symbol may be extended to the chart border and the “V” eliminated.



References:

[Appendix 10](#) - Legend – IAP Planview

### 3.4.4.30 Intersections/Fixes

#### 3.4.4.30.1 General

All Intersection/Fixes that are to be portrayed within the planview borders shall use the appropriate symbol as shown in [Appendix 10](#). Intersection/Fix symbology will be used in cases where the same point is also used as a waypoint on the same procedure.

#### 3.4.4.30.2 Enroute

Intersections (defined by two or more NAVAID make-ups) and DME fixes (single NAVAID make-up), designed for enroute charting (enroute low, enroute high or area), will be shown with a triangle symbol as illustrated in the [Appendix 10](#) - Legend – IAP Planview. The INT/fix will be identified with the assigned five letter name.

Any DME component requested by the procedure shall be listed below the name, shown to the nearest tenth of a nautical mile.

**Figure 3.34 Enroute Fix with DME Component**



If the INT/fix is the start of a terminal route; i.e., coming off the enroute structure, no radial/bearing make-ups shall be shown unless specifically requested by the FAA procedure source document. Any enroute INT/fix used as a feeder route inside the enroute structure shall be shown with all requested radial/bearing make-ups as defined on the procedure source document. Also, if the INT/fix serves in the capacity of missed approach point, all requested radial/bearing make-ups shall be shown.

Any make-up lines shall run through the symbol but will be cleared from the inside of the triangle.

**Figure 3.35 Make-up Lines**



INT/fix identification shall typically be shown in the close proximity to the symbol. In congested areas, the information may be leadered to the symbol by a lightning type leader.

**3.4.4.30.3 IAP Only Intersections (No Enroute Component)**

IAP only INTs shall be symbolized as two or more crossing radial/bearing/course lines as requested by the procedure source document. They will be identified by the assigned five letter name followed by the designator “INT”. The information shall be leadered to the symbol by a lightning type leader.

Any DME component requested by the procedure shall be listed below the name, shown to the nearest tenth of a nautical mile.

**Figure 3.36 IAP Only Intersection with DME Component**



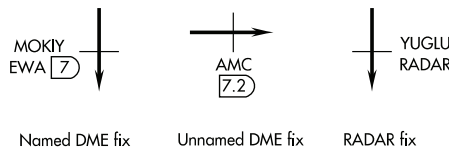
If a RADAR component is requested, the word “RADAR” will follow all other identification.

**3.4.4.30.4 IAP Only DME Fixes/Step-down Fixes (No Enroute Component)**

DME fixes shall be symbolized with a 2 weight (.006") line, 0.2" long (tick mark) centered on and perpendicular to the terminal route or procedure track. When a DME fix is not along a route, it will be shown with the tick mark perpendicular to the radial/bearing defining it.

DME fixes shall be identified by the assigned five-letter name followed by the identifier of the establishing NAVAID and the DME mileage to the nearest tenth of a nautical mile. If the DME fix is unnamed, the DME value will be the sole identification. If a RADAR component is requested, the word “RADAR” will follow all other identification.

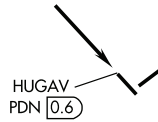
**Figure 3.37 DME Fixes**



Step-down fixes are DME fixes that are established between designated procedure points; i.e., IAF, IF, FAF, MAP, for altitude restriction. They are symbolized and identified the same as any IAP only DME fix. On ILS procedures, step-down fixes within the final approach segment will not be shown in the planview of any CAT II, CAT II & III, or Special Authorization (SA) charts.

Named DME fixes established as the missed approach point and in close proximity to the runway pattern, will be identified the same as above. The symbology however, will be a straight, 1 weight (.005") leader drawn from the exact geographical position of the fix to the name. Unnamed DME fixes established as the missed approach point will be shown only in the profile.

**Figure 3.38 Named Missed Approach Point Fix**



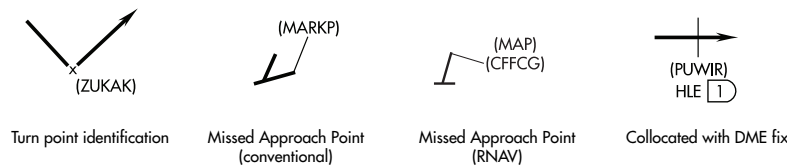
Visual Descent Points (VDPs), when established by the procedure, are not shown in the planview, but appear in the profile.

All intersections and fixes that are identified as an Initial Approach Fix (IAF) on the procedure source document, shall be identified by “(IAF)” positioned above the name.

**3.4.4.30.4.1 Computer Navigation Fix (CNF)**

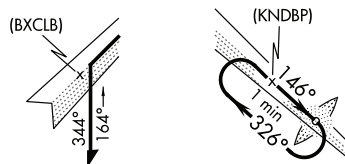
Points-in-space used solely for electronic database identification are known as CNFs. The location of the CNF shall be indicated by a 7 point lower case “x” and its five letter designator in parentheses. The “x” shall not be shown when the CNF is established as a missed approach point near the runway end. A straight 1 weight (.005") leader shall be used to point to the exact geographical location. The “x” will also not be shown when the CNF is coincident with an unnamed DME fix. In this case, the CNF designator shall go above the DME distance information.

**Figure 3.39 CNFs**



When the CNF is a final approach course fix and it falls near the procedure turn (PT) barb, the PT barb shall be adjusted before the CNF. In cases of extreme congestion, placing the PT barb after the CNF would be the next option. Do not place the PT barb with CNF at the apex of the turn. When the CNF falls in a holding pattern, the CNF will be placed in its exact geographic position, breaking the line of the holding pattern for the “x”.

**Figure 3.40 Final Approach Course CNFs**



References:

[Appendix 10](#) - Legend – IAP Planview

**3.4.4.31 Area Navigation (RNAV) Waypoints**

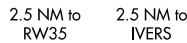
RNAV waypoints, as designated and identified by the approving authority, shall be shown by the symbol illustrated in the appendices. The missed approach point (MAP) will be depicted by a 50% reduction of the fly-over waypoint symbol with the following exceptions: when specified as FB on the procedure source document, the MAP shall be depicted by a 50% reduction of the fly-by waypoint symbol.

If an RNAV waypoint is collocated with an intersection, DME fix, or NAVAID, the appropriate Intersection, DME fix, or NAVAID symbol will be used.

RNAV waypoints, as designated, shall be identified by name.

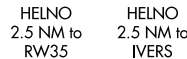
Unnamed step-down waypoints, defined by an along-track distance (ATD), shall be identified with reference to the associated runway or the associated fix and symbolized by a 2 weight (.006") line, 0.2" long, centered on and perpendicular to the terminal route or procedure track.

**Figure 3.41 Unnamed Step-down Waypoints**



When the step-down waypoint is named, the name shall be shown near the waypoint symbol with the along-track distance information, centered beneath.

**Figure 3.42 Named Step-down Waypoints**



On RNAV (RNP) charts, any requirement/capability notes will be depicted in parentheses below the fix/waypoint/NAVAID name, and also below any existing altitude/speed restrictions. The order of the notes shall be RNP, RF, and RADAR. The word REQUIRED shall be shortened to REQD. The format of the notes shall be as depicted in **Figure 3.43**.

**Figure 3.43 RNP Values**

 SHNON (RNP 0.50)	 DRUZZ (RNP 0.50) (RADAR REQD)	(IAF) BILIT 280K  (RNP 0.50)	(IF) COLUM 2500 (RNP 0.50)
(IAF) WESTMINSTER EMI 4000 (RNP 0.50)	(IAF) RENOL (RNP 0.50) (RF REQD) (RADAR REQD)	(IAF) TRING (RNP 0.50) (RF REQD)	(IAF) BILIT 11000 280K (RNP 0.50)

Waypoints identified as IAF, IF, FAF or MAP shall be identified by the letters indicated above, positioned on and breaking the top line of the waypoint identification box. If a data box is not required, the identifier shall go above the name in parentheses.

References:

**Appendix 10** - Legend – IAP Planview

### 3.4.4.32 Fly-over Symbology

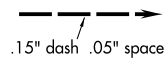
Enroute fixes/intersections, waypoints, and NAVAIDs that are designated as fly-over will be shown with a circle around the symbol. However, enroute fixes/intersections, waypoints, and NAVAIDs designated as a holding point will be charted as a fly-by, without the circle around the symbol. In the event the holding point is also designated in all other parts of the procedure unrelated to holding with a fly-over function, then the holding point will be charted as a fly-over point.

### 3.4.4.33 Copter Point-in-Space Procedures

#### 3.4.4.33.1 Visual Segment

Visual flight path segments shall be shown by an 8 weight (.020") dashed line symbol as illustrated below.

**Figure 3.44 Visual Segment**



#### 3.4.4.33.2 VFR Segments

VFR segments shall not be depicted with a line, but will include the reference bearing and distance text, when provided on the procedure source document, at the end point of the VFR segment as illustrated in [Appendix 58](#) - COPTER – Point-in-Space.

#### 3.4.4.33.3 Significant Visual Landmark Features

Significant visual landmark features are items which, due to their location, are prominent or are readily identifiable because of their distinctive size, shape or form and are identified as follows:

- Primary roads to include route or highway names in populated areas
- Railroads
- Water features
- Power lines along the route of flight will be shown when no other landmarks are available
- Prominent buildings will be shown when required or as requested by Flight Inspection.
- Other landmark features requested by Flight Inspection
- Commercial names, such as Sears Tower, will not be used to identify features, and instead, only generic names will be used, i.e., building, stadium, etc.

#### 3.4.4.34 Airways

Airways shall only be shown when referenced in the approach and/or missed approach parts of the procedure, or when depiction of the airway is requested by the approving authority.

Airways, when shown, shall be depicted inside an appropriately sized 2 weight (.006") box. The box shall be positioned above or below the line in a clear area.

**Figure 3.45 Airway Example**



### 3.4.4.35 End of Runway Coordinates (Military Only)

End of runway coordinates will be depicted in geographic coordinates in degrees, minutes and hundredths of a minute. They shall be depicted when requested and provided by the military Office of Primary Responsibility (OPR) and will depict the point where the runway threshold and centerline intersect.

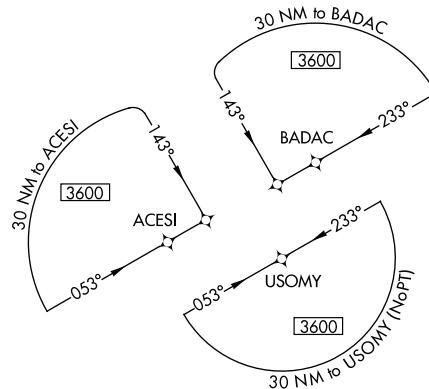
The data shall be depicted in solid color in 6 point type enclosed in a .007" line weight box. A pointer line (.007") shall extend from the data box to and without touching the runway end.

### 3.4.4.36 Terminal Arrival Areas (TAA)

When identified in source documentation, chart the single straight-in and the two base TAA sectors as three separate icons, at reduced scale, as shown in the appendix.

Each TAA icon will contain: inbound courses to define the sector limits; a boxed altitude centered in the icon; the distance to the IAF as text curved along the outer edge of the icon, e.g., "30 NM to TTURN"; the waypoint upon which the TAA is based will be named and charted at a reduced size; and, in the base TAAs only, the IF waypoint will also be charted at a reduced size but will not be named.

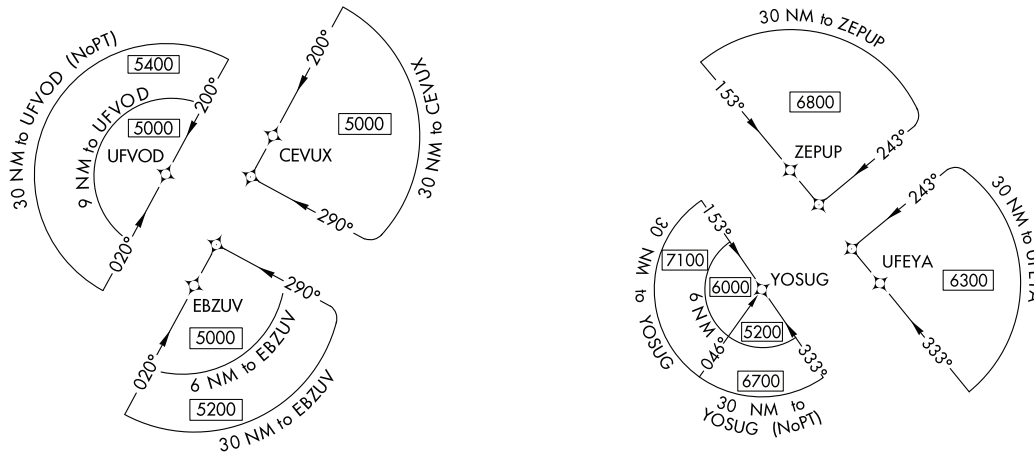
**Figure 3.46 Terminal Arrival Areas**



TAA icons will not have Feeder Routes, Airways, or Radar Vectors depicted.

Inner sectors that are defined by nautical mile arcs shall be labeled in the same manner as on the outer edge.

**Figure 3.47 Terminal Arrival Areas with Inner Sectors**

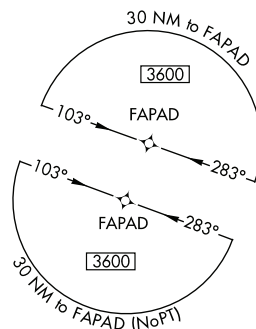


The TAA icons will be positioned in the planview relative to their relationship to the procedure. Avoid placing an icon where it encapsulates other aeronautical information.

Areas identified on source documentation as a “NO TAA” sector will have that term placed where the boxed altitude would go. The curved text along the outer edge of the “NO TAA” icon will contain a Minimum Sector Altitude (MSA), e.g., “30 NM 8000 MSA to FIRST”.

When the TAA deviates from the standard depiction; i.e., one base leg, no base legs, the symbology will be altered to accommodate the requested sectors, e.g., expanded straight-in area, two straight-in hemispheres.

**Figure 3.48 Nonstandard TAA**



References:

[Appendix 10](#) - Legend – IAP Planview

**3.4.5 Profile**

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

[Appendix 11](#) - Legend – IAP Profile

### 3.4.5.1 General

A profile diagram of the instrument approach procedure shall be placed in the space provided below the planview. Those facilities, intersections, fixes, etc. identified in the procedure to be used in executing a course reversal and/or involved in the intermediate/final approach segment with minimum altitudes, as required by the procedure, shall be shown.

The profile box shall be kept at the standard 1.2" height whenever possible. When necessary, the profile box may be shortened to increase planview space, or lengthened for excessive profile data.

The direction of the profile will be shown left to right or right to left based on the true final approach course. Approaches with a true final approach course 000.01 CW 180.00 will be a left to right depiction and 180.01 CW 360.00 will be a right to left depiction.

When the procedure provides differing altitudes for with and without a procedure turn, a dual profile shall be provided.

Dual approaches to parallel runways shall also be provided by a dual profile.

All textual data and numerical values within the profile shall be shown using 7 point type, unless otherwise stated.

Profile component lines shall be shown progressively shorter from the start of the profile to the missed approach point to give the appearance of descent, except where level flight is to be maintained.

Any components designated for non-precision use shall not be shown on CAT II, CAT II & III and Special Authorization (SA) profiles.

### 3.4.5.2 Airport Profile

The airport profile shall be shown by a solid rectangle, .3" long, positioned below the underline (airport elevation line).

Airports other than the airport of intended landing will be shown only when requested on the procedure source document and will be portrayed in the same manner as the primary airport, placed in its approximate location along the final approach course.

### 3.4.5.3 NAVAIDs

All NAVAIDs shown, shall be positioned relative to the airport profile and other facilities, using a vertical 2 weight (.006") line.

The primary on-airport NAVAID facility shall extend 1" above the underline (airport elevation line) on VOR and TACAN charts.

A NAVAID located between the start of the profile and the non-precision DME MAP that is only used to provide DME guidance in the final approach will be shown in the profile and extend 1" above the underline (airport elevation line). See Section [3.4.5.11.3](#) - Components Used for Reference for further explanation and examples.

All NAVAIDs depicted in the profile shall be identified, directly above the vertical line, by location identifier and facility type (e.g., ABC VORTAC). Facility types shall be shown as follows:

- Fan Marker by “FM”.
- Outer markers and middle markers “OM” and “MM”; or, when a compass locator beacon is collocated with a marker beacon and used in an instrument landing system “LOM” or “LMM”.
- Marker beacons by “FM” and code.
- VORs, VORTACs, VOR/DMEs, TACANs, and DMEs by “VOR”, “VORTAC”, “VOR/DME”, “TACAN”, or “DME” as appropriate.
- Radio beacons by “NDB”.

#### 3.4.5.4 Intersections/Fixes

Intersections/fixes formed by radials and bearings shall be indicated by a 2 weight (.006") dashed line extending vertically upward from the underline to a height sufficient to clear the approach track.

Intersections/fixes shall be identified by name, and the mileage figure positioned below the name, all centered above the dashed line. “INT” shall follow the name where it is identified that way in the planview.

Fixes formed by radials and shown along the procedure track shall be identified in abbreviated form, e.g., R-145, and the mileage value positioned below the radial value shall be centered above the dashed line.

Fixes formed by bearings and shown along the procedure track shall be identified and centered above the dashed line. The call letters shall be in capital letters, and the words “bearing to” in lower case letters.

**Figure 3.49 Fixes Formed by Bearings**

180° bearing  
to ABC NDB

TACAN fixes shall be identified in nautical miles, e.g.,  $\boxed{15}$ , centered above the dashed line. The TACAN final approach fix shall be identified by the Maltese cross symbol.

DME mileage symbols shall be identified in nautical miles using the DME symbol, centered above the dashed line symbol.

Combinations of any of the above intersections/fixes shall be identified as appropriate.

The dashed line symbol may be broken as required and necessary for placement of altitude values and procedural notes.

On RNAV procedures, fixes along the final approach course used for altitude restrictions may be shown by the dashed line symbol only, without identification.

When Computer Navigation Fixes (CNFs) are provided, they will be depicted with the name in parentheses as shown in [Appendix 10](#) - Legend – IAP Planview.

### 3.4.5.5 RNAV Waypoints

RNAV waypoints shown shall be positioned relative to the airport profile and intersections/fixes using a vertical solid 2 weight (.006") line, identical to that described for NAVAIDs. Identification above the line symbol shall be the name only.

RNAV waypoints also used as mileage fixes shall have the mileage description added below the name.

**Figure 3.50 RNAV Waypoints Used as Mileage Fixes**

HELGA	TUXTY
3.9 NM to	1.6 NM to
FIGED	RW02

On RNAV procedures, runway ends used as waypoints will be identified with "RW" followed by the runway number. All single digit runway numbers will have a leading zero.

### 3.4.5.6 Procedure Track

A profile view of the procedure track shall be shown using an 8 weight (.020") line. The approach track shall begin toward the top of the primary facility line, unless otherwise dictated by the procedure, and shall descend to .10" above the underline, where the final approach ends and the missed approach begins.

On non-precision only approach procedures, the approach track will begin at the point specified on the procedure source document and descend to the MDA or VDP, thence horizontally to the missed approach point. The segment shall typically be 0.2" in length but length may vary due to the layout of the profile components.

#### 3.4.5.6.1 Headings

All headings associated with the procedure shall be shown with directional arrowheads on and breaking the track after each change in direction, using 9 point type. A degree sign shall be shown with all headings.

#### 3.4.5.6.2 Procedure and Teardrop Turns

Procedure and teardrop turns shall be symbolized as indicated in the appendix. Procedure turn headings shall not be shown. When a holding pattern is required in lieu of a procedure turn, a horizontal line shall be shown. The descending line shall begin at the fix when the fix altitude is the same as the minimum holding pattern altitude. When the fix altitude is lower than the minimum holding pattern altitude, the descending line shall begin at the midpoint of the holding pattern symbol.

References:

[Appendix 34](#) - Teardrop Turn

#### 3.4.5.6.2.1 Procedure Turn Notes

Procedure turn notes shall be shown, positioned adjacent to (preferably above) the procedure turn altitude. Wording shall be condensed to indicate length of maneuvering area.

**Figure 3.51 Procedure Turn Notes**

Remain within 10 NM	One Minute Holding Pattern	4 NM Holding Pattern
------------------------	-------------------------------	-------------------------

When included as part of the procedure, the notation “Procedure Turn NA” shall be shown.

The procedure turn altitude shall be shown in lieu of a specific procedure turn symbol.

### 3.4.5.6.3 Nonprecision Final Approach Fix (FAF)

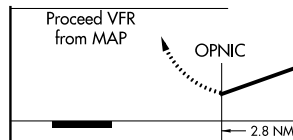
The nonprecision final approach fix (FAF), when specifically identified on the approved procedure, shall be shown by a Maltese cross symbol positioned on and breaking the procedure track.

### 3.4.5.6.4 Instrument Approach Procedures that Terminate or Have Missed Approaches Prior to the Airport

Instrument approach procedures, including copter approach procedures, that terminate or have missed approaches prior to the airport, and are authorized to proceed visual, shall depict the visual segment by the dashed line symbol from the missed approach point to the airport. The note “Fly visual” (“Proceed visually” for Copter procedures) along with the bearing and distance shall be shown leadered to the visual flight path.

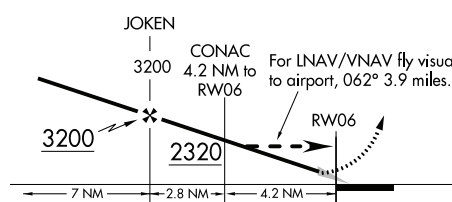
Copter approach procedures with a VFR segment from the missed approach point will not depict the VFR segment with a line in the profile. The note similar to “Proceed VFR from MAP” will be shown as sourced on procedure document.

**Figure 3.52 Copter VFR Segment**



RNAV charts sometimes have visual flight for LNAV/VNAV minima which do not start at the missed approach point. An additional note indicating “LNAV/VNAV” will be placed above the note.

**Figure 3.53 RNAV Fly Visual Example**

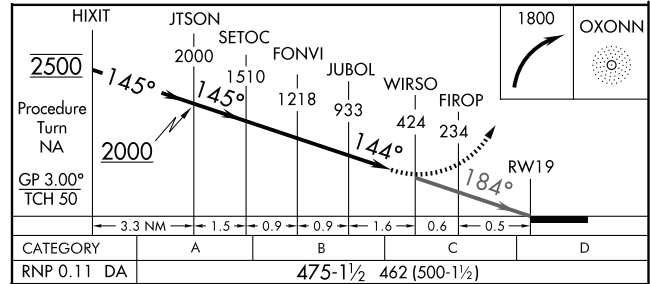


Instrument approach procedures (typically RNP) that change course after the missed approach point shall depict the track following the MAP in shaded line with shaded track value shown above the line. See [Figure 3.54](#).

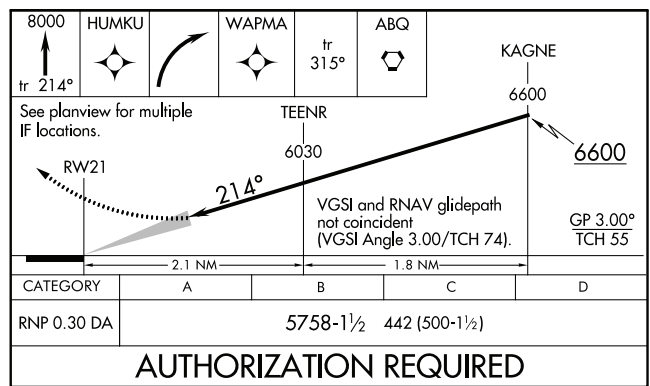
### 3.4.5.6.5 RNP Profile View with Track-to-Fix (TF) and Radius-to-Fix (RF) Segments

In RNP profile views that include both TF and RF segments, the track line will be broken for the initial bearing if it is a TF segment. On all following TF portions (even consecutive segments), the bearing will be positioned above the track line. Track values will not be shown on RF segments.

**Figure 3.54 RNP Profile - Track to Fix (TF) and Radius to Fix (RF) Segments**



RONALD REAGAN WASHINGTON NTL (DCA)  
38°51' N - 77°02' W  
**RNAV (RNP) RWY 19**



**AUTHORIZATION REQUIRED**  
ALBUQUERQUE INTL SUNPORT (ABQ)  
35°02'N-106°36'W  
**RNAV (RNP) Y RWY 21**

### 3.4.5.6.6 Profile View of Terminal Routes Designated for Final Approach

A profile view of terminal routes designated as a final approach to the airport from the facility or fix indicated without executing a procedure turn shall be shown in addition to the normal profile of the primary procedure.

### 3.4.5.6.7 Missed Approach Track

The Missed Approach procedure track shall be shown as indicated in the appendix. The track shall begin at the missed approach point specified on the procedure. Where separate missed approach points exist for precision and non-precision approaches on the same chart, e.g., ILS and LOC, the track will be shown from the precision point only.

### 3.4.5.6.8 Level Flight to be Maintained from Primary Facility or Fix

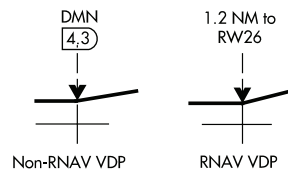
When level flight is to be maintained from the primary facility or fix, prior to the beginning of the descent, the distance shall be shown by use of a .007" vertical line .10" in length extending downward from the procedure track at the point where the descent begins. The distance shown need not be to scale.

The direction of flight shall be indicated by a .007" horizontal line below the procedure track beginning at the facility or fix and ending with an arrowhead at the vertical line. This arrowed line shall be broken for insertion of the mileage.

### 3.4.5.6.9 Visual Descent Point (VDP)

The Visual Descent Point (VDP), when specifically identified on the procedure, shall be shown by a bold letter "V" positioned above and tangent to the procedure track and centered on the accompanying dashed line. Identification shall be a DME value on non-RNAV charts and a mileage value on RNAV charts.

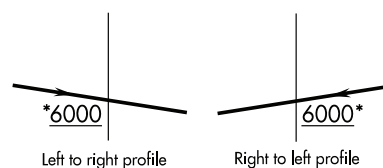
**Figure 3.55 Visual Descent Point**



### 3.4.5.7 Altitudes

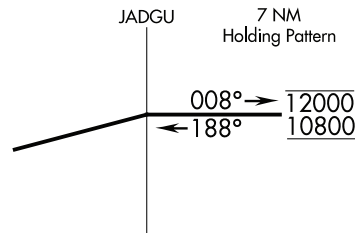
Minimum, Maximum, Mandatory and Recommended Altitudes shall be shown in 9 pt. type and be clearly identified with the component to which they apply. See [Appendix 11 - Legend – IAP Profile](#) for the correct symbology and preferred placement of altitudes. If the altitude requires a reference mark, the mark will be a superscript placed before or after the altitude, depending on the direction of the profile.

**Figure 3.56 Altitudes with Reference Mark**



When a maximum holding pattern altitude restriction is requested on the procedure source document, the minimum and maximum holding pattern altitudes will be shown as a block altitude prior to the start of the holding pattern line in profile.

**Figure 3.57 Holding Pattern Altitude Restriction in Profile**



### 3.4.5.8 Restrictive Airspeeds Along the Procedure Track

Restrictive airspeeds along the procedure track shall be shown as described in Section 3.4.4.15.

### 3.4.5.9 ILS Glide Slope and RNAV Glidepath

Precision Approach procedures (e.g., RNAV, ILS) are based on the use of electronic vertical guidance. The appropriate vertical guidance symbols, as illustrated in the appendices, shall be positioned at an angle emanating from the standard position of the glide slope antenna, just inside the approach end of the runway symbol. The angle and size of the glide slope symbol or glidepath may be varied to provide for the placement of inbound bearings, notes, altitudes, etc.

A note providing the glide slope (GS) or glidepath (GP) angle (in degrees and hundredths) and the threshold crossing height (TCH), rounded to a whole number, as provided, shall be positioned in the lower half of the profile box and in the 'white space' between the start of the procedure and the side of the profile box. GS should be indicated on all ILS procedures. GP should be indicated on GLS procedures and RNAV procedures with a published decision altitude (DA/H).

**Figure 3.58 Glide Slope/Glidepath Angle Note**

GS 3.00° TCH 47	GP 3.50° TCH 50
--------------------	--------------------

When the procedure source document indicates a TCH value for both the displaced threshold and for the runway end, the TCH value for the displaced threshold will be indicated with a reference mark and a note indicating the value of the runway end TCH will be placed in the vicinity.

**Figure 3.59 Dual TCH Values**

*at DTHR; 57 at Rwy end.	GS 3.76° *TCH 19
-----------------------------	---------------------

The final approach track shall be centered on the glide slope or glidepath symbol from the point of interception and continuing downward to the missed approach point. The track and vertical guidance symbol shall be cleared to provide for placement of inbound bearings, when shown.

The altitude of the glide slope or glidepath at a fix or the outer marker as designated on the procedure shall be shown, positioned on and breaking the vertical line symbol, above the procedure track.

The actual point of interception of the glide slope or glidepath with the procedure track shall be graphically depicted to indicate the interception point and altitude. The interception altitude shall be shown below the procedure track, in 9 point type with a lightning type arrowed line leading to the actual point of glide slope or glidepath interception.

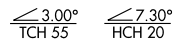
### 3.4.5.10 Constant Descent Angle and Threshold/Heliport Crossing Heights

When provided in the Additional Flight Data Block of the procedure source document, the Descent Angle and the Threshold Crossing Height (TCH) will be depicted. For Copter approach procedures, a Descent Angle and Heliport Crossing Height (HCH) will be depicted.

The descent angle value (in degrees and hundredths) will be depicted adjacent to an angle symbol above “TCH” (or “HCH” for Copter procedures) with a TCH (or HCH) value to its right. The two values will be separated by a horizontal line, as shown in the appendix.

The values will be positioned either above or below the procedure track and in the 'white space' after the fix or facility designated as the start of constant descent angle point.

**Figure 3.60 Descent Angle with TCH and HCH**



#### 3.4.5.10.1 34:1 Surface Clear Stipple Symbol

Chart a “stipple symbol” below the DA/MDA only if the procedure source document indicates that the 34:1 Obstacle Clearance Surface (OCS) for the visual segments is clear of obstacles; i.e., 34:1 is clear and the “Visual Segment - Obstacles” note is not indicated for charting. If the visual segment is designated as clear and the note is not indicated, then the stipple symbol depicting the continuation of the downward procedure track, as illustrated in the appendix, shall be positioned at an angle to the approach end of the procedure runway. If the visual segment is designated otherwise; i.e., 34:1 is not clear or the “Visual Segment - Obstacles” note is charted, then do not chart any continuation of the Constant Descent Angle/ Vertical Descent Path below the DA/MDA.

### 3.4.5.11 Distance Between Components of the Procedure

#### 3.4.5.11.1 Precision Approaches

On precision approaches (ILS, RNAV) and GPS approaches, the distance between the components (waypoints, facilities, fixes, intersections, glide slope antenna distances) of the procedure and the distance from the last component and the approach end of the airport profile shall be shown using a 0 weight (.005") line, with an arrowhead on each end, with the distance centered on and breaking the line. Due to space limitations between the components, the arrowed lines may be waived with the distance centered within the open source. All distances shall be placed between the lower neatline and underline. Type size shall be 5 point. The facility/fix vertical line symbol shall extend below the underline.

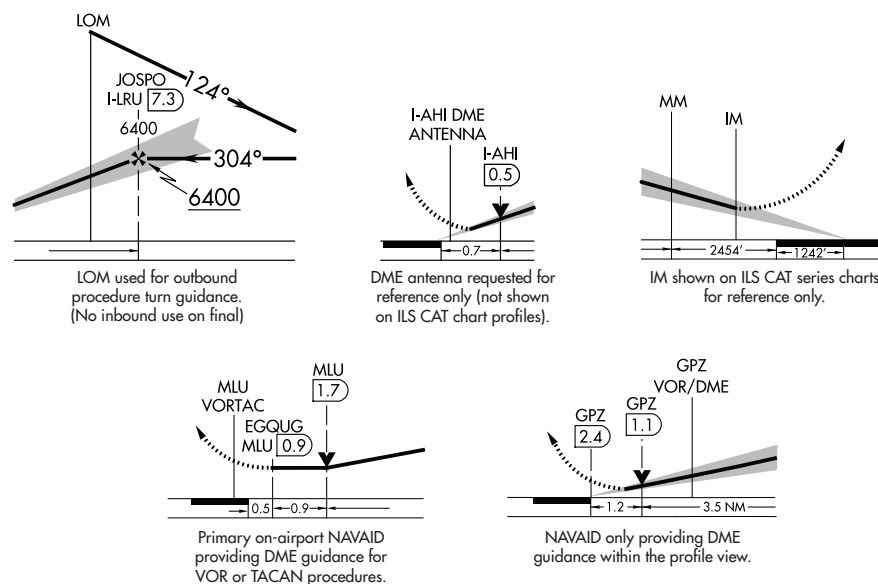
### 3.4.5.11.2 Nonprecision Approaches

On all nonprecision approaches, e.g., VOR, NDB, TACAN, VOR/DME, LOC BC, the distance between the components (facilities, fixes, intersections) of the procedure and the missed approach point shall be shown using a 0 weight (.005") line, with an arrowhead on each end, with the distance centered on and breaking the line, positioned between the lower neatline and the underline. Due to space limitations between components, the arrowed lines may be waived with the distance centered within the open space. Type size shall be 5 point. The vertical line symbol shall extend to the underline.

### 3.4.5.11.3 Components Used for Reference

When a facility is not involved in the final approach but serves a reference purpose the vertical line need not extend to the bottom line of the profile box.

**Figure 3.61 Components Used for Reference**



### 3.4.5.12 ILS CAT II, CAT II & III, and Special Authorization (SA) Profile Features

CAT II, CAT II & III, and SA charts are offshoots of standard ILS charts but designed with lower minimums and requiring special authorization or certification to use. The profiles mimic the standard ILS to the glide slope intercept. For examples see Appendices listed below.

References:

- [Appendix 21](#) - ILS or LOC – PARENT CHART 1
- [Appendix 22](#) - SA ILS Approach – CAT I
- [Appendix 23](#) - ILS CAT II & III
- [Appendix 24](#) - ILS or LOC – PARENT CHART 2
- [Appendix 25](#) - SA ILS Approach – CAT I & II
- [Appendix 26](#) - ILS or LOC - PARENT CHART 3
- [Appendix 27](#) - ILS CAT II
- [Appendix 28](#) - ILS or LOC - PARENT CHART 4
- [Appendix 29](#) - SA ILS Approach – CAT II

### 3.4.5.13 Notes

Notes shall be shown when specified as profile notes on the procedure.

When a glidepath angle/vertical descent angle VGSI non-coincident note is specified by procedure source, the following information will be added to supplement the note: (VGSI Angle X.XX/TCH XX), where the X values represent the currently published VGSI information obtained from the appropriate database. (For example, when the procedure source reads “VGSI and descent angles not coincident.”, the charted note will read “VGSI and descent angles not coincident (VGSI Angle 3.00/TCH 52).”

Notes, when shown, shall be positioned in an open area.

### 3.4.6 Missed Approach Icons

Missed Approach Icons will be depicted in the upper left or upper right of the profile box. Space permitting, all textual missed approach instructions will be graphically depicted in sequence. If space does not permit the depiction of all missed approach icon boxes, only the first four icon boxes shall be shown.

The Missed Approach Icons are intended to provide quick, at a glance intuitive guidance to the pilot, to supplement the textual missed approach instructions in the briefing strip. The icons will depict, but are not limited to, the following:

- Initial heading/altitude/turn
- Direction of turn
- Navigational aids
- Intersections, fixes and waypoints
- Radials, bearings, courses (crs), headings (hdg) and tracks (tr)

These directional abbreviations (crs, hdg, tr) will always be shown in lower case, as opposed to the identfs for NAVAIDs and fixes which will always be shown in upper case.

References:

[Appendix 12](#) - Missed Approach Icons (VOLPE)

[Appendix 13](#) - Missed Approach Examples

### 3.4.7 Airport Sketch

References:

[Appendix 14](#) - Legend – Airport Sketch

[Appendix 15](#) - Legend – Airport Sketch Lighting Systems

#### 3.4.7.1 General

A sketch of the airport providing a diagram of the runway pattern and related information shall be shown positioned in either the lower left or lower right corner of the chart as necessary to allow for the best use of a ‘notched’ planview. “White space” at the top and/or bottom of the sketch may be eliminated and the sketch height reduced accordingly, when more planview space is needed.

The runway diagram shall be drawn to scale and oriented to true north. The scale of the airport outline shall remain flexible so that the maximum use of the space provided in the format can be utilized.

On Copter procedures where visual flight is required to a single heliport or alighting area and not associated with an airport, the area of coverage of the sketch shall be 1 NM or greater in radius of the MAP. Copter approach sketches will include the final approach course to the MAP, final approach course text to the MAP, e.g. 168°, and the visual segment and value from the MAP to landing area. If it is a VFR segment, the reference bearing and distance text, when provided on the procedure source document, shall be shown at or leadered to the landing point. Significant visual landmark features along the path that aid containment within that area (see 3.4.4.33.3) will be shown. Copter procedures that serve multiple heliports or alighting areas and are not associated with an airport do not require a sketch. When Surface Elevation is documented on the procedure source form, it will replace the boxed TDZE as “Sfc Elev”.

Only the airport on which the procedure is based shall be portrayed.

Drag strips or any other form of a strip in the proximity of the airport and falling within the coverage of the airport sketch shall be shown and identified.

### **3.4.7.2 Airport Elevations, Touchdown Zone Elevations, and Surface Elevations**

#### **3.4.7.2.1 Airport Elevation**

The airport elevation shall be shown enclosed within a box in the upper left corner of the sketch box. The elevation figure shall be preceded by the letters “ELEV”, e.g., ELEV 1005.

#### **3.4.7.2.2 Touchdown Zone Elevation**

The touchdown zone elevation (TDZE) shall be shown enclosed within a box in the upper right corner of the sketch box. The elevation figure shall be preceded by the letters “TDZE”, e.g., TDZE 1005. When necessary, the TDZE box may be stacked beneath the ELEV box. The TDZE box may also be expanded to accommodate runways with sidestep lines of minima listed on the procedure source form.

References:

[Appendix 62](#) - Sidestep Minimums

#### **3.4.7.2.3 Surface Elevations**

When documented on the procedure source form, Surface Elevation will be shown in place of TDZE. The elevation figure shall be preceded by “Sfc Elev”, e.g., Sfc Elev 1005.

### **3.4.7.3 Airport Pattern**

Only runways that exist in the authoritative source database shall be shown.

References:

[Appendix 14](#) - Legend – Airport Sketch

#### **3.4.7.3.1 Runway Surface**

Paved or hard surfaced runways consisting of concrete, asphalt, bitumen, or macadam shall be shown in solid color.

Metal surfaced runways shall be shown using solid color, by the cross-hatch pattern at right angles to each other and 45° to the edge of the runway, as indicated in the appendix. A 1 weight (.005") line shall be used to outline the runway.

Ultralight areas, ski landing areas, unpaved or runway other than hard surface, such as sod, clay, gravel, etc., shall be shown by the solid dot pattern indicated in the appendix and outlining the runway with a solid 1 weight (.005") line, "Ultralight Area" or "Ski Landing Area", in close proximity or leadered to the area.

Seaplane landing or waterways shall be shown by 1 weight (.005") outline, .1" dash, separated by a .04" space to outline the waterway boundary. Waterways will be shown in their approximate geographic location when coordinates are not available.

Runways that exist in the authoritative source database as permanently closed shall be indicated by the outline only, using a 1 weight (.005") solid line, and an "X" overprinted on both ends of the runway. Closed runways that are not hard surface shall be removed.

Indefinitely closed, currently existing but temporarily under construction or re-purposed runways that maintain a runway entry in the authoritative source database shall be indicated by the outline, using a .005" solid line and an "X" above the published runway identifier. Runway length and width information shall be shown.

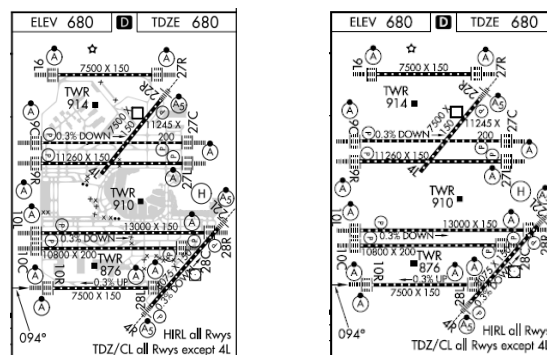
New runways under construction shall be shown by outline only, using a 1 weight (.005") solid dotted outline.

### 3.4.7.3.2 Taxiways, Aprons, and Hardstands

Taxiways, aprons, and hardstands shall only be shown at airports without a published airport diagram.

Closed taxiways shall be identified by a series of "x"s (see legend for graphic portrayal) overprinting the taxiways using 4 to 7 point lower case type, solid color.

**Figure 3.62 Airport Sketch Depiction**



Sketch depiction without Airport Diagram    Sketch depiction with Airport Diagram

### 3.4.7.3.3 Runway Dimensions

Runway dimensions (length and width) shall be shown for all runways that maintain a runway entry in the authoritative source database (except those indicated as permanently closed) with the numerals positioned along and parallel to the runway using 5 point type.

Runway length shall be the actual length of the runway (pavement, end to end) including displaced thresholds, but excluding those areas designated as overruns.

Displaced thresholds shall be shown in their true position on the runway by the symbol illustrated in the appendix.

Runway declared distance information when available will be indicated by a negative type D in a box shown immediately to the right the airport elevation.

#### **Figure 3.63 Runway Declared Distance Information Icon**



#### **3.4.7.3.4 Runway Numbers**

Runway numbers as shown on the runway shall be placed as close as practicable to the end of the associated runways. When runway numbers are not shown, magnetic inbound bearings shall be indicated by an arrow and figure near the end of each runway, oriented to the actual direction of the runway bearings. Runway numbers shall not be shown for new runways under constructions or permanently closed runways. Indefinitely closed, currently existing but temporarily under construction or re-purposed runways that maintain a runway entry in the authoritative source database shall show and “X” above the published runway identifier.

#### **3.4.7.3.5 Runway Slope**

Runway slope shall be shown as a percentage value of the slope of the runway measured from each threshold (runway end) to midpoint of all runways 8,000 feet or longer, from threshold (runway end) to threshold (runway end) on all runways shorter than 8,000 feet, and portrayed when the unrounded calculated value is greater than or equal to 0.25% (expressed to the nearest 0.1%). (0.249% does not require charting, 0.250% would be charted as 0.3%)

Runway slope values shall be expressed in whole numbers and tenths, e.g., 0.6%, 1.2%, using .05 as the breaking point, e.g., 1.44% shall be shown as 1.4%, 1.45% shall be shown as 1.5%.

Runway slope value shall be positioned parallel to and in close proximity to the runway end. The slope value shall be followed by the corresponding “UP” or “DOWN” designation, both in 5 point type, and supplemented with directional arrows.

#### **3.4.7.3.6 Arresting Gear and Jet Barriers**

Arresting Gear and Jet Barriers shall be shown in their true position, using the symbols indicated in the appendix.

The directional arrows for the arresting gear shall point with the direction of roll.

(Note: Arresting systems such as EMAS will not be shown.)

#### **3.4.7.3.7 U.S. Navy Optical Landing System**

U.S. Navy Optical Landing System shall be shown by the symbol indicated in the appendix, in its exact position alongside of the runway.

#### **3.4.7.3.8 Helicopter Alighting Areas**

The alighting area symbols on the chart shall be representative of the markings painted on the heliport. When unknown, the standard circle H symbol shall be used.

The intended landing point shall be shown by the appropriate alighting area symbol in negative print.

A paved surface with various alighting areas shall be treated the same as a runway surface, with the various alighting areas superimposed thereon, in solid color.

#### **3.4.7.4 Control Tower**

The location of the control tower shall be indicated by symbol as indicated in the appendix (.035" square) and shall always be annotated with the text "TWR". Should a rotating beacon be located on the tower, the rotating beacon symbol shall suffice for the tower symbol, supplemented by the letters "TWR".

#### **3.4.7.5 NAVAIDs**

All NAVAIDs located within the geographic parameters of the airport sketch, except components of the ILS, shall be shown. Exception will be when a localizer is offset from its normal position. The LOC or LOC/DME symbol shall be shown in its exact location only on the chart(s) where it appears in the planview.

When more than one NAVAID of the same type is shown, the identifiers shall be shown.

#### **3.4.7.6 Final Approach Course**

##### **3.4.7.6.1 IAP Final Approach Course**

The final approach course or an extension of the final approach course on all IAPs except ILS CAT II, ILS CAT II & III, ILS SA CAT I, ILS SA CAT II, and ILS SA CAT I & II, shall be shown by a 2 weight (.006") line, with arrowhead. Placement shall be such as to avoid overprinting. The final approach course text shall be shown leadered to the arrowed line, e.g., 168°.

##### **3.4.7.6.2 Copter Point-in-Space Final Approach Course**

For "Proceed Visually" Copter point-in-space procedures, the visual track, when shown in the sketch, shall be supplemented by the track value and distance from the MAP to the landing point.

For "Proceed VFR" Copter point-in-space procedures, a track will not be shown, and the reference bearing and distance text, when provided on the procedure source document, shall be shown in proximity to the endpoint of the VFR segment or leadered to the landing point.

#### **3.4.7.7 Lighting**

##### **3.4.7.7.1 Approach Lighting Systems**

Various approach lighting systems shall be shown symbolized in miniature. The circled letters associated with and identifying the various systems shall also be shown.

The approach lighting system symbols and associated letter designation shall be positioned as illustrated in the appendices.

Threshold lights shall be indicated only when an integral part of the approach lighting symbol. They shall not be shown separately.

References:

[Appendix 15](#) - Legend – Airport Sketch Lighting Systems

### 3.4.7.7.2 Visual Glide Slope Indicator (VGSI) Lighting Systems

The VGSI lighting symbols referenced in the Appendix shall be charted on the side of the runway where they are actually located. In cases where the VGSI system lights are located on both sides of the runway (such as V12 and V16 systems), a single symbol shall be placed on the left side of the runway.

References:

[Appendix 15](#) - Legend – Airport Sketch Lighting Systems

### 3.4.7.7.3 Airport Beacon

The Airport Beacon (rotating light) shall be symbolized by the five-pointed star with an open center, as shown in [Appendix 14](#), (if beacon is Pilot Controlled, the “negative” symbol will be used) positioned as near the proper location as possible.

### 3.4.7.7.4 Runway End Identifier Lights (REIL)

Runway End Identifier Lights (REIL) shall be indicated by a note, e.g., REIL Rwy 11R. When more than one runway end is involved, reference to all pertinent runway ends shall be included in a common note, e.g., REIL Rwys 4 and 22. At larger airports, when all runway ends are involved and the available sketch area prevents the listing of all runway ends, “all rwys” may be used, e.g., REIL all rwys. When the lighting feature is used at all but one or two runway ends, “all rwys except” may be used with the excepted runway ends, e.g., REIL all rwys except 4 and 22.

### 3.4.7.7.5 Runway Lead-in Light Systems (RLLS)


Runway Lead-in Light Systems (RLLS) shall be indicated by a note, e.g., RLLS Rwy 13L. When more than one runway end is involved, reference to all pertinent runway ends shall be included in a common note, e.g., RLLS Rwys 13C, 31C, 4R and 22L. At larger airports, when all runway ends are involved and the available sketch area prevents the listing of all runway ends, “all rwys” may be used, e.g., RLLS all rwys. When the lighting feature is used at all but one or two runway ends, “all rwys except” may be used with the excepted runway ends, e.g., RLLS all rwys except 13C and 31C.

### 3.4.7.7.6 Runway Lights

Runway Lights (HIRL) (MIRL) (LIRL) (TDZL) (TDZL/RCLS) shall be indicated by a note, e.g., HIRL Rwy 9-27. When more than one runway is involved (or runway end, the case of TDZL), all pertinent runways shall be included in a common note, e.g., HIRL Rwys 7L-25R and 7R-25L, TDZL Rwys 8 and 26. Runway Centerline Lighting System (RCLS) will be indicated by a note only when pilot controlled or when paired with TDZL, e.g., TDZL/RCLS Rwys 6 and 24. At larger airports, when all runways or runway ends are involved and the available sketch area prevents the listing of all runways or runway ends, “all rwys” may be used, e.g., HIRL all rwys. When the lighting feature is used at all but one or two runways or runway ends, “all rwys except” may be used with the excepted runway or runway ends, e.g., HIRL all rwys except 3-21, TDZL all rwys except 21.

Runways with RCLS will show a negative dot pattern through the middle of the solid runway as illustrated in the Legend.

### 3.4.7.7.7 Notes on Lighting

Notes on lighting shown within the airport sketch shall generally be positioned together in an open area of the sketch, preferable in the lower left/right corner. Pilot capability to activate airport lighting systems shall be shown using negative symbols, as shown in the appendix, e.g., MIRL Rwy 9-27 .

### 3.4.7.8 Base Information (Copter Approaches Only)

Base Information, as required and necessary to identify the MAP area and in the vicinity of the landing area shall be provided.

Information shall be limited to and depict significant visual landmark features at and surrounding the MAP area and the heliport/pad of intended landing.

Significant visual landmark features will be depicted in accordance with Sectional/TAC specifications in IAC 2. Commercial names, such as Sears Tower, will not be used to identify features, and instead, only generic names will be used, i.e., building, stadium, etc.

References:

[Appendix 58](#) - COPTER – Point-in-Space

[Appendix 59](#) - COPTER – Point-in-Space Example 2

#### 3.4.7.8.1 Hydrography

Hydrography shall include such features for which water is a constituent part (120L/15%)

- Lakes - The shoreline of perennial lakes shall be that which corresponds to the normal water stage.
- Reservoirs and Pools - The shoreline represents the water level at the normal stage.
- Streams - Those which maintain a flow of water throughout the year; both double line and single line.
- Aqueducts, Flumes, and Conduits; labeled in 5 point type.
- Canals and Ditches; labeled in 5 point type.

#### 3.4.7.8.2 Railroads, Roads and Related Features (120L/15%)

Multiple Track Railroads on a common roadbed; labeled 5 point type.

Under Construction or Abandoned Railroads; labeled 5 point type.

Railroads in Juxtaposition - Railroads on separate roadbeds which closely parallel each other.

Marshalling and Storage Yards - Outlined to scale with a pattern of tracks shown within.

Dual Lane Highways - Highways which are separated by a median.

Primary Roads - These are classified as hard surface all-weather roads two (2) lanes in width. Exceptions may be made in areas having only secondary roads, one or more of which have exceptional landmark value. Under these circumstances, such roads may be classified as primary.

Highways exceeding two (2) lanes shall be shown by the primary road symbol.

Secondary Roads - These are classified as all roads, except primary, which are maintained for automobile traffic.

Bridges, Tunnels and Viaducts shall be plotted to scale.

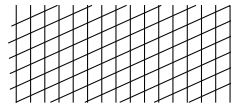
### 3.4.7.8.3 Populated Places

The term “Populated place” as used in these Specifications shall be interpreted also as “developed area” and “urban area”. These terms imply a concentration of structures designed and built for human occupancy and/or for occupational activities. Populated places may vary in size from the largest metropolitan area to scattered huts.

The visual area of populated places shall reflect the physical pattern or shape of developed areas as viewed from the air. Open areas formed by parks, cemeteries, cultivated areas, etc., within the visual limits shall not be shown.

**Note:** This symbology applies to Department of Defense Procedures only, as shown below.

**Figure 3.64 Depiction of Populated Places**



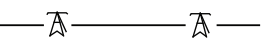
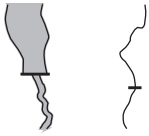






Buildings to be shown shall be those which are associated with the visual flight track or airport, and may be depicted pictorially or as landmarks, as shown below.

**Figure 3.65 Depiction of Buildings & Landmarks Along Visual Flight Track**



3.4.7.8.4 Miscellaneous Cultural Features

Table 3.3 Miscellaneous Cultural Features

Name of Feature	Graphic Depiction	Additional Information
Power Transmission Lines		
Dams		Shall be plotted to scale using a .040" line
Racetracks and Stadiums		Shall be plotted to scale using a .020" line. No. 66 Zip-A-Tone placed 45° to track/stadium
Outdoor Theaters		Shall be plotted to scale using a .010" line. No. 66 Zip-A-Tone at 45° to base
Towers		Shall be charted using the obstacle symbol
Tanks and Oil Wells	 water/gas  oil well	Shall be charted using the landmark or obstacle symbol. The landmark symbol shall be labeled, e.g., gas, oil, water,
Smoke Stacks		Shall be charted using a pictorial or an obstacle symbol

3.4.7.8.5 Relief (Differences in Elevation)

Relief consists of the portrayal of differences in elevation of a portion of the earth's surface.

Hachuring shall be used to portray:

1. Great differences (not gradual sloped) between airports and surrounding terrain, e.g., peaks, ridges, hills.
2. Relief which falls in the category of obstacles. Hachuring will be with a .005" line, NW light source, obstacles and landmarks solid, as below.

Figure 3.66 Relief (Differences in Elevation)



3.4.8 Minima Data

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

[Appendix 16](#) - Landing Minima

3.4.8.1 General

The minima section shall be positioned directly below the profile in either the lower left or lower right corner of the chart as necessary to allow for the best use of a ‘notched’ planview, as shown in [Appendix 6](#) - IAP Chart Format and Dimensions. Minima boxes shall be a standard .24" in height. Where space is needed in the planview or profile, the height may be reduced to as low as .12" where no full size boxes are required; e.g., all categories have the same values.

All lines of minima will be titled in a separate box flush left. Titles will be consistent with those provided on the procedure source document.

On RNP, CAT II, CAT II & III, and Special Authorization (SA) charts, a space will be created under the minima section to accommodate the 12 point requirement note unique to each of these charts.

#### **3.4.8.2 Minima Data**

Landing minima data provided shall consist of the Minimum Descent Altitude (MDA), Decision Altitude (DA) or Decision Height (DH), Runway Visual Range (RVR) or visibility, Height Above Airport (HAA), or Height Above Touchdown (HAT) and ceiling-visibility minimums in statute miles, for the type of approach and approach speed categories.

For CAT II and SA minima, DH will be expressed as RA (Radio Altimeter), e.g., RA 104. On CAT II or III combined charts, minima will be preceded by the appropriate CAT II or CAT III designator. For CAT III minima only the RVR value shall be shown preceded by the category type, e.g., CAT IIIa RVR 07. If there is only a single line of minima, the RVR value shall not be preceded by the category type.

MDA shall be provided as Mean Sea Level (MSL) consisting of the airport weather minimums for the type of approach.

Letter designations for the above shall not be depicted unless provided, the type size, sequence plus type of approach shall indicate the data provided.

- RVR shall be shown by a slash (/) preceding the RVR value and following the MDA/DA/DH value. RVR shall be expressed in hundreds of feet, e.g., 4000 is 40.
- HAT or HAA shall be shown next.
- Military ceiling and visibility values shall be shown in parentheses. For CAT II and SA minima DA value will be shown in place of military minimums.

#### **3.4.8.3 Day/Night**

Minima data shown shall be considered as applicable to both day and night, unless otherwise specified on the procedure. Should night minima data be required, an asterisk shall be shown with the qualifying footnote provided in the Notes section.

#### **3.4.8.4 Multiple Approach Speed Categories**

When the minimums for one type of approach are the same for two or more approach speed categories, the data shall be shown centered below the appropriate approach speed headings, eliminating the vertical separation line(s) between the approach speed categories.

When minima are unique to one speed category, the data shall be positioned on two lines as shown in [Appendix 16](#) - Landing Minima.

### 3.4.8.5 Dual Minimums

When the use of a separate facility or altimeter setting source allows for a second set of minimums for the same procedure, the second set of minimums shall be shown beneath the first entry. The title of the second set of minimums shall include the appropriate fix/facility (e.g. <NAME> FIX MINIMUMS) or altimeter setting source (e.g., <LOCATION ID> ALTIMETER SETTING) positioned above and on a separate line as shown in [Appendix 20](#) - ILS with RNAV Elements.

### 3.4.8.6 Sidestep Minima

When sidestep minimums are documented on the procedure source form, they will be added to the chart as shown in [Appendix 62](#) - Sidestep Minimums.

### 3.4.8.7 Military Minima

When not furnished, the military minimum data, consisting of the ceiling and visibility, will be computed by the producing agency. The ceiling will be computed by subtracting the field elevation from the MDA/DA and, if not in even hundreds (of feet), this value will be rounded off upwards to the next hundred feet. The visibility will be the statute mile equivalent of the RVR visibility value identified with the DA or MDA in accordance with the following table. For RVR values that fall between the listed values, use the next higher RVR value.

**Table 3.4 Comparable Values of RVR and Visibility**

RVR (feet)	Visibility (statute miles)
1,600	1/4
1,800	1/2
2,000	1/2
2,200	1/2
2,400	1/2
2,600	1/2
3,000	5/8
3,200	5/8
3,500	5/8
4,000	3/4
4,500	7/8
5,000	1
5,500	1
6,000	1 1/4

### 3.4.9 Time/Distance Table

References:

[Appendix 6](#) - IAP Chart Format and Dimensions

**3.4.9.1 General**

On procedures when a distance from the final approach facility/fix (FAF) to the missed approach point (MAP) is specified, a time/distance table shall be shown below the Airport Sketch as illustrated in the appendices. On Copter procedures, the time/distance table shall reflect knots 45, 60, 75, 90, and 105 respectively.

**3.4.9.2 Multiple Facilities**

In the event more than one facility is used in the procedure or secondary facilities fall along or near the procedure path so that confusion might result, the facility shall be identified with the identification letters and type of facility.

**3.4.9.3 No Depiction**

The time/distance table shall not be depicted:

- When the controlling NAVAID is located on the airport and serves as the MAP.
- On procedures where DME is the sole means of identifying the non-precision MAP. (exception to this will be made when the procedure source document describes the non-precision MAP as a specific distance (X.XX NM) after the FAF and when the “DIST FAF to MAP:” field is populated with this same distance.
- On all vertically guided procedures (MAP is defined by a DA) where there is no associated non-precision minimums, e.g. ILS without LOC minimums, LDA/GS without LDA, etc.
- On all RNAV procedures.

**3.4.9.4 Nonprecision Approaches**

For nonprecision approaches, where required, the distance to the missed approach point (MAP) shall be shown.

**Table 3.5 Nonprecision Approaches - Distance to MAP**

Single Procedure	Multiple Procedures
FAF to MAP 3.7 NM	LOC FAF to MAP 3.7 NM VOR FAF to MAP 4.1 NM

### **3.4.10 Category II/II & III and SA Category I/II/I & II ILS Procedures**

Specifications as described herein shall apply, supplemented by Category II, Category II & III, and SA Category I and II notations as illustrated. When lines of minima requiring specific authorization or certification (SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED, AUTHORIZATION REQUIRED or SPECIAL AUTHORIZATION) are included on the source document, a separate procedure plate shall be produced, depicting those attributes unique to CAT II only, CAT II & III combined, SA CAT I, SA CAT II or SA CAT I & II combined requirements. Specifically, these include the procedure source document notation (CAT II), (CAT III), (SA CAT I) or (SA CAT II) contained within the procedure title box and the special certification/authorization note below the minima data. When there is a CAT II and III or SA CAT I and II requested on the procedure source document, both shall be combined on one procedure plate as shown in the appendices.

References:

**Appendix 17** - ILS

**Appendix 18** - ILS or LOC

**Appendix 19** - ILS or LOC/DME w/Alternate Missed Approach

**Appendix 20** - ILS with RNAV Elements

**Appendix 21** - ILS or LOC – PARENT CHART 1

**Appendix 22** - SA ILS Approach – CAT I

**Appendix 23** - ILS CAT II & III

**Appendix 24** - ILS or LOC – PARENT CHART 2

**Appendix 25** - SA ILS Approach – CAT I & II

**Appendix 26** - ILS or LOC - PARENT CHART 3

**Appendix 27** - ILS CAT II

**Appendix 28** - ILS or LOC - PARENT CHART 4

**Appendix 29** - SA ILS Approach – CAT II

#### **3.4.10.1 Profile Depictions**

Unique profile depictions may be charted on these plates, utilizing the SAAR decision heights, RA, etc., depending on the procedure. Procedure-specific notes will be depicted.

#### **3.4.10.2 CAT II, CAT III, SA CAT I and SA CAT II Specific Notes**

On CAT II & III combined charts and SA CAT I & II combined charts, CAT II, CAT III, SA CAT I and SA CAT II specific notes will be prefaced for the clarity, e.g., CAT II: RVR 1000 authorized with specific OPSPEC, MSPEC or LOA approval and use of autoland or HUD to touchdown.

#### **3.4.10.3 CAT II, CAT III, SA CAT I and SA CAT II Minimums**

Information within the lines of minima on the combined charts shall also be identified with a CAT II, CAT III, SA CAT I or SA CAT II notation, e.g., CAT II RA 147/12 100DA 2422, CAT III RVR 07.

### **3.4.11 RNAV Procedures**

For specification purposes, RNAV procedures will include stand-alone GPS procedures.

References:

[Appendix 49](#) - RNAV (RNP)

[Appendix 50](#) - RNAV (GPS)

### **3.4.12 Attention All Users Page (AAUP)**

When indicated by the source document, a single AAUP for each airport will be published. The AAUP may be continued onto subsequent pages if necessary.

References:

[Appendix 31](#) - PRM Approach AAUP

## **3.5 CHARTED VISUAL FLIGHT PROCEDURE (CVFP) CHARTS**

References:

[Appendix 60](#) - VISUAL (CVFP) Portrait

[Appendix 61](#) - VISUAL (CVFP) Landscape

### **3.5.1 General**

The CVFP charts shall be divided into Planview and Remarks or Notes Sections. The specifications for IAP charts shall apply to CVFP charts, unless otherwise stated below.

### **3.5.2 Scale**

For Charted Visual Flight Procedures, a scale of 1:250,000 shall be used. However, if necessary for a better portrayal of the procedure, the chart may be depicted “not to scale” or at a different scale. Normally, all information between the planview neatlines, including base detail, shall be shown to scale.

### **3.5.3 Projection**

For Charted Visual Flight Procedures, the projection shall be Lambert Conformal, Polyconic or Polar Stereographic.

### **3.5.4 Margin Information**

#### **3.5.4.1 Procedure Title**

Each procedure is named for the primary landmark and the specific runway for which the procedure is developed, such as: RIVER VISUAL RWY 18, STADIUM VISUAL RWY 24, etc.

#### **3.5.4.2 Amendment Number**

The amendment number of the procedure, as indicated on the procedure source document, shall be shown abbreviated, e.g., Amdt 3. The amendment number will be shown in the bottom margin only, flush left, immediately below the procedure title. Original procedures shall be indicated as “Orig”, with the same placement as indicated above for amendment numbers.

The AIRAC date of the latest procedural (upnumber) revision applied to the chart shall be shown adjacent to and two spaces to the right of the amendment number or “Orig” as appropriate, as shown in the appendices.

The latest revision date (Julian), which reflects a chart revision of any type, shall be shown in the upper left hand corner, above the procedure name, preferably on the same line as the geographic name and chart reference number, as shown in the appendices.

### **3.5.5 Planview**

#### **3.5.5.1 General**

The planview of the CVFP shall be concerned with the portrayal of visual approach procedures information, such as landmarks, NAVAIDs, visual track, hydrography, special use airspace and cultural features, as applicable.

Depiction of the visual track may be shown not to scale if it will enhance and depict the procedure more clearly. Such a depiction may be necessary due to distances involved in some procedures which would extend beyond the neatline or border of the planview. Those segments of the track not to scale shall be broken by the “not to scale” symbol shown in the Appendices.

All type within the planview shall be 7 point unless otherwise stated.

#### **3.5.5.2 Communications**

Communications information, when available, shall be shown in the upper left corner, as indicated on [Appendix 60 - VISUAL \(CVFP\) Portrait](#), in such a manner so as not to interfere with procedure information or items of significant landmark value. When necessary, communications information may be shown in the upper right corner. Type size shall be 7 pt.

CVFPs will depict the communications information referenced in [3.4.3.3 - Bottom Briefing Strip](#). If additional communications are required, they will be listed in the communication section of the procedure source document.

The typical format for communications is the name on the line followed by the frequency(ies) underneath it and will follow the sequencing outlined in [Section 3.4.3.3 - Bottom Briefing Strip](#). All data shall be justified left or right as appropriate to the corner placement.

#### **3.5.5.3 Relief**

Care should be taken in the selection of relief features to be shown. Terrain in the proximity of the flight path should receive priority consideration.

#### **3.5.5.4 Obstacles**

Obstacles shall be depicted pictorially only if specifically identified as such by the approving authority.

#### **3.5.5.5 Visual Track**

The visual track shall be indicated by a dashed 8 weight (.020") line with dashes being .15" long and spaces being .05" long. Each fifth dash shall have an arrowhead. The visual track shall be broken for course values. The inbound course and directional arrows shall be positioned on the final approach track to indicate direction of flight.

CVFP originate at or near, and are designed around, prominent visual landmarks and normally should not extend beyond 15 flight path miles from the landing runway. Visual tracks shall be shown beginning at the geographical point or landmark where the procedure must be flown visually to the airport.

Visual tracks may include the track value, distance and minimum or recommended altitudes, as specified.

To distinguish the runway from the visual track, an arrow shall be positioned on the end of the final approach track just short of the end of the runway.

### **3.5.5.6 Additional Base Information**

Information shall be limited to and depict significant visual landmark features which are identified in the procedure.

Significant visual landmark features will be depicted in accordance with Sectional/TAC specifications in IAC 2. Commercial names, such as Sears Tower, will not be used to identify features, and instead, only generic names will be used, i.e., building, stadium, etc.

### **3.5.5.7 Radio Aids to Navigation**

Radio aids to navigation shall be used as supplementary information only. Limit use to one NAVAID, excluding the NAVAID used for final approach vertical guidance.

### **3.5.5.8 Bar Scale**

A nautical mile bar scale shall be shown at the top of the notes section extending from the left to the right neatline in 1 nautical mile increments.

### **3.5.5.9 Lights**

Lead-in and circling lights, when available, shall be shown symbolized by .065" diameter circles and identified by an appropriate descriptive note, as shown below.

**Figure 3.67 Lights**

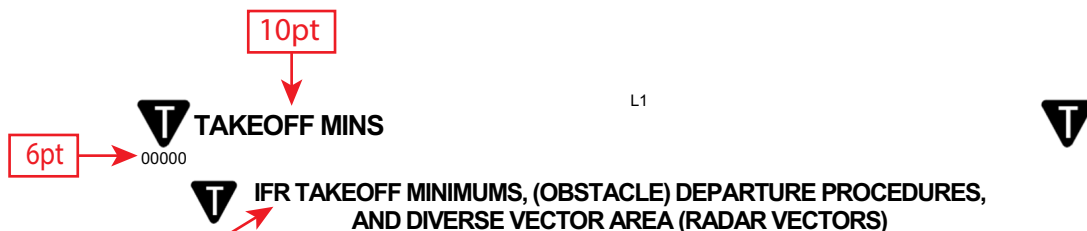
○ Lead-in lights

### **3.5.6 Notes Section**

An area for notes and procedural restrictions in narrative form shall be placed in a space provided below the planview. Type size and style shall be as indicated in the Appendices.



# APPENDIX 1 IFR TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS) - LEGACY ICA



## Civil Airports and Selected Military Airports

**ALL USERS:** Airports that have Departure Procedures (DPs) designed specifically to assist pilots in avoiding obstacles during the climb to the minimum enroute altitude, and/or airports that have civil IFR takeoff minimums other than standard, are listed below. Takeoff Minimums and Departure Procedures apply to all runways unless otherwise specified. An entry may also be listed that contains only Takeoff Obstacle Notes. Altitudes, unless otherwise indicated, are minimum altitudes in MSL.

The FAA redefined the initial climb area (ICA) criteria used to evaluate and identify the obstacles that penetrate the 40:1 OCS. The takeoff obstacle notes are published in a different manner and an additional minimums option is added for the departure. To ensure the pilot knows which evaluation was accomplished, the charting will be different by bolding certain headers and runway information to indicate the new ICA criteria has been used as indicated in (1) and (2) below. Until the FAA can amend all departures, the legacy obstacle notes will still be published.

(1) For textual departures, the headers Takeoff Minimums, Departure Procedure, and Takeoff Obstacle Notes will be bolded and underlined. The specific runway entries under each header will continue to be underlined.

(2) For graphic departure procedures, the headers Takeoff Minimums and Takeoff Obstacle Notes will be bolded and continue to be underlined. The specific runway entries for these headers will be bolded. In the Departure Route Description section of the graphic departure, the heading will be bolded and underlined, and the runway information will be bolded.

DPs specifically designed for obstacle avoidance are referred to as Obstacle Departure Procedures (ODPs) and are textually described below, or published separately as a graphic procedure. If the ODP is published as a graphic procedure, its name will be listed below, and it can be found in either this volume (civil), or the applicable military volume, as appropriate. Users will recognize graphic obstacle DPs by the term "(OBSTACLE)" included in the procedure title; e.g., TETON TWO (OBSTACLE). If not specifically assigned an ODP, SID, or RADAR vector as part of an IFR clearance, an ODP may be required to be flown for obstacle clearance, even though not specifically stated in the IFR clearance. When doing so in this manner, ATC should be informed when the ODP being used contains a specified route to be flown, restrictions before turning, and/or altitude restrictions.

Some ODPs, which are established solely for obstacle avoidance, require a climb in visual conditions to cross the airport, a fix, or a NAVAID in a specified direction, at or above a specified altitude. These procedures are called Visual Climb Over Airport (VCOA). To ensure safe and efficient operations, the pilot must notify ATC of their intent to fly the VCOA when requesting their IFR clearance.

At some locations where an ODP has been established, a diverse vector area (DVA) may be created to allow RADAR vectors to be used in lieu of an ODP. DVA information will state that headings will be as assigned by ATC and climb gradients, when applicable, will be published immediately following the specified departure procedure.

Graphic DPs designed by ATC to standardize traffic flows, ensure aircraft separation and enhance capacity are referred to as "Standard Instrument Departures (SIDs)". SIDs also provide obstacle clearance and are published under the appropriate airport section. ATC clearance must be received prior to flying a SID.

**CIVIL USERS NOTE:** Title 14 Code of Federal Regulations Part 91 prescribes standard takeoff rules and establishes takeoff minimums for certain operators as follows: (1) For aircraft, other than helicopters, having two engines or less – one statute mile visibility. (2) For aircraft having more than two engines – one-half statute mile visibility. (3) For helicopters – one-half statute mile visibility. These standard minima apply in the absence of any different minima listed below.

**MILITARY USERS NOTE:** Civil (nonstandard) takeoff minima are published below. For military takeoff minima, refer to appropriate service directives.

### AFTON, WY

AFTON LINCOLN COUNTY/GENERAL BOYD L EDDINS FLD (AFO)  
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES  
AMDT 1 28SEP06 (25051) (FAA)  
DEPARTURE PROCEDURE:  
Rwy 16, use LUNDI DEPARTURE.  
Rwy 34, use AFTON DEPARTURE.

### ANACONDA, MT

BOWMAN FLD (3U3)  
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES  
AMDT 1 05JUL07 (21112) (FAA)  
TAKEOFF MINIMUMS:  
Rwy 22, NA - Obstacles.  
Rwy 4, std. w/min. climb of 417' per NM to 9000, or 2800-3 for climb in visual conditions.  
Rwy 17, std. w/min. climb of 321' per NM to 10200, or 2800-3 for climb in visual conditions.  
Rwy 35, std. w/min. climb of 369' per NM to 9100, or 2800-3 for climb in visual conditions.  
CONT

6pt



All text is Arial  
7pt if not labelled

6pt

**APPENDIX 2**  
**IFR TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND**  
**DIVERSE VECTOR AREA (RADAR VECTORS) - ICA**

L30

 **TAKEOFF MINS**



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**SHREVEPORT, LA**

SHREVEPORT RGNL (SHV)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

ORIG 26DEC24 (24361) (FAA)

**TAKEOFF MINIMUMS:****Rwy 6:** std w/min climb of 225'/NM to 900, or 1000-3 for VCOA.**Rwy 32:** 300-2 or std w/min climb of 240'/NM to 700 or std and crossing DER 47' above DER elev clears takeoff minimums obstacles.**DEPARTURE PROCEDURE:****Rwy 32:** climb on heading 234° to 800 before turning left.**VCOA Rwy 6:** when executing VCOA, notify ATC prior to departure. Climb in visual conditions to cross Shreveport RGNL airport at or above 1000 before proceeding on course.**TAKEOFF OBSTACLE NOTES:****Rwy 6 Low, Close-in Obstacles:** trees beginning ¼ SM from DER extending to ½ SM, right of centerline up to 291' MSL, 61' above DER. Crossing DER 13' above DER elev clears low, close-in obstacles.**Rwy 14 Low, Close-in Obstacles:** poles and trees within 500' from DER extending to 1 SM crossing centerline up to 366' MSL, 144' above DER. Crossing DER 39' above DER elev clears low, close-in obstacles.**Rwy 24 Low, Close-in Obstacles:** trees, poles, transmission tower, and spire beginning 1000' from DER extending to 1 SM crossing centerline up to 367' MSL, 129' above DER. Crossing DER 47' above DER elev clears low, close-in obstacles.**Rwy 32 Low, Close-in Obstacles:** trees beginning ¼ SM from DER extending to ½ SM, right of centerline up to 327' MSL, 69' above DER. Crossing DER 14' above DER elev clears low, close-in obstacles.**Rwy 32 Takeoff Minimums Obstacles:** building 1.6 SM from DER, right of centerline 550' MSL, 292' above DER. Crossing DER 47' above DER clears takeoff minimums obstacles.
 **TAKEOFF MINS**
SC-4 

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L30

## APPENDIX 3

### DIVERSE VECTOR AREA (RADAR VECTORS) EXAMPLE

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**AUBURN, WA**

AUBURN MUNI (S50)

DIVERSE VECTOR AREA (RADAR VECTORS)

AMDT 1 10NOV16 (16315) (FAA)

**Rwy 16**, heading as assigned by ATC; requires minimum climb of 270' per NM to 1000.**Rwy 34**, heading as assigned by ATC; requires minimum climb of 390' per NM to 800.

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

AMDT 2 16MAY24 (24137) (FAA)

TAKEOFF MINIMUMS:

Use VAMPS (RNAV) DEPARTURE.

TAKEOFF OBSTACLE NOTES:

**Rwy 17**, buildings, fences, trees, signs beginning 15' from DER, on centerline, up to 36' AGL/102' MSL.

Fences beginning 57' from DER, 157' left of centerline, up to 7' AGL/72' MSL.

Building 88' from DER, 342' left of centerline, 25' AGL/90' MSL.

Poles, vegetation, building beginning 111' from DER, 124' left of centerline, up to 35' AGL/102' MSL.

Sign, antenna, buildings, poles, tree beginning 176' from DER, 48' left of centerline, up to 40' AGL/108' MSL.

Tree 232' from DER, 319' right of centerline, 39' AGL/106' MSL.

Trees, poles, signs, buildings, antenna beginning 237' from DER, 5' right of centerline, up to 60' AGL/130' MSL.

Poles, trees, buildings beginning 254' from DER, 46' left of centerline, up to 40' AGL/109' MSL.

Trees, poles, vegetation, buildings, signs beginning 440' from DER, 43' left of centerline, up to 44' AGL/113' MSL.

Building 1353' from DER, 167' left of centerline, 46' AGL/118' MSL.

Buildings beginning 1353' from DER, 161' left of centerline, up to 53' AGL/126' MSL.

Trees beginning 1710' from DER, 229' right of centerline, up to 105' AGL/173' MSL.

Tree 1732' from DER, 327' left of centerline, 57' AGL/130' MSL.

Tree 2682' from DER, 1176' left of centerline, 90' AGL/165' MSL.

**Rwy 35**, buildings, trees beginning 6' from DER, 262' left of centerline, up to 45' AGL/97' MSL.

Buildings beginning 76' from DER, 324' right of centerline, up to 19' AGL/73' MSL.

Tree 321' from DER, 561' right of centerline, 43' AGL/95' MSL.

Trees, poles beginning 321' from DER, 115' right of centerline, up to 48' AGL/102' MSL.

Trees beginning 325' from DER, 454' left of centerline, up to 58' AGL/113' MSL.

Trees, poles, building beginning 329' from DER, 14' left of centerline, up to 61' AGL/117' MSL.

Buildings, trees, pole beginning 394' from DER, 72' right of centerline, up to 47' AGL/103' MSL.

Trees beginning 692' from DER, 570' right of centerline, up to 50' AGL/107' MSL.

Tree 887' from DER, 557' right of centerline, 54' AGL/109' MSL.

Vertical point 1440' from DER, 318' right of centerline, 77' AGL/128' MSL.

Transmission line 1450' from DER, 487' right of centerline, 105' AGL/156' MSL.

Transmission line 1458' from DER, 518' left of centerline, 102' AGL/154' MSL.

Transmission line beginning 1561' from DER, 479' right of centerline, up to 137' AGL/192' MSL.

Transmission line, vertical point, tree beginning 1578' from DER, 368' left of centerline, up to 122' AGL/176' MSL.

**AURORA, OR**

AURORA STATE (UAO)

DIVERSE VECTOR AREA (RADAR VECTORS)

ORIG 05MAR15 (15064) (FAA)

**Rwy 17**, heading as assigned by ATC; requires minimum climb of 375' per NM to 2000.**Rwy 35**, heading as assigned by ATC; requires minimum climb of 350' per NM to 2000.

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

AMDT 3 15DEC11 (11349) (FAA)

TAKEOFF MINIMUMS:

**Rwy 17**, std. w/min. climb of 292' per NM to 2100 or 1500-2½ for climb in visual conditions.**Rwy 35**, std. w/min. climb of 312' per NM to 2100 or 1500-2½ for climb in visual conditions.

DEPARTURE PROCEDURE:

**Rwy 17**, climbing right turn, thence ... Or for climb in visual conditions cross Aurora State airport at or above 1500 thence...**Rwy 35**, climbing left turn, thence ... Or for climb in visual conditions cross Aurora State airport at or above 1500 thence ...

... Aircraft departing on V23 intercept BTG R-175 and climb on course. All others proceed direct UBG VOR/DME and Hold (hold South, left turns, 003° Inbound) continue climb in hold to cross UBG VOR/DME at or above MEA for direction of flight before proceeding on course.

TAKEOFF OBSTACLE NOTES:

**Rwy 17**, trees beginning 31' from DER, 246' right of centerline, up to 87' AGL/316' MSL.

Tree 2270' from DER, 836' left of centerline, 87' AGL/303' MSL.

Vehicle on road 254' from DER, 349' left of centerline, 16' AGL/209' MSL.

**Rwy 35**, trees beginning 30' from DER, 163' left of centerline, up to 65' AGL/329' MSL.

Vehicle on road 212' from DER, 390' left of centerline, 16' AGL/212' MSL.

Trees 973' from DER, 281' right of centerline, up to 65' AGL/253' MSL.

**Rwy 17**, heading as assigned by ATC; requires minimum climb of 375' per NM to 2000.**Rwy 35**, heading as assigned by ATC; requires minimum climb of 350' per NM to 2000.

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NW-1

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# APPENDIX 4 IFR ALTERNATE AIRPORT MINIMUMS

10pt



## ALTERNATE MINS

M1



25219

6pt



### IFR ALTERNATE AIRPORT MINIMUMS

Pilots must review the IFR Alternate Minimums Notes to determine alternate airport suitability.

NA designation on the approach chart means that pilots may not use that approach as an alternate due to unmonitored facility, absence of weather reporting service, or lack of adequate navigation coverage. Approaches with the NA designation are not listed in this section. designation on the approach chart indicates that the approach procedure has non-standard minimums (for aircraft other than helicopters) or restrictions (for all users) for its use as an alternate. A procedure is not authorized for alternate flight planning purposes when local weather is not available.

**MILITARY USERS NOTE:** For IFR alternate airport and minima planning, refer to appropriate service directives.

9pt

Alternate Minima (ref: 14 CFR 91.169)

	Precision Approach	Non-Precision Approach
Standard	<b>600-2</b>	<b>800-2</b>
Non-Standard or restrictions	As indicated below	As indicated below
Helicopters	For the selected approach: Ceiling: 200' above published ceiling Visibility: the greater of 1 SM visibility or the published visibility	

**Note:** For alternate airport flight planning purposes, precision approach operations include: ILS, PAR, and GLS, and Non-Precision approach operations include: NDB, VOR, LOC, TACAN, LDA, SDF, ASR, RNAV (GPS) and RNAV (RNP).

04 SEP 2025 to 02 OCT 2025

04 SEP 2025 to 02 OCT 2025

NAME ALTERNATE MINIMUMS

NAME ALTERNATE MINIMUMS

**BATTLE MOUNTAIN, NV**  
 BATTLE MOUNTAIN (BAM).....RNAV (GPS) Rwy 4<sup>12</sup>  
 RNAV (GPS) Rwy 22<sup>3</sup>  
 VOR Rwy 4<sup>2</sup>

**BULLHEAD CITY, AZ**  
 LAUGHLIN/BULLHEAD INTL (IFP).....RNAV (GPS) Rwy 16<sup>12</sup>  
 RNAV (GPS) Rwy 34<sup>3</sup>  
 VOR Rwy 34<sup>4</sup>

<sup>1</sup>Cat A, B 1000-2, Cat C 1000-2¾.  
<sup>2</sup>NA when local weather not available.  
<sup>3</sup>Cat D 1000-3.

<sup>1</sup>Cat A 800-2½, Cat B 900-2½, Cat C 1100-3, Cat D 1700-3.  
<sup>2</sup>NA when local weather not available.  
<sup>3</sup>Cat A, B 1100-2, Cat C 1100-3, Cat D 1700-3.  
<sup>4</sup>Cat A, B 2200-2, Cat C, D 2200-3.

**BEAVER, UT**  
 BEAVER MUNI (U52).....RNAV (GPS)-A  
 Cat A, B 1300-2, Cat C 1800-3.

**CARSON CITY, NV**  
 CARSON CITY (CXP).....RNAV (GPS)-B  
 Cat A, B 1700-2, Cat C 1700-3, Cat D 3000-3.

**BLANDING, UT**  
 BLANDING MUNI (BDG).....RNAV (GPS) Rwy 35  
 Cat C 900-2¾.  
 NA when local weather not available.

**CASA GRANDE, AZ**  
 CASA GRANDE MUNI (CGZ).....RNAV (GPS) Rwy 5  
 RNAV (GPS) Rwy 23<sup>1</sup>

**BOULDER CITY, NV**  
 BOULDER CITY MUNI (BVU).....RNAV (GPS) Rwy 27  
 Cat B 1200-2, Cat C 1800-3.

Cat D 800-2½.  
<sup>1</sup>NA when local weather not available.



## ALTERNATE MINS

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SW-4



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If not labelled,  
text is 7pt

**APPENDIX 4  
IFR ALTERNATE AIRPORT MINIMUMS (CONTINUED)**



**ALTERNATE MINS**

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**PHOENIX, AZ**  
PHOENIX  
DEER VALLEY (DVT).....**RNAV (GPS) Rwy 7R<sup>1</sup>**  
**RNAV (GPS) Rwy 25L<sup>1</sup>**  
**RNAV (GPS)-B<sup>2</sup>**  
  
NA when local weather not available.  
<sup>1</sup>Cat A, B 1000-2, Cat C 1200-3, Cat D 1300-3.  
<sup>2</sup>Cat A, B 1000-2, Cat C 1200-3.

**PHOENIX**  
SKY HARBOR INTL (PHX).....**ILS or LOC Rwy 7R<sup>1</sup>**  
**ILS or LOC Rwy 8<sup>1</sup>**  
**ILS or LOC Rwy 25L<sup>1</sup>**  
**ILS or LOC Rwy 26<sup>1</sup>**  
**ILS or LOC/DME Rwy 7L<sup>1</sup>**  
**RNAV (GPS) Y Rwy 7L<sup>2</sup>**  
**RNAV (GPS) Y Rwy 7R<sup>2</sup>**  
**RNAV (GPS) Y Rwy 8<sup>3</sup>**  
**RNAV (GPS) Y Rwy 25L<sup>3</sup>**  
**RNAV (GPS) Y Rwy 25R<sup>2</sup>**  
**RNAV (GPS) Y Rwy 26<sup>3</sup>**  
  
<sup>1</sup>LOC Cat C 1000-2¾, Cat D 1500-3.  
<sup>2</sup>Cat C 1000-2¾, Cat D 1500-3.  
<sup>3</sup>Cat C 1000-2¾, Cat D 1300-3.

**PHOENIX-MESA**  
GATEWAY (IWA).....**ILS or LOC Rwy 30C<sup>14</sup>**  
**RNAV (GPS) Rwy 12C<sup>2</sup>**  
**RNAV (GPS) Rwy 12R<sup>3</sup>**  
**RNAV (GPS) Rwy 30L<sup>2</sup>**  
**RNAV (GPS) Rwy 30R**  
**RNAV (GPS) Y Rwy 30C<sup>2</sup>**  
**VOR or TACAN Rwy 30C<sup>2</sup>**  
  
NA when local weather not available.  
<sup>1</sup>NA when control tower closed.  
<sup>2</sup>Cat E 800-2¼.  
<sup>3</sup>Cat E 1100-3.  
<sup>4</sup>ILS Cat E 700-2¼; LOC Cat E 800-2¼.

**PRESCOTT, AZ**  
PRESCOTT RGNL - ERNEST A  
LOVE FLD (PRC).....**ILS or LOC/DME Rwy 21L<sup>12</sup>**  
**RNAV (GPS) Rwy 12<sup>3</sup>**  
**RNAV (GPS) Rwy 21L<sup>3</sup>**  
**RNAV (GPS) Y Rwy 3R<sup>3</sup>**  
**VOR Rwy 12<sup>4</sup>**  
  
<sup>1</sup>NA when control tower closed.  
<sup>2</sup>ILS Cat B 700-2, Cat C 1100-3, Cat D 1700-3;  
LOC Cat C 1100-3, Cat D 1700-3.  
<sup>3</sup>Cat C 1100-3, Cat D 1700-3.  
<sup>4</sup>Cat C 1100-3.

**PRICE, UT**  
CARBON COUNTY RGNL/  
BUCK DAVIS FLD (PUC).....**RNAV (GPS) Rwy 1**  
Cat B 1000-2, Cat C 1200-3.

**PROVO, UT**  
PROVO MUNI (PVU).....**ILS or LOC Rwy 13<sup>12</sup>**  
**RNAV (GPS) Rwy 13<sup>3</sup>**  
  
<sup>1</sup>NA when control tower closed.  
<sup>2</sup>LOC Cat D 800-2½.  
<sup>3</sup>Cat D 800-2½.

**RENO, NV**  
RENO/TAHOE  
INTL (RNO).....**ILS or LOC Rwy 35L<sup>1</sup>**  
**ILS X or LOC X Rwy 17R<sup>2</sup>**  
**ILS Z or LOC Z Rwy 17R<sup>2</sup>**  
**ILS Y Rwy 17R<sup>3</sup>**  
**RNAV (RNP) W Rwy 35L<sup>4</sup>**  
**RNAV (RNP) W Rwy 35R<sup>4</sup>**  
**RNAV (RNP) Z Rwy 35L<sup>4</sup>**  
**RNAV (RNP) Z Rwy 35R<sup>4</sup>**  
**RNAV (GPS) X Rwy 17L<sup>5</sup>**  
**RNAV (GPS) X Rwy 17R<sup>6</sup>**  
**RNAV (GPS) X Rwy 35L<sup>7</sup>**  
**RNAV (GPS) X Rwy 35R<sup>8</sup>**  
**RNAV (GPS) Y Rwy 35L<sup>9</sup>**  
**LOC Y Rwy 17R<sup>a</sup>**  
**VOR-D<sup>b</sup>**  
**TACAN-F<sup>c</sup>**

<sup>1</sup>ILS 700-2; LOC Cat A, B 1000-2, Cat C 2100-3.  
<sup>2</sup>ILS Cat A, B, C, D 800-2; LOC Cat A, B, 1100-2,  
Cat C, D 2100-3.  
<sup>3</sup>Cat A, B, C, D, E 1500-5.  
<sup>4</sup>Cat A, B, C, D 1000-2½.  
<sup>5</sup>Cat A, B 1000-2, Cat C, D 2100-3.  
<sup>6</sup>Cat A, B 1800-2, Cat C, D 1800-3.  
<sup>7</sup>Cat A, B 1200-4, Cat C, D 2100-4.  
<sup>8</sup>Cat A, B 1100-4, Cat C, D 2100-4.  
<sup>9</sup>Cat A, B, C 1000-2½.  
<sup>a</sup>Cat A, B 1600-2, Cat C, D 2100-3, Cat E 2300-3.  
<sup>b</sup>Cat A, B 1900-2, Cat C, D 2100-3.  
<sup>c</sup>Cat A, B 1900-2, Cat C, D, E 2100-3.

**SAFFORD, AZ**  
SAFFORD RGNL/1LT DUANE  
SPALSBURY FLD (SAD).....**RNAV (GPS) Rwy 12**  
**RNAV (GPS) Rwy 30**  
  
NA when local weather not available.  
Cat D 800-2¼.

**ST GEORGE, UT**  
ST GEORGE RGNL (SGU).....**RNAV (GPS) Rwy 1<sup>1</sup>**  
**RNAV (GPS) Rwy 19<sup>2</sup>**  
  
<sup>1</sup>Cat A 900-2, Cat B 1000-2, Cat C 1000-3.  
<sup>2</sup>Cat A, B 1100-2, Cat C, 1100-3, Cat D 1800-3.

**ST JOHNS, AZ**  
ST JOHNS INDUSTRIAL  
AIR PARK (SJN).....**RNAV (GPS) Rwy 14**  
**VOR-A**  
  
NA when local weather not available.



**ALTERNATE MINS**

00000

M4

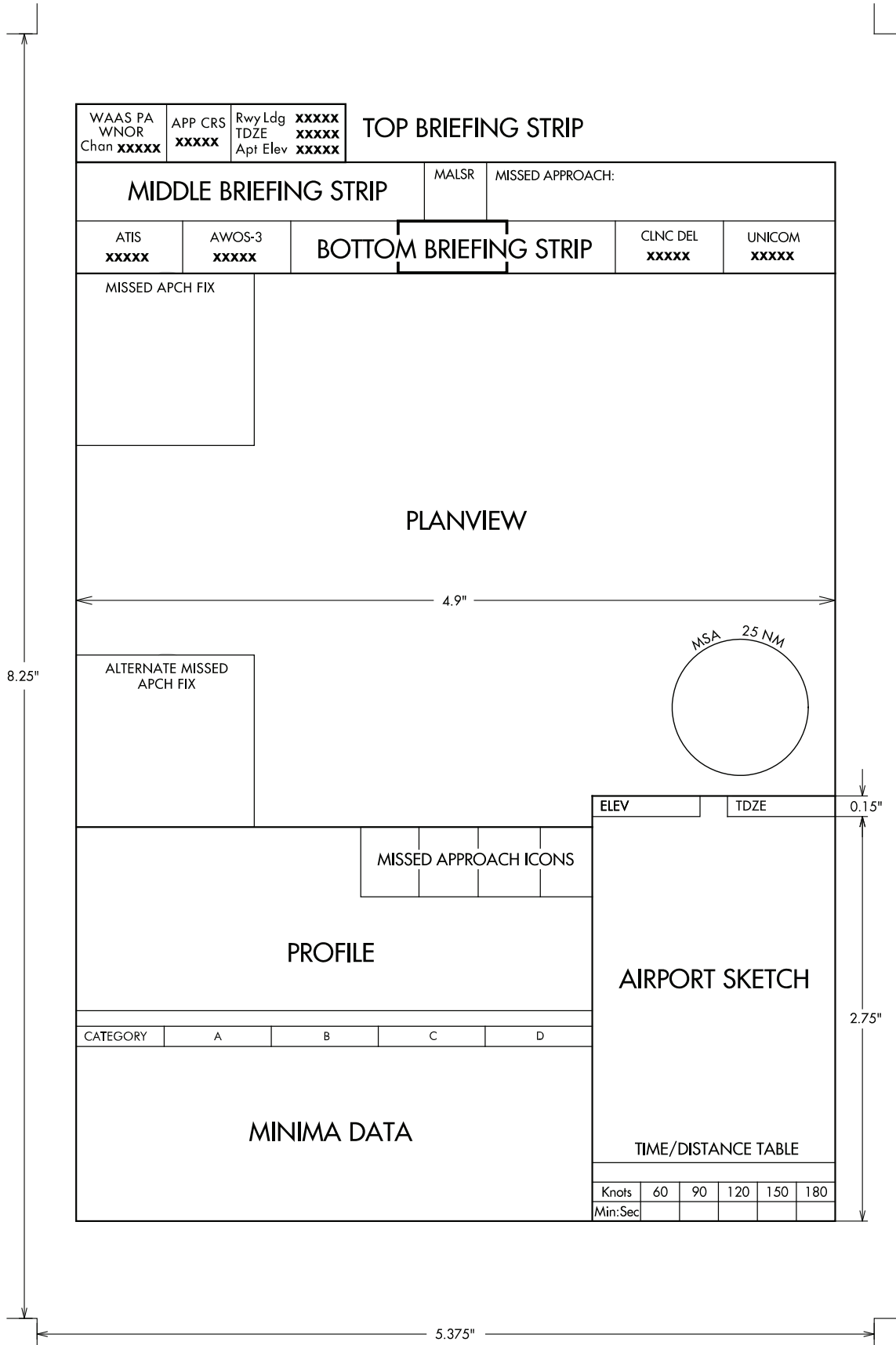
SW-4



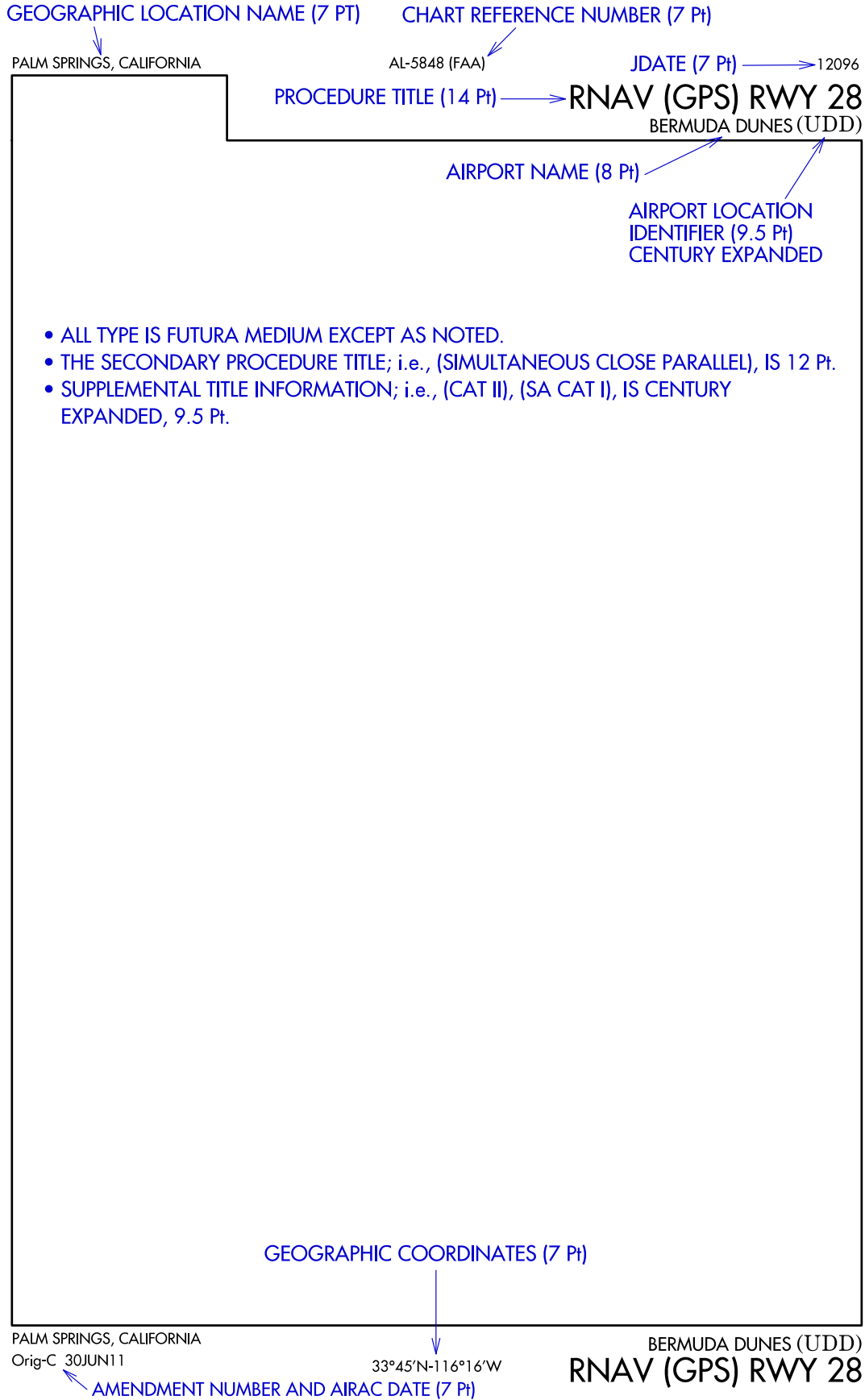


## APPENDIX 6 IAP CHART FORMAT AND DIMENSIONS

### IAP CHART FORMAT AND DIMENSIONS



### APPENDIX 7 MARGIN DATA



## APPENDIX 8 BRIEFING STRIPS

CARLSBAD, CALIFORNIA		AL-5310 (FAA)		00000	
WAAS CH <b>78129</b> <b>W24A</b>	APP CRS <b>245°</b>	Rwy Ldg TDZE Apt Elev	<b>4897</b> <b>326</b> <b>331</b>	<h3 style="margin: 0;">RNAV (GPS) Y RWY 24</h3> <p style="margin: 0;">MC CLELLAN-PALOMAR (CRQ)</p>	
<p><b>⚠</b> For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C (25°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. Rwy 24 helicopter visibility reduction below RVR 4000 NA. For inop ALS, increase LNAV/VNAV all Cats visibility to 1½ SM, increase LNAV Cats A/B visibility to RVR 5500 Cat C to 1½ SM. Inop table does not apply to LPV.</p>				MALSR 	MISSED APPROACH: Climb to 2000 direct IBUGE and hold.
ATIS <b>120.15</b>	SOCAL APP CON <b>127.3 323.0</b>	PALOMAR TOWER ★ <b>118.6 (CTAF) 276.4</b>		GND CON <b>121.8</b>	

SACRAMENTO, CALIFORNIA		AL-5490 (FAA)		00000	
WAAS CH <b>86602</b> <b>W35A</b>	APP CRS <b>348°</b>	Rwy Ldg TDZE Apt Elev	<b>8598</b> <b>24</b> <b>27</b>	<h3 style="margin: 0;">RNAV (GPS) Y RWY 35L</h3> <p style="margin: 0;">SACRAMENTO INTL (SMF)</p>	
<p><b>⚠</b> Circling NA east of Rwy 17R-35L. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -2°C or above 54°C. For inop ALS, increase LNAV/VNAV all Cats visibility to RVR 4500 and increase LNAV Cat C/D visibility to RVR 5500. *RVR 1800 authorized with use of FD or AP or HUD to DA.</p>				MALSR 	MISSED APPROACH: Climb to 800 then climbing left turn to 2000 direct GRIME and hold.
D-ATIS <b>126.75</b>	NORCAL APP CON <b>125.4 259.1 (W-NE) 125.25 257.9 (SW)</b> <b>127.4 317.5 (E-SE)</b>		CAPITOL TOWER <b>125.7 256.7</b>	GND CON <b>121.7 256.7</b>	

NEWARK, NEW JERSEY		AL-285 (FAA)		00000	
GBAS CH <b>21905</b> <b>G11A</b>	APP CRS <b>108°</b>	Rwy Ldg TDZE Apt Elev	<b>6726</b> <b>17</b> <b>17</b>	<h3 style="margin: 0;">GLS RWY 11</h3> <p style="margin: 0;">NEWARK LIBERTY INTL (EWR)</p>	
<p><b>⚠</b> RNP APCH - GPS. Radar required. Autopilot coupled approach NA below 312. Rwy 11 helicopter visibility reduction below RVR 4000 NA.</p>				MALSR 	MISSED APPROACH: (Do not exceed 230K until JKLNE) Climb to 2000 direct ROOSO and right turn on track 194° to JKLNE and right turn on track 245° to JEFFB and left turn on track 218° to RAATO and hold.
D-ATIS <b>115.7 134.825</b>	NEWARK APP CON <b>128.55 379.9</b>		NEWARK TOWER <b>118.3 257.6</b>	GND CON <b>121.8</b>	

CAMBRIDGE, MARYLAND		AL-5571 (FAA)		00000	
APP CRS <b>154°</b>	Rwy Ldg TDZE Apt Elev	<b>N/A</b> <b>N/A</b> <b>20</b>		<h3 style="margin: 0;">RNAV (GPS)-A</h3> <p style="margin: 0;">CAMBRIDGE-DORCHESTER RGNL (CGE)</p>	
<p><b>⚠</b> RNP APCH. Circling Rwy 16 NA at night. Rwy 16 helicopter visibility reduction below 1 SM NA.</p>				MALSR 	MISSED APPROACH: Climb to 2000 direct PROFS and hold.
AWOS-3 <b>120.675</b>	PATUXENT APP CON ★ <b>121.0 250.3</b>		UNICOM <b>122.7 (CTAF)</b>	GND CON <b>121.9</b>	

DETROIT, MICHIGAN		AL-119 (FAA)		00000	
LOC/DME I-ALA <b>111.75</b> Chan <b>54(Y)</b>	APP CRS <b>038°</b>	Rwy Ldg TDZE Apt Elev	<b>10000</b> <b>645</b> <b>645</b>	<h3 style="margin: 0;">ILS PRM Y RWY 4L (CLOSE PARALLEL)</h3> <p style="margin: 0;">DETROIT METRO WAYNE COUNTY (DTW)</p>	
<p>From GRBAC, SIZOR: RNAV 1-DME/DME/IRU or GPS required. Aircraft not DME/DME/IRU or GPS equipped - RADAR required for procedure entry. DME or RADAR required.</p>				ALSF-2 	MISSED APPROACH: Climb to 1100 then climbing left turn to 4000 on DXO VOR/DME R-297 to DOHNT INT/DXO 15.5 DME/ RADAR and hold.
<p><b>⚠</b> Rwy 4L and 4R separated by 3000 feet centerline to centerline. Simultaneous approach authorized. Use of FD or AP required during simultaneous operations. Dual VHF Comm required. See additional requirements on AAUP.</p>				MALSR 	
D-ATIS <b>133.675</b>	DETROIT APP CON <b>124.05 284.0</b>		METRO TOWER <b>135.0 317.725</b> <b>PRM 127.05</b>	GND CON <b>121.8 (NW) 119.45 (NE)</b> <b>132.725 (SW) 119.25 (SE)</b>	

## APPENDIX 8 BRIEFING STRIPS (CONTINUED)

EASTON, MARYLAND		AL-5596 (FAA)		00000
LOC/DME I-FGH <b>109.35</b> Chan <b>30(Y)</b>	APP CRS <b>041°</b>	Rwy Ldg <b>4775</b> TDZE <b>58</b> Apt Elev <b>72</b>	<b>ILS or LOC RWY 4</b> EASTON/NEWNAM FLD (ESN)	
RADAR and DME required for procedure entry. DME required for LOC only.			MISSED APPROACH: Climb to 2000 on heading 041° and on ATR VOR/DME R-283 to ORETE INT/ATR 31.6 DME and hold.	
Circling Rwy 15, 33 NA at night. Autopilot coupled approach NA below 1000.				
ATIS <b>124.475</b>	POTOMAC APP CON <b>133.75 254.35</b>	EASTON TOWER ★ <b>118.525 (CTAF) 0</b>	GND CON <b>119.075</b>	

WASHINGTON, DC		AL-443 (FAA)		00000
LOC/DME I-VWH <b>111.35</b> Chan <b>50(Y)</b>	APP CRS <b>147°</b>	Rwy Ldg <b>6869</b> TDZE <b>13</b> Apt Elev <b>14</b>	<b>LDA Z RWY 19</b> RONALD REAGAN WASHINGTON NTL (DCA)	
DME required. RADAR required for procedure entry.			MALSF	MISSED APPROACH: Climbing right turn to 3000 on DCA VOR/DME R-185 to BADDN/DCA VOR/DME 5.9 DME and hold, continue climb-in-hold to 3000.
Rwy 19 helicopter visibility reduction below 1 SM NA. Circling NA northeast of Rwy 15-33. Inop table does not apply.				
D-ATIS <b>132.65</b>	POTOMAC APP CON <b>119.85 239.25 (W/S)</b> <b>124.2 360.8 (E)</b>	WASHINGTON TOWER <b>119.1 257.6</b>	GND CON <b>121.7 257.6</b>	

SOUTH BOSTON, VIRGINIA		AL-5112 (FAA)		00000
VORTAC SBV <b>110.4</b> Chan <b>41</b>	APP CRS <b>081°</b>	Rwy Ldg <b>N/A</b> TDZE <b>N/A</b> Apt Elev <b>420</b>	<b>VOR-A</b> WILLIAM M TUCK (W78)	
Night landing: Rwy 19 NA. Helicopter visibility reduction below 1 SM NA. When local altimeter setting not received, use Danville altimeter setting and increase all MDA 80 feet; increase all Cats visibility and DICYE fix minimums Cat C visibility ¼ mile. Circling NA to Rwy 6-24.			MISSED APPROACH: Climbing left turn to 3000 direct SBV VORTAC and hold.	
AWOS-3 <b>119.425</b>	WASHINGTON CENTER <b>124.05 352.0</b>		UNICOM <b>122.8 (CTAF) 0</b>	

ROANOKE, VIRGINIA		AL-349 (FAA)		00000
VOR ODR <b>114.9</b>	APP CRS <b>236°</b>	Rwy Ldg <b>N/A</b> TDZE <b>N/A</b> Apt Elev <b>1175</b>	<b>VOR/DME-A</b> ROANOKE/BLACKSBURG RGNL (WOODRUM FLD) (ROA)	
RADAR required.			MISSED APPROACH: Climbing left turn to 4000 on ODR VOR R-164 and LYH VOR/DME R-258 to MONAT/LYH 19.8 DME and hold.	
Circling NA northwest of Rwy 6-24. DME from I-SZK LDA. Simultaneous reception of ODR VOR and I-SZK DME required. -13°C				
ATIS <b>132.375</b>	ROANOKE APP CON <b>126.9 339.8</b>	ROANOKE TOWER <b>118.3 257.8</b>	GND CON <b>121.9 257.8</b>	

GAMBELL, ALASKA		AL-6687 (FAA)		00000
NDB/DME GAM <b>369</b> Chan <b>92 (114.5)</b>	APP CRS <b>345°</b>	Rwy Ldg <b>4500</b> TDZE <b>26</b> Apt Elev <b>27</b>	<b>NDB/DME RWY 34</b> GAMBELL (GAM)(PAGM)	
Circling NA northeast of Rwy 16-34. -27°C			ODALS	MISSED APPROACH: Climb to 3000 direct GAM NDB/DME and in GAM NDB/DME holding pattern.
AWOS-3P <b>125.9</b>	ANCHORAGE CENTER <b>132.2 281.4</b>	NOME RADIO <b>122.0</b>	CTAF <b>122.7 0</b>	

HOUSTON, TEXAS		AL-5537 (FAA)		00000
WAAS CH <b>82513</b> <b>W17A</b>	APP CRS <b>170°</b>	Rwy Ldg <b>7620</b> TDZE <b>81</b> Apt Elev <b>81</b>	<b>RNAV (GPS) RWY 17</b> SUGAR LAND RGNL (SGR)	
RNP APCH - GPS.			MISSED APPROACH: Climb to 2000 direct POPAM and hold.	
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C or above 54°C. Rwy 17 helicopter visibility reduction below ¾ SM NA.				
ATIS ★ <b>118.125</b>	HOUSTON APP CON <b>123.8 257.7</b>	SUGAR LAND TOWER ★ <b>118.65 (CTAF) 0</b>	GND CON <b>121.4</b>	UNICOM <b>122.95</b>

## APPENDIX 8 BRIEFING STRIPS (CONTINUED)

BATTLE CREEK, MICHIGAN			AL-41 (FAA)	00000
LOC I-BTL <b>110.5</b>	APP CRS <b>227°</b>	Rwy Ldg <b>10004</b> TDZE <b>929</b> Apt Elev <b>952</b>	<b>ILS or LOC RWY 23R</b> BATTLE CREEK EXEC AT KELLOGG FLD (BTL)	
ADF required. RADAR required for procedure entry. RNP APCH - GPS.			MALSR 	MISSED APPROACH: Climb to 1400 then climbing left turn to 3000 direct VVTEN and hold, continue climb-in-hold to 3000.
⚠ Circling NA to Rwy 5R and 23L. Circling Rwy 31 NA at night. For inop ALS increase S-LOC 23R Cat C/D visibility to 1 3/8 SM. * RVR 1800 authorized with use of FD or AP or HUD to DA (NA when using Grand Rapids altimeter setting).				
ATIS <b>128.325</b>	GREAT LAKES APP CON* <b>119.2 239.25</b>	BATTLE CREEK TOWER* <b>126.825</b> (CTAF)	GND CON <b>121.7</b>	UNICOM <b>122.95</b>

CHEYENNE, WYOMING			AL-80 (FAA)	00000
LOC/DME I-CYS <b>110.1</b> Chan <b>38</b>	APP CRS <b>265°</b>	Rwy Ldg <b>7985</b> TDZE <b>6121</b> Apt Elev <b>6160</b>	<b>ILS or LOC RWY 27</b> CHEYENNE RGNL/JERRY OLSON FLD (CYS)	
⚠ # RVR 1800 authorized with the use of FD or AP or HUD to DA. ⚠ ASR/PAR			MALSR 	MISSED APPROACH: Climb to 6800, then climbing right turn to 8000 direct CYS VORTAC and hold, continue climb-in-hold to 8000 (TACAN aircraft continue on CYS VORTAC R-016 to MARKL/CYS 10 DME and hold N, RT, 196° inbound).
⚠ For uncompensated Baro-VNAV systems, procedure NA below -20°C or above 54°C.				
ATIS <b>134.425 278.3</b>	CHEYENNE APP CON* <b>124.55 263.075</b>	CHEYENNE TOWER* <b>118.7</b> (CTAF) <b>0 257.8</b>	GND CON <b>121.9 254.275</b>	UNICOM <b>122.95</b>

MILWAUKEE, WISCONSIN			AL-262 (FAA)	00000
APP CRS <b>256°</b>	Rwy Ldg <b>7867</b> TDZE <b>683</b> Apt Elev <b>729</b>	<b>RNAV (RNP) Y RWY 25L</b> GENERAL MITCHELL INTL (MKE)		
RF required. RNP AR APCH.			MISSED APPROACH: Climb to 3700 on the RNAV missed approach route to PROOT and hold.	
⚠ For uncompensated Baro-VNAV systems, procedure NA below -20°C or above 54°C.				
D-ATIS <b>126.4</b>	MILWAUKEE APP CON <b>126.5 307.0</b>	MILWAUKEE TOWER <b>124.575 269.05</b>	GND CON <b>121.8 263.125</b>	

KWETHLUK, ALASKA			AL-10325 (FAA)	00000
WAAS CH <b>97508 W36A</b>	APP CRS <b>002°</b>	Rwy Ldg <b>3199</b> TDZE <b>25</b> Apt Elev <b>25</b>	<b>RNAV (GPS) RWY 36</b> KWETHLUK (KWT) (PFKW)	
⚠ Baro-VNAV NA. ⚠ NA DME/DME RNP-0.3 NA. ⚠ When local altimeter setting not received use Bethel altimeter setting. ⚠ Rwy 36 helicopter visibility reduction below 3/4 SM NA.			MISSED APPROACH: Climb to 2200 direct FONUS and right turn via 115° track to ZALOS and via 197° track to WODIL and hold.	
AWOS-3P <b>120.0</b>	BET/PABE ASOS <b>135.45</b>	ANCHORAGE CENTER <b>125.2 372.0</b>		CTAF <b>122.9</b> 0

WINTER HAVEN, FLORIDA			AL-5953 (FAA)	00000
VORTAC LAL <b>116.0</b> Chan <b>107</b>	APP CRS <b>071°</b>	Rwy Ldg <b>N/A</b> TDZE <b>N/A</b> Apt Elev <b>146</b>	<b>VOR-A</b> WINTER HAVEN RGNL (GIF)	
DME required.			MISSED APPROACH: Climbing left turn to 2000 direct LAL VORTAC and hold.	
⚠ Circling Rwy 5, 11, 29 NA at night. When local altimeter setting not received, use Bartow altimeter setting and increase all MDAs 20 feet.				
ASOS <b>133.675</b>	TAMPA APP CON <b>120.65 290.3</b>	GCO <b>121.725</b>	UNICOM <b>123.05</b> (CTAF) 0	

EAGLE PASS, TEXAS			AL-126 (FAA)	00000
WAAS CH <b>63207 W31A</b>	APP CRS <b>309°</b>	Rwy Ldg <b>5506</b> TDZE <b>882</b> Apt Elev <b>887</b>	<b>RNAV (GPS) RWY 31</b> MAVERICK COUNTY MEML INTL (5T9)	
⚠ Baro-VNAV NA. DME/DME RNP-0.3 NA. Use Laughlin AFB altimeter setting; when not received, use Del Rio Intl altimeter setting.			MISSED APPROACH: Climb to 4000 direct CEDEV and via 056° track to NEYIR and hold.	
AWOS-3 <b>119.175</b>	KDLF ATIS* <b>114.4 269.9</b>	DEL RIO APP CON* <b>127.75 326.2</b>	UNICOM <b>122.8</b> (CTAF) 0	

## APPENDIX 8 BRIEFING STRIPS (CONTINUED)

SEATTLE, WASHINGTON		AL-582 (FAA)		00000
LOC/DME I-SNQ <b>110.3</b> Chan <b>40</b>	APP CRS <b>164°</b>	Rwy Ldg <b>11901</b> TDZE <b>432</b> Apt Elev <b>432</b>	<b>ILS or LOC RWY 16L</b> SEATTLE-TACOMA INTL (SEA)	
DME or RADAR required. RNP APCH-GPS, from GRIFY.			ALSIF-2 	MISSED APPROACH: Climb to 900 on heading 165° then on SEA VORTAC R-161 to cross TEBNE/SEA 2.4 DME/RADAR at or below 2000 then climb to 5000 on SEA VORTAC R-161 to MLLT/SEA 11 DME/RADAR and hold, continue climb-in-hold to 5000.
Simultaneous approach authorized.				
D-ATIS <b>118.0</b>	SEATTLE APP CON <b>133.65 273.45</b>	SEATTLE TOWER <b>119.9 239.3</b> (16L, 16C, 34C, 34R) <b>120.95 239.3</b> (16R, 34L)	GND CON <b>121.7</b>	

CARLSBAD, CALIFORNIA		AL-5310 (FAA)		00000
WAAS CH <b>45831</b> <b>W24B</b>	APP CRS <b>245°</b>	Rwy Ldg <b>4897</b> TDZE <b>326</b> Apt Elev <b>331</b>	<b>RNAV (GPS) X RWY 24</b> MC CLELLAN-PALOMAR (CRQ)	
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C (25°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. RF required. Rwy 24 helicopter visibility reduction below RVR 4000 NA. For inop ALS, increase LNAV/VNAV all Cats visibility to 1 1/2 SM. Increase LNAV Cats A/B visibility to RVR 5500, Cat C to 1 1/2 SM. Inop table does not apply to LPV.			MALSR 	MISSED APPROACH: Climb to 2000 direct IBUGE and hold.
ATIS <b>120.15</b>	SOCAL APP CON <b>127.3 323.0</b>	PALOMAR TOWER* <b>118.6</b> (CTAF) <b>0 276.4</b>	GND CON <b>121.8</b>	

DENVER, COLORADO		AL-9077 (FAA)		00000
LOC/DME I-ERP <b>111.55</b> Chan <b>52(Y)</b>	APP CRS <b>263°</b>	Rwy Ldg <b>12000</b> TDZE <b>5355</b> Apt Elev <b>5434</b>	<b>ILS or LOC RWY 25</b> DENVER INTL (DEN)	
Simultaneous approach authorized with Rwy 26. For inoperative MALSR, increase S-LOC 25 Cat C and D visibility to RVR 5500. **RVR 1800 authorized with use of FD or AP or HUD to DA.			MALSR 	MISSED APPROACH: Climb to 10000 on heading 263° and on FGF VORTAC R-306 to HYGEN INT/FGF 37.9 DME and hold.
D-ATIS <b>125.6 379.9</b>	DENVER APP CON <b>119.3 307.3</b> (N) <b>120.35 379.3</b> (S)	DENVER TOWER <b>128.75 273.55</b>	GND CON <b>121.35 379.175</b> (W) <b>121.85 377.1</b> (E)	

DETROIT, MICHIGAN		AL-119 (FAA)		00000
LOC/DME I-EJR <b>111.5</b> Chan <b>52</b>	APP CRS <b>216°</b>	Rwy Ldg <b>10001</b> TDZE <b>632</b> Apt Elev <b>645</b>	<b>ILS or LOC RWY 21L</b> DETROIT METRO WAYNE COUNTY (DTW)	
From RYEDR, COBBO: RNAV 1-DME/DME/IRU or GPS required. Aircraft not DME/DME/IRU or GPS equipped - RADAR required for procedure entry. DME or RADAR required.			MALSR 	MISSED APPROACH: Climb to 1100 then climbing left turn to 4000 on DXO R-122 to GAAGE/DXO 16 DME and hold, continue climb-in-hold to 4000.
Simultaneous approach authorized. **RVR 1800 authorized with use of FD or AP or HUD to DA.				
D-ATIS <b>133.675</b>	DETROIT APP CON <b>125.15 284.0</b>	METRO TOWER <b>118.4 317.725</b>	GND CON <b>121.8</b> (NW) <b>119.45</b> (NE) <b>132.725</b> (SW) <b>119.25</b> (SE)	

BRAWLEY, CALIFORNIA		AL-6932 (FAA)		00000
APP CRS <b>272°</b>	Rwy Ldg <b>4006</b> TDZE <b>-135</b> Apt Elev <b>-129</b>	<b>RNAV (GPS) RWY 26</b> BRAWLEY MUNI (BWC)		
GPS or RNP-0.3 required. DME/DME RNP-0.3 NA. Use Imperial County altimeter setting. Circling Rwy 8 NA at night.		MISSED APPROACH: Climbing left turn to 3600 direct IPL VORTAC and hold.		
IPL ASOS <b>132.175</b>	YUMA CERAP <b>128.55 292.2</b>	CTAF <b>122.9 0</b>		

TOK, ALASKA		AL-10059 (FAA)		00000
WAAS CH <b>77546</b> <b>W08A</b>	APP CRS <b>082°</b>	Rwy Ldg <b>2509</b> TDZE <b>1643</b> Apt Elev <b>1643</b>	<b>RNAV (GPS) RWY 8</b> TOK JUNCTION (6K8) (PFTO)	
RNP APCH - GPS.			MISSED APPROACH: Climb to 8000 direct NUNIC and on track 131° to CIMGO and hold, continue climb-in-hold to 8000.	
Rwy 8 helicopter visibility reduction below 3/4 SM NA. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -25°C or above 54°C.				
AWOS-3P <b>118.1</b>	ANCHORAGE CENTER <b>126.55 323.0</b>	NORTHWAY RADIO <b>122.4</b>	<b>122.8</b> (CTAF) <b>0</b>	

**APPENDIX 8  
BRIEFING STRIPS (CONTINUED)**

PLANT CITY, FLORIDA

AL-5941 (FAA)

23334

WAAS CH <b>90422</b> <b>W10A</b>	APP CRS <b>099°</b>	Rwy ldg TDZE Apt Elev	<b>3750</b> <b>153</b> <b>153</b>
--	------------------------	-----------------------------	---

**RNAV (GPS) RWY 10**  
PLANT CITY (PCM)

RNP APCH.		MISSED APPROACH: Climb to 600 then climbing right turn to 2000 direct LAL VORTAC and hold.	
<p>▼ ▲</p> <p>Circling Rwy 28 NA at night. Baro-VNAV and VDP NA when using Lakeland altimeter setting. Rwy 10 helicopter visibility reduction below 3/4 SM NA. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C or above 54°C. When local altimeter setting not received, use Lakeland altimeter setting and increase all DA/MDA 20 feet.</p>			
AWOS-3 <b>120.025</b>	TAMPA APP CON <b>120.65 290.3</b>	CLNC DEL <b>121.725</b> (GCO)	UNICOM <b>123.05</b> (CTAF) <b>0</b>

## APPENDIX 9 BRIEFING STRIPS - COPTER

WASHINGTON ISLAND, WISCONSIN

AL-9765 (FAA)

24305

<b>APP CRS</b> <b>029°</b>	Rwy Ldg Sfc Elev Apt Elev	<b>N/A</b> <b>650</b> <b>N/A</b>	<b>COPTER RNAV (GPS) 029°</b> WASHINGTON ISLAND (2P2)		
RNP APCH. <b>▲ NA</b>			MISSED APPROACH: Climbing left turn to 2100 direct JILP and hold.		
AWOS-3PT <b>118.525</b>	MINNEAPOLIS CENTER <b>127.65</b>		CTAF <b>122.9</b>		

WASHINGTON, DC

AL-443 (FAA)

00000

LOC/DME I-DCA <b>109.9</b> Chan <b>36</b>	<b>APP CRS</b> <b>006°</b>	Rwy Ldg <b>6869</b> TDZE <b>14</b> Apt Elev <b>15</b>	<b>COPTER ILS or LOC/DME RWY 1</b> RONALD REAGAN WASHINGTON NTL (DCA)		
MISSED APPROACH: Climb to 420 then climbing left turn to 2200 on DCA VOR/DME R-325 to GTN NDB/INT/DCA 5.9 DME and hold.			ALSIF-2 		
D-ATIS <b>132.65</b>	POTOMAC APP CON <b>119.85 239.25 (W/S)</b> <b>124.2 360.8 (E)</b>		WASHINGTON TOWER <b>119.1 257.6</b>	GND CON <b>121.7 257.6</b>	

NEW YORK, NEW YORK

AL-289 (FAA)

00000

LOC/DME I-URD <b>110.5</b> Chan <b>42</b>	<b>APP CRS</b> <b>224°</b>	Rwy Ldg <b>7002</b> TDZE <b>12</b> Apt Elev <b>21</b>	<b>COPTER ILS or LOC RWY 22</b> LAGUARDIA (LGA)		
MISSED APPROACH: Climb to 3000 on LGA VOR/DME R-225 to PROUD/LGA VOR/DME 11 DME and hold.			ALSIF-1 		
D-ATIS <b>125.95</b>	NEW YORK APP CON <b>120.8 263.0</b>		LAGUARDIA TOWER <b>118.7 263.0</b>	GND CON <b>121.7 263.0</b>	

## APPENDIX 10 LEGEND – IAP PLANVIEW

### LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)

#### PLANVIEW SYMBOLS

##### ROUTES

Procedure Track  
 Feeder Route  
 Missed Approach  
 Visual Flight Path  
  
 Minimum Route  
 Altitude → 3100 NoPT to LOM  
 Mileage → (14.2)  
 045°

Procedure Turn  
 (Type degree and point of turn optional)  
 165°  
 345°

##### ALTITUDES

5500 Mandatory Altitude    3000 Recommended Altitude  
2500 Minimum Altitude    5000 Mandatory Block  
 4300 Maximum Altitude    3000 Altitude

##### HOLDING PATTERNS

Hold-in-lieu of Procedure Turn

Missed Approach

Arrival

Holding pattern with max. restricted airspeed:  
 (175K) applies to all altitudes.  
 (210K) applies to altitudes above 6000' to and including 14000'.  
 Arrival Holding Pattern altitude restrictions will be indicated when they deviate from the adjacent leg.

Timing or distance limits for Hold-in-lieu of Procedure Turn Holding Patterns will be shown.  
 DME fixes may be shown.

##### INDICATED AIRSPEED

<u>175K</u>	<u>120K</u>	<u>250K</u>	180K
Mandatory Airspeed	Minimum Airspeed	Maximum Airspeed	Recommended Airspeed

##### RADIO AIDS TO NAVIGATION

110.1 Underline indicates No Voice transmitted on this frequency

- VOR      VORTAC      TACAN
- VOR/DME      DME
- NDB      NDB/DME
- LOM (Compass locator at Outer Marker)
- Marker Beacon
- Marker beacons that are not specifically part of the procedure.
- Localizer Front Course (LOC/LDA)  
Right side shading- Front course
- Localizer Back Course  
Left side shading- Back Course
- SDF Course
- LOC/DME
- LOC/LDA/SDF Transmitter  
(shown when installation is offset from its normal position off the end of the runway.)

##### FIXES/ATC REPORTING REQUIREMENTS

- Reporting Point
- Waypoint
- MAP WP (Flyby)
- MAP WP (Flyover)
- Flyover Point
- Intersection  
GLGHR INT
- DME  
MYLES I-LVF 14.9 (Distance From Facility)

##### NAVAID

Primary NAVAID

LIMA  
114.5 LIM   
Chan 92

Secondary NAVAID

LOM  
AKRON  
362 AK

TACAN or DME NAVAID

SCOTT  
Chan 59  
SKE   
(112.2)

VHF Paired Frequency

##### Computer Navigation Fix (CNF) - No ATC Function

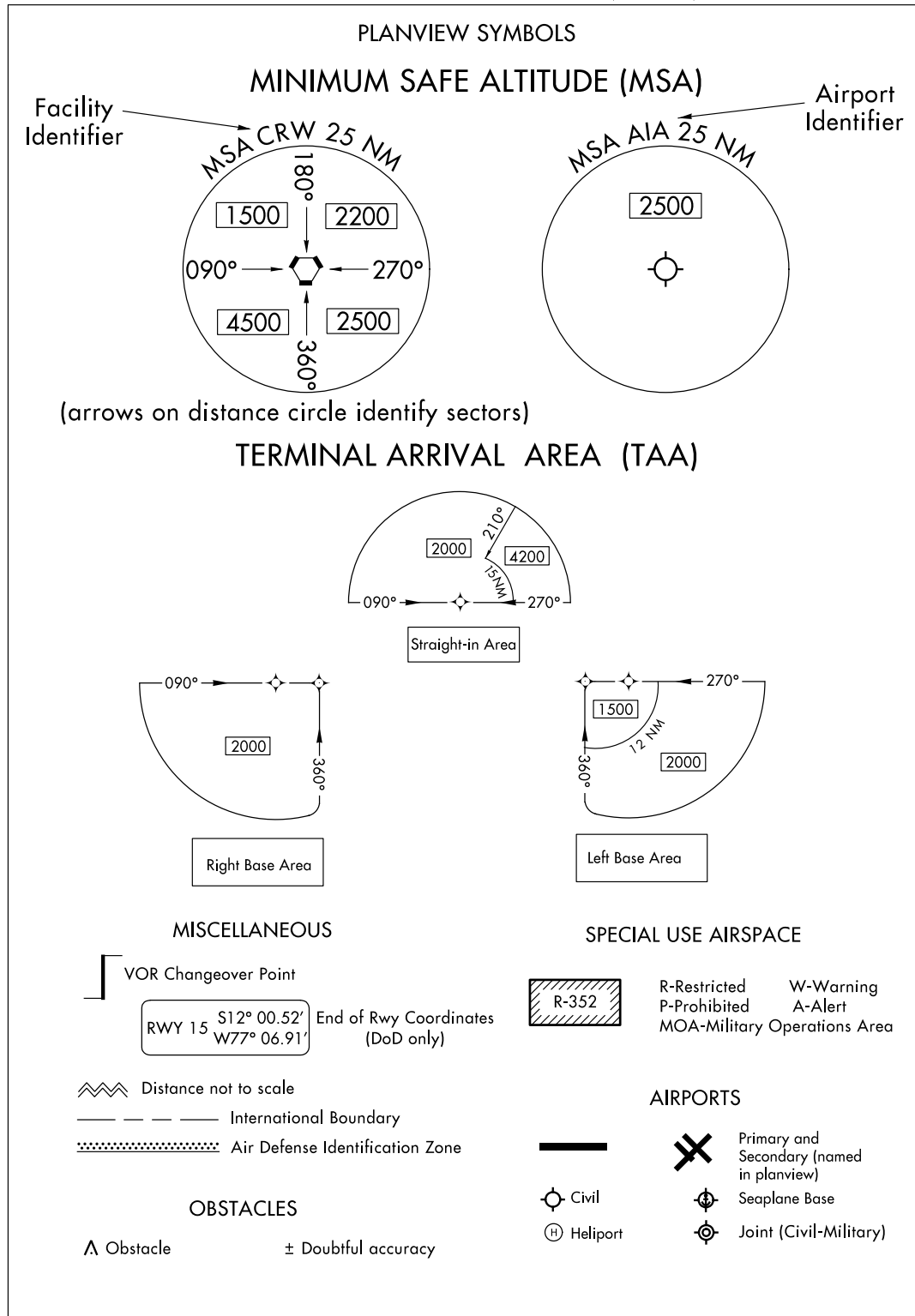
x (NAME) ("x" omitted when it is a MAP)

- R-198 → Radial line and value
- LR-198 → Lead Radial
- LB-198 → Lead Bearing

LEGEND 00000

**APPENDIX 10  
LEGEND – IAP PLANVIEW (CONTINUED)**

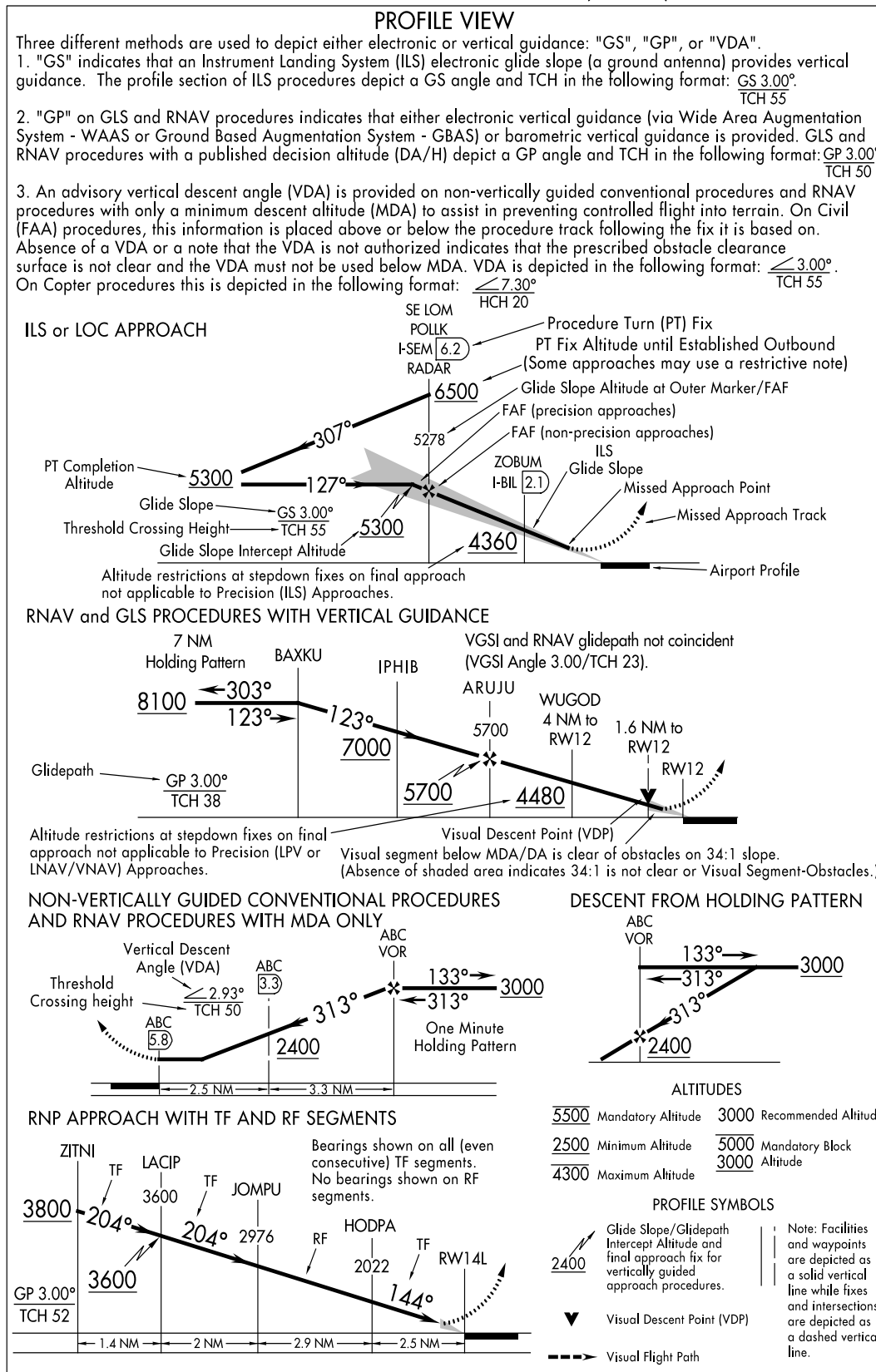
LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND 00000

## APPENDIX 11 LEGEND – IAP PROFILE

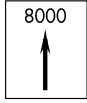

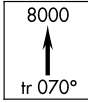
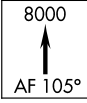

### LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)





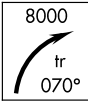


LEGEND 00000

## APPENDIX 12 MISSED APPROACH ICONS (VOLPE)

### COMMON INITIAL CLIMB INSTRUCTIONS




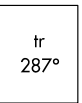
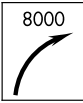
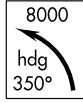
				
Climb to (altitude)	Climb direct	Climb to (altitude) on a course (crs), heading (hdg), or track (tr)	Climb to (altitude) on a bearing	Climb to (altitude) on a radial

				
Climbing right turn	Climbing right turn to (altitude)	Climbing right turn to (altitude) on a course (crs), heading (hdg), or track (tr)	Climbing right turn on a bearing	Climb right turn on a radial

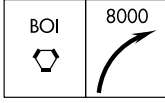
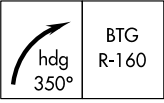

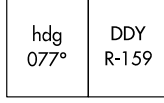
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### COMMON SECONDARY INSTRUCTIONS

					
...to intercept CPN R-346...	...then right turn direct...	...then left turn direct...	...on track 287°...	...then climbing right turn to 8000...	...then climbing left turn to 7000 on heading 350°...

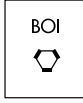
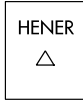



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### DUAL INSTRUCTIONS WITH THE WORD "AND"

			
...to BOI VORTAC and continue climbing right turn to 8000...	...then climbing right turn on heading 350 and BTG R-160...	...direct FANCO and right turn on track 270...	...on heading 077 and DDY R-159...

---

### MISSED APPROACH DESTINATIONS

				
NAVAID (Ident and symbol)	Enroute fix (Name and symbol)	Waypoint (Name and symbol)	IAP only INT (Name and INT)	DME fix (Name and DME)

## APPENDIX 13 MISSED APPROACH EXAMPLES

### EXAMPLES

<p>MISSED APPROACH: Climb to 3000 then right turn direct MADDS LOM and hold. EX from: 00119_IL4R</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">3000 ↑</td> <td style="text-align: center; vertical-align: middle;"></td> <td style="text-align: center; vertical-align: middle;">DE </td> </tr> </table>	3000 ↑		DE 	<p>MISSED APPROACH: Climb to 2500 direct LAN VORTAC and hold. EX from: 00224_VG24</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">2500 ↑</td> <td style="text-align: center; vertical-align: middle;">LAN </td> </tr> </table>	2500 ↑	LAN 
3000 ↑		DE 						
2500 ↑	LAN 							
<p>MISSED APPROACH: Climb to 500 then climbing left turn to 4600 via 201° bearing from GCR NDB to EGGER INT/I-CDV 11.1 DME and hold. EX from: 01195_ILD27</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">500 ↑</td> <td style="text-align: center; vertical-align: middle;">4600 GRC 201° </td> <td style="text-align: center; vertical-align: middle;">EGGER △</td> </tr> </table>	500 ↑	4600 GRC 201° 	EGGER △				
500 ↑	4600 GRC 201° 	EGGER △						
<p>MISSED APPROACH: Climb to 4000 via 005° bearing from VYI NDB then climb to 7000 direct VYI NDB and hold. EX from: 00762_ND2</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">4000 ↑ VYI 005°</td> <td style="text-align: center; vertical-align: middle;">7000 ↑</td> <td style="text-align: center; vertical-align: middle;">VYI </td> </tr> </table>	4000 ↑ VYI 005°	7000 ↑	VYI 				
4000 ↑ VYI 005°	7000 ↑	VYI 						
<p>MISSED APPROACH: Climbing right turn to 4000 via heading 275° and TAL VOR/DME R-258 to OCULA 12 DME and hold, continue climb-in-hold to 4000. EX from: 01227_VD7</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">4000  hdg 275°</td> <td style="text-align: center; vertical-align: middle;">TAL R-258</td> <td style="text-align: center; vertical-align: middle;">OCULA TAL 12</td> </tr> </table>	4000  hdg 275°	TAL R-258	OCULA TAL 12				
4000  hdg 275°	TAL R-258	OCULA TAL 12						
<p>MISSED APPROACH: Climb to 700 then climbing left turn to 3000 via heading 190° and PDN NDB bearing 232° to CEDZU/4.5 DME and hold, continue climb-in-hold to 3000. EX from: 01240_ND5</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">700 ↑</td> <td style="text-align: center; vertical-align: middle;">3000 hdg 190° </td> <td style="text-align: center; vertical-align: middle;">PDN 232°</td> <td style="text-align: center; vertical-align: middle;">CEDZU PDN 4.5</td> </tr> </table>	700 ↑	3000 hdg 190° 	PDN 232°	CEDZU PDN 4.5			
700 ↑	3000 hdg 190° 	PDN 232°	CEDZU PDN 4.5					
<p>MISSED APPROACH: Climb to 3000 direct PARNE and via track 304° to GICEY and via track 353° to SVM VORTAC and hold. EX from: 00119_R22R</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">3000 ↑</td> <td style="text-align: center; vertical-align: middle;">PARNE </td> <td style="text-align: center; vertical-align: middle;">tr 304°</td> <td style="text-align: center; vertical-align: middle;">GICEY </td> <td style="text-align: center; vertical-align: middle;">tr 353°</td> <td style="text-align: center; vertical-align: middle;">SVM </td> </tr> </table>	3000 ↑	PARNE 	tr 304°	GICEY 	tr 353°	SVM 	
3000 ↑	PARNE 	tr 304°	GICEY 	tr 353°	SVM 			
<p>MISSED APPROACH: Climb heading 158° and SEA VORTAC R-161 to cross TEBNE/SEA 2.4 DME/RADAR at or below 2000, then climb to 5000 via SEA VORTAC R-161 to MILLT INT/SEA 11 DME/RADAR and hold, continue climb-in-hold to 5000. EX from: 00582_IL16R</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">↑ hdg 158°</td> <td style="text-align: center; vertical-align: middle;">SEA R-161</td> <td style="text-align: center; vertical-align: middle;">TEBNE SEA 2.4 2000</td> <td style="text-align: center; vertical-align: middle;">5000 ↑ SEA R-161</td> <td style="text-align: center; vertical-align: middle;">MILLT INT</td> </tr> </table>	↑ hdg 158°	SEA R-161	TEBNE SEA 2.4 2000	5000 ↑ SEA R-161	MILLT INT		
↑ hdg 158°	SEA R-161	TEBNE SEA 2.4 2000	5000 ↑ SEA R-161	MILLT INT				
<p>MISSED APPROACH: Immediate climbing right turn via heading 280° and I-JDL west course (251°) to cross BARLO INT/I-JDL 8 DME at or above 3000. Continue climb to 5400 direct SSR VORTAC or EEF NDB and hold. EX from: 01191_LX8</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;"> hdg 280°</td> <td style="text-align: center; vertical-align: middle;">I-JDL W crs (251°)</td> <td style="text-align: center; vertical-align: middle;">BARLO △ 3000</td> <td style="text-align: center; vertical-align: middle;">5400 ↑</td> <td style="text-align: center; vertical-align: middle;">SSR </td> <td style="text-align: center; vertical-align: middle;">or EEF </td> </tr> </table>	 hdg 280°	I-JDL W crs (251°)	BARLO △ 3000	5400 ↑	SSR 	or EEF 	
 hdg 280°	I-JDL W crs (251°)	BARLO △ 3000	5400 ↑	SSR 	or EEF 			
<p>* MISSED APPROACH: Climb to 3700 on the RNAV missed approach route to PROOT and hold. EX from: 00262_RRY25L</p>	<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="text-align: center; vertical-align: middle;">3700 ↑ tr 254°</td> <td style="text-align: center; vertical-align: middle;">IRONY </td> <td style="text-align: center; vertical-align: middle;"></td> <td style="text-align: center; vertical-align: middle;">HUVED </td> <td style="text-align: center; vertical-align: middle;">tr 080°</td> <td style="text-align: center; vertical-align: middle;">PROOT </td> </tr> </table>	3700 ↑ tr 254°	IRONY 		HUVED 	tr 080°	PROOT 	
3700 ↑ tr 254°	IRONY 		HUVED 	tr 080°	PROOT 			

\* For RNP's that do not have the entire missed approach written out in the textual description, the entire missed approach track must still be shown in the icon boxes. Use the points as depicted on the procedure source document.

### NOTES

- After the words "then", "direct", "and" are stated, the following instructions belong in a new box.
- If space is an issue, you only have to show the first 4 missed approach icon boxes. (per specs)
- Do not put "RADAR" in the missed approach icon boxes unless the fix is a RADAR fix only.
- Do not chart frequencies.
- Never show the word "bearing" or the abbreviation "BRG" or "brg". Only show the navaid ident with the bearing value.
- Keep all the boxes the same height. Width can vary.
- DME boats belong with a DME fix only. Do not put DME boats with enroute fixes, or IAP only INTs.

## APPENDIX 14 LEGEND – AIRPORT SKETCH

24025  
**LEGEND**

INSTRUMENT APPROACH PROCEDURES (CHARTS)

### AIRPORT DIAGRAM/AIRPORT SKETCH

**Runways**

Hard Surface	Other Than Hard Surface	Stopways, Taxiways, Parking Areas	Metal Surface
Closed Runway	Closed Surface	Non-Movement	Under Construction
			Water Runway

ARRESTING GEAR: Specific arresting gear systems; e.g., BAK12, MA-1A etc., shown on airport diagrams, not applicable to Civil Pilots. Military Pilots refer to appropriate DOD publications.

uni-directional    
 bi-directional    
 Jet Barrier

ARRESTING SYSTEM (EMAS)

**REFERENCE FEATURES**

Displaced Threshold.....	
Hot Spot .....	
Runway Holding Position Markings.....	
Buildings.....	
Self-Serve Fuel ##.....	
Tanks.....	
Obstructions.....	
Airport Beacon #.....	
Runway Radar Reflectors.....	
Bridges.....	
Control Tower #.....	

Unlit    Lit

Wind Cone.....	
Landing Tee.....	
Tetrahedron.....	

# When Control Tower and Rotating Beacon are co-located, Beacon symbol will be used and further identified as TWR.

## See appropriate Chart Supplement for information.

Runway Weight Bearing Capacity or Pavement Classification Number (PCN)/Pavement Classification Rating (PCR) is shown as a codified expression. Refer to the appropriate Supplement/Directory for applicable codes e.g., RWY 14-32 PCR 560 R/B/W/T; S-75, D-185, 2D-325, 2D/2D2-1120

Helicopter Alighting Areas

Negative Symbols used to identify Copter Procedures landing point.....

NOTE:  
Landmark features depicted on Copter Approach insets and sketches are provided for visual reference only.

Runway TDZ elevation.....TDZE 123

Runway Slope.....  $\leftarrow$  0.3% Down.....0.8% UP  $\rightarrow$   
(shown when rounded runway slope is  $\geq$  0.3%)

NOTE:  
Runway Slope measured to midpoint on runways 8000 feet or longer.

U.S. Navy Optical Landing System (OLS) "OLS" location is shown because of its height of approximately 7 feet and proximity to edge of runway may create an obstruction for some types of aircraft.

Approach light symbols are shown in the Flight Information Handbook.

Airport diagram scales are variable.

True/magnetic North orientation may vary from diagram to diagram

Coordinate values are shown in 1 or 1/2 minute increments. They are further broken down into 6 second ticks, within each 1 minute increments.

Positional accuracy within  $\pm$  600 feet unless otherwise noted on the chart.

Runway length depicted is the physical length of the runway (end-to-end, including displaced thresholds if any) but excluding areas designated as stopways.

A symbol is shown to indicate runway declared distance information available, see appropriate Chart Supplement for distance information.

NOTE:  
All new and revised airport diagrams are shown referenced to the World Geodetic System (WGS) (noted on appropriate diagram), and may not be compatible with local coordinates published in DoD FLIP. (Foreign Only)

The airport sketch box includes the final approach course or final approach course extended.

SCOPE

Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

**LEGEND**

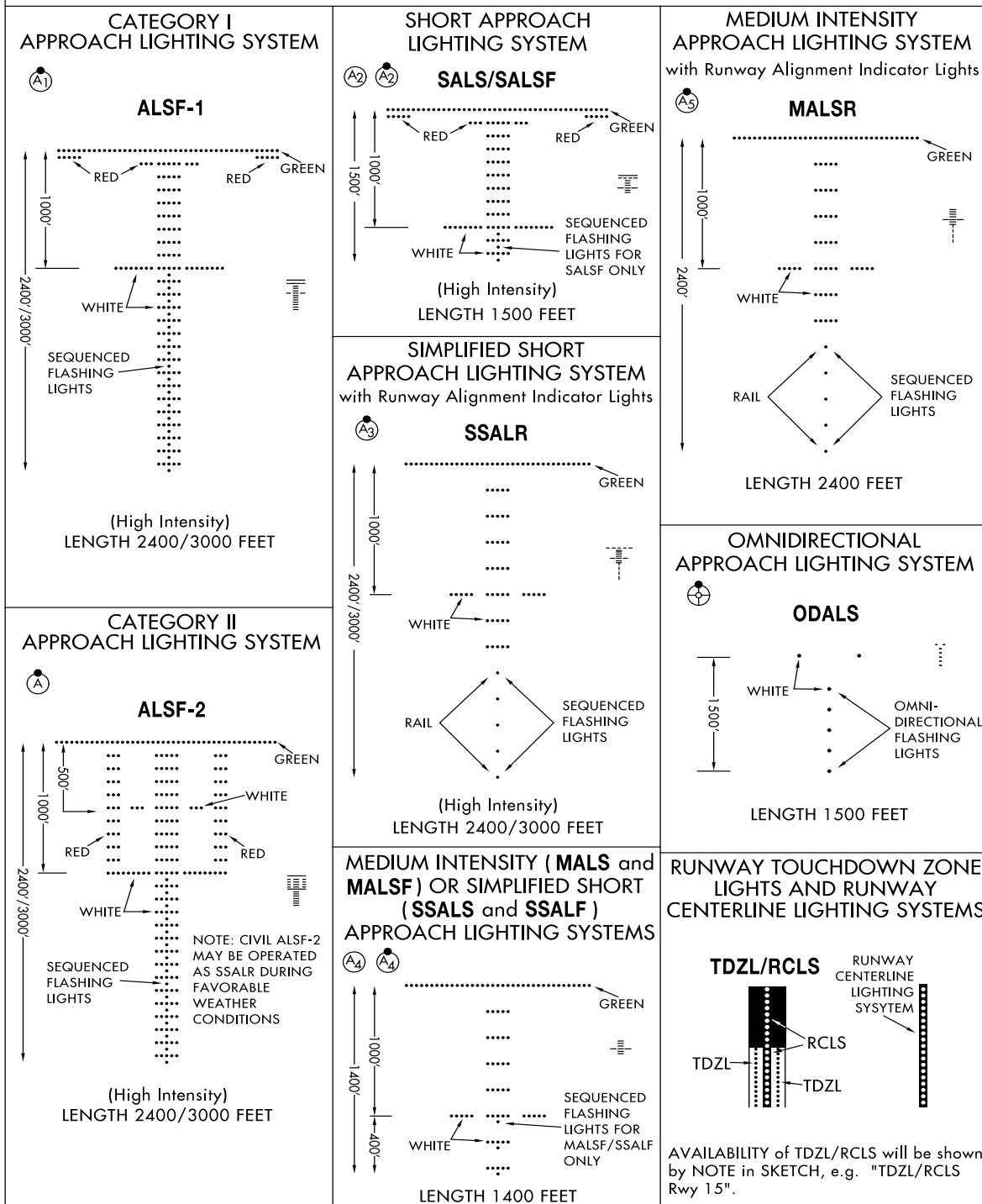
## APPENDIX 15 LEGEND – AIRPORT SKETCH LIGHTING SYSTEMS

**LEGEND** 22195

INSTRUMENT APPROACH PROCEDURES (CHARTS)  
APPROACH LIGHTING SYSTEM - UNITED STATES

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, e.g., (A<sub>2</sub>), (V), etc.

A dot "•" portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A<sub>1</sub>). Negative symbology, e.g., (A<sub>1</sub>), (V) indicates Pilot Controlled Lighting (PCL).



**LEGEND** 22195

APPENDIX 15

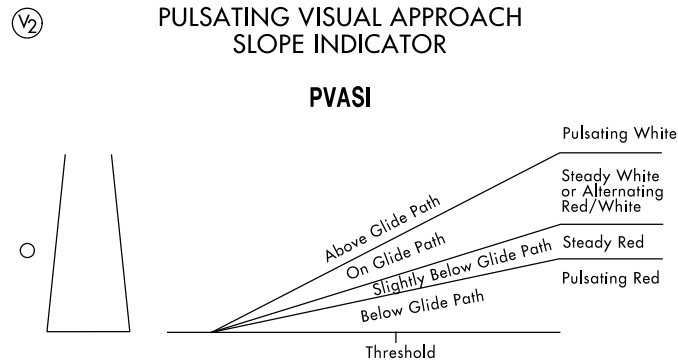
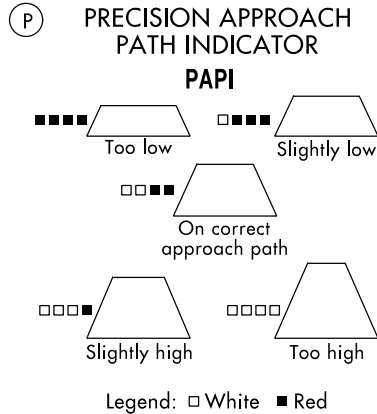
LEGEND – AIRPORT SKETCH LIGHTING SYSTEMS (CONTINUED)

LEGEND 00000

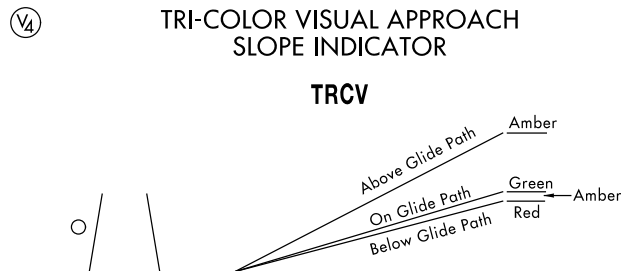
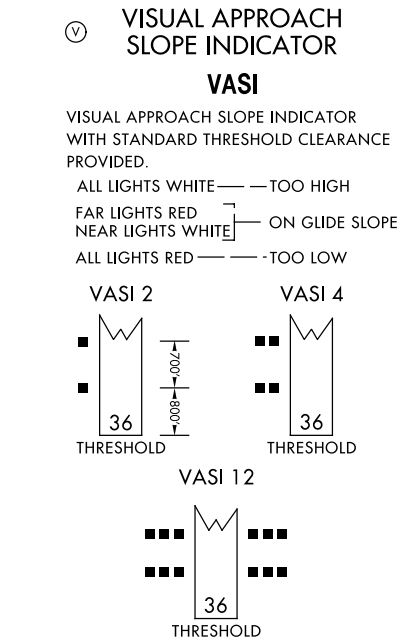
INSTRUMENT APPROACH PROCEDURES (CHARTS)  
APPROACH LIGHTING SYSTEM - UNITED STATES

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, (A2), (V) etc.

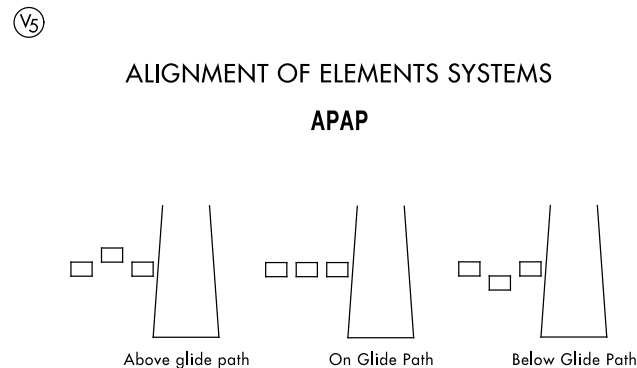
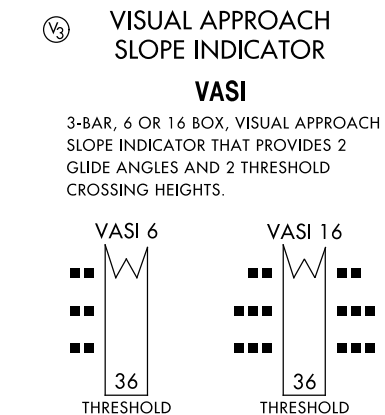
A dot "•" portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A1). Negative symbology, e.g., (A1), (V) indicates Pilot Controlled Lighting (PCL).



CAUTION: When viewing the pulsating visual approach slope indicators in the pulsating white or pulsating red sectors, it is possible to mistake this lighting aid for another aircraft or a ground vehicle. Pilots should exercise caution when using this type of system.



CAUTION: When the aircraft descends from green to red, the pilot may see a dark amber color during the transition from green to red.



Painted panels which may be lighted at night. To use the system the pilot positions the aircraft so the elements are in alignment.

LEGEND 00000

## APPENDIX 16 LANDING MINIMA

### TERMS/LANDING MINIMA DATA 00000

#### IFR LANDING MINIMA

The United States Standard for Terminal Instrument Procedures (TERPS) is the approved criteria for formulating instrument approach procedures. Landing minima are established for six aircraft approach categories (ABCDE and COPTER). In the absence of COPTER MINIMA, helicopters may use the CAT A minimums of other procedures.

#### LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.

CATEGORY	A	B	C	D
S-ILS 27	1352/24		200	(200-½)
S-LOC 27	1440/24	288	(300-½)	1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)

COPTER MINIMA ONLY

CATEGORY	COPTER			
H-176°	680-½	363	(400-½)	

No circling minimums are provided

**NOTE:** The **W** symbol indicates outages of the WAAS vertical guidance may occur daily at this location due to initial system limitations. WAAS NOTAMS for vertical outages are not provided for this approach. Use LNAV minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the **W** will be removed.

RNAV minimums are dependent on navigation equipment capability, as stated in the applicable AFM, AFMS, or other FAA approved document. See AIM paragraph 5-4-5, AC 90-105 and AC 90-107 for detailed requirements for each line of minima.

#### COLD TEMPERATURE AIRPORTS

**NOTE:** A **❄**-12°C symbol indicates a cold temperature altitude correction is required at this airport when reported temperature is at or below the published temperature. See the following Cold Temperature Error Table to make manual corrections. Advise ATC with altitude correction. Advising ATC with altitude corrections is not required in the final segment. See Aeronautical Information Manual (AIM), Chapter 7, for guidance and additional information. For a complete list, see the "Cold Temperature Airports" link under the Additional Resources heading at the bottom of the following page: [http://www.faa.gov/air\\_traffic/flight\\_info/aeronav/digital\\_products/dtpp/search/](http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/search/)

#### COLD TEMPERATURE ERROR TABLE

##### HEIGHT ABOVE AIRPORT IN FEET

	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
REPORTED TEMP °C	+10	10	10	10	20	20	20	20	20	30	40	60	80	90
0	20	20	30	30	40	40	50	50	60	90	120	170	230	280
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490
-20	30	50	60	70	90	100	120	130	140	210	280	420	570	710
-30	40	60	80	100	120	140	150	170	190	280	380	570	760	950
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1210
-50	60	90	120	150	180	210	240	270	300	450	590	890	1190	1500

#### AIRCRAFT APPROACH CATEGORIES

Aircraft approach category indicates a grouping of aircraft based on a speed of VREF, if specified, or if VREF not specified, 1.3 VSO at the maximum certificated landing weight. VREF, VSO, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. Helicopters are Category A aircraft. An aircraft shall fit in only one category. When necessary to operate the aircraft at an airspeed in excess of the maximum airspeed of its certified aircraft approach category, pilots should use the applicable higher category minima. For additional options and to ensure the aircraft remains within protected airspace, consult the AIM. See following category limits:

#### MANEUVERING TABLE

Approach Category	A	B	C	D	E
Speed (Knots)	0-90	91-120	121-140	141-165	Abv 165

### TERMS/LANDING MINIMA DATA 00000

## APPENDIX 16 LANDING MINIMA (CONTINUED)

### TERMS/LANDING MINIMA DATA 00000

#### CIRCLING APPROACH OBSTACLE PROTECTED AIRSPACE

The circling MDA provides vertical obstacle clearance during a circle-to-land maneuver. The circling MDA protected area extends from the threshold of each runway authorized for landing following a circle-to-land maneuver for a distance as shown in the table below. The resultant arcs are then connected tangentially to define the protected area.

#### CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

Circling MDA protected areas use the radius distance shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
1000 or less	1.3	1.7	2.7	3.6	4.5
1001-3000	1.3	1.8	2.8	3.7	4.6
3001-5000	1.3	1.8	2.9	3.8	4.8
5001-7000	1.3	1.9	3.0	4.0	5.0
7001-9000	1.4	2.0	3.2	4.2	5.3
9001 and above	1.4	2.1	3.3	4.4	5.5

#### Comparable Values of RVR and Visibility

The following table may be used for converting RVR to ground or flight visibility. For RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 4800 RVR, use 5000 RVR with the resultant visibility of 1 mile.

RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)	RVR (feet)	Visibility (SM)
1200	¼	2200	½	3200*	⅝	5000*	1
1600*	¼	2400*	½	3500	⅝	5500	1
1800	½	2600	½	4000*	¾	6000*	1¼
2000	½	3000	⅝	4500*	⅞		

\*Values repeated from 14 CFR 91.175 and shall be used for takeoff or landing minima.

If a visibility adjustment is required for a procedure with an RVR value, the RVR value should first be converted to visibility using this table. The visibility should then be increased by the adjustment value, and then may be converted back to the highest RVR value associated with that visibility. For example, if a procedure with 2000 RVR requires a ¼ mile adjustment, first convert 2000 RVR to ½ SM. Adding ¼ SM results in ¾ SM, which may then be converted to 3500 RVR.

### RADAR MINIMA

	RWY	GP/TCH/RPI	CAT	DA/ MDA-VIS	HAT HAA	CEIL-VIS	CAT	DA/ MDA-VIS	HAT HAA	CEIL-VIS
PAR	10	2.5°/42/1000	ABCDE	<b>195/16</b>	100	(100-¼)				
	28	2.5°/48/1068	ABCDE	<b>187/16</b>	100	(100-¼)				
ASR	10		ABC	<b>560/40</b>	463	(500-¾)	DE	<b>560/50</b>	463	(500-1)
	28		AB	<b>600/50</b>	513	(600-1)	CDE	<b>600/60</b>	513	(600-1¼)
CIR	10		AB	<b>560-1¼</b>	463	(500-1¼)	CDE	<b>560-1½</b>	463	(500-1½)
	28		AB	<b>600-1¼</b>	503	(600-1¼)	CDE	<b>600-1½</b>	503	(600-1½)

Visibility in Statute Miles ↙

↘ All minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.

Radar Minima:

1. Minima shown are the lowest permitted by established criteria. Pilots should consult applicable directives for their category of aircraft.
2. The circling MDA and weather minima to be used are those for the runway to which the final approach is flown- not the landing runway. In the above RADAR MINIMA example, a category C aircraft flying a radar approach to runway 10, circling to land on runway 28, must use an MDA of 560 feet with weather minima of 500-1½.

NOTE: Military RADAR MINIMA may be shown with communications symbology that indicates emergency frequency monitoring capability by the radar facility as follows:

- (E) VHF and UHF emergency frequencies monitored
- (V) VHF emergency frequency (121.5) monitored
- (U) UHF emergency frequency (243.0) monitored

Additionally, unmonitored frequencies which are available on request from the controlling agency may be annotated with an "x".

- ▲ Alternate Minimums not standard. Civil users refer to tabulation. USA/USN/USAF pilots refer to appropriate regulations.
- ▲ NA Alternate minimums are Not Authorized due to unmonitored facility or absence of weather reporting service.
- ▼ Airport is published in the Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) tabulation.

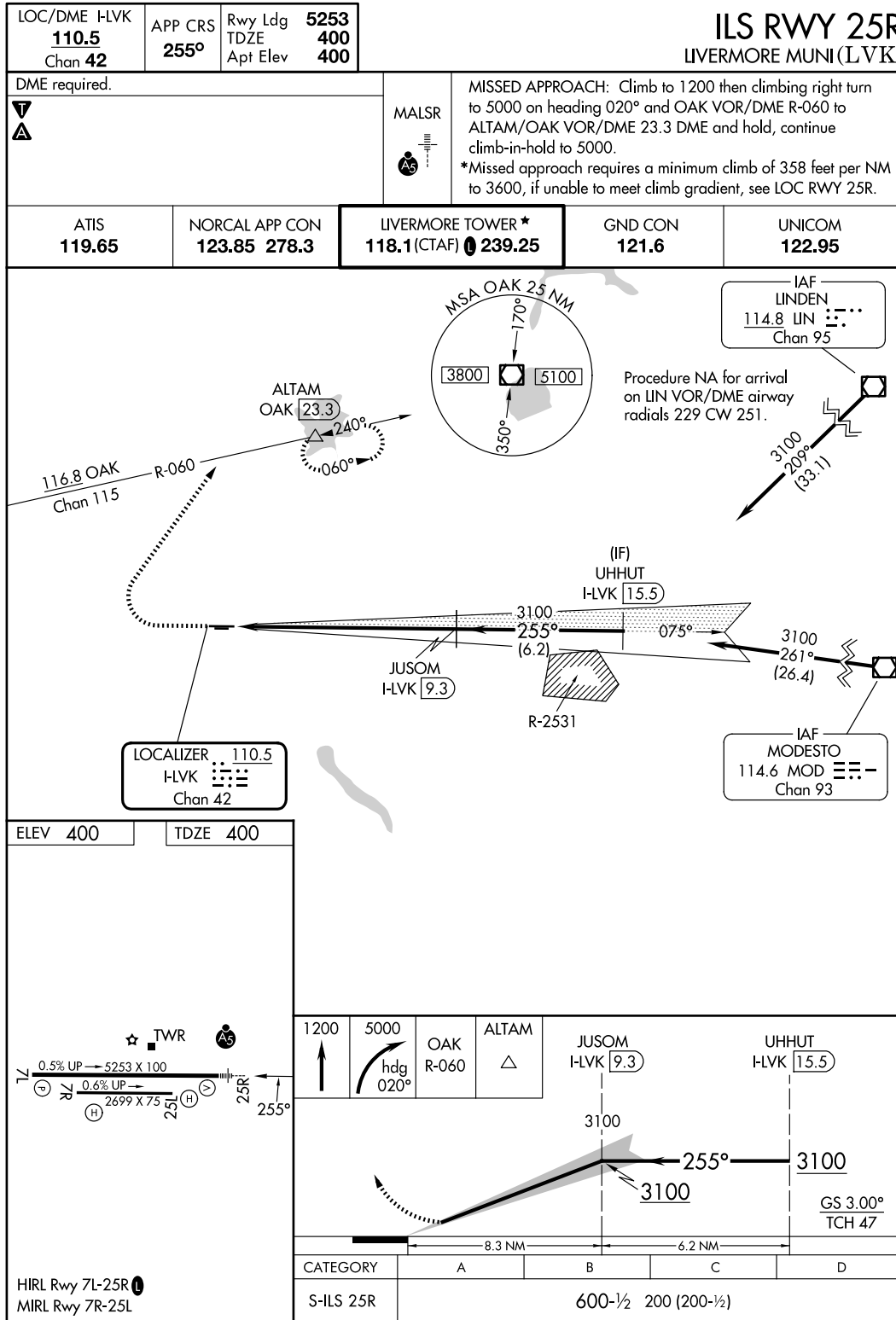
### TERMS/LANDING MINIMA DATA 00000

APPENDIX 17  
ILS

LIVERMORE, CALIFORNIA

AL-6075 (FAA)

24025



LIVERMORE, CALIFORNIA  
Amdt 9A 10SEP20

37°42'N-121°49'W

LIVERMORE MUNI (LVK)  
ILS RWY 25R

APPENDIX 18  
ILS OR LOC

BALTIMORE, MARYLAND

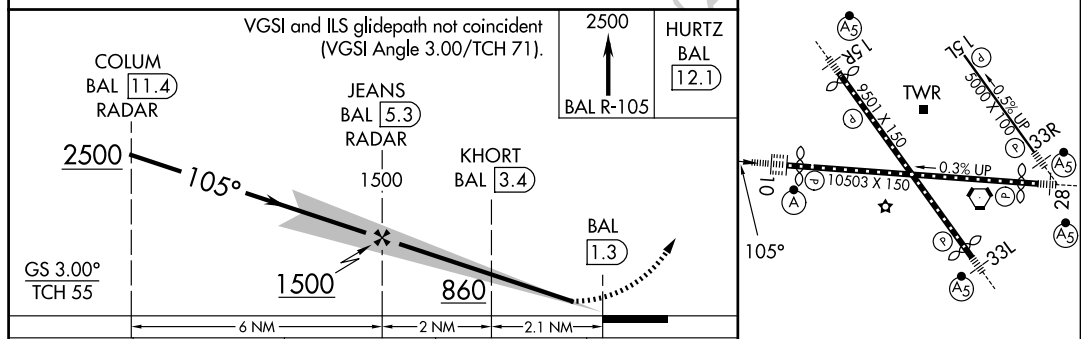
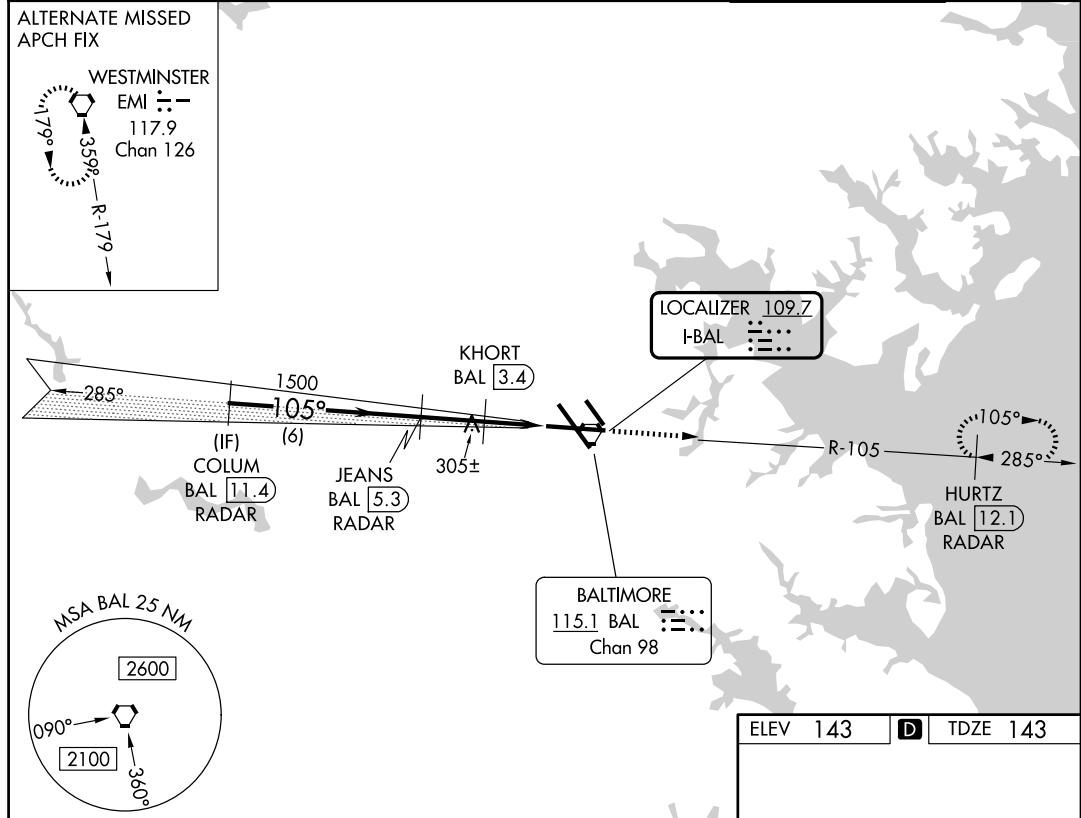
AL-804 (FAA)

22251

LOC I-BAL <b>109.7</b>	APP CRS <b>105°</b>	Rwy Ldg TDZE Apt Elev	<b>9953</b> <b>143</b> <b>143</b>	BALTIMORE/ WASHINGTON INTL THURGOOD MARSHALL (BWI)	<b>ILS or LOC RWY 10</b>
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RADAR required for procedure entry. DME required.	ALSIF-2 	MISSED APPROACH: Climb to 2500 on BAL VORTAC R-105 to HURTZ/BAL 12.1 DME/RADAR and hold.
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D-ATIS <b>115.1 127.8</b>	POTOMAC APP CON (020°-100°) <b>119.0 282.275</b> (101°-130°) <b>124.55 317.425</b>	(131°-180°) <b>119.7 290.475</b> (181°-019°) <b>128.7 307.9</b>	BALTIMORE TOWER <b>119.4 257.8</b>	GND CON <b>121.9</b>
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	ELEV 143	D	TDZE 143			
CATEGORY	A	B	C	D		
S-ILS 10	343/18 200 (200-½)					
S-LOC 10	580/24	437 (500-½)	580/40	437 (500-¾)		
CIRCLING	640-1	660-1	700-1½	860-2¼		
	497 (500-1)	517 (600-1)	557 (600-1½)	717 (800-2¼)		
TDZL/RCLS Rwy 10 and 33L REIL Rwy 15L and 33R HIRL all rwy						
FAF to MAP 4.1 NM						
	Knots	60	90	120	150	180
	Min:Sec	4:06	2:44	2:03	1:38	1:22

BALTIMORE, MARYLAND  
Amdt 21D 08SEP22

BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL (BWI)  
39°11'N-76°40'W

**ILS or LOC RWY 10**

## APPENDIX 19 ILS OR LOC/DME W/ALTERNATE MISSED APPROACH

ALLENTOWN, PENNSYLVANIA

AL-15 (FAA)

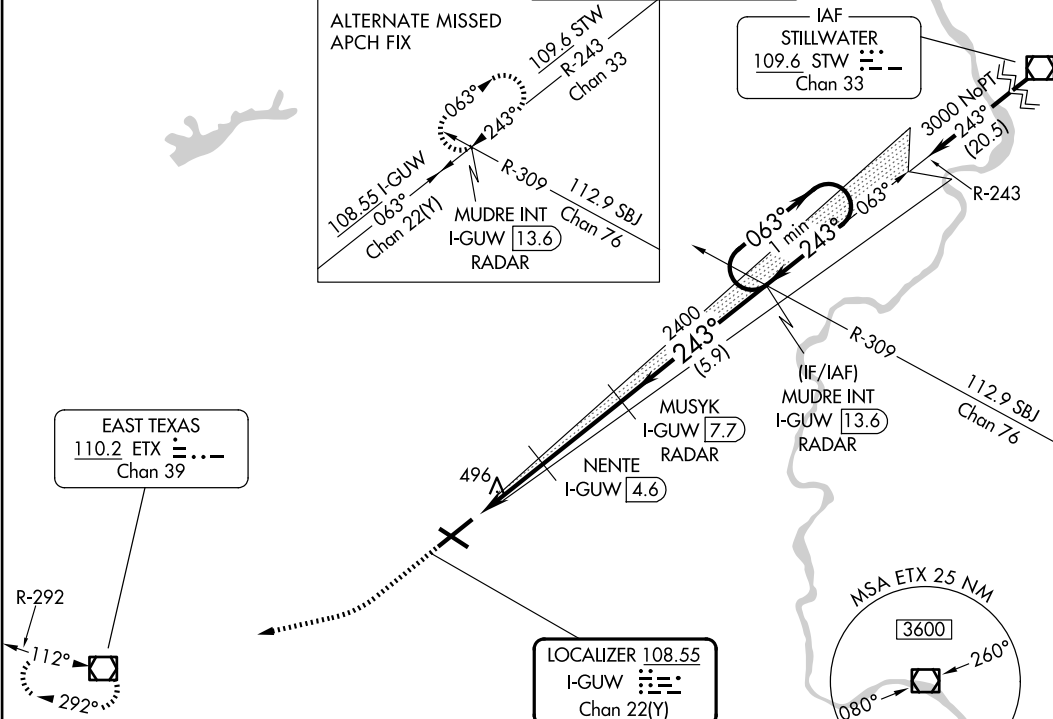
23278

LOC/DME I-GUW <b>108.55</b> Chan <b>22(Y)</b>	APP CRS <b>243°</b>	Rwy Ldg TDZE Apt Elev	<b>7089</b> <b>387</b> <b>394</b>
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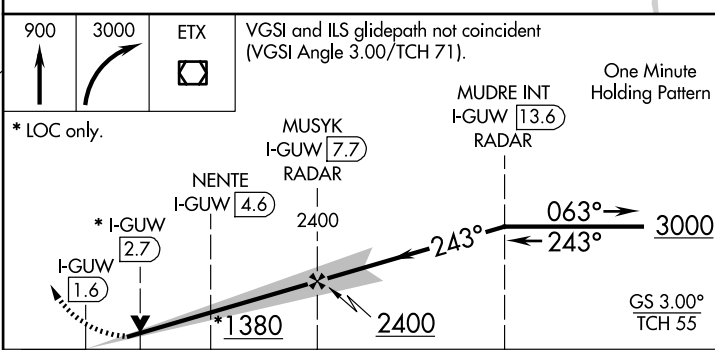
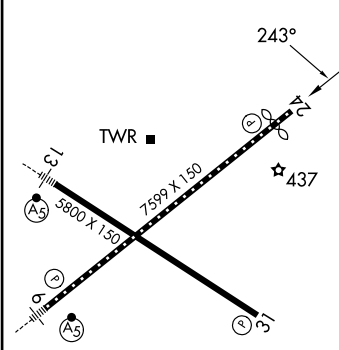
### ILS or LOC/DME RWY 24 LEHIGH VALLEY INTL (ABE)

**MISSED APPROACH:** Climb to 900 then climbing right turn to 3000 direct ETX VOR/DME and hold.

ATIS <b>126.975</b>	ALLENTOWN APP CON <b>119.65 124.45 351.8</b>	ALLENTOWN TOWER <b>120.5 257.95</b>	GND CON <b>121.9 257.95</b>
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ELEV 394	<b>D</b>	TDZE 387
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CATEGORY	A	B	C	D
S-ILS 24	587/40 200 (200-¾)			
S-LOC 24	800/55	413 (500-1)	800/60	413 (500-1¼)
CIRCLING	900-1	506 (600-1)	1180-2¼ 786 (800-2¼)	1600-3 1206 (1300-3)

REIL Rwy 24 and 31  
HIRL Rwy 6-24 and 13-31  
ALLENTOWN, PENNSYLVANIA  
Amdt 1B 24MAY18

40°39'N-75°26'W

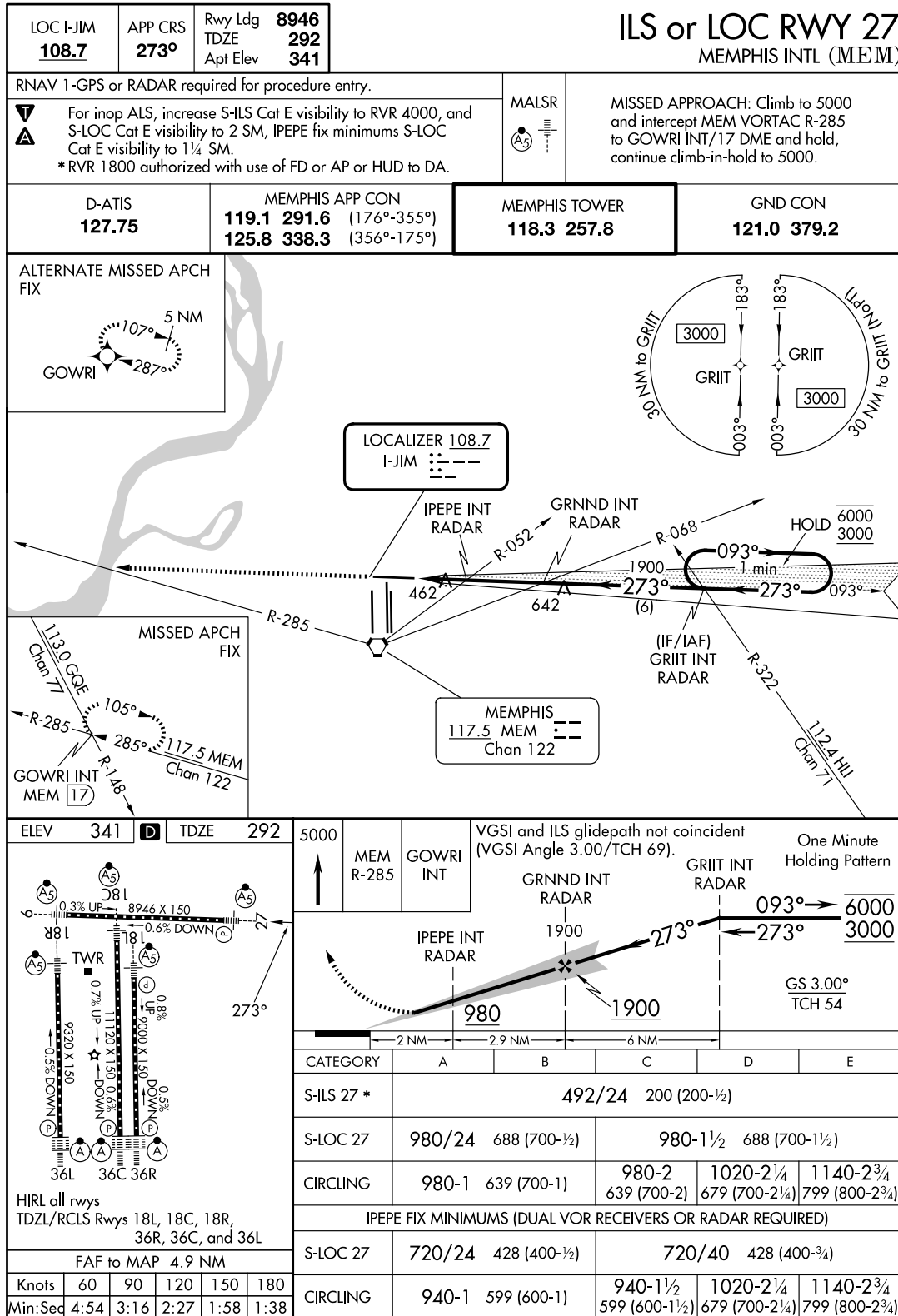
### LEHIGH VALLEY INTL (ABE) ILS or LOC/DME RWY 24

## APPENDIX 20 ILS WITH RNAV ELEMENTS

MEMPHIS, TENNESSEE

AL-253 (FAA)

24137



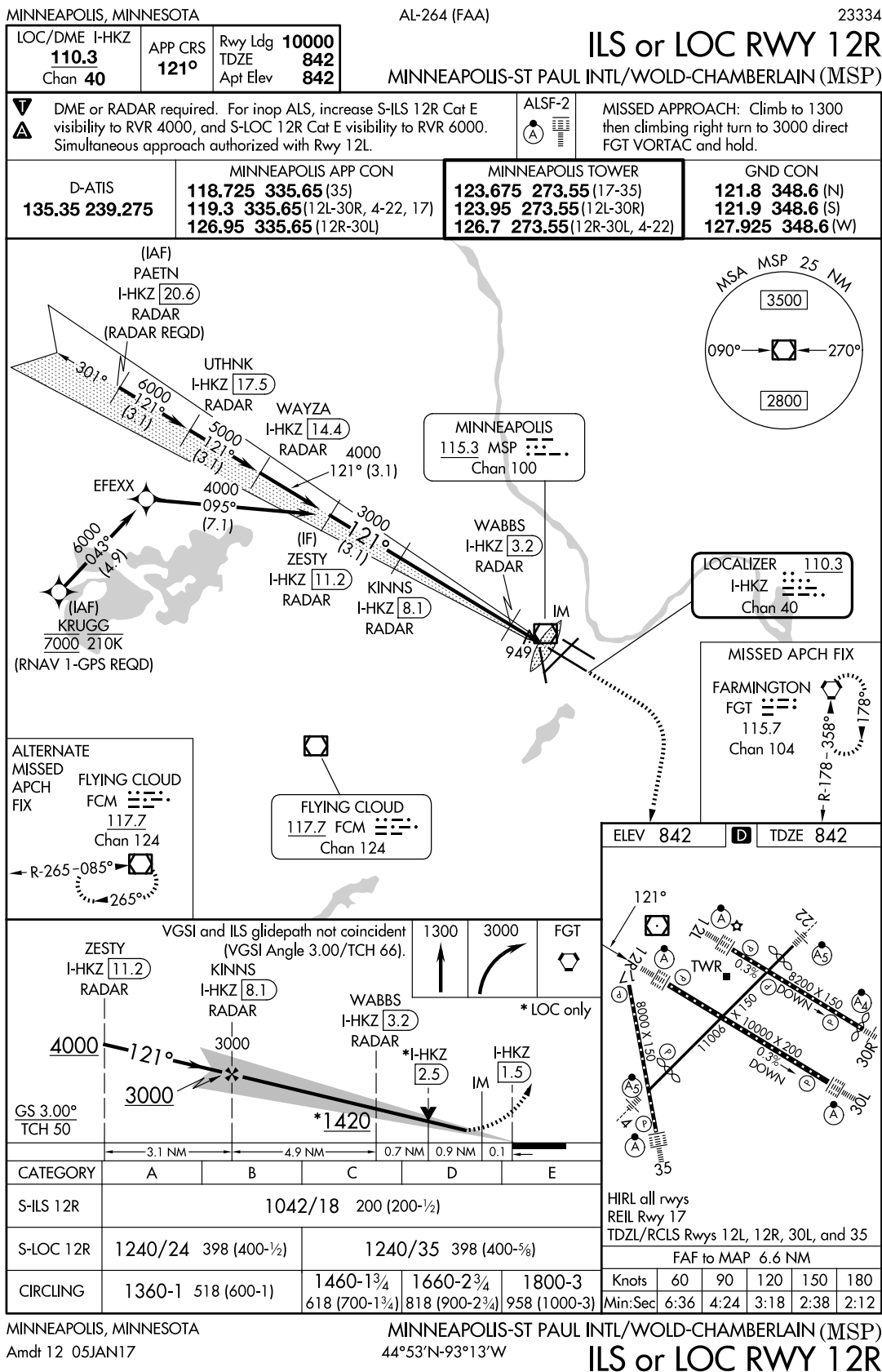
MEMPHIS, TENNESSEE

Amdt 4D 30NOV23 35°03'N-89°59'W

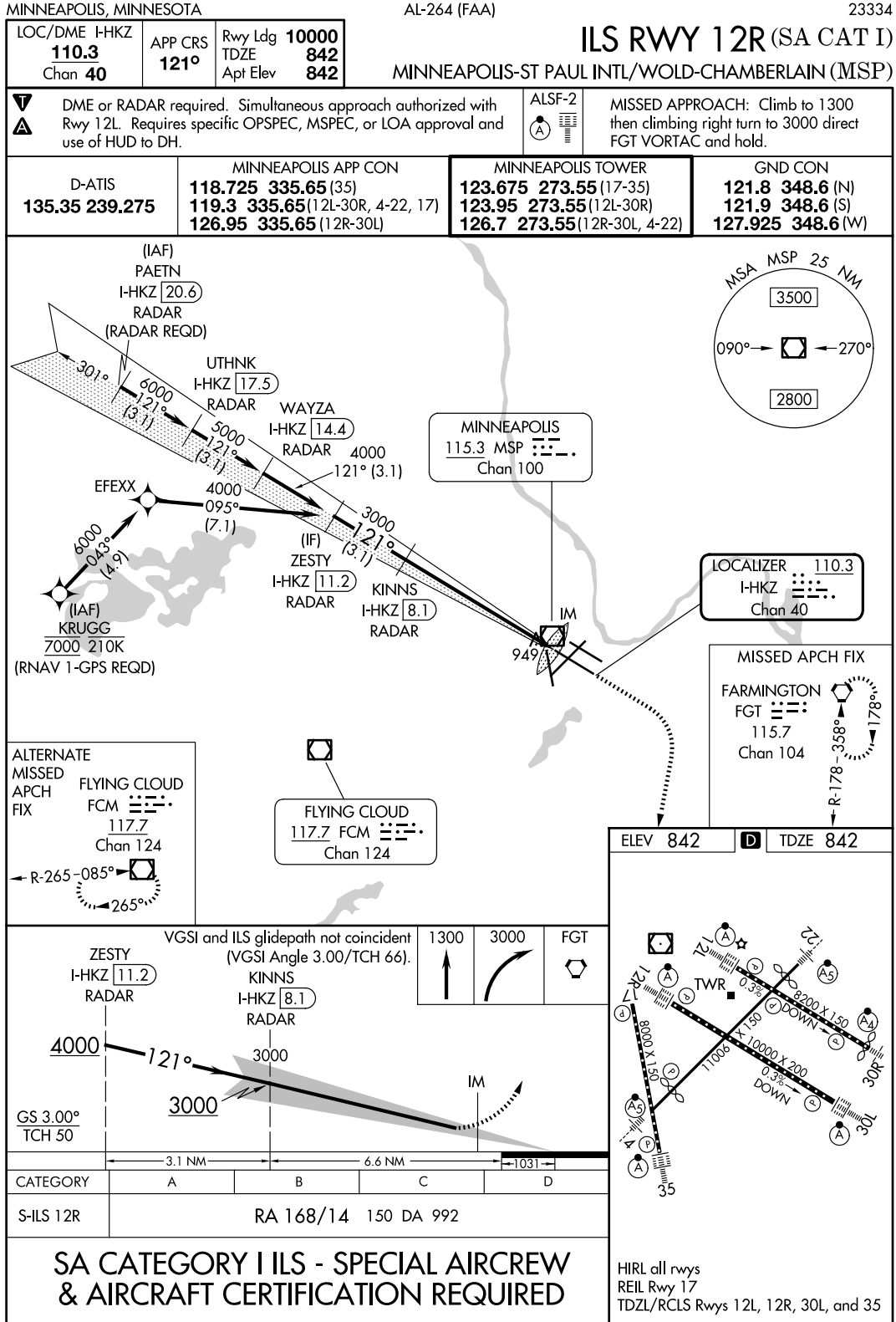
MEMPHIS INTL (MEM)

ILS or LOC RWY 27

## APPENDIX 21 ILS OR LOC – PARENT CHART 1



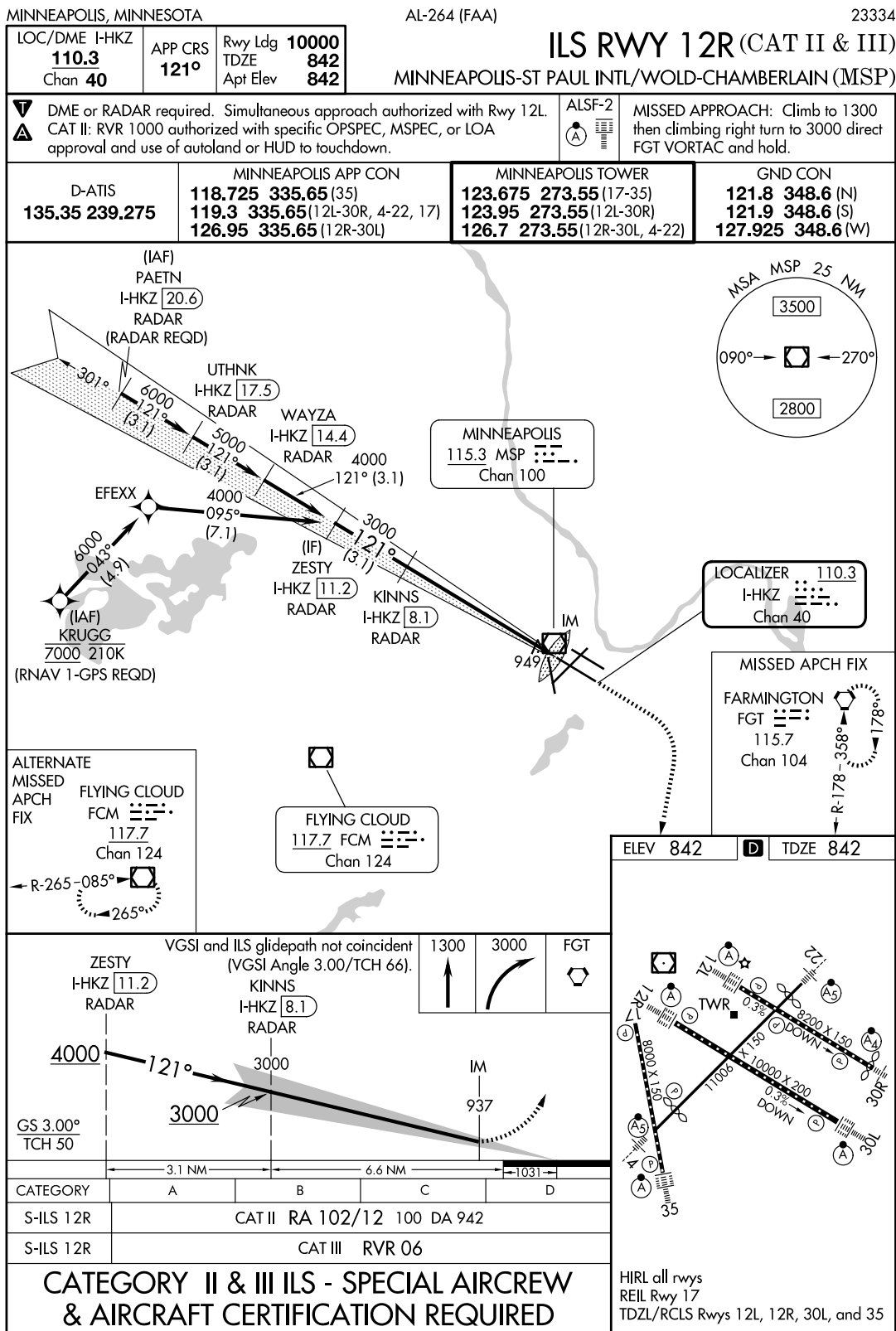
## APPENDIX 22 SA ILS APPROACH – CAT I



MINNEAPOLIS, MINNESOTA  
Amdt 12 05JAN17

MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)  
44°53'N-93°13'W  
**ILS RWY 12R (SA CAT I)**

### APPENDIX 23 ILS CAT II & III



## APPENDIX 24 ILS OR LOC – PARENT CHART 2

SEATTLE, WASHINGTON
AL-582 (FAA)
24137

LOC/DME I-TUC <b>111.7</b> Chan <b>54</b>	APP CRS <b>344°</b>	Rwy Ldg <b>9426 11901</b> TDZE <b>387 372</b> Apt Elev <b>432 432</b>	34C 34R <b>9426 11901</b> <b>387 372</b> <b>432 432</b>	<h3 style="margin: 0;">ILS or LOC RWY 34C</h3> <p style="margin: 0;">SEATTLE-TACOMA INTL (SEA)</p>
DME or RADAR required. From SONDR: RNAV 1-GPS required.		MALSR Rwy 34C/R		MISSED APPROACH: Climb on heading 345° and outbound on SEA VORTAC R-341 to cross COYLA/SEA 4.7 DME/RADAR at or above 3000 then climb to 5000 on SEA VORTAC R-341 to MGNUM/SEA 12.7 DME/RADAR and hold, continue climb-in-hold to 5000.
Inop table does not apply to ALS Rwy 34R. Simultaneous approach authorized with Rwy 34L.				
D-ATIS <b>118.0</b>	SEATTLE APP CON <b>133.65 273.45</b>	SEATTLE TOWER <b>119.9 239.3</b> (16L, 16C, 34C, 34R) <b>120.95 239.3</b> (16R, 34L)		GND CON <b>121.7</b>

Procedure NA for arrivals at CIDUG on V495 southbound.

VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 73).	hdg <b>345°</b>	SEA R-341	COYLA SEA <b>4.7</b> 3000	5000 SEA R-341	MGNUM SEA <b>12.7</b>
LORIE I-TUC <b>14.2</b> RADAR	ODBOE I-TUC <b>11.1</b> RADAR	TIFYS I-TUC <b>6.1</b> RADAR	RYBKA I-TUC <b>1.7</b> RADAR	UFMOP I-TUC <b>0.3</b> RADAR	*LOC only
5000 → 344° → 4000 → 2400 → *1000 → 0.5 → 0.5					
GS 3.00° TCH 56					
3.1 NM    5 NM    4.3 NM    0.9 NM    0.5    0.5					

CATEGORY	A	B	C	D
S-ILS 34C	604/24		217 (200-½)	
S-LOC 34C	760/24	373 (400-½)	760/35	373 (400-⅝)
SIDESTEP 34R	760/50	388 (400-1)	760/60	388 (400-1¼)
CIRCLING	1000-1	568 (600-1)	1000-1½	568 (600-2)

ELEV 432	TDZE 34C 387 TDZE 34R 372
TDZL/RCLS Rwy 16L, 16C, 16R and 34R FAF to MAP 5.7 NM	
Knots 60    90    120    150    180	Min:Sec 5:42    3:48    2:51    2:17    1:54

### APPENDIX 25 SA ILS APPROACH – CAT I & II

SEATTLE, WASHINGTON

AL-582 (FAA)

24137

LOC/DME I-TUC <b>111.7</b> Chan <b>54</b>	APP CRS <b>344°</b>	Rwy Ldg TDZE <b>387</b> Apt Elev <b>432</b>	<b>ILS RWY 34C (SA CAT I &amp; II)</b> SEATTLE-TACOMA INTL (SEA)
DME or RADAR required. From SONDR: RNAV 1-GPS required.			
Simultaneous approach authorized with Rwy 34L. SA CAT I: Requires specific OPSPEC, MSPEC, or LOA approval and use of HUD to DH. SA CAT II: Reduced lighting; Requires specific OPSPEC, MSPEC, or LOA approval and use of autoland or HUD to touchdown.		MALSR 	MISSED APPROACH: Climb on heading 345° and outbound on SEA VORTAC R-341 to cross COYLA/SEA 4.7 DME/RADAR at or above 3000 then climb to 5000 on SEA VORTAC R-341 to MGNUM/SEA 12.7 DME/RADAR and hold, continue climb-in-hold to 5000.
D-ATIS <b>118.0</b>	SEATTLE APP CON <b>133.65 273.45</b>	SEATTLE TOWER <b>119.9 239.3</b> (16L, 16C, 34C, 34R) <b>120.95 239.3</b> (16R, 34L)	GND CON <b>121.7</b>
Procedure NA for arrivals at CIDUG on V495 southbound.			
VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 73). LORIE I-TUC <b>14.2</b> RADAR ODBOE I-TUC <b>11.1</b> RADAR TIFYS I-TUC <b>6.1</b> RADAR		SEA R-341 COYLA SEA <b>4.7</b> 3000 5000 SEA R-341 MGNUM SEA <b>12.7</b>	ELEV <b>432</b> TDZE <b>387</b>
5000 — 344° — 4000 — 2400 GS 3.00° TCH 56 3.1 NM    5 NM    6.2 NM    900'			
CATEGORY    A    B    C    D	S-ILS 34C    SA CAT I    RA 231/14    150    DA 537		
S-ILS 34C    SA CAT II    RA 112/12    100    DA 487	<b>SA CATEGORY I &amp; II ILS - SPECIAL AIRCREW &amp; AIRCRAFT CERTIFICATION REQUIRED</b>		
HIRL all rwys TDZL/RCLS Rws 16L, 16C, 16R and 34R			

SEATTLE, WASHINGTON  
Amdt 3E 21JUN18

47°27'N-122°19'W

SEATTLE-TACOMA INTL (SEA)

**ILS RWY 34C (SA CAT I & II)**

### APPENDIX 26 ILS OR LOC - PARENT CHART 3

MINNEAPOLIS, MINNESOTA

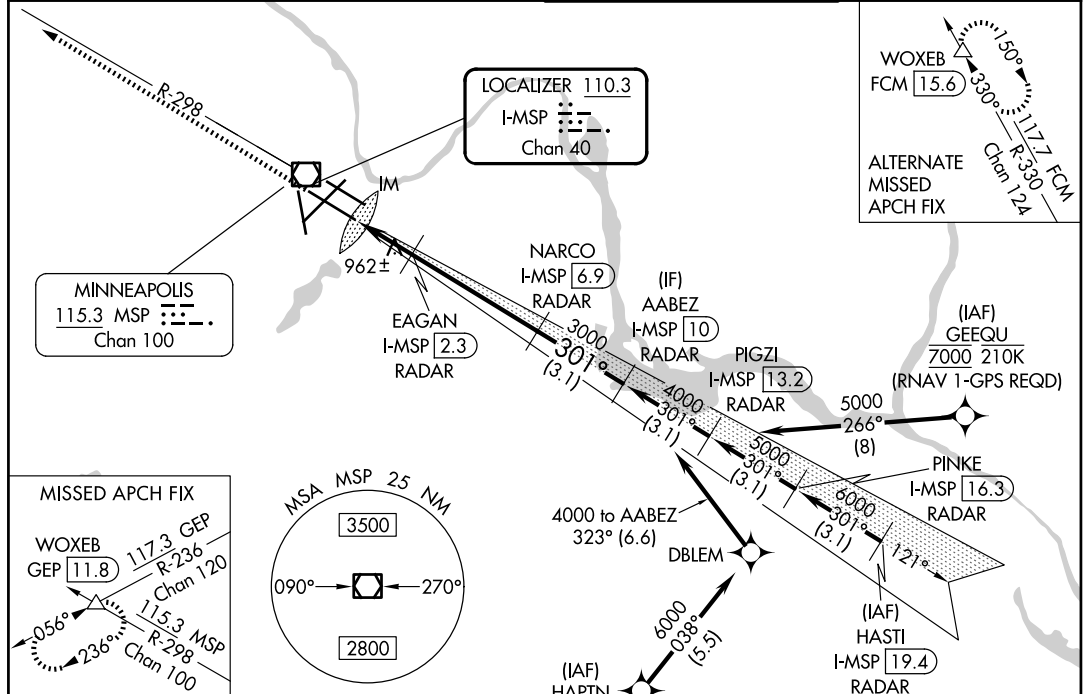
AL-264 (FAA)

23334

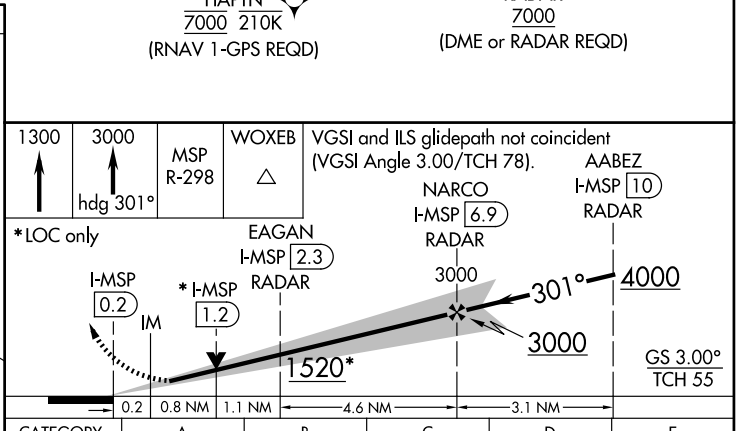
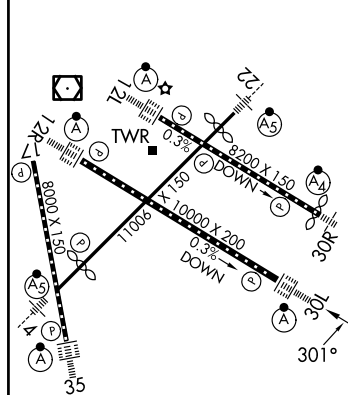
LOC/DME I-MSP <b>110.3</b> Chan 40	APP CRS <b>301°</b>	Rwy Ldg <b>10000</b> TDZE <b>823</b> Apt Elev <b>842</b>	<h2 style="margin: 0;">ILS or LOC RWY 30L</h2> MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)
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⚠ DME or RADAR required. Simultaneous approaches authorized with Rwy 30R and ILS V RWY 35 (CONVERGING). For inop ALS, increase S-ILS 30L Cat E visibility to RVR 4000, and increase S-LOC 30L Cat E visibility to RVR 6000.	ALSF-2 	MISSED APPROACH: Climb to 1300 then climb to 3000 on heading 301° and MSP VOR/DME R-298 to WOXEB INT/ GEP VORTAC 11.8 DME and hold.
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D-ATIS <b>135.35 239.275</b>	MINNEAPOLIS APP CON <b>118.725 335.65</b> (35) <b>119.3 335.65</b> (12L-30R, 4-22, 17) <b>126.95 335.65</b> (12R-30L)	MINNEAPOLIS TOWER <b>123.675 273.55</b> (17-35) <b>123.95 273.55</b> (12L-30R) <b>126.7 273.55</b> (12R-30L, 4-22)	GND CON <b>121.8 348.6</b> (N) <b>121.9 348.6</b> (S) <b>127.925 348.6</b> (W)
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ELEV 842 **D** TDZE 823



HIRL all rwys REIL Rwy 17 TDZL/RCLS Rwys 12L, 12R, 30L, and 35 FAF to MAP 6.7 NM	Knots 60 90 120 150 180 Min:Sec 6:42 4:28 3:21 2:41 2:14	CATEGORY S-ILS 30L S-LOC 30L CIRCLING	A 1220/24 397 (400-½) 1360-1 518 (600-1)	B 200 (200-½) 1460-1¾ 618 (700-1¾)	C 200 (200-½) 1660-2¾ 818 (900-2¾)	D 200 (200-½) 1800-3 958 (1000-3)	E 200 (200-½) 1800-3 958 (1000-3)
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MINNEAPOLIS, MINNESOTA

MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)

Amdt 47 05JAN17

44°53'N-93°13'W

## ILS or LOC RWY 30L

APPENDIX 27  
ILS CAT II

MINNEAPOLIS, MINNESOTA

AL-264 (FAA)

23334

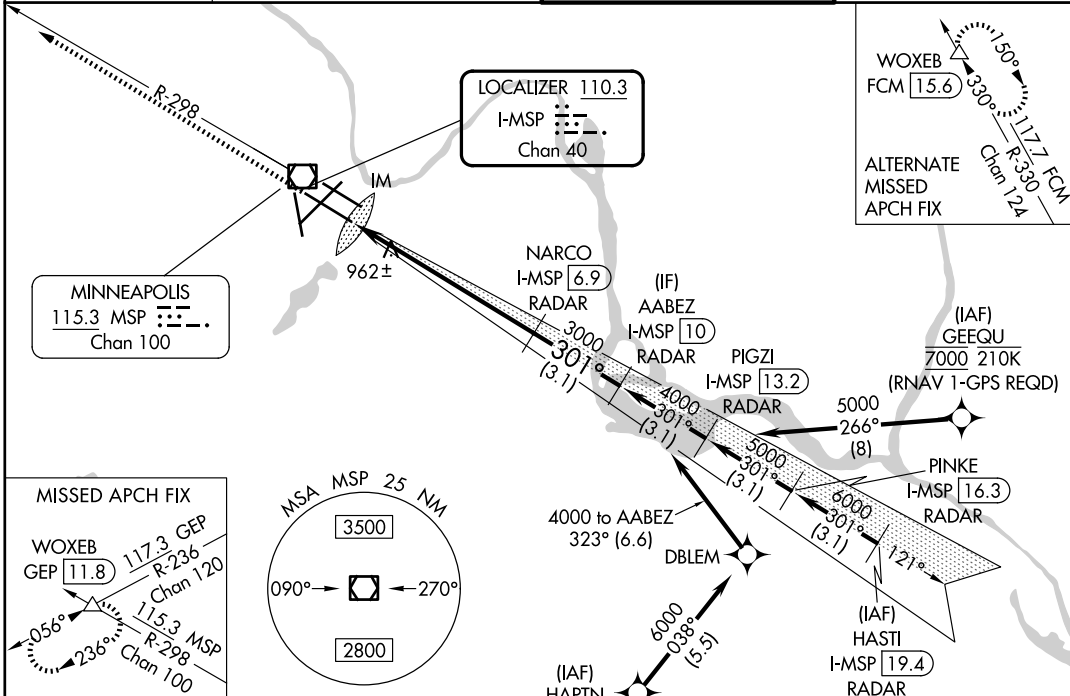
LOC/DME I-MSP <b>110.3</b> Chan <b>40</b>	APP CRS <b>301°</b>	Rwy Ldg <b>10000</b> TDZE <b>823</b> Apt Elev <b>842</b>
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ILS RWY 30L (CAT II)

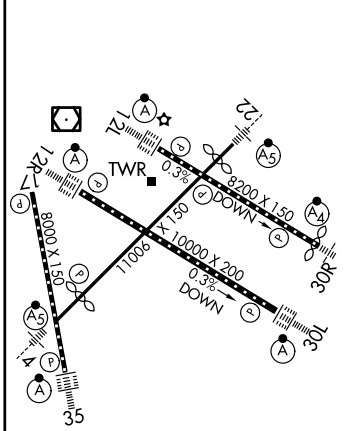
MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)

<p>▼ DME or RADAR required. Simultaneous approaches authorized with Rwy 30R and ILS V RWY 35 (CONVERGING). RVR 1000 authorized with specific OPSPEC, MSPEC, or LOA approval and use of autoland or HUD to touchdown.</p>	<p>ALSIF-2</p>	<p>MISSED APPROACH: Climb to 1300 then climb to 3000 on heading 301° and MSP VOR/DME R-298 to WOXEB INT/ GEP VORTAC 11.8 DME and hold.</p>
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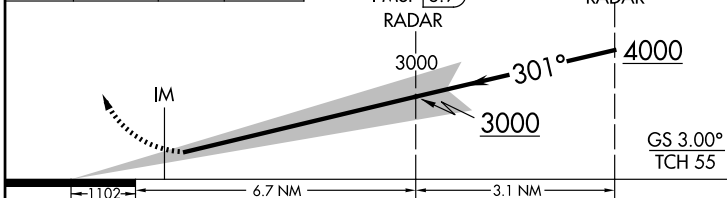
D-ATIS <b>135.35 239.275</b>	MINNEAPOLIS APP CON <b>118.725 335.65</b> (35) <b>119.3 335.65</b> (12L-30R, 4-22, 17) <b>126.95 335.65</b> (12R-30L)	MINNEAPOLIS TOWER <b>123.675 273.55</b> (17-35) <b>123.95 273.55</b> (12L-30R) <b>126.7 273.55</b> (12R-30L, 4-22)	GND CON <b>121.8 348.6</b> (N) <b>121.9 348.6</b> (S) <b>127.925 348.6</b> (W)
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ELEV 842	<b>D</b>	TDZE 823
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1300	3000	MSP R-298	WOXEB	VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 78).
↑	↑	hdg 301°	△	NARCO I-MSP 6.9 RADAR
				AABEZ I-MSP 10 RADAR



CATEGORY	A	B	C	D
S-ILS 30L	RA NA/12 100 DA 923			

CATEGORY II ILS - SPECIAL AIRCREW & AIRCRAFT CERTIFICATION REQUIRED

HIRL all rwys  
REIL Rwy 17  
TDZL/RCLS Rwy 12L, 12R, 30L, and 35

MINNEAPOLIS, MINNESOTA  
Amdt 47 05JAN17

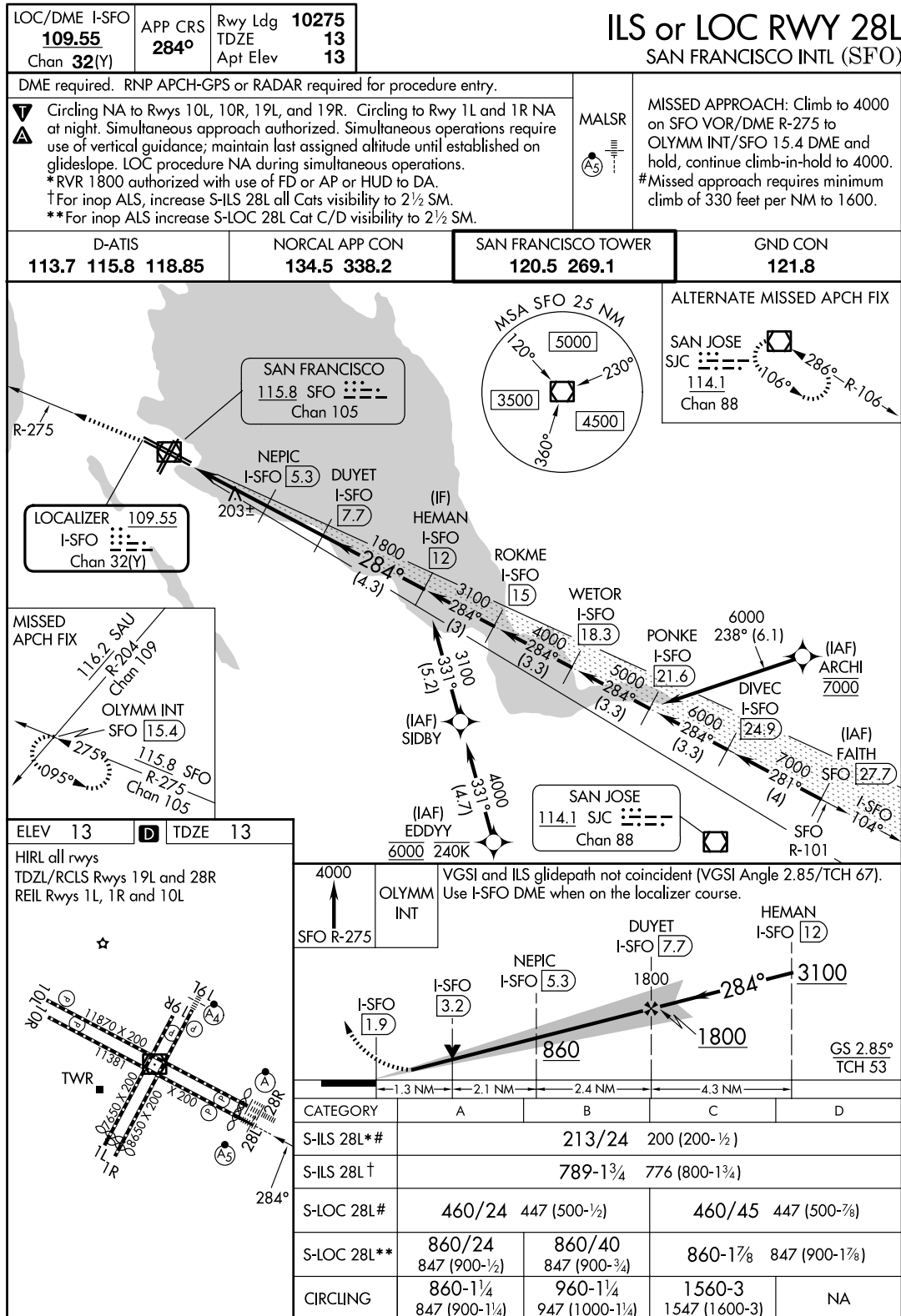
MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)  
44°53'N-93°13'W  
ILS RWY 30L (CAT II)

## APPENDIX 28 ILS OR LOC - PARENT CHART 4

SAN FRANCISCO, CALIFORNIA

AL-375 (FAA)

23334



SAN FRANCISCO, CALIFORNIA

Amdt 27C 11AUG22

37°37'N-122°23'W

SAN FRANCISCO INTL (SFO)  
**ILS or LOC RWY 28L**

## APPENDIX 29 SA ILS APPROACH – CAT II

SAN FRANCISCO, CALIFORNIA

AL-375 (FAA)

23334

LOC/DME I-SFO <b>109.55</b> Chan <b>32(Y)</b>	APP CRS <b>284°</b>	Rwy Ldg <b>10275</b> TDZE <b>13</b> Apt Elev <b>13</b>	<h3 style="margin: 0;">ILS RWY 28L (SA CAT II)</h3> SAN FRANCISCO INTL (SFO)
DME required. RNP APCH-GPS or RADAR required for procedure entry.			MISSED APPROACH: Climb to 4000 on SFO VOR/DME R-275 to OLYMM INT/SFO 15.4 DME and hold, continue climb-in-hold to 4000. *Missed approach requires minimum climb of 330 feet per NM to 1600.
Requires specific OPSPEC, MSPEC, or LOA approval.		MALSR	
D-ATIS <b>113.7 115.8 118.85</b>	NORCAL APP CON <b>134.5 338.2</b>	SAN FRANCISCO TOWER <b>120.5 269.1</b>	GND CON <b>121.8</b>
ELEV 13 TDZE 13 HIRL all rwys TDZL/RCLS Rwy 19L and 28R REIL Rwy 1L, 1R and 10L		SAN JOSE 114.1 SJIC Chan 88	
		CATEGORY A B C D S-ILS 28L* RA 113/12 100 DA 113	
<h3 style="margin: 0;">SA CAT II ILS - SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED</h3>			

SAN FRANCISCO, CALIFORNIA

Amdt 27C 11AUG22

37°37'N-122°23'W

SAN FRANCISCO INTL (SFO)

ILS RWY 28L (SA CAT II)

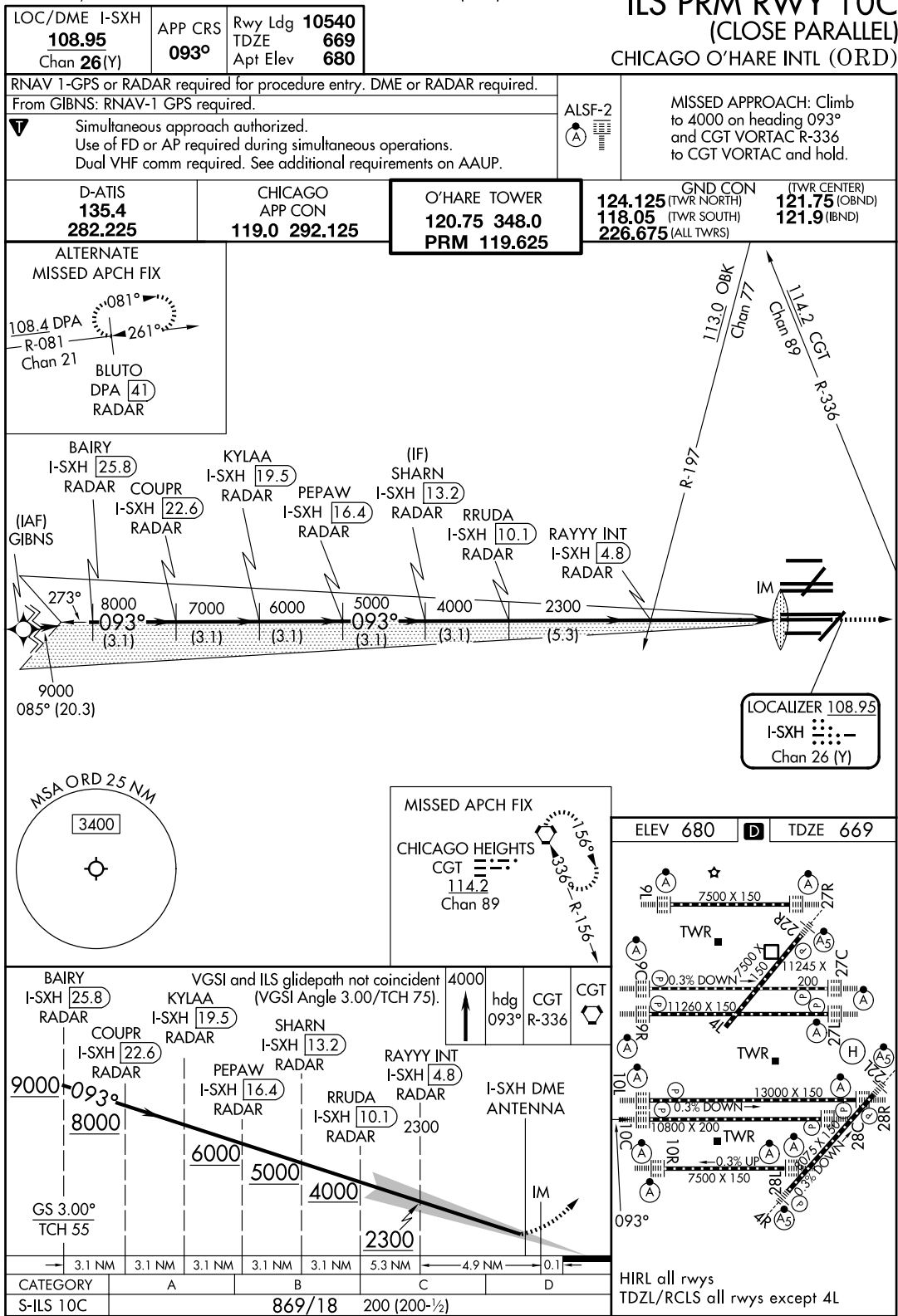
### APPENDIX 30 ILS PRM (CLOSE PARALLEL)

24193

CHICAGO, ILLINOIS

AL-166 (FAA)

## ILS PRM RWY 10C (CLOSE PARALLEL) CHICAGO O'HARE INTL (ORD)



CHICAGO, ILLINOIS  
Amdt 1A 03JAN19

41°59'N-87°54'W

CHICAGO O'HARE INTL (ORD)  
**ILS PRM RWY 10C (CLOSE PARALLEL)**

## APPENDIX 31 PRM APPROACH AAUP

18032

PRM APPROACH AAUP

AL-166 (FAA)

CHICAGO O'HARE INTL (ORD)

CHICAGO, ILLINOIS

### ATTENTION ALL USERS PAGE (AAUP)

**Pilots who are unable to participate** will be afforded appropriate arrival services as operational conditions permit and must notify the controlling ARTCC as soon as practical but at least 120 miles from destination.

ILS PRM Rwy 10C, 28C  
 ILS PRM Rwy 10C (SA CAT I), 28C (SA CAT I)  
 ILS PRM Rwy 10C (CAT II-III), 28C (CAT II-III)  
 ILS PRM Y 10R  
 RNAV (GPS) PRM Rwy 10C, 28C  
 RNAV (GPS) PRM Y Rwy 10R, 28L

#### **General**

Review procedure for executing a climbing and descending PRM breakout

Breakout phraseology: "TRAFFIC ALERT (call sign) TURN (left/right) IMMEDIATELY HEADING (degrees) CLIMB/DESCEND AND MAINTAIN (altitude)."

All breakouts: Hand flown, initiate immediately.

Descending on the glideslope/glidepath ensures compliance with any charted crossing restrictions.

Dual VHF Comm.: When assigned or planning a specific PRM approach, tune a second receiver to the PRM monitor frequency or, if silent, another active frequency (i.e. ATIS), set the volume, retune the PRM frequency if necessary, then deselect the audio. When directed by ATC, immediately switch to the tower frequency and select the second receiver audio to ON.

If later assigned the same runway, non-PRM approach, consider it briefed provided the same minimums are utilized. PRM related chart notes and PRM frequency no longer apply.

TCAS during breakout: Follow TCAS climb/descend if it differs from ATC, while executing the breakout turn.

#### **Runway Specific**

##### **RWY 10R**

- Final approach offset by 2.5 degrees.
- If later assigned a Visual Approach to RWY 10R, expect clearance via the ILS or RNAV (GPS) PRM Y final approach course.

##### **RWY 28L**

- RWY 28L PRM final approach course offset by 2.5 degrees.

PRM APPROACH AAUP

41°59'N-87°54'W

CHICAGO, ILLINOIS

01FEB18

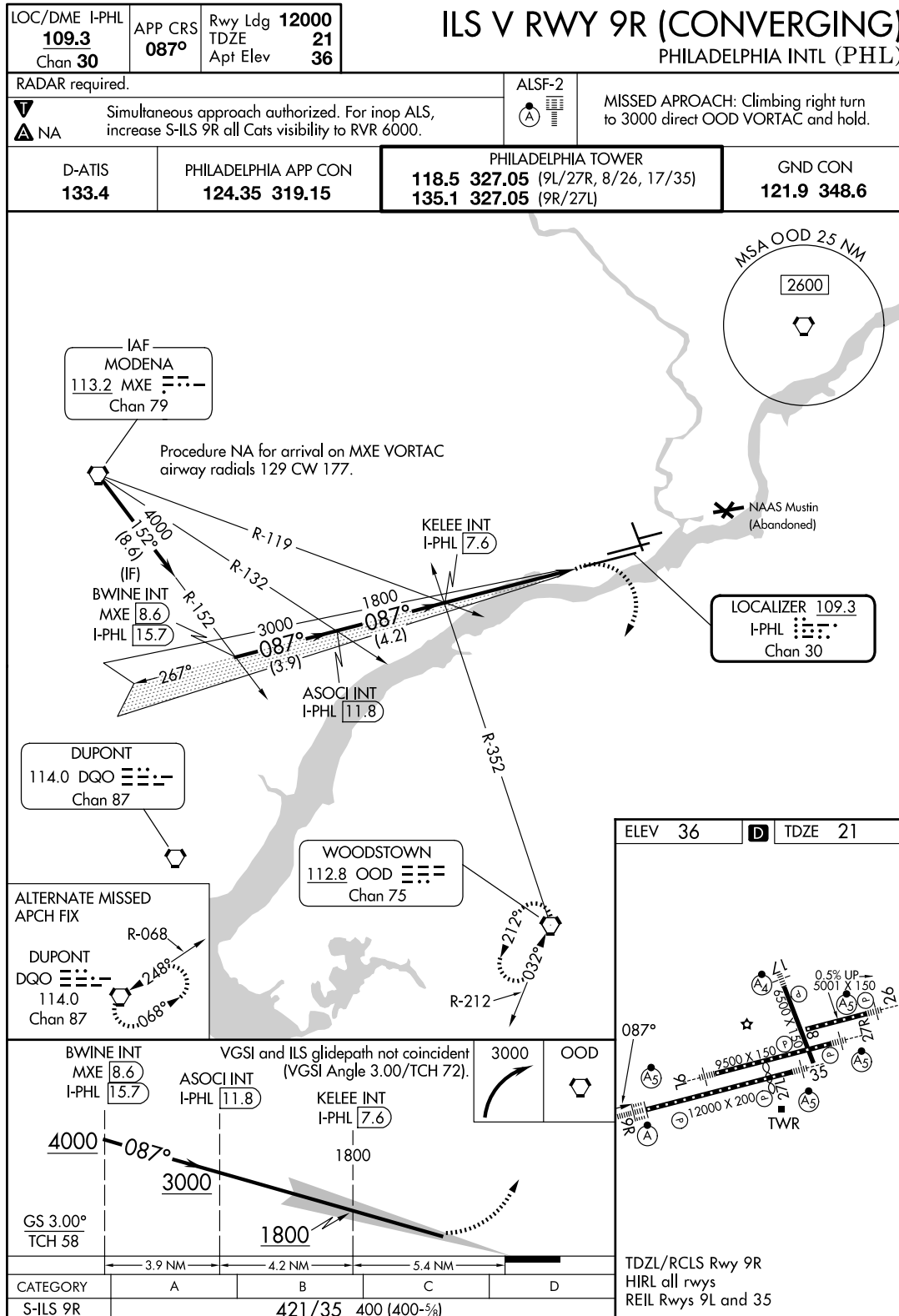
CHICAGO O'HARE INTL (ORD)

## APPENDIX 32 ILS V (CONVERGING)

PHILADELPHIA, PENNSYLVANIA

AL-320 (FAA)

23334



PHILADELPHIA, PENNSYLVANIA

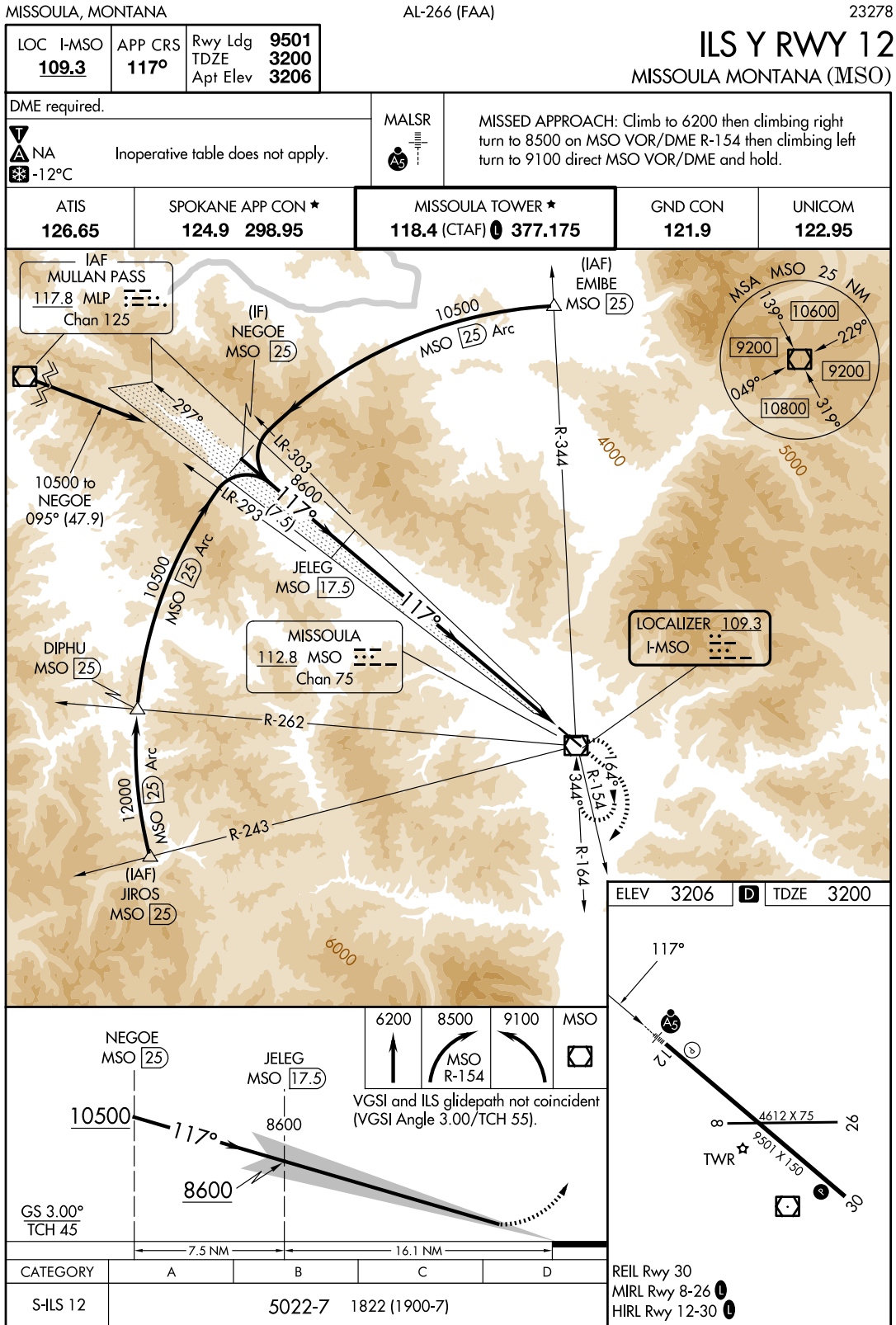
39°52'N-75°14'W

PHILADELPHIA INTL (PHL)

Amdt 6 19JUL18

## ILS V RWY 9R (CONVERGING)

## APPENDIX 33 ILS WITH RELIEF (CONTOURS) DEPICTED



MISSOULA, MONTANA  
Orig-C 24MAY18

46°55'N-114°05'W

MISSOULA MONTANA (MSO)  
**ILS Y RWY 12**

## APPENDIX 34 TEARDROP TURN

LINCOLN, NEBRASKA

AL-232 (FAA)

24193

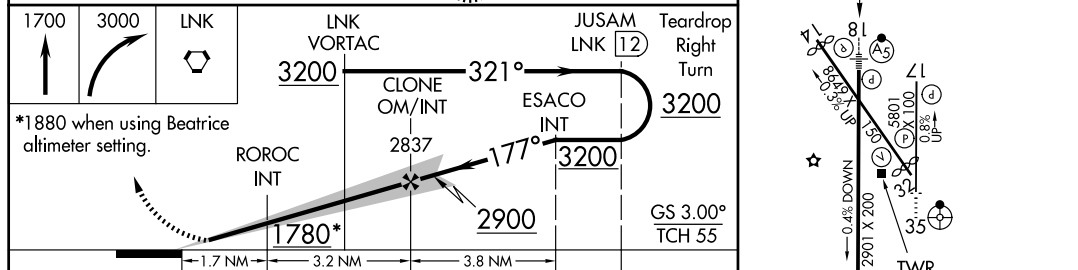
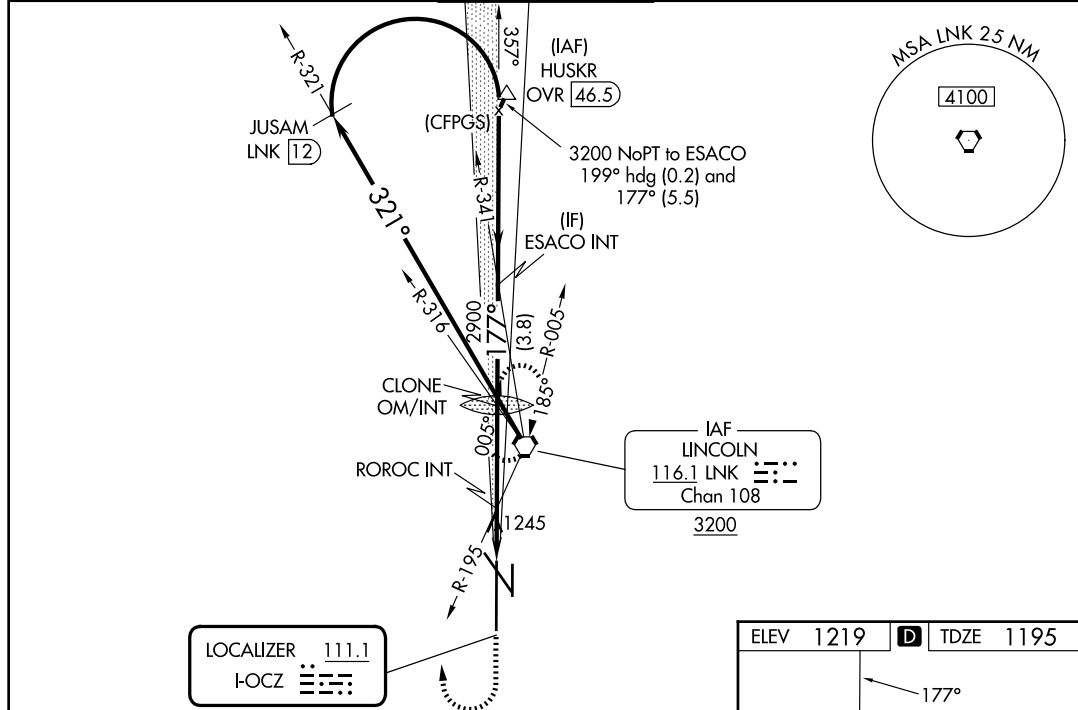
<b>LOC I-OCZ</b> <b>111.1</b>	<b>APP CRS</b> <b>177°</b>	<b>Rwy Ldg</b> <b>12901</b>	<b>TDZE</b> <b>1195</b>		<b>ILS Y or LOC Y RWY 18</b> LINCOLN (LNK)
		<b>Apt Elev</b> <b>1219</b>			

**⚠** When local altimeter setting not received use Beatrice altimeter setting and increase DA to 1486; and all MDA 100 feet, increase visibility S-LOC 18 Cat C, D, E and Circling Cats C and D ¼ SM: increase ROROC fix minimums S-LOC 18 Cat C/D/E visibility ¾ SM and Circling Cats C and D ¼ SM. For inop ALS, increase S-ILS 18 Cat E visibility to RVR 4000, S-LOC 18 Cat E visibility to 1 ¾ SM, and ROROC fix minimums S-LOC 18 Cat E visibility to 1 ½ SM. For inop ALS when using Beatrice altimeter setting, increase S-ILS 18 all Cats visibility to RVR 4500, S-LOC 18 Cat E visibility to 2 SM, and ROROC fix minimums S-LOC 18 Cat C/D/E visibility to 1 ¾ SM.  
#RVR 1800 authorized with use of FD or AP or HUD to DA.



**MISSED APPROACH:**  
Climb to 1700 then climbing right turn to 3000 direct LNK VORTAC and hold.

<b>ATIS</b> <b>118.05 290.9</b>	<b>OMAHA APP CON</b> <b>124.0 270.3</b>	<b>LINCOLN TOWER*</b> <b>118.5 (CTAF) 253.5</b>	<b>GND CON</b> <b>121.9 275.8</b>	<b>UNICOM</b> <b>122.95</b>
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	1700	3000	LNK	LNK VORTAC	JUSAM LNK (12)	Teardrop Right Turn
*1880 when using Beatrice altimeter setting.	1780*	2900	3200	3200	3200	3200
	1.7 NM	3.2 NM	3.8 NM			GS 3.00° TCH 55
CATEGORY	A	B	C	D	E	
S-ILS 18#	1395/24 200 (200-½)					
S-LOC 18	1780/24	585 (600-½)	1780-1¼		585 (600-1¼)	
CIRCLING	1780-1	561 (600-1)	1820-1¾	1960-2½	2040-3	
	601 (700-1¾)	741 (800-2½)	821 (900-3)			
ROROC FIX MINIMUMS (DUAL VOR RECEIVERS REQUIRED)						
S-LOC 18	1720/24	525 (600-½)	1720/55		525 (600-1)	
CIRCLING	1720-1	1760-1	1820-1½	1960-2¼	2040-3	
	501 (600-1)	541 (600-1)	601 (700-1½)	741 (800-2¼)	821 (900-3)	
FAF to MAP 4.9 NM						
	Knots	60	90	120	150	180
	Min:Sec	4:54	3:16	2:27	1:58	1:38

LINCOLN, NEBRASKA  
Amdt 7D 16MAY24

40°51'N-96°46'W

LINCOLN (LNK)  
**ILS Y or LOC Y RWY 18**

# APPENDIX 35 GLS

NEWARK, NEW JERSEY

AL-285 (FAA)

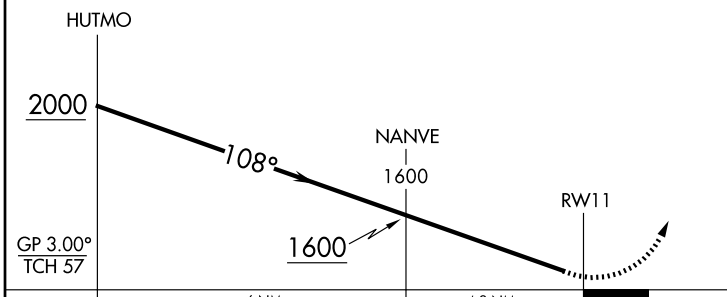
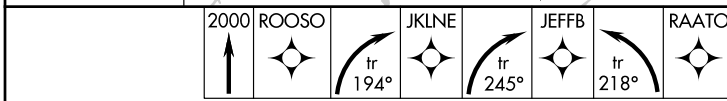
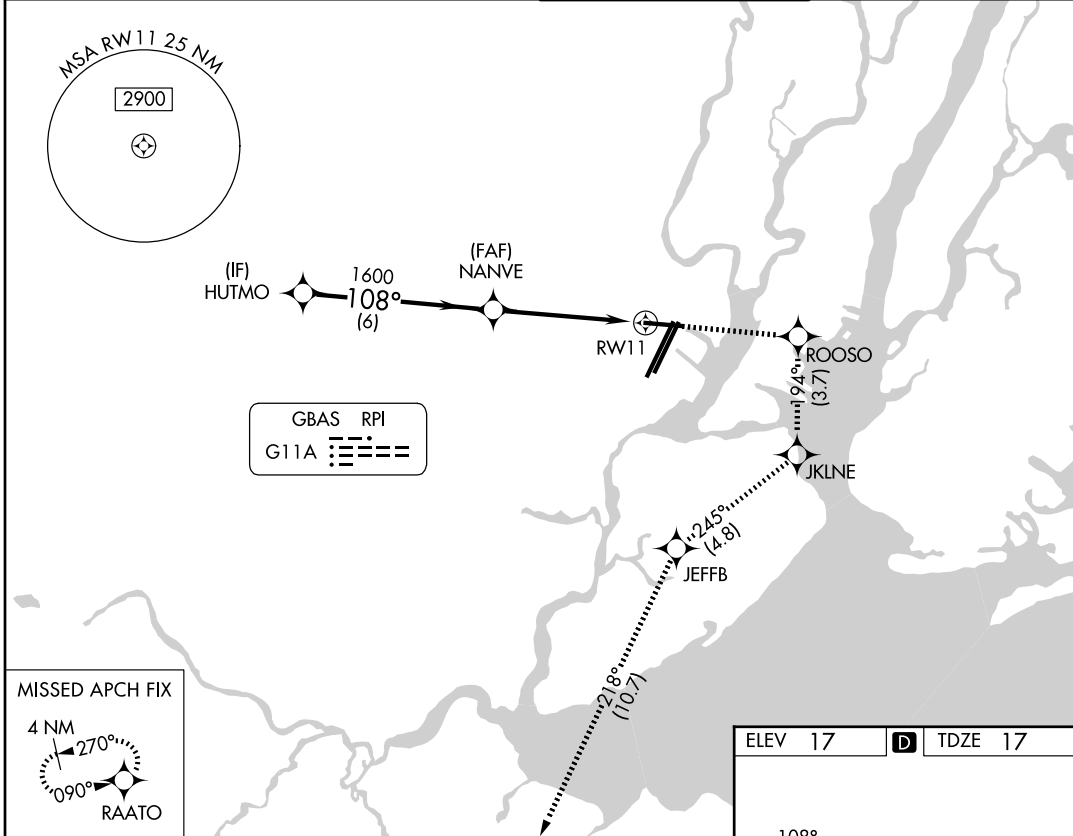
24137

GBAS CH <b>21905</b> G11A	APP CRS <b>108°</b>	Rwy Ldg TDZE Apt Elev	<b>6726</b> <b>17</b> <b>17</b>
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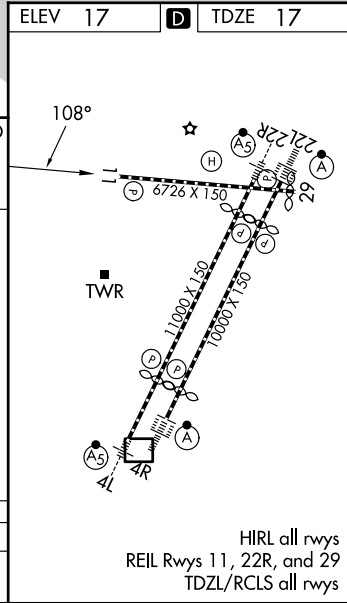
**GLS RWY 11**  
NEWARK LIBERTY INTL (EWR)

RNP APCH - GPS. RADAR required.	MISSED APPROACH: (Do not exceed 230K until JKLNE) Climb to 2000 direct ROOSO and right turn on track 194° to JKLNE and right turn on track 245° to JEFFB and left turn on track 218° to RAATO and hold.
▼ Autopilot coupled approach NA below 312.	
▲ NA Rwy 11 helicopter visibility reduction below RVR 4000 NA.	

D-ATIS <b>115.7 134.825</b>	NEW YORK APP CON <b>128.55 379.9</b>	NEWARK TOWER <b>118.3 257.6</b>	GND CON <b>121.8</b>
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CATEGORY	A	B	C	D
GLS DA		312/45	295 (300-7/8)	



NEWARK, NEW JERSEY  
Amdt 1 15JUN23

40°42'N-74°10'W

NEWARK LIBERTY INTL (EWR)  
**GLS RWY 11**

# APPENDIX 36 LOC

SOUTH HILL, VIRGINIA

AL-6793 (FAA)

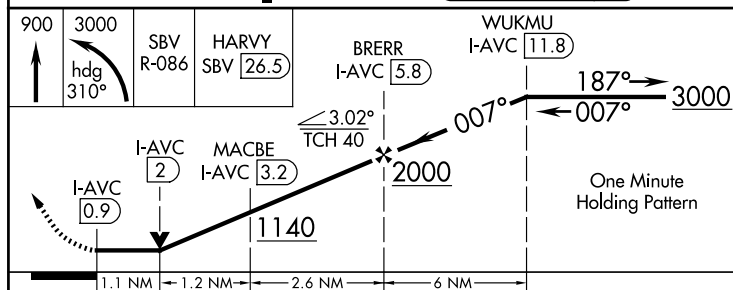
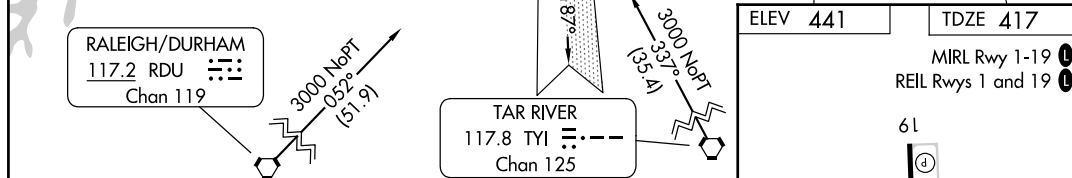
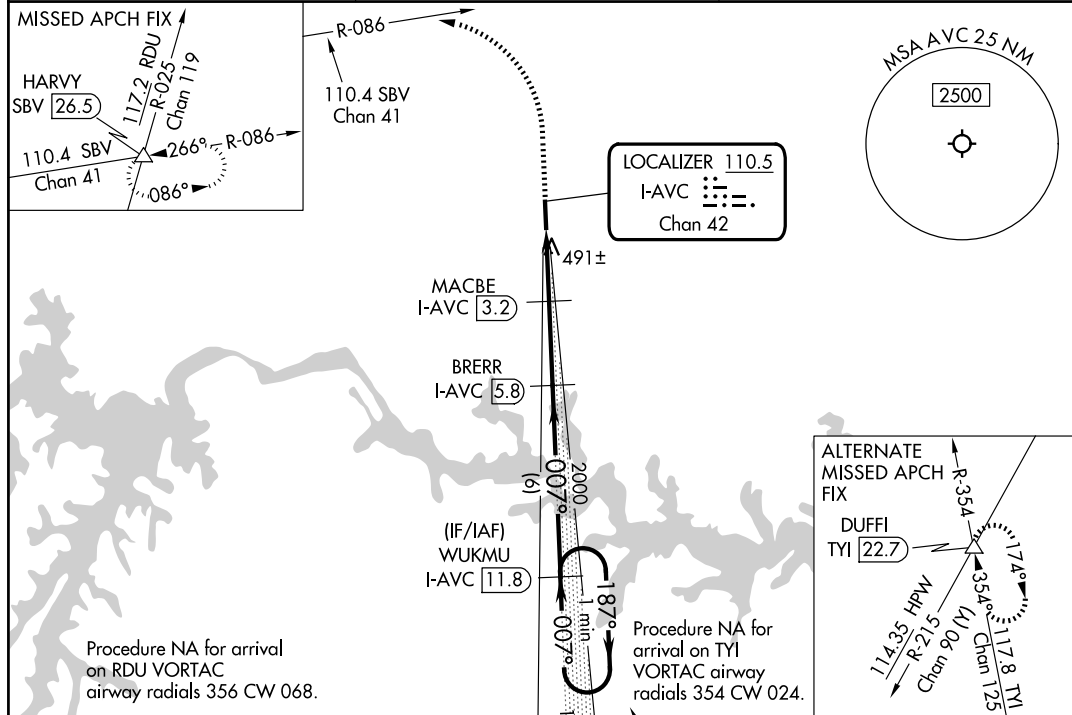
23278

LOC/DME I-AVC <b>110.5</b> Chan <b>42</b>	APP CRS <b>007°</b>	Rwy Ldg TDZE Apt Elev	<b>5002</b> <b>417</b> <b>441</b>
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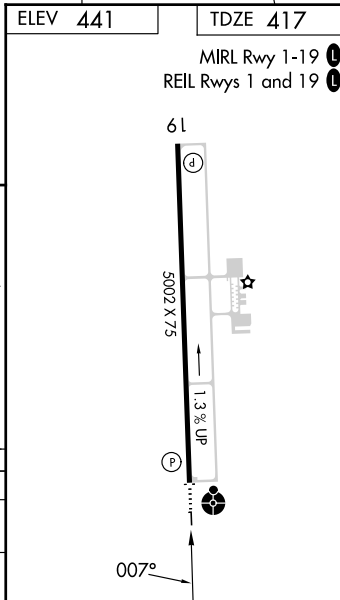
**LOC RWY 1**  
MECKLENBURG-BRUNSWICK RGNL (AVC)

DME required. DME required for procedure entry.	ODALS	MISSED APPROACH: Climb to 900 then climbing left turn to 3000 on heading 310° and SBV VORTAC R-086 to HARVY INT/SBV 26.5 DME and hold.
▼ Rwy 1 helicopter visibility reduction below 3/4 SM NA. ▲ Inop table does not apply.		

AWOS-3 <b>127.525</b>	WASHINGTON CENTER <b>118.75 377.1</b>	UNICOM <b>122.8 (CTAF) 0</b>
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CATEGORY	A	B	C	D
S-01		760-1	343 (400-1)	
CIRCLING	860-1 419 (500-1)	900-1 459 (500-1)	1060-1 <sup>3/4</sup> 619 (700-1 <sup>3/4</sup> )	1060-2 619 (700-2)



SOUTH HILL, VIRGINIA  
Amdt 1A 24MAY18

36°41'N-78°03'W

MECKLENBURG-BRUNSWICK RGNL (AVC)  
**LOC RWY 1**

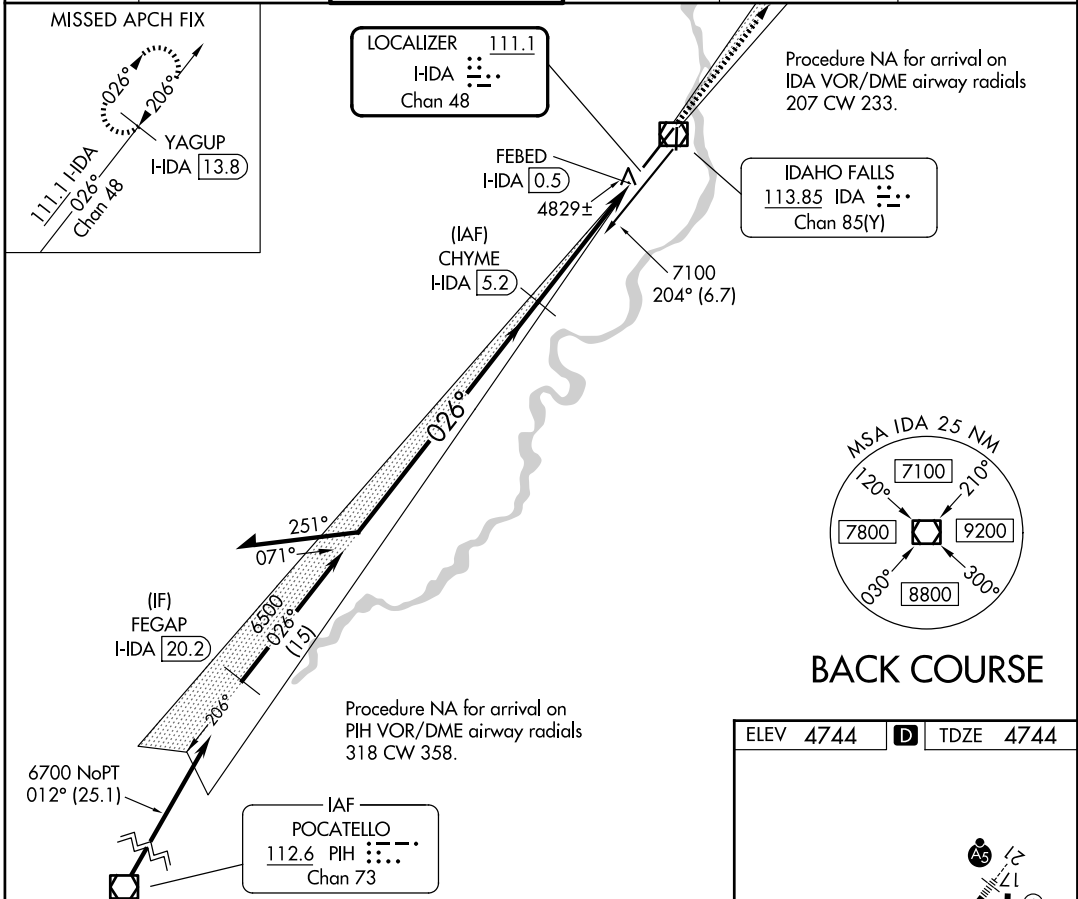
### APPENDIX 37 LOC – BACK COURSE

IDAHO FALLS, IDAHO AL-590 (FAA) 21224

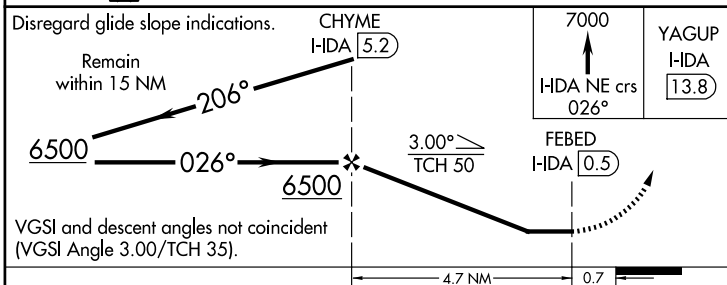
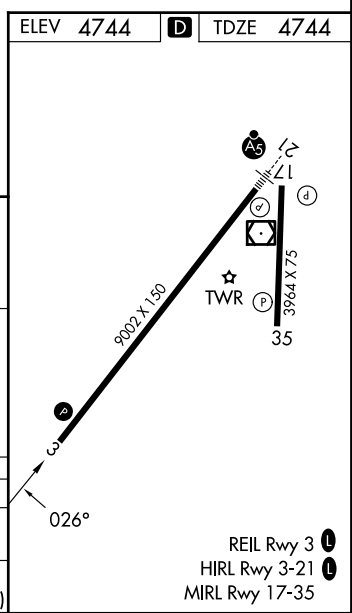
LOC/DME I-IDA <b>111.1</b> Chan 48	APP CRS <b>026°</b>	Rwy Ldg <b>9002</b> TDZE <b>4744</b> Apt Elev <b>4744</b>	<h2 style="margin: 0;">LOC BC RWY 3</h2> IDAHO FALLS RGNL (IDA)
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DME required. MISSED APPROACH: Climb to 7000 on I-IDA localizer NE course 026° to YAGUP/I-IDA 13.8 DME and hold.

ATIS <b>135.325</b>	SALT LAKE CENTER <b>128.35 239.25</b>	IDAHO FALLS TOWER ★ <b>118.5 (CTAF) 0 257.8</b>	GND CON <b>121.7</b>	GCO <b>121.725</b>	UNICOM <b>122.95</b>
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### BACK COURSE



CATEGORY	A	B	C	D	E
S-LOC 3	5080-1 336 (400-1)				
CIRCLING	5200-1 456 (500-1)	5300-1 556 (600-1)	5400-1¾ 656 (700-1¾)	5420-2¼ 676 (700-2¼)	5420-2½ 676 (700-2½)

IDAHO FALLS, IDAHO 43°31'N-112°04'W IDAHO FALLS RGNL (IDA)  
LOC BC RWY 3

Amdt 7 03JAN19

## APPENDIX 38 LOC/DME – BACK COURSE

SANTA MARIA, CALIFORNIA

AL-379 (FAA)

24081

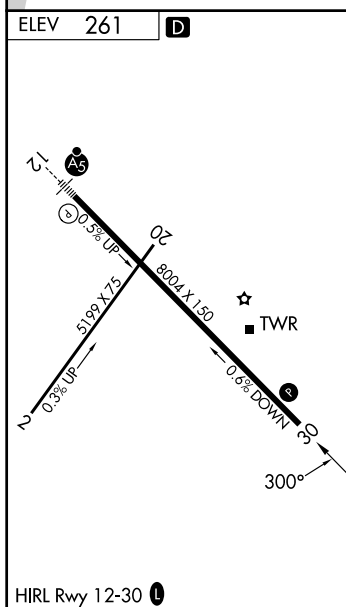
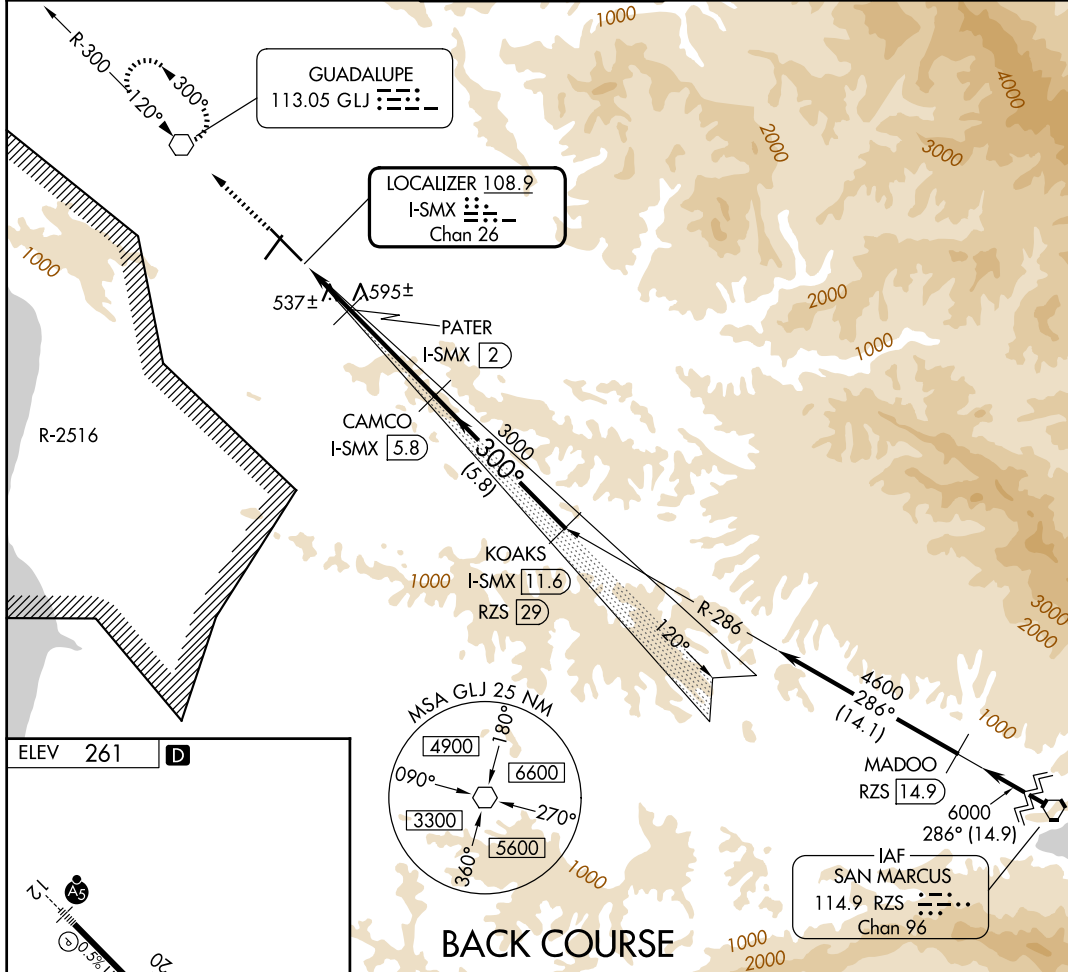
LOC/DME I-SMX <b>108.9</b> Chan <b>26</b>	APP CRS <b>300°</b>	Rwy Ldg N/A	TDZE N/A	Apt Elev <b>261</b>
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### LOC/DME BC-A

SANTA MARIA PUB/CAPT G ALLAN HANCOCK FLD (SMX)

<p><b>⚠</b> Circling to Rwy 2 NA at night. Helicopter visibility reduction below 1 SM NA. When local altimeter setting not received, use San Luis Obispo altimeter setting and increase all MDA 60 feet.</p>		<p>MISSED APPROACH: Climb to 2100 direct GLJ VOR and hold.</p>		
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ATIS <b>121.15</b>	SANTA BARBARA APP CON* <b>124.15 327.8</b>	SANTA MARIA TOWER* <b>118.3(CTAF) 239.25</b>	GND CON <b>121.9</b>	UNICOM <b>122.95</b>
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CATEGORY	A		B		C		D	
	1100-1¼		839 (900-1¼)		1420-3		1540-3	
CIRCLING	1100-1¼		839 (900-1¼)		1159 (1200-3)		1279 (1300-3)	

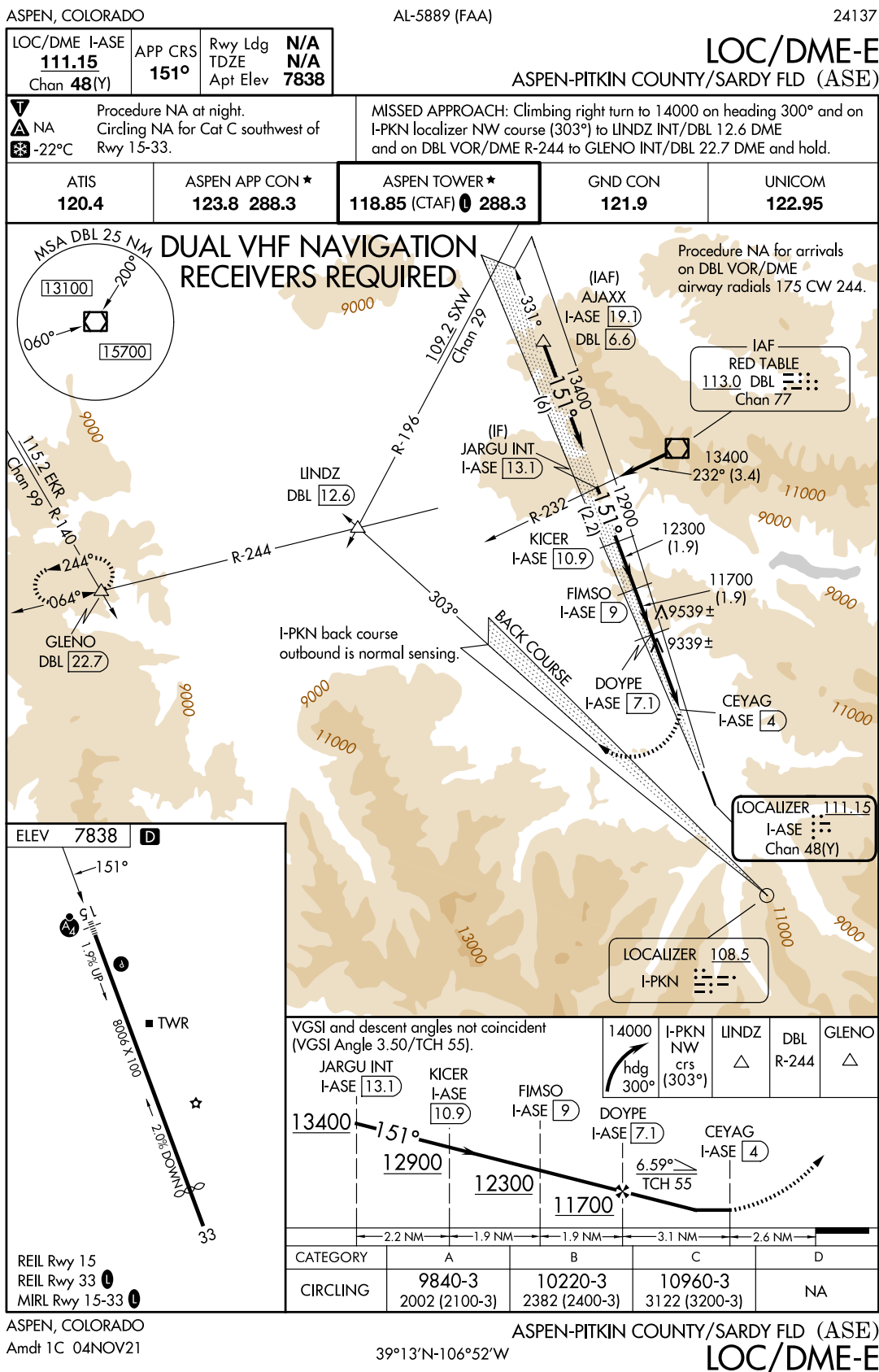
SANTA MARIA, CALIFORNIA  
Amdt 10F 24FEB22

SANTA MARIA PUB/CAPT G ALLAN HANCOCK FLD (SMX)  
34°54'N-120°27'W

### LOC/DME BC-A

APPENDIX 39

LOC/DME – BACK COURSE USED OTHER THAN AS PROCEDURE FACILITY (PRIMARY)



### APPENDIX 40 LDA/DME

THE DALLES, OREGON

AL-530 (FAA)

23334

LOC/DME I-DLS <b>109.35</b> Chan <b>30(Y)</b>	APP CRS <b>238°</b>	Rwy Ldg TDZE Apt Elev	<b>4451</b> <b>243</b> <b>247</b>
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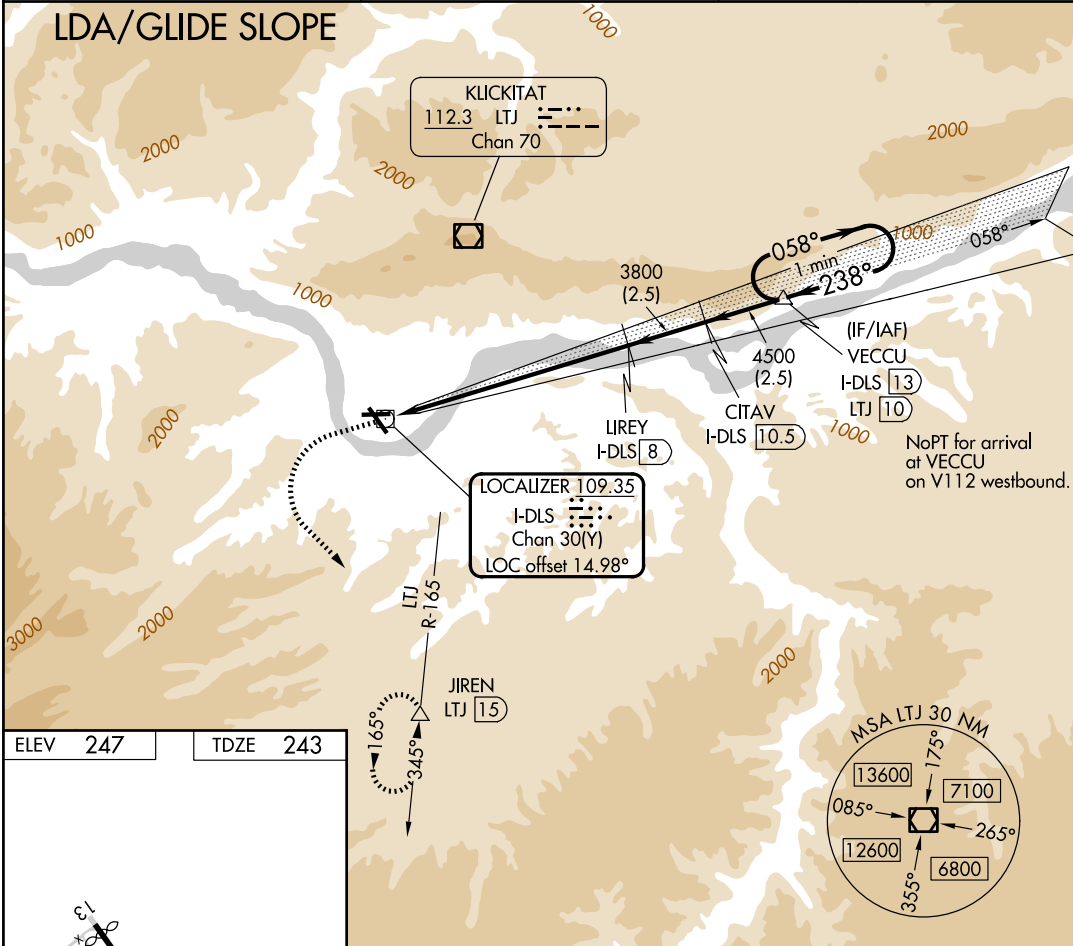
## LDA/DME RWY 25

COLUMBIA GORGE RGNL/THE DALLES MUNI (DLS)

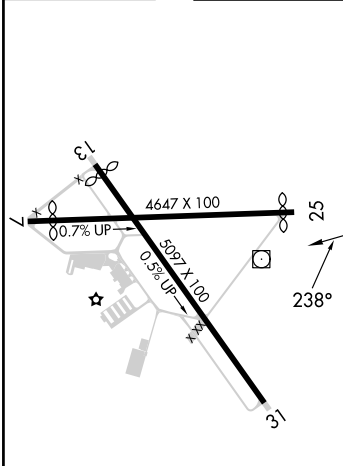
**NA** When local altimeter setting not received, procedure NA. Glide slope provided by standard glide slope equipment.

**MISSED APPROACH:** Climb to 1600 then climbing left turn to 7000 on heading 120° and LTJ VOR/DME R-165 to JIREN/LTJ 15 DME and hold, continue climb-in-hold to 7000.

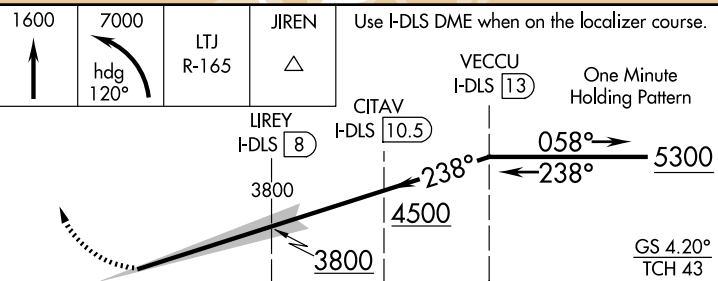
ASOS <b>135.175</b>	SEATTLE CENTER <b>119.65 257.6</b>	UNICOM <b>123.0 (CTAF) 0</b>
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ELEV <b>247</b>	TDZE <b>243</b>
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REIL Rwy 31 **0**  
MIRL Rwy 7-25 and 13-31 **0**



CATEGORY	A	B	C	D
S-LDA/GS 25	1368-3	1125 (1200-3)		NA

THE DALLES, OREGON  
Amdt 1A 28APR16

COLUMBIA GORGE RGNL/THE DALLES MUNI (DLS)  
45°37'N-121°10'W  
**LDA/DME RWY 25**

APPENDIX 41  
SDF

MORRISTOWN, TENNESSEE

AL-5549 (FAA)

23166

SDF/DME MOR	APP CRS	Rwy Ldg	5717
109.5	053°	TDZE	1313
Chan 32		Apt Elev	1313

**SDF RWY 5**  
MOORE-MURRELL (MOR)

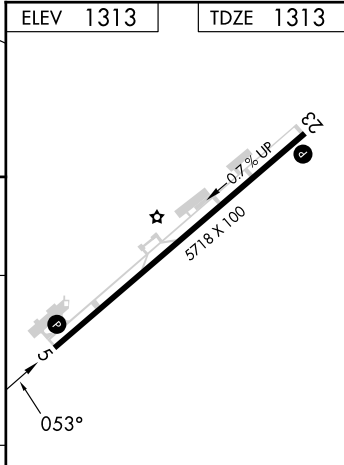
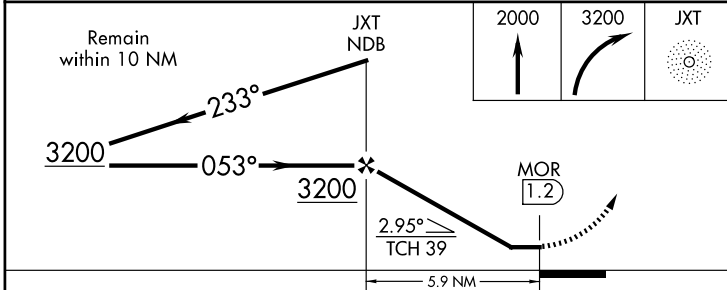
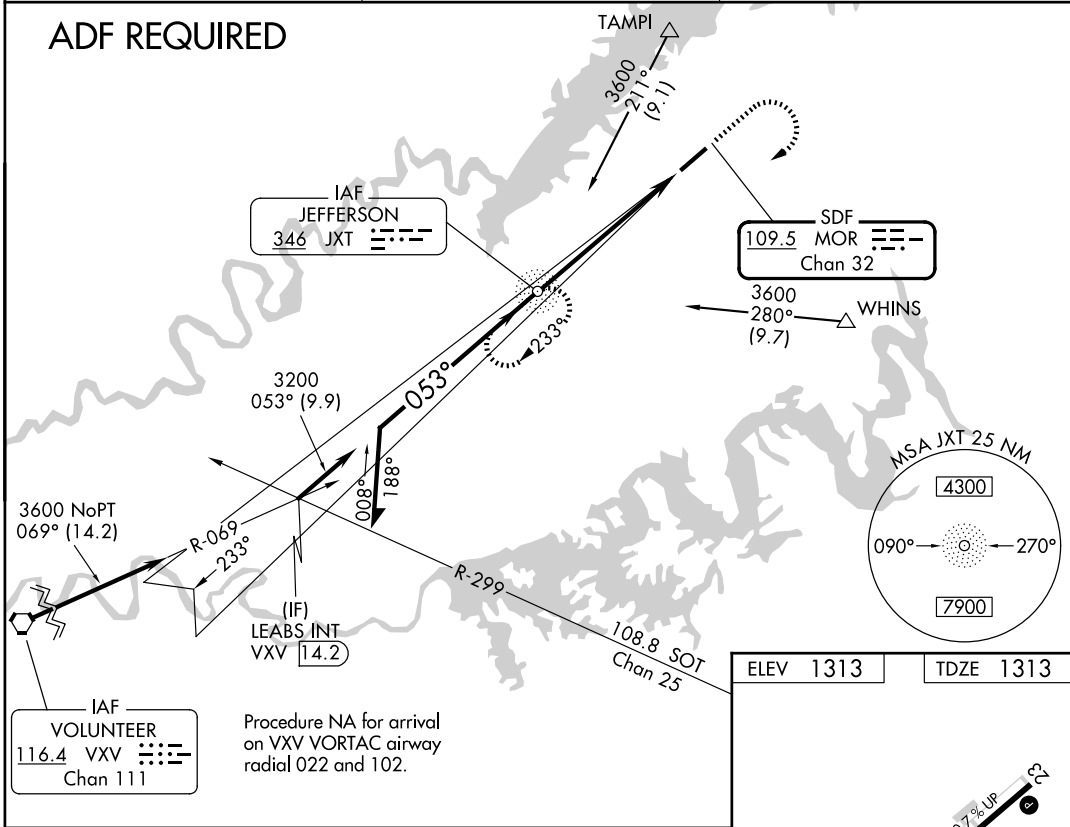
**ADF Required.** When local altimeter setting not received, use Mc Ghee Tyson altimeter setting and increase all MDA 140 feet, increase S-5 Cats C/D visibility to 1 3/4 SM, and Circling Cat B visibility to 1 1/4 SM, Cat C to 3 SM. For inop MALSF, increase S-5 Cats C and D visibility to 1 1/8 miles. For inop MALSF, when using Mc Ghee Tyson altimeter setting, increase S-5 Cats C and D visibility to 2 miles.

**NA**

MALSF

MISSED APPROACH: Climb to 2000 then climbing right turn to 3200 direct JXT NDB and hold.

AWOS-3 126.725	KNOXVILLE APP CON 132.8 360.8	UNICOM 122.8 (CTAF) 0
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CATEGORY	A	B	C	D
S-5	1860-3/4 547 (600-3/4)		1860-1 3/8 547 (600-1 3/8)	
CIRCLING	1880-1 567 (600-1)	2020-1 707 (800-1)	2160-2 1/2 847 (900-2 1/2)	2420-3 1107 (1200-3)

REIL Rwy 5-23  
MIRL Rwy 5-23  
FAF to MAP 5.9 NM

Knots	60	90	120	150	180
Min:Sec	5:54	3:56	2:57	2:22	1:58

MORRISTOWN, TENNESSEE

MOORE-MURRELL (MOR)

Amdt 5D 22APR21

36°11'N - 83°23'W

**SDF RWY 5**

### APPENDIX 42 VOR/DME

RAMONA, CALIFORNIA

AL-6667 (FAA)

21280

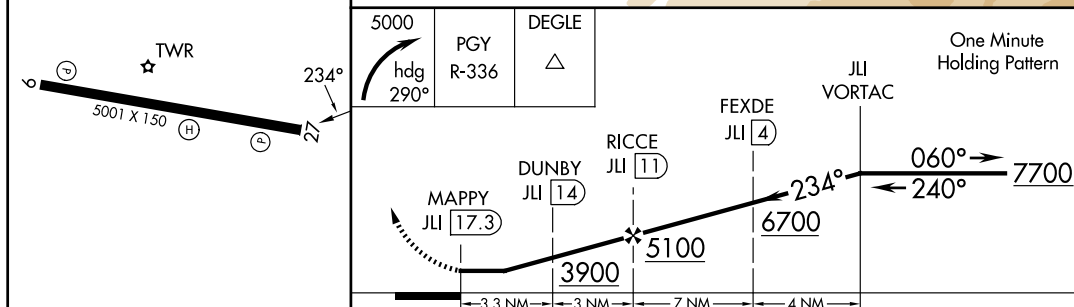
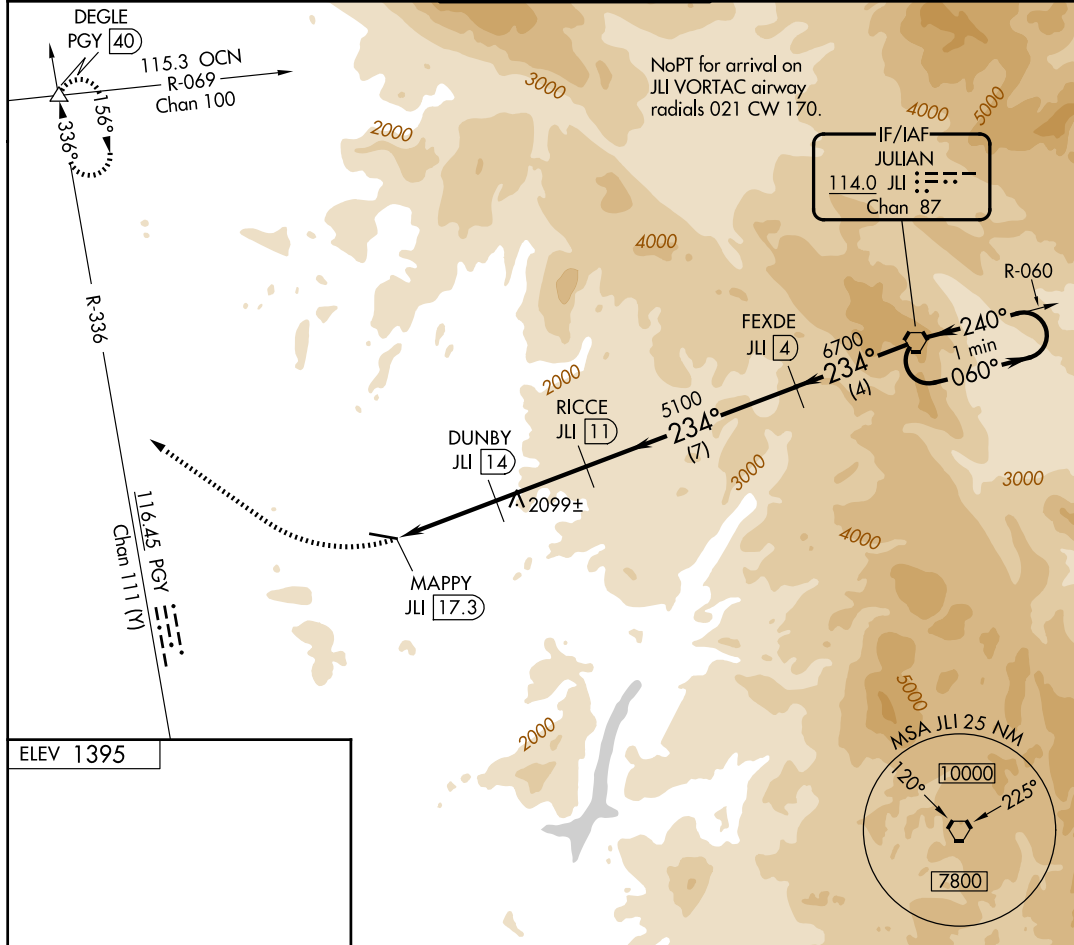
VORTAC JLI <b>114.0</b> Chan <b>87</b>	APP CRS <b>234°</b>	Rwy Ldg TDZE Apt Elev <b>N/A</b> <b>N/A</b> <b>1395</b>
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### VOR/DME-A RAMONA (RNM)

**⚠** Circling NA north of Rwy 9-27.  
**⚠** When local altimeter setting not received, use Gillespie Fld altimeter setting and increase all MDA 180 feet.

MISSED APPROACH: Climbing right turn to 5000 via heading 290° and PGY VORTAC R-336 to DEGLE/PGY 40 DME and hold.

ATIS <b>132.025</b>	SOCAL APP CON <b>132.2 269.1</b>	RAMONA TOWER ★ <b>119.875 (CTAF) 0</b>	GND CON <b>121.65</b>	UNICOM <b>122.95</b>
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REIL Rwy 27 0	MIRL Rwy 9-27 0			
CATEGORY	A	B	C	D
CIRCLING	2580-1¼ 1185 (1200-1¼)	2580-1½ 1185 (1200-1½)	3180-3 1785 (1800-3)	NA

RAMONA, CALIFORNIA  
Amdt 2A 07OCT21

33°02'N-116°55'W

RAMONA (RNM)  
VOR/DME-A

APPENDIX 43  
VOR/DME ARC

BALTIMORE, MARYLAND

AL-5222 (FAA)

23222

VORTAC BAL <b>115.1</b> Chan <b>98</b>	BAL <b>14.7</b> Arc	Rwy Ldg <b>6997</b> TDZE <b>22</b> Apt Elev <b>22</b>
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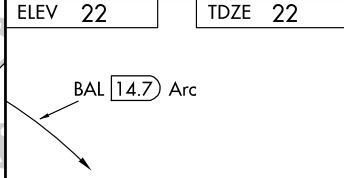
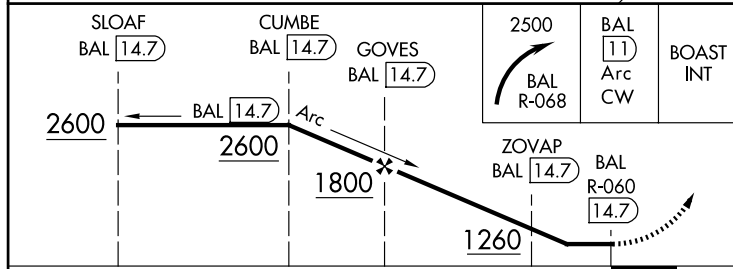
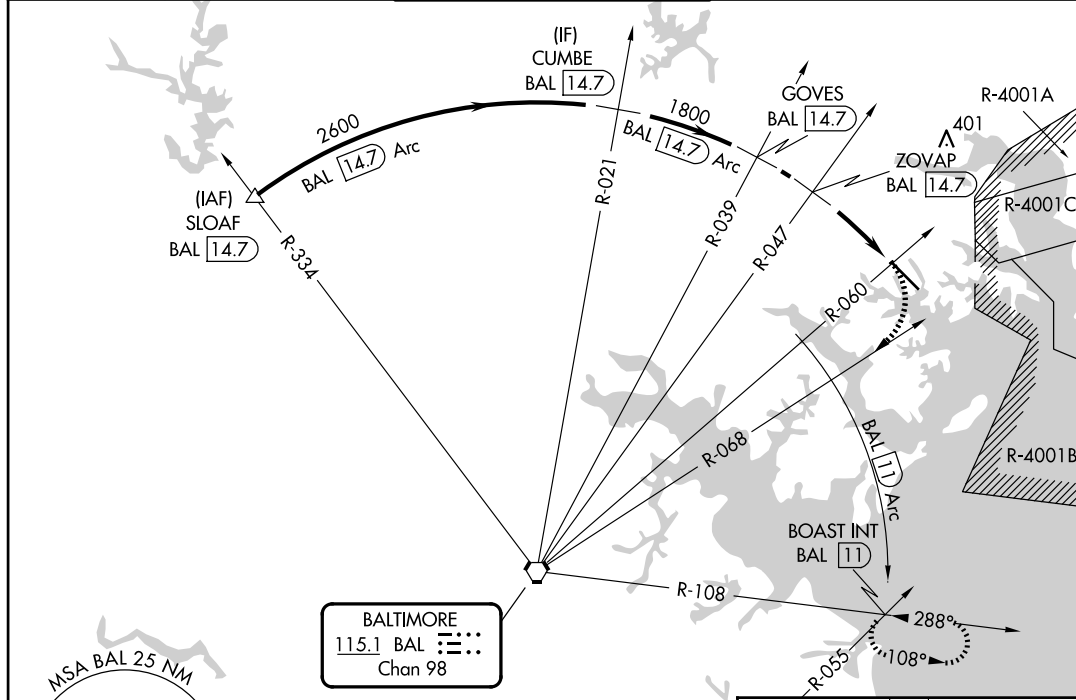
VOR or TACAN RWY 15  
MARTIN STATE (MTN)

DME required.

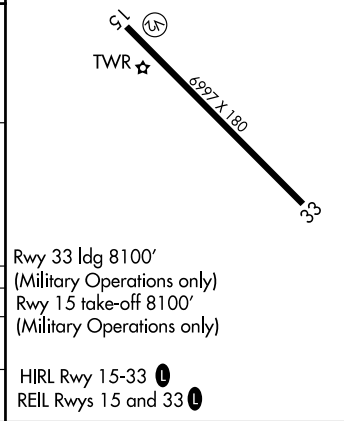
▼ Rwy 15 helicopter visibility reduction below 3/4 SM NA. When local altimeter setting not received, use Baltimore/Washington Intl Thurgood Marshall altimeter setting and increase all MDA 60 feet, and increase S-15 Cat B visibility 1/4 SM, Cat C/D 1/2 SM and Circling Cats B/C 1/4 SM. Circling NA northeast of Rwy 15-33.

▲ MISSED APPROACH: Climbing right turn to 2500 on BAL VORTAC R-068 and BAL 11 DME Arc clockwise to BOAST INT/BAL 11 DME and hold.

ATIS <b>124.925</b>	POTOMAC APP CON <b>119.0 282.275</b>	MARTIN TOWER ★ <b>121.3(CTAF) 254.425</b>	GND CON <b>121.8 253.4</b>	UNICOM <b>122.95</b>
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CATEGORY	A	B	C	D
S-15	920-1 1/4	898 (900-1 1/4)	920-2 1/2	898 (900-2 1/2)
CIRCLING	920-1 1/4	898 (900-1 1/4)	920-2 3/4 898 (900-2 3/4)	920-3 898 (900-3)



BALTIMORE, MARYLAND  
Orig-D 17JUN21

39°20'N-76°25'W

MARTIN STATE (MTN)  
VOR or TACAN RWY 15

## APPENDIX 44 CONCENTRIC RING DEPICTION

HELENA, MONTANA

AL-192 (FAA)

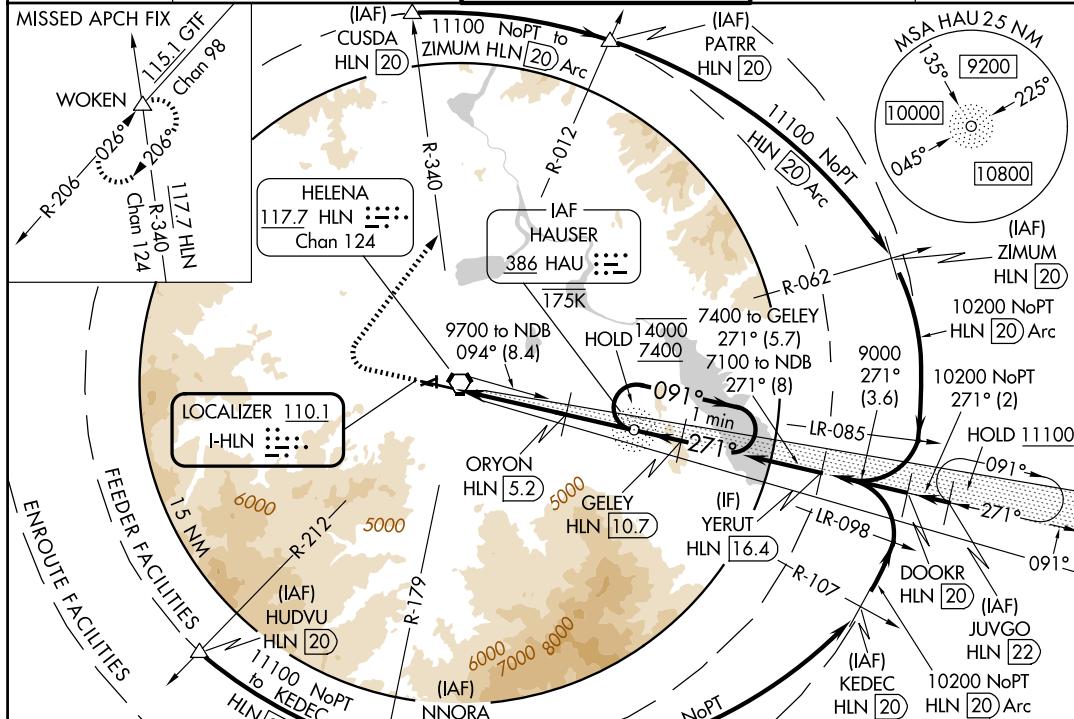
23334

<b>LOC I-HLN</b> <b>110.1</b>	<b>APP CRS</b> <b>271°</b>	<b>Rwy Ldg</b> <b>TDZE</b> <b>Apt Elev</b>	<b>9000</b> <b>3852</b> <b>3877</b>
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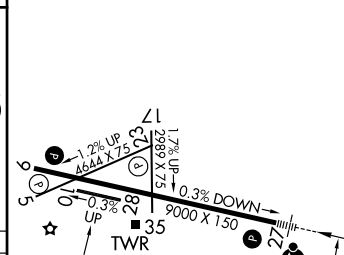
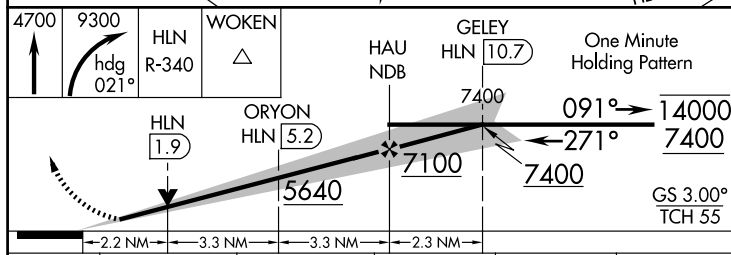
**ILS Z or LOC Z RWY 27**  
HELENA RGNL (HLN)

<p><b>ADF or DME required.</b></p> <p>▼ Circling NA to Rwys 10 and 28. Circling Rwy 5, 23, 35 NA at night. Inop table does not apply to S-LOC 27 all Cats. For inop ALS, increase S-ILS 27 Cat E visibility to 3/4 mile, increase ORYON fix minimums: S-LOC 27 Cat C/ D/E visibility to 2 miles. Circling NA for Cats D and E south of Rwy 9-27.</p> <p>❄️ Holding at HAU NDB authorized for Cat A and B aircraft only. * DME from HLN VORTAC. DME use requires simultaneous reception of I-HLN and HLN DME.</p>	<p><b>MALSIR</b></p> <p>MISSED APPROACH: Climb to 4700 then climbing right turn to 9300 on heading 021° and on HLN VORTAC R-340 to WOKEN INT and hold, continue climb-in-hold to 9300. #Messed approach requires minimum climb of 300 feet per NM to 6000; if unable to meet climb gradient, see ILS Y or LOC Y RWY 27.</p>
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<b>ATIS</b> <b>120.4</b>	<b>HELENA APP CON *</b> <b>119.5 229.4</b>	<b>HELENA TOWER *</b> <b>118.3 (CTAF) 257.8</b>	<b>GND CON</b> <b>121.9</b>	<b>UNICOM</b> <b>122.95</b>
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<b>ELEV</b> 3877	<b>D</b>	<b>TDZE</b> 3852
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CATEGORY	A	B	C	D	E
S-ILS 27#	4052-1/2 200 (200-1/2)				
S-LOC 27	5640-1 1/4 1788 (1800-1 1/4)	5640-1 1/2 1788 (1800-1 1/2)	5640-3	1788	(1800-3)
CIRCLING	5640-1 1/4 1763 (1800-1 1/4)	5640-1 1/2 1763 (1800-1 1/2)	6000-3	2123	(2200-3)
ORYON FIX MINIMUMS*					
S-LOC 27	4600-1 1/2 748 (800-1 1/2)	4600-3/4 748 (800-3/4)	4600-1 3/4	748	(800-1 3/4)
CIRCLING	4640-1 763 (800-1)	4800-1 1/4 923 (1000-1 1/4)	6000-3	2123	(2200-3)

REIL Rwys 9, 17 and 35 (L)

MIRL Rwys 5-23 and 17-35 (L)

HIRL Rwy 9-27 (L)

FAF to MAP 8.7 NM

Knots	60	90	120	150	180
Min:Sec	8:42	5:48	4:21	3:29	2:54

HELENA, MONTANA  
Amdt 3 23FEB23

46°36'N-111°59'W

HELENA RGNL (HLN)  
**ILS Z or LOC Z RWY 27**

### APPENDIX 45 VOR OR TACAN

SAN LUIS OBISPO, CALIFORNIA

AL-989 (FAA)

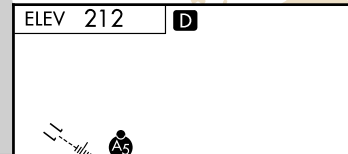
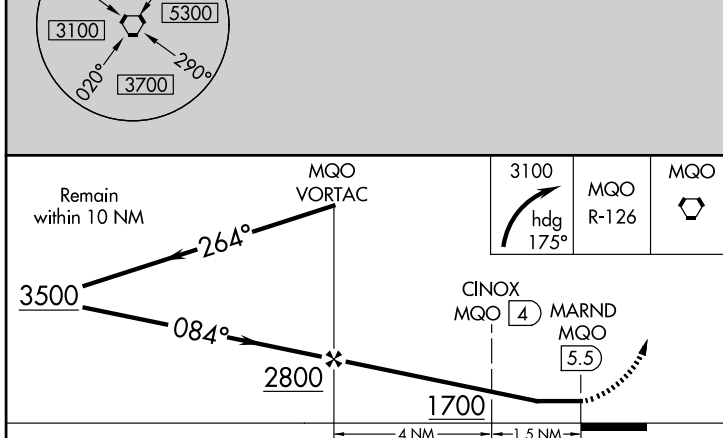
24081

VORTAC MQO <b>112.4</b> Chan 71	APP CRS <b>084°</b>	Rwy Ldg TDZE N/A Apt Elev <b>212</b>
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**VOR or TACAN-A**  
SAN LUIS OBISPO COUNTY RGNL (SBP)

**⚠** Circling NA north of Rwy 11-29.  
**⚠** MISSED APPROACH: Climbing right turn to 3100 via heading 175° and MQO R-126 to MQO VORTAC and hold. (TACAN Aircraft continue climb to 4000 via MQO R-292 to FRAMS 11.2 DME and hold east, right turns, 292° inbound.)

ATIS ★ <b>120.6</b>	SANTA BARBARA APP CON ★ <b>127.725 244.575</b>	SAN LUIS TOWER ★ <b>124.0 (CTAF) 0 379.9</b>	GND CON <b>121.6</b>	UNICOM <b>122.95</b>
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CATEGORY	A	B	C	D
CIRCLING	1700-1¼ 1488 (1500-1¼)	1700-1½ 1488 (1500-1½)	1700-3	1488 (1500-3)
TACAN OR DME MINIMA				
CIRCLING	1120-1¼ 908 (1000-1¼)	1220-1½ 1008 (1100-1½)	1460-3 1248 (1300-3)	1560-3 1348 (1400-3)

ELEV 212	<b>D</b>				
HIRL Rwy 11-29	<b>0</b>				
REIL Rwy 29	<b>0</b>				
FAF to MAP 5.5 NM					
Knots	60	90	120	150	180
Min:Sec	5:30	3:40	2:45	2:12	1:50

SAN LUIS OBISPO, CALIFORNIA  
Amdt 6C 12AUG21

35°14'N-120°39'W

SAN LUIS OBISPO COUNTY RGNL (SBP)  
**VOR or TACAN-A**

# APPENDIX 46 TACAN

FRESNO, CALIFORNIA

AL-162 (FAA)

23334

TACAN CZQ Chan <b>76</b> <b>(112.9)</b>	APP CRS <b>307°</b>	Rwy Ldg 29R <b>9227</b> 29L <b>8008</b> TDZE <b>333</b> <b>331</b> Apt Elev <b>336</b> <b>336</b>	<h2 style="margin: 0;">TACAN RWY 29R</h2> <h3 style="margin: 0;">FRESNO YOSEMITE INTL (FAT)</h3>	
⚠ Rwy 29R helicopter visibility reduction below RVR 4000 NA. ⚠ For inop ALS, increase S-29R Cat A/B visibility to RVR 5500 and Cat E visibility to 1¼ mile.		ALSF-2 Rwy 29R 	MISSED APPROACH: Climb to 5500 on heading 330° and FRA VORTAC R-222 to NIVEE INT/FRA 8 DME and hold, continue climb-in-hold to 5500.	
ATIS <b>121.35 273.6</b>	FRESNO APP CON <b>119.6 351.95</b>	FRESNO TOWER <b>118.2 251.1</b>	GND CON <b>121.7 348.6</b>	

ELEV 336	<b>D</b>	TDZE 29R 333	TDZE 29L 331
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5500 hdg 330°

FRA R-222	NIVEE INT	URFEZ CZQ 13.1	IXDEB CZQ 19.1
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One Minute Holding Pattern

JULTI CZQ 10.6	URFEZ CZQ 13.1	IXDEB CZQ 19.1	6000
CZQ 8.7	CZQ 9.8	CZQ 10.6	2000

307° 127° 307°

980 1800

1.1 NM 0.8 NM 2.5 NM 6 NM

CATEGORY	A	B	C	D	E
S-29R	760/40 427 (500-¾)				
SIDESTEP 29L	760/55 429 (500-1)	760-1½ 429 (500-1½)	760-2 429 (500-2)		
CIRCLING	820-1 484 (500-1)	920-1½ 584 (600-1½)	920-2 584 (600-2)	1140-2¾ 804 (900-2¾)	

REIL Rwys 11L and 11R  
HIRL Rwy 11L-29R  
MIRL Rwy 11R-29L  
TDZL/RCLS Rwy 29R

FRESNO, CALIFORNIA  
Amdt 3 10OCT19

36°47'N-119°43'W

FRESNO YOSEMITE INTL (FAT)  
**TACAN RWY 29R**

### APPENDIX 47 NDB

LAKE CITY, FLORIDA

AL-811 (FAA)

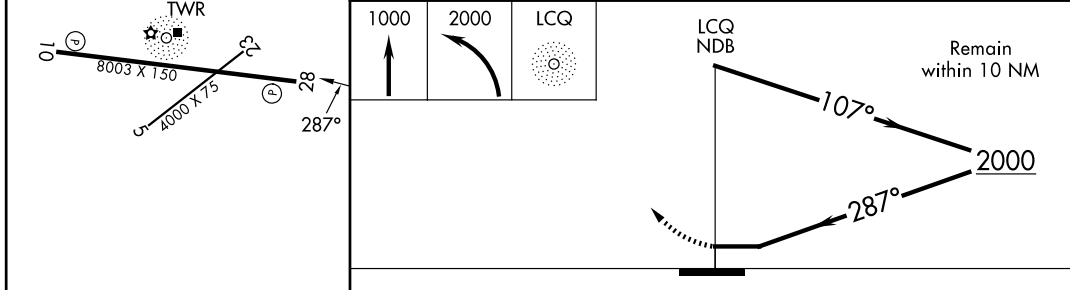
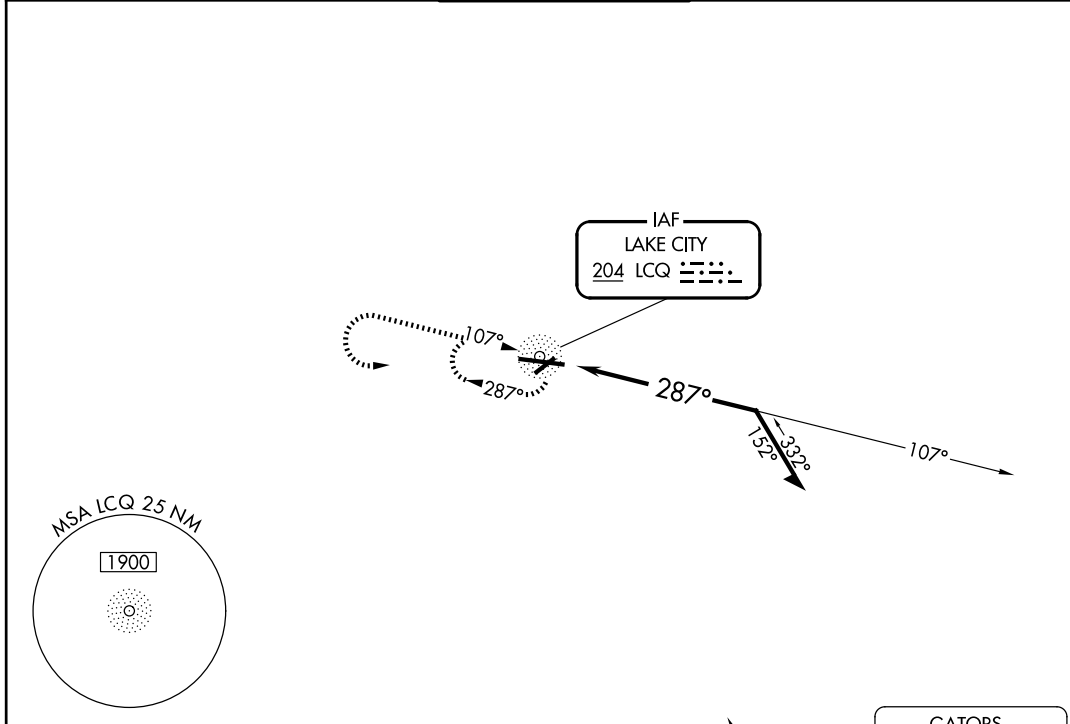
23334

NDB LCQ <b>204</b>	APP CRS <b>287°</b>	Rwy Ldg TDZE Apt Elev	<b>8003</b> <b>196</b> <b>201</b>
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**NDB RWY 28**  
LAKE CITY GATEWAY (LCQ)

<p><b>⚠</b> Circling to Rwy 10 NA at night. When local altimeter setting not received, use Gainesville altimeter setting and increase all MDA 100 feet, and increase S-28 Cats C/D and Circling Cat C visibility ¼ mile. Helicopter visibility reduction below ¾ SM not authorized.</p>	<p>MISSED APPROACH: Climb to 1000 then climbing left turn to 2000 direct LCQ NDB LOM and hold.</p>
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AWOS-3 <b>120.675</b>	JACKSONVILLE CENTER <b>125.375 254.325</b>	LAKE CITY TOWER ★ <b>119.2 (CTAF) 314.6</b>	GND CON <b>121.9</b>	UNICOM <b>122.95</b>
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CATEGORY	A	B	C	D
S-28	760-1	564 (600-1)	760-1½	564 (600-1½)
CIRCLING	760-1	559 (600-1)	760-1½	559 (600-2)

REIL Rwy 10 and 28  
MIRL Rwy 5-23 and 10-28

LAKE CITY, FLORIDA  
Amdt 2A 02MAY13

30°11'N-82°35'W

LAKE CITY GATEWAY (LCQ)  
**NDB RWY 28**

### APPENDIX 48 NDB WITH DME

GAMBELL, ALASKA

AL-6687 (FAA)

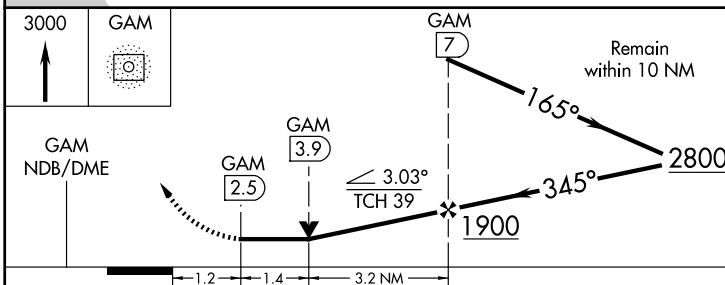
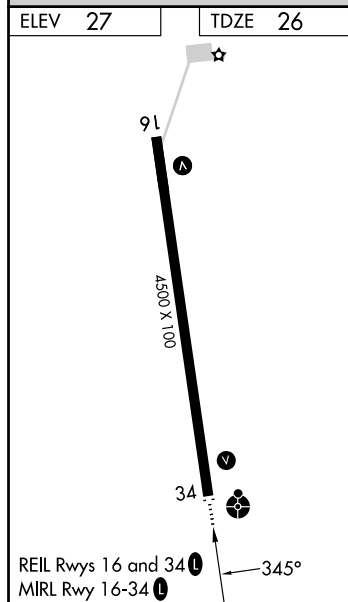
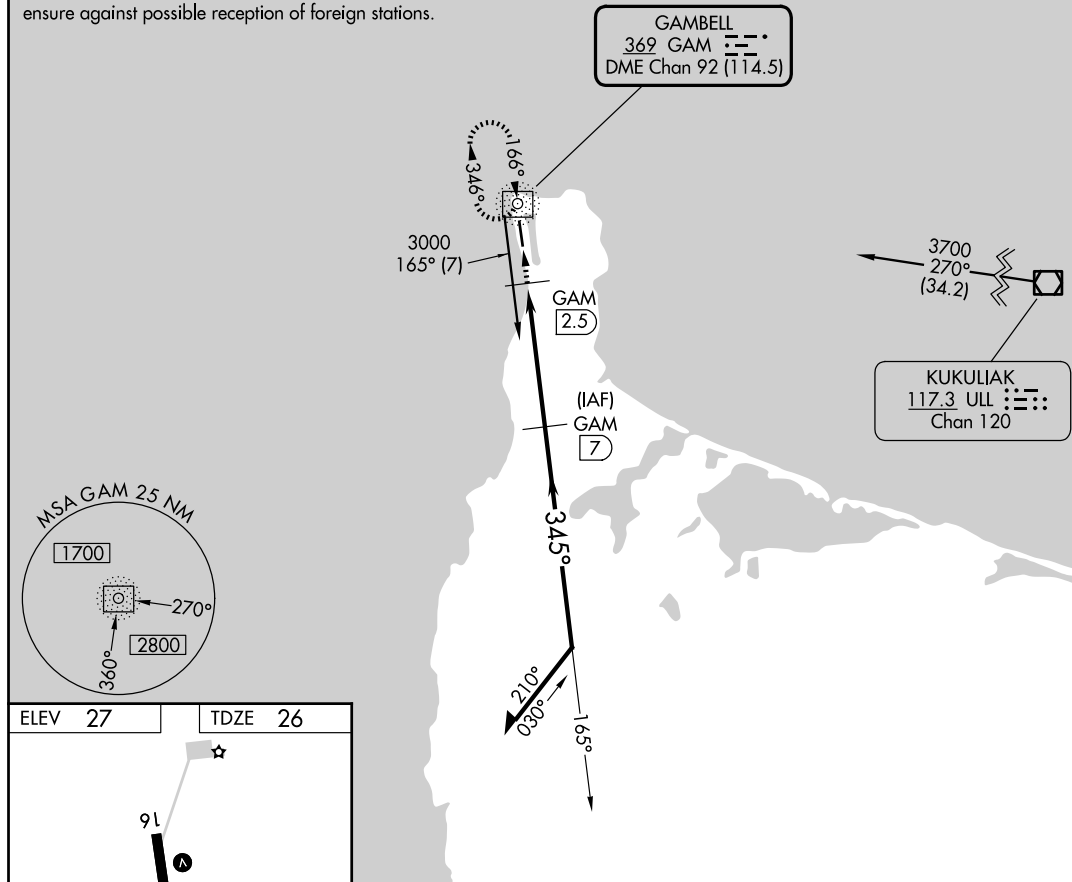
24081

NDB/DME GAM <b>369</b>	APP CRS <b>345°</b>	Rwy Ldg <b>4500</b>
Chan <b>92 (114.5)</b>	TDZE <b>26</b>	Apt Elev <b>27</b>

## NDB/DME RWY 34 GAMBELL (GAM) (PAGM)

Circling NA northeast of Rwy 16-34. -27°C	ODALS 	MISSED APPROACH: Climb to 3000 direct GAM NDB/DME and in GAM NDB/DME holding pattern.
	AWOS-3P <b>125.9</b>	ANCHORAGE CENTER <b>132.2 281.4</b>
		CTAF <b>122.7</b>

CAUTION: GAM aural ident should be monitored to ensure against possible reception of foreign stations.



CATEGORY	A	B	C	D
S-34	880-1½	854 (900-1½)	880-2½ 854 (900-2½)	880-2¾ 854 (900-2¾)
CIRCLING	880-1½	853 (900-1½)	880-2½ 853 (900-2½)	880-2¾ 853 (900-2¾)

GAMBELL, ALASKA  
Amdt 2B 22AUG13

63°46'N-171°44'W

## GAMBELL (GAM) (PAGM) NDB/DME RWY 34

### APPENDIX 49 RNAV (RNP)

BOISE, IDAHO AL-57 (FAA) 23278

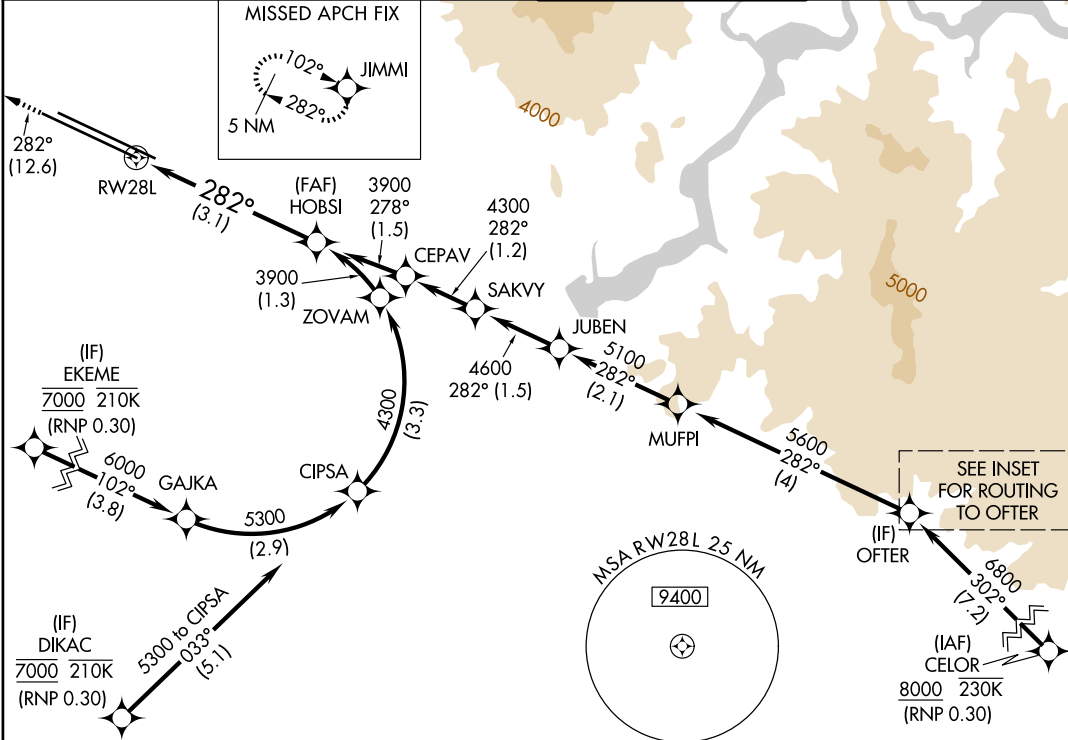
APP CRS	Rwy Ldg	<b>9763</b>
<b>282°</b>	TDZE	<b>2858</b>
	Apt Elev	<b>2872</b>

## RNAV (RNP) Z RWY 28L

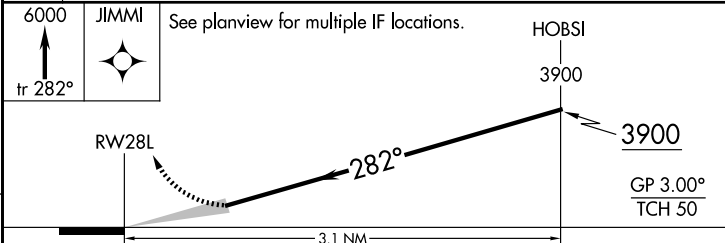
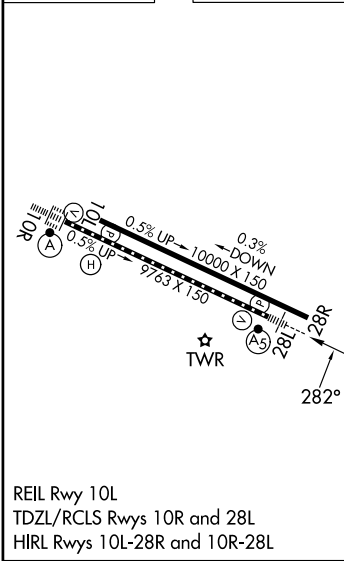
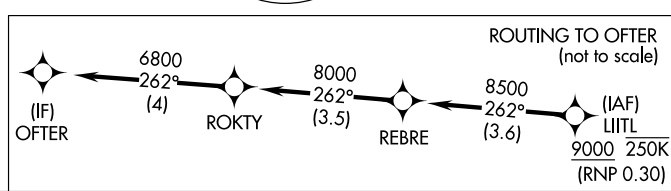
BOISE AIR TRML/GOWEN FLD (BOI)

RNP AR APCH - GPS.		MALSR	MISSED APPROACH: Climb to 6000 on track 282° to JIMMI and hold, continue climb-in-hold to 6000.	
For uncompensated Baro-VNAV systems, procedure NA below -14°C or above 54°C. For inop ALS, increase RNP 0.11 all Cats visibility to RVR 5500.				

D-ATIS	BIG SKY APP CON	BOISE TOWER	GND CON
<b>123.9 290.4</b>	<b>119.6 269.4</b>	<b>118.1 257.8</b>	<b>121.7 348.6</b>



ELEV 2872 **D** TDZE 2858



CATEGORY	A	B	C	D
RNP 0.11 DA		3220/35	362 (400-5/8)	
RNP 0.30 DA		3315/45	457 (500-7/8)	

**AUTHORIZATION REQUIRED**

BOISE, IDAHO  
Amdt 3 14JUL22

43°34'N-116°13'W

BOISE AIR TRML/GOWEN FLD (BOI)  
**RNAV (RNP) Z RWY 28L**

### APPENDIX 50 RNAV (GPS)

PITTSBURGH, PENNSYLVANIA

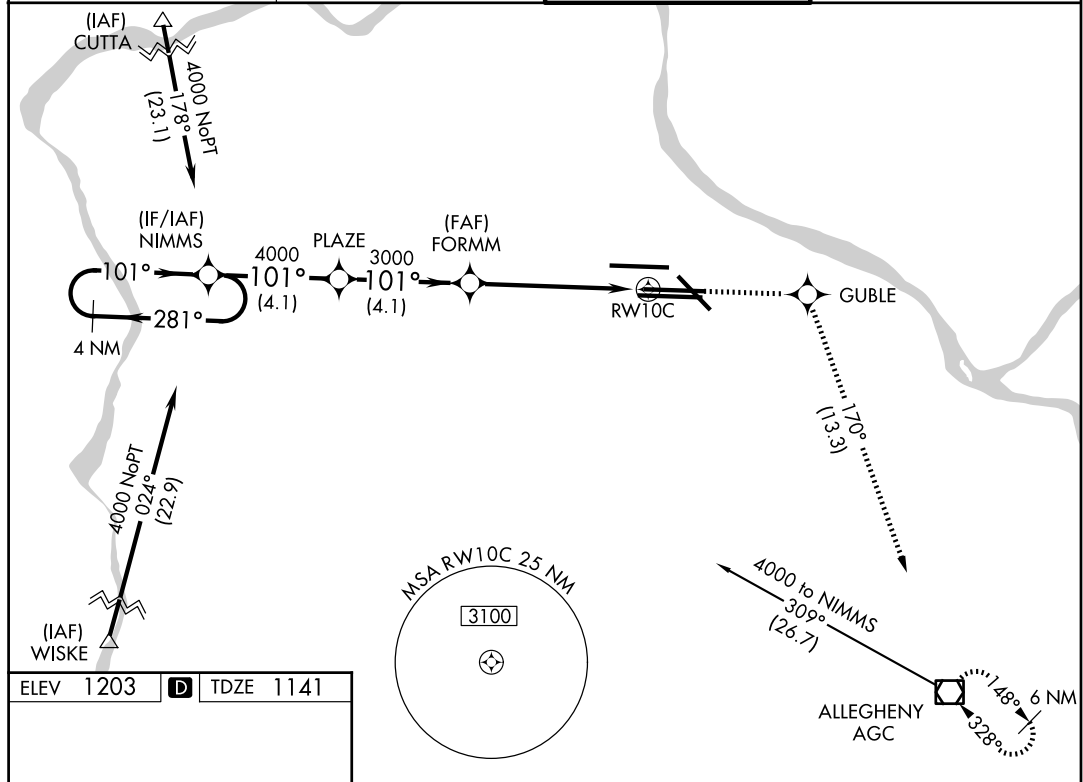
AL-570 (FAA)

24025

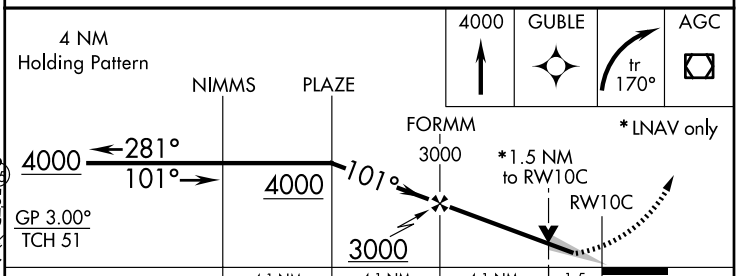
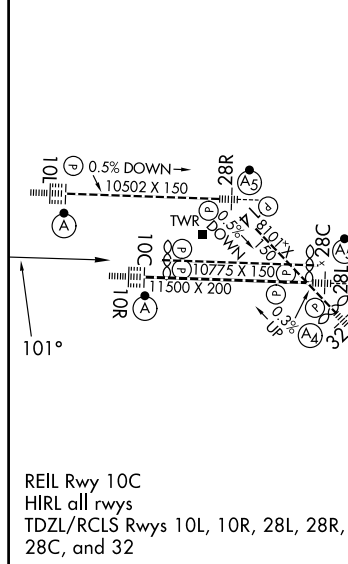
WAAS CH <b>90126</b> <b>W10A</b>	APP CRS <b>101°</b>	Rwy Ldg TDZE Apt Elev	<b>9708</b> <b>1141</b> <b>1203</b>	<b>RNAV (GPS) Y RWY 10C</b> PITTSBURGH INTL (PIT)
<p>▼ For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. Simultaneous approach authorized with ILS or LOC Rwy 10L, ILS Rwy 10L (Cat II), ILS Rwy 10L (Cat III). LNAV procedure NA during simultaneous operations. Use of FD or AP providing RNAV track guidance required during simultaneous operations.</p>				

MISSED APPROACH:  
Climb to 4000 direct GUBLE and right turn on track 170° to AGC VOR/DME and hold.

D-ATIS <b>127.25</b>	PITTSBURGH APP CON <b>123.95 360.8</b>	PITTSBURGH TOWER <b>128.3 291.7</b>	GND CON <b>121.9 348.6 (S)</b> <b>127.8 348.6 (N)</b>
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ELEV 1203	<b>D</b>	TDZE 1141
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CATEGORY	A	B	C	D
LPV DA	1438/50 297 (300-1)			
LNAV/VNAV DA	1634-1 <sup>3</sup> / <sub>4</sub> 493 (500-1 <sup>3</sup> / <sub>4</sub> )			
LNAV MDA	1660/55 519 (500-1)	1660-1 <sup>1</sup> / <sub>2</sub> 519 (500-1 <sup>1</sup> / <sub>2</sub> )	1660-1 <sup>3</sup> / <sub>4</sub> 519 (500-1 <sup>3</sup> / <sub>4</sub> )	
CIRCLING	1700-1 497 (500-1)		1880-2 677 (700-2)	1880-2 <sup>1</sup> / <sub>4</sub> 677 (700-2 <sup>1</sup> / <sub>4</sub> )

PITTSBURGH, PENNSYLVANIA

Amdt 4B 01FEB18

40°29'N-80°14'W

PITTSBURGH INTL (PIT)

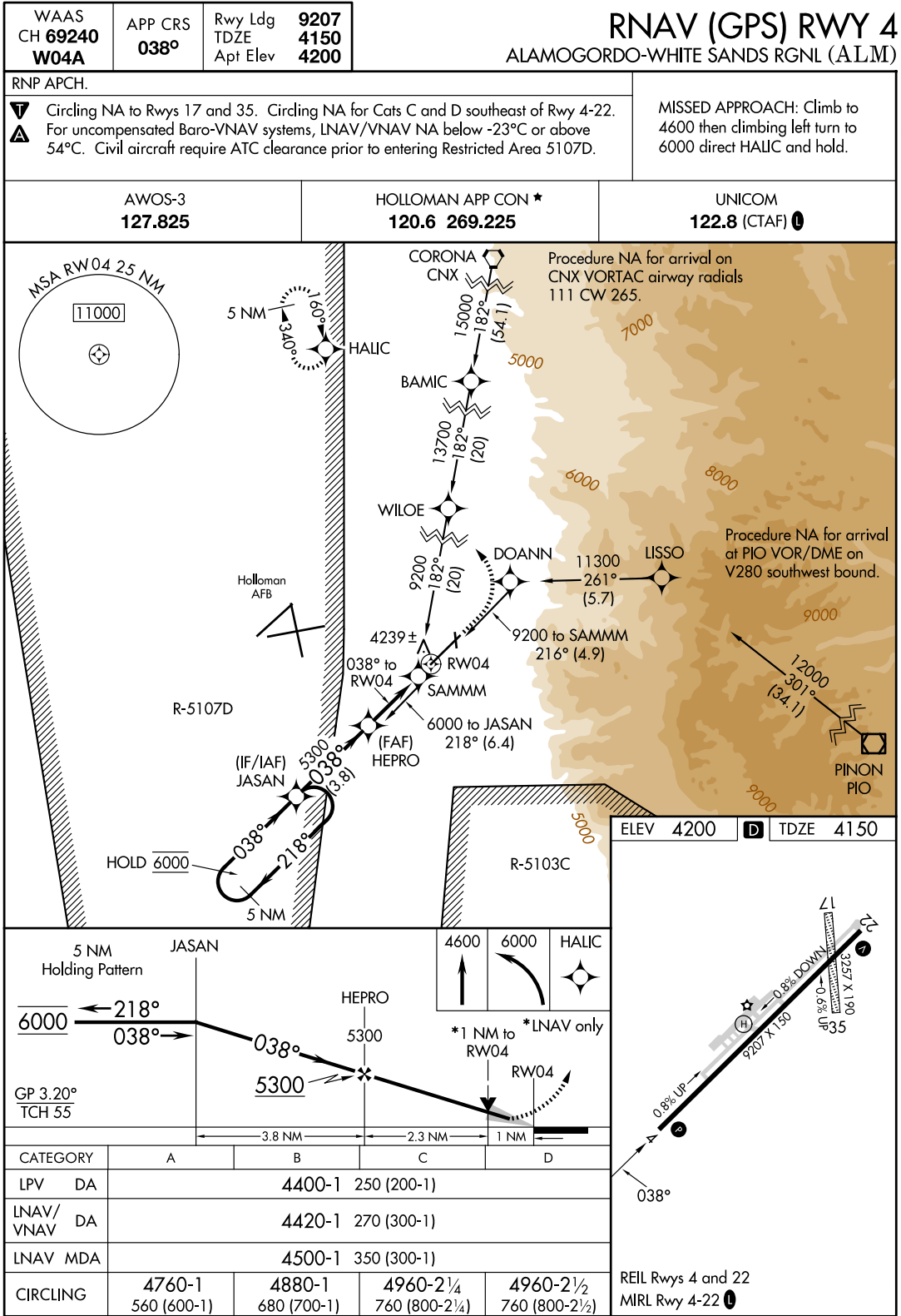
### RNAV (GPS) Y RWY 10C

## APPENDIX 51 RNAV (GPS) WITH MULTIPLE SCALE BREAKS

ALAMOGORDO, NEW MEXICO

AL-5130 (FAA)

21280



ALAMOGORDO, NEW MEXICO  
Amdt 2B 12AUG21

32°50'N-105°59'W

ALAMOGORDO-WHITE SANDS RGNL (ALM)  
**RNAV (GPS) RWY 4**

## APPENDIX 52 RNAV (RNP) WITH INSET

CARLSBAD, CALIFORNIA

AL-5310 (FAA)

24053

APP CRS <b>065°</b>	Rwy Ldg <b>4600</b> TDZE <b>331</b> Apt Elev <b>331</b>	<h1 style="margin: 0;">RNAV (RNP) Z RWY 6</h1> <p style="margin: 0;">MC CLELLAN-PALOMAR (CRQ)</p>											
⚠ For uncompensated Baro-VNAV systems, procedure NA below 4°C (40°F) or above 54°C (130°F). GPS required.		MISSED APPROACH: Climbing right turn to 3000 direct TIZIE and hold, continue climb-in-hold to 3000.											
ATIS <b>120.15</b>	SOCIAL APP CON <b>127.3 323.0</b>	PALOMAR TOWER ★ <b>118.6 (CTAF) 276.4</b>	GND CON <b>121.8</b>										
MSA RW06 25 NM <b>7300</b>		ROUTING TO DEGLE (not to scale) 7400 251° (25.3) DEGLE 9800 216° (29.8) THERMAL TRM (RF REQD) (IAF) ZASOG Procedure NA for arrival on TRM VORTAC airway radials 126 CW 306.	(IAF) TANNR 9000 (RF REQD) 6000 177° (11.8) Procedure NA for arrivals at TANNR on V186 northbound.										
Procedure NA for arrivals at PACIF on V25-27 northwest bound and V208-458 westbound. (IAF) PACIF 7000 4400 109° (13.6) (IF) DOOGR 210K 2500 110° (6) (FAF) SWWAG 1700 065° (2.9) FLEEE 1700 065° (2.9) 4 NM 245° 065° TIZIE		(IF) TRRIP 210K 3600 245° (5.5) HOLVI 5000 215° (5.1) PASME 5000 240° (8.7) DEGLE SEE INSET FOR ROUTING TO DEGLE 5000 265° (9.1) ROBNN 7300 264° (26.3) (IAF) JULIAN JLI (RF REQD) Procedure NA for arrival on JLI VORTAC airway radials 174 CW 354.											
VGSIs and RNAV glidepath not coincident (VGSi Angle 3.00/TCH 35). SWWAG 1700 GP 3.00° TCH 55 065° RWY 06 See planview for multiple IF locations. 4.1 NM		ELEV 331 TDZE 331 3000 TIZIE 4897 X 150 TWR 065°											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">CATEGORY</td> <td style="width: 15%;">A</td> <td style="width: 15%;">B</td> <td style="width: 15%;">C</td> <td style="width: 15%;">D</td> </tr> <tr> <td>RNP 0.30 DA</td> <td></td> <td>810-1<math>\frac{5}{8}</math></td> <td>479 (500-1<math>\frac{5}{8}</math>)</td> <td></td> </tr> </table>				CATEGORY	A	B	C	D	RNP 0.30 DA		810-1 $\frac{5}{8}$	479 (500-1 $\frac{5}{8}$ )	
CATEGORY	A	B	C	D									
RNP 0.30 DA		810-1 $\frac{5}{8}$	479 (500-1 $\frac{5}{8}$ )										
AUTHORIZATION REQUIRED													
CARLSBAD, CALIFORNIA Orig 10NOV16		MC CLELLAN-PALOMAR (CRQ) 33°08'N-117°17'W <h1 style="margin: 0;">RNAV (RNP) Z RWY 6</h1>											

### APPENDIX 53 GPS

CRESCO, IOWA

AL-6773 (FAA)

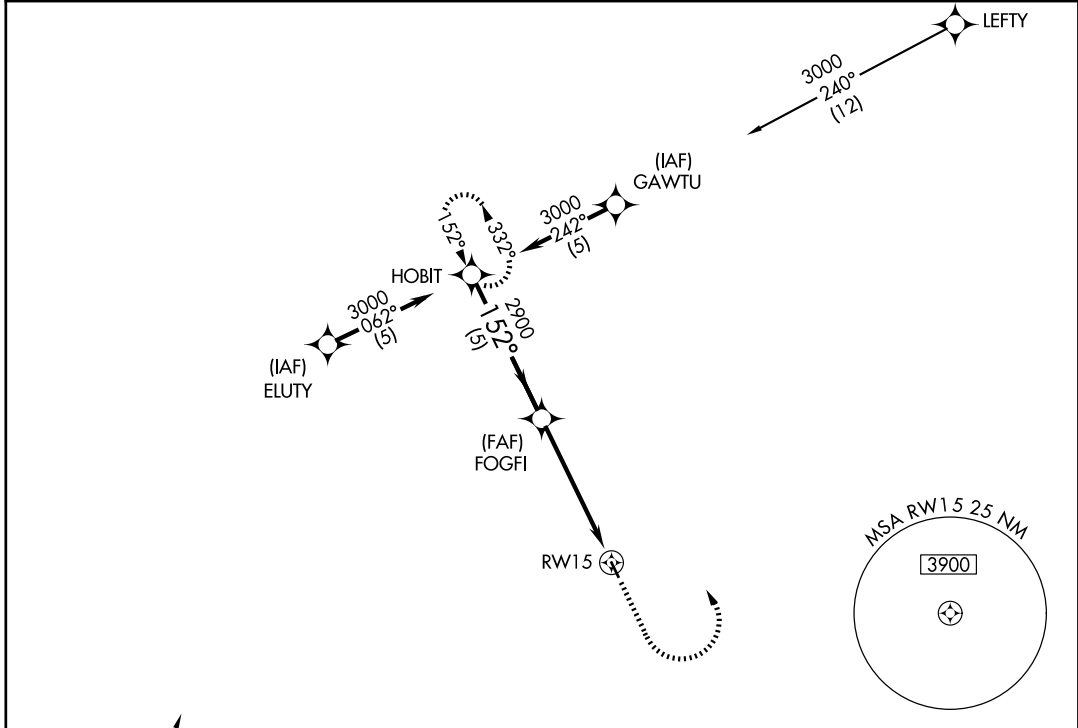
21280

APP CRS	Rwy Ldg	<b>2949</b>
<b>152°</b>	TDZE	<b>1279</b>
	Apt Elev	<b>1279</b>

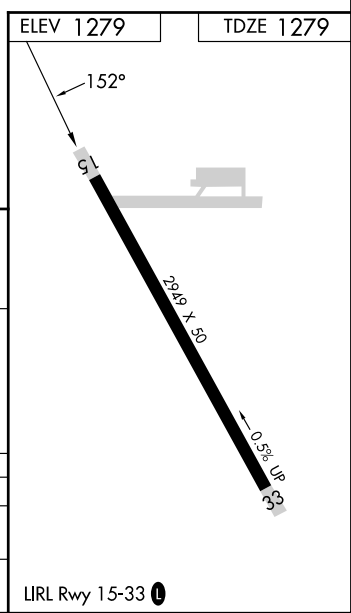
## GPS RWY 15 ELLEN CHURCH FLD (CJJ)

<p><b>▼</b> Use Decorah Muni altimeter setting. Procedure NA at night.  <b>▲ NA</b> Rwy 15 helicopter visibility reduction below 1 SM NA.</p>	<p>MISSED APPROACH: Climb to 2400, then climbing left turn to 3000 direct HOBIT and hold.</p>
---	---

DEH AWOS-3 <b>120.925</b>	MINNEAPOLIS CENTER <b>118.85</b>	UNICOM <b>122.8 (CTAF)</b>	<b>122.7 0</b>
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	HOBIT	FOGFI	RW15
3000	152°	2900	2.98° TCH 40
Procedure Turn NA			
	5 NM	5 NM	



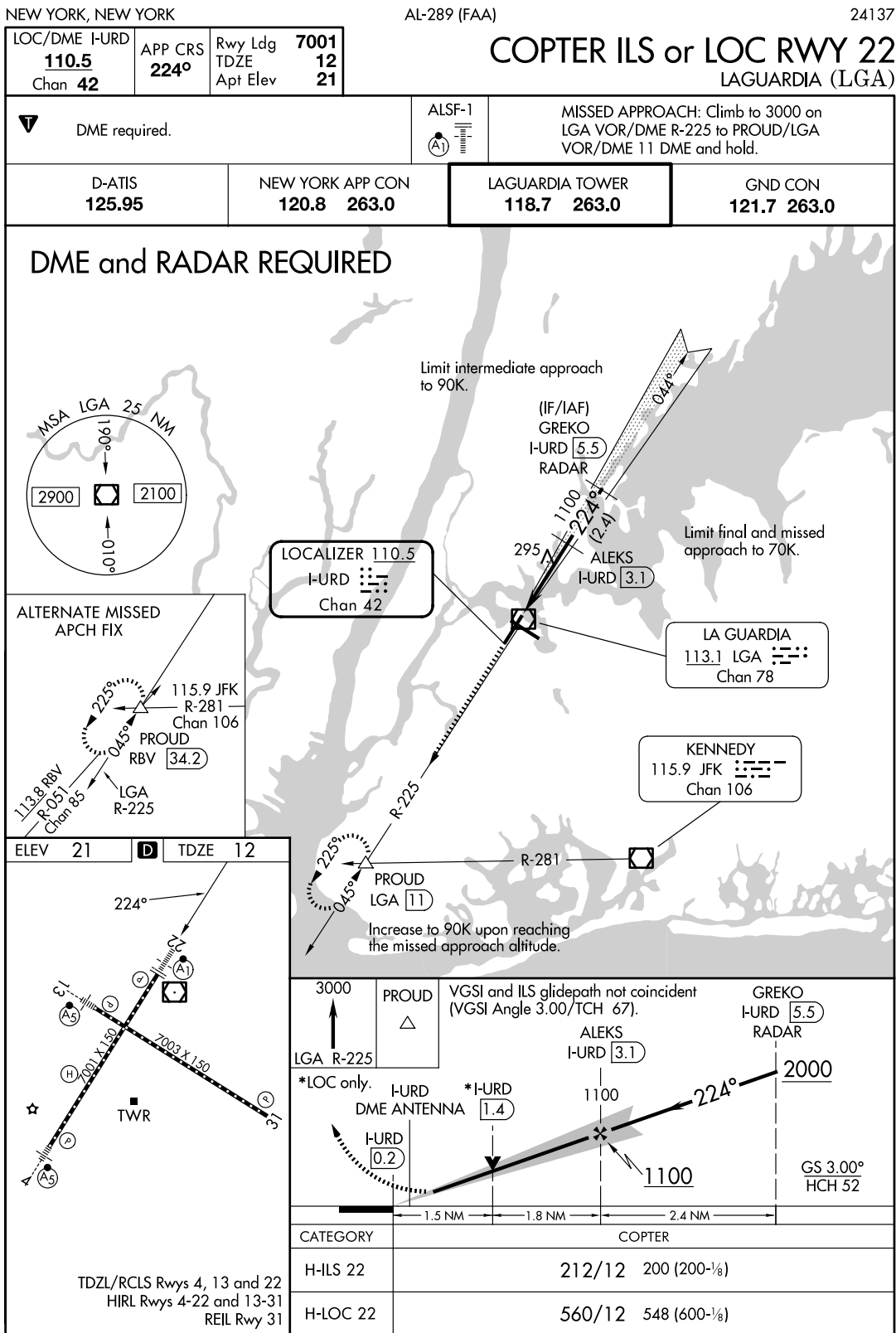
CATEGORY	A	B	C	D
S-15	1980-1	701 (800-1)	1980-2 701 (800-2)	NA
CIRCLING	1980-1	701 (800-1)	1980-2 701 (800-2)	NA

CRESCO, IOWA  
Orig-B 28FEB19

43°22'N-92°08'W

ELLEN CHURCH FLD (CJJ)  
**GPS RWY 15**

APPENDIX 54  
COPTER – ILS



NEW YORK, NEW YORK 40°47'N-73°52'W LAGUARDIA (LGA)  
 Amdt 3 07DEC17 **COPTER ILS or LOC RWY 22**

APPENDIX 55  
COPTER – NDB

ANDALUSIA/OPP, ALABAMA

AL-6524 (FAA)

23278

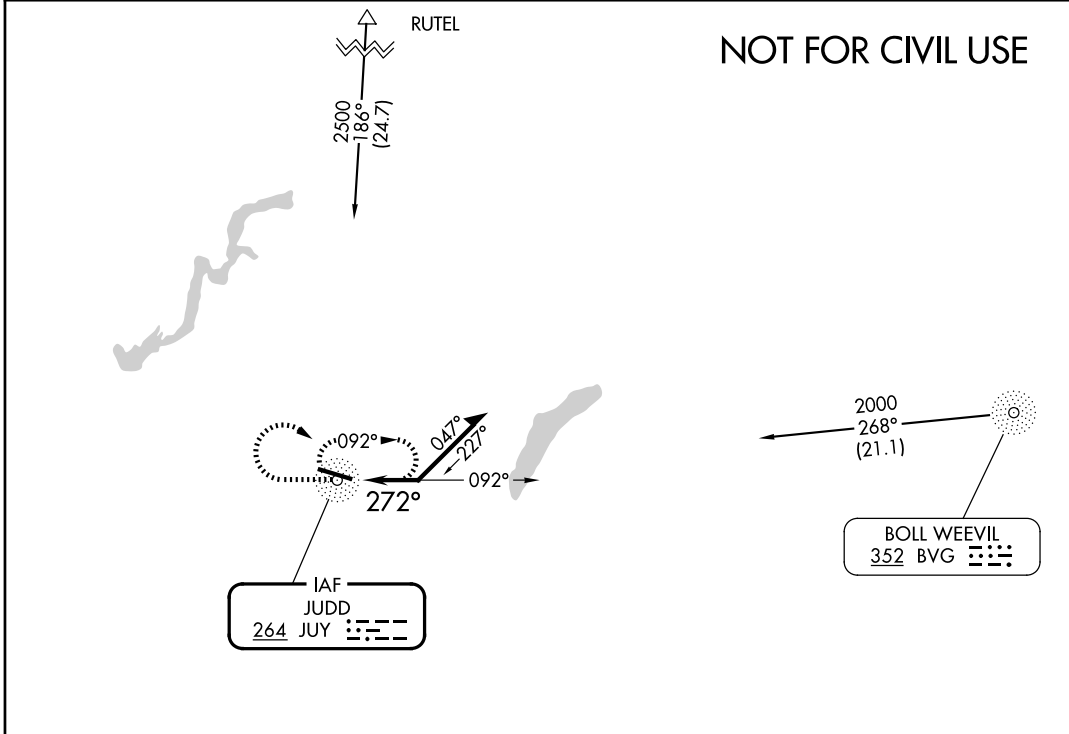
NDB	JUY	APP CRS	Rwy Ldg	6000
<u>264</u>		<u>272°</u>	TDZE	308
			Apt Elev	310

COPTER NDB RWY 29

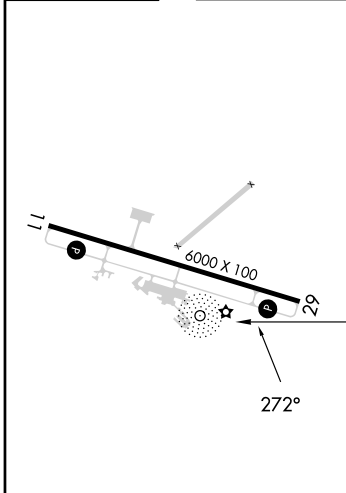
SOUTH ALABAMA RGNL AT BILL BENTON FLD (79J)

<p>⚠ When local altimeter setting not received, use Cairns AAF (Fort Novosel) altimeter setting and increase all MDA 100 feet.</p>	<p>MISSED APPROACH: Climb to 1200 then climbing right turn to 2000 direct JUY NDB and hold.</p>
--	---

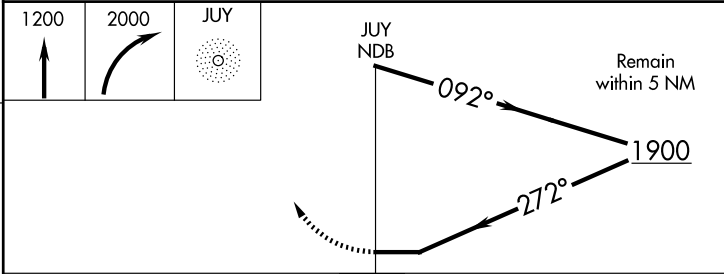
ASOS <b>134.875</b>	CAIRNS APP CON ★ <b>133.45 239.275</b>	UNICOM <b>122.8 (CTAF)</b>
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ELEV	310	TDZE	308
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MIRL Rwy 11-29   
REIL Rwys 11 and 29



CATEGORY	COPTER	
H-29	860-3/4	552 (600-3/4)

ANDALUSIA/OPP, ALABAMA  
Orig-A 28MAY15

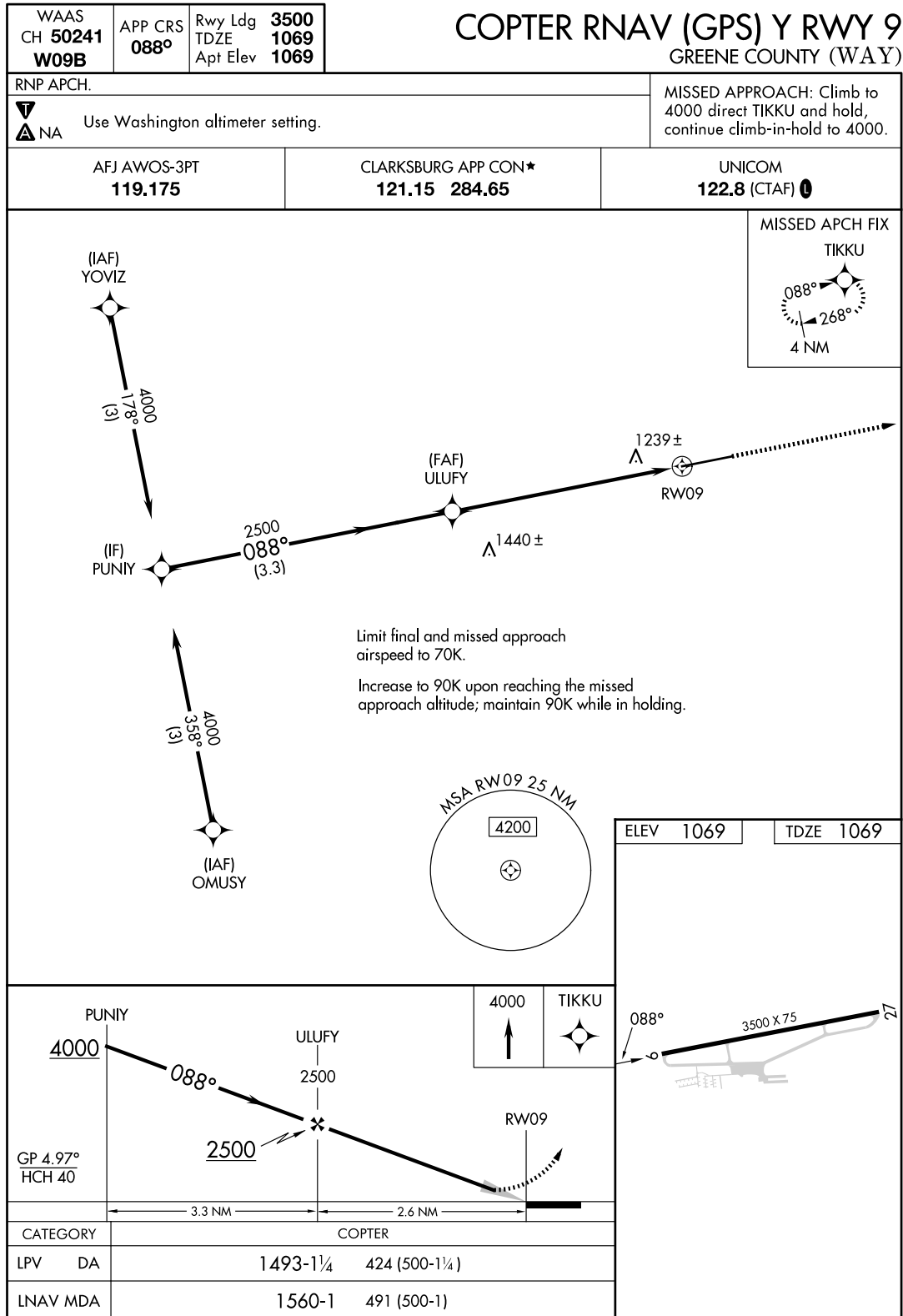
SOUTH ALABAMA RGNL AT BILL BENTON FLD (79J)  
31°19'N-86°24'W  
COPTER NDB RWY 29

## APPENDIX 56 COPTER – RNAV (GPS)

WAYNESBURG, PENNSYLVANIA

AL-10357 (FAA)

23166



WAYNESBURG, PENNSYLVANIA

GREENE COUNTY (WAY)

Amdt 1 26MAR20

39°54'N-80°08'W

### COPTER RNAV (GPS) Y RWY 9

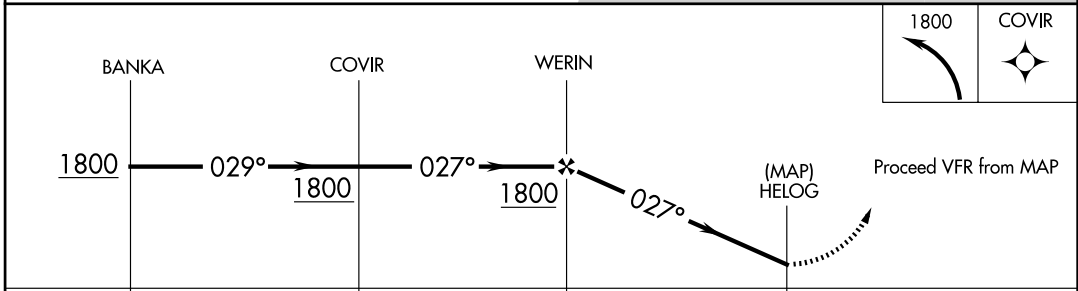
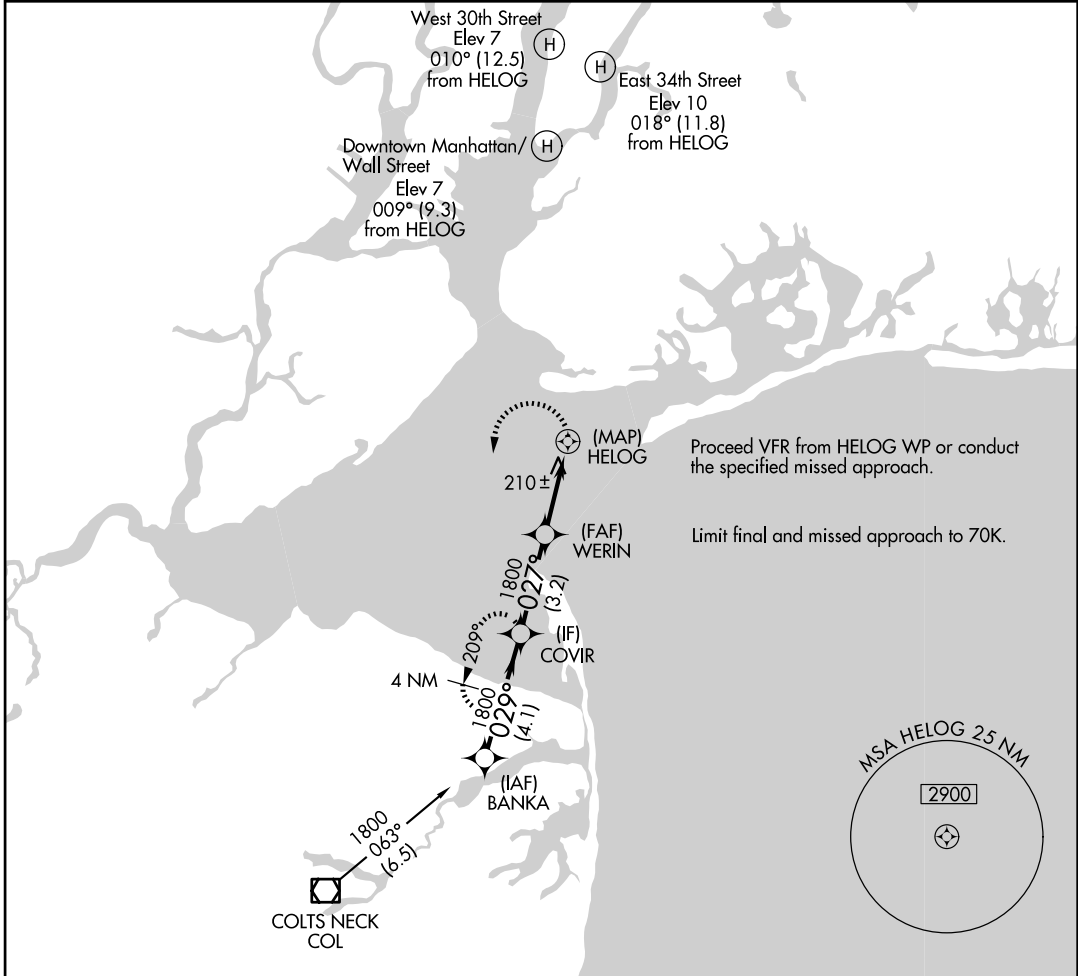
**APPENDIX 57**  
**COPTER – RNAV (GPS) – MULTI HELIPTS WITHOUT AIRPORT SKETCH**

NEW YORK, NEW YORK AL-610 (FAA) 23110

APP CRS <b>027°</b>	Rwy Ldg Sfc Elev Apt Elev	<b>N/A</b> <b>33</b> <b>N/A</b>	<b>COPTER RNAV (GPS) 027°</b> JOHN F KENNEDY INTL (JFK)
------------------------	---------------------------------	---------------------------------------	--

RNP APCH. ▼ ▲ NA Use John F Kennedy Intl altimeter setting.	MISSED APPROACH: Climbing left turn to 1800 direct COVIR and hold.
---	--

D-ATIS <b>128.725</b> (ARR/DEP) <b>117.7</b> (ARR-NE) <b>115.4</b> (ARR-SW)	NEW YORK APP CON <b>128.125</b> <b>269.0</b>
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CATEGORY	COPTER
LNAV MDA	500-¾ 467 (500-¾)

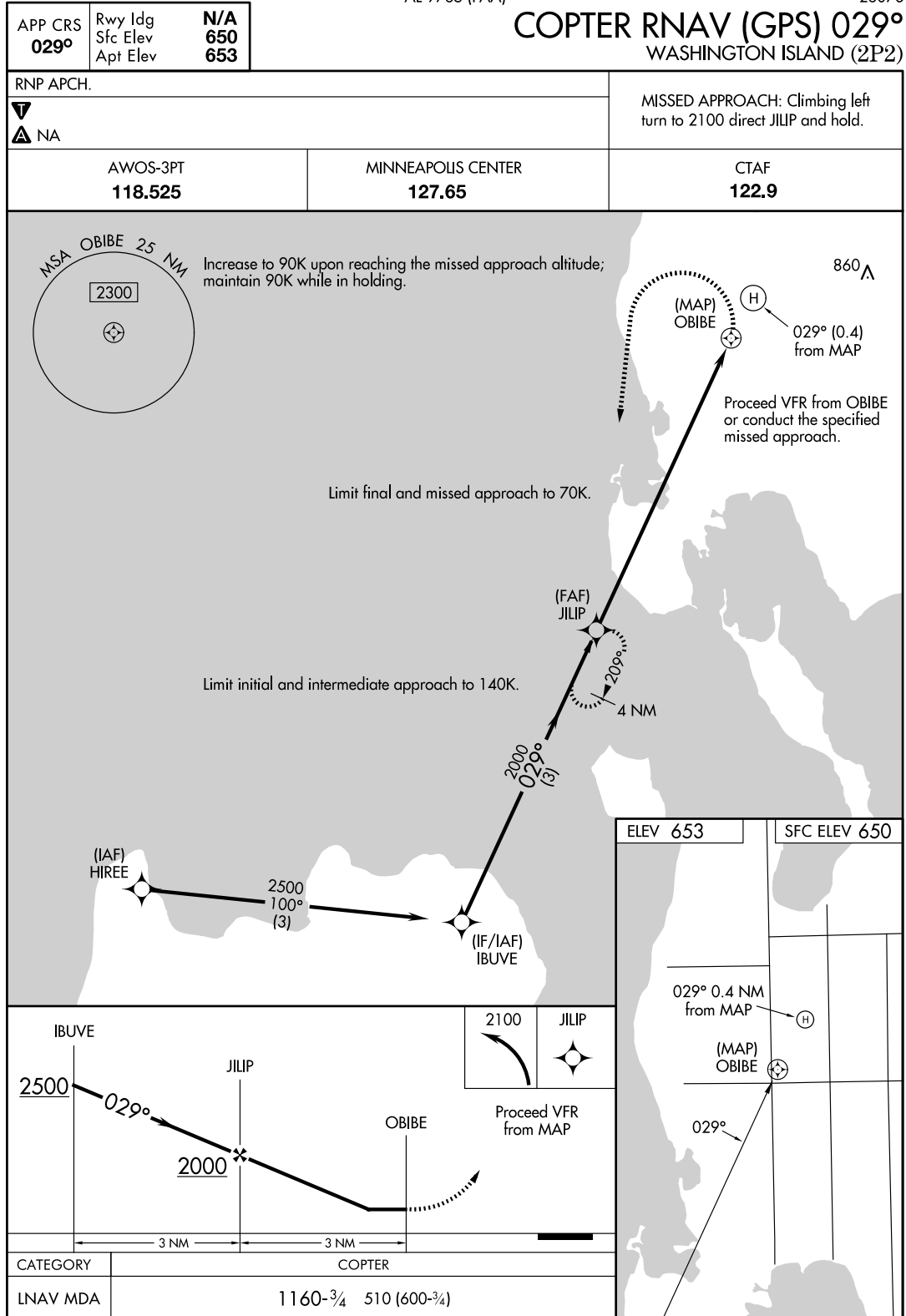
NEW YORK, NEW YORK JOHN F KENNEDY INTL (JFK)  
 Orig-C 19JUL18 40°38'N - 73°47'W **COPTER RNAV (GPS) 027°**

## APPENDIX 58 COPTER – POINT-IN-SPACE

WASHINGTON ISLAND, WISCONSIN

AL-9765 (FAA)

26078



WASHINGTON ISLAND, WISCONSIN  
Orig 08NOV18

45°23'N-86°55'W

WASHINGTON ISLAND (2P2)

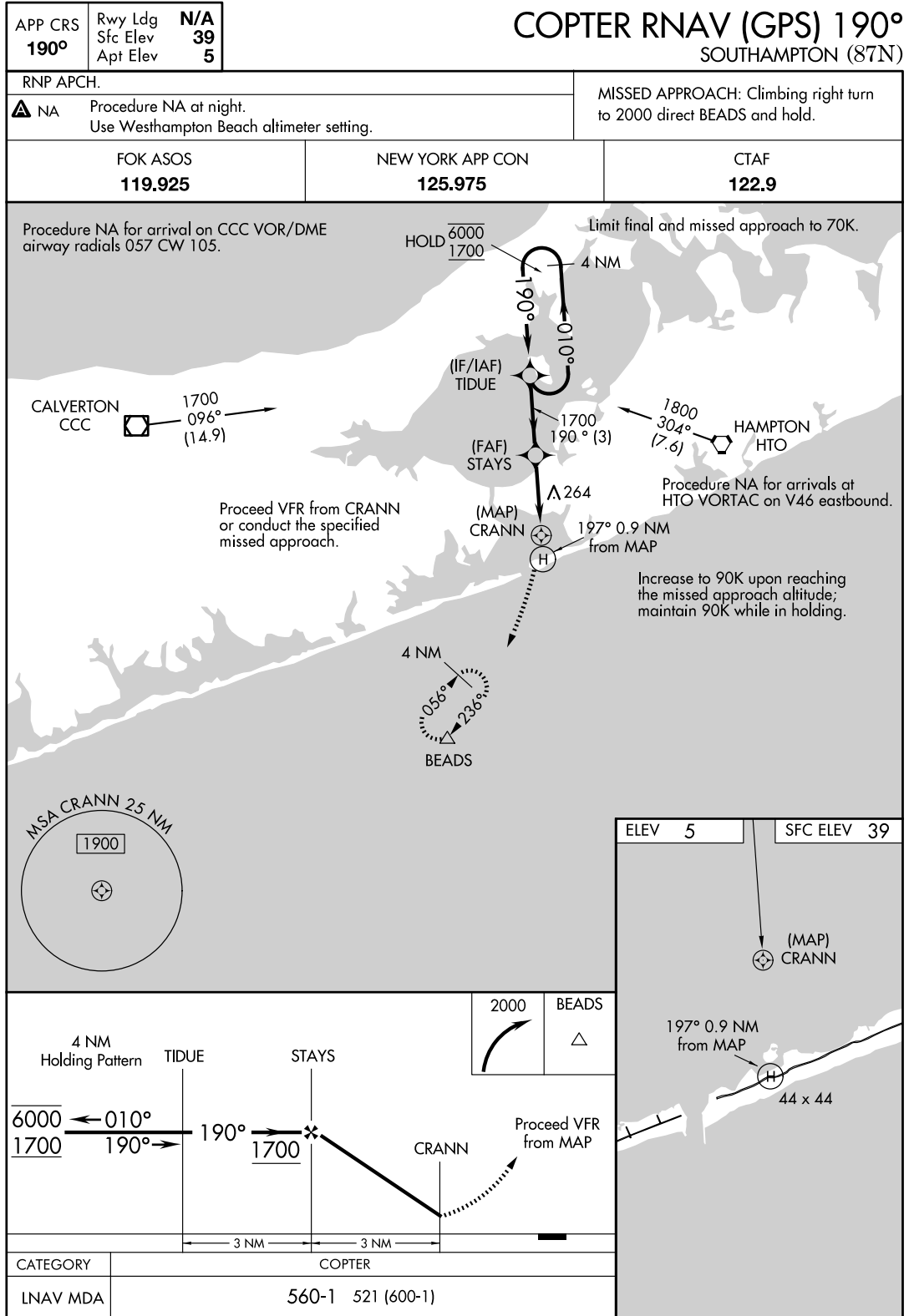
**COPTER RNAV (GPS) 029°**

## APPENDIX 59 COPTER – POINT-IN-SPACE EXAMPLE 2

SOUTHAMPTON, NEW YORK

AL-9013 (FAA)

24109



SOUTHAMPTON, NEW YORK

40°51'N-72°28'W

SOUTHAMPTON (87N)

Orig-B 10SEP20

**COPTER RNAV (GPS) 190°**

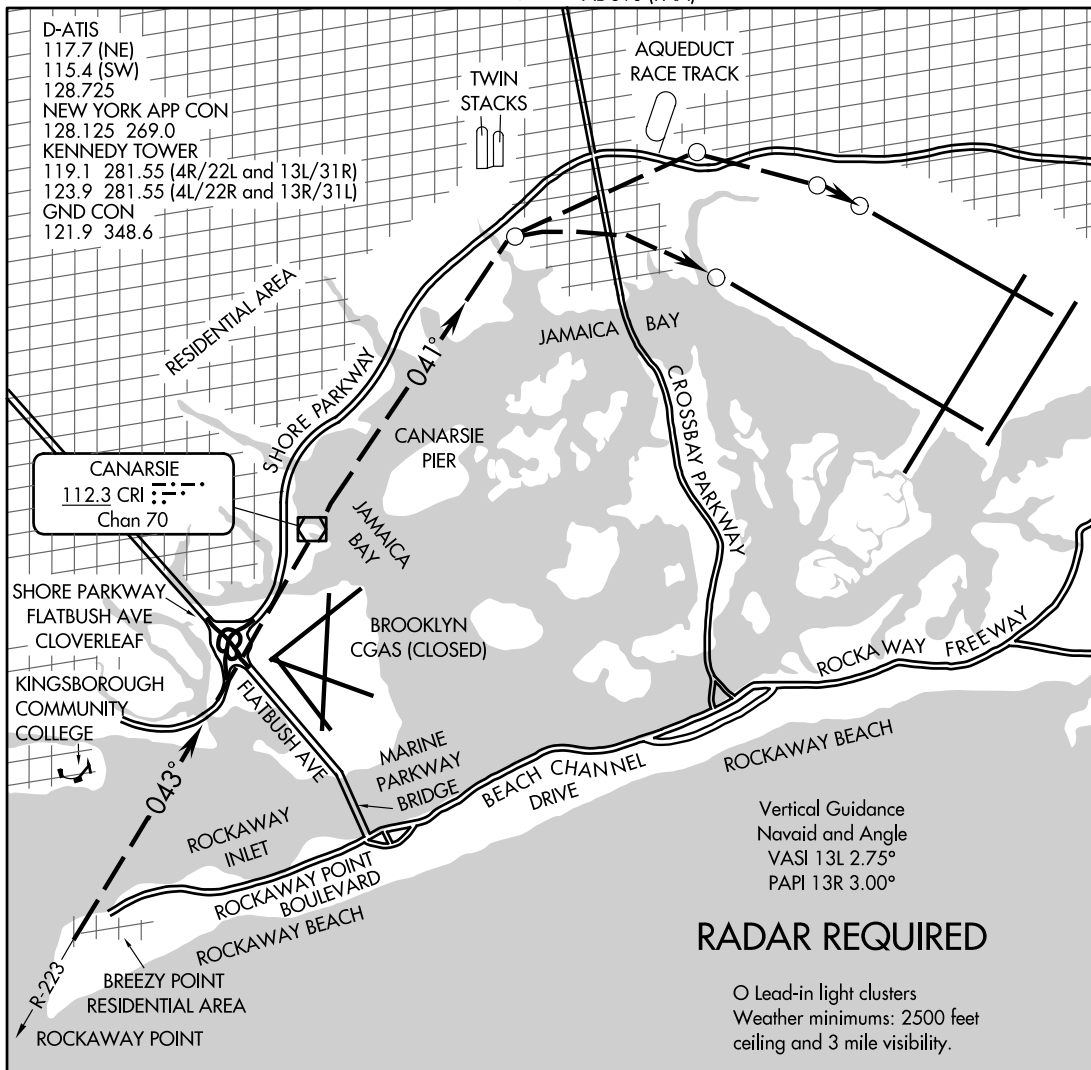
APPENDIX 60  
VISUAL (CVFP) PORTRAIT

18032

PARKWAY VISUAL RWY 13L/R

AL-610 (FAA)

JOHN F KENNEDY INTL (JFK)  
NEW YORK, NEW YORK



1	2	3	4	5	6	7	8
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PARKWAY VISUAL RUNWAY 13L/R

When cleared for Parkway Visual to Runway 13L/R maintain at or above 2000' until abeam Rockaway Point. Remain west of Rockaway Point, thence east of Kingsborough Community College. Remain east of the Shore Parkway. Cross Brooklyn Coast Guard Air Station at or above 1500'. Remain east of the Shore Parkway until Canarsie Pier.

Runway 13R continue descent between the Canarsie Pier and Twin Stacks.  
Runway 13L continue descent after passing the Twin Stacks.

PARKWAY VISUAL RWY 13L/R  
Amdt 1 29MAY14

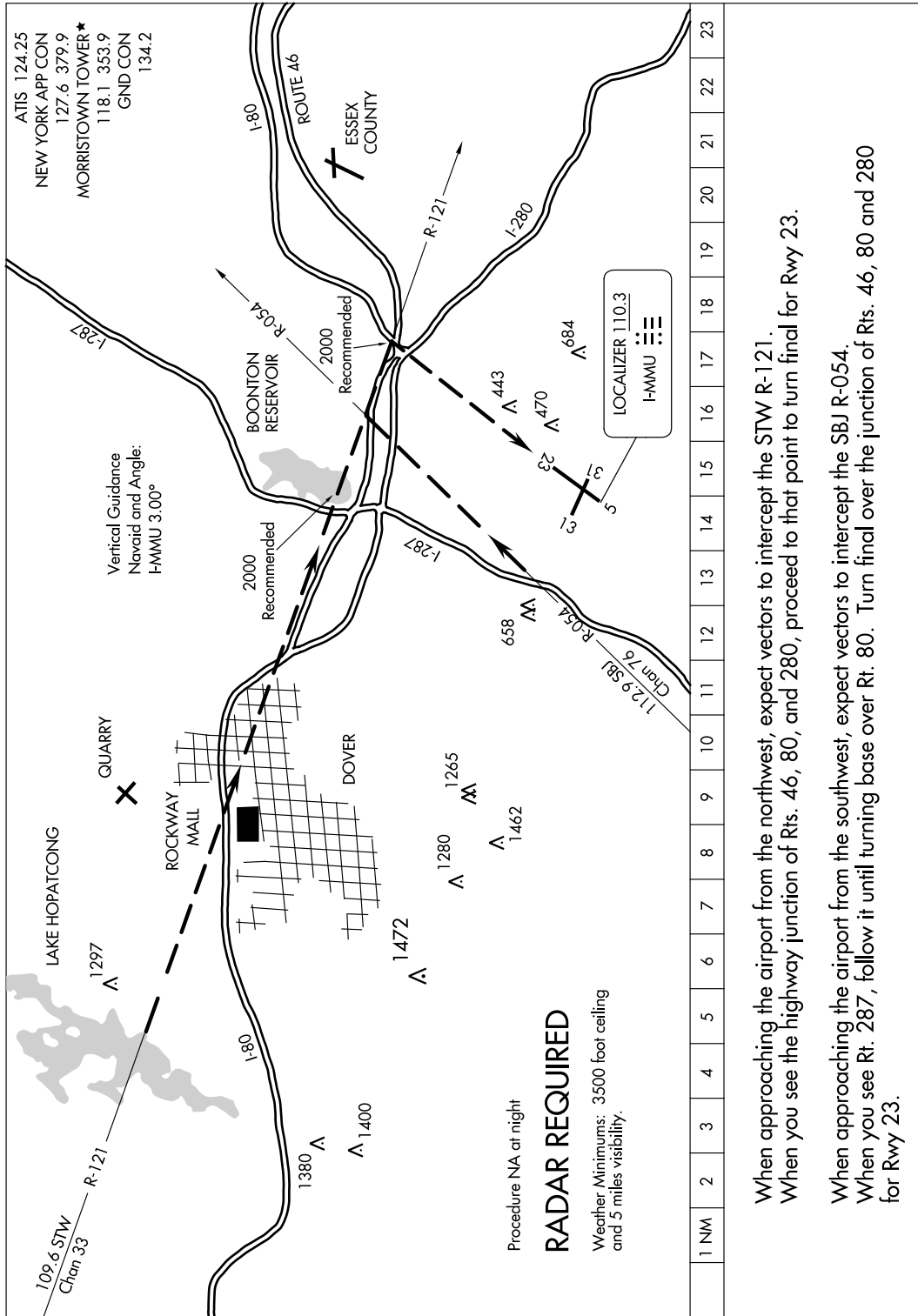
NEW YORK, NEW YORK  
JOHN F KENNEDY INTL (JFK)

APPENDIX 61  
VISUAL (CVFP) LANDSCAPE

13178

ROUTE 80 VISUAL RWY 23 AL-931 (FAA)

MORRISTOWN MUNI (MMU)  
MORRISTOWN, NEW JERSEY



ROUTE 80 VISUAL RWY 23  
Orig 17JUL97

40°48'N-74°25'W

MORRISTOWN, NEW JERSEY  
MORRISTOWN MUNI (MMU)

When approaching the airport from the northwest, expect vectors to intercept the STW R-121.  
When you see the highway junction of Rts. 46, 80, and 280, proceed to that point to turn final for Rwy 23.

When approaching the airport from the southwest, expect vectors to intercept the SBJ R-054.  
When you see Rt. 287, follow it until turning base over Rt. 80. Turn final over the junction of Rts. 46, 80 and 280 for Rwy 23.

## APPENDIX 62 SIDESTEP MINIMUMS

NEWARK, NEW JERSEY

AL-285 (FAA)

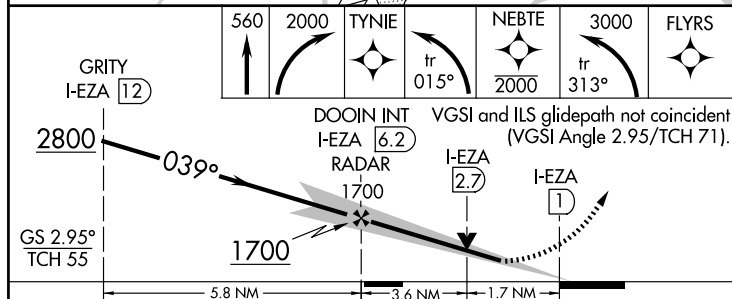
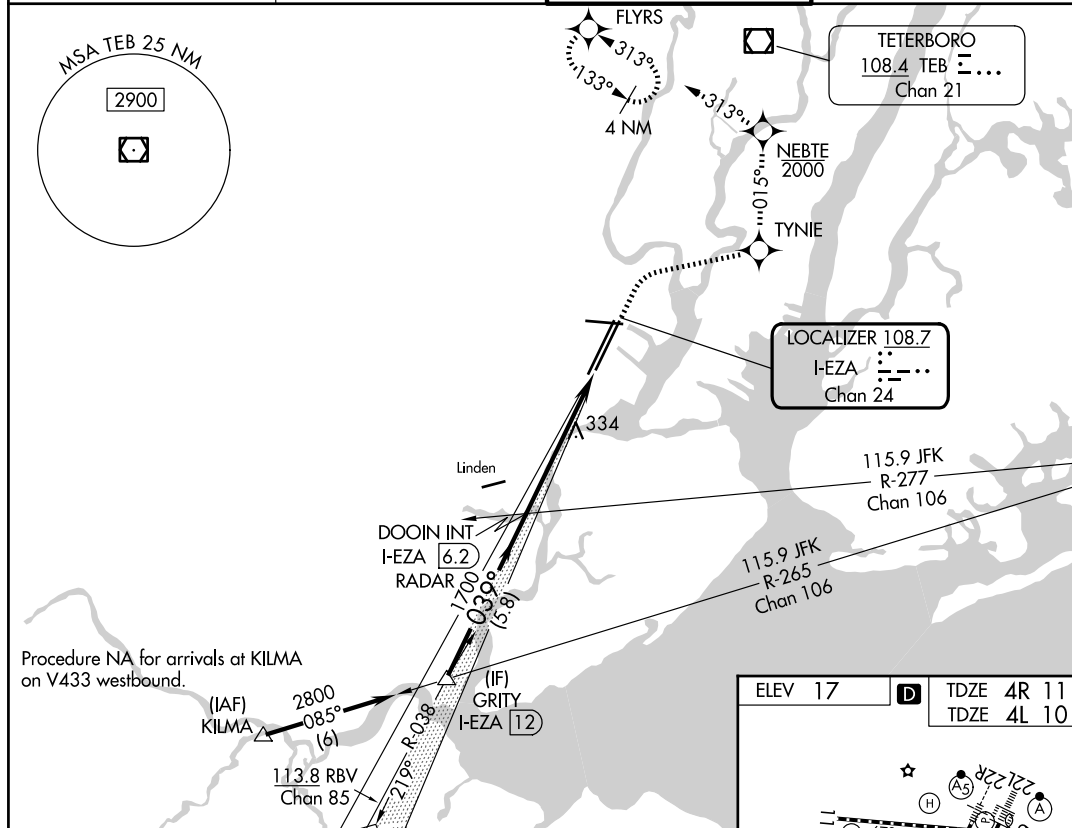
24137

LOC/DME I-EZA	APP CRS	Rwy Ldg	4R	4L
<b>108.7</b>	<b>039°</b>		<b>8810</b>	<b>8460</b>
Chan <b>24</b>		TDZE	<b>11</b>	<b>10</b>
		Apt Elev	<b>17</b>	<b>17</b>

**ILS or LOC RWY 4R**  
NEWARK LIBERTY INTL (EWR)

RNP APCH - GPS. RADAR required.	4R ALSF-2	4L MALSR	MISSED APPROACH: (Do not exceed 210K until NEBTE) Climb to 560 then climbing right turn to 2000 direct TYNIE and left turn on track 015° to NEBTE, cross NEBTE at or below 2000 then climbing left turn to 3000 on track 313° to FLYRS and hold, continue climb-in-hold to 3000.
⚠ When Circling to Rwy 29 at night, operational VGSi required, remain on or above VGSi glidepath until threshold. For inop ALS, increase Sidestep 4L Cat C visibility to 1½ SM.			

D-ATIS <b>115.7 134.825</b>	NEW YORK APP CON <b>128.55 379.9</b>	NEWARK TOWER <b>118.3 257.6</b>	GND CON <b>121.8</b>
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ELEV 17	<b>D</b>	TDZE 4R 11	TDZE 4L 10
HIRL all rwys REIL Rwy 11, 22R and 29 TDZL/RCLS all rwys			
FAF to MAP 5.2 NM			
Knots	60	90	120 150 180
Min:Sec	5:12	3:28	2:36 2:05 1:44

CATEGORY	A	B	C	D
S-ILS 4R	211/18 200 (200-½)			
S-LOC 4R	600/24	589 (600-½)	600-1¼	589 (600-1¼)
SIDESTEP RWY 4L	600/55	590 (600-1)	600-1¼ 590 (600-1¼)	600-1½ 590 (600-1½)
CIRCLING	760-1	743 (800-1)	900-2¾ 883 (900-2¾)	900-3 883 (900-3)

NEWARK, NEW JERSEY  
Amdt 14 15JUN23

40°42'N-74°10'W

NEWARK LIBERTY INTL (EWR)  
**ILS or LOC RWY 4R**

## APPENDIX 63 SEAPLANE BASE – RNAV APPROACH PLATE

GREENVILLE, MAINE

AL-5935 (FAA)

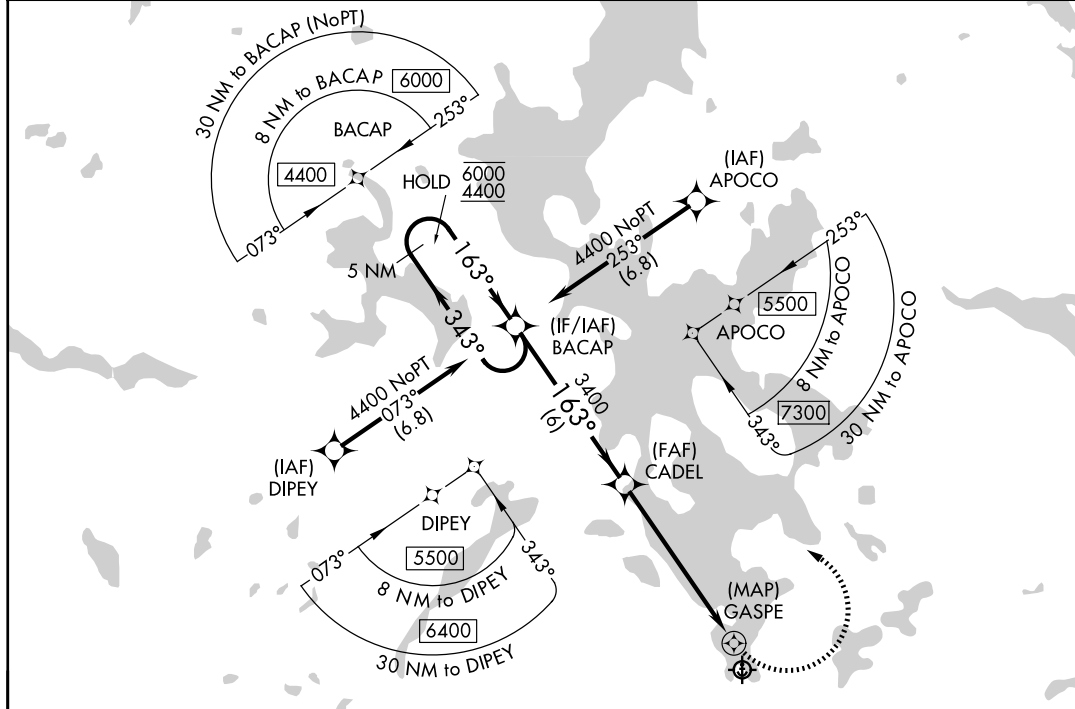
23110

APP CRS <b>163°</b>	Rwy Ldg TDZE Apt Elev	<b>N/A</b> <b>N/A</b> <b>1028</b>
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**RNAV (GPS)-B**  
MOOSEHEAD AERO MARINE (52B)

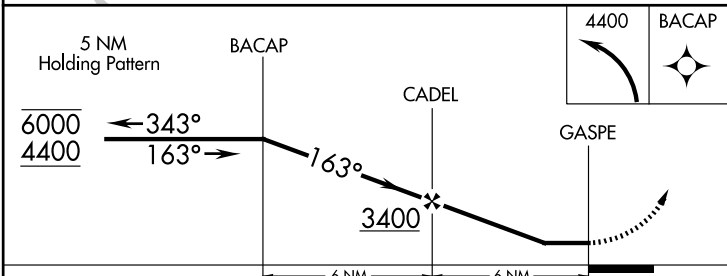
RNP APCH - GPS.		MISSED APPROACH: Climbing left turn to 4400 direct BACAP and hold.
NA Procedure NA at night. -22°C		

BOSTON CENTER <b>120.25 346.4</b>	CTAF <b>122.9</b>
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ELEV 1028

SEE MOOSEHEAD  
AERO MARINE  
SEAPLANE BASE  
LANDING CHART



CATEGORY	A	B	C	D
CIRCLING	2140-1¼ 1112 (1200-1¼)	2560-1½ 1532 (1600-1½)	2560-3 1532 (1600-3)	NA

GREENVILLE, MAINE  
Amdt 1 20APR23

45°28'N - 69°36'W

MOOSEHEAD AERO MARINE (52B)  
**RNAV (GPS)-B**

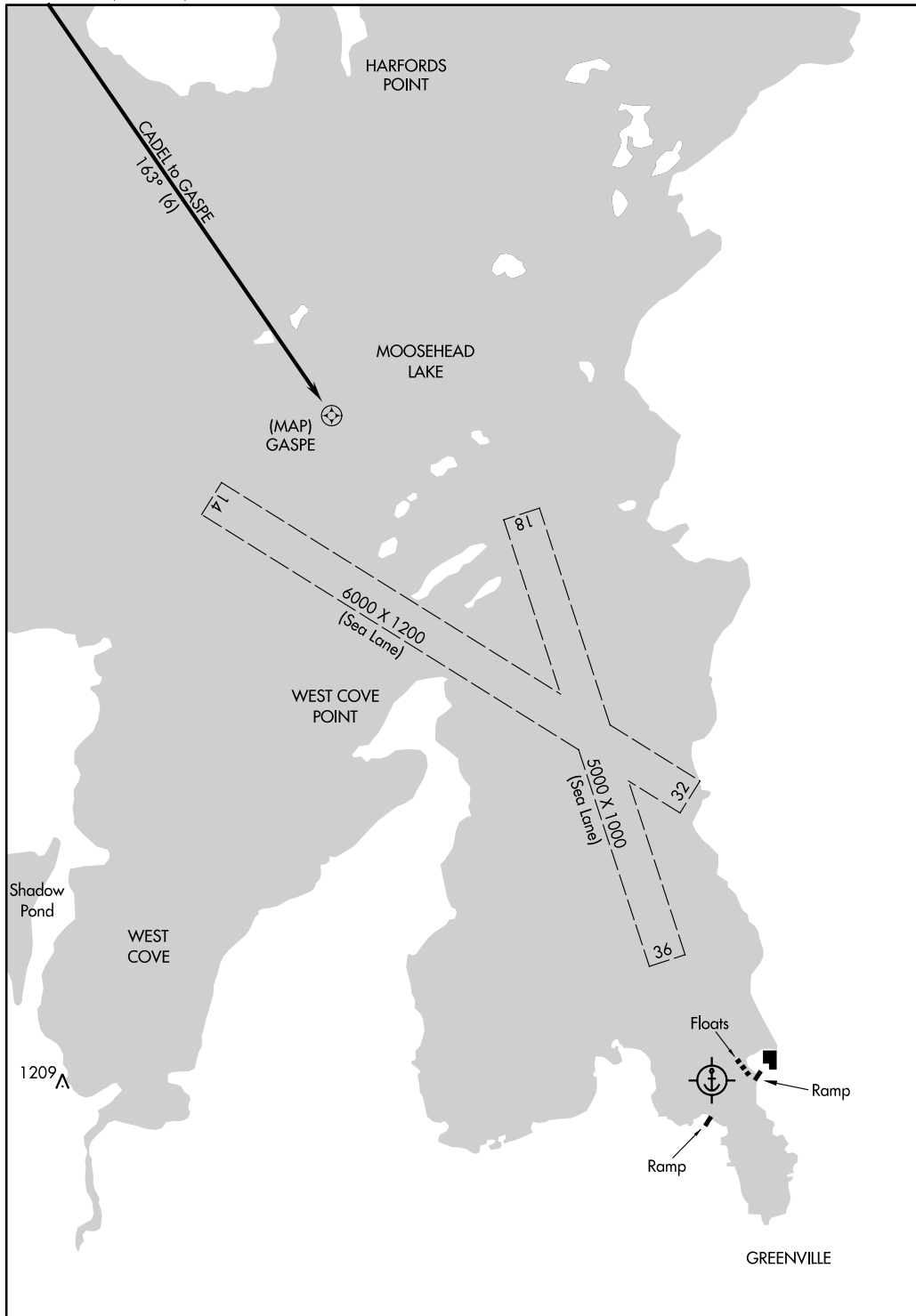
### APPENDIX 64 SEAPLANE BASE – RNAV LANDING PLATE

16147

### RNAV (GPS)-B LANDING

AL-5935 (FAA)

GREENVILLE (52B)  
GREENVILLE, MAINE



### RNAV (GPS)-B LANDING

45°28'N-69°36'W

GREENVILLE, MAINE  
GREENVILLE (52B)

Orig-A 26MAY16



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