Federal Aviation Administration

UNITED STATES GOVERNMENT SPECIFICATIONS

FLIGHT INFORMATION PUBLICATION INSTRUMENT APPROACH PROCEDURES

IAC 4
12 June 2025

Prepared by the Interagency Air Committee (IAC)

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UNITED STATES GOVERNMENT SPECIFICATIONS FOR THE FLIGHT INFORMATION PUBLICATION INSTRUMENT APPROACH PROCEDURES

12 June 2025

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

EDITORIAL CHANGES

a. 24-14 - Charting of Alternate Airport Minimums
b. 24-16 Alternate Minimums TPP Legend Information
c. 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

CHANGES APPLIED 16 APRIL 2024

REQUIREMENT DOCUMENTS

a. None applied to this edition

EDITORIAL CHANGES

a. EC 24-04 – FAA-O Clarification

CHANGES APPLIED 13 NOVEMBER 2023

REQUIREMENT DOCUMENTS

a. None applied to this edition

EDITORIAL CHANGES

a. EC 23-11 – Addition of Non-Movement Areas to Legend

CHANGES APPLIED 18 OCTOBER 2023

REQUIREMENT DOCUMENTS

a. RD 844 – Modification of Hot Spot Depiction
b. RD 862 – Landing Direction Indicators
c. RD 865 – Removal of Computer Based Nav System Data on IAPs
d. RD 866 – Extended Final Approach Track
e. RD 869 – Removal of AL Numbers on Military Charts

EDITORIAL CHANGES

a. EC 23-10 – TPP Planview Symbols Legend Cleanup

CHANGES APPLIED 30 AUGUST 2023

REQUIREMENT DOCUMENTS

a. RD 860 – Pilot Controlled Lighting on IAPs

EDITORIAL CHANGES

a. EC 23-08 – TPP Index Abbreviations

CHANGES APPLIED 28 AUGUST 2023

REQUIREMENT DOCUMENTS

a. RD 848 – Airport Diagram Modernization
b. RD 861 – NAVAID Box Depiction in TPP

EDITORIAL CHANGES

a. EC 23-07 – Office of Responsibility for Terminal Procedures

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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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TABLE OF CONTENTS

CHAPTER 1 – GENERAL

1.1 PURPOSE AND SCOPE 1-1
1.1.1 General 1-1
1.1.2 Purpose 1-1

1.2 REQUIREMENTS 1-1
1.2.1 General 1-1
1.2.2 Quality and Accuracy 1-1
1.2.3 Color 1-1
1.2.4 Symbolization 1-1
1.2.5 Type Styles 1-2

1.3 SPECIFICATION APPENDICES 1-2

CHAPTER 2 – FORMAT AND LAYOUT

2.1 GENERAL 2-1

2.2 SIZE AND DIMENSIONS 2-1
2.2.1 IAP Charts 2-1

CHAPTER 3 – CONTENT

3.1 GENERAL 3-1

3.2 LEGENDS 3-1
3.2.1 IAP Planview Symbols 3-1
3.2.2 IAP Profile Symbols 3-1

3.3 MINIMUMS 3-1
3.3.1 IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) 3-1
3.3.1.1 Format 3-2
3.3.1.1.1 Civilian Airports 3-2
3.3.1.1.2 Military Airports 3-2
3.3.1.1.3 Airports Identifiers 3-3
3.3.2 IFR Alternate Airport Minimums 3-3
3.3.2.1 Format 3-3
3.3.2.1.1 Civil Airports 3-3
3.3.2.1.2 Military Airports 3-3

3.3.2.1.3 Airport Identifiers 3-3
3.3.3 Radar Instrument Approach Minimums 3-4
3.3.3.1 General 3-4
3.3.3.2 Arrangement of Information 3-4
3.3.3.2.1 Civil Airports 3-4
3.3.3.2.2 Military Airports 3-4
3.3.3.2.3 Airport Identifiers 3-5
3.3.3.3 Column Headings 3-5
3.3.3.4 Minima 3-5
3.3.3.4.1 Minima Data 3-5
3.3.3.4.2 PAR Approaches 3-5
3.3.3.4.3 ASR Approaches 3-5
3.3.3.4.4 Categories with the Same Minima 3-5
3.3.3.4.5 Categories with Different Minima 3-6
3.3.3.4.6 Runway Data 3-6
3.3.3.5 Missed Approach Climb Rate 3-6
Table 3.1 Missed Approach Climb Rate 3-6
3.3.3.6 Informational Notes 3-6

3.4 INSTRUMENT APPROACH PROCEDURE (IAP) CHARTS 3-6
3.4.1 General 3-6
3.4.1.1 Scale 3-6
3.4.1.2 Projection 3-6
3.4.1.3 Horizontal Datum 3-6
3.4.1.4 Chart Sections 3-7
3.4.1.5 Reference Mark Symbol Hierarchy 3-7
3.4.2 Margin Information 3-7
3.4.2.1 Procedure Title 3-7
3.4.2.2 Amendment Number 3-7
3.4.2.3 Chart Reference Number 3-8
3.4.2.4 Geographic Location Name 3-8
3.4.2.5 Airport Name 3-8
3.4.2.6 Airport Location Identifier 3-8
3.4.2.7 Geographic Coordinates 3-8
3.4.3 Briefing Strips 3-9
3.4.3.1 Top Briefing Strip 3-9
Figure 3.1 Expanded Briefing Strip Example 3-9
3.4.3.2 Middle Briefing Strip 3-9

3.4.3.2.1 Notes Section 3-10
Figure 3.2 Equipment Requirements Box 3-10
Figure 3.3 Two Equipment/Requirement Boxes 3-10
Figure 3.4 Cold Temperature Airport 3-11
3.4.3.2.2 Approach Lighting System 3-11
3.4.3.2.3 Missed Approach Procedure Text 3-12
3.4.3.3 Bottom Briefing Strip 3-12
3.4.3.3.1 Approach Control (APP CON) 3-12
3.4.3.3.2 Weather Communications 3-13
3.4.3.3.3 Clearance Delivery (CLNC DEL) Frequencies 3-13
3.4.3.3.4 Controller Pilot Data Link Communications (CPDLC) 3-13
3.4.3.3.5 Non-Towered Airport 3-13
3.4.3.3.6 Primary VHF & UHF Frequencies 3-14
3.4.3.3.7 Pilot Activated Airport Lighting 3-14
3.4.4 Planview 3-14
3.4.4.1 General 3-14
3.4.4.2 Hydrography 3-14
3.4.4.3 Relief (Contours) 3-15
3.4.4.3.1 Contour Values 3-15
3.4.4.3.2 Contour Layers and Values 3-15
3.4.4.4 Cultural Features 3-15
3.4.4.5 International Boundary 3-15
3.4.4.6 Procedure Obstacles (Man-made, Terrain, and Vegetation) 3-16
3.4.4.7 Airports 3-16
3.4.4.8 Special Use Airspace (SUA) 3-16
Figure 3.5 Special Use Airspace 3-17
3.4.4.9 Air Defense Identification Zone (ADIZ) 3-17
Figure 3.6 Air Defense Identification Zone (ADIZ) Boundary 3-17
3.4.4.10 Scale 3-17
3.4.4.10.1 Terminal Route/Procedure Track Inset Box 3-18
Figure 3.7 Inset Reference Box 3-18
Figure 3.8 Inset Box 3-19
3.4.4.11 Notched Planview 3-19
3.4.4.12 Concentric Rings 3-19
3.4.4.12.1 Inner Ring (10 NM Distance Ring) 3-19
3.4.4.12.2 Middle Ring (Feeder Facilities) 3-20
3.4.4.12.3 Outer Ring (En route Facilities) 3-20

3.4.4.13 Terminal Routes ... 3-21
Figure 3.9 Dogleg ... 3-22
Figure 3.10 Dogleg Segment Based on Heading ... 3-22
Figure 3.11 DME Arcs and RF Legs ... 3-22
3.4.4.14 Procedure Track ... 3-23
Figure 3.12 Procedure Track ... 3-23
Figure 3.13 Procedure Track Type ... 3-24
Figure 3.14 Offset Feeder Route ... 3-24
3.4.4.14.1 Procedure Turn Barb ... 3-24
Figure 3.15 Procedure Turn Barb ... 3-24
3.4.4.14.2 Procedures Using Teardrop or Holding Pattern ... 3-25
Figure 3.16 Teardrop Turn ... 3-25
3.4.4.14.3 ILS Components ... 3-25
3.4.4.15 Restrictive Altitudes and Airspeeds Along the Procedure Track ... 3-25
Table 3.2 Restrictive Altitudes and Airspeeds ... 3-25
3.4.4.16 Missed Approach Procedure Track ... 3-26
Figure 3.17 Missed Approach Track ... 3-26
Figure 3.18 Missed Approach Procedure Track Off Chart ... 3-26
Figure 3.19 Missed Approach Procedure Track Endpoint Off Chart Using Radial/Bearing ... 3-26
3.4.4.17 Visual Procedure Track ... 3-27
Figure 3.20 Visual Procedure Track ... 3-27
Figure 3.21 Visual Track Applies to LNAV/VNAV Only ... 3-27
3.4.4.18 Notes ... 3-27
3.4.4.19 Minimum Safe Altitudes (MSA) ... 3-27
3.4.4.20 Holding Patterns ... 3-28
3.4.4.20.1 General ... 3-28
Figure 3.22 Holding Pattern Altitude Restrictions ... 3-29
3.4.4.20.2 Missed Approach Inset Box ... 3-30
Figure 3.23 Missed Approach Inset Box Examples ... 3-30
3.4.4.20.3 Arrival Holding Patterns with Altitude Restrictions ... 3-31
3.4.4.21 Radial Lines ... 3-31
3.4.4.22 Bearing Lines ... 3-31
3.4.4.23 NAVAIDs - General ... 3-31
3.4.4.23.1 NAVAIDs Used on Non-RNAV Charts ... 3-31
3.4.4.23.2 NAVAIDs Used on RNAV Charts ... 3-32
3.4.4.23.3 NAVAIDs Off the Chart ... 3-32
Figure 3.24 NAVAIDs Off the Chart ... 3-32
Figure 3.25 Morse Code on NAVAID Off the Chart ... 3-33
3.4.4.23.4 NAVAIDs Used in Missed/Alternate Missed Approach Holding ... 3-33
Figure 3.26 Missed Approach Box Inset ... 3-33

3.4.4.23.5 Arrangement of Data Within Data Box 3-34
Figure 3.27 Arrangement of Data in the NAVAID Box 3-34
Figure 3.28 DME or TACAN NAVAID Box 3-34
3.4.4.23.6 NAVAIDs Identified as Initial Approach Fix (IAF) or Intermediate Fix (IF) 3-34
Figure 3.29 IAF Note 3-35
3.4.4.24 Marker Beacons 3-35
Figure 3.30 Marker Beacon 3-35
Figure 3.31 Named Outer Marker 3-35
3.4.4.25 Non-Directional Radio Beacons (NDB) 3-35
3.4.4.26 Compass Locators / Marker Beacons 3-36
Figure 3.32 Compass Locators/Marker Beacons 3-36
3.4.4.27 VOR, VORTAC, VOR/DME, DME 3-36
3.4.4.28 TACAN 3-36
3.4.4.29 Instrument Landing System (ILS) 3-36
Figure 3.33 Localizer Depiction 3-37
Figure 3.34 ILS - Outbound Bearings 3-37
3.4.4.30 Intersections/Fixes 3-37
3.4.4.30.1 General 3-37
3.4.4.30.2 Enroute 3-38
Figure 3.35 Enroute Fix with DME Component 3-38
Figure 3.36 Make-up Lines 3-38
3.4.4.30.3 IAP Only Intersections (No Enroute Component) 3-38
Figure 3.37 IAP Only Intersection with DME Component 3-38
3.4.4.30.4 IAP Only DME Fixes/Step-down Fixes (No Enroute Component) 3-38
Figure 3.38 DME Fixes 3-39
Figure 3.39 Named Missed Approach Point Fix 3-39
Figure 3.40 CNFs 3-39
Figure 3.41 Final Approach Course CNFs 3-40
3.4.4.31 Area Navigation (RNAV) Waypoints 3-40
Figure 3.42 Unnamed Step-down Waypoints 3-40
Figure 3.43 Named Step-down Waypoints 3-40
Figure 3.44 RNP Values 3-41
Figure 3.45 IAF Note 3-41
3.4.4.32 Fly-over Symbology 3-41
3.4.4.33 Copter Point-in-Space Procedures 3-41
3.4.4.33.1 Visual Segment 3-41
Figure 3.46 Visual Segment 3-41
3.4.4.33.2 VFR Segments 3-41
3.4.4.33.3 Significant Visual Landmark Features 3-42

3.4.4.34 Airways ... 3-42
Figure 3.47 Airway Example ... 3-42
3.4.4.35 End of Runway Coordinates (Military Only) ... 3-42
3.4.4.36 Terminal Arrival Areas (TAA) ... 3-42
Figure 3.48 Terminal Arrival Areas ... 3-43
Figure 3.49 Terminal Arrival Areas with Inner Sectors ... 3-43
Figure 3.50 Nonstandard TAA ... 3-44
3.4.5 Profile ... 3-44
3.4.5.1 General ... 3-44
3.4.5.2 Airport Profile ... 3-45
3.4.5.3 NAVAIDs ... 3-45
3.4.5.4 Intersections/Fixes ... 3-45
Figure 3.51 Fixes Formed by Bearings ... 3-46
3.4.5.5 RNAV Waypoints ... 3-46
Figure 3.52 RNAV Waypoints Used as Mileage Fixes ... 3-46
3.4.5.6 Procedure Track ... 3-46
3.4.5.6.1 Headings ... 3-47
3.4.5.6.2 Procedure and Teardrop Turns ... 3-47
Figure 3.53 Procedure Turn Notes ... 3-47
3.4.5.6.3 Nonprecision Final Approach Fix (FAF) ... 3-47
3.4.5.6.4 Instrument Approach Procedures that Terminate or Have Missed Approaches Prior to the Airport ... 3-47
Figure 3.54 Copter VFR Segment ... 3-48
Figure 3.55 RNAV Fly Visual Example ... 3-48
3.4.5.6.5 RNP Profile View with Track-to-Fix (TF) and Radius-to-Fix (RF) Segments ... 3-49
Figure 3.56 RNP Profile - Track to Fix (TF) and Radius to Fix (RF) Segments ... 3-49
3.4.5.6.6 Profile View of Terminal Routes Designated for Final Approach ... 3-49
3.4.5.6.7 Missed Approach Track ... 3-49
3.4.5.6.8 Level Flight to be Maintained from Primary Facility or Fix ... 3-50
3.4.5.6.9 Visual Descent Point (VDP) ... 3-50
Figure 3.57 Visual Descent Point ... 3-50
3.4.5.7 Altitudes ... 3-50
Figure 3.58 Altitudes with Reference Mark ... 3-50
Figure 3.59 Holding Pattern Altitude Restriction in Profile ... 3-51
3.4.5.8 Restrictive Airspeeds Along the Procedure Track ... 3-51
3.4.5.9 ILS Glide Slope and RNAV Glidepath ... 3-51
Figure 3.60 Glide Slope/Glidepath Angle Note ... 3-51
Figure 3.61 Dual TCH Values ... 3-51

3.4.5.10 Constant Descent Angle and Threshold/Heliport Crossing Heights 3-52
Figure 3.62 Descent Angle with TCH and HCH 3-52
3.4.5.10.1 34:1 Surface Clear Stipple Symbol 3-52
3.4.5.11 Distance Between Components of the Procedure 3-52
3.4.5.11.1 Precision Approaches 3-52
3.4.5.11.2 Nonprecision Approaches 3-53
3.4.5.11.3 Components Used for Reference 3-53
Figure 3.63 Components Used for Reference 3-53
3.4.5.12 ILS CAT II, CAT II & III, and Special Authorization (SA) Profile Features 3-53
3.4.5.13 Notes 3-54
3.4.6 Missed Approach Icons 3-54
3.4.7 Airport Sketch 3-54
3.4.7.1 General 3-54
3.4.7.2 Airport Elevations and Touchdown Zone Elevation 3-55
3.4.7.2.1 Airport Elevation 3-55
3.4.7.2.2 Touchdown Zone Elevation 3-55
3.4.7.3 Airport Pattern 3-55
3.4.7.3.1 Runway Surface 3-55
3.4.7.3.2 Taxiways, Aprons, and Hardstands 3-56
Figure 3.64 Airport Sketch Depiction 3-56
3.4.7.3.3 Runway Dimensions 3-56
Figure 3.65 Runway Declared Distance Information Icon 3-57
3.4.7.3.4 Runway Numbers 3-57
3.4.7.3.5 Runway Slope 3-57
3.4.7.3.6 Arresting Gear and Jet Barriers 3-57
3.4.7.3.7 U.S. Navy Optical Landing System 3-57
3.4.7.3.8 Helicopter Alighting Areas 3-57
3.4.7.4 Control Tower 3-58
3.4.7.5 NAVAIDs 3-58
3.4.7.6 Final Approach Course 3-58
3.4.7.6.1 IAP Final Approach Course 3-58
3.4.7.6.2 Copter Point-in-Space Final Approach Course 3-58
3.4.7.7 Lighting 3-58
3.4.7.7.1 Approach Lighting Systems 3-58
3.4.7.7.2 Airport Beacon 3-59
3.4.7.7.3 Runway End Identifier Lights (REIL) 3-59
3.4.7.7.4 Runway Lead-in Light Systems (RLLS) 3-59

3.4.7.7.5 Runway Lights ... 3-59
3.4.7.7.6 Notes on Lighting ... 3-59
3.4.7.8 Base Information (Copter Approaches Only) ... 3-59
3.4.7.8.1 Hydrography ... 3-60
3.4.7.8.2 Railroads, Roads and Related Features (120L/15%) ... 3-60
3.4.7.8.3 Populated Places ... 3-61
Figure 3.66 Depiction of Populated Places ... 3-61
Figure 3.67 Depiction of Buildings & Landmarks Along Visual Flight Track ... 3-61
3.4.7.8.4 Miscellaneous Cultural Features ... 3-61
Table 3.3 Miscellaneous Cultural Features ... 3-61
3.4.7.8.5 Relief (Differences in Elevation) ... 3-61
Figure 3.68 Relief (Differences in Elevation) ... 3-62
3.4.8 Minima Data ... 3-62
3.4.8.1 General ... 3-62
3.4.8.2 Minima Data ... 3-62
3.4.8.3 Day/Night ... 3-63
3.4.8.4 Multiple Approach Speed Categories ... 3-63
3.4.8.5 Multiple Straight-Ins ... 3-63
3.4.8.6 Military Minima ... 3-63
Table 3.4 Comparable Values of RVR and Visibility ... 3-63
3.4.9 Time/Distance Table ... 3-64
3.4.9.1 General ... 3-64
3.4.9.2 Multiple Facilities ... 3-64
3.4.9.3 No Depiction ... 3-64
3.4.9.4 Nonprecision Approaches ... 3-65
Table 3.5 Nonprecision Approaches - Distance to MAP ... 3-65
3.4.10 Category II/II & III and SA Category I/II/I &II ILS Procedures ... 3-65
3.4.10.1 Profile Depictions ... 3-65
3.4.10.2 CAT II, CAT III, SA CAT I and SA CAT II Specific Notes ... 3-65
3.4.10.3 CAT II, CAT III, SA CAT I and SA CAT II Minimums ... 3-66
3.4.11 RNAV Procedures ... 3-66
3.4.12 Attention All Users Page (AAUP) ... 3-66

3.5 CHARTED VISUAL FLIGHT PROCEDURE (CVFP) CHARTS ... 3-66
3.5.1 General ... 3-66
3.5.2 Scale ... 3-66
3.5.3 Projection ... 3-66
3.5.4 Margin Information ... 3-66
3.5.4.1 Procedure Title ... 3-66

3.5.4.2 Amendment Number 3-67
3.5.5 Planview 3-67
3.5.5.1 General 3-67
3.5.5.2 Communications 3-67
3.5.5.3 Relief 3-67
3.5.5.4 Obstacles 3-67
3.5.5.5 Visual Track 3-68
3.5.5.6 Additional Base Information 3-68
3.5.5.7 Radio Aids to Navigation 3-68
3.5.5.8 Bar Scale 3-68
3.5.5.9 Lights 3-68
Figure 3.69 Lights 3-68
3.5.6 Notes Section 3-68

Appendix 1 IFR Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) A-1
Appendix 2 Diverse Vector Area (Radar Vectors) Example A-2
Appendix 3 IFR Alternate Airport Minimums A-3
Appendix 4 Radar Instrument Approach Minimums A-5
Appendix 5 IAP Chart Format and Dimensions A-6
Appendix 6 Margin Data A-7
Appendix 7 Briefing Strips A-8
Appendix 8 Briefing Strips – Copter A-12
Appendix 9 Legend – IAP Planview A-13
Appendix 10 Legend – IAP Profile A-15
Appendix 11 Missed Approach Icons (VOLPE) A-16
Appendix 12 Missed Approach Examples A-17
Appendix 13 Legend – Airport Sketch A-18
Appendix 14 Legend – Airport Sketch Lighting Systems A-19
Appendix 15 Landing Minima A-21
Appendix 16 ILS A-23
Appendix 17 ILS or LOC A-24
Appendix 18 ILS or LOC/DME w/Alternate Missed Approach A-25
Appendix 19 ILS with RNAV Elements A-26
Appendix 20 ILS or LOC – PARENT CHART 1 ..... A-27
Appendix 21 SA ILS Approach – CAT I A-28
Appendix 22 ILS CAT II & III A-29
Appendix 23 ILS or LOC – PARENT CHART 2 ..... A-30
Appendix 24 SA ILS Approach – CAT I & II A-31

Appendix 25 ILS or LOC - PARENT CHART 3 ..... A-32
Appendix 26 ILS CAT II A-33
Appendix 27 ILS or LOC - PARENT CHART 4 ..... A-34
Appendix 28 SA ILS Approach – CAT II A-35
Appendix 29 ILS PRM (Close Parallel) A-36
Appendix 30 PRM Approach AAUP A-37
Appendix 31 ILS V (Converging) A-38
Appendix 32 ILS with Relief (Contours) Depicted A-39
Appendix 33 Teardrop Turn A-40
Appendix 34 GLS A-41
Appendix 35 LOC A-42
Appendix 36 LOC – Back Course A-43
Appendix 37 LOC/DME – Back Course A-44
Appendix 38 LOC/DME – Back Course Used Other than as Procedure Facility (Primary) A-45
Appendix 39 LDA/DME A-46
Appendix 40 SDF A-47
Appendix 41 VOR/DME A-48
Appendix 42 VOR/DME Arc A-49
Appendix 43 Concentric Ring Depiction A-50
Appendix 44 VOR or TACAN A-51
Appendix 45 TACAN A-52
Appendix 46 NDB A-53
Appendix 47 NDB with DME A-54
Appendix 48 RNAV (RNP) A-55
Appendix 49 RNAV (GPS) A-56
Appendix 50 RNAV (GPS) with Multiple Scale Breaks A-57
Appendix 51 RNAV (RNP) with Inset A-58
Appendix 52 GPS A-59
Appendix 53 GPS with Armed Approach A-60
Appendix 54 COPTER – ILS A-61
Appendix 55 COPTER – NDB A-62
Appendix 56 COPTER – RNAV (GPS) A-63
Appendix 57 COPTER – RNAV (GPS) – Multi Heliports without Airport Sketch A-64
Appendix 58 COPTER – Point-in-Space A-65
Appendix 59 COPTER – Point-in-Space Example 2 ..... A-66
Appendix 60 VISUAL (CVFP) Portrait A-67
Appendix 61 VISUAL (CVFP) Landscape A-68
Appendix 62 Multiple Touchdown Zones Elevations A-69
Appendix 63 Seaplane Base – RNAV Approach Plate A-70
Appendix 64 Seaplane Base – RNAV Landing Plate A-71

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.

1.3 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 5 - 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 9 - Legend – IAP Planview

3.2.2 IAP Profile Symbols

References:

Appendix 10 - 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 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, Visual Climb Over Airport (VOCA) procedures and Diverse Vector Area (Radar Vectors) 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)

Appendix 2 - 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, Takeoff Minimums and (Obstacle) Departure Procedure title, Diverse Vector Area (Radar Vectors).

3.3.1.1.1.1 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.

3.3.1.1.1.2 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.

3.3.1.1.2 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.

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 3 - 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 4 - 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)
- DH/MDA-VIS (Decision Height/Minimum Descent Altitude-Visibility) for military airports. DA/MDA-VIS (Decision Altitude/Minimum Descent Altitude-Visibility) for civilian airports.
- 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 5 - 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 5 - 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 6 - 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 7 - Briefing Strips
Appendix 8 - 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) shall be shown. 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 straight-in minimums for parallel runways, the entire briefing strip may be widened to show stacked information for each runway.

Figure 3.1 Expanded Briefing Strip Example

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

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.
T 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.
T 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 7 - 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 straight-in minimums for parallel runways. Each box will include the proper runway identification.

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 operations for ATIS or AFIS, APP CON, and TOWER will be annotated with a star after the communication title.

References:

Appendix 7 - 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. 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.

3.4.3.3.4 Controller Pilot Data Link Communications (CPDLC)

When CPDLC service is provided, "CPDLC" shall be shown.

3.4.3.3.5 Non-Towered Airport

When there is not a tower located on the airport or the tower 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

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.

When requested, the frequencies may be sectorized.

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., 122.7❶.

Hours of operation shall not be shown.

3.4.4 Planview

References:

Appendix 5 - IAP Chart Format and Dimensions
Appendix 9 - 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 32 - 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 9 - 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 9** - 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.

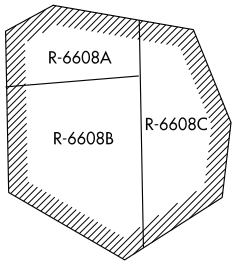
SUA shall be portrayed by a 2 weight (.006") diagonal line pattern, .10" in width, positioned so as to have the lines in a NE to SW direction. In no case will the portrayal of SUA obliterate the functional procedural data. Should an area be too small to portray the specified width, the width shall be 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 9 - 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

References:

Appendix 9 - 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 9** - 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 51 - 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

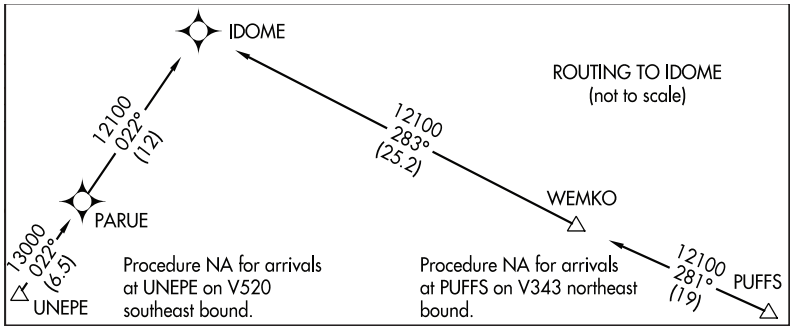
3.4.4.10.1.2 Inset Box

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 planview 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 beginnig 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

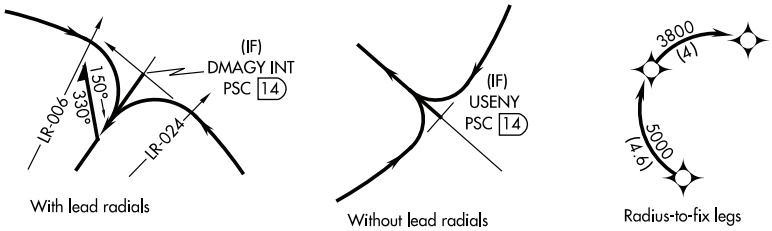
3200 NoPT to LOM
290° hdg (7.8) and
353° (10.3)

- 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.

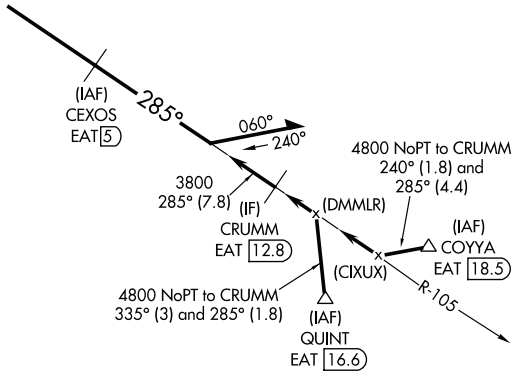
VOR changeover points, other than midpoint (plus or minus one mile) shall be shown when so identified and submitted by the approving authority.

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.

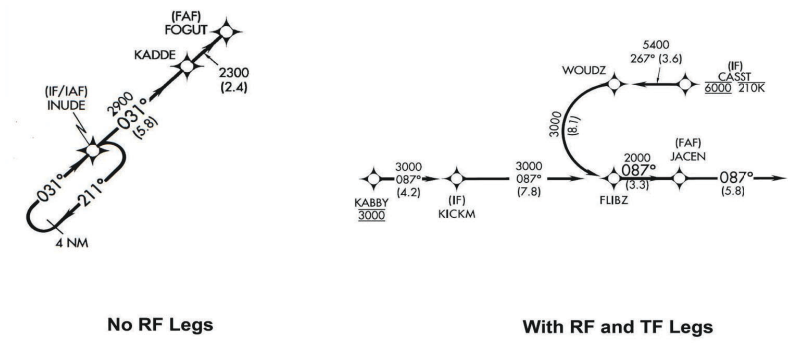
Figure 3.12 Procedure Track



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.

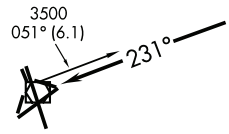
In the final approach segment, if the course value would repeat the bearing shown, it may be omitted, showing only the altitude and distance unless the procedure contains one or more Radius-to-Fix (RF) legs. Then, all bearing values will be shown on the entire final approach segment to easily differentiate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

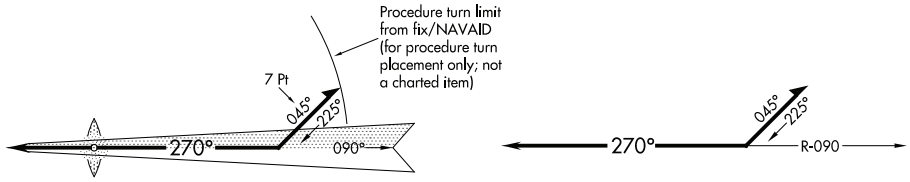
Figure 3.14 Offset Feeder Route



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.

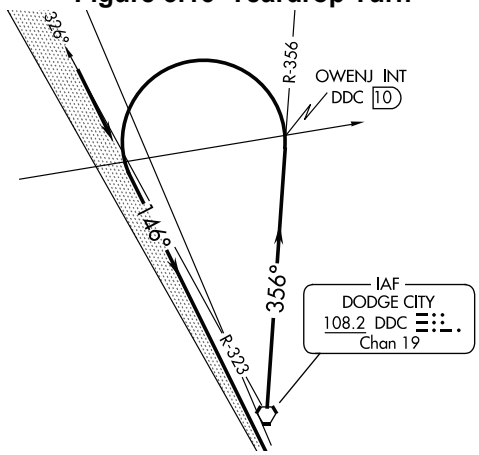
Figure 3.15 Procedure Turn Barb



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.

Figure 3.16 Teardrop Turn



References:

Appendix 33 - 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	2300	170K
Maximum	Maximum altitude/speed shall be depicted as a number with a line above it	4800	170K
Mandatory	Mandatory altitude/speed shall be depicted as a number with a line above and below it	5500	170K
Block	Block altitudes shall be depicted with two altitudes with a line above and below	7500 5500	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 9 - Legend – IAP Planview

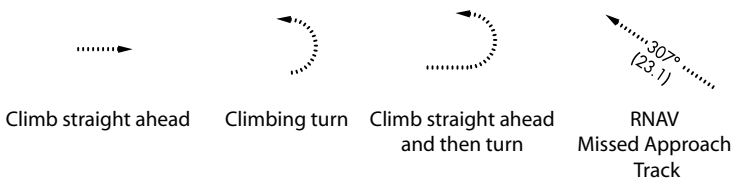
3.4.4.16 Missed Approach Procedure Track

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.

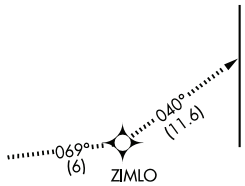
On RNAV procedures, legs in the missed approach procedure will be depicted with the course, and/or distance, if designated, in the same manner as terminal routes.

Figure 3.17 Missed Approach Track



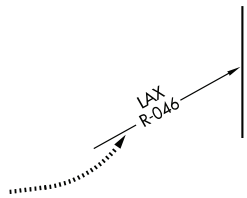
If any portion of the missed approach procedure track is off the chart, the missed approach track shall be extended to the chart border, maintaining proper orientation.

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.

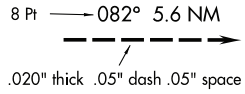
Figure 3.19 Missed Approach Procedure Track Endpoint Off Chart Using Radial/Bearing



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

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 in 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 9 - Legend – IAP Planview

3.4.4.20 Holding Patterns

3.4.4.20.1 General

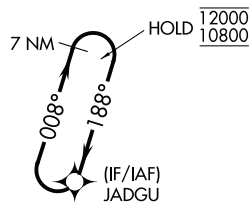
Holding patterns shall be shown only when identified and submitted with the procedure source document.

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 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 specified on the source document. When indicated, it will be shown as a 2 weight (.006") line, 0.2" in length will 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

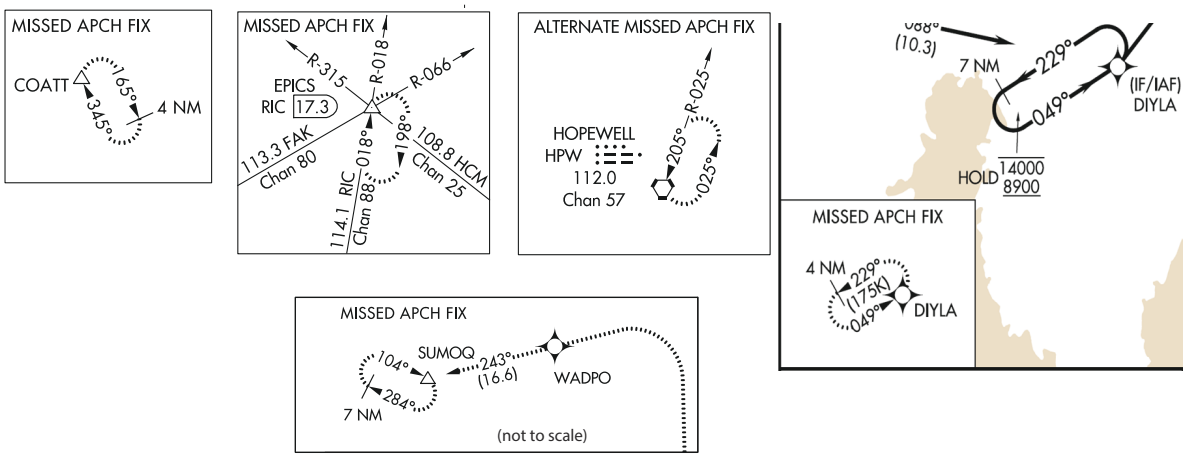
The following types of missed approach holding patterns will be shown as a boxed inset within the planview:

- 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 9 - 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 9**. 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 9 - 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").

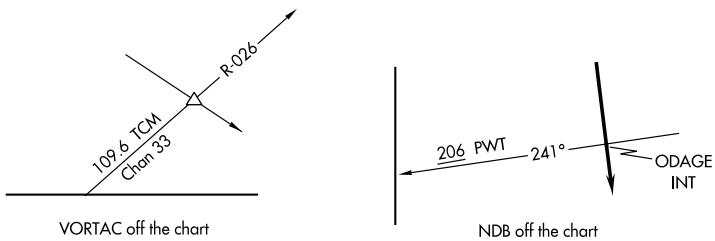
3.4.4.23.2 NAVAIDs Used on RNAV Charts

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

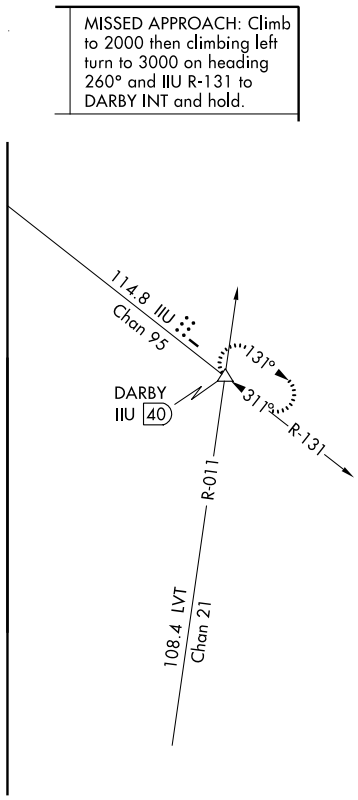
Those NAVAIDs that are utilized in the procedure solely for fix make-up, but are located off the chart shall be portrayed by a radial line emanating from the chart border to the fix or a bearing line from the fix to the chart border. Frequency and identification of the NAVAID shall be shown above the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

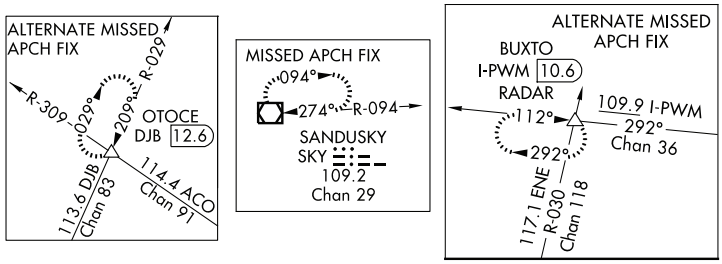
Figure 3.25 Morse Code on NAVAID Off the Chart



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.

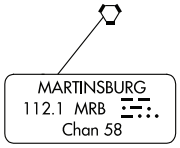
Figure 3.26 Missed Approach Box Inset



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.

An IAF identified on the procedure form as being 30 NM or more from the ARP of the airport will be shown in negative type with the note "IAF ARM APPROACH MODE PRIOR TO IAF."

Figure 3.29 IAF Note

IAF ARM APPROACH MODE PRIOR TO IAF.

References:

Appendix 53 - GPS with Armed Approach

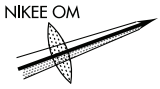
3.4.4.24 Marker Beacons

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 3.30 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 3.31 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 9 - 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 9**. 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 9 - 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 3.32 Compass Locators/Marker Beacons

References:

Appendix 9 - 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 9 - 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:

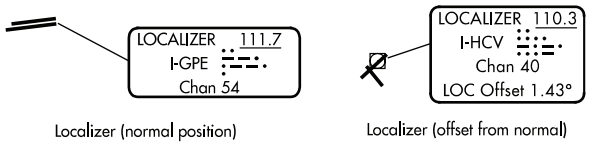
Appendix 9 - Legend – IAP Planview

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 3.33 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.

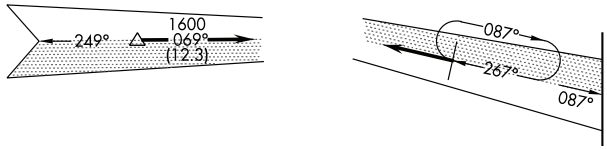
Procedures based on the back course of the localizer shall have the words "BACK COURSE" displayed in the planview using 14 point type.

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 38** - 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.

Figure 3.34 ILS - Outbound Bearings



References:

Appendix 9 - 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 9**. 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 9** - 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 3.35 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 3.36 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 3.37 IAP Only Intersection with DME Component

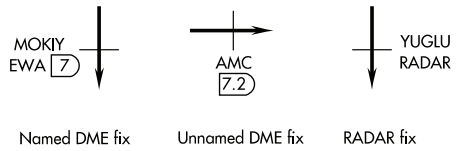
If a RADAR component is requested, the word “RADAR” will follow all other identification.

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.

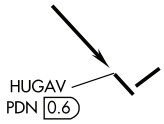
Figure 3.38 DME Fixes



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 3.39 Named Missed Approach Point Fix



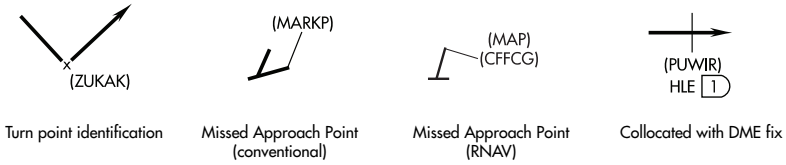
Visual Descent Points (VDPs), when established by the procedure, are not shown in the planview, but appear in the profile.

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)

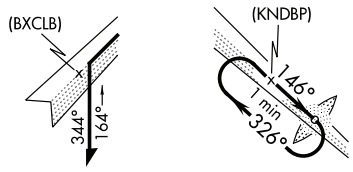
Points-in-space used solely for electronic database identification are known as CNFs. The location of the CNF shall be indicated by a 7 point lower case “x” and its five letter designator in parentheses. The “x” shall not be shown when the CNF is established as a missed approach point near the runway 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 3.40 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 3.41 Final Approach Course CNFs



References:

Appendix 9 - Legend – IAP Planview

3.4.4.31 Area Navigation (RNAV) Waypoints

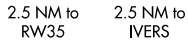
RNAV waypoints, as designated and identified by the approving authority, shall be shown by the symbol illustrated in the appendices. The missed approach point (MAP) will be depicted by a 50% reduction of the fly-over waypoint symbol with the following exceptions: when specified as FB on the procedure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

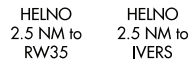
Unnamed step-down waypoints, defined by an along-track distance (ATD), shall be identified with reference to the associated runway or the associated fix and symbolized by a 2 weight (.006") line, 0.2" long, centered on and perpendicular to the terminal route or procedure track.

Figure 3.42 Unnamed Step-down Waypoints



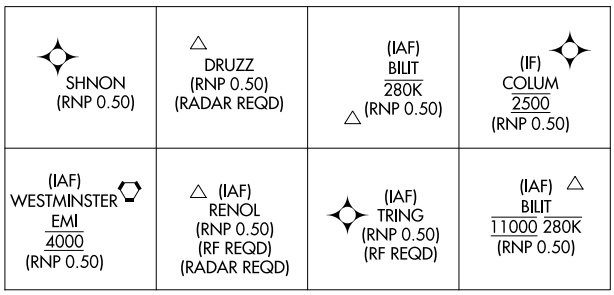
When the step-down waypoint is named, the name shall be shown near the waypoint symbol with the along-track distance information, centered beneath.

Figure 3.43 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 3.44**.

Figure 3.44 RNP Values



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. An IAF identified on the procedure form as being 30 NM or more from the ARP of the airport will be shown in negative type with the note "IAF ARM APPROACH MODE PRIOR TO IAF."

Figure 3.45 IAF Note

IAF ARM APPROACH MODE PRIOR TO IAF.

References:

Appendix 9 - Legend – IAP Planview

3.4.4.32 Fly-over Symbology

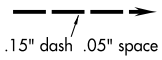
Enroute fixes/intersections, waypoints, and NAVAIDs that are designated as fly-over will be shown with a circle around the symbol. However, enroute fixes/intersections, waypoints, and NAVAIDs designated as a holding point will be charted as a fly-by, without the circle around the symbol. In the event 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 3.46 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 3.47 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.

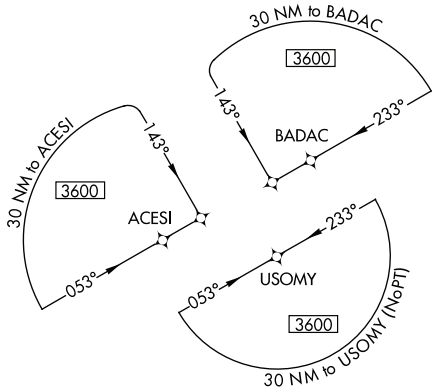
The data shall be depicted in solid color in 6 point type enclosed in a .007" line weight box. A pointer line (.007") shall extend from the data box to and without touching the runway end.

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.

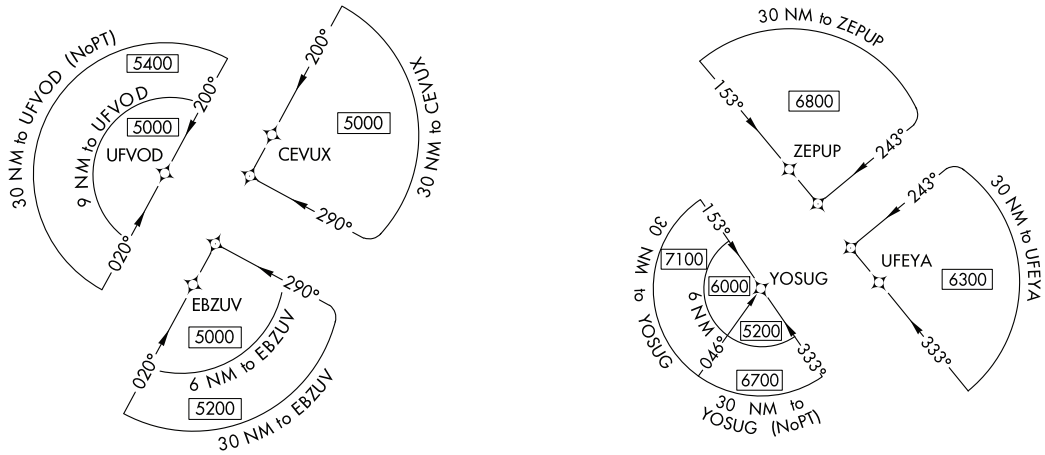
Figure 3.48 Terminal Arrival Areas



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 3.49 Terminal Arrival Areas with Inner Sectors

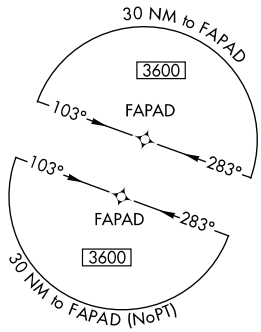


The TAA icons will be positioned in the planview relative to their relationship to the procedure. Avoid placing an icon where it encapsulates other aeronautical information.

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 3.50 Nonstandard TAA



References:

Appendix 9 - Legend – IAP Planview

3.4.5 Profile

References:

Appendix 5 - IAP Chart Format and Dimensions

Appendix 10 - 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 3.51 Fixes Formed by Bearings

180° bearing
to ABC NDB

TACAN fixes shall be identified in nautical miles, e.g., 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 9** - 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 3.52 RNAV Waypoints Used as Mileage Fixes

HELGA
3.9 NM to
FIGED

TUXTY
1.6 NM to
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 33 - 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 3.53 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)

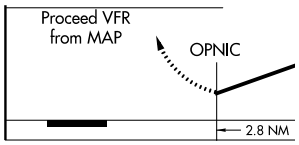
The nonprecision final approach fix (FAF), when specifically identified on the approved procedure, shall be shown by a Maltese cross symbol positioned on and breaking the procedure track.

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.

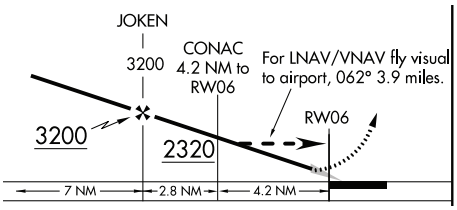
Copter approach procedures with a VFR segment from the missed approach point will not depict the VFR segment with a line in the profile. The note similar to “Proceed VFR from MAP” will be shown as sourced on procedure document.

Figure 3.54 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 3.55 RNAV Fly Visual Example

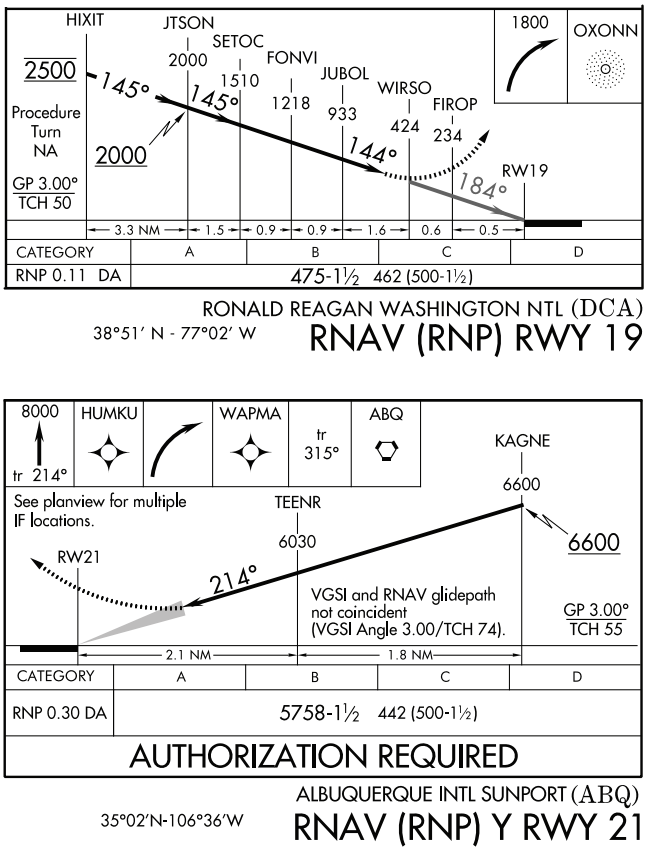


Instrument approach procedures (typically RNPs) that change course after the missed approach point shall depict the track following the MAP in shaded line with shaded track value shown above the line. See **Figure 3.56**.

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 3.56 RNP Profile - Track to Fix (TF) and Radius to Fix (RF) Segments



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

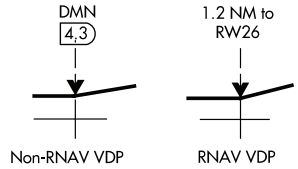
When level flight is to be maintained from the primary facility or fix, prior to the beginning of the descent, the distance shall be shown by use of a .007" vertical line .10" in length extending downward from the procedure track at the point where the descent begins. The distance shown need not be to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

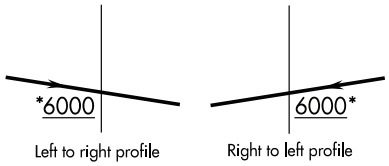
Figure 3.57 Visual Descent Point



3.4.5.7 Altitudes

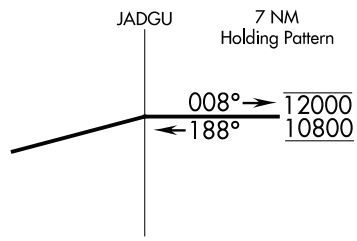
Minimum, Maximum, Mandatory and Recommended Altitudes shall be shown in 9 pt. type and be clearly identified with the component to which they apply. See **Appendix 10** - Legend – IAP Profile for the correct symbology and preferred placement of altitudes. If the altitude requires a reference mark, the mark will be a superscript placed before or after the altitude, depending on the direction of the profile.

Figure 3.58 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 3.59 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 3.60 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 3.61 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.

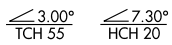
3.4.5.10 Constant Descent Angle and Threshold/Heliport Crossing Heights

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 3.62 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.

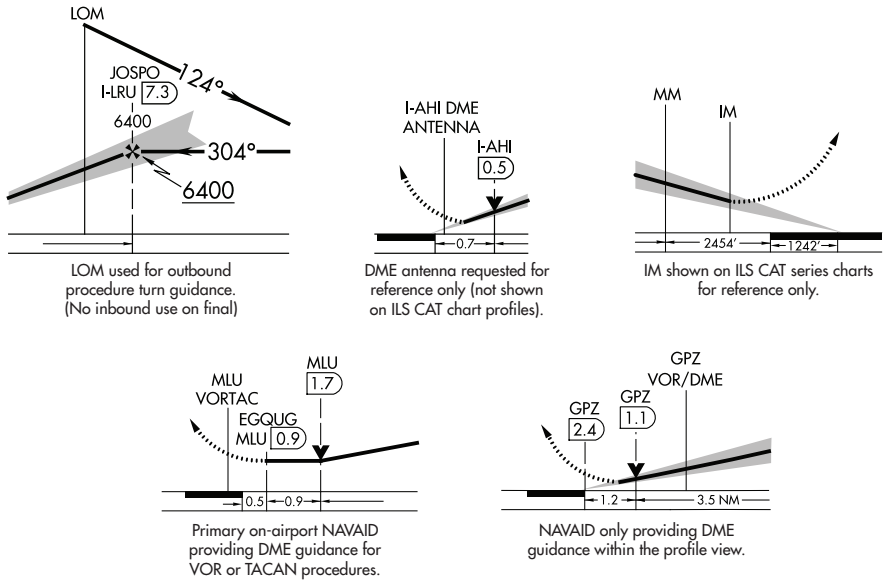
3.4.5.11.2 Nonprecision Approaches

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 3.63 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 20 - ILS or LOC – PARENT CHART 1
Appendix 21 - SA ILS Approach – CAT I
Appendix 22 - ILS CAT II & III
Appendix 23 - ILS or LOC – PARENT CHART 2
Appendix 24 - SA ILS Approach – CAT I & II
Appendix 25 - ILS or LOC - PARENT CHART 3
Appendix 26 - ILS CAT II
Appendix 27 - ILS or LOC - PARENT CHART 4
Appendix 28 - 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 idents for NAVAIDs and fixes which will always be shown in upper case.

References:

Appendix 11 - Missed Approach Icons (VOLPE)
Appendix 12 - Missed Approach Examples

3.4.7 Airport Sketch

References:

Appendix 13 - Legend – Airport Sketch
Appendix 14 - 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.

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 and Touchdown Zone Elevation

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 multiple runways.

References:

Appendix 62 - Multiple Touchdown Zones Elevations

3.4.7.3 Airport Pattern

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

References:

Appendix 13 - 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.

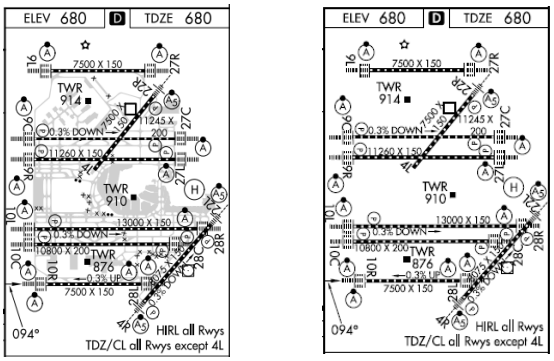
Only hard surfaced overruns shall be shown, as illustrated in the appendices.

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 3.64 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 3.65 Runway Declared Distance Information Icon

D

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 over-printing. 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 14 - Legend – Airport Sketch Lighting Systems

3.4.7.7.2 Airport Beacon

The Airport Beacon (rotating light) shall be symbolized by the five-pointed star with an open center, as shown in **Appendix 13**, (if beacon is Pilot Controlled, the "negative" symbol will be used) positioned as near the proper location as possible.

3.4.7.7.3 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.

3.4.7.7.4 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.

3.4.7.7.5 Runway Lights

Runway Lights (HIRL) (MIRL) (LIRL) (TDZL) (TDZ/CL) 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 lights (CL) will be indicated by a note only when pilot controlled or when paired with TDZL, e.g., TDZ/CL 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 centerline lights (CL) will show a negative dot pattern through the middle of the solid runway as illustrated in the Legend.

3.4.7.7.6 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 9-27❶.

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.

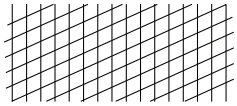
3.4.7.8.3 Populated Places

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 3.66 Depiction of Populated Places

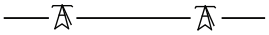
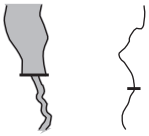


Buildings to be shown shall be those which are associated with the visual flight track or airport, and may be depicted pictorially or as landmarks, as shown below.

Figure 3.67 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		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 3.68 Relief (Differences in Elevation)

3.4.8 Minima Data

References:

Appendix 5 - IAP Chart Format and Dimensions
Appendix 15 - 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 5** - 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 CAT II, CAT II & III, and Special Authorization (SA) charts, a space will be created under the minima section to accommodate the 14 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 15** - Landing Minima.

3.4.8.5 Multiple Straight-Ins

When two straight-in minimums are approved for the same procedure; i.e., one minimum is based on a single facility, and a higher minimum is based on the use of an additional facility or fix, the minimum, as established with the single facility shall be shown as the first entry. The second minimum shall be shown separately, with the appropriate facility/fix name title, e.g., NAME MINIMA, positioned above and on a separate line, preceding this second minimum data, as shown in **Appendix 19** - ILS with RNAV Elements.

3.4.8.6 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

Table 3.4 Comparable Values of RVR and Visibility

RVR (feet)	Visibility (statute miles)
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 5 - 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 16 - ILS
Appendix 17 - ILS or LOC
Appendix 18 - ILS or LOC/DME w/Alternate Missed Approach
Appendix 19 - ILS with RNAV Elements
Appendix 20 - ILS or LOC – PARENT CHART 1
Appendix 21 - SA ILS Approach – CAT I
Appendix 22 - ILS CAT II & III
Appendix 23 - ILS or LOC – PARENT CHART 2
Appendix 24 - SA ILS Approach – CAT I & II
Appendix 25 - ILS or LOC - PARENT CHART 3
Appendix 26 - ILS CAT II
Appendix 27 - ILS or LOC - PARENT CHART 4
Appendix 28 - 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 48 - RNAV (RNP)
Appendix 49 - 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 30 - 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.

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 3.69 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)

10pt

6pt

9pt

L1

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TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS)

INSTRUMENT APPROACH PROCEDURE CHARTS

IFR TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

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.

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 verbally request approval from ATC 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.

6pt

AFTON, WY Arial 8 pt
AFTON MUNI (AFO) Arial 8 pt
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES Arial 7 pt
AMDT 1 28SEP06 (06271) (FAA) Arial 7 pt
DEPARTURE PROCEDURE: Arial 6 pt
Rwy 16, Use LUNDI DEPARTURE. Arial 6pt
Rwy 34, Use AFTON DEPARTURE. Arial 6 pt

ALBANY, OR
ALBANY MUNI (S12)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 2B 10DEC15 (15344) (FAA)
DEPARTURE PROCEDURE:
Rwy 16, turn right.
Rwy 34, turn left. All aircraft climb direct CVO VOR/DME and continue climb in CVO VOR/DME holding pattern, (East, right turns, 261° inbound) to cross CVO VOR/DME at or above 3400.
TAKEOFF OBSTACLE NOTES:
Rwy 16, pole 1391' from DER, 277' right of centerline, 30' AGL/265" MSL.
Rwy 34, light poles 860' from DER, 69' right of centerline, 40' AGL/262' MSL.
Light poles 906' from DER, 15' left of centerline, 41' AGL/262' MSL.

ANACONDA, MT
BOWMAN FLD (3U3)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 1 05JUL07 (07186) (FAA)
TAKEOFF MINIMUMS:
Rwy 4, std. w/min. climb of 417' per NM to 9000, or 2800-3 for climb in visual conditions.

TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS)

L1

NW-1

6pt

All text is Arial 7pt if not labelled

APPENDIX 2
DIVERSE VECTOR AREA (RADAR VECTORS) EXAMPLE

L4

TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS)

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AUBURN, WA
AUBURN MUNI (S50)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 1 31MAR16 (16091) (FAA)
TAKEOFF MINIMUMS:
Use BLAKO (RNAV) DEPARTURE.

DIVERSE VECTOR AREA (RADAR VECTORS)
AMDT 1 10NOV16 (16315) (FAA)
Rwy 16, heading as assigned by ATC; requires min. climb of 270' per NM to 1000.
Rwy 34, heading as assigned by ATC; requires min. climb of 390' per NM to 800.

AURORA, OR
AURORA STATE (UAO)
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.

DIVERSE VECTOR AREA (RADAR VECTORS)
ORIG 05MAR15 (15064) (FAA)
Rwy 17, heading as assigned by ATC; requires min. climb of 375' per NM to 2000.
Rwy 35, heading as assigned by ATC; requires min. climb of 350' per NM to 2000.

BAKER, MT
BAKER MUNI (BHK)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 1 13NOV14 (14317) (FAA)
TAKEOFF MINIMUMS:
Rwy 13, NA-Environmental.
DEPARTURE PROCEDURE:
Rwy 31, climbing right turn heading 010° to 9000 on 343° bearing from BKU NDB to UMWEL INT and hold, continue climb in hold (hold north, right turns, 163° inbound) to 9000. Expect further instructions from ATC.
TAKEOFF OBSTACLE NOTES:
Rwy 31, fence 168' from DER, 498' left of centerline, 6' AGL/2967' MSL.
Structure 173' from DER, 499' left of centerline, 10' AGL/2974' MSL.
Windsock on building 1015' from DER, 727' left of centerline, 37' AGL/2998' MSL.
Rod on antenna 3832' from DER, 136' left of centerline, 112' AGL/3073' MSL.

BAKER CITY, OR
BAKER CITY MUNI (BKE)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 2 18NOV10 (10322) (FAA)
TAKEOFF MINIMUMS:
Rwy 8, std. w/min climb of 460' per NM to 6900, or 3700-3 for climb in visual conditions.
Rwy 13, std. w/min climb of 470' per NM to 6900, or 3700-3 for climb in visual conditions.
Rwy 17, N/A-Environmental.
Rwy 26, std. w/min climb of 400' per NM to 7200, or 3700-3 for climb in visual conditions.
Rwys 31, 35, std. w/min climb of 400' per NM to 6900, or 3700-3 for climb in visual conditions.
DEPARTURE PROCEDURE:
Rwy 8, climb heading 081° to 6900, then climbing left turn to BKE VOR/DME R-066 to BKE VOR/DME and hold, continue climb in BKE VOR/DME holding pattern (hold S, right turns, 338° inbound) to cross BKE VOR/DME at or above MEA/MCA for route of flight, or for climb in visual conditions, cross BKE VOR/DME at or above 6900, then climb-in-hold to at or above MEA/MCA for route of flight. **CON'T**

APPENDIX 3
IFR ALTERNATE AIRPORT MINIMUMS

10pt

6pt

ALTERNATE MINS

M1

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INSTRUMENT APPROACH PROCEDURE CHARTS

IFR ALTERNATE AIRPORT MINIMUMS

9pt

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.

Alternate Minima (ref: 14 CFR 91.169)

	Precision Approach	Non-Precision Approach
Standard	**600-2**	**800-2**
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).

NAME ALTERNATE MINIMUMS

ADRIAN, MI
LENAWEE
COUNTY (ADG)……..……...**RNAV (GPS) Rwy 5**
RNAV (GPS) Rwy 23
NA when local weather not available.

ALMA, MI
GRATIOT
COMMUNITY (AMN)……..…...**RNAV (GPS) Rwy 9**
RNAV (GPS) Rwy 27
NA when local weather not available.

ALPENA, MI
ALPENA COUNTY
RGNL (APN)……..….**ILS or LOC Rwy 1[1]**
RNAV (GPS) Rwy 7[2]
RNAV (GPS) Rwy 25[2]

[1]NA when control tower closed.
[2]NA when local weather not available.

ANN ARBOR, MI
ANN ARBOR
MUNI (ARB)……..…..**RNAV (GPS) Rwy 6**
RNAV (GPS) Rwy 24
VOR Rwy 6[1]
VOR Rwy 24[1]
NA when local weather not available.
[1]Cat D 900-2½.

NAME ALTERNATE MINIMUMS

BAD AXE, MI
HURON COUNTY
MEML (BAX)……....……...**RNAV (GPS) Rwy 4**
RNAV (GPS) Rwy 17
RNAV (GPS) Rwy 22
RNAV (GPS) Rwy 35
NA when local weather not available.

BATTLE CREEK, MI
BATTLE CREEK EXEC AT KELLOGG
FLD (BTL)…….....**ILS or LOC Rwy 23R[1]**
RNAV (GPS) Rwy 5L
RNAV (GPS) Rwy 23R
NA when local weather not available.
[1]NA when control tower closed.

BEAVER ISLAND, MI
BEAVER
ISLAND (SJX)……..**RNAV (GPS) Rwy 9**
RNAV (GPS) Rwy 27
NA when local weather not available.

BELLAIRE, MI
ANTRIM
COUNTY (ACB)……..**RNAV (GPS) Rwy 2**
NA when local weather not available.
Cat C 1000-2¾, Cat D 1100-3.

6pt

If not labelled, text is 7pt

APPENDIX 3
IFR ALTERNATE AIRPORT MINIMUMS (CONTINUED)

M4

A ALTERNATE MINS

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NAME ALTERNATE MINIMUMS

PHOENIX, AZ

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

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

PHOENIX-MESA
GATEWAY (IWA)……..**ILS or LOC Rwy 30C[14]**
RNAV (GPS) Rwy 12C[2]
RNAV (GPS) Rwy 12R[3]
RNAV (GPS) Rwy 30L[2]
RNAV (GPS) Rwy 30R
RNAV (GPS) Y Rwy 30C[2]
VOR or TACAN Rwy 30C[2]
NA when local weather not available.
[1]NA when control tower closed.
[2]Cat E 800-2¼.
[3]Cat E 1100-3.
[4]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[12]**
RNAV (GPS) Rwy 12[3]
RNAV (GPS) Rwy 21L[3]
RNAV (GPS) Y Rwy 3R[3]
VOR Rwy 12[4]
[1]NA when control tower closed.
[2]ILS Cat B 700-2, Cat C 1100-3, Cat D 1700-3; LOC Cat C 1100-3, Cat D 1700-3.
[3]Cat C 1100-3, Cat D 1700-3.
[4]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[12]**
RNAV (GPS) Rwy 13[3]
[1]NA when control tower closed.
[2]LOC Cat D 800-2½.
[3]Cat D 800-2½.

RENO, NV

RENO/TAHOE
INTL (RNO)…….……**ILS or LOC Rwy 35L[1]**
ILS X or LOC X Rwy 17R[2]
ILS Z or LOC Z Rwy 17R[2]
ILS Y Rwy 17R[3]
RNAV (RNP) W Rwy 35L[4]
RNAV (RNP) W Rwy 35R[4]
RNAV (RNP) Z Rwy 35L[4]
RNAV (RNP) Z Rwy 35R[4]
RNAV (GPS) X Rwy 17L[5]
RNAV (GPS) X Rwy 17R[6]
RNAV (GPS) X Rwy 35L[7]
RNAV (GPS) X Rwy 35R[8]
RNAV (GPS) Y Rwy 35L[9]
LOC Y Rwy 17R[a]
VOR-D[b]
TACAN-F[c]
[1]ILS 700-2; LOC Cat A, B 1000-2, Cat C 2100-3.
[2]ILS Cat A, B, C, D 800-2; LOC Cat A, B, 1100-2, Cat C, D 2100-3.
[3]Cat A, B, C, D, E 1500-5.
[4]Cat A, B, C, D 1000-2½.
[5]Cat A, B 1000-2, Cat C, D 2100-3.
[6]Cat A, B 1800-2, Cat C, D 1800-3.
[7]Cat A, B 1200-4, Cat C, D 2100-4.
[8]Cat A, B 1100-4, Cat C, D 2100-4.
[9]Cat A, B, C 1000-2½.
[a]Cat A, B 1600-2, Cat C, D 2100-3, Cat E 2300-3.
[b]Cat A, B 1900-2, Cat C, D 2100-3.
[c]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[1]**
RNAV (GPS) Rwy 19[2]
[1]Cat A 900-2, Cat B 1000-2, Cat C 1000-3.
[2]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.

APPENDIX 4
RADAR INSTRUMENT APPROACH MINIMUMS

RADAR MINS (12pt) N1 (7pt)
25107 (7pt)

RADAR INSTRUMENT APPROACH MINIMUMS (10pt)

(10pt) **ALBEMARLE, NC** Orig-A, 02NOV23 (23306) (FAA) ELEV 609
(9pt) **STANLY COUNTY (VUJ)**
RADAR-1 128.325 307.8

	RWY	GS/TCH/RPI	CAT	DH/ MDA-VIS	HAT/ HAA	CEIL-VIS
PAR	22L	3.0°/40/887	ABCD	916-1	332	(400-1)

Rwy 22L helicopter visibility reduction below ¾ SM not authorized.
Procedure NA when control tower closed.

BEAUFORT, SC Amdt 4, 17APR25 (25107) (FAA) ELEV 9
BEAUFORT EXEC (ARW)
RADAR-1 125.125 292.125

	RWY	GP/TCH/RPI	CAT	DA/ MDA-VIS	HAT/ HAA	CEIL-VIS	CAT	DA/ MDA-VIS	HAT/ HAA	CEIL-VIS
ASR	25		ABC	380-1	372	(400-1)	D	NA		
CIRCLING		ALL RWY	AB D	480-1 NA	471	(500-1)	C	640-1¾	631	(700-1¾)

When Beaufort Class D not in effect procedure NA.
VGSI and descent angles not coincident.

All text is ARIAL.
If not labelled, text is 7pt (header and footer text size are same).

RADAR MINS, jdate and volume in the header/footer are bold.

FAA city, state, airport, ICAO/ident are bold. Military installation, ICAO/ident are bold.

Elevation is bold. RADAR - header is bold. Column headers are bold. DA/DH/MDA is bold.

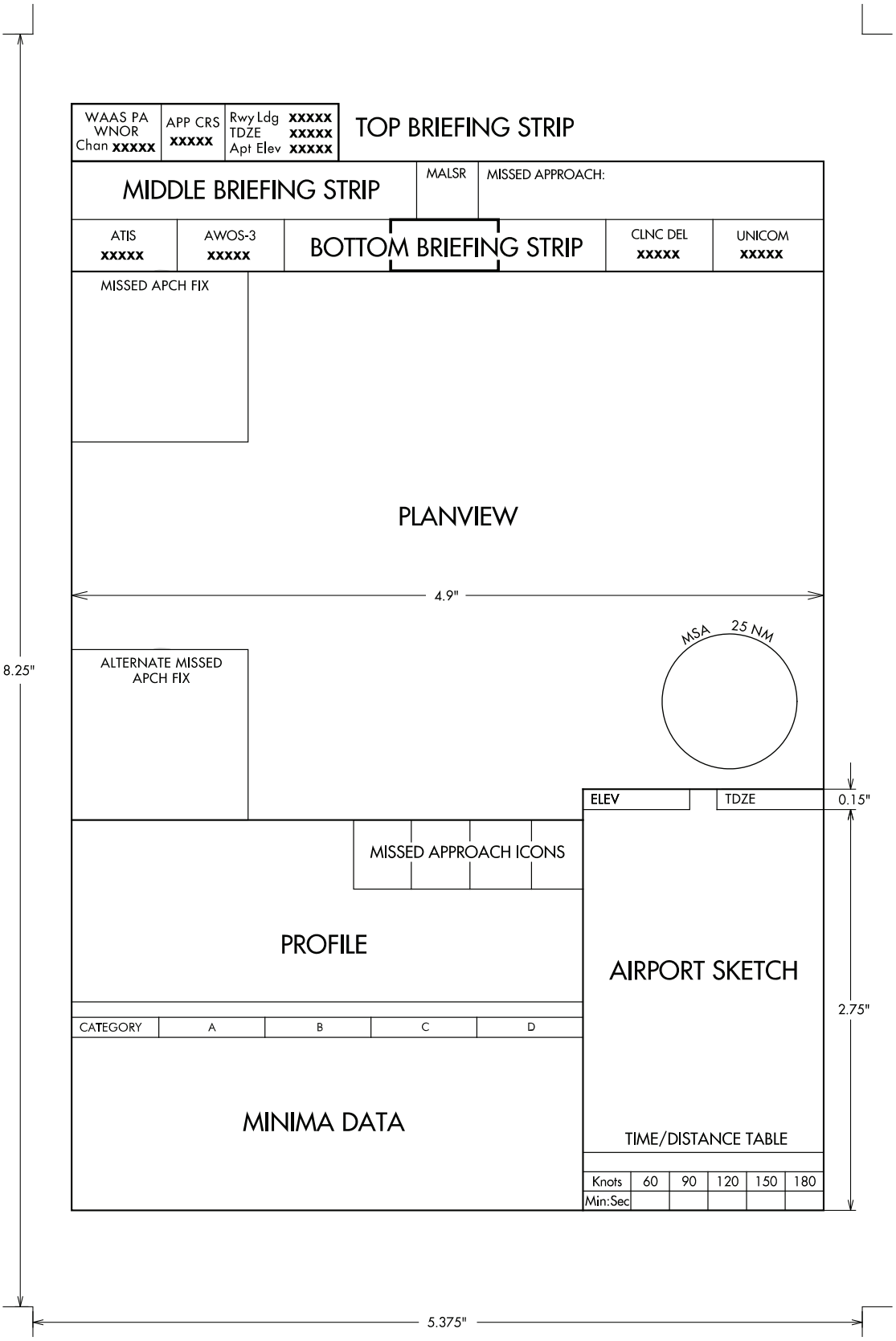
SE-2

RADAR INSTRUMENT APPROACH MINIMUMS

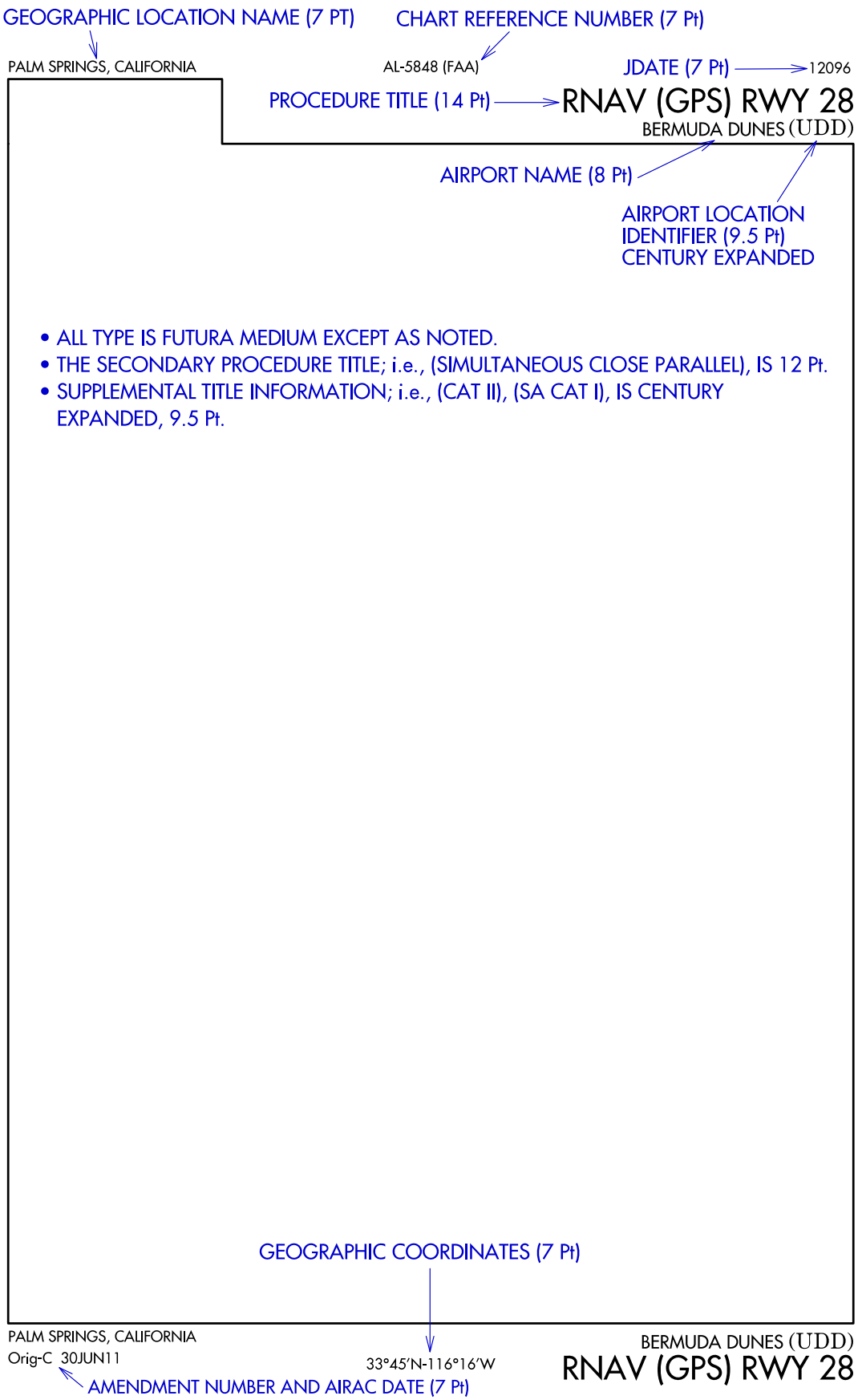
RADAR MINS
25107 N1

APPENDIX 5
IAP CHART FORMAT AND DIMENSIONS

IAP CHART FORMAT AND DIMENSIONS



APPENDIX 6
MARGIN DATA



APPENDIX 7
BRIEFING STRIPS

CARLSBAD, CALIFORNIA — AL-5310 (FAA) — 00000

RNAV (GPS) RWY 24
MC CLELLAN-PALOMAR (CRQ)

WAAS	APP CRS	Rwy Ldg	4897
CH 65603	245°	TDZE	326
W24A		Apt Elev	331

DME/DME RNP-0.3 NA.
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 54°C (130°F).

MALSR

MISSED APPROACH: Climb to 2000 direct IBUGE WP and hold.

ATIS	SOCAL APP CON	PALOMAR TOWER★	GND CON	CLNC DEL
120.15	127.3 323.0	118.6 (CTAF) 276.4	121.8	134.85

SACRAMENTO, CALIFORNIA — AL-5490 (FAA) — 00000

RNAV (GPS) Y RWY 35L
SACRAMENTO INTL (SMF)

WAAS	APP CRS	Rwy Ldg	8598
CH 86602	348°	TDZE	24
W35A		Apt Elev	27

RNP APCH-GPS.
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.

MALSR

MISSED APPROACH: Climb to 800 then climbing left turn to 2000 direct GRIME and hold.

D-ATIS	NORCAL APP CON	CAPITOL TOWER	GND CON	CLNC DEL	CPDLC
126.75	125.4 259.1 (W-NE) 125.25 257.9 (SW) 127.4 317.5 (E-SE)	125.7 256.7	121.7 256.7	121.1 256.7	

NEWARK, NEW JERSEY — AL-285 (FAA) — 00000

GLS RWY 11
NEWARK LIBERTY INTL (EWR)

GBAS	APP CRS	Rwy Ldg	6726
CH 21905	108°	TDZE	17
G11A		Apt Elev	17

RNP APCH - GPS.
NA
Rwy 11 helicopter visibility reduction below RVR 4000 NA.
Autopilot coupled approach NA below 308.

MISSED APPROACH: Climb to 3000 direct FOVEX and on track 193° to COGSU and right turn on track 285° to DIRMY and hold.

D-ATIS	NEW YORK APP CON	NEWARK TOWER	GND CON	CLNC DEL	CPDLC
115.7 134.825	128.55 379.9	118.3 257.6	121.8	118.85	

CAMBRIDGE, MARYLAND — AL-5571 (FAA) — 00000

RNAV (GPS)-A
CAMBRIDGE-DORCHESTER RGNL (CGE)

APP CRS	Rwy Ldg	N/A
154°	TDZE	N/A
	Apt Elev	20

RNP APCH.
Circling Rwy 16 NA at night.
Rwy 16 helicopter visibility reduction below 1 SM NA.

MISSED APPROACH: Climb to 2000 direct PROFS and hold.

AWOS-3	PATUXENT APP CON ★	UNICOM	
120.675	121.0 250.3	122.7 (CTAF)	121.9

DETROIT, MICHIGAN — AL-119 (FAA) — 00000

RNAV (GPS) PRM Y RWY 4L (CLOSE PARALLEL)
DETROIT METRO WAYNE COUNTY (DTW)

WAAS	APP CRS	Rwy Ldg	10000
CH 73039	038°	TDZE	645
W04A		Apt Elev	645

RNP APCH.
Rwy 4L and 4R separated by 3000 feet centerline to centerline. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -19°C or above 54°C. Simultaneous approach authorized. Use of FD or AP required during simultaneous operations. Dual VHF comm required. See additional requirements on AAUP.

ALSF-2

MISSED APPROACH: Climb to 1100 then climbing left turn to 4000 direct DOHNT and hold.

D-ATIS	DETROIT APP CON	METRO TOWER	GND CON	CLNC DEL	CPDLC
133.675	124.05 284.0	135.0 317.725 PRM 127.05	121.8 (NW) 119.45 (NE) 132.725 (SW) 119.25 (SE)	120.65	

APPENDIX 7
BRIEFING STRIPS (CONTINUED)

EASTON, MARYLAND — AL-5596 (FAA) — 00000

LOC/DME I-FGH 109.35 Chan 30(Y)	APP CRS 041°	Rwy Ldg 4775 TDZE 58 Apt Elev 72

ILS or LOC RWY 4
EASTON/NEWNAM FLD (ESN)

RADAR and DME required for procedure entry. DME required for LOC only.

Circling Rwy 15, 33 NA at night. Autopilot coupled approach NA below 1000.

MISSED APPROACH: Climb to 2000 on heading 041° and on ATR VOR/DME R-283 to ORETE INT/ATR 31.6 DME and hold.

ATIS	POTOMAC APP CON	EASTON TOWER★	GND CON	CLNC DEL
124.475	133.75 254.35	118.525 (CTAF) L	119.075	119.075

WASHINGTON, DC — AL-443 (FAA) — 00000

LOC/DME I-VWH 111.35 Chan 50(Y)	APP CRS 147°	Rwy Ldg 6869 TDZE 13 Apt Elev 14

LDA Z RWY 19
RONALD REAGAN WASHINGTON NTL (DCA)

DME required. RADAR required for procedure entry.

Rwy 19 helicopter visibility reduction below 1 SM NA.
Circling NA northeast of Rwy 15-33. Inop table does not apply.

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.

D-ATIS	POTOMAC APP CON	WASHINGTON TOWER	GND CON	CLNC DEL	CPDLC
132.65	119.85 239.25 (W/S) 124.2 360.8 (E)	119.1 257.6	121.7 257.6	128.25	

SOUTH BOSTON, VIRGINIA — AL-5112 (FAA) — 00000

VORTAC SBV 110.4 Chan 41	APP CRS 081°	Rwy Ldg N/A TDZE N/A Apt Elev 420

VOR-A
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	WASHINGTON CENTER	UNICOM
119.425	124.05 352.0	122.8 (CTAF) L

ROANOKE, VIRGINIA — AL-349 (FAA) — 00000

VOR ODR 114.9	APP CRS 236°	Rwy Ldg N/A TDZE N/A Apt Elev 1175

VOR/DME-A
ROANOKE/BLACKSBURG RGNL (WOODRUM FLD) (ROA)

RADAR required.

Circling NA northwest of Rwy 6-24. DME from I-SZK LDA. Simultaneous reception of ODR VOR and I-SZK DME required.

-13°C

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.

ATIS	ROANOKE APP CON	ROANOKE TOWER	GND CON	CLNC DEL
132.375	126.9 339.8	118.3 257.8	121.9 257.8	119.7

GAMBELL, ALASKA — AL-6687 (FAA) — 00000

NDB/DME GAM 369 Chan 92 (114.5)	APP CRS 345°	Rwy Ldg 4500 TDZE 26 Apt Elev 27

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	ANCHORAGE CENTER	NOME RADIO	CTAF
125.9	132.2 281.4	122.0	122.7 L

HOUSTON, TEXAS — AL-5537 (FAA) — 00000

WAAS CH 82513 W17A	APP CRS 170°	Rwy ldg 7620 TDZE 81 Apt Elev 81

RNAV (GPS) RWY 17
SUGAR LAND RGNL (SGR)

RNP APCH - GPS.

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C or above 54°C. Rwy 17 helicopter visibility reduction below ¾ SM NA.

MISSED APPROACH: Climb to 2000 direct POPAM and hold.

ATIS★	HOUSTON APP CON	SUGAR LAND TOWER★	GND CON	CLNC DEL	CLNC DEL	UNICOM
118.125	123.8 257.7	118.65 (CTAF) L	121.4	121.4	119.25 (When twr closed)	122.95

APPENDIX 7
BRIEFING STRIPS (CONTINUED)

BATTLE CREEK, MICHIGAN — AL-41 (FAA) — 00000

LOC I-BTL	APP CRS	Rwy Ldg	TDZE	Apt Elev
110.5	227°	10004	929	952

ILS or LOC RWY 23R
BATTLE CREEK EXEC AT KELLOGG FLD (BTL)

ADF required. RADAR required for procedure entry. RNP APCH - GPS.

T A ASR — Circling NA to Rwys 5R and 23L. Circling Rwy 31 NA at night. For inop ALS increase S-LOC 23R Cat C/D visibility to 1⅜ SM. * RVR 1800 authorized with use of FD or AP or HUD to DA (NA when using Grand Rapids altimeter setting).

MALSR — MISSED APPROACH: Climb to 1400 then climbing left turn to 3000 direct VVTEN and hold, continue climb-in-hold to 3000.

ATIS	GREAT LAKES APP CON★	BATTLE CREEK TOWER★	GND CON	UNICOM
128.325	119.2 239.25	126.825 L (CTAF)	121.7	122.95

CHEYENNE, WYOMING — AL-80 (FAA) — 00000

LOC I-CYS	APP CRS	Rwy Ldg	TDZE	Apt Elev
110.1	265°	7985	6121	6160

ILS or LOC RWY 27
CHEYENNE RGNL/JERRY OLSON FLD (CYS)

T A ASR/PAR — For inoperative MALSR, increase S-LOC 27 Cat D visibility to RVR 5000. * RVR 1800 authorized with the use of FD or AP or HUD to DA.

MALSR — MISSED APPROACH: Climb to 6700, then climbing right turn to 8000 direct CYS VORTAC and hold. (TACAN aircraft continue via CYS R-016 to MARKL/10 DME and hold N, RT, 196° inbound.)

ATIS	CHEYENNE APP CON	CHEYENNE TOWER★	GND CON	UNICOM
134.425 278.3	124.55 263.075	118.7 (CTAF) L 257.8	121.9 254.275	122.95

MILWAUKEE, WISCONSIN — AL-262 (FAA) — 00000

APP CRS	Rwy Ldg	TDZE	Apt Elev
256°	7867	683	729

RNAV (RNP) Y RWY 25L
GENERAL MITCHELL INTL (MKE)

RF required. RNP AR APCH.

T — For uncompensated Baro-VNAV systems, procedure NA below -20°C or above 54°C.

MISSED APPROACH: Climb to 3700 on the RNAV missed approach route to PROOT and hold.

D-ATIS	MILWAUKEE APP CON	MILWAUKEE TOWER	GND CON	CLNC DEL	CPDLC
126.4	126.5 307.0	124.575 269.05	121.8 263.125	120.8	

KWETHLUK, ALASKA — AL-10325 (FAA) — 00000

WAAS	APP CRS	Rwy Ldg	TDZE	Apt Elev
CH 97508 W36A	002°	3199	25	25

RNAV (GPS) RWY 36
KWETHLUK (KWT) (PFKW)

T A NA W -38°C — Baro-VNAV NA. DME/DME RNP-0.3 NA. Use Bethel altimeter setting; when not received, procedure NA. Night landing: Rwy 36 Cat C and D 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	BET/PABE ASOS	ANCHORAGE CENTER	CTAF
120.0	119.8	125.2 372.0	122.9 L

BET/PABE ASOS

WINTER HAVEN, FLORIDA — AL-5953 (FAA) — 00000

VORTAC LAL	APP CRS	Rwy Ldg	TDZE	Apt Elev
116.0 Chan 107	071°	N/A	N/A	145

VOR-A
WINTER HAVEN RGNL (GIF)

DME required.

T A — When local altimeter setting not received, use Bartow altimeter setting and increase all MDA 20 feet.

MISSED APPROACH: Climbing left turn to 2000 direct LAL VORTAC and hold.

ASOS	TAMPA APP CON	CLNC DEL (GCO)	UNICOM
133.675	120.65 290.3	121.725	123.05 (CTAF) L

EAGLE PASS, TEXAS — AL-126 (FAA) — 00000

WAAS	APP CRS	Rwy Ldg	TDZE	Apt Elev
CH 63207 W31A	309°	5506	882	887

RNAV (GPS) RWY 31
MAVERICK COUNTY MEML INTL (5T9)

T A NA — 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 CEXEV and via 056° track to NEYIR and hold.

AWOS-3	KDLF ATIS★	DEL RIO APP CON ★	UNICOM
119.175	114.4	127.75 326.2	122.8 (CTAF) L

APPENDIX 7
BRIEFING STRIPS (CONTINUED)

SEATTLE, WASHINGTON — AL-582 (FAA) — 00000

ILS or LOC RWY 16L
SEATTLE-TACOMA INTL (SEA)

LOC/DME I-SNQ	APP CRS	Rwy Ldg	TDZE	Apt Elev
110.3 Chan 40	164°	11901	432	432

DME or RADAR required. RNP APCH-GPS, from GRIFY.
Simultaneous approach authorized.

ALSF-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 MILLT/SEA 11 DME/RADAR and hold, continue climb-in-hold to 5000.

D-ATIS	SEATTLE APP CON	SEATTLE TOWER	GND CON	CLNC DEL	CPDLC
118.0	133.65 273.45	119.9 239.3 (16L, 16C, 34C, 34R) 120.95 239.3 (16R, 34L)	121.7	128.0	

CARLSBAD, CALIFORNIA — AL-5310 (FAA) — 00000

RNAV (GPS) X RWY 24
MC CLELLAN-PALOMAR (CRQ)

WAAS	APP CRS	Rwy Ldg	TDZE	Apt Elev
CH 45831 W24B	245°	4897	326	331

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 1⅞ SM. Increase LNAV Cats A/B visibility to RVR 5500, Cat C to 1⅞ SM. Inop table does not apply to LPV.

MALSR

MISSED APPROACH: Climb to 2000 direct IBUGE and hold.

ATIS	SOCAL APP CON	PALOMAR TOWER★	GND CON	CLNC DEL
120.15	127.3 323.0	118.6 (CTAF) L 276.4	121.8	134.85

DENVER, COLORADO — AL-9077 (FAA) — 00000

ILS or LOC RWY 25
DENVER INTL (DEN)

LOC/DME I-ERP	APP CRS	Rwy Ldg	TDZE	Apt Elev
111.55 Chan 52(Y)	263°	12000	5355	5434

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 FQF VORTAC R-306 to HYGEN INT/FQF 37.9 DME and hold.

D-ATIS	DENVER APP CON	DENVER TOWER	GND CON	CLNC DEL	CPDLC
125.6 379.9 (ARR) 134.025 (DEP)	119.3 307.3 (N) 120.35 379.3 (S)	128.75 273.55	121.35 379.175 (W) 121.85 377.1 (E)	118.75	

DETROIT, MICHIGAN — AL-119 (FAA) — 00000

ILS or LOC RWY 21L
DETROIT METRO WAYNE COUNTY (DTW)

LOC/DME I-EJR	APP CRS	Rwy Ldg	TDZE	Apt Elev
111.5 Chan 52	216°	10001	632	645

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.
Simultaneous approach authorized.
**RVR 1800 authorized with use of FD or AP or HUD to DA.

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.

D-ATIS	DETROIT APP CON	METRO TOWER	GND CON	CLNC DEL	CPDLC
133.675	125.15 284.0	118.4 317.725	121.8 (NW) 119.45 (NE) 132.725 (SW) 119.25 (SE)	120.65	

BRAWLEY, CALIFORNIA — AL-6932 (FAA) — 00000

RNAV (GPS) RWY 26
BRAWLEY MUNI (BWC)

APP CRS	Rwy Ldg	TDZE	Apt Elev
272°	4006	-135	-129

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	YUMA CERAP	CTAF
132.175	128.55 292.2	122.9 L

TOK, ALASKA — AL-10059 (FAA) — 00000

RNAV (GPS) RWY 8
TOK JUNCTION (6K8) (PFTO)

WAAS	APP CRS	Rwy Ldg	TDZE	Apt Elev
CH 77546 W08A	082°	2509	1643	1643

RNP APCH - GPS.
Rwy 8 helicopter visibility reduction below ¾ SM NA. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -25°C or above 54°C.

MISSED APPROACH: Climb to 8000 direct NUNIC and on track 131° to CIMGO and hold, continue climb-in-hold to 8000.

AWOS-3P	ANCHORAGE CENTER	NORTHWAY RADIO	UNICOM
118.1	126.55 323.0	122.4	122.8 (CTAF) L

APPENDIX 8
BRIEFING STRIPS – COPTER

INDIANAPOLIS, INDIANA — AL-6835 (FAA) — 00000

COPTER RNAV (GPS) 291°
INDIANAPOLIS DOWNTOWN (8A4)

APP CRS	Rwy Ldg	N/A
291°	Surf Elev	824
	Apt Elev	732

RNP APCH - GPS

NA Limit final and missed approach to 70K. When local altimeter setting not received, use Indianapolis Intl altimeter setting and increase MDA 40 feet. Activate High Intensity Pad Lights-CTAF.

MISSED APPROACH: Climb to 1500 then climbing right turn to 3000 direct VHP VORTAC and hold.

AWOS-3	INDIANAPOLIS APP CON	UNICOM
135.525	125.275 317.8	123.05 (CTAF) L

WASHINGTON, DC — AL-443 (FAA) — 00000

COPTER ILS or LOC/DME RWY 1
RONALD REAGAN WASHINGTON NTL (DCA)

LOC/DME I-DCA	APP CRS	Rwy Ldg	6869
109.9	006°	TDZE	14
Chan 36		Apt Elev	15

NA

ALSF-2

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.

D-ATIS	POTOMAC APP CON	WASHINGTON TOWER	GND CON	CLNC DEL	CPDLC
132.65	119.85 239.25 (W/S) 124.2 360.8 (E)	119.1 257.6	121.7 257.6	128.25	

NEW YORK, NEW YORK — AL-289 (FAA) — 00000

COPTER ILS or LOC RWY 22
LAGUARDIA (LGA)

LOC/DME I-URD	APP CRS	Rwy Ldg	7002
110.5	224°	TDZE	12
Chan 42		Apt Elev	21

DME required.

ALSF-1

MISSED APPROACH: Climb to 3000 on LGA VOR/DME R-225 to PROUD/LGA VOR/DME 11 DME and hold.

D-ATIS	NEW YORK APP CON	LAGUARDIA TOWER	GND CON	CLNC DEL	CPDLC
125.95 (ARR) 127.05 (DEP)	120.8 263.0	118.7 263.0	121.7 263.0	135.2 121.875 (COPTER)	

APPENDIX 9
LEGEND – IAP PLANVIEW

LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)

PLANVIEW SYMBOLS

ROUTES

Procedure Track

Feeder Route

Missed Approach

Visual Flight Path

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

Minimum Route Altitude → 3100 NoPT to LOM
045°
Mileage → (14.2)

HOLDING PATTERNS

Hold-in-lieu of Procedure Turn

HOLD 10000/8000
090°
(IAS)
270°
4 NM

HOLD 10000/8000
090°
1 min
270°

Missed Approach
090°
270°

Arrival
HOLD 8000
090°
270°

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.

FIXES/ATC REPORTING REQUIREMENTS

Reporting Point

Waypoint

MAP WP (Flyby)

MAP WP (Flyover)

GLGHR INT Intersection

MYLES
I-LVF 14.9 (Distance From Facility)

DME

Flyover Point

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

ALTITUDES

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

INDICATED AIRSPEED

175K	120K	250K	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 postion off the end of the runway.)

Primary NAVAID
LIMA
114.5 LIM
Chan 92

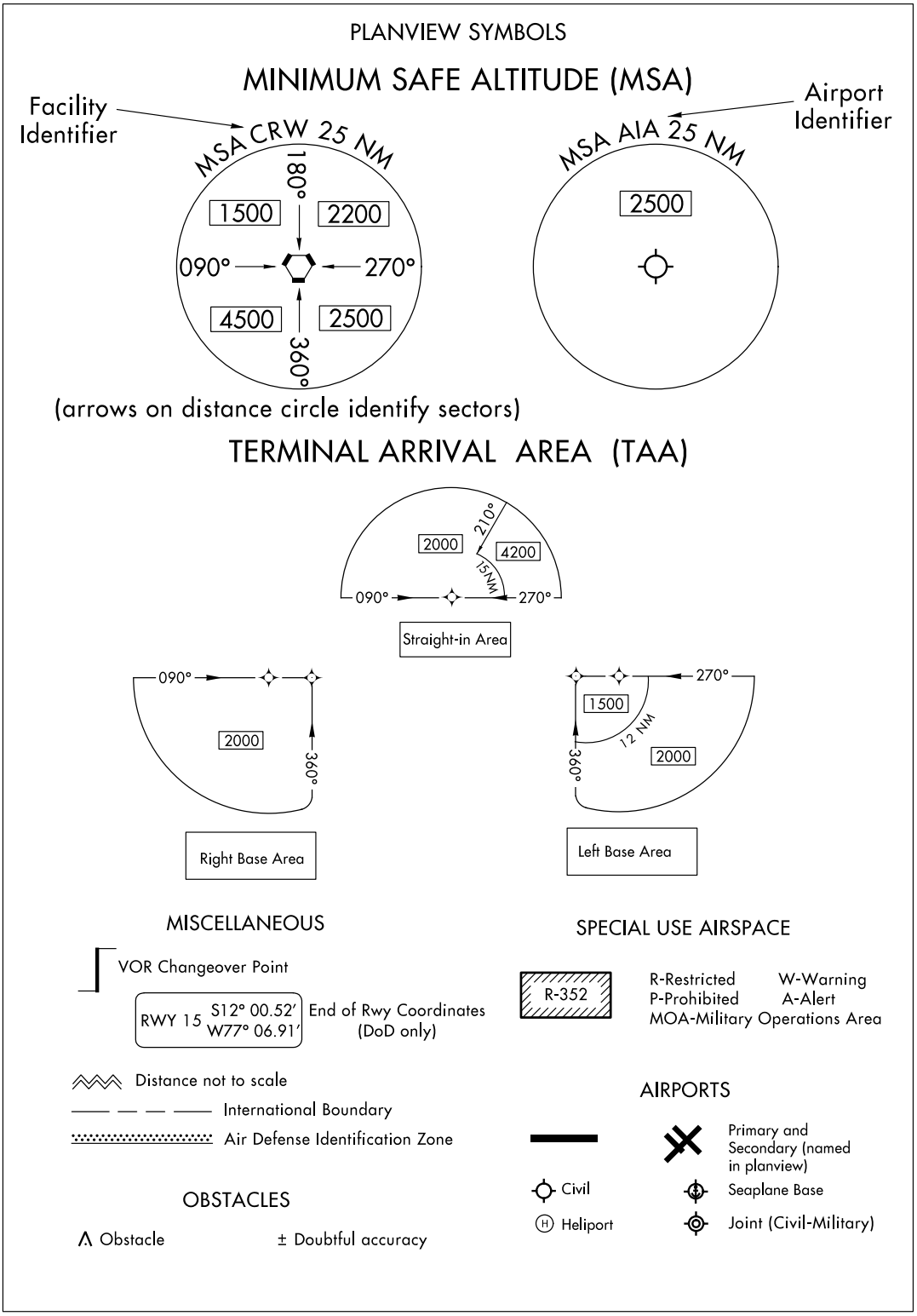
Secondary NAVAID
LOM
AKRON
362 AK

TACAN or DME NAVAID
SCOTT
Chan 59
SKE
(112.2)
VHF Paired Frequency

LEGEND 00000

APPENDIX 9
LEGEND – IAP PLANVIEW (CONTINUED)

LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND 00000

APPENDIX 10
LEGEND – IAP PROFILE

LEGEND 00000 INSTRUMENT APPROACH PROCEDURES (CHARTS)

PROFILE VIEW

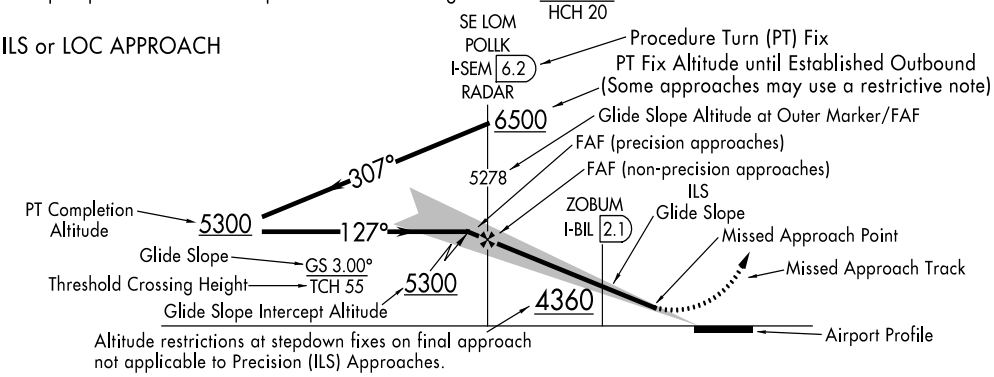
Three different methods are used to depict either electronic or vertical guidance: "GS", "GP", or "VDA".

1. "GS" indicates that an Instrument Landing System (ILS) electronic glide slope (a ground antenna) provides vertical guidance. The profile section of ILS procedures depict a GS angle and TCH in the following format: GS 3.00° / TCH 55.

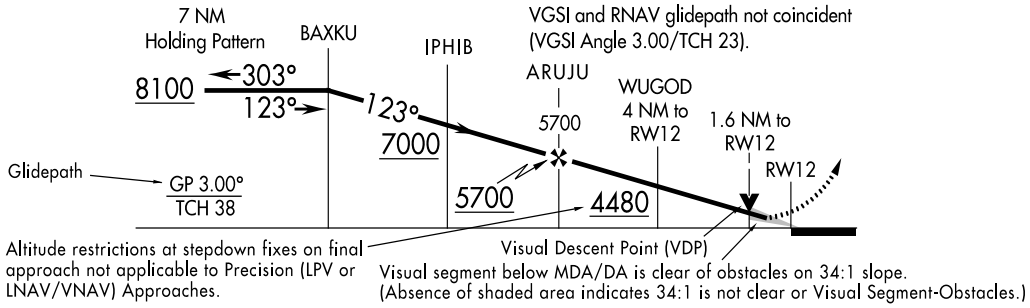
2. "GP" on GLS and RNAV procedures indicates that either electronic vertical guidance (via Wide Area Augmentation System - WAAS or Ground Based Augmentation System - GBAS) or barometric vertical guidance is provided. GLS and RNAV procedures with a published decision altitude (DA/H) depict a GP angle and TCH in the following format: GP 3.00° / TCH 50.

3. An advisory vertical descent angle (VDA) is provided on non-vertically guided conventional procedures and RNAV procedures with only a minimum descent altitude (MDA) to assist in preventing controlled flight into terrain. On Civil (FAA) procedures, this information is placed above or below the procedure track following the fix it is based on. Absence of a VDA or a note that the VDA is not authorized indicates that the prescribed obstacle clearance surface is not clear and the VDA must not be used below MDA. VDA is depicted in the following format: ∠3.00° / TCH 55. On Copter procedures this is depicted in the following format: ∠7.30° / HCH 20.

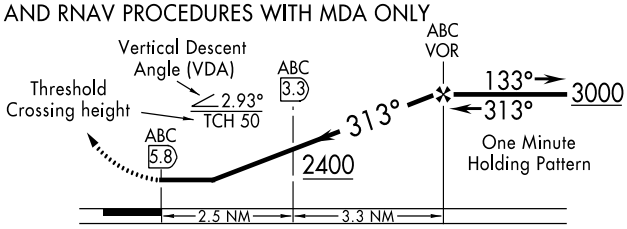
ILS or LOC APPROACH



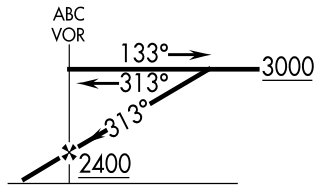
RNAV and GLS PROCEDURES WITH VERTICAL GUIDANCE



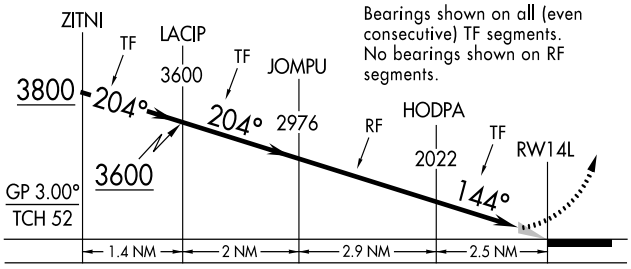
NON-VERTICALLY GUIDED CONVENTIONAL PROCEDURES AND RNAV PROCEDURES WITH MDA ONLY



DESCENT FROM HOLDING PATTERN



RNP APPROACH WITH TF AND RF SEGMENTS



ALTITUDES

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

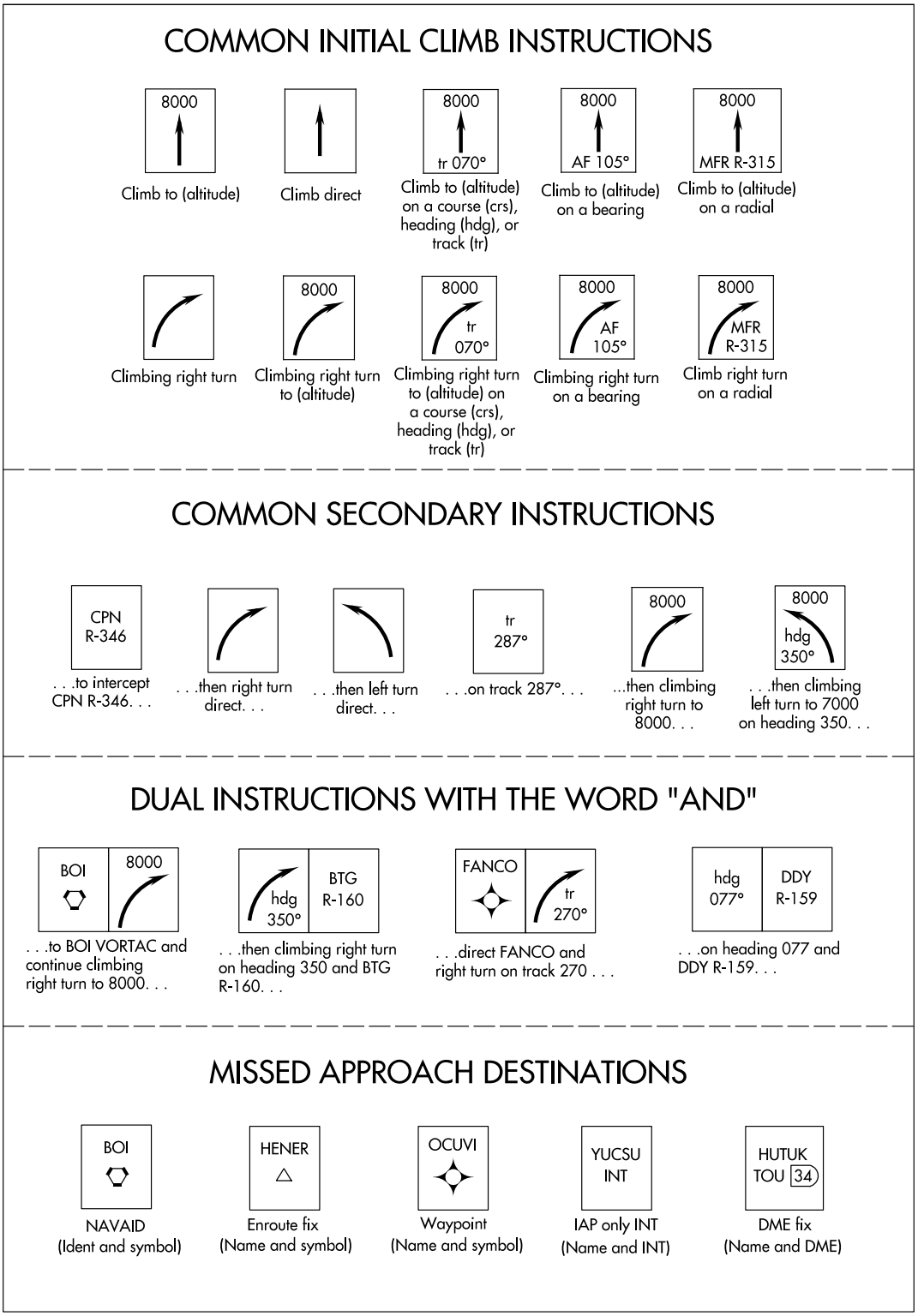
PROFILE SYMBOLS

- 2400 — Glide Slope/Glidepath Intercept Altitude and final approach fix for vertically guided approach procedures.
- ▼ Visual Descent Point (VDP)
- Visual Flight Path

Note: Facilities and waypoints are depicted as a solid vertical line while fixes and intersections are depicted as a dashed vertical line.

LEGEND 00000

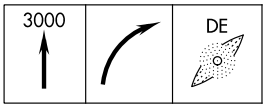
APPENDIX 11
MISSED APPROACH ICONS (VOLPE)



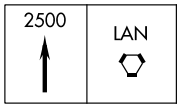
APPENDIX 12
MISSED APPROACH EXAMPLES

EXAMPLES

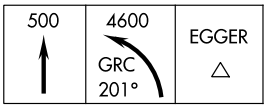
MISSED APPROACH: Climb to 3000 then right turn direct MADDS LOM and hold.
EX from: 00119_IL4R



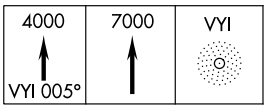
MISSED APPROACH: Climb to 2500 direct LAN VORTAC and hold.
EX from: 00224_VG24



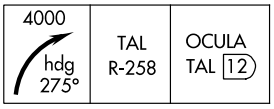
MISSED APPROACH: Climb to 500 then climbing left turn to 4600 via 201° bearing from GCR NDB to EGGER INT/I-CDV 11.1 DME and hold.
EX from: 01195_ILD27



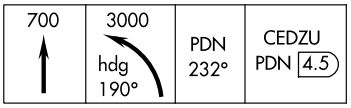
MISSED APPROACH: Climb to 4000 via 005° bearing from VYI NDB then climb to 7000 direct VYI NDB and hold.
EX from: 00762_ND2



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

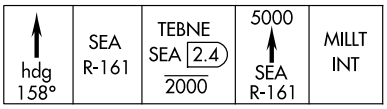


MISSED APPROACH: Climb to 700 then climbing left turn to 3000 via heading 190° and PDN NDB bearing 232° to CEDZU/4.5 DME and hold, continue climb-in-hold to 3000. EX from: 01240_ND5

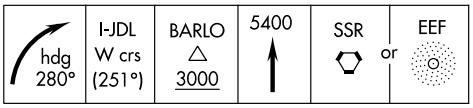


MISSED APPROACH: Climb to 3000 direct PARNE and via track 304° to GICEY and via track 353° to SVM VORTAC and hold. EX from: 00119_R22R

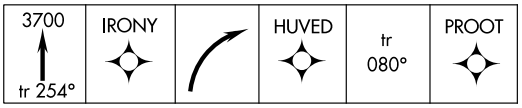
MISSED APPROACH: Climb heading 158° and SEA VORTAC R-161 to cross TEBNE/SEA 2.4 DME/RADAR at or below 2000, then climb to 5000 via SEA VORTAC R-161 to MILLT INT/SEA 11 DME/RADAR and hold, continue climb-in-hold to 5000. EX from: 00582_IL16R



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



* MISSED APPROACH: Climb to 3700 on the RNAV missed approach route to PROOT and hold.
EX from: 00262_RRY25L



* For RNPs 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 instuctions 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 13
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 # TWR

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..... ← 0.3% Down.....0.8% UP →
(shown when rounded runway slope is ≥ 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 ½ minute increments. They are further broken down into 6 second ticks, within each 1 minute increments.

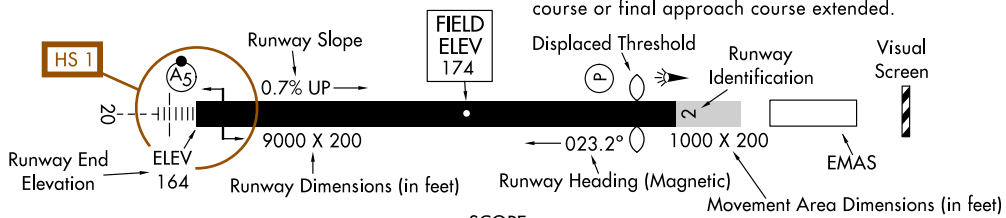
Positional accuracy within ± 600 feet unless otherwise noted on the chart.

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 D 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 14
LEGEND – AIRPORT SKETCH LIGHTING SYSTEMS

LEGEND 00000

INSTRUMENT APPROACH PROCEDURES (CHARTS)
APPROACH LIGHTING SYSTEM - UNITED STATES

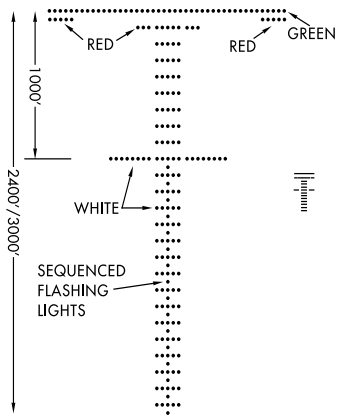
Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, e.g., (A2), (V), etc.

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).

CATEGORY I APPROACH LIGHTING SYSTEM

(A1)

ALSF-1

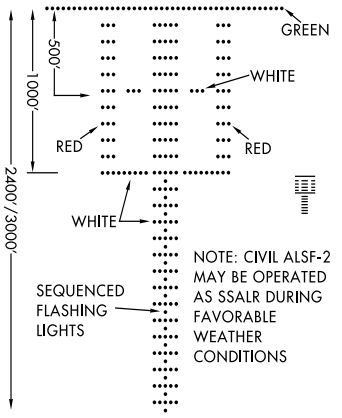


(High Intensity)
LENGTH 2400/3000 FEET

CATEGORY II APPROACH LIGHTING SYSTEM

(A)

ALSF-2

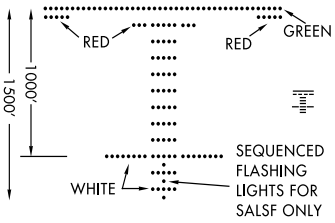


(High Intensity)
LENGTH 2400/3000 FEET

SHORT APPROACH LIGHTING SYSTEM

(A2) (A2)

SALS/SALSF



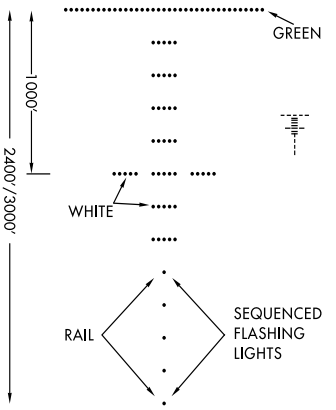
(High Intensity)
LENGTH 1500 FEET

SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM

with Runway Alignment Indicator Lights

(A3)

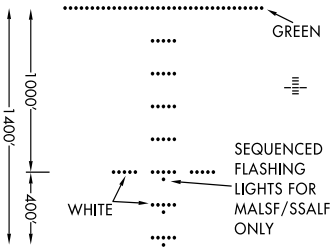
SSALR



(High Intensity)
LENGTH 2400/3000 FEET

MEDIUM INTENSITY (**MALS** and **MALSF**) OR SIMPLIFIED SHORT (**SSALS** and **SSALF**) APPROACH LIGHTING SYSTEMS

(A4) (A4)



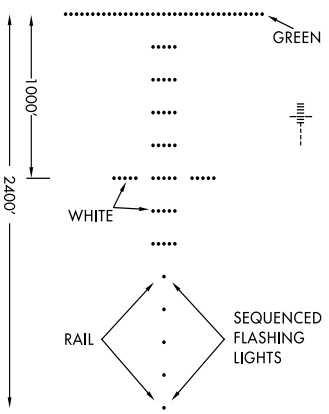
LENGTH 1400 FEET

MEDIUM INTENSITY APPROACH LIGHTING SYSTEM

with Runway Alignment Indicator Lights

(A5)

MALSR

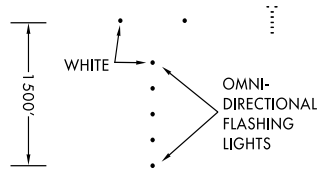


LENGTH 2400 FEET

OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM

(V)

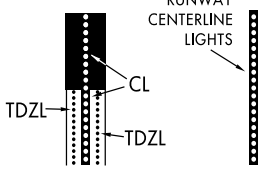
ODALS



LENGTH 1500 FEET

RUNWAY TOUCHDOWN ZONE AND CENTERLINE LIGHTING SYSTEMS

TDZ/CL



AVAILABILITY of TDZ/CL will be shown by NOTE in SKETCH e.g. "TDZ/CL Rwy 15"

LEGEND 00000

APPENDIX 14
LEGEND – AIRPORT SKETCH LIGHTING SYSTEMS (CONTINUED)

LEGEND 00000

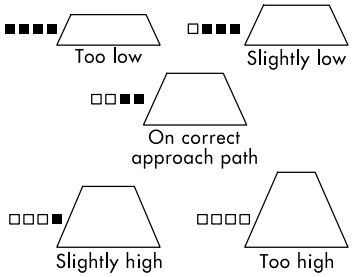
INSTRUMENT APPROACH PROCEDURES (CHARTS)
APPROACH LIGHTING SYSTEM - UNITED STATES

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).

(P) PRECISION APPROACH PATH INDICATOR

PAPI



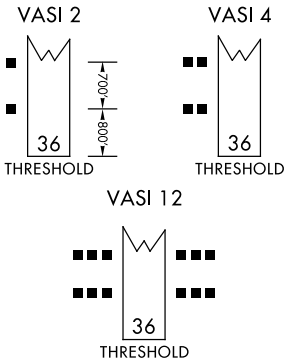
Legend: □ White ■ Red

(V) VISUAL APPROACH SLOPE INDICATOR

VASI

VISUAL APPROACH SLOPE INDICATOR WITH STANDARD THRESHOLD CLEARANCE PROVIDED.

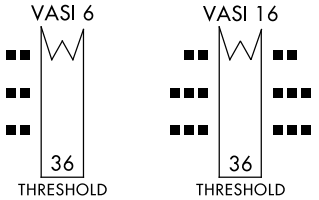
ALL LIGHTS WHITE — TOO HIGH
FAR LIGHTS RED, NEAR LIGHTS WHITE — ON GLIDE SLOPE
ALL LIGHTS RED — TOO LOW



(V3) VISUAL APPROACH SLOPE INDICATOR

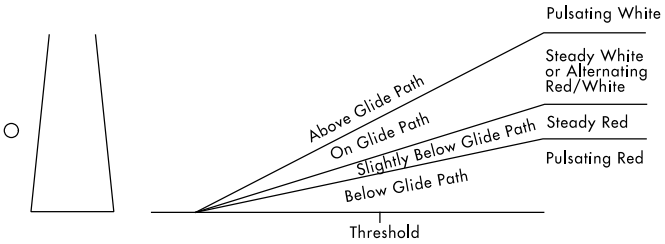
VASI

3-BAR, 6 OR 16 BOX, VISUAL APPROACH SLOPE INDICATOR THAT PROVIDES 2 GLIDE ANGLES AND 2 THRESHOLD CROSSING HEIGHTS.



(V2) PULSATING VISUAL APPROACH SLOPE INDICATOR

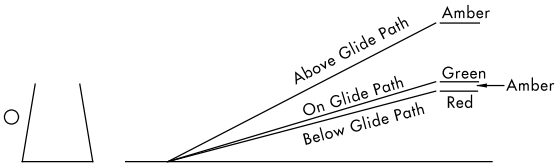
PVASI



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.

(V4) TRI-COLOR VISUAL APPROACH SLOPE INDICATOR

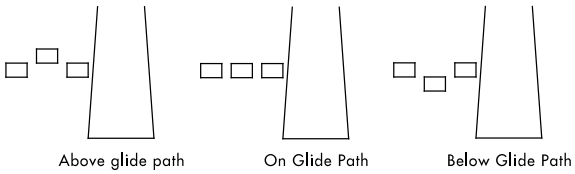
TRCV



CAUTION: When the aircraft descends from green to red, the pilot may see a dark amber color during the transition from green to red.

(V5) ALIGNMENT OF ELEMENTS SYSTEMS

APAP



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 15
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.

Visibility (RVR 100's of feet) — DA — Aircraft Approach Category — HAT

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)

Straight-in ILS to Runway 27

Straight-in with Glide Slope Inoperative or not used to Runway 27

All **weather** minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.

MDA — HAA — Visibility in Statute Miles

COPTER MINIMA ONLY

CATEGORY	COPTER
H-176°	680-½ 363 (400-½)

Copter Approach Direction — Height of MDA/DA Above Landing Area (HAL) — 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/

COLD TEMPERATURE ERROR TABLE

HEIGHT ABOVE AIRPORT IN FEET

REPORTED TEMP °C	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
+10	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 15
LANDING MINIMA (CONTINUED)

TERMS/LANDING MINIMA DATA 25163

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

Users may ignore the presence of C symbols on charts which will be removed on a day-forward basis. All circling areas within this volume have been evaluated for the circling MDA protected area radius shown in the table above.

Comparable Values of RVR and Visibility

The following table shall be used for converting RVR to ground or flight visibility. For converting 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)
1600	¼	2400	½	3500	⅝	5500	1
1800	½	2600	½	4000	¾	6000	1¼
2000	½	3000	⅝	4500	⅞		
2200	½	3200	⅝	5000	1		

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	**195**/16	100	(100-¼)				
	28	2.5°/48/1068	ABCDE	**187**/16	100	(100-¼)				
ASR	10		ABC	**560**/40	463	(500-¾)	DE	**560**/50	463	(500-1)
	28		AB	**600**/50	513	(600-1)	CDE	**600**/60	513	(600-1¼)
CIR	10		AB	**560**-1¼	463	(500-1¼)	CDE	**560**-1½	463	(500-1½)
	28		AB	**600**-1¼	503	(600-1¼)	CDE	**600**-1½	503	(600-1½)

Visibility (RVR 100's of feet)

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".

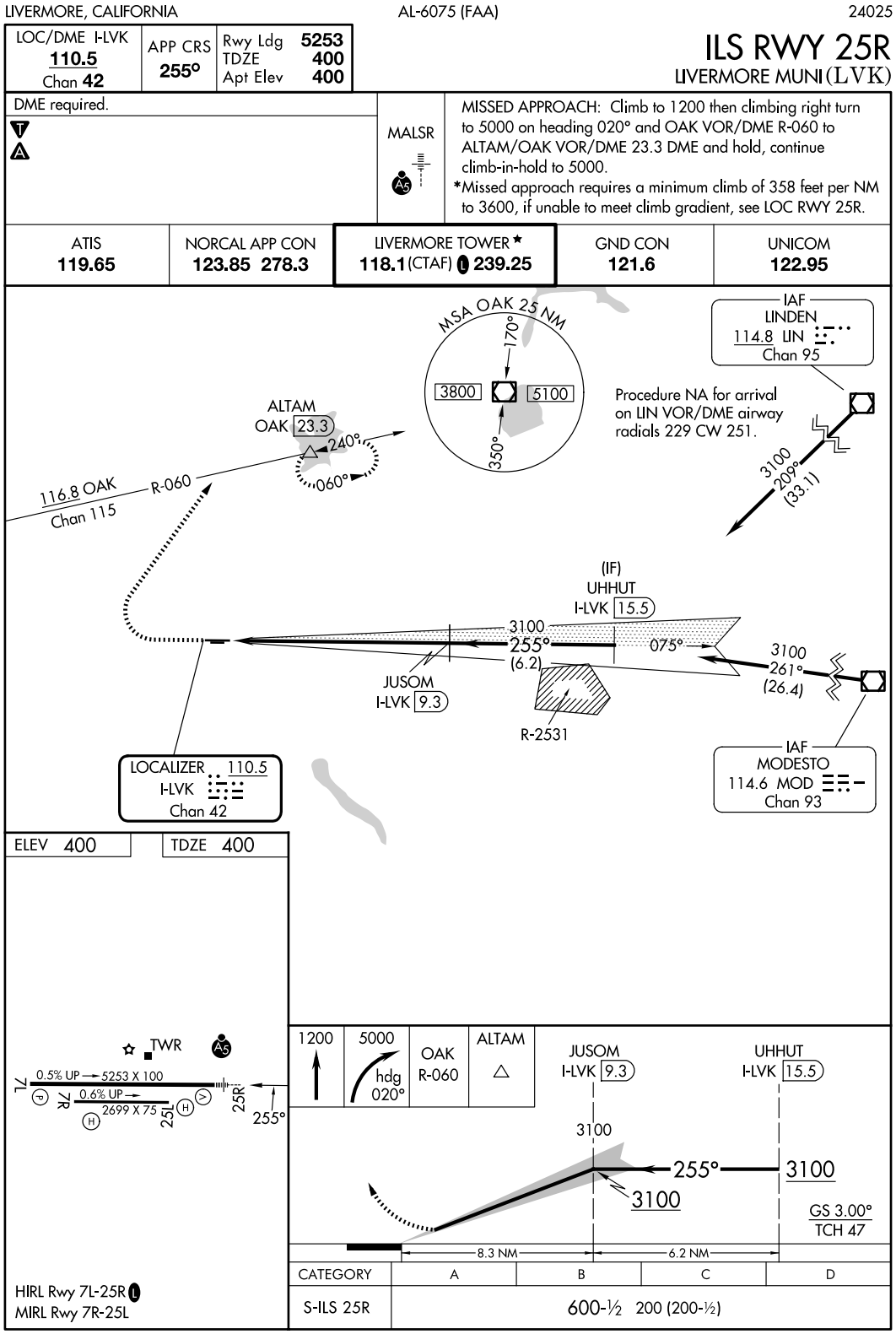
A Alternate Minimums not standard. Civil users refer to tabulation. USA/USN/USAF pilots refer to appropriate regulations.

A NA Alternate minimums are Not Authorized due to unmonitored facility or absence of weather reporting service.

T Airport is published in the Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) tabulation.

TERMS/LANDING MINIMA DATA 25163

APPENDIX 16
ILS



APPENDIX 17
ILS OR LOC

BALTIMORE, MARYLAND AL-804 (FAA) 22251

LOC I-BAL	APP CRS	Rwy Ldg	9953
109.7	105°	TDZE	143
		Apt Elev	143

BALTIMORE/ WASHINGTON INTL THURGOOD MARSHALL (BWI)

ILS or LOC RWY 10

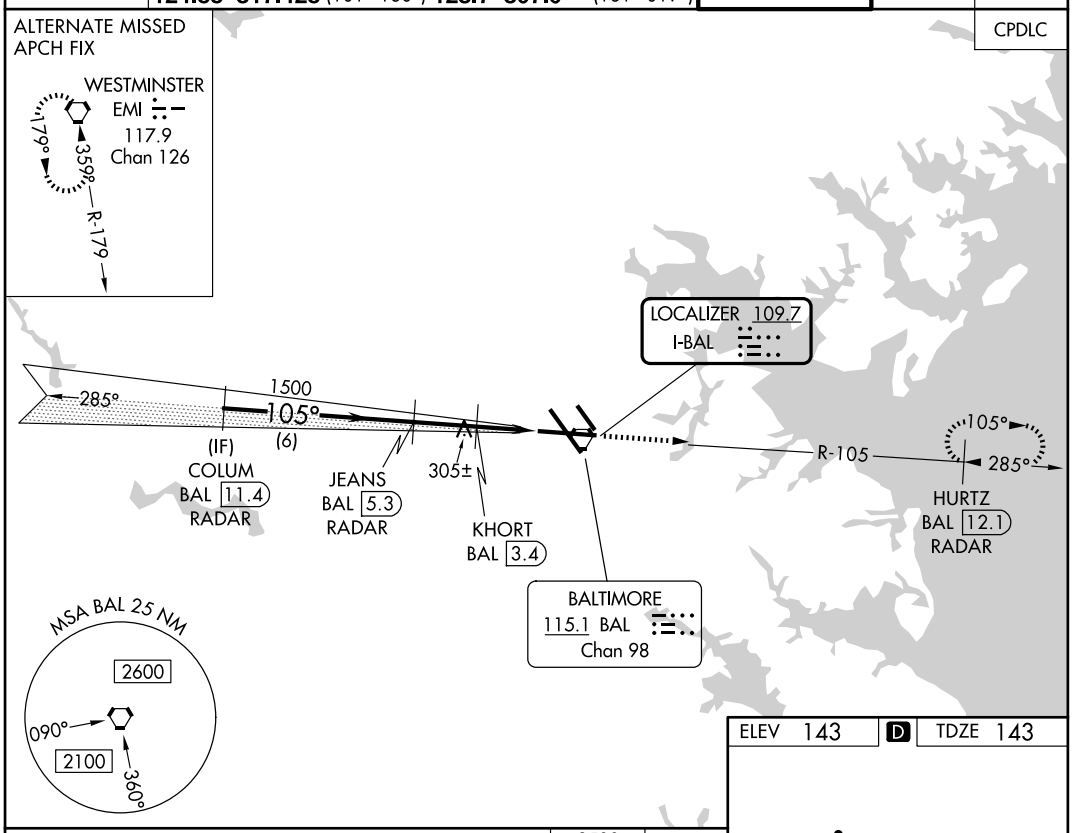
RADAR required for procedure entry.
DME required.

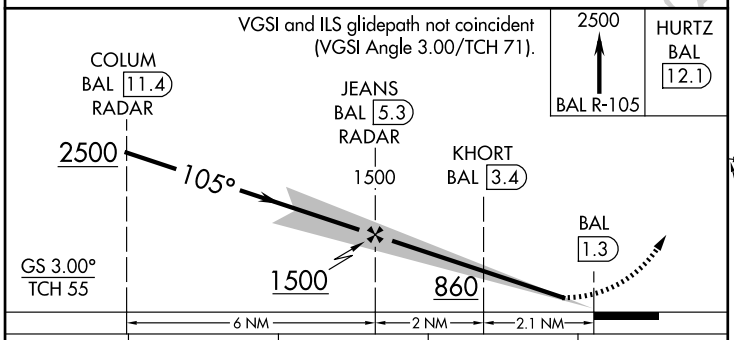
ALSF-2

MISSED APPROACH: Climb to 2500 on BAL VORTAC R-105 to HURTZ/BAL 12.1 DME/RADAR and hold.

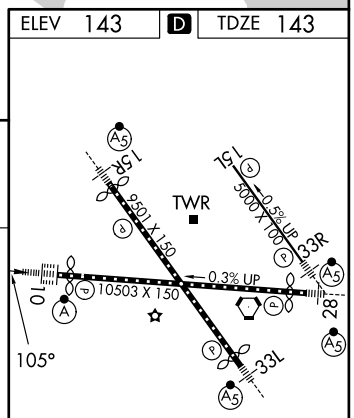
D-ATIS	POTOMAC APP CON	BALTIMORE TOWER	GND CON	CLNC DEL
115.1 127.8	119.0 282.275 (020°-100°) 119.7 290.475 (131°-180°) 124.55 317.425 (101°-130°) 128.7 307.9 (181°-019°)	119.4 257.8	121.9	118.05

CPDLC





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	640-1 497 (500-1)	660-1 517 (600-1)	700-1½ 557 (600-1½)	860-2¼ 717 (800-2¼)



TDZ/CL Rwys 10 and 33L
REIL Rwys 15L and 33R
HIRL all Rwys

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 18
ILS OR LOC/DME W/ALTERNATE MISSED APPROACH

BALTIMORE, MARYLAND — AL-804 (FAA) — 22251

LOC I-BAL	APP CRS	Rwy Ldg	9953
109.7	105°	TDZE	143
		Apt Elev	143

BALTIMORE/ WASHINGTON INTL THURGOOD MARSHALL (BWI)

ILS or LOC RWY 10

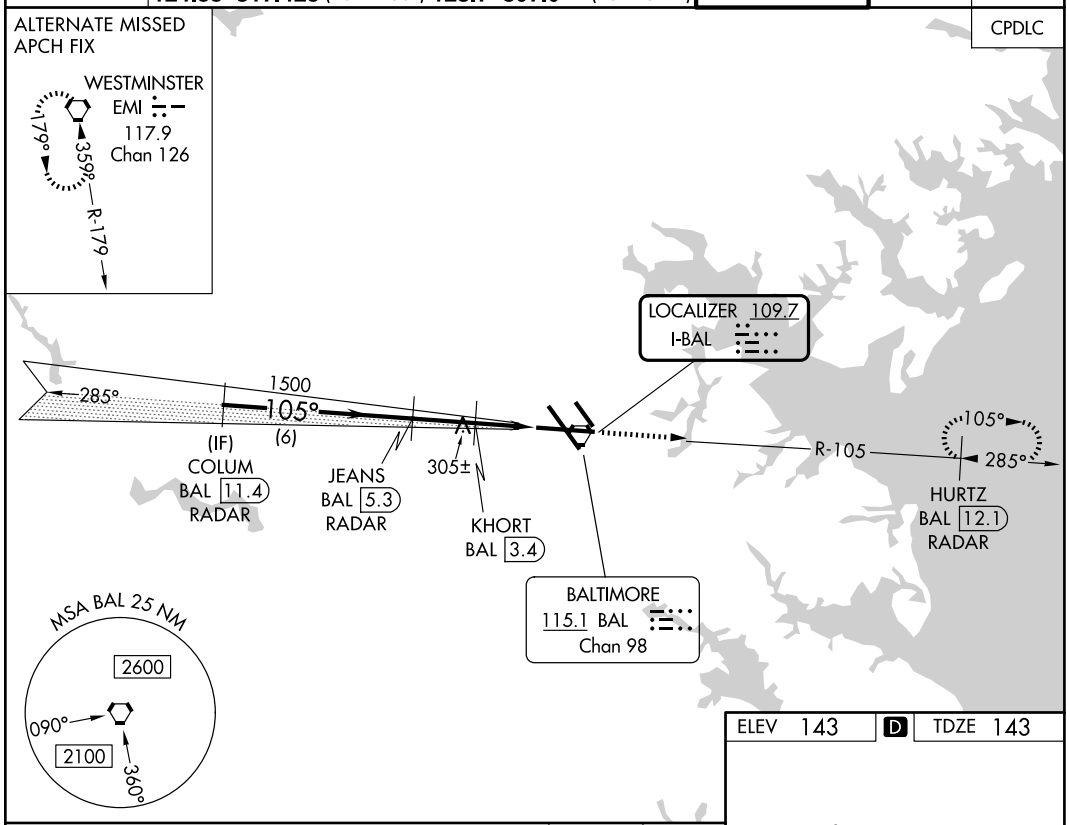
RADAR required for procedure entry.
DME required.

ALSF-2

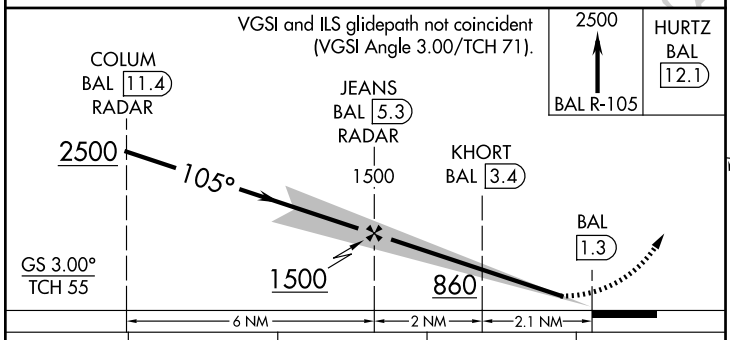
MISSED APPROACH: Climb to 2500 on BAL VORTAC R-105 to HURTZ/BAL 12.1 DME/RADAR and hold.

D-ATIS	POTOMAC APP CON		BALTIMORE TOWER	GND CON	CLNC DEL
115.1 127.8	119.0 282.275 (020°-100°) 119.7 290.475 (131°-180°) 124.55 317.425 (101°-130°) 128.7 307.9 (181°-019°)		119.4 257.8	121.9	118.05

CPDLC

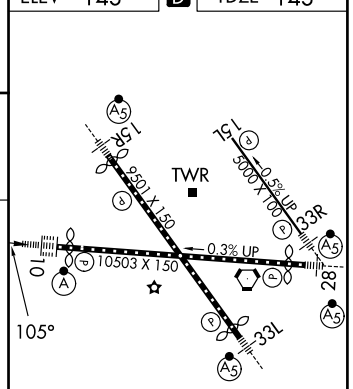


VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 71).



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	640-1 497 (500-1)	660-1 517 (600-1)	700-1½ 557 (600-1½)	860-2¼ 717 (800-2¼)

ELEV 143 D TDZE 143



TDZ/CL Rwys 10 and 33L
REIL Rwys 15L and 33R
HIRL all Rwys

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 WITH RNAV ELEMENTS

MEMPHIS, TENNESSEE AL-253 (FAA) 24137

ILS or LOC RWY 27
MEMPHIS INTL (MEM)

LOC I-JIM	APP CRS	Rwy Ldg	8946
108.7	273°	TDZE	292
		Apt Elev	341

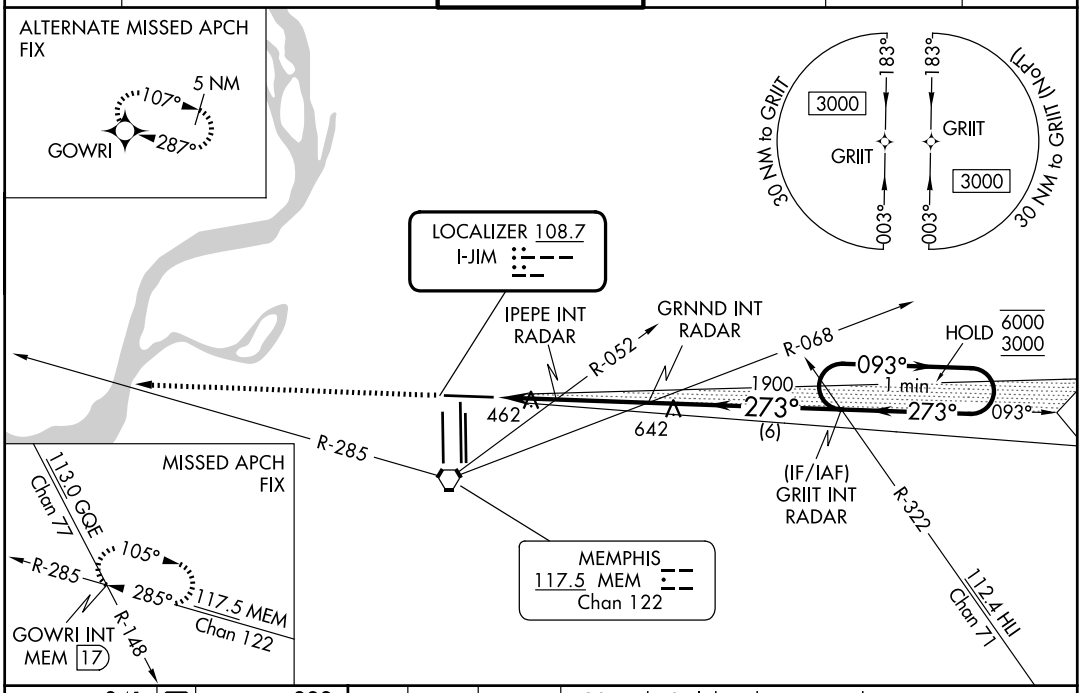
RNAV 1-GPS or RADAR required for procedure entry.

For inop ALS, increase S-ILS Cat E visibility to RVR 4000, and S-LOC Cat E visibility to 2 SM, IPEPE fix minimums S-LOC Cat E visibility to 1¼ SM.
*RVR 1800 authorized with use of FD or AP or HUD to DA.

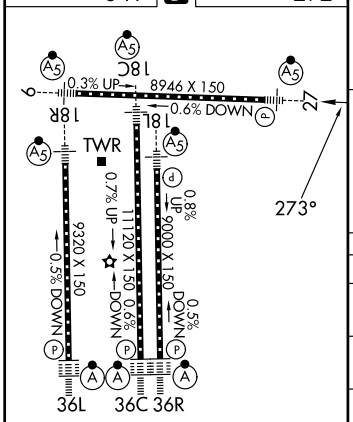
MALSR

MISSED APPROACH: Climb to 5000 and intercept MEM VORTAC R-285 to GOWRI INT/17 DME and hold, continue climb-in-hold to 5000.

D-ATIS	MEMPHIS APP CON	MEMPHIS TOWER	GND CON	CLNC DEL	CPDLC
127.75	119.1 291.6 (176°-355°) 125.8 338.3 (356°-175°)	118.3 257.8	121.0 379.2	125.2	



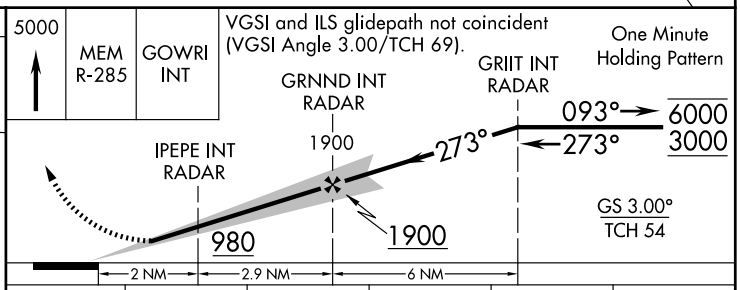
ELEV 341 D TDZE 292



HIRL all Rwys
TDZ/CL Rwys 18L, 18C, 18R, 36R, 36C, and 36L

FAF to MAP 4.9 NM

Knots	60	90	120	150	180
Min:Sec	4:54	3:16	2:27	1:58	1:38

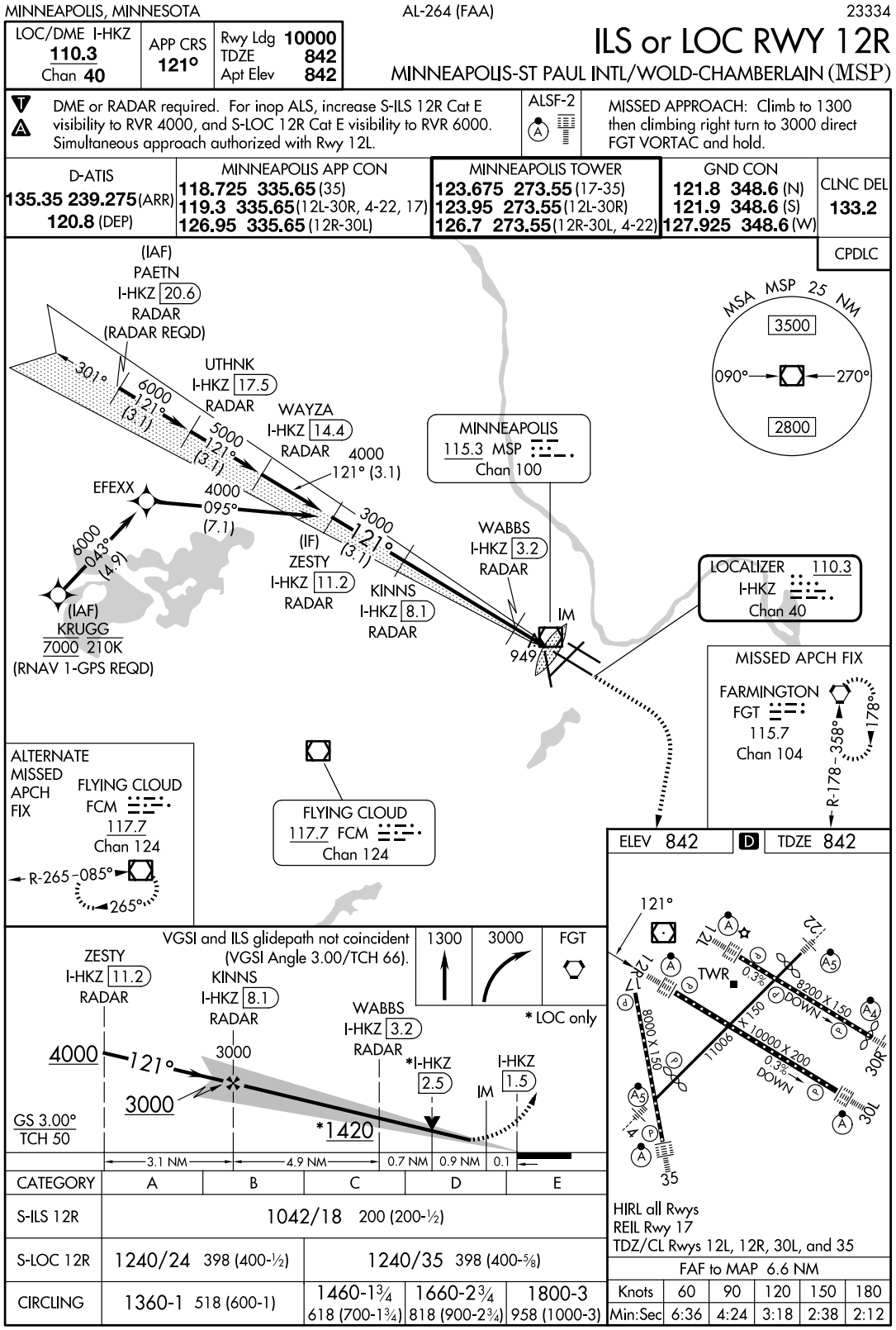


CATEGORY	A	B	C	D	E
S-ILS 27 *	492/24 200 (200-½)				
S-LOC 27	980/24 688 (700-½)		980-1½ 688 (700-1½)		
CIRCLING	980-1 639 (700-1)		980-2 639 (700-2)	1020-2¼ 679 (700-2¼)	1140-2¾ 799 (800-2¾)
IPEPE FIX MINIMUMS (DUAL VOR RECEIVERS OR RADAR REQUIRED)					
S-LOC 27	720/24 428 (400-½)		720/40 428 (400-¾)		
CIRCLING	940-1 599 (600-1)		940-1½ 599 (600-1½)	1020-2¼ 679 (700-2¼)	1140-2¾ 799 (800-2¾)

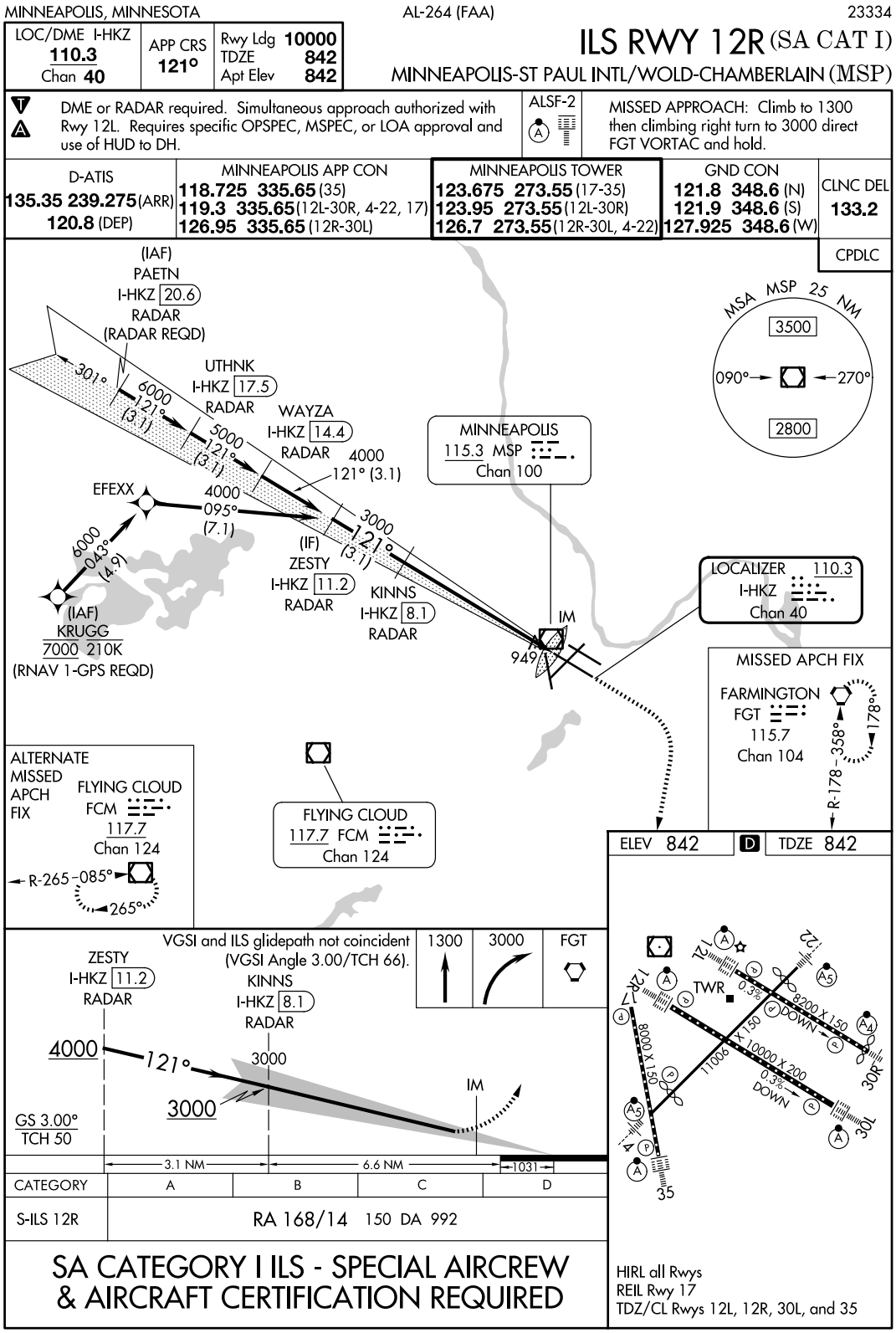
MEMPHIS, TENNESSEE
Amdt 4D 30NOV23 35°03′N-89°59′W

MEMPHIS INTL (MEM)
ILS or LOC RWY 27

APPENDIX 20
ILS OR LOC – PARENT CHART 1



APPENDIX 21
SA ILS APPROACH – CAT I



APPENDIX 22
ILS CAT II & III

MINNEAPOLIS, MINNESOTA — AL-264 (FAA) — 23334

LOC/DME I-HKZ	APP CRS	Rwy Ldg	10000
110.3	121°	TDZE	842
Chan 40		Apt Elev	842

ILS RWY 12R (CAT II & III)
MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)

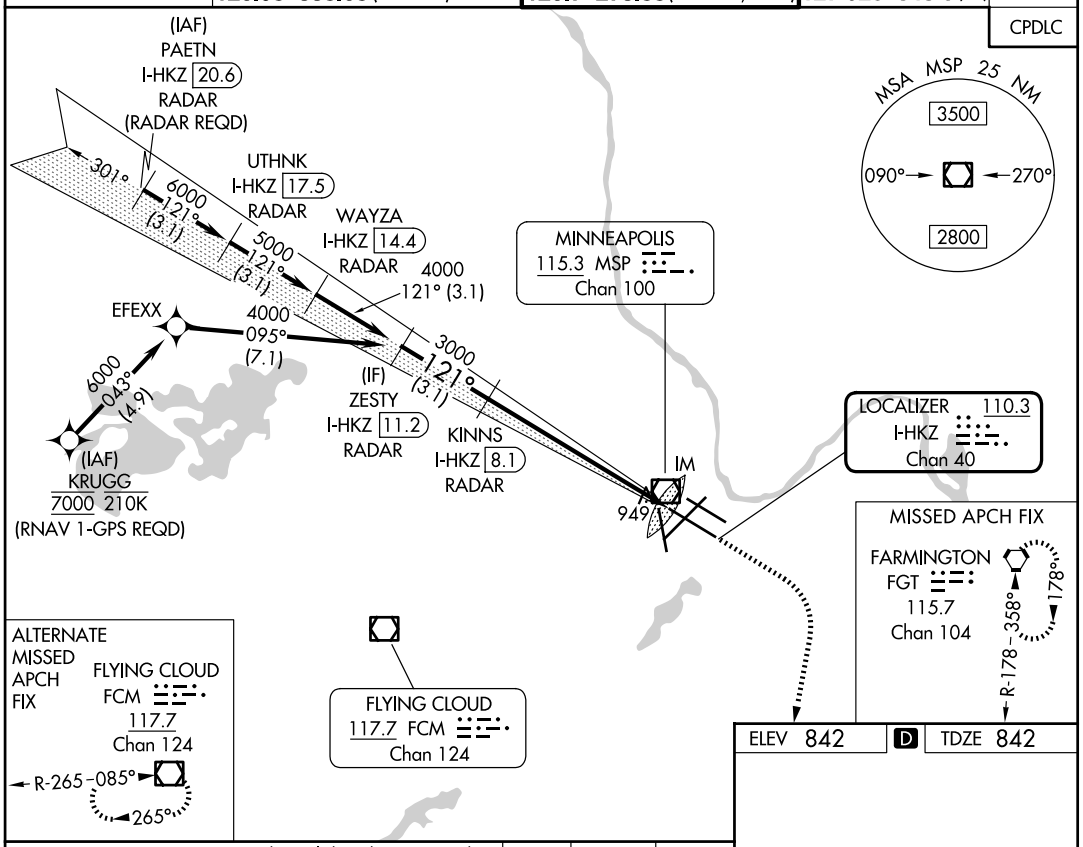
DME or RADAR required. Simultaneous approach authorized with Rwy 12L.
CAT II: RVR 1000 authorized with specific OPSPEC, MSPEC, or LOA approval and use of autoland or HUD to touchdown.

ALSF-2

MISSED APPROACH: Climb to 1300 then climbing right turn to 3000 direct FGT VORTAC and hold.

D-ATIS	MINNEAPOLIS APP CON	MINNEAPOLIS TOWER	GND CON	CLNC DEL
135.35 239.275 (ARR)	118.725 335.65 (35)	123.675 273.55 (17-35)	121.8 348.6 (N)	133.2
120.8 (DEP)	119.3 335.65 (12L-30R, 4-22, 17)	123.95 273.55 (12L-30R)	121.9 348.6 (S)	
	126.95 335.65 (12R-30L)	126.7 273.55 (12R-30L, 4-22)	127.925 348.6 (W)	

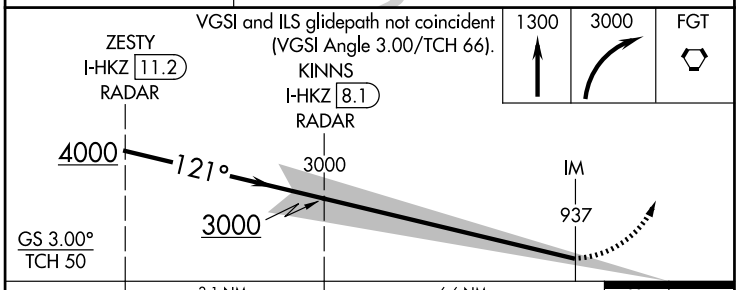
CPDLC

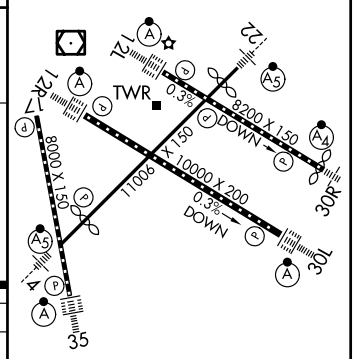


ELEV 842 | D | TDZE 842

VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 66).

1300	3000	FGT
↑	↗	⬡





CATEGORY	A	B	C	D
S-ILS 12R	CAT II RA 102/12 100 DA 942			
S-ILS 12R	CAT III RVR 06			

CATEGORY II & III ILS - SPECIAL AIRCREW & AIRCRAFT CERTIFICATION REQUIRED

HIRL all Rwys
REIL Rwy 17
TDZ/CL Rwys 12L, 12R, 30L, and 35

MINNEAPOLIS, MINNESOTA — MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)
Amdt 12 05JAN17 — 44°53'N-93°13'W — ILS RWY 12R (CAT II & III)

APPENDIX 23
ILS OR LOC – PARENT CHART 2

SEATTLE, WASHINGTON AL-582 (FAA) 24137

LOC/DME I-TUC	APP CRS		34C	34R
111.7	344°	Rwy Ldg	9426	11901
Chan 54		TDZE	387	372
		Apt Elev	432	432

ILS or LOC RWY 34C
SEATTLE-TACOMA INTL (SEA)

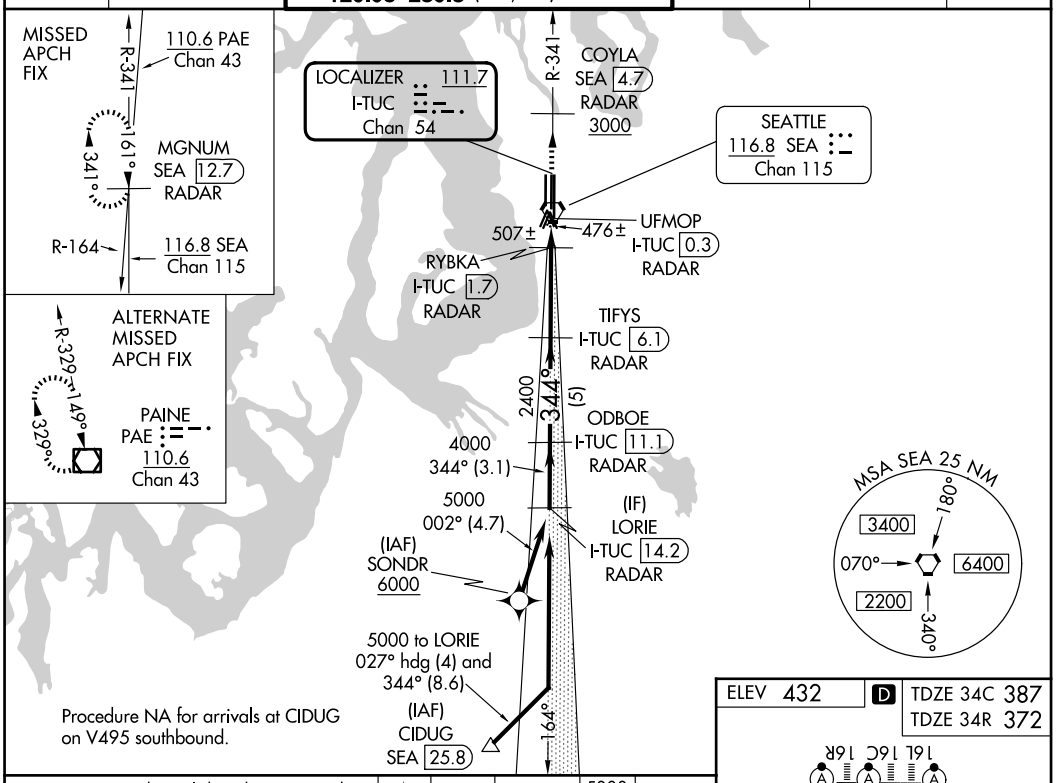
DME or RADAR required.
From SONDR: RNAV 1-GPS required.

Inop table does not apply to ALS Rwy 34R.
Simultaneous approach authorized with Rwy 34L.

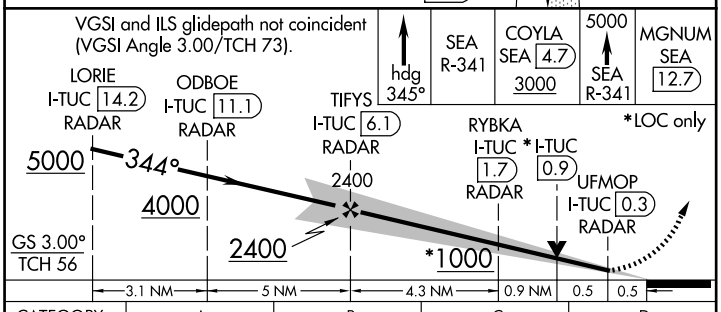
MALSR Rwy 34C/R

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.

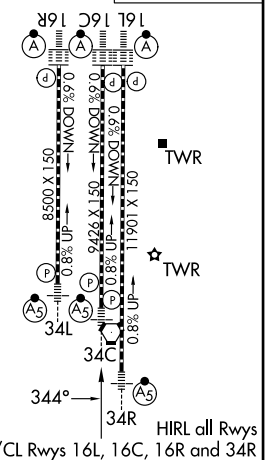
D-ATIS	SEATTLE APP CON	SEATTLE TOWER	GND CON	CLNC DEL	CPDLC
118.0	133.65 273.45	119.9 239.3 (16L, 16C, 34C, 34R) 120.95 239.3 (16R, 34L)	121.7	128.0	



VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 73).



ELEV 432 D TDZE 34C 387 TDZE 34R 372



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 (600-1½)	1000-2 568 (600-2)

FAF to MAP 5.7 NM

Knots	60	90	120	150	180
Min:Sec	5:42	3:48	2:51	2:17	1:54

SEATTLE, WASHINGTON 47°27′N-122°19′W SEATTLE-TACOMA INTL (SEA)
Amdt 3E 21JUN18 ILS or LOC RWY 34C

APPENDIX 24
SA ILS APPROACH – CAT I & II

SEATTLE, WASHINGTON AL-582 (FAA) 24137

LOC/DME I-TUC	APP CRS	Rwy Ldg	9426
111.7	344°	TDZE	387
Chan 54		Apt Elev	432

ILS RWY 34C (SA CAT I & II)
SEATTLE-TACOMA INTL (SEA)

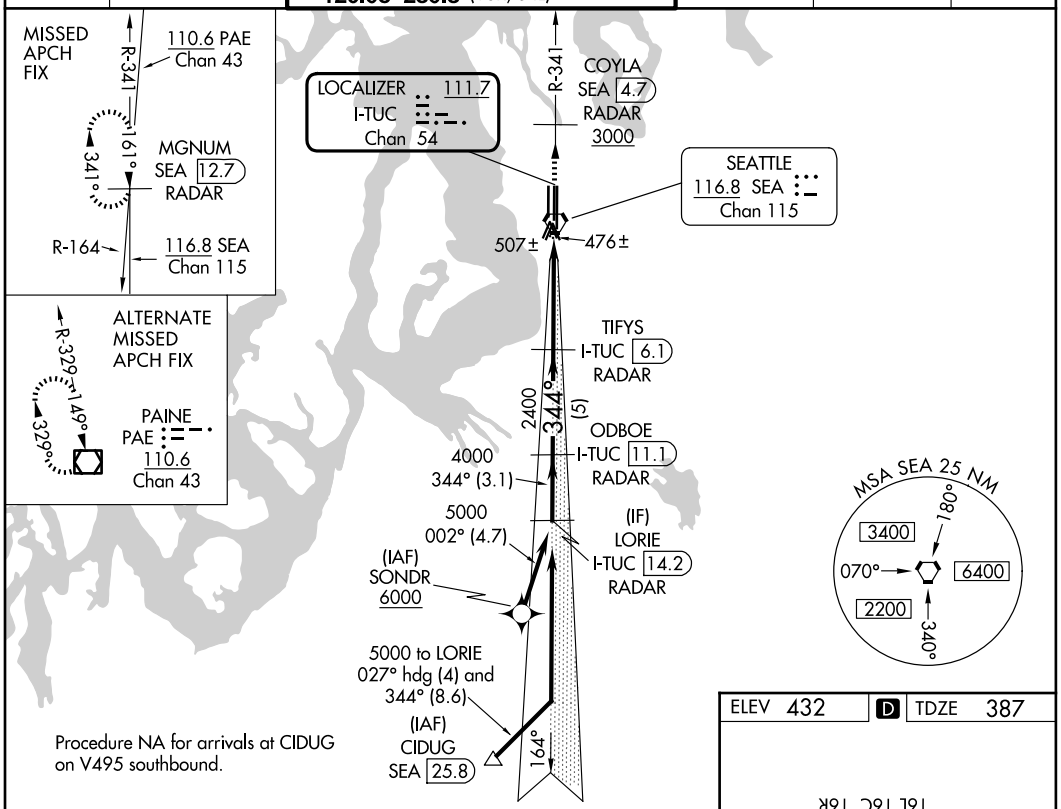
DME or RADAR required. From SONDR: RNAV 1-GPS required.

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

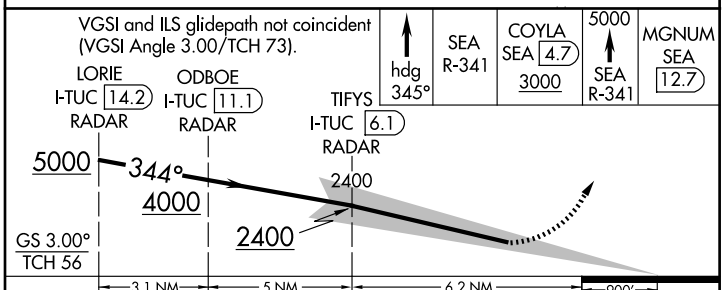
MISSED APPROACH: Climb on heading 345° and outbound on SEA VORTAC R-341 to cross COYLA/SEA 4.7 DME/RADAR at or above 3000 then climb to 5000 on SEA VORTAC R-341 to MGNUM/SEA 12.7 DME/RADAR and hold, continue climb-in-hold to 5000.

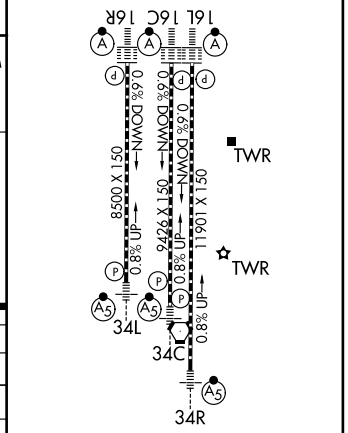
D-ATIS	SEATTLE APP CON	SEATTLE TOWER	GND CON	CLNC DEL	CPDLC
118.0	133.65 273.45	119.9 239.3 (16L, 16C, 34C, 34R) 120.95 239.3 (16R, 34L)	121.7	128.0	



Procedure NA for arrivals at CIDUG on V495 southbound.

ELEV 432	D	TDZE 387





HIRL all Rwys
TDZ/CL Rwys 16L, 16C, 16R and 34R

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			

SA CATEGORY I & II ILS - SPECIAL AIRCREW & AIRCRAFT CERTIFICATION REQUIRED

SEATTLE, WASHINGTON 47°27′N-122°19′W SEATTLE-TACOMA INTL (SEA)
Amdt 3E 21JUN18 ILS RWY 34C (SA CAT I & II)

APPENDIX 25
ILS OR LOC - PARENT CHART 3

MINNEAPOLIS, MINNESOTA AL-264 (FAA) 23334

LOC/DME I-MSP	APP CRS	Rwy Ldg / TDZE / Apt Elev
110.3 Chan 40	301°	10000 / 823 / 842

ILS or LOC RWY 30L
MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)

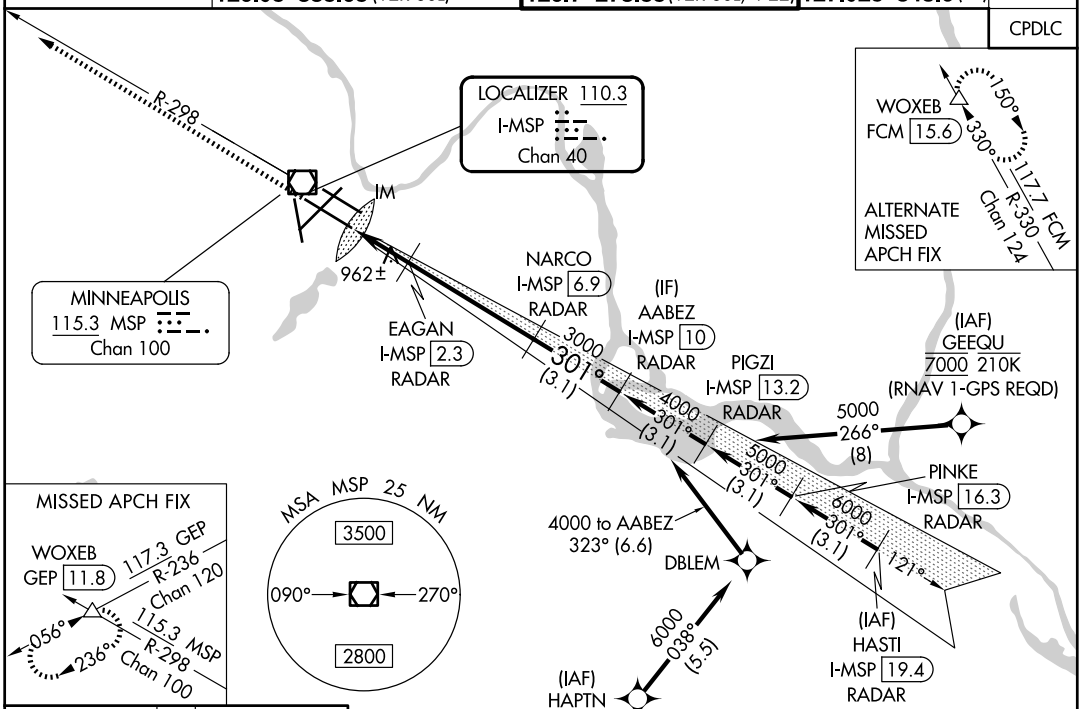
DME or RADAR required. Simultaneous approaches authorized with Rwy 30R and ILS V RWY 35 (CONVERGING). For inop ALS, increase S-ILS 30L Cat E visibility to RVR 4000, and increase S-LOC 30L Cat E visibility to RVR 6000.

ALSF-2

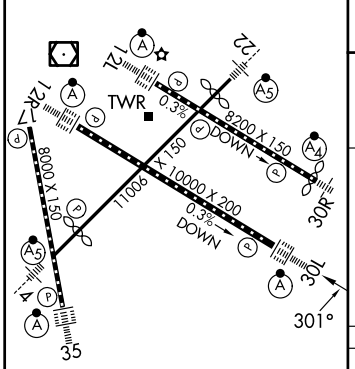
MISSED APPROACH: Climb to 1300 then climb to 3000 on heading 301° and MSP VOR/DME R-298 to WOXEB INT/ GEP VORTAC 11.8 DME and hold.

D-ATIS	MINNEAPOLIS APP CON	MINNEAPOLIS TOWER	GND CON	CLNC DEL
135.35 239.275 (ARR) 120.8 (DEP)	118.725 335.65 (35) 119.3 335.65 (12L-30R, 4-22, 17) 126.95 335.65 (12R-30L)	123.675 273.55 (17-35) 123.95 273.55 (12L-30R) 126.7 273.55 (12R-30L, 4-22)	121.8 348.6 (N) 121.9 348.6 (S) 127.925 348.6 (W)	133.2

CPDLC



ELEV 842 D TDZE 823



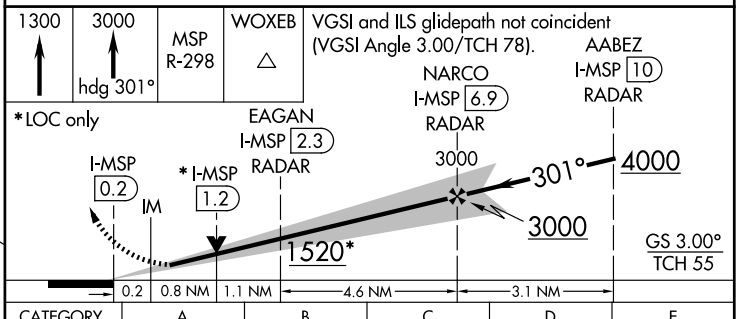
HIRL all Rwys
REIL Rwy 17
TDZ/CL Rwys 12L, 12R, 30L, and 35

FAF to MAP 6.7 NM

Knots	60	90	120	150	180
Min:Sec	6:42	4:28	3:21	2:41	2:14

1300	3000 hdg 301°	MSP R-298	WOXEB

VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 78).

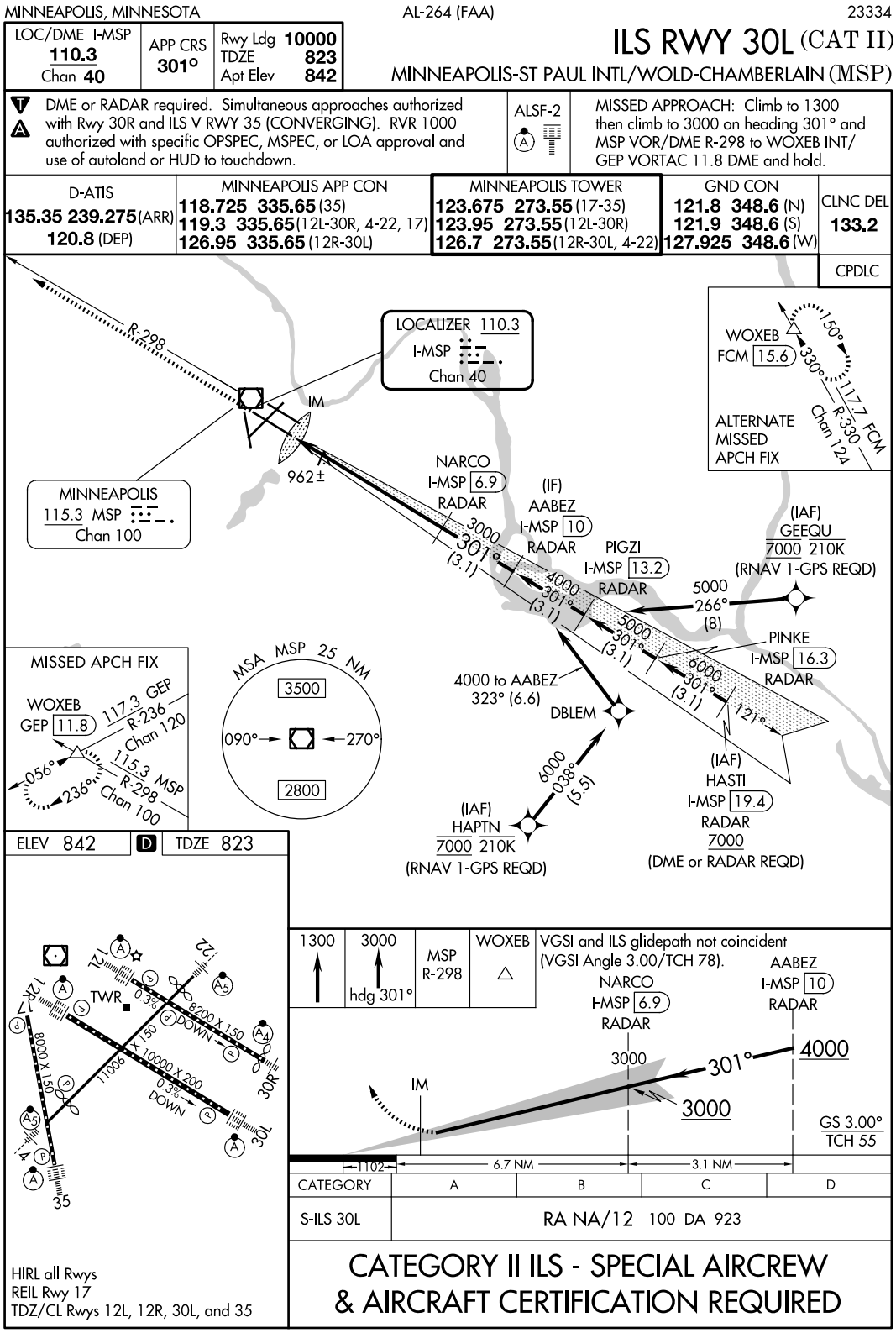


CATEGORY	A	B	C	D	E
S-ILS 30L	1023/18 200 (200-½)				
S-LOC 30L	1220/24 397 (400-½)		1220/35 397 (400-⅝)		
CIRCLING	1360-1 518 (600-1)		1460-1¾ 618 (700-1¾)	1660-2¾ 818 (900-2¾)	1800-3 958 (1000-3)

MINNEAPOLIS, MINNESOTA
Amdt 47 05JAN17

MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN (MSP)
44°53′N-93°13′W
ILS or LOC RWY 30L

APPENDIX 26
ILS CAT II



APPENDIX 27
ILS OR LOC - PARENT CHART 4

SAN FRANCISCO, CALIFORNIA AL-375 (FAA) 23334

LOC/DME I-SFO 109.55 Chan 32(Y)	APP CRS 284°	Rwy Ldg 10275 TDZE 13 Apt Elev 13

ILS or LOC RWY 28L
SAN FRANCISCO INTL (SFO)

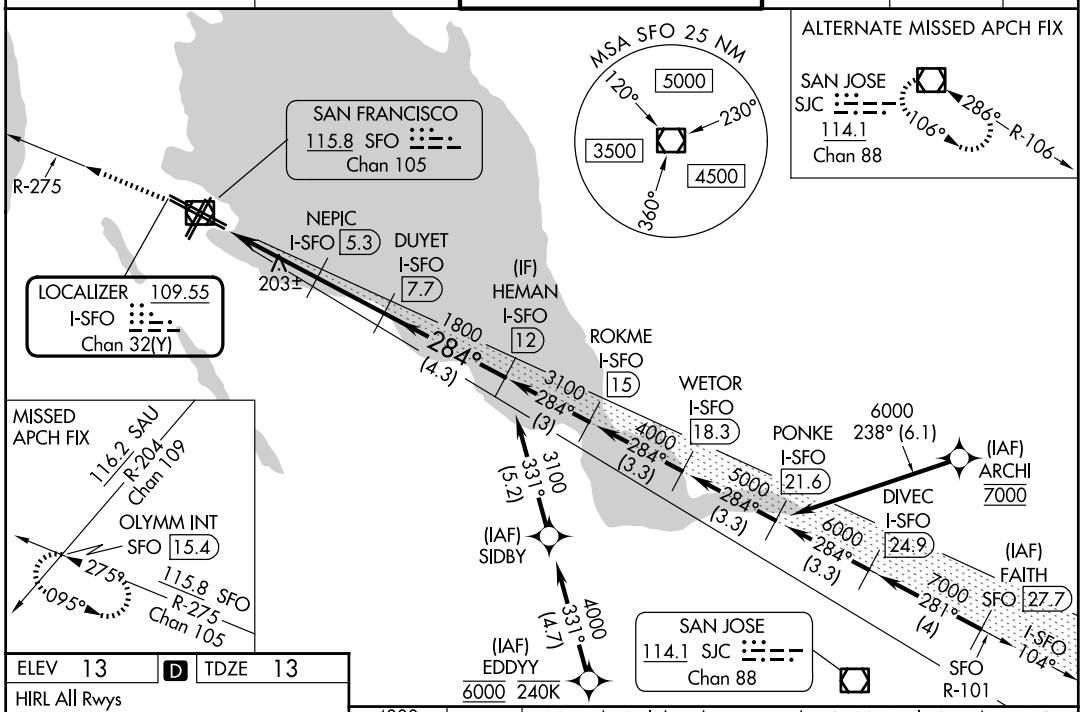
DME required. RNP APCH-GPS or RADAR required for procedure entry.

T A Circling NA to Rwys 10L, 10R, 19L, and 19R. Circling to Rwy 1L and 1R NA at night. Simultaneous approach authorized. Simultaneous operations require use of vertical guidance; maintain last assigned altitude until established on glideslope. LOC procedure NA during simultaneous operations.
*RVR 1800 authorized with use of FD or AP or HUD to DA.
†For inop ALS, increase S-ILS 28L all Cats visibility to 2½ SM.
**For inop ALS increase S-LOC 28L Cat C/D visibility to 2½ SM.

MALSR A5

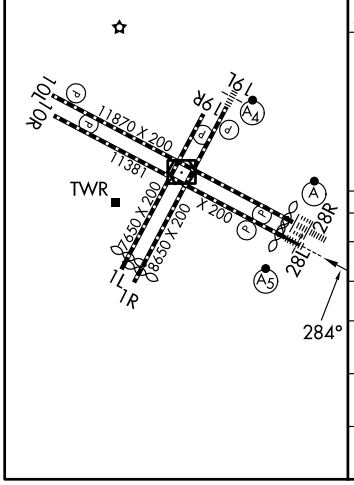
MISSED APPROACH: Climb to 4000 on SFO VOR/DME R-275 to OLYMM INT/SFO 15.4 DME and hold, continue climb-in-hold to 4000.
#Missed approach requires minimum climb of 330 feet per NM to 1600.

D-ATIS	NORCAL APP CON	SAN FRANCISCO TOWER	GND CON	CLNC DEL	CPDLC
113.7 115.8 118.85	134.5 338.2	120.5 269.1	121.8	118.2	



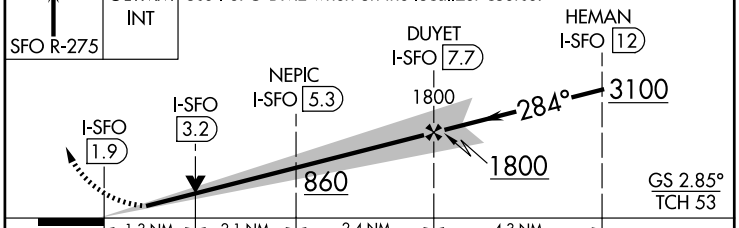
ELEV 13 D TDZE 13

HIRL All Rwys
TDZ/CL Rwys 19L and 28R
REIL Rwys 1L, 1R and 10L



4000 SFO R-275 | OLYMM INT

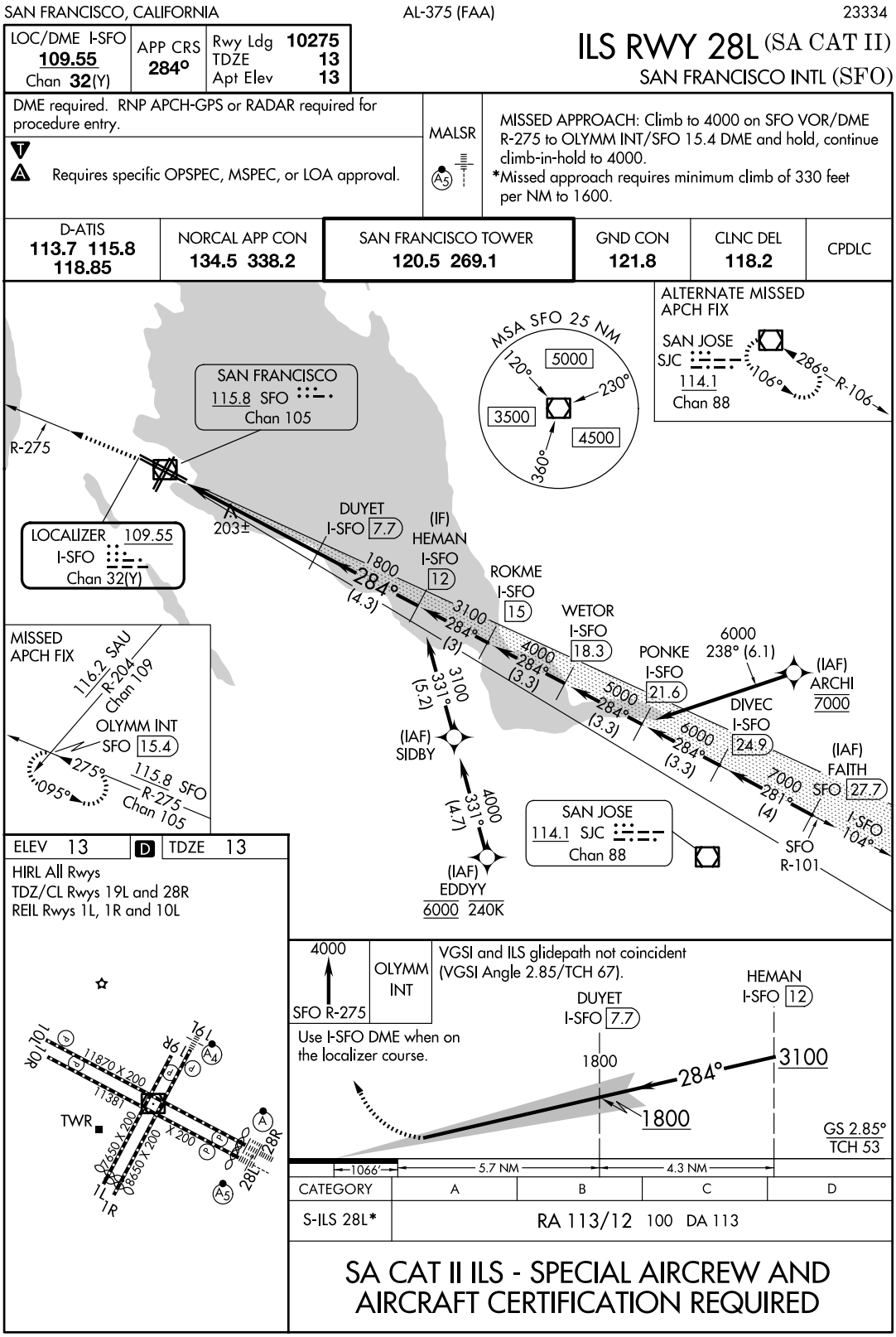
VGSI and ILS glidepath not coincident (VGSI Angle 2.85/TCH 67).
Use I-SFO DME when on the localizer course.



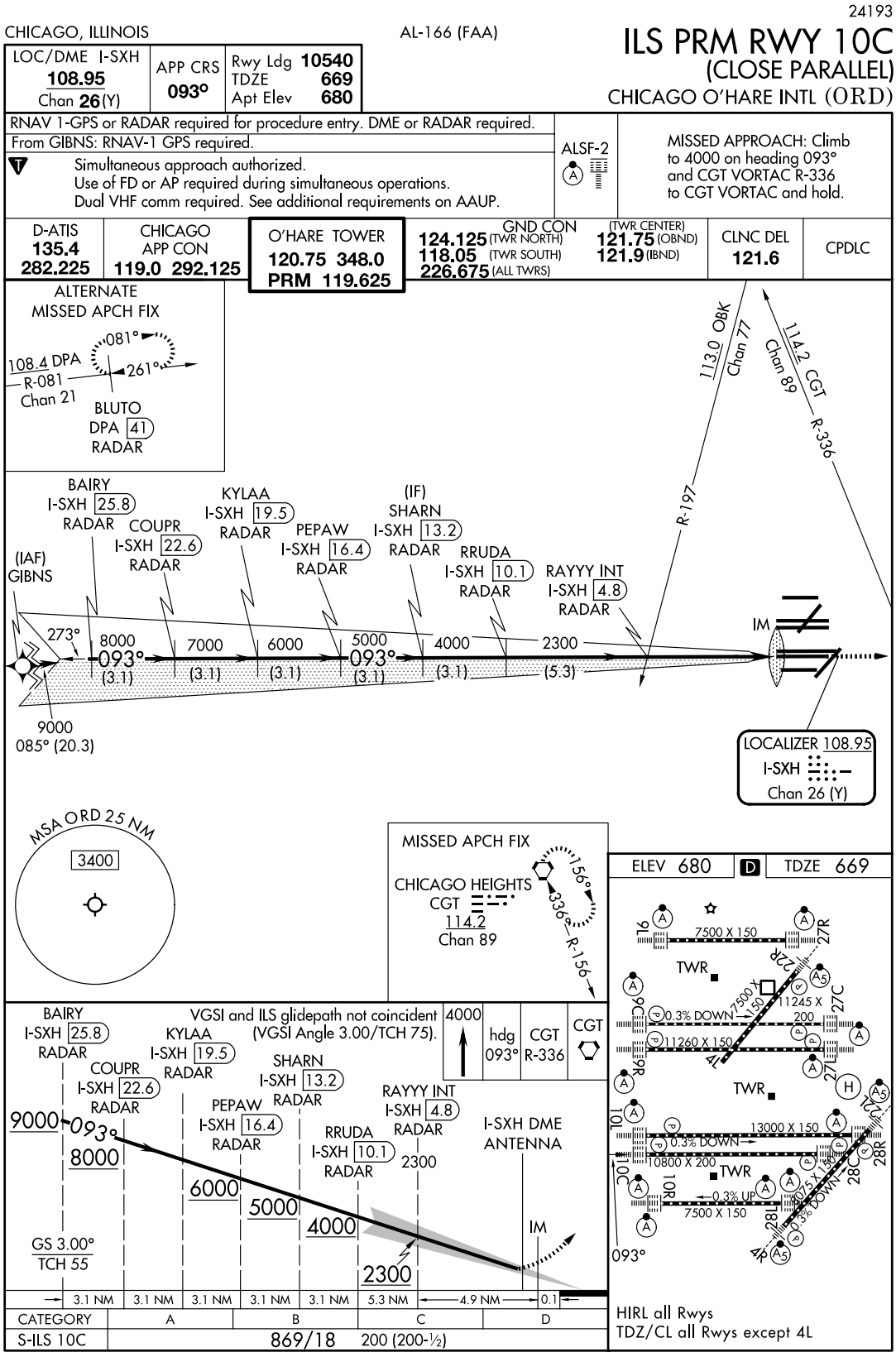
CATEGORY	A	B	C	D
S-ILS 28L*#	213/24 200 (200-½)			
S-ILS 28L †	789-1¾ 776 (800-1¾)			
S-LOC 28L#	460/24 447 (500-½)		460/45 447 (500-⅞)	
S-LOC 28L**	860/24 847 (900-½)	860/40 847 (900-¾)	860-1⅞ 847 (900-1⅞)	
CIRCLING	860-1¼ 847 (900-1¼)	960-1¼ 947 (1000-1¼)	1560-3 1547 (1600-3)	NA

SAN FRANCISCO, CALIFORNIA
Amdt 27C 11AUG22
37°37′N-122°23′W
SAN FRANCISCO INTL (SFO)
ILS or LOC RWY 28L

APPENDIX 28
SA ILS APPROACH – CAT II



APPENDIX 29
ILS PRM (CLOSE PARALLEL)



APPENDIX 30
PRM APPROACH AAUP

18032 CHICAGO O'HARE INTL (ORD)

PRM APPROACH AAUP AL-166 (FAA) 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 Rwys 10C, 28C
ILS PRM Rwys 10C (SA CAT I), 28C (SA CAT I)
ILS PRM Rwys 10C (CAT II-III), 28C (CAT II-III)
ILS PRM Y 10R
RNAV (GPS) PRM Rwys 10C, 28C
RNAV (GPS) PRM Y Rwys 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.

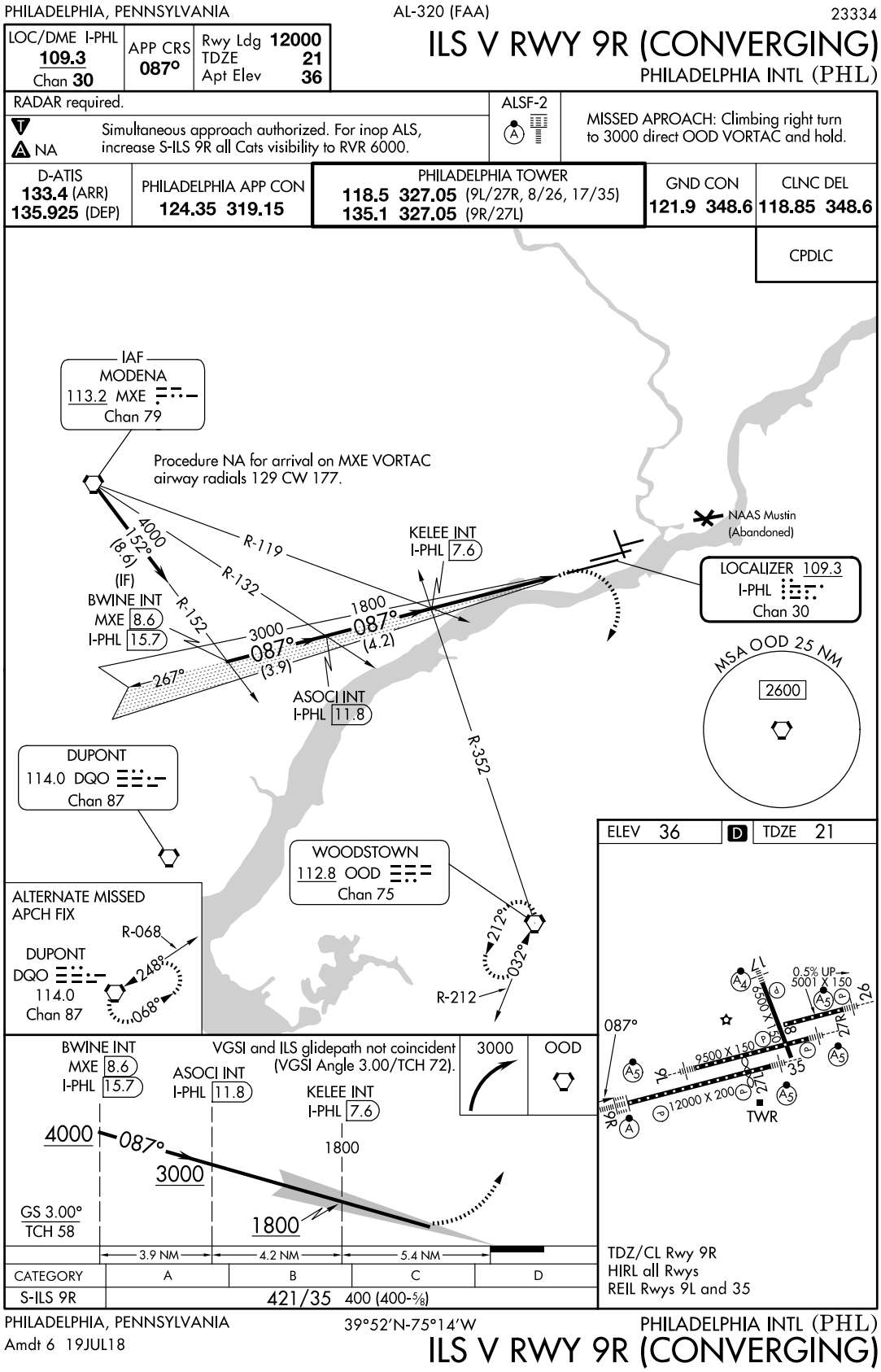
RWY 28L

- RWY 28L PRM final approach course offset by 2.5 degrees.

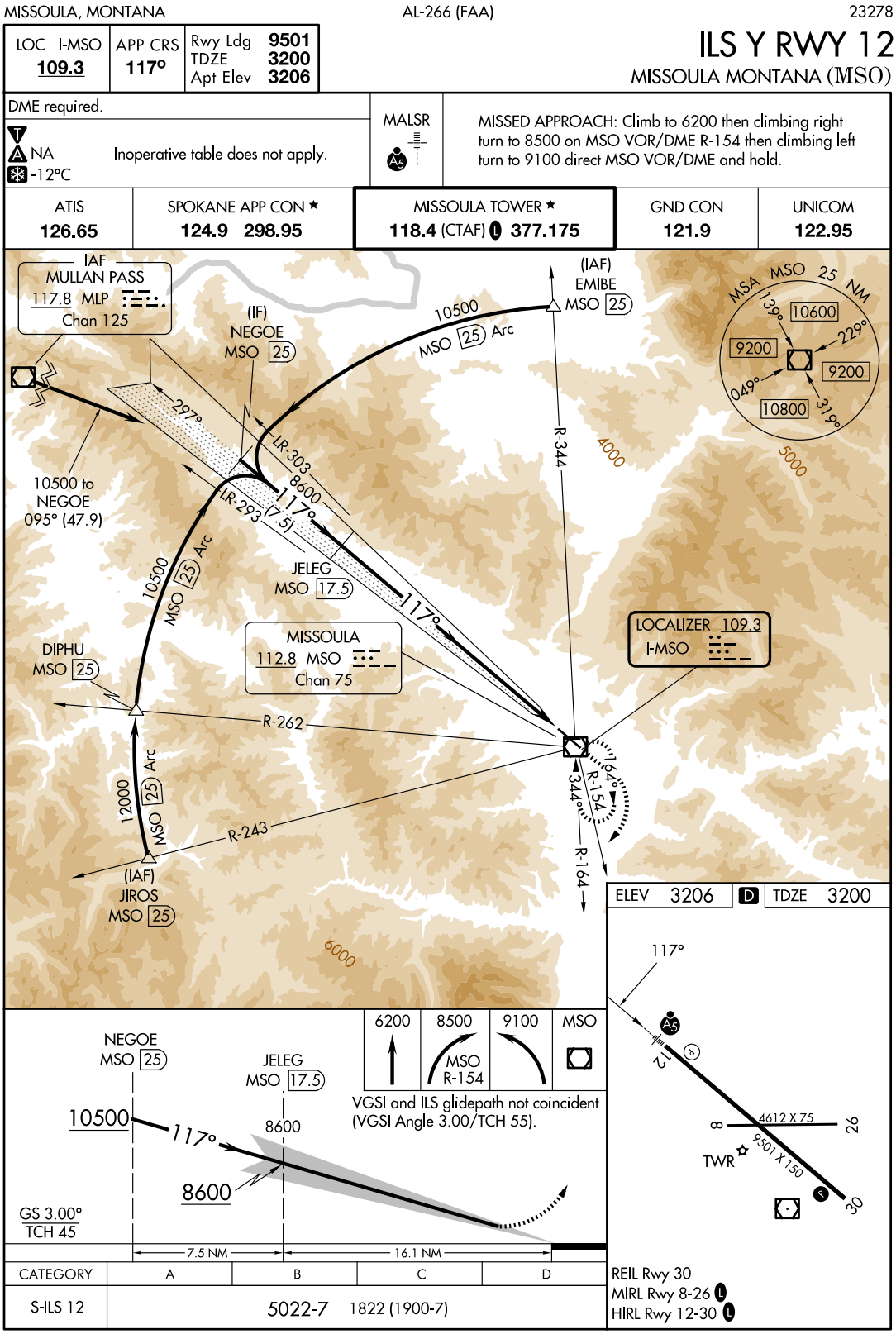
PRM APPROACH AAUP 41°59'N-87°54'W CHICAGO, ILLINOIS

01FEB18 CHICAGO O'HARE INTL (ORD)

APPENDIX 31
ILS V (CONVERGING)



APPENDIX 32
ILS WITH RELIEF (CONTOURS) DEPICTED



APPENDIX 33
TEARDROP TURN

LINCOLN, NEBRASKA AL-232 (FAA) 24193

LOC I-OCZ	APP CRS	Rwy Ldg	12901
111.1	177°	TDZE	1195
		Apt Elev	1219

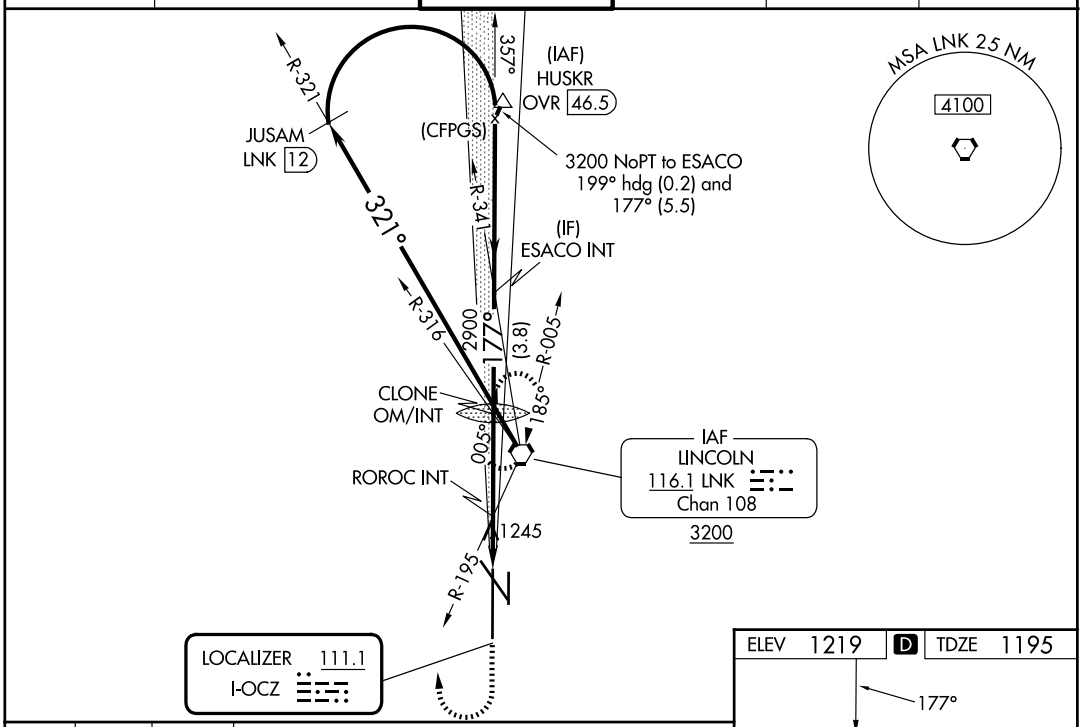
ILS Y or LOC Y RWY 18
LINCOLN (LNK)

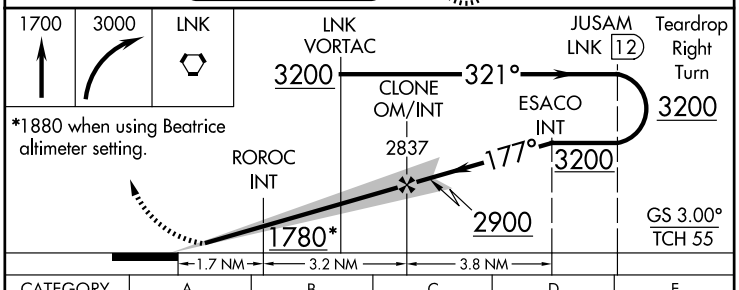
When local altimeter setting not received use Beatrice altimeter setting and increase DA to 1486; and all MDA 100 feet, increase visibility S-LOC 18 Cat C, D, E and Circling Cats C and D ¼ SM: increase ROROC fix minimums S-LOC 18 Cat C/D/E visibility ⅜ SM and Circling Cats C and D ¼ SM. For inop ALS, increase S-ILS 18 Cat E visibility to RVR 4000, S-LOC 18 Cat E visibility to 1¾ SM, and ROROC fix minimums S-LOC 18 Cat E visibility to 1½ 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 1¾ SM.
#RVR 1800 authorized with use of FD or AP or HUD to DA.

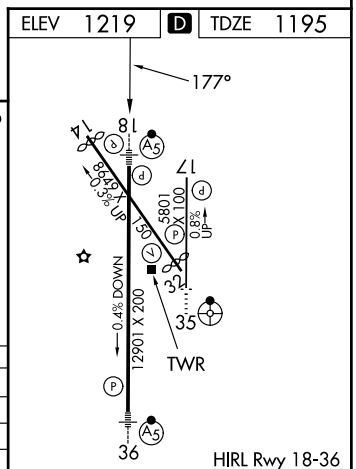
MALSR

MISSED APPROACH: Climb to 1700 then climbing right turn to 3000 direct LNK VORTAC and hold.

ATIS	OMAHA APP CON	LINCOLN TOWER★	GND CON	CLNC DEL	UNICOM
118.05 290.9	124.0 270.3	118.5 (CTAF) 253.5	121.9 275.8	120.7 225.4	122.95







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 601 (700-1¾)	1960-2½ 741 (800-2½)	2040-3 821 (900-3)
ROROC FIX MINIMUMS (DUAL VOR RECEIVERS REQUIRED)					
S-LOC 18	1720/24 525 (600-½)		1720/55 525 (600-1)		
CIRCLING	1720-1 501 (600-1)	1760-1 541 (600-1)	1820-1½ 601 (700-1½)	1960-2¼ 741 (800-2¼)	2040-3 821 (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 34
GLS

NEWARK, NEW JERSEY AL-285 (FAA) 24137

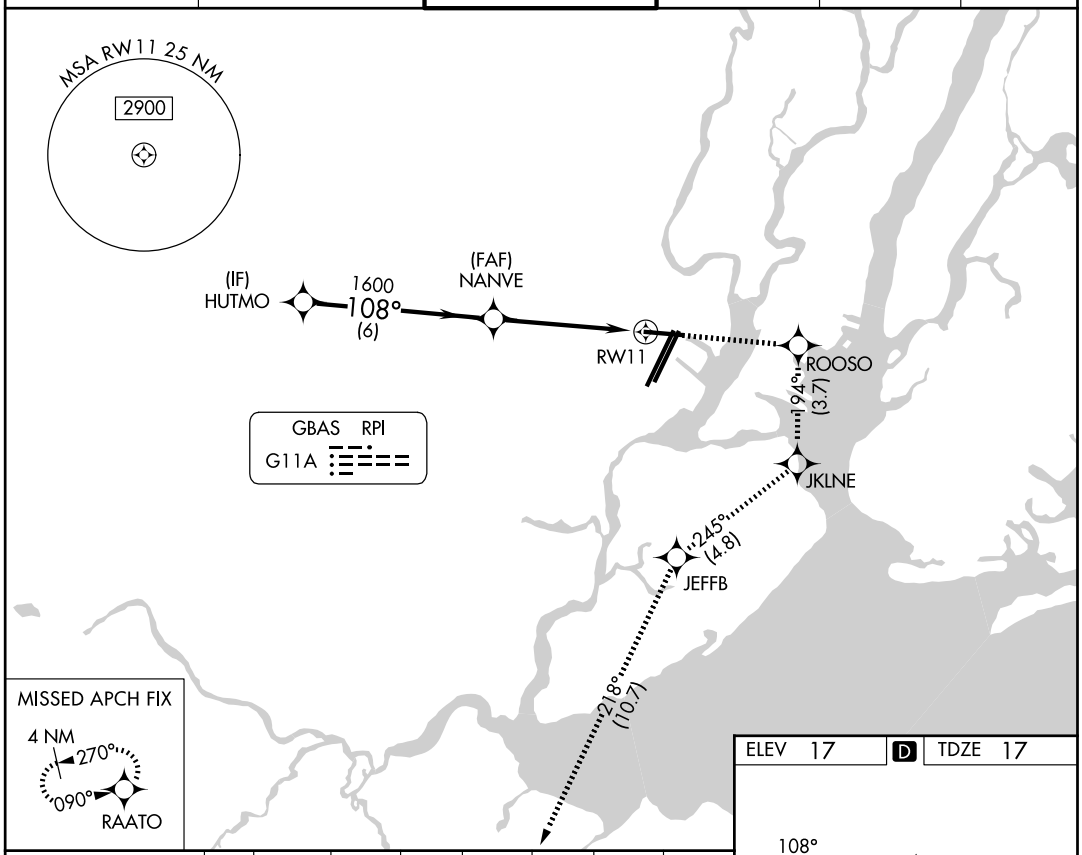
GBAS	APP CRS	Rwy Ldg	6726
CH 21905	108°	TDZE	17
G11A		Apt Elev	17

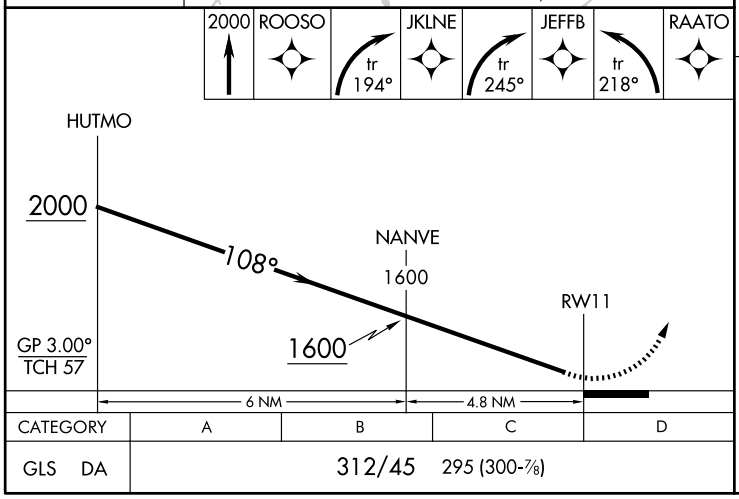
GLS RWY 11
NEWARK LIBERTY INTL (EWR)

RNP APCH - GPS.
RADAR required.
T Autopilot coupled approach NA below 312.
A NA Rwy 11 helicopter visibility reduction below RVR 4000 NA.

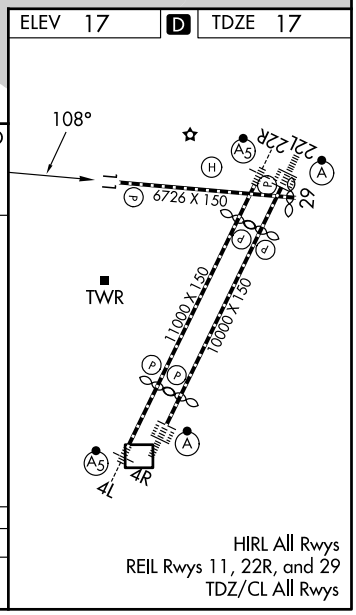
MISSED APPROACH: (Do not exceed 230K until JKLNE) Climb to 2000 direct ROOSO and right turn on track 194° to JKLNE and right turn on track 245° to JEFFB and left turn on track 218° to RAATO and hold.

D-ATIS	NEW YORK APP CON	NEWARK TOWER	GND CON	CLNC DEL	CPDLC
115.7 134.825	128.55 379.9	118.3 257.6	121.8	118.85	





CATEGORY	A	B	C	D
GLS DA	312/45 295 (300-⅞)			



NEWARK, NEW JERSEY 40°42′N-74°10′W NEWARK LIBERTY INTL (EWR)
Amdt 1 15JUN23 GLS RWY 11

APPENDIX 35
LOC

SOUTH HILL, VIRGINIA AL-6793 (FAA) 23278

LOC/DME I-AVC	APP CRS	Rwy Ldg	5002
110.5	007°	TDZE	417
Chan 42		Apt Elev	441

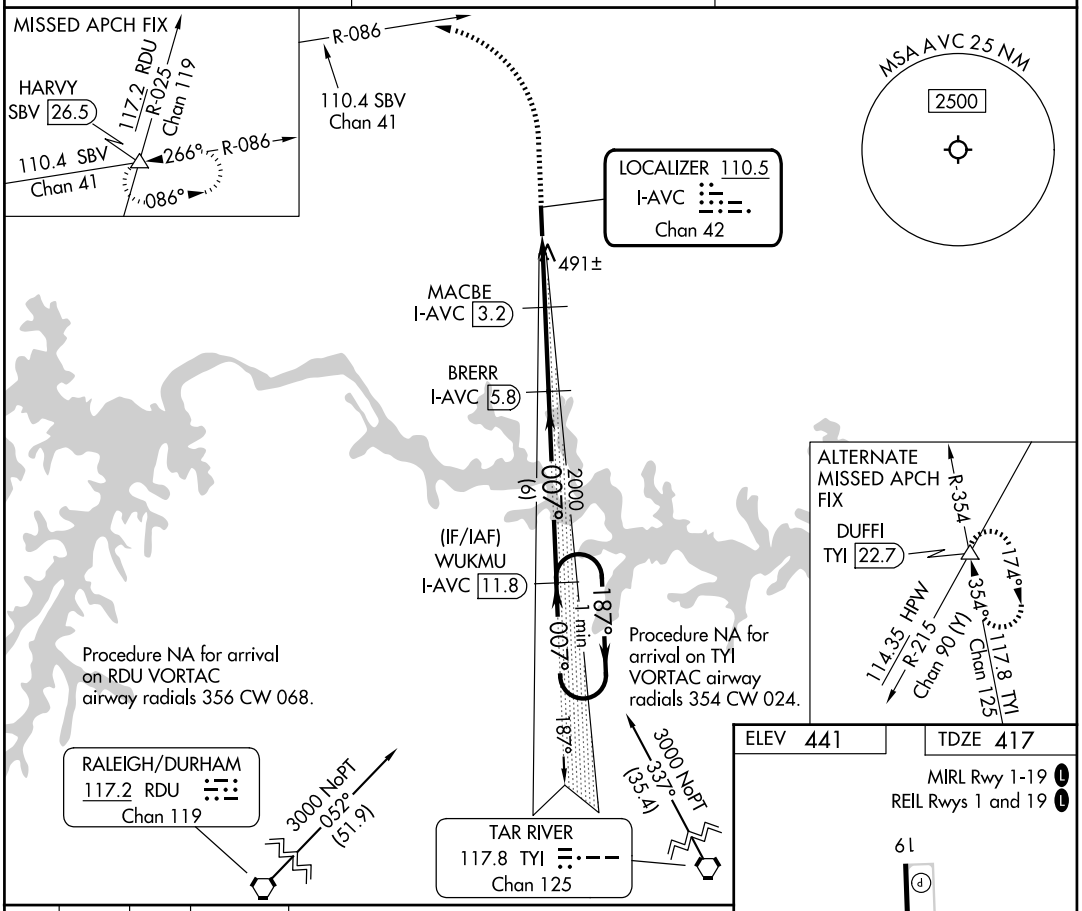
LOC RWY 1
MECKLENBURG-BRUNSWICK RGNL (AVC)

DME required.
DME required for procedure entry.
Rwy 1 helicopter visibility reduction below ¾ SM NA.
Inop table does not apply.

ODALS

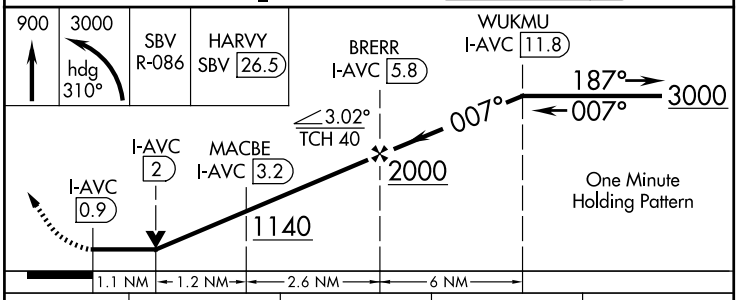
MISSED APPROACH: Climb to 900 then climbing left turn to 3000 on heading 310° and SBV VORTAC R-086 to HARVY INT/SBV 26.5 DME and hold.

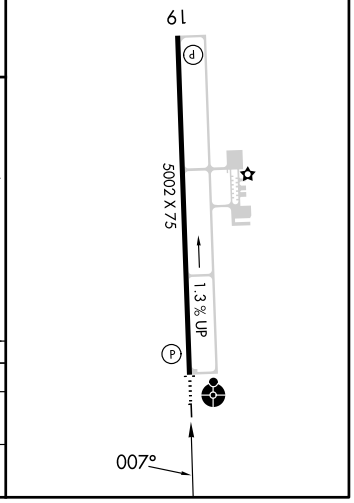
AWOS-3	WASHINGTON CENTER	UNICOM
127.525	118.75 377.1	122.8 (CTAF) L



ELEV 441	TDZE 417

MIRL Rwy 1-19 L
REIL Rwys 1 and 19 L





CATEGORY	A	B	C	D
S-01	760-1 343 (400-1)			
CIRCLING	860-1 419 (500-1)	900-1 459 (500-1)	1060-1¾ 619 (700-1¾)	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 36
LOC – BACK COURSE

IDAHO FALLS, IDAHO AL-590 (FAA) 21224

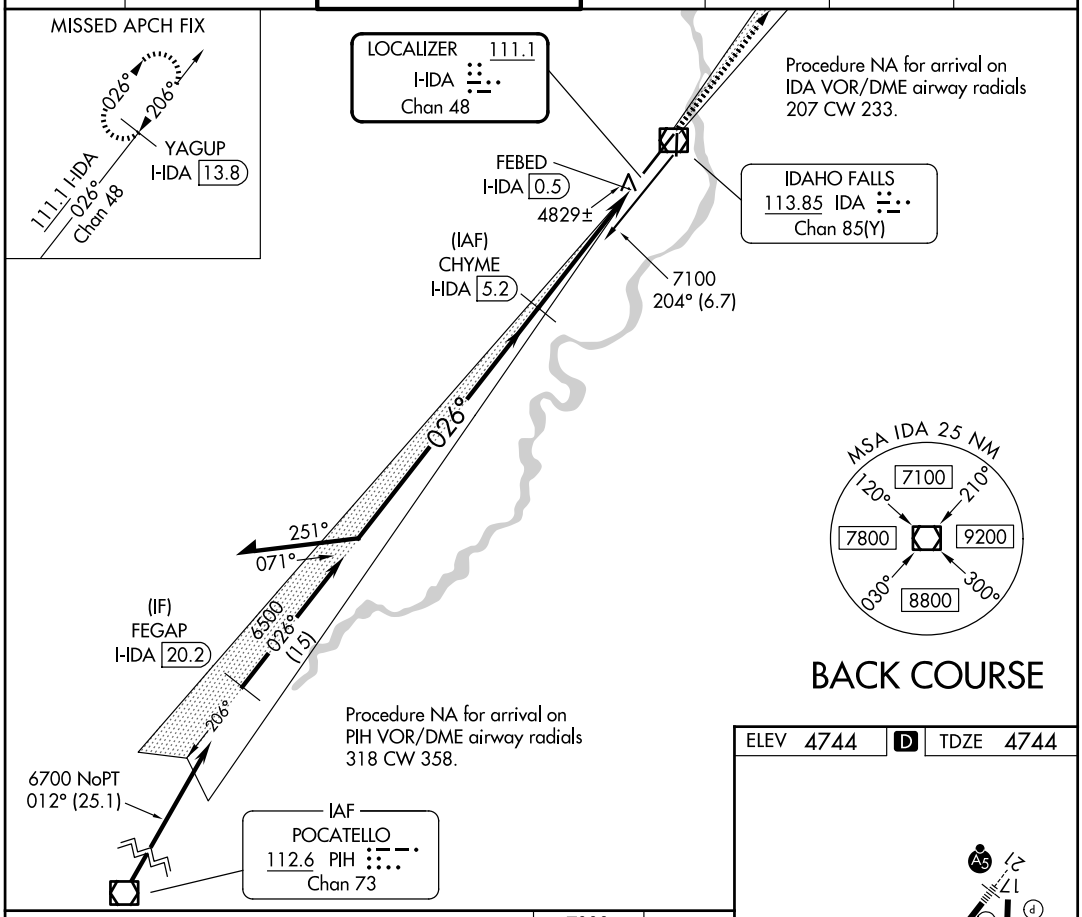
LOC/DME I-IDA	APP CRS	Rwy Ldg	9002
111.1	026°	TDZE	4744
Chan 48		Apt Elev	4744

LOC BC RWY 3
IDAHO FALLS RGNL (IDA)

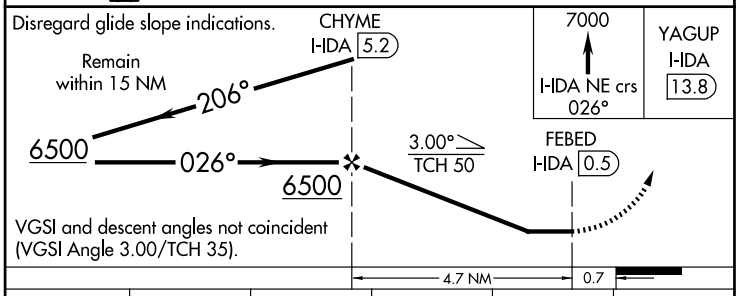
DME required.

MISSED APPROACH: Climb to 7000 on I-IDA localizer NE course 026° to YAGUP/I-IDA 13.8 DME and hold.

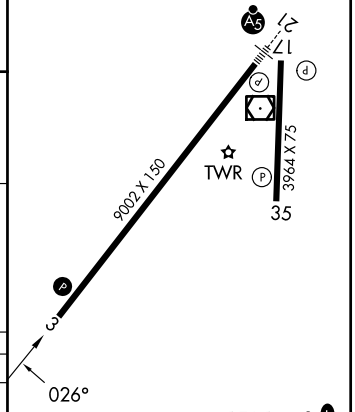
ATIS	SALT LAKE CENTER	IDAHO FALLS TOWER★	GND CON	CLNC DEL	GCO	UNICOM
135.325	128.35 239.25	118.5 (CTAF) L 257.8	121.7	121.7	121.725	122.95



BACK COURSE



ELEV 4744 D TDZE 4744



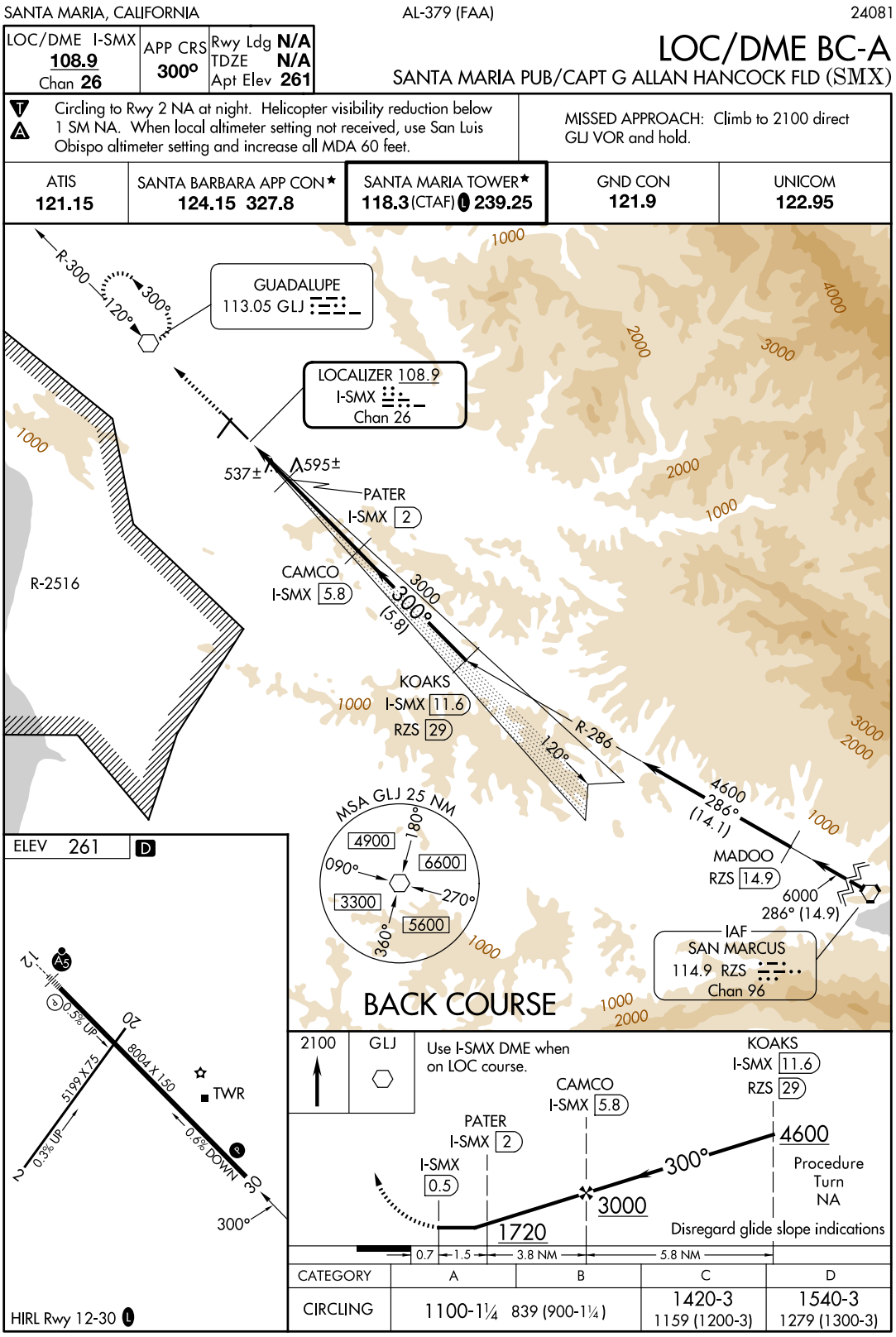
REIL Rwy 3 L
HIRL Rwy 3-21 L
MIRL Rwy 17-35

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)

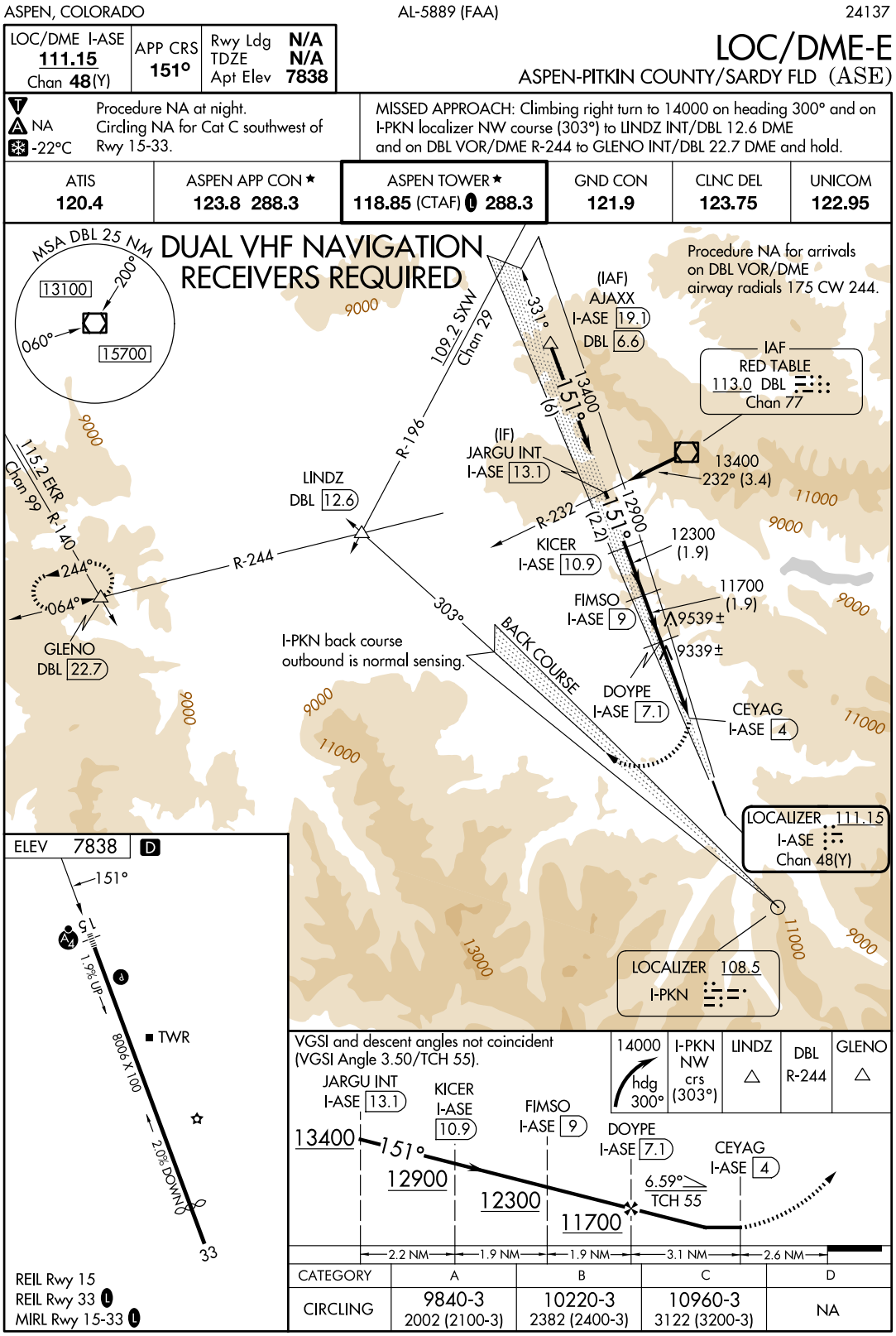
IDAHO FALLS, IDAHO
Amdt 7 03JAN19 43°31′N-112°04′W

IDAHO FALLS RGNL (IDA)
LOC BC RWY 3

APPENDIX 37
LOC/DME – BACK COURSE



APPENDIX 38
LOC/DME – BACK COURSE USED OTHER THAN AS PROCEDURE FACILITY (PRIMARY)



APPENDIX 39
LDA/DME

THE DALLES, OREGON — AL-530 (FAA) — 23334

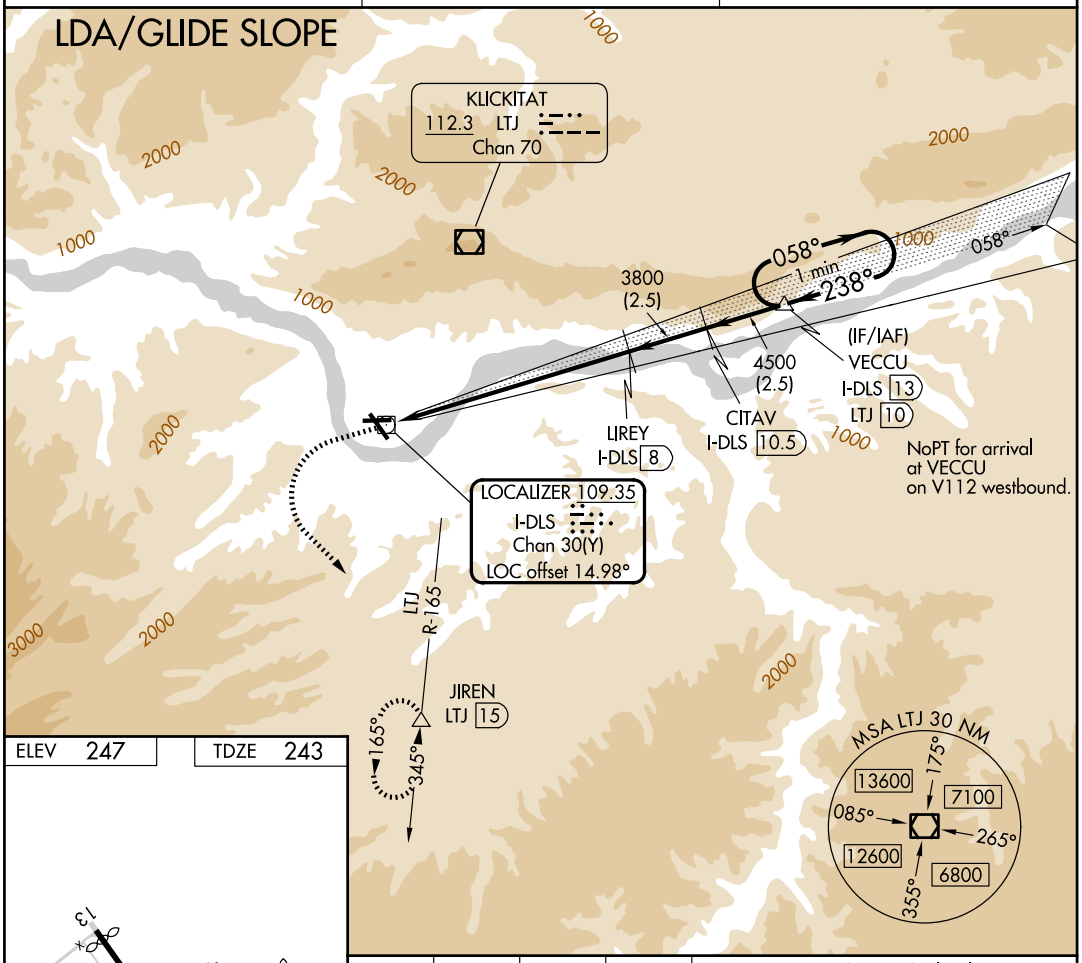
LOC/DME I-DLS 109.35 Chan 30(Y)	APP CRS 238°	Rwy Ldg 4451 / TDZE 243 / Apt Elev 247

LDA/DME RWY 25
COLUMBIA GORGE RGNL/THE DALLES MUNI (DLS)

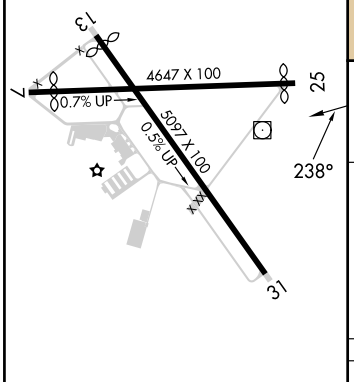
NA — When local altimeter setting not received, procedure NA. Glide slope provided by standard glide slope equipment.

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	SEATTLE CENTER	UNICOM
135.175	119.65 257.6	123.0 (CTAF) L

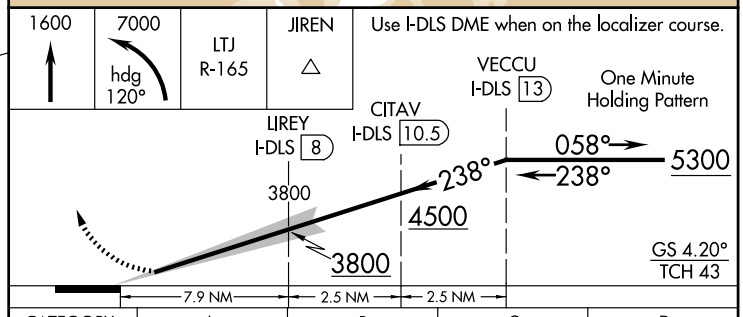


ELEV 247 — TDZE 243



1600	7000 hdg 120°	LTJ R-165	JIREN

Use I-DLS DME when on the localizer course.



CATEGORY	A	B	C	D
S-LDA/GS 25	1368-3 1125 (1200-3)		NA	

REIL Rwy 31 L
MIRL Rwys 7-25 and 13-31 L

THE DALLES, OREGON
Amdt 1A 28APR16

COLUMBIA GORGE RGNL/THE DALLES MUNI (DLS)
45°37′N-121°10′W
LDA/DME RWY 25

APPENDIX 40
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)

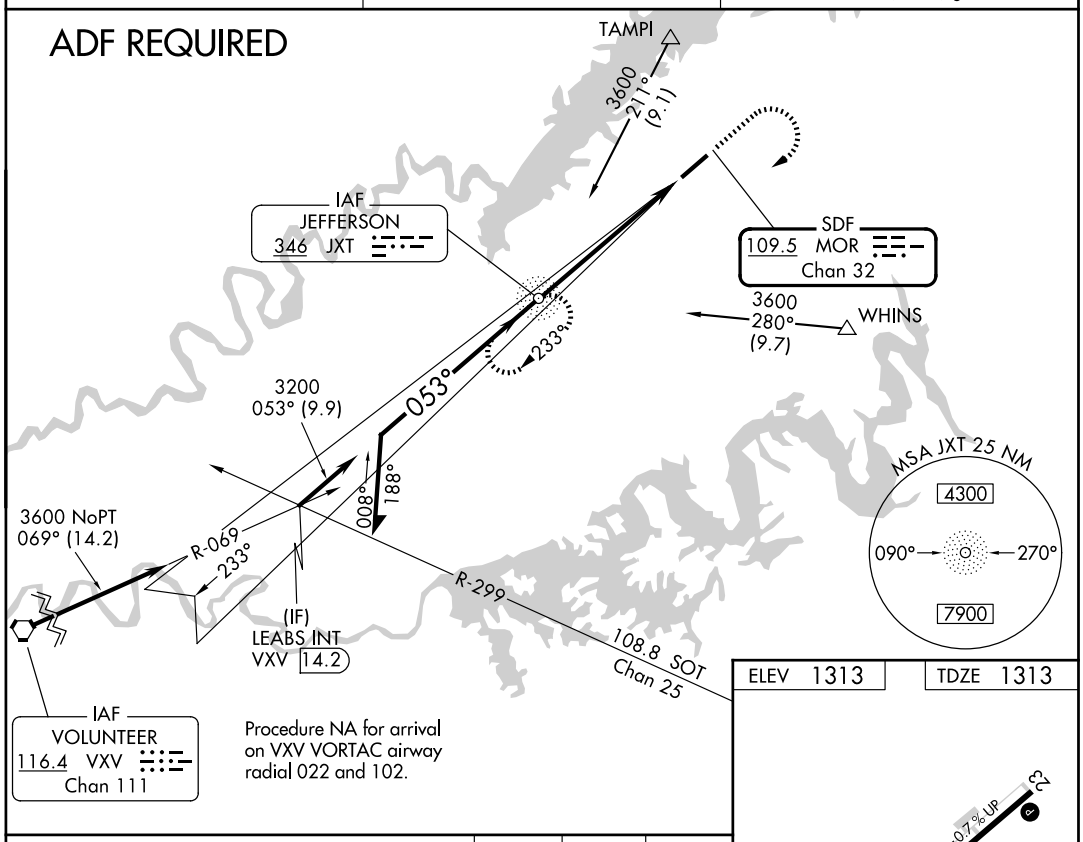
T
A NA

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 1¾ SM, and Circling Cat B visibility to 1¼ SM, Cat C to 3 SM. For inop MALSF, increase S-5 Cats C and D visibility to 1⅝ miles. For inop MALSF, when using Mc Ghee Tyson altimeter setting, increase S-5 Cats C and D visibility to 2 miles.

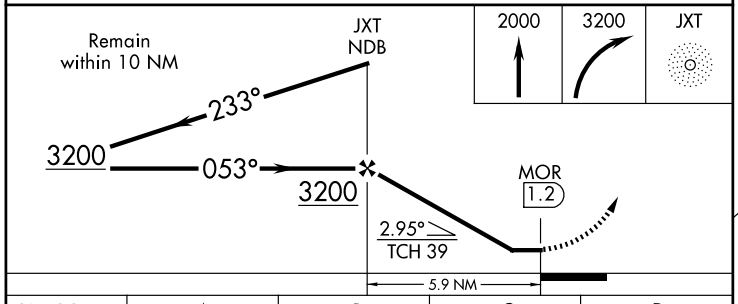
MALSF

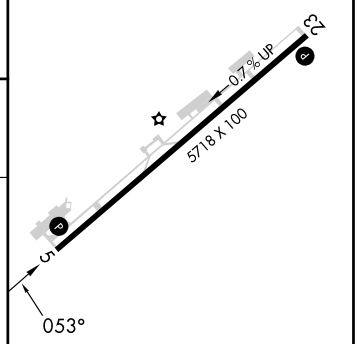
MISSED APPROACH: Climb to 2000 then climbing right turn to 3200 direct JXT NDB and hold.

AWOS-3	KNOXVILLE APP CON	UNICOM
126.725	132.8 360.8	122.8 (CTAF) L



ELEV 1313 TDZE 1313





REIL Rwy 5-23
MIRL Rwy 5-23

CATEGORY	A	B	C	D
S-5	1860-¾ 547 (600-¾)		1860-1⅜ 547 (600-1⅜)	
CIRCLING	1880-1 567 (600-1)	2020-1 707 (800-1)	2160-2½ 847 (900-2½)	2420-3 1107 (1200-3)

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
Amdt 5D 22APR21

36°11′N - 83°23′W

MOORE-MURRELL (MOR)
SDF RWY 5

APPENDIX 41
VOR/DME

RAMONA, CALIFORNIA AL-6667 (FAA) 21280

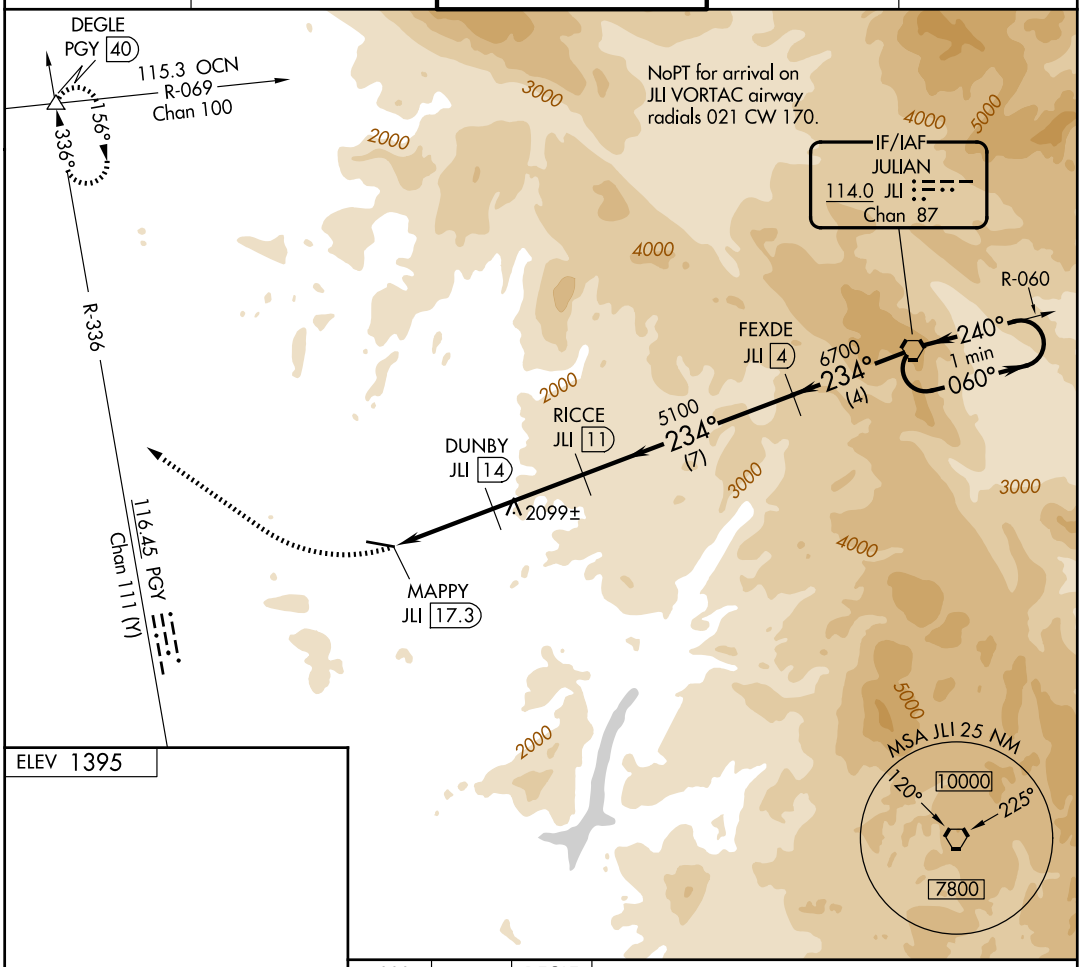
VORTAC JLI 114.0 Chan 87	APP CRS 234°	Rwy Ldg N/A TDZE N/A Apt Elev 1395

VOR/DME-A
RAMONA (RNM)

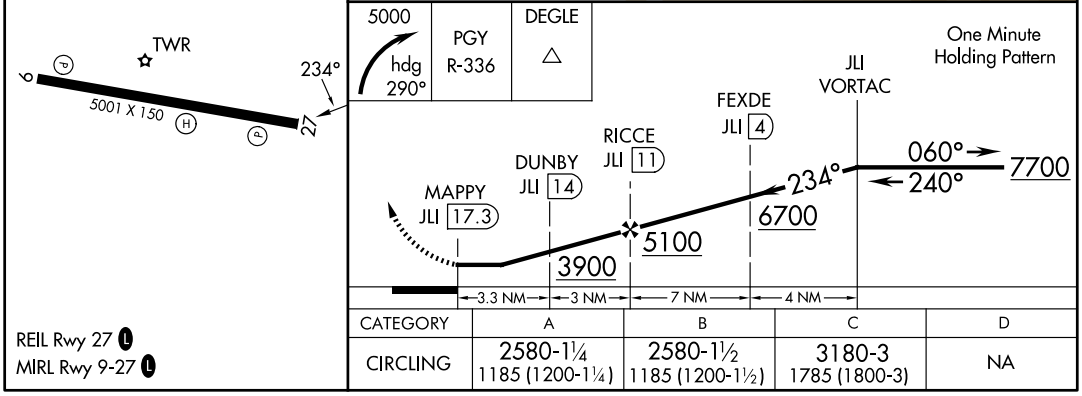
Circling NA north of Rwy 9-27.
When local altimeter setting not received, use Gillespie Fld altimeter setting and increase all MDA 180 feet.

MISSED APPROACH: Climbing right turn to 5000 via heading 290° and PGY VORTAC R-336 to DEGLE/PGY 40 DME and hold.

ATIS	SOCAL APP CON	RAMONA TOWER ★	GND CON	UNICOM
132.025	132.2 269.1	119.875 (CTAF) L	121.65	122.95



ELEV 1395



CATEGORY	A	B	C	D
CIRCLING	2580-1¼ 1185 (1200-1¼)	2580-1½ 1185 (1200-1½)	3180-3 1785 (1800-3)	NA

REIL Rwy 27 L
MIRL Rwy 9-27 L

RAMONA, CALIFORNIA
Amdt 2A 07OCT21

33°02′N-116°55′W

RAMONA (RNM)
VOR/DME-A

APPENDIX 42
VOR/DME ARC

BALTIMORE, MARYLAND AL-5222 (FAA) 23222

VORTAC BAL	BAL	Rwy Ldg 6997
115.1	14.7	TDZE 22
Chan 98	Arc	Apt Elev 22

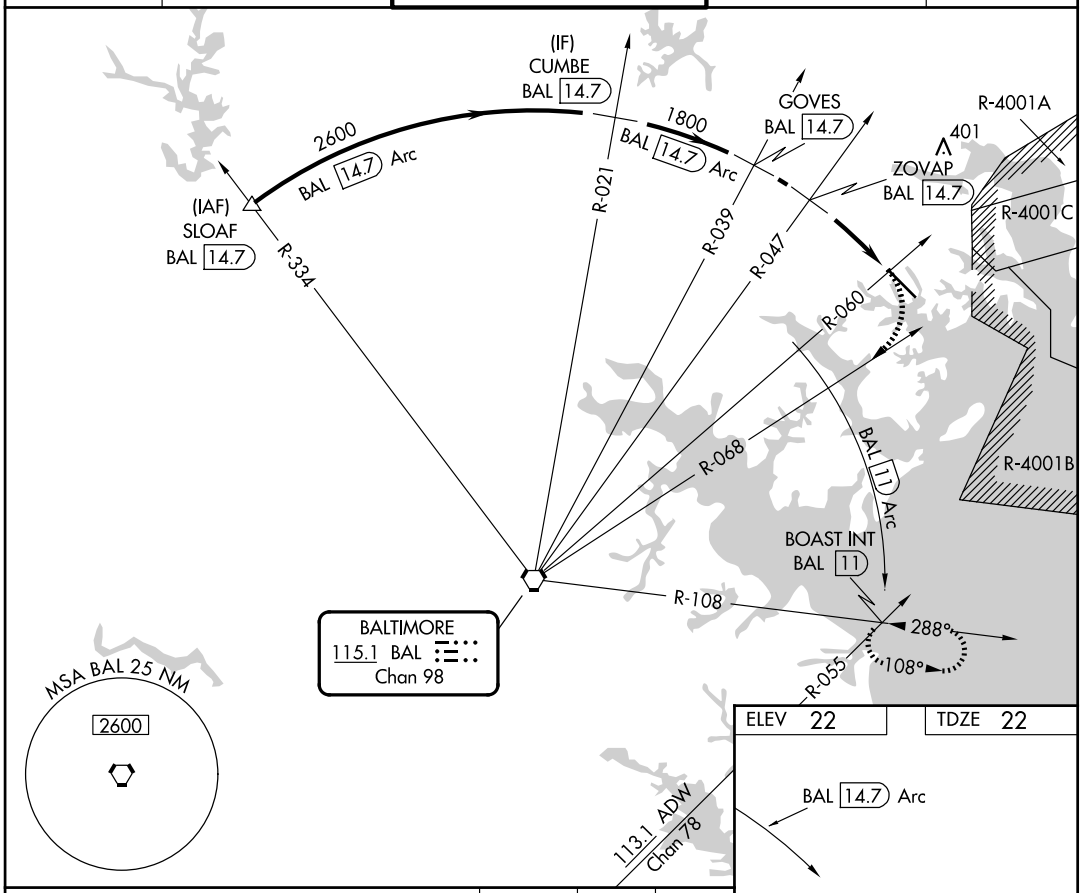
VOR or TACAN RWY 15
MARTIN STATE (MTN)

DME required.

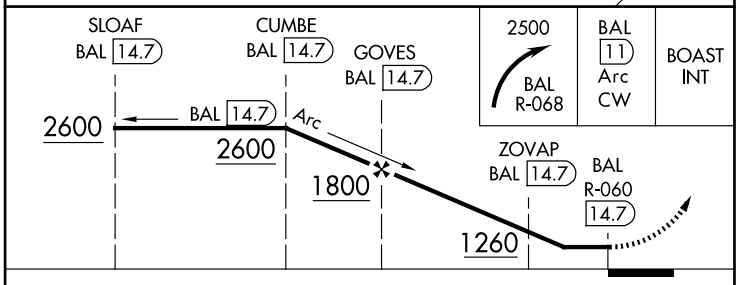
Rwy 15 helicopter visibility reduction below ¾ SM NA. When local altimeter setting not received, use Baltimore/Washington Intl Thurgood Marshall altimeter setting and increase all MDA 60 feet, and increase S-15 Cat B visibility ¼ SM, Cat C/D ½ SM and Circling Cats B/C ¼ SM. Circling NA northeast of Rwy 15-33.

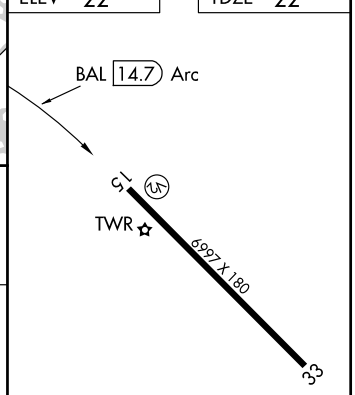
MISSED APPROACH: Climbing right turn to 2500 on BAL VORTAC R-068 and BAL 11 DME Arc clockwise to BOAST INT/BAL 11 DME and hold.

ATIS	POTOMAC APP CON	MARTIN TOWER ★	GND CON	UNICOM
124.925	119.0 282.275	121.3 (CTAF) L 254.425	121.8 253.4	122.95



ELEV 22 TDZE 22





Rwy 33 ldg 8100′
(Military Operations only)
Rwy 15 take-off 8100′
(Military Operations only)

HIRL Rwy 15-33 L
REIL Rwys 15 and 33 L

CATEGORY	A	B	C	D
S-15	920-1¼ 898 (900-1¼)		920-2½ 898 (900-2½)	
CIRCLING	920-1¼ 898 (900-1¼)		920-2¾ 898 (900-2¾)	920-3 898 (900-3)

BALTIMORE, MARYLAND 39°20′N-76°25′W MARTIN STATE (MTN)
Orig-D 17JUN21
VOR or TACAN RWY 15

APPENDIX 43
CONCENTRIC RING DEPICTION

HELENA, MONTANA — AL-192 (FAA) — 23334

LOC I-HLN	APP CRS	Rwy Ldg	9000
110.1	271°	TDZE	3852
		Apt Elev	3877

ILS Z or LOC Z RWY 27
HELENA RGNL (HLN)

ADF or DME required.

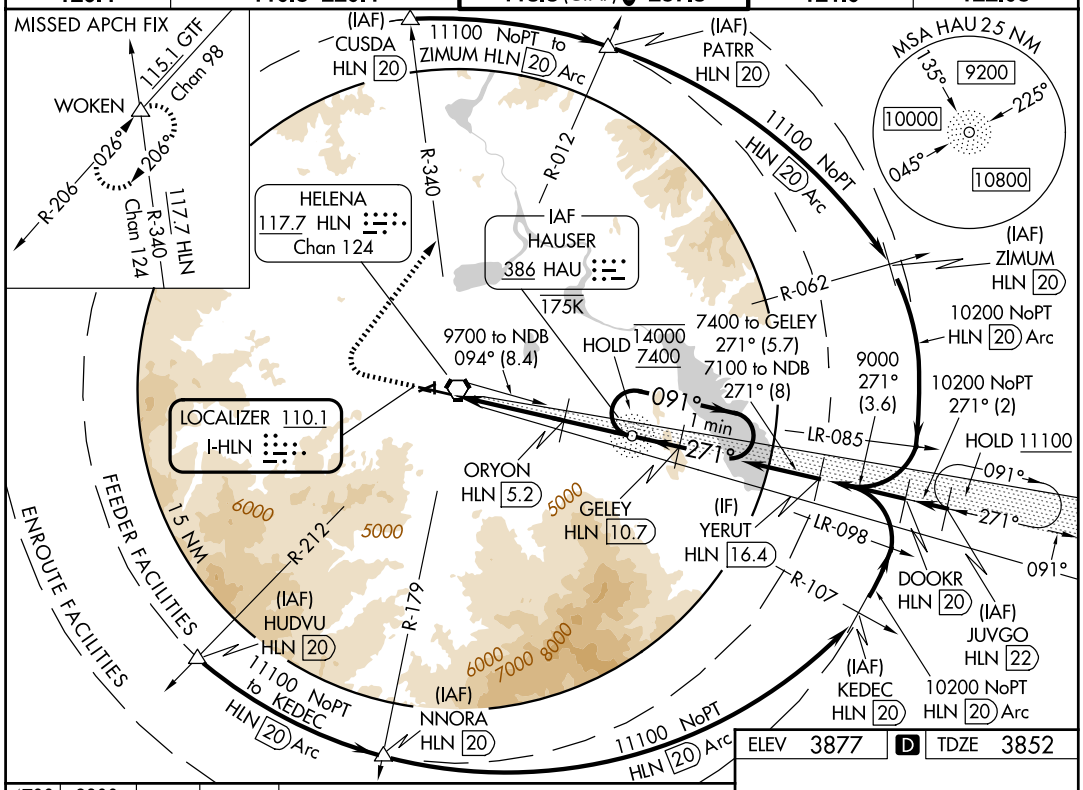
Circling NA to Rwys 10 and 28. Circling Rwy 5, 23, 35 NA at night. Inop table does not apply to S-LOC 27 all Cats. For inop ALS, increase S-ILS 27 Cat E visibility to ¾ mile, increase ORYON fix minimums: S-LOC 27 Cat C/D/E visibility to 2 miles. Circling NA for Cats D and E south of Rwy 9-27. Holding 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.

-17°C

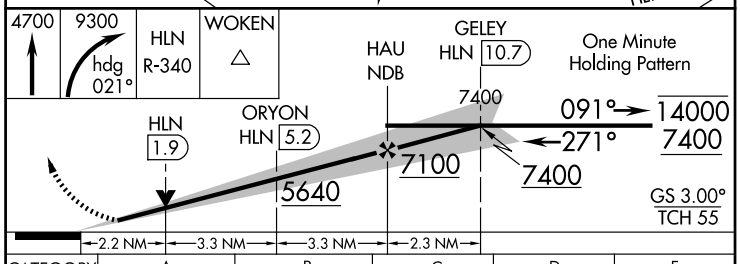
MALSR

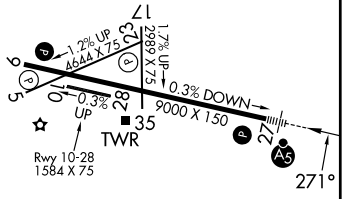
MISSED APPROACH: Climb to 4700 then climbing right turn to 9300 on heading 021° and on HLN VORTAC R-340 to WOKEN INT and hold, continue climb-in-hold to 9300.
#Missed approach requires minimum climb of 300 feet per NM to 6000; if unable to meet climb gradient, see ILS Y or LOC Y RWY 27.

ATIS	HELENA APP CON *	HELENA TOWER *	GND CON	UNICOM
120.4	119.5 229.4	118.3 (CTAF) L 257.8	121.9	122.95



ELEV 3877 D TDZE 3852





CATEGORY	A	B	C	D	E
S-ILS 27#	4052-½ 200 (200-½)				
S-LOC 27	5640-1¼ 1788 (1800-1¼)	5640-1½ 1788 (1800-1½)	5640-3 1788 (1800-3)		
CIRCLING	5640-1¼ 1763 (1800-1¼)	5640-1½ 1763 (1800-1½)	6000-3 2123 (2200-3)		
ORYON FIX MINIMUMS*					
S-LOC 27	4600-½ 748 (800-½)	4600-¾ 748 (800-¾)	4600-1¾ 748 (800-1¾)		
CIRCLING	4640-1 763 (800-1)	4800-1¼ 923 (1000-1¼)	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 44
VOR OR TACAN

SAN LUIS OBISPO, CALIFORNIA AL-989 (FAA) 24081

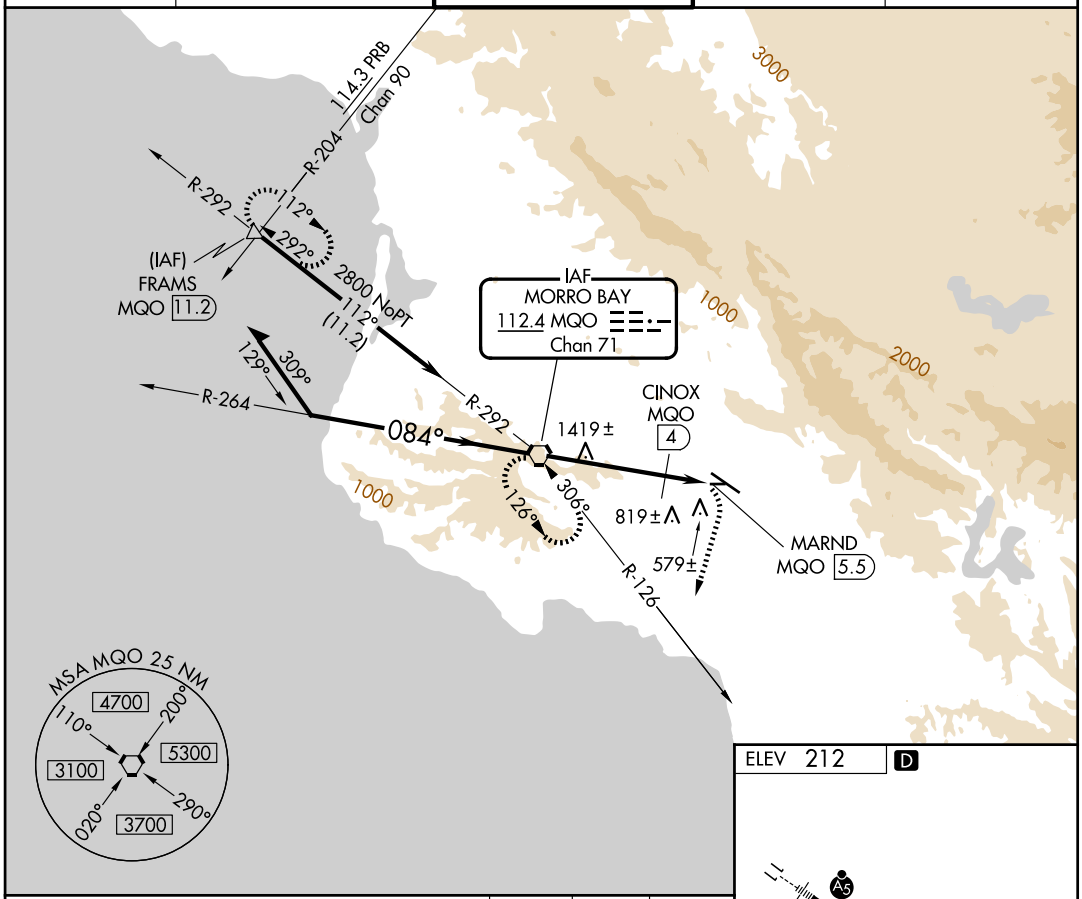
VORTAC MQO 112.4 Chan 71	APP CRS 084°	Rwy Ldg N/A TDZE N/A Apt Elev 212

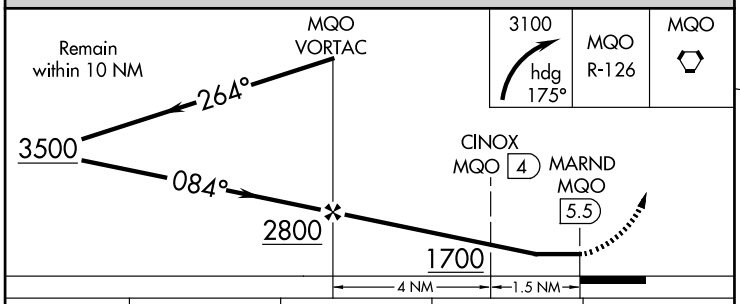
VOR or TACAN-A
SAN LUIS OBISPO COUNTY RGNL (SBP)

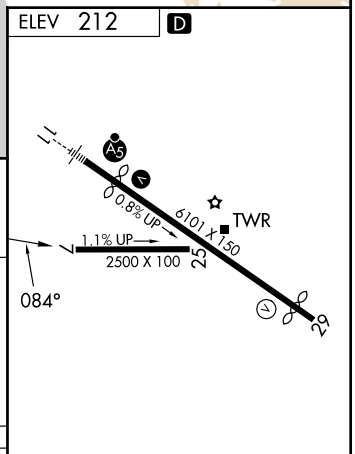
Circling NA north of Rwy 11-29.

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 ★	SANTA BARBARA APP CON ★	SAN LUIS TOWER ★	GND CON	UNICOM
120.6	127.725 244.575	124.0 (CTAF) L 379.9	121.6	122.95







HIRL Rwy 11-29 L
REIL Rwy 29 L

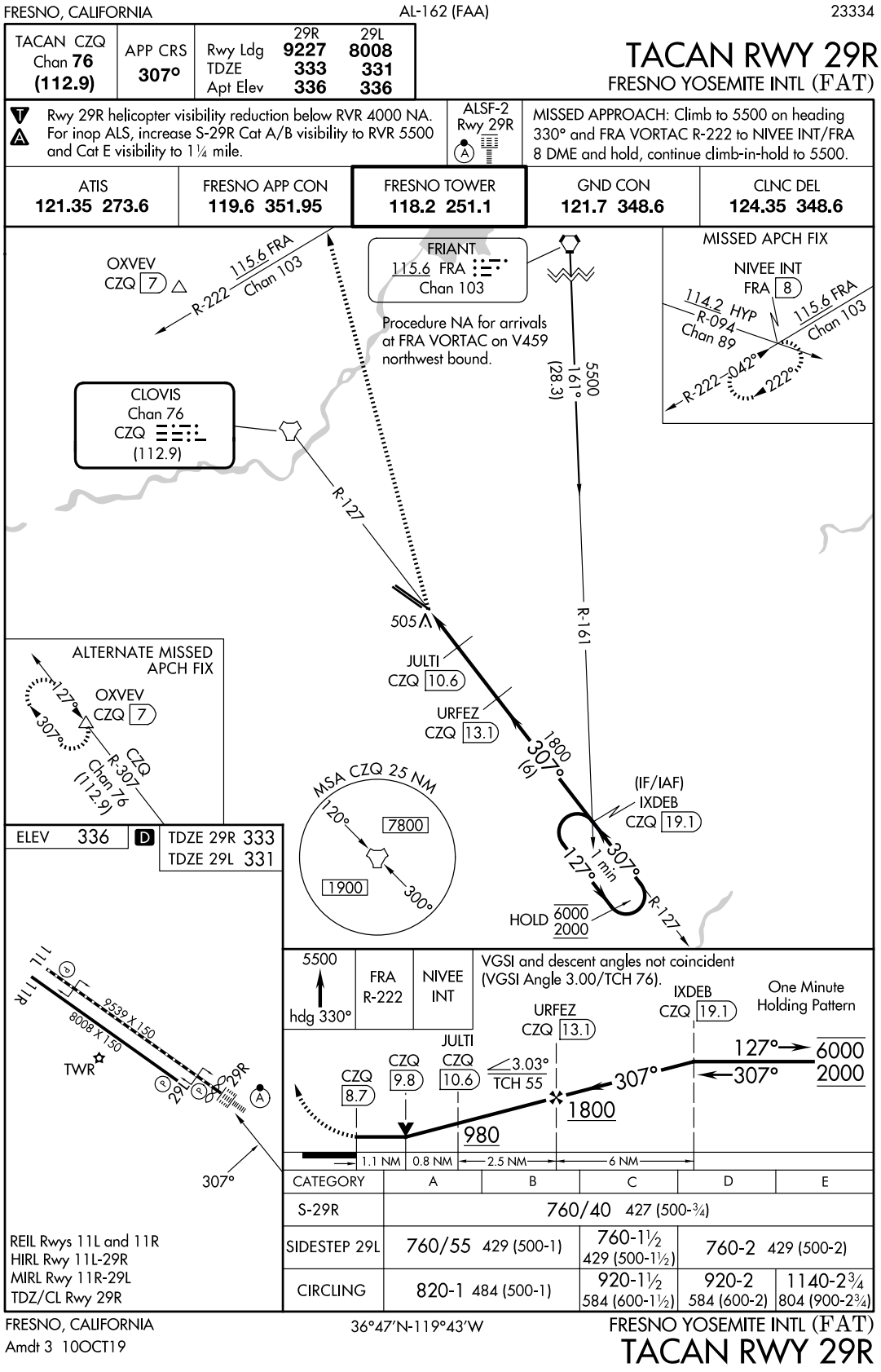
CATEGORY	A	B	C	D
CIRCLING	1700-1¼ 1488 (1500-1¼)	1700-1½ 1488 (1500-1½)	1700-3 1488 (1500-3)	
TACAN OR DME MINIMA				
CIRCLING	1120-1¼ 908 (1000-1¼)	1220-1½ 1008 (1100-1½)	1460-3 1248 (1300-3)	1560-3 1348 (1400-3)

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 45
TACAN



APPENDIX 46
NDB

LAKE CITY, FLORIDA | AL-811 (FAA) | 23334

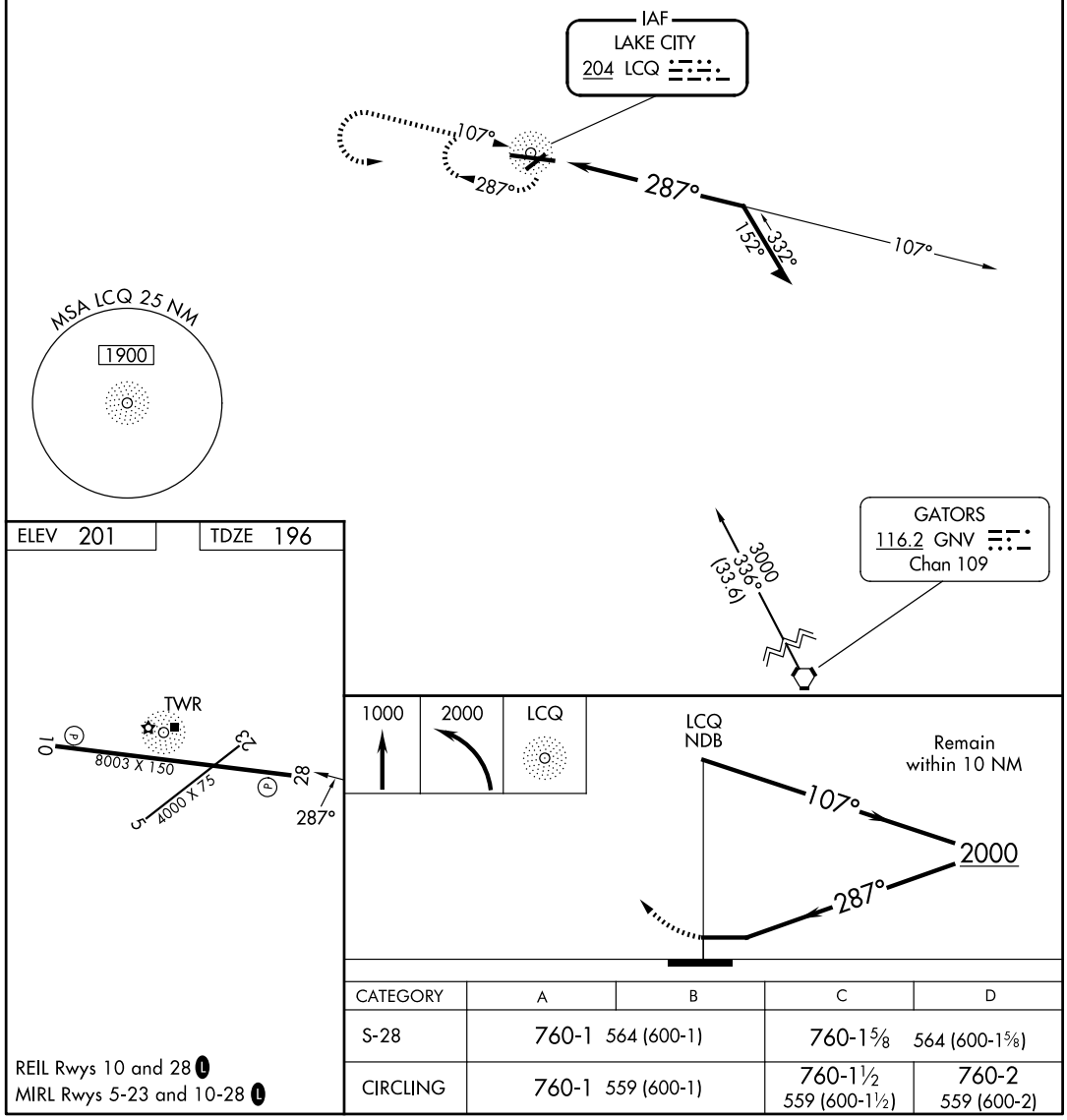
NDB RWY 28
LAKE CITY GATEWAY (LCQ)

NDB LCQ	APP CRS	Rwy Ldg / TDZE / Apt Elev
204	287°	8003 / 196 / 201

T NA — 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.

MISSED APPROACH: Climb to 1000 then climbing left turn to 2000 direct LCQ NDB LOM and hold.

AWOS-3	JACKSONVILLE CENTER	LAKE CITY TOWER ★	GND CON	UNICOM
120.675	125.375 254.325	119.2 (CTAF) L 314.6	121.9	122.95



CATEGORY	A	B	C	D
S-28	760-1 564 (600-1)		760-1⅝ 564 (600-1⅝)	
CIRCLING	760-1 559 (600-1)		760-1½ 559 (600-1½)	760-2 559 (600-2)

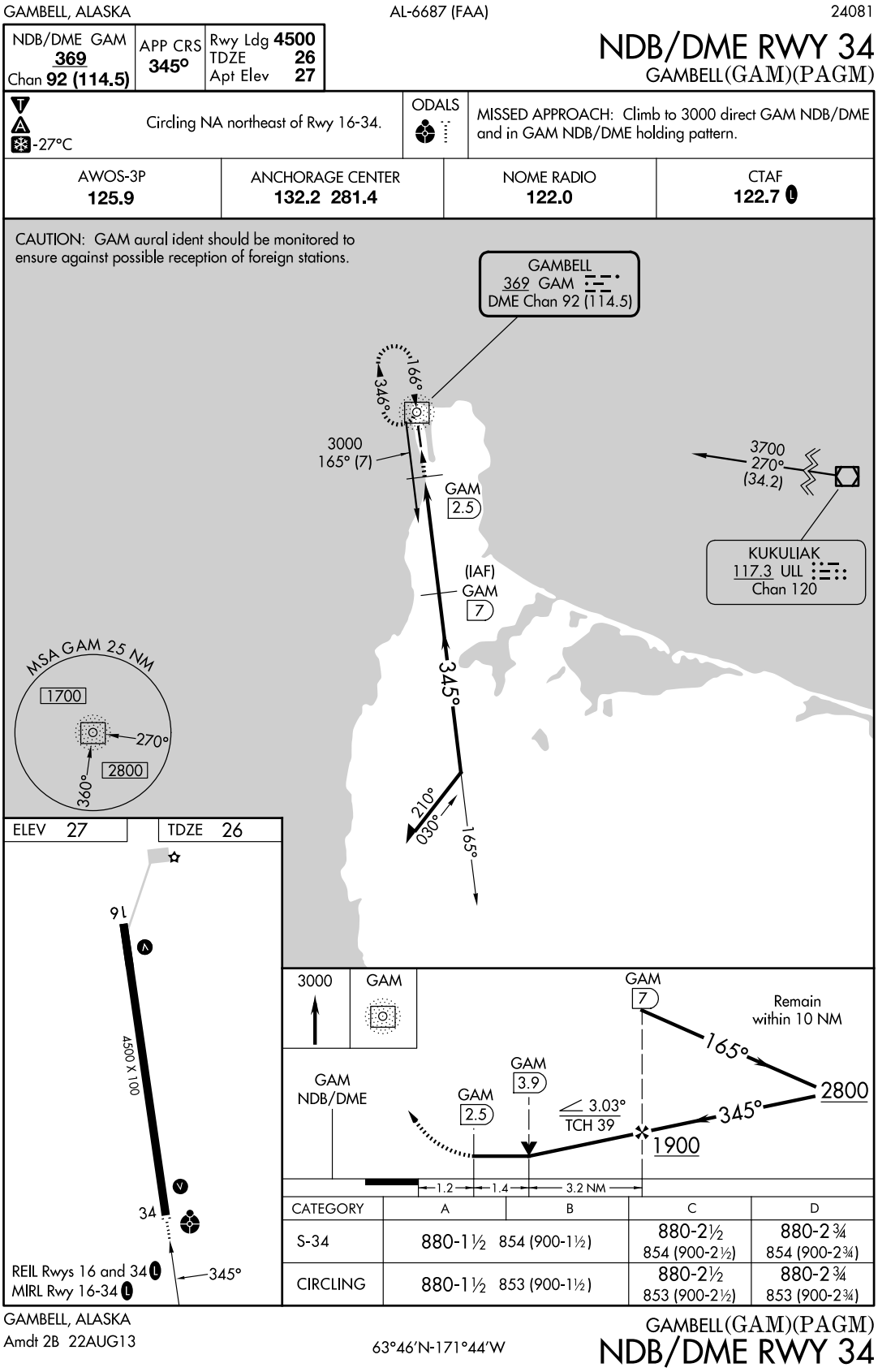
REIL Rwys 10 and 28 L
MIRL Rwys 5-23 and 10-28 L

LAKE CITY, FLORIDA
Amdt 2A 02MAY13

30°11′N-82°35′W

LAKE CITY GATEWAY (LCQ)
NDB RWY 28

APPENDIX 47
NDB WITH DME



APPENDIX 48
RNAV (RNP)

BOISE, IDAHO AL-57 (FAA) 23278

RNAV (RNP) Z RWY 28L
BOISE AIR TRML/GOWEN FLD (BOI)

APP CRS	Rwy Ldg	9763
282°	TDZE	2858
	Apt Elev	2872

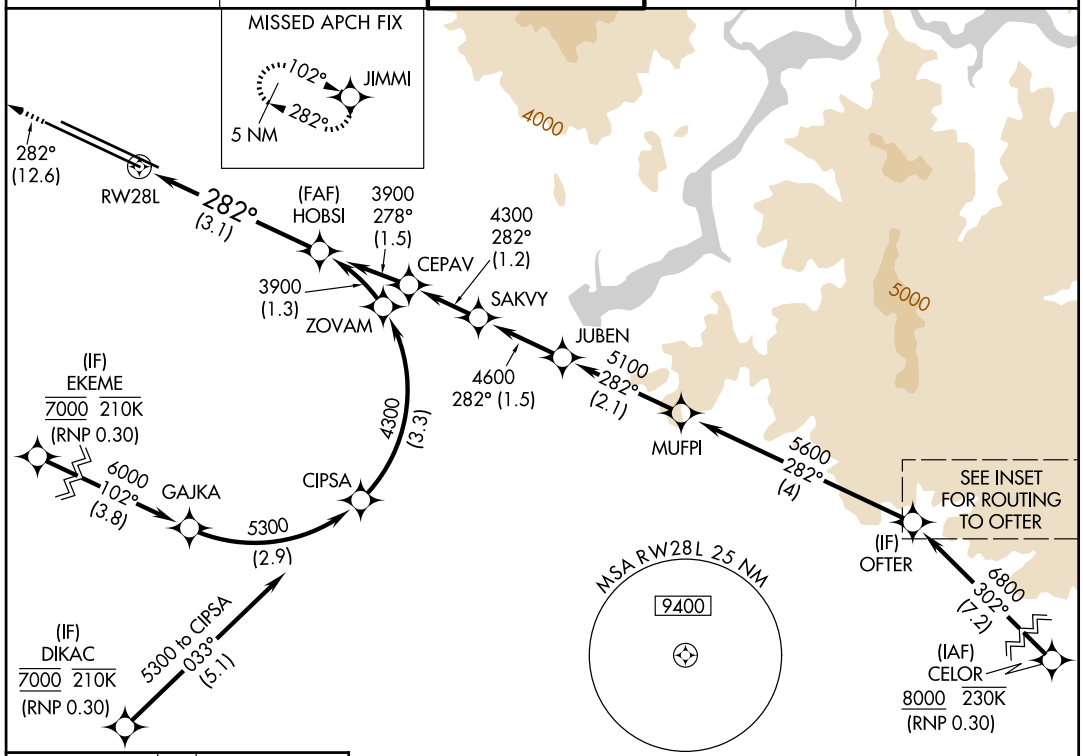
RNP AR APCH - GPS.

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.

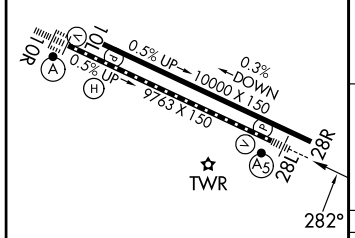
MALSR

MISSED APPROACH: Climb to 6000 on track 282° to JIMMI and hold, continue climb-in-hold to 6000.

D-ATIS	BIG SKY APP CON	BOISE TOWER	GND CON	CLNC DEL
123.9 290.4	119.6 269.4	118.1 257.8	121.7 348.6	125.9 323.2

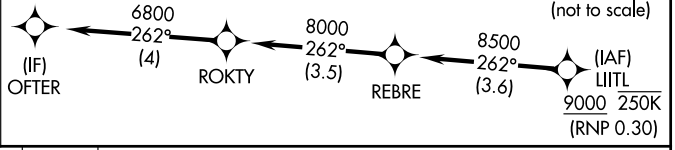


ELEV 2872 D TDZE 2858



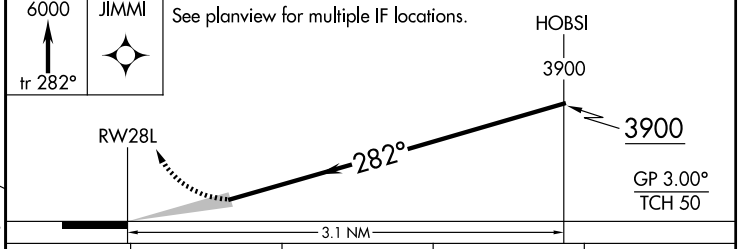
REIL Rwy 10L
TDZ/CL Rwys 10R and 28L
HIRL Rwys 10L-28R and 10R-28L

ROUTING TO OFTER
(not to scale)



6000
tr 282°
JIMMI

See planview for multiple IF locations.



CATEGORY	A	B	C	D
RNP 0.11 DA	3220/35	362 (400-⅝)		
RNP 0.30 DA	3315/45	457 (500-⅞)		

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 49
RNAV (GPS)

PITTSBURGH, PENNSYLVANIA AL-570 (FAA) 24025

WAAS CH 90126 W10A	APP CRS 101°	Rwy Ldg 9708 TDZE 1141 Apt Elev 1203

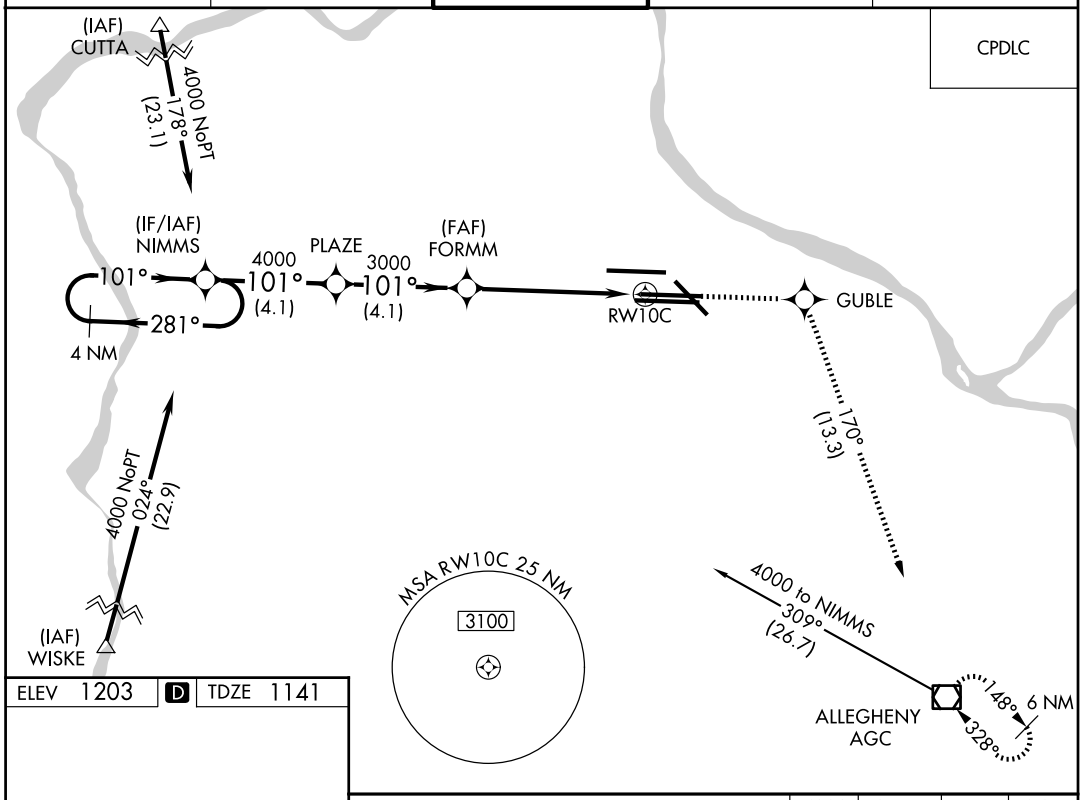
RNAV (GPS) Y RWY 10C
PITTSBURGH INTL (PIT)

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.

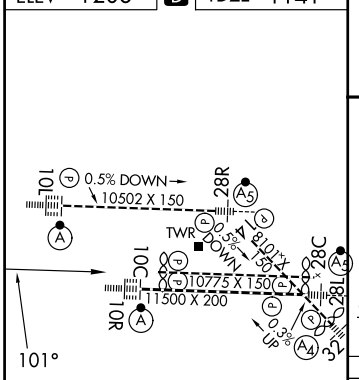
MISSED APPROACH:
Climb to 4000 direct GUBLE and right turn on track 170° to AGC VOR/DME and hold.

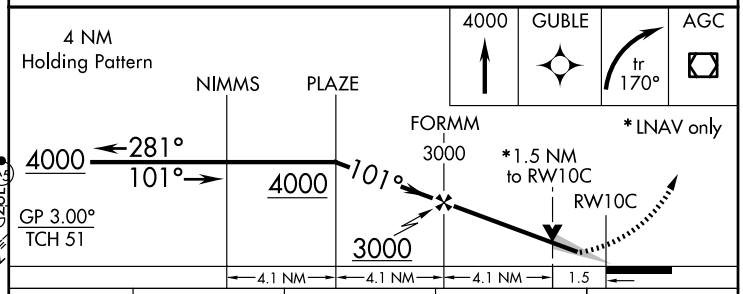
D-ATIS	PITTSBURGH APP CON	PITTSBURGH TOWER	GND CON	CLNC DEL
127.25 (ARR) 135.9 (DEP)	123.95 360.8	128.3 291.7	121.9 348.6 (S) 127.8 348.6 (N)	126.75 353.7

CPDLC



ELEV 1203 D TDZE 1141





CATEGORY	A	B	C	D
LPV DA	1438/50 297 (300-1)			
LNAV/VNAV DA	1634-1¾ 493 (500-1¾)			
LNAV MDA	1660/55 519 (500-1)		1660-1½ 519 (500-1½)	1660-1¾ 519 (500-1¾)
CIRCLING	1700-1 497 (500-1)		1880-2 677 (700-2)	1880-2¼ 677 (700-2¼)

REIL Rwy 10C
HIRL all Rwys
TDZ/CL Rwys 10L, 10R, 28L, 28R, 28C, and 32

PITTSBURGH, PENNSYLVANIA
Amdt 4B 01FEB18

40°29'N-80°14'W

PITTSBURGH INTL (PIT)
RNAV (GPS) Y RWY 10C

APPENDIX 50
RNAV (GPS) WITH MULTIPLE SCALE BREAKS

ALAMOGORDO, NEW MEXICO AL-5130 (FAA) 21280

WAAS CH 69240 W04A	APP CRS 038°	Rwy Ldg 9207 TDZE 4150 Apt Elev 4200

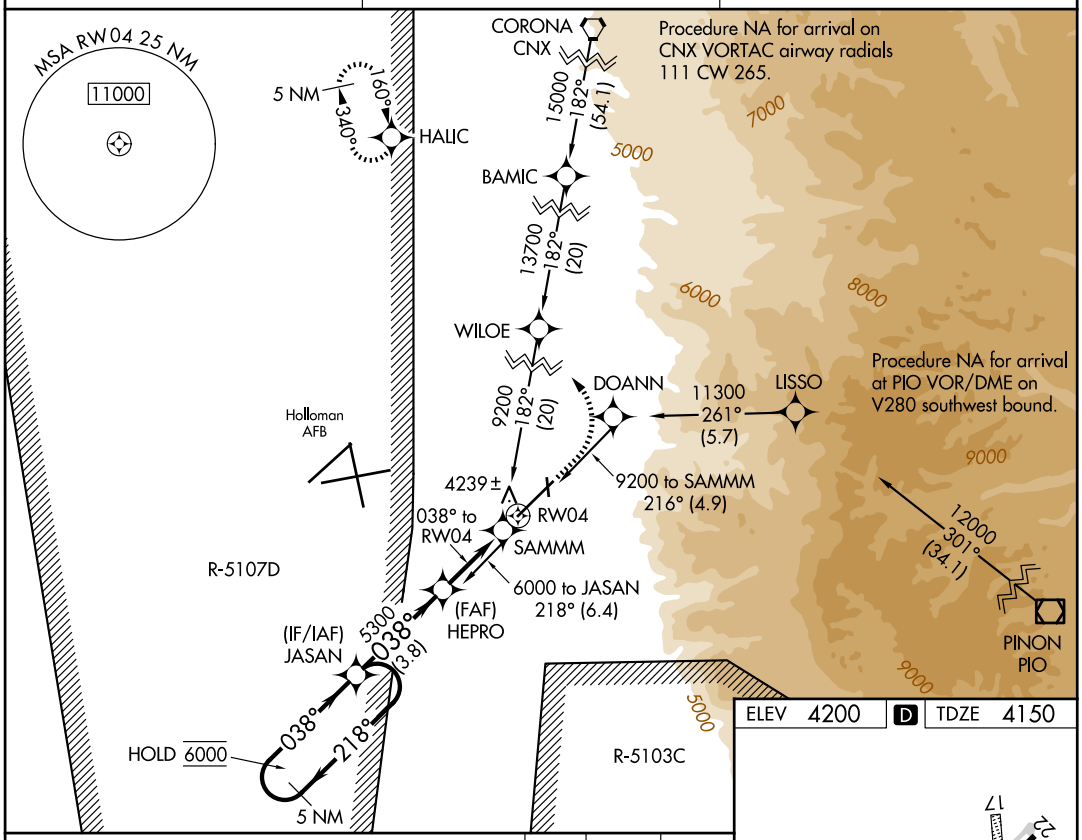
RNAV (GPS) RWY 4
ALAMOGORDO-WHITE SANDS RGNL (ALM)

RNP APCH.

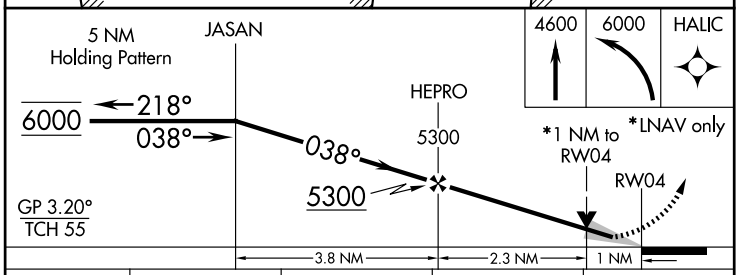
Circling NA to Rwys 17 and 35. Circling NA for Cats C and D southeast of Rwy 4-22. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -23°C or above 54°C. Civil aircraft require ATC clearance prior to entering Restricted Area 5107D.

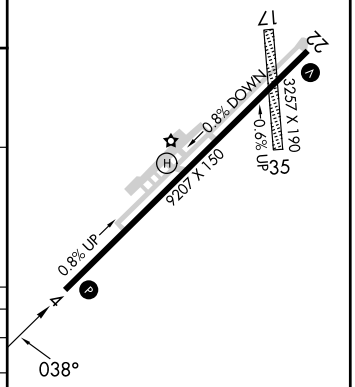
MISSED APPROACH: Climb to 4600 then climbing left turn to 6000 direct HALIC and hold.

AWOS-3	HOLLOMAN APP CON ★	UNICOM
127.825	120.6 269.225	122.8 (CTAF) L



ELEV 4200 D TDZE 4150





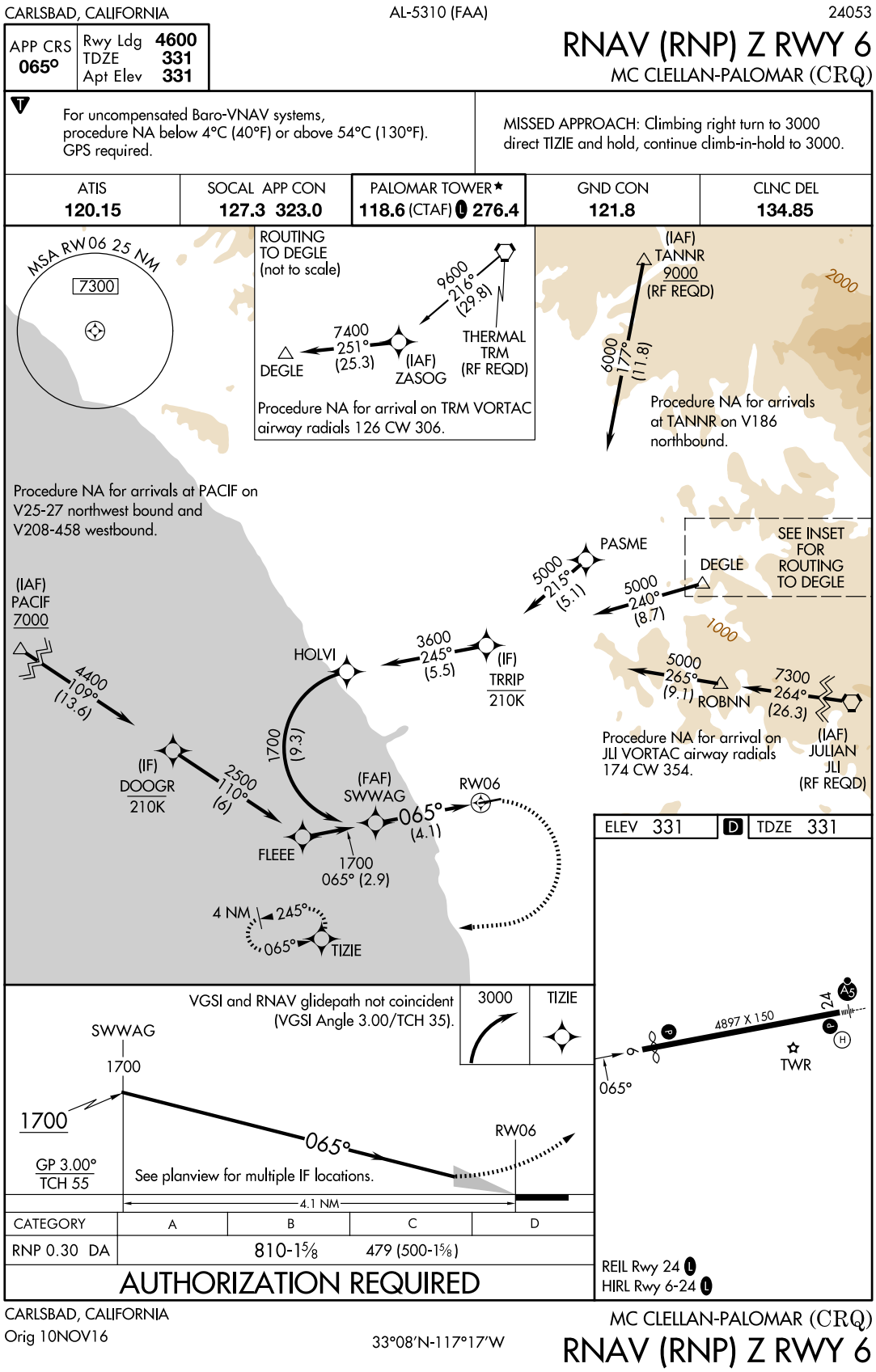
CATEGORY	A	B	C	D
LPV DA	4400-1 250 (200-1)			
LNAV/VNAV DA	4420-1 270 (300-1)			
LNAV MDA	4500-1 350 (300-1)			
CIRCLING	4760-1 560 (600-1)	4880-1 680 (700-1)	4960-2¼ 760 (800-2¼)	4960-2½ 760 (800-2½)

REIL Rwys 4 and 22
MIRL Rwy 4-22 L

ALAMOGORDO, NEW MEXICO
Amdt 2B 12AUG21
32°50′N-105°59′W

ALAMOGORDO-WHITE SANDS RGNL (ALM)
RNAV (GPS) RWY 4

APPENDIX 51
RNAV (RNP) WITH INSET



APPENDIX 52
GPS

CRESCO, IOWA | AL-6773 (FAA) | 21280

APP CRS	Rwy Ldg	2949
152°	TDZE	1279
	Apt Elev	1279

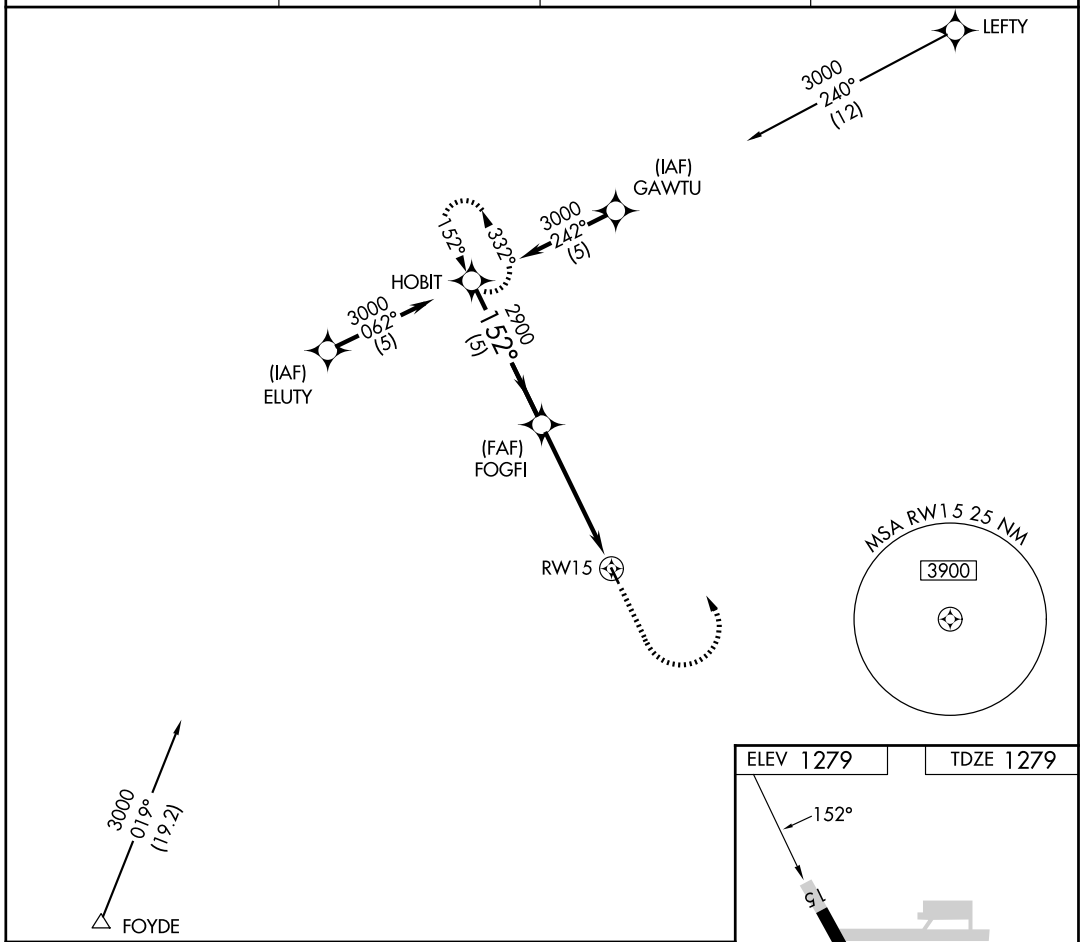
GPS RWY 15
ELLEN CHURCH FLD (CJJ)

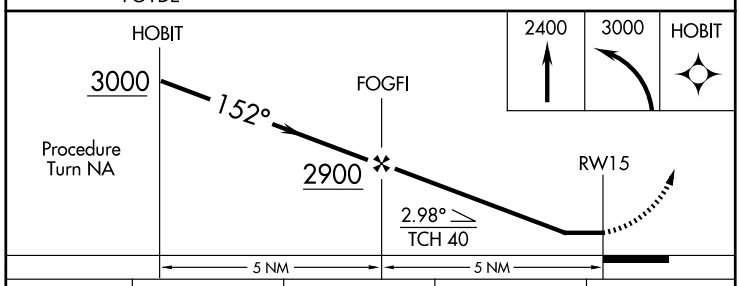
NA

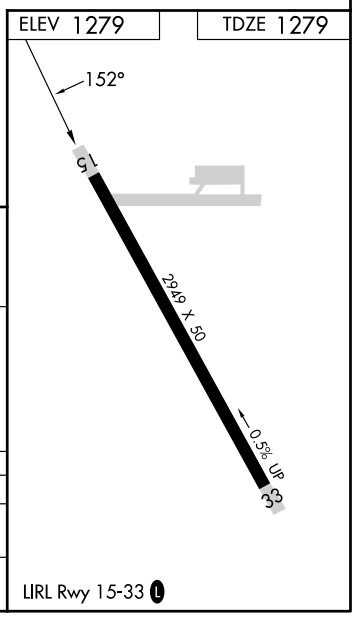
Use Decorah Muni altimeter setting. Procedure NA at night. Rwy 15 helicopter visibility reduction below 1 SM NA.

MISSED APPROACH: Climb to 2400, then climbing left turn to 3000 direct HOBIT and hold.

DEH AWOS-3	MINNEAPOLIS CENTER	UNICOM	
120.925	118.85	122.8 (CTAF)	122.7 L







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 53
GPS WITH ARMED APPROACH

PORTERVILLE, CALIFORNIA AL-569 (FAA) 21364

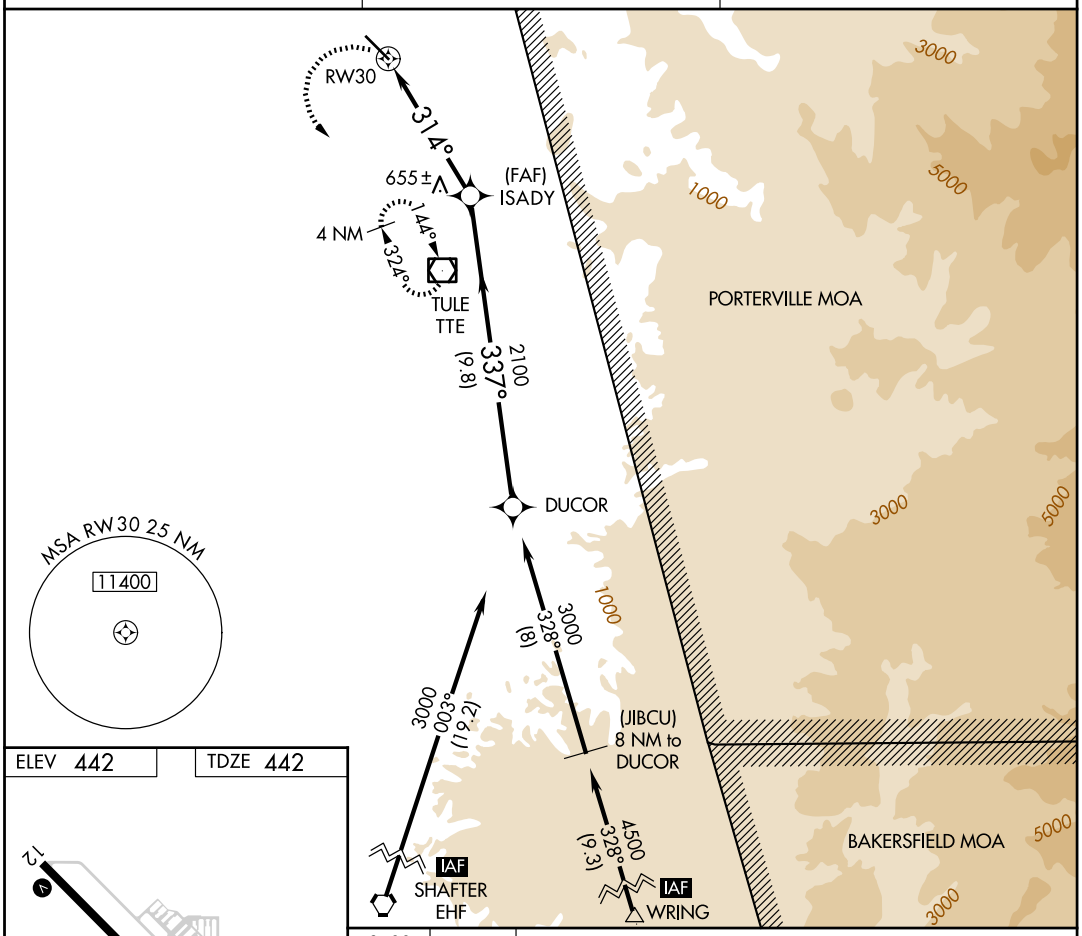
APP CRS	Rwy Ldg	5960
314°	TDZE	442
	Apt Elev	442

GPS RWY 30
PORTERVILLE MUNI (PTV)

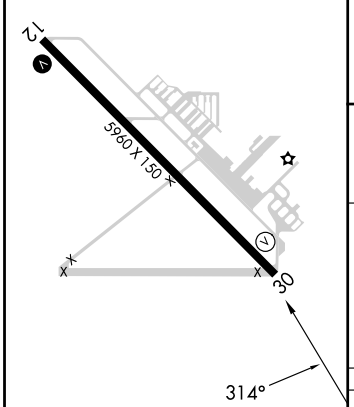
IAF ARM APPROACH MODE PRIOR TO IAF.
NA Helicopter visibility reduction below ¾ SM NA.

MISSED APPROACH: Climbing left turn to 3100 direct TTE VOR/DME and hold.

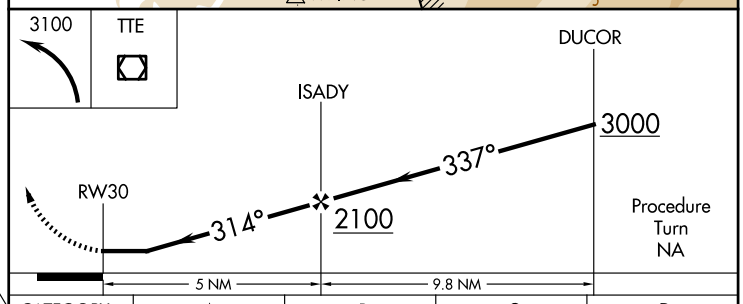
AWOS-3PT	BAKERFIELD APP CON★	UNICOM
134.625	120.5	122.8 (CTAF) L



ELEV 442 TDZE 442



REIL Rwy 30
HIRL Rwy 12-30 L



CATEGORY	A	B	C	D
S-30	900-1 458 (500-1)		900-1¼ 458 (500-1¼)	900-1½ 458 (500-1½)
CIRCLING	900-1 458 (500-1)		940-1½ 498 (500-1½)	1080-2 638 (700-2)

PORTERVILLE, CALIFORNIA
Orig-B 30DEC21

36°02'N-119°04'W

PORTERVILLE MUNI (PTV)
GPS RWY 30

APPENDIX 54
COPTER – ILS

NEW YORK, NEW YORK AL-289 (FAA) 24137

COPTER ILS or LOC RWY 22
LAGUARDIA (LGA)

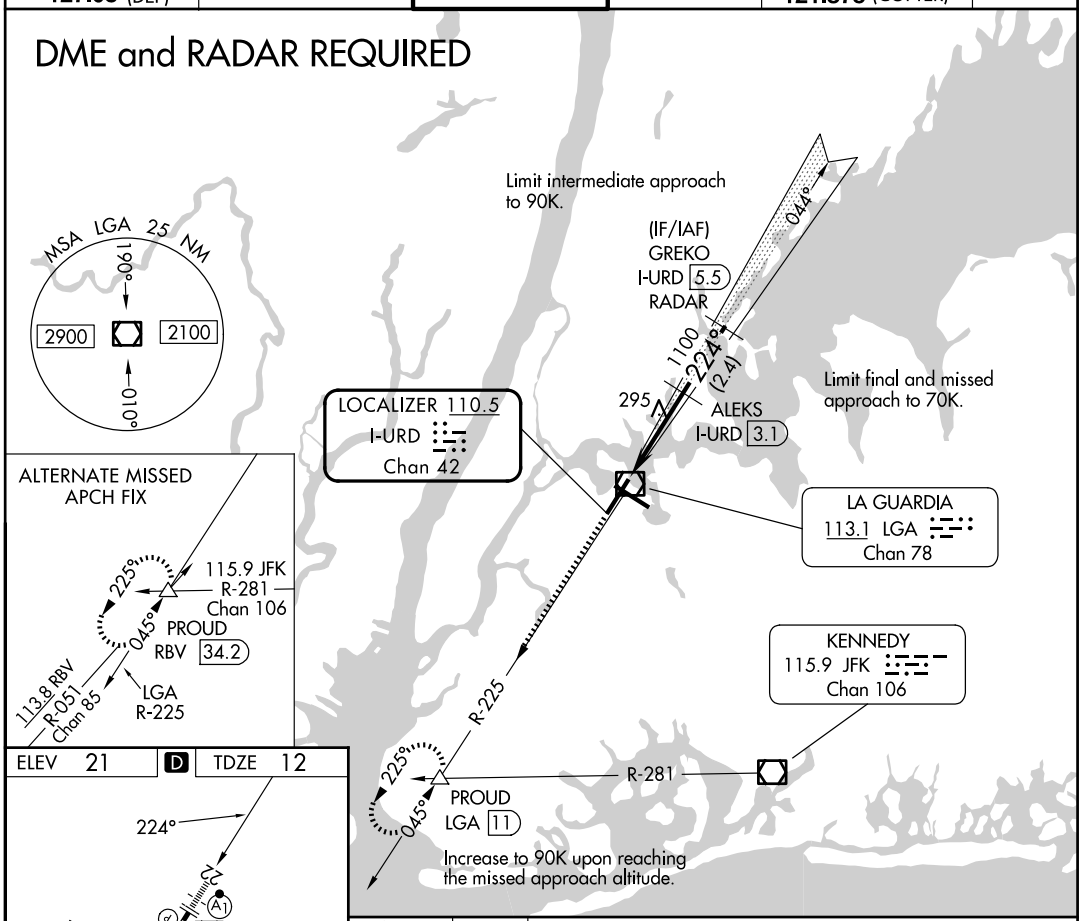
LOC/DME I-URD	APP CRS	Rwy Ldg	7001
110.5	224°	TDZE	12
Chan 42		Apt Elev	21

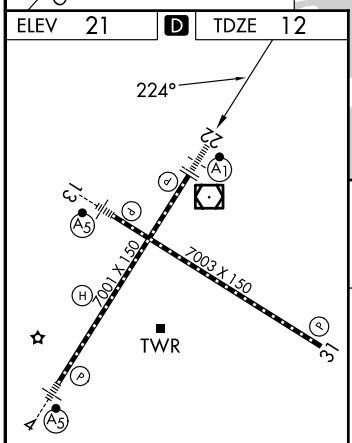
DME required.

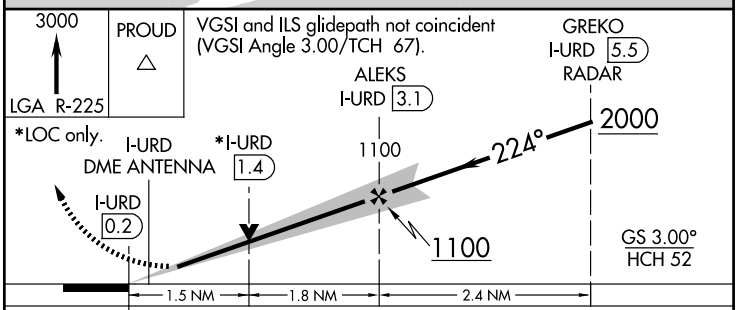
ALSF-1

MISSED APPROACH: Climb to 3000 on LGA VOR/DME R-225 to PROUD/LGA VOR/DME 11 DME and hold.

D-ATIS	NEW YORK APP CON	LAGUARDIA TOWER	GND CON	CLNC DEL	CPDLC
125.95 (ARR) 127.05 (DEP)	120.8 263.0	118.7 263.0	121.7 263.0	135.2 121.875 (COPTER)	







CATEGORY	COPTER	
H-ILS 22	212/12	200 (200-⅛)
H-LOC 22	560/12	548 (600-⅛)

TDZ/CL Rwys 4, 13 and 22
HIRL Rwys 4-22 and 13-31
REIL Rwy 31

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
264	272°	TDZE	308
		Apt Elev	310

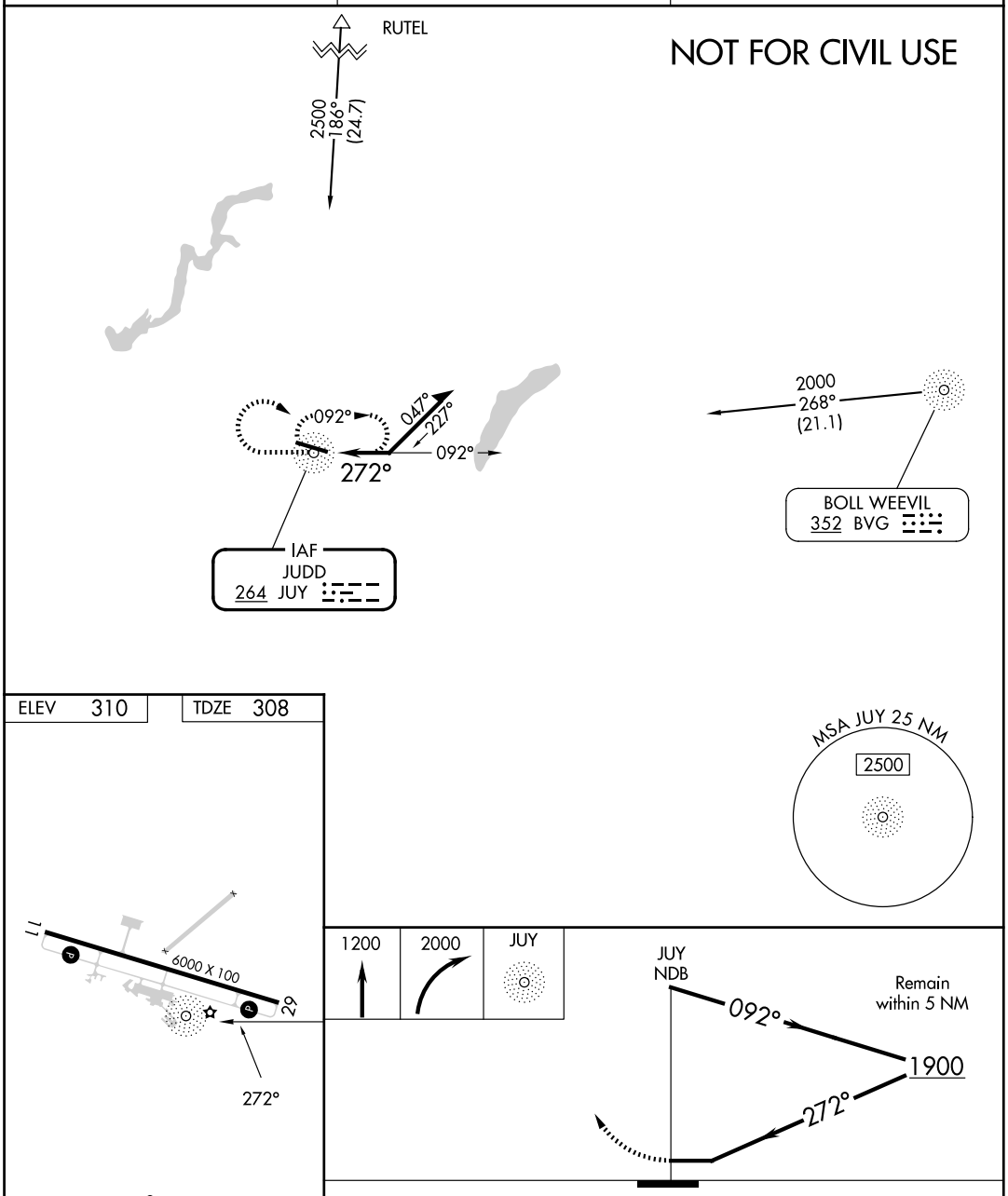
COPTER NDB RWY 29
SOUTH ALABAMA RGNL AT BILL BENTON FLD (79J)

When local altimeter setting not received, use Cairns AAF (Fort Novosel) altimeter setting and increase all MDA 100 feet.

MISSED APPROACH: Climb to 1200 then climbing right turn to 2000 direct JUY NDB and hold.

ASOS	CAIRNS APP CON ★	UNICOM
134.875	133.45 239.275	122.8 (CTAF) L

NOT FOR CIVIL USE



MIRL Rwy 11-29 L
REIL Rwys 11 and 29

CATEGORY	COPTER
H-29	860-¾ 552 (600-¾)

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

WAAS CH 50241 W09B	APP CRS 088°	Rwy Ldg 3500 TDZE 1069 Apt Elev 1069

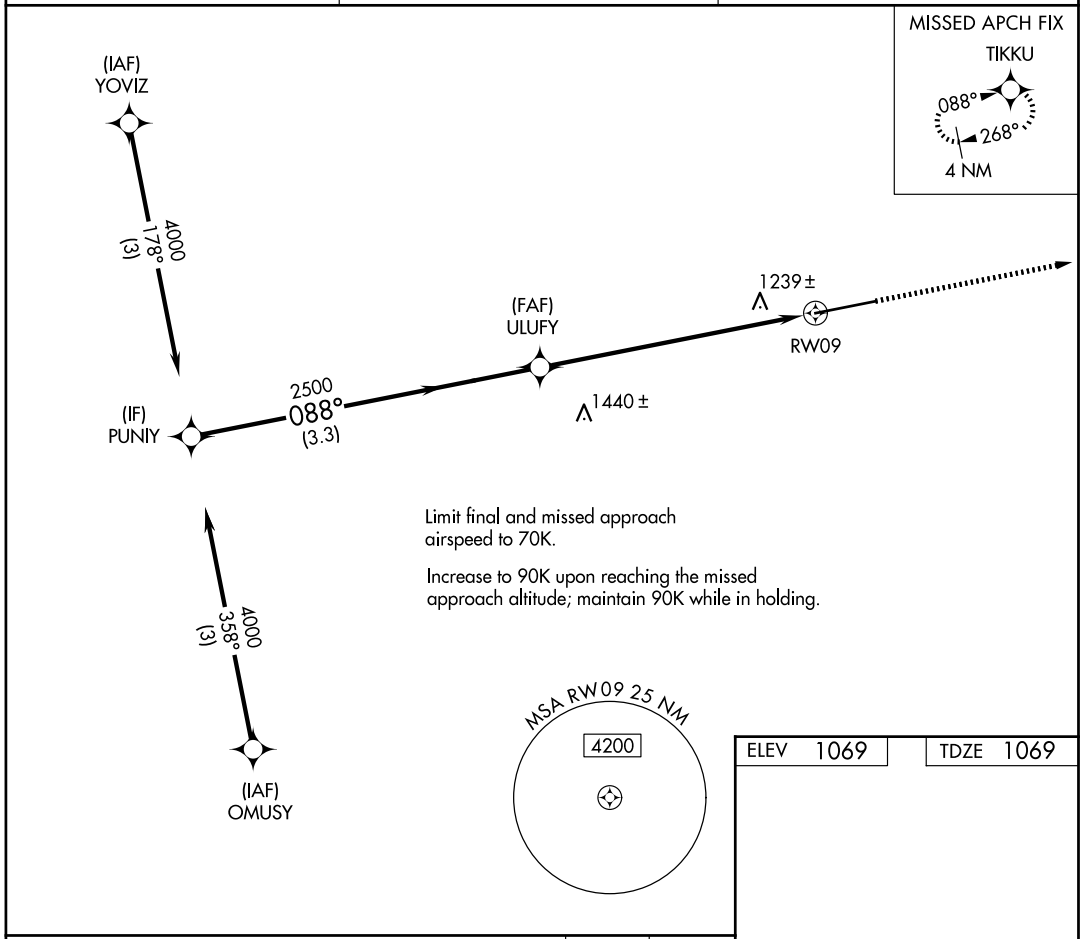
COPTER RNAV (GPS) Y RWY 9
GREENE COUNTY (WAY)

RNP APCH.

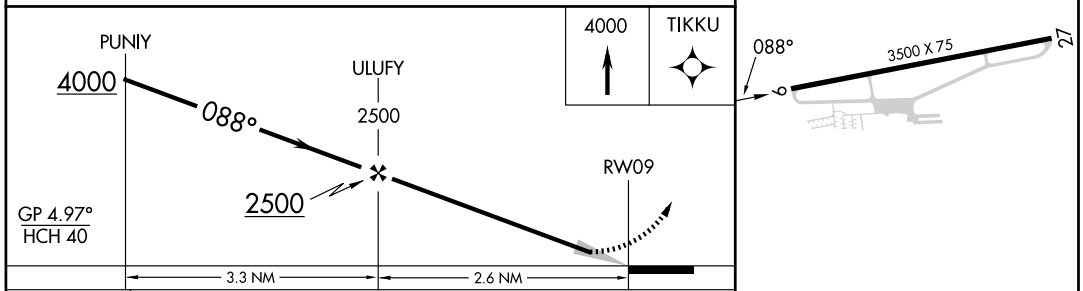
NA Use Washington altimeter setting.

MISSED APPROACH: Climb to 4000 direct TIKKU and hold, continue climb-in-hold to 4000.

AFJ AWOS-3PT	CLARKSBURG APP CON★	UNICOM
119.175	121.15 284.65	122.8 (CTAF) L



ELEV 1069 TDZE 1069



CATEGORY	COPTER	
LPV DA	1493-1¼	424 (500-1¼)
LNAV MDA	1560-1	491 (500-1)

WAYNESBURG, PENNSYLVANIA
Amdt 1 26MAR20

39°54′N-80°08′W

GREENE COUNTY (WAY)
COPTER RNAV (GPS) Y RWY 9

APPENDIX 57
COPTER – RNAV (GPS) – MULTI HELIPORTS WITHOUT AIRPORT SKETCH

NEW YORK, NEW YORK AL-610 (FAA) 23110

APP CRS	Rwy Ldg	N/A
027°	Sfc Elev	33
	Apt Elev	N/A

COPTER RNAV (GPS) 027°
JOHN F KENNEDY INTL (JFK)

RNP APCH.

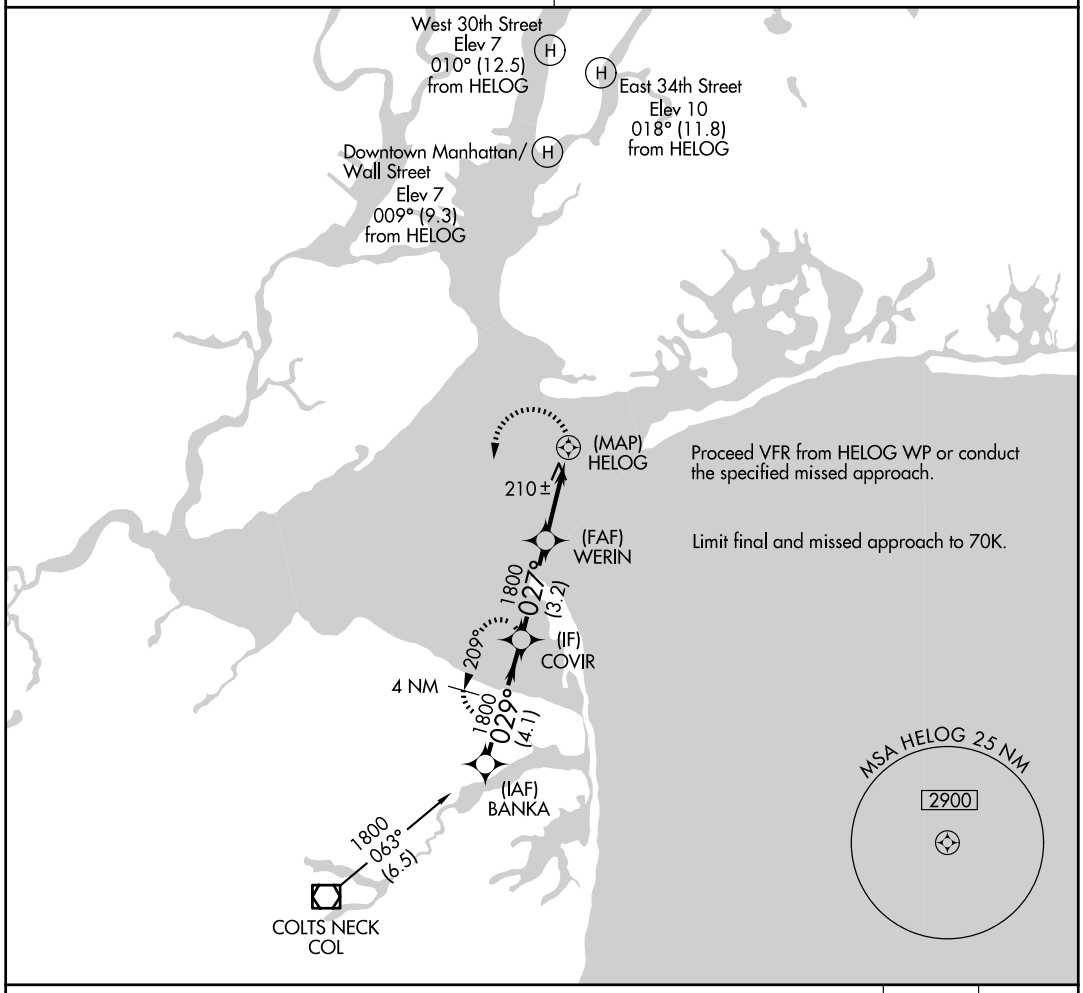
T
A NA

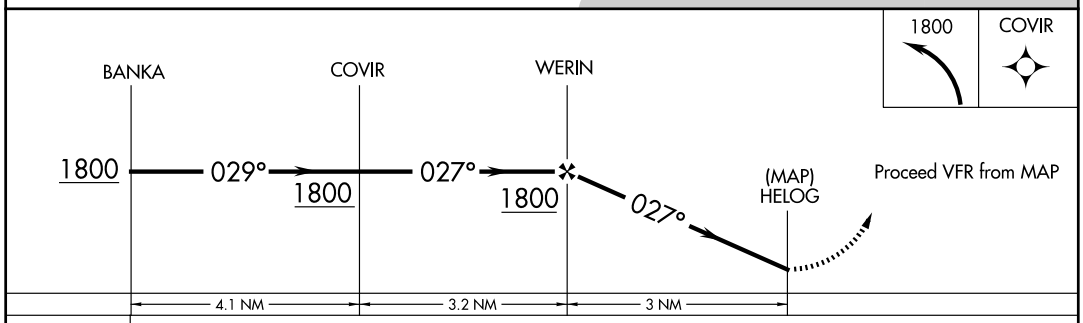
Use John F Kennedy Intl altimeter setting.

MISSED APPROACH: Climbing left turn to 1800 direct COVIR and hold.

D-ATIS
128.725 (ARR/DEP) **117.7** (ARR-NE) **115.4** (ARR-SW)

NEW YORK APP CON
128.125 269.0



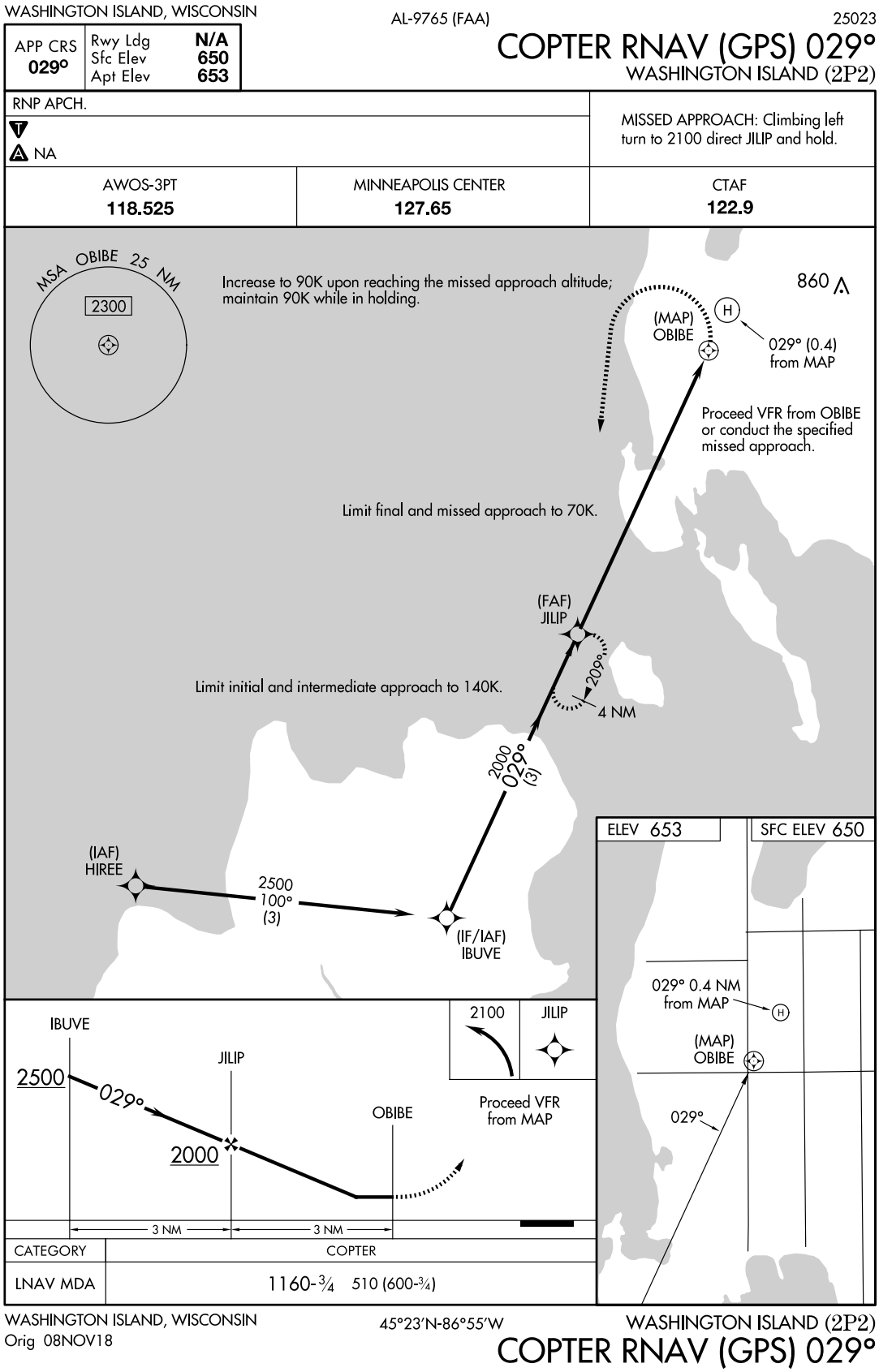


CATEGORY	COPTER
LNAV MDA	500-¾ 467 (500-¾)

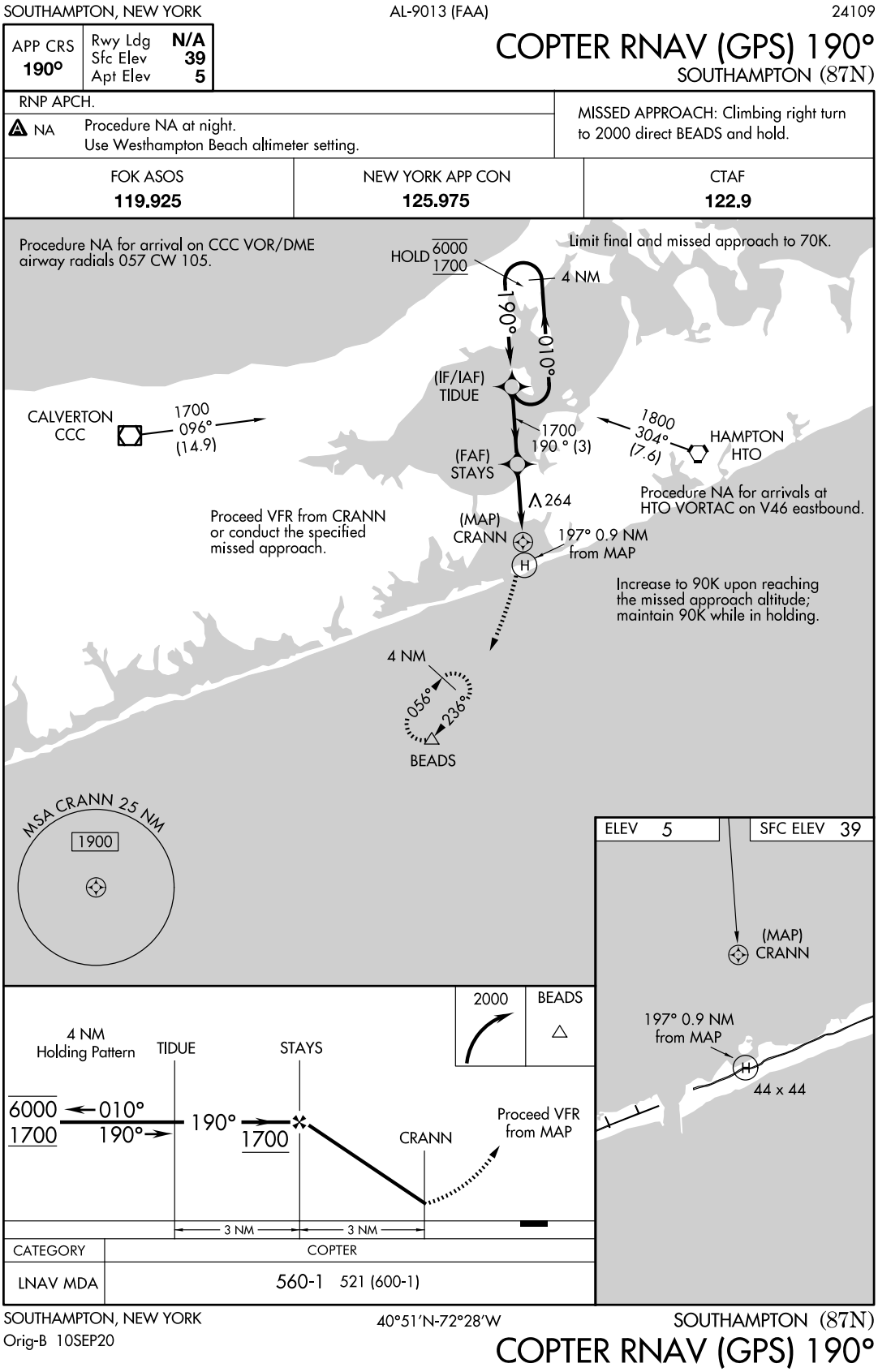
NEW YORK, NEW YORK
Orig-C 19JUL18

JOHN F KENNEDY INTL (JFK)
40°38′N - 73°47′W COPTER RNAV (GPS) 027°

APPENDIX 58
COPTER – POINT-IN-SPACE



APPENDIX 59
COPTER – POINT-IN-SPACE EXAMPLE 2



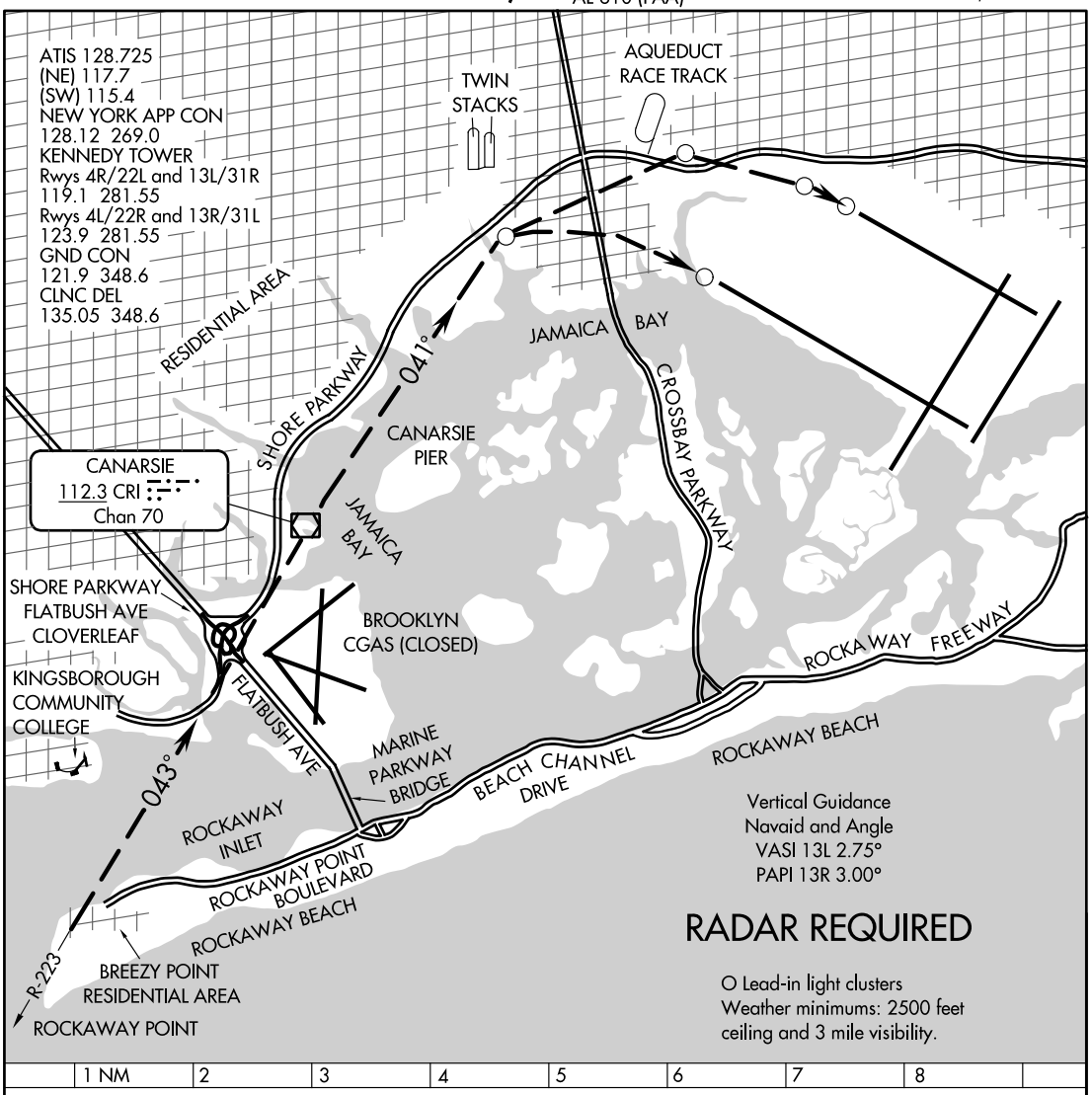
APPENDIX 60
VISUAL (CVFP) PORTRAIT

14149

PARKWAY VISUAL RWY 13L/R

AL-610 (FAA)

JOHN F. KENNEDY INTL (JFK)
NEW YORK, NEW YORK



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.

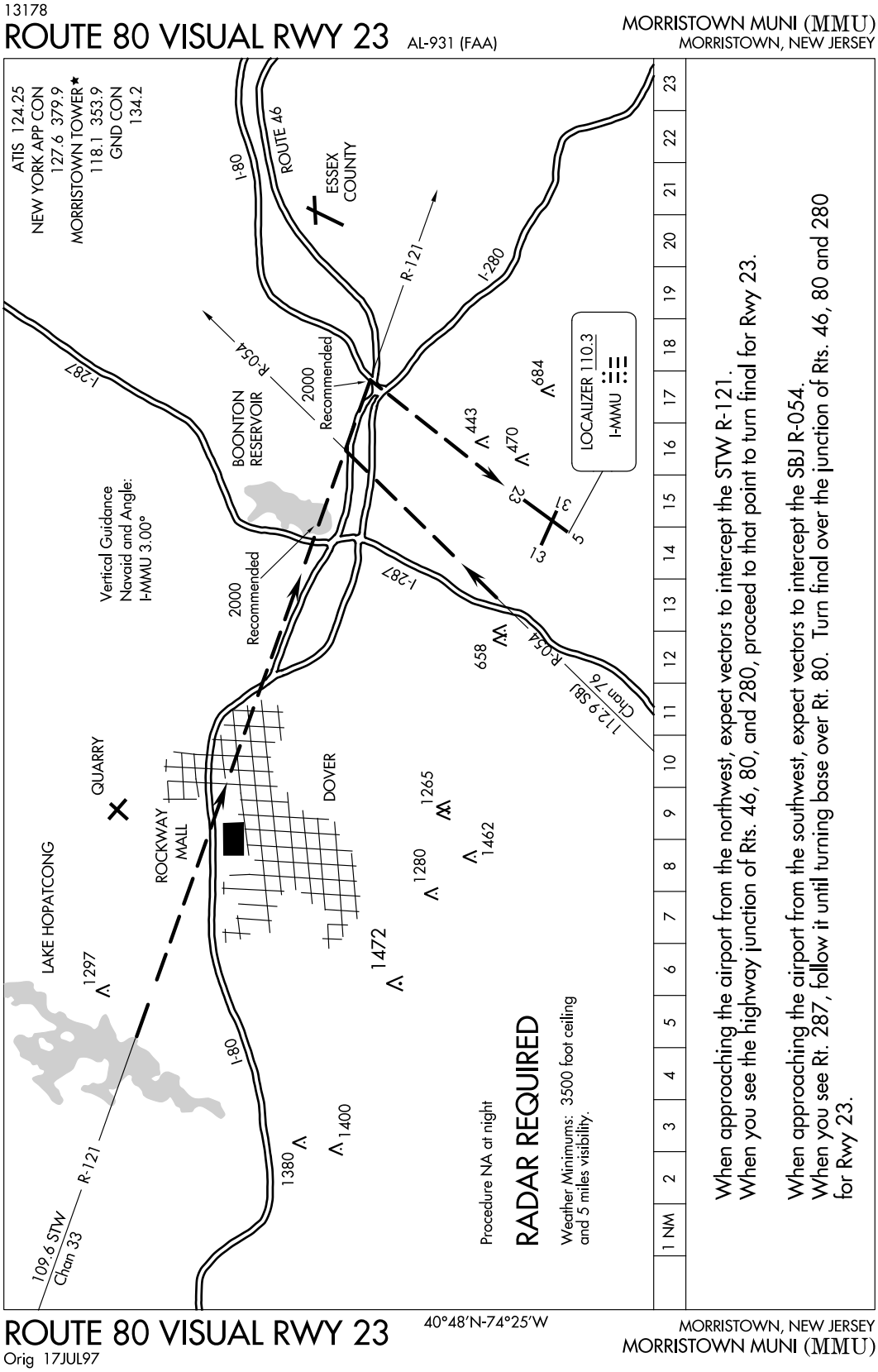
Runway 13R continue descent between the Canarsie Pier and Twin Stacks.
Runway 13L continue descent after passing the Twin Stacks.

PARKWAY VISUAL RWY 13L/R

NEW YORK, NEW YORK
JOHN F. KENNEDY INTL (JFK)

Amdt 1 29MAY14

APPENDIX 61
VISUAL (CVFP) LANDSCAPE



APPENDIX 62
MULTIPLE TOUCHDOWN ZONES ELEVATIONS

NEWARK, NEW JERSEY AL-285 (FAA) 24137

ILS or LOC RWY 4R
NEWARK LIBERTY INTL (EWR)

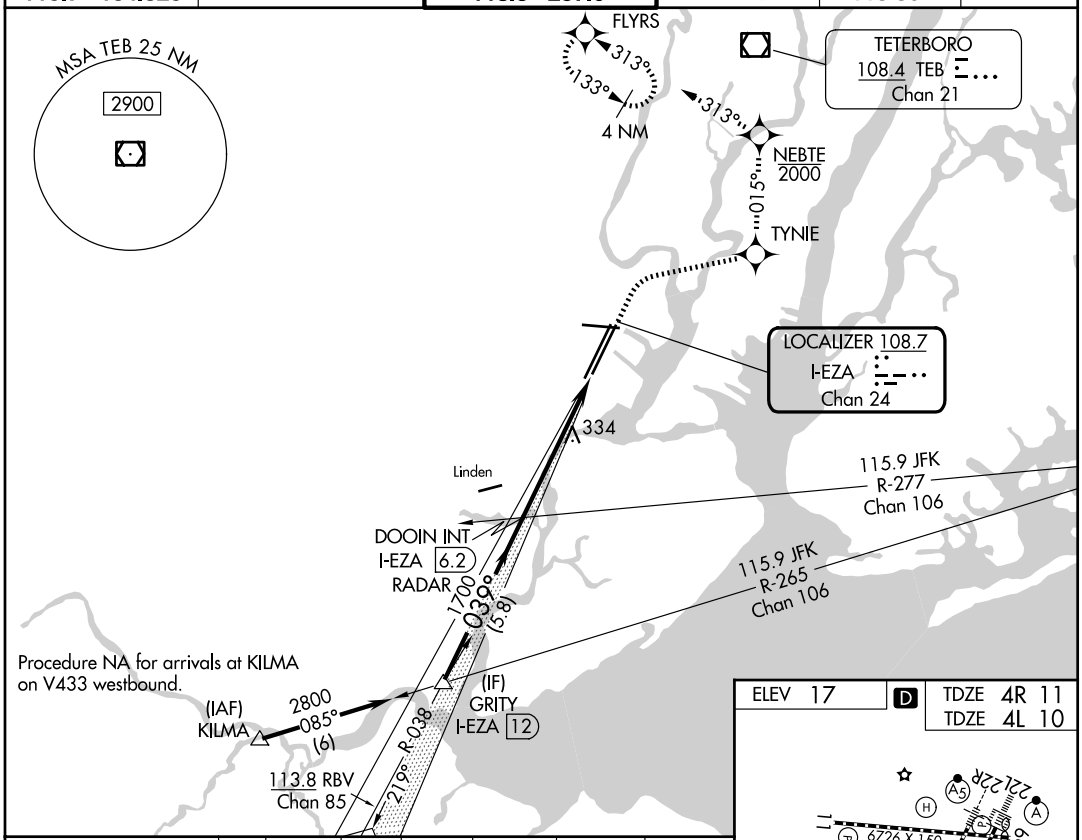
LOC/DME I-EZA	APP CRS		4R	4L
108.7	039°	Rwy Ldg	8810	8460
Chan 24		TDZE	11	10
		Apt Elev	17	17

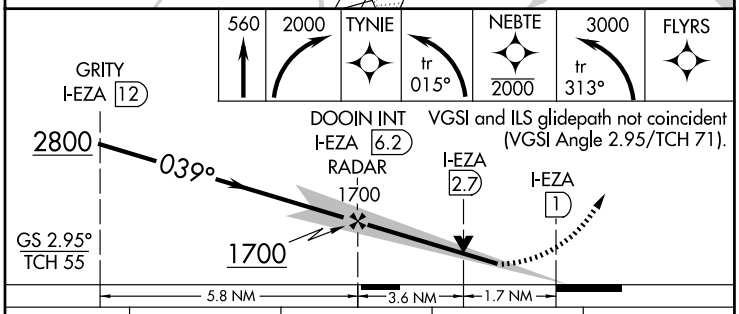
RNP APCH - GPS.
RADAR required.
When Circling to Rwy 29 at night, operational VGSI required, remain on or above VGSI glidepath until threshold. For inop ALS, increase Sidestep 4L Cat C visibility to 1½ SM.

4R ALSF-2 (A) | 4L MALSR (A5)

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.

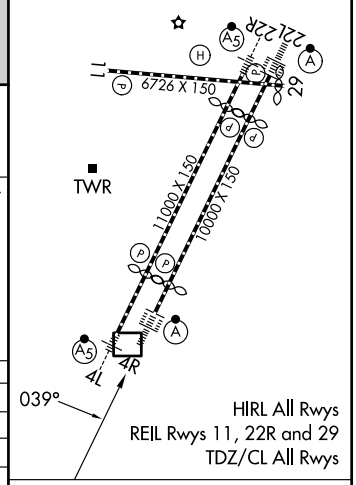
D-ATIS	NEW YORK APP CON	NEWARK TOWER	GND CON	CLNC DEL	CPDLC
115.7 134.825	128.55 379.9	118.3 257.6	121.8	118.85	





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)

ELEV 17 | D | TDZE 4R 11 TDZE 4L 10



FAF to MAP 5.2 NM

Knots	60	90	120	150	180
Min:Sec	5:12	3:28	2:36	2:05	1:44

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	Rwy Ldg	N/A
163°	TDZE	N/A
	Apt Elev	1028

RNAV (GPS)-B
MOOSEHEAD AERO MARINE (52B)

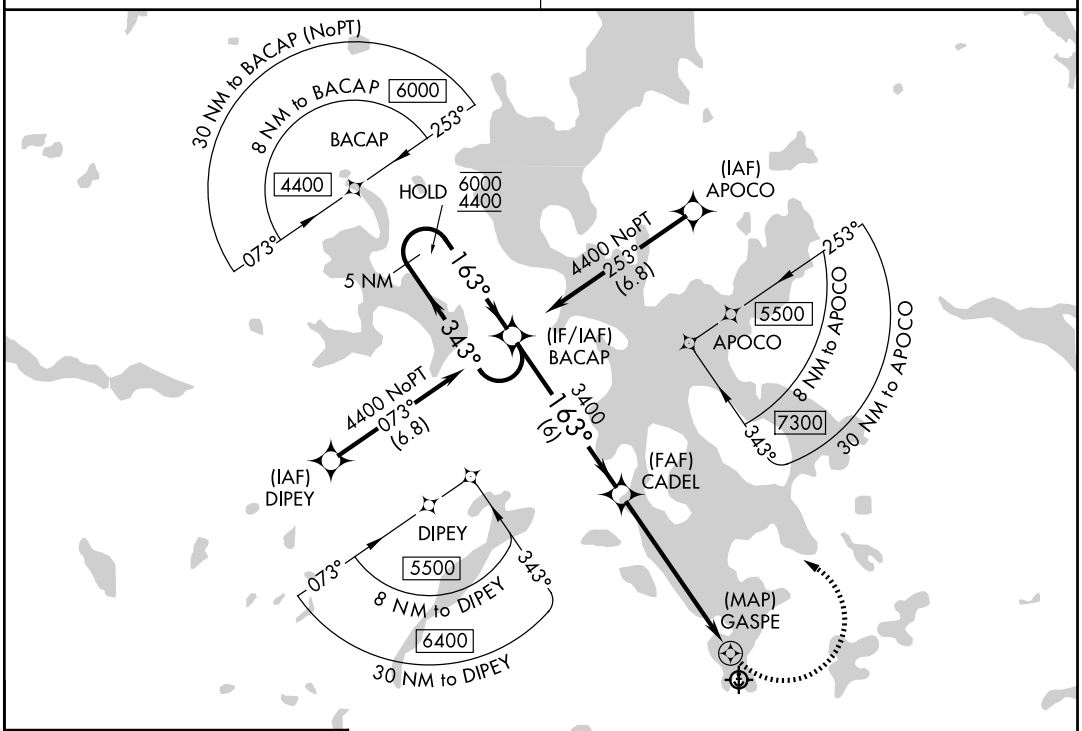
RNP APCH - GPS.

NA
-22°C

Procedure NA at night.

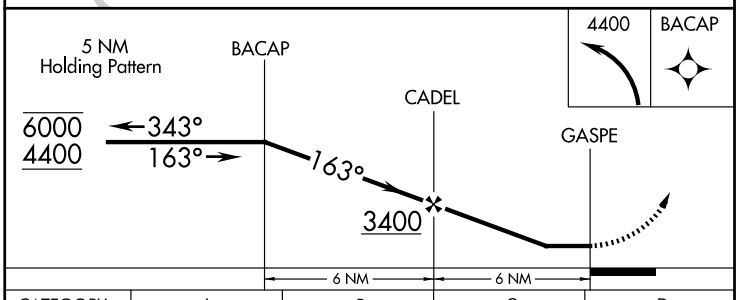
MISSED APPROACH: Climbing left turn to 4400 direct BACAP and hold.

BOSTON CENTER	CTAF
120.25 346.4	122.9



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

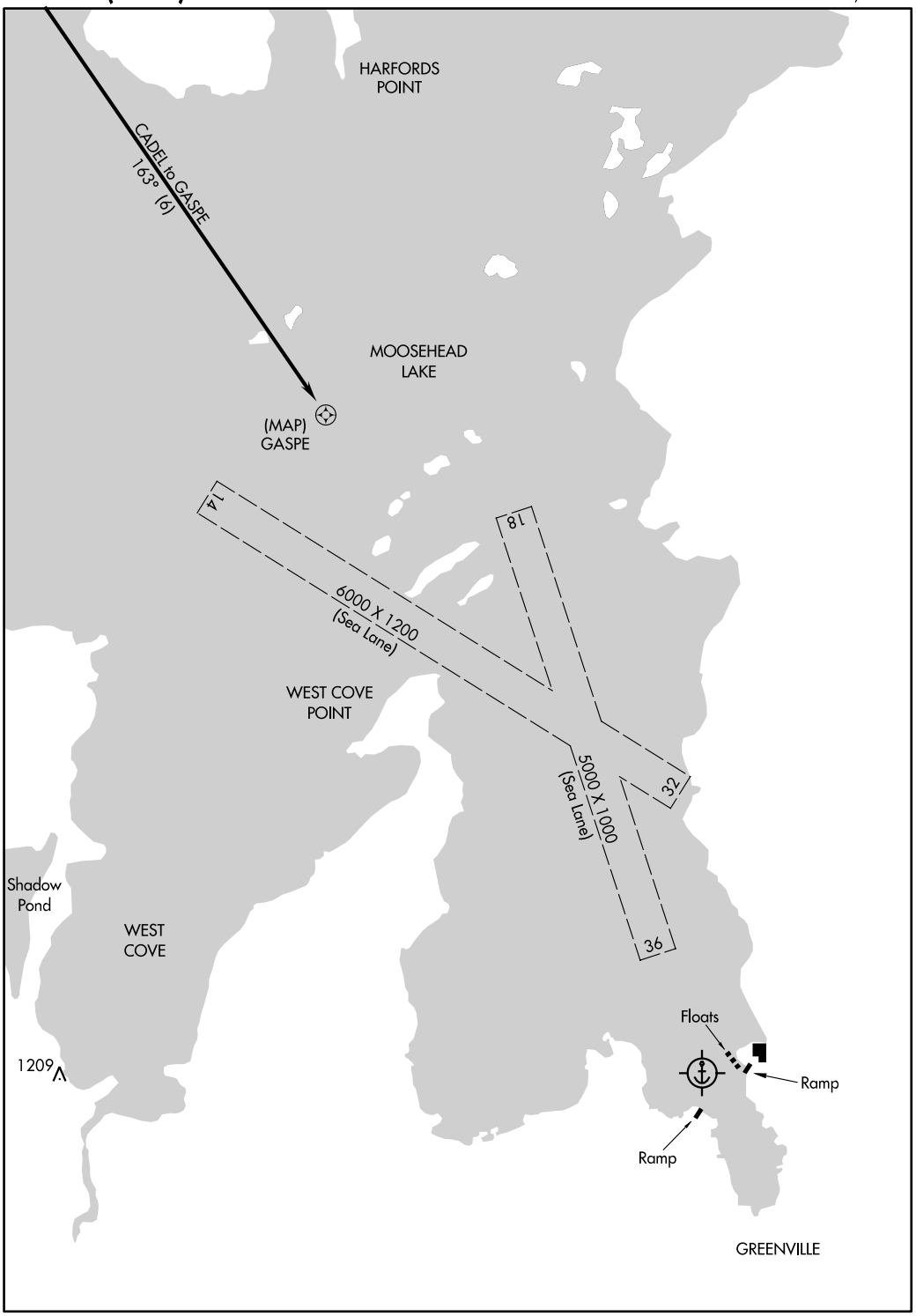
MOOSEHEAD AERO MARINE (52B)
RNAV (GPS)-B

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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