



**Federal Aviation
Administration**

Aeronautical Information Services

Aeronautical Chart User's Guide

Terminal Procedure Publications

Effective as of 30 January 2020

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WHAT'S NEW?

Update as of 30 January 2020

The following charting items have been added to the Online Chart User's Guide since the Guide was last published on 5 December 2019:

VFR CHARTS

Hazardous Inflight Weather Advisory Service (HIWAS) and Transcribed Weather Broadcast (TWEB) Decommissioning and Removal of Symbolology from All VFR Charts

Starting 30 January 2020, HIWAS and TWEB symbolology will be removed from VFR Charts. Charts produced and released prior to the 30 January 2020 effective date will still be in circulation, however, HIWAS, and TWEB services where indicated on those charts will not be available due to the decommissioning of both systems. The removal of all references to both services should be complete by 3 December 2020.

For additional information:

- **Federal Register Notice:** Announcement Titled - *Discontinuation of Hazardous Inflight Weather Advisory Service (HIWAS) in the Contiguous United States*, published on December 9, 2019 (URL: <https://www.federalregister.gov/documents/2019/12/09/2019-26386/discontinuation-of-hazardous-inflight-weather-advisory-service-hiwas-in-the-contiguous-united-states>)
- **FAA Announcement:** Announcement Titled - *TWEB and TIBS in Alaska to Sunset*, published in December 2019 (URL: https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/fs/alaskan/notices/)

IFR ENROUTE CHARTS

Hazardous Inflight Weather Advisory Service (HIWAS) and Transcribed Weather Broadcast (TWEB) Decommissioning

Effective 30 January 2020, HIWAS and TWEB symbolology will be removed from all IFR Enroute High and Low charts.

For additional information:

- **Federal Register Notice:** Announcement Titled - *Discontinuation of Hazardous Inflight Weather Advisory Service (HIWAS) in the Contiguous United States*, published on December 9, 2019 (URL: <https://www.federalregister.gov/documents/2019/12/09/2019-26386/discontinuation-of-hazardous-inflight-weather-advisory-service-hiwas-in-the-contiguous-united-states>)
- **FAA Announcement:** Announcement Titled - *TWEB and TIBS in Alaska to Sunset*, published in December 2019 (URL: https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/fs/alaskan/notices/)

TERMINAL PROCEDURE PUBLICATIONS (TPPS)

No Changes Applied

INTRODUCTION

This Chart User's Guide is an introduction to the Federal Aviation Administration's (FAA) aeronautical charts and publications. It is useful to new pilots as a learning aid, and to experienced pilots as a quick reference guide.

The FAA is the source for all data and information utilized in the publishing of aeronautical charts through authorized publishers for each stage of Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) air navigation including training, planning, and departures, enroute (for low and high altitudes), approaches, and taxiing charts. Digital charts are available online at:

- VFR Charts - https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/vfr/
- IFR Charts - https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/ifr/
- Terminal Procedures Publication - http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/
- Chart Supplements - https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/

Paper copies of the charts are available through an FAA Approved Print Provider. A complete list of current providers is available at http://www.faa.gov/air_traffic/flight_info/aeronav/print_providers/

The FAA Aeronautical Information Manual (AIM) Pilot/Controller Glossary defines in detail, all terms and abbreviations used throughout this publication. Unless otherwise indicated, miles are nautical miles (NM), altitudes indicate feet above Mean Sea Level (MSL), and times used are Coordinated Universal Time (UTC).

The Notices to Airmen Publication (NOTAM) includes current Flight Data Center (FDC) NOTAMs. NOTAMs alert pilots of new regulatory requirements and reflect changes to Standard Instrument Approach Procedures (SIAPs), flight restrictions, and aeronautical chart revisions. This publication is prepared every 28 days by the FAA, and is available by subscription from the Government Printing Office. For more information on subscribing or to access online PDF copy, http://www.faa.gov/air_traffic/publications/notices/

In addition to NOTAMs, the Chart Supplement and the Safety Alerts/Charting Notices page of the Aeronautical Information Services website are also useful to pilots

KEEP YOUR CHARTS CURRENT

Aeronautical information changes rapidly, so it is important that pilots check the effective dates on each aeronautical chart and publication. To avoid danger, it is important to always use current editions and discard obsolete charts and publications.

To confirm that a chart or publication is current, refer to the next scheduled edition date printed on the cover. Pilots should also check Aeronautical Chart Bulletins and NOTAMs for important updates between chart and publication cycles that are essential for safe flight.

EFFECTIVE DATE OF CHART USER'S GUIDE AND UPDATES

All information in this guide is effective as of **30 January 2020**. All graphics used in this guide are for educational purposes. Chart symbology may not be to scale. Please do not use them for flight navigation.

The Chart User's Guide is updated as necessary when there is new chart symbology or changes in the depiction of information and/or symbols on the charts. When there are changes, it will be in accordance with the 56-day aeronautical chart product schedule.

COLOR VARIATION

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

REPORTING CHART DISCREPANCIES

Your experience as a pilot is valuable and your feedback is important. We make every effort to display accurate information on all FAA charts and publications, so we appreciate your input. Please notify us concerning any requests for changes, or potential discrepancies you see while using our charts and related products.

*FAA, Aeronautical Information Services
1305 East-West Highway
SSMC4, Room 3424
Silver Spring, MD 20910-3281*

*Telephone Toll-Free 1-800-638-8972
Aeronautical Inquires: https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/Aeronautical_Inquiries/*

U.S. TERMINAL PROCEDURES PUBLICATION

The U.S. Terminal Procedures Publication (TPPs) includes the Instrument Approach Procedures (IAPs), Departure Procedures (DPs) charts, Standard Terminal Arrival (STAR) charts, Charted Visual Flight Procedure (CVFP) charts, and Airport Diagrams. Also included are Takeoff Minimums, (Obstacle) Departure Procedures, Diverse Vector Area (RADAR Vectors), RADAR and Alternate Minimum textual procedures.

EXPLANATION OF TPP TERMS AND SYMBOLS

The information and examples in this section are based primarily on the IFR (Instrument Flight Rules) Terminal Procedures Publication (TPP). The publication legends list aeronautical symbols with a brief description of what each symbol depicts. This section will provide more detailed information of some of the symbols and how they are used on TPP charts.

FAA Terminal charts are prepared in accordance with specifications of the Interagency Air Committee (IAC) and their supporting technical groups for the purpose of standardization, which are approved by representatives of the Federal Aviation Administration (FAA), and the Department of Defense (DoD).

The Terminal Procedure Publication is made up of the following charts:

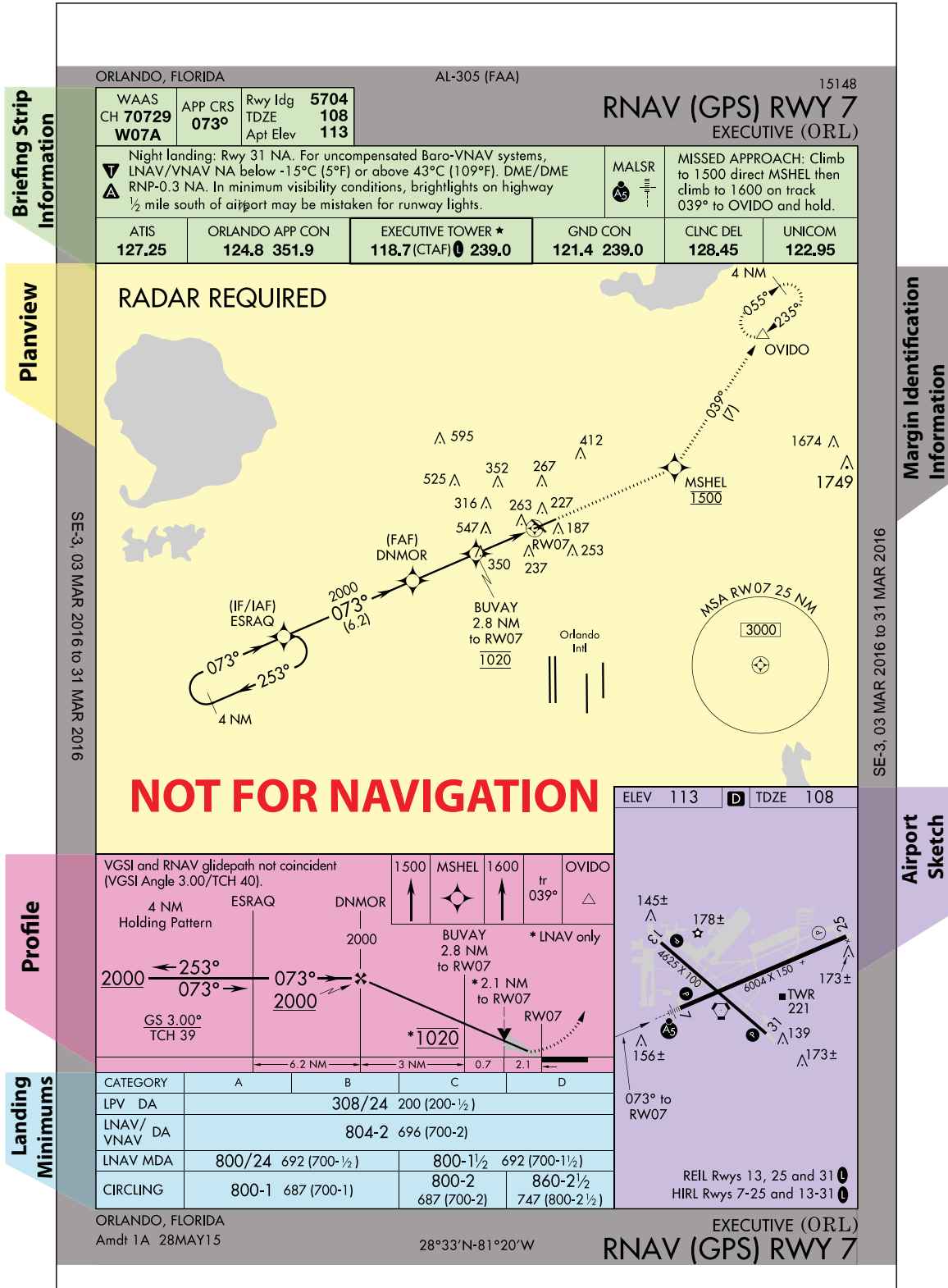
- Instrument Approach Procedure (IAP) Charts
- Airport Diagrams
- Departure Procedures (DP)
- Standard Terminal Arrival (STAR) Charts
- Charted Visual Flight Procedure (CVFP) Charts

INSTRUMENT APPROACH PROCEDURE CHART

The IAPs (charts) are divided into various sections:

Margin Identification Information
Briefing Strip Information
Planview
Missed Approach Information

Profile View
Landing Minimums
Airport Sketch



Margin Identification Information

CITY, STATE

AL-0000 (FAA)

00000

RNAV (GPS) RWY 00

AIRPORT NAME (XXX)

VOL, DD MMM YYYY to DD MMM YYYY

YYY WWW DD of YYY WWW DD 'YY

CITY, STATE

Orig DDMMYY

00°00'N-000°00'W

RNAV (GPS) RWY 00

AIRPORT NAME (XXX)

The margin identification at the top, bottom, and sides of the chart provides information about the airport location, procedure identification, and chart currency. The charts are organized by city first, then airport name and state, with the exception of military charts, which are organized by airport name. Going from the top of the chart, reading from left to right, and going down the chart, Margin Identification Information is organized in the following way.

Top Margin Information:

The city and state with which the airport is associated is located on both the top and bottom margins.

At the center of the top margin is the FAA numbering system. This Approach and Landing (AL) number is followed by the organization responsible for the procedure in parentheses, e.g., AL-18 (FAA), AL-227 (USAF).

WASHINGTON, DC

AL-5326 (FAA)

15344

RNAV (GPS) RWY 34L

MANASSAS RGNL/HARRY P DAVIS FIELD (HEF)

WAAS	APP CRS	Rwy Idg	3715
CH 56239	326°	TDZE	182
W34B		Apt Elev	192

The procedure title is located on both the top and bottom margins. It is derived from the type of navigational facility that is providing the final approach course guidance. The title is abbreviated, e.g. ILS, RNAV, NDB, etc. For airports with parallel runways and simultaneous approach procedures, “L”, “R” or “C” follows the runway number to distinguish between left, right, and center runways.

The airport name is shown on both the top and bottom margins below the procedure title. The airport identifier is shown in parentheses following the airport name. Airports outside the contiguous United States will be shown with the FAA designated identifier followed by the ICAO location identifier.

The Date of Latest Revision is shown on the top margin above the procedure title. The Date of Latest Revision identifies the Julian date the chart was last revised for any reason. The first two digits indicate the year, the last three digits indicate the day of the year (001 to 365/6).

WASHINGTON, DC		AL-5326 (FAA)		15344
WAAS CH 56239 W34B	APP CRS 326°	Rwy Idg TDZE Apt Elev	3715 182 192	RNAV (GPS) RWY 34L MANASSAS RGNL/HARRY P DAVIS FIELD (HEF)

15344
 Year|Day of Year

Side Margin Information:

The side margins show the volume identification, i.e. SW-3, followed by the current issue date and the next issue date, e.g. SW-3, 21 JUL 2016 to 15 SEP 2016.

Bottom Margin Information:

The FAA Procedure Amendment Number, located on the left bottom margin below the City, State, represents the most current amendment of a given procedure. The Procedure Amendment Effective Date represents the AIRAC cycle date on which the procedure amendment was incorporated into the chart. Updates to the amendment number and effective date represent procedural/criteria revisions to the charted procedure, e.g., course, fix, altitude, minima, etc.

Example: Original Procedure Date

WASHINGTON, DC Orig 10DEC15	MANASSAS RGNL/HARRY P DAVIS FIELD (HEF) 38°43'N-77°31'W RNAV (GPS) RWY 34L
--------------------------------	---

Example: Amendment Procedure Date

WASHINGTON D.C. Amdt 1B 28MAY15	MANASSAS RGNL/HARRY P DAVIS FIELD (HEF) 38°43'N-77°31'W RNAV (GPS) RWY 16R
------------------------------------	---

The coordinates for the airport reference point are located at the center of the bottom margin.

BRIEFING STRIP INFORMATION

At the top of every TPP is the Briefing Strip which consists of three stacked strips of information immediately above the planview. Information varies depending upon the type of procedure.

WASHINGTON, DC		AL-443 (FAA)		15288
ILS or LOC/DME RWY 1 RONALD REAGAN WASHINGTON NATIONAL (DCA)				
Top Briefing Strip LOC/DME I-DCA Chan 36 APP CRS 360 Rwy Idg 6869 TDZE 14 Apt Elev 15				
Middle Briefing Strip Circling NA NE of Rwy 1-5-33 Night landing Rwy 4: 1.5 NA For inoperative ALSF-2, increase S-LOC 1 Cats C and D visibility to 1 1/4 mile. MISSED APPROACH: Climb to 420 then climbing left turn to 2100 on DCA VOR/DME R 325 to GTN NDB/INT/DCA 5.9 DME and hold				
Communications Briefing Strip ATIS 132.65 POTOMAC APP CON 119.85 124.2 269.0 (EAST) WASHINGTON INTL TOWER 119.7 237.3 UNICOM 121.1 257.6 CLNC DEL 128.25				

Top Briefing Strip

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

1	2	3
NAVAID Info	APP CRS	Rwy Idg TDZE Apt Elev

- **Box 1: Primary Procedure Navigation Information:** 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 are shown stacked top to bottom. If the primary navigation type is GBAS, then the following information is shown, stacked top to bottom: GBAS, CH NNNN, RPI XXXX. If there is not a primary Navigation Box required, the first box is removed.
- **Box 2: Final Approach Course Information.** The inbound Approach Course (APP CRS) is shown.
- **Box 3: Runway Landing Information:** Stacked top to bottom, the runway landing distance (Rwy Ldg), the Touchdown Zone Elevation (TDZE), and the Airport Elevation (Apt Elev) are shown. Rwy Ldg may not reflect full runway length due to displaced thresholds and shorter declared distances.

Top Briefing Strip Examples:

Ground based NAVAID:

DENVER, COLORADO

LOC/DME I-DZG 111.55 Chan 52 (Y)	APP CRS 082°	Rwy Idg TDZE Apt Elev	12000 5352 5434
--	------------------------	-----------------------------	--

16147
ILS or LOC RWY 7
DENVER INTL (DEN)

RNAV-WAAS:

DENVER, COLORADO

WAAS CH 82628 W16B	APP CRS 173°	Rwy Idg TDZE Apt Elev	16000 5326 5434
--	------------------------	-----------------------------	--

16147
RNAV (GPS) Y RWY 16R
DENVER INTL (DEN)

GBAS:

NEWARK, NEW JERSEY

GBAS CH 22727 G04A	APP CRS 039°	Rwy Idg TDZE Apt Elev	8460 10 17
--	------------------------	-----------------------------	---------------------------------------

AL-285 (FAA)

18256
GLS RWY 4L
NEWARK LIBERTY INTL (EWR)

No Primary NAVAID box:

DENVER, COLORADO

APP CRS 173°	Rwy Idg TDZE Apt Elev	12000 5339 5434
------------------------	-----------------------------	--

16147
RNAV (RNP) Z RWY 17L
DENVER INTL (DEN)

Circling Approach:

ROANOKE, VIRGINIA

VOR ODR 114.9	APP CRS 236°	Rwy Idg TDZE Apt Elev	N/A N/A 1175
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AL-349 (FAA)

16203
VOR/DME-A
ROANOKE-BLACKSBURG RGNL/WOODRUM FIELD (ROA)

Sidestep Procedure:

LOS ANGELES, CALIFORNIA				
LOC/DME I-OSS	APP CRS	Rwy Idg	24R	24L
108.5	251°	TDZE	8925	9483
Chan 22		Apt Elev	120	121
			126	126

AL-237 (FAA)

16315

ILS or LOC RWY 24R
LOS ANGELES INTL (LAX)

Middle Briefing Strip

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



- Box 1: Notes Box:** contains procedure notes, Equipment/Requirements Notes box and Takeoff, Alternate, RADAR, WAAS, and/or Cold Weather indicators (details provided below under Notes Box).
- Box 2: Approach Lighting System Box (when applicable):** shows the approach lighting system name and charting icon. Multiple approach lighting systems may be shown for approaches that have straight-in minimums for parallel runways.
- Box 3: Missed Approach Procedure Text Box:** The full textual description of the missed approach procedure is provided here.

Notes Box

Procedure Equipment Requirements Notes Box

Users will begin to see Performance-Based Navigation (PBN) Requirements and ground-based Equipment Requirements prominently displayed in separate, standardized notes boxes. For procedures with PBN elements, the PBN box will contain the procedure’s navigation specification(s); and, if required: specific sensors or infrastructure needed for the navigation solution; any additional or advanced functional requirements; the minimum Required Navigation Performance (RNP) value and any amplifying remarks. Items listed in this PBN box are REQUIRED. The separate Equipment Requirements Box will list ground-based equipment requirements.






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


On procedures with both PBN elements and ground-based equipment requirements, the PBN requirements box will be listed first.


PBN Requirements Box	From WINRZ, LIBGE: RNAV-1 GPS, RNAV-1GPS from MAP to YARKU.
Equipment Requirements Box	DME required for LOC only.
Standard Procedure Notes Box	▼ Circling to Rwy 25 NA at night. #For inop MALSR increase S-ILS 16R all cats visibility to 2½ SM.

Notes Symbols

Several different symbols may appear within the Notes Box:

-  Non-Standard Takeoff minimums and/or Departure Procedures exist. Refer to Takeoff Minimum, (Obstacle) Departure Procedures, and Diverse Vector Area (RADAR VECTORS) section of the TPP
-  Non-standard IFR alternate minimums exist. Refer to IFR Alternate Airport Minimums section of the TPP.
-  NA Alternate minimums are not authorized due to unmonitored facility or absence of weather reporting service.
-  WAAS (Wide Area Augmentation System)
-  -12°C Cold Temperature Restricted Airport

The negative  within a black square box symbol shown in the Notes section below any “A” or “T” Symbol indicates that outages of the WAAS (Wide Area Augmentation System) 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.

When  -12°C appears in the Notes section below all other symbols it indicates a cold temperature altitude correction is required at that airport when the reported temperature is at or below the published restricted temperature. Advise ATC when altitude correction is made in the intermediate and/or missed approach segment. Reporting corrections to ATC in final segment is not required. See Notices to Airmen Publication (NTAP) Graphic Notices General for complete list of published airports, temperature/s, segments and procedure information.

When “ASR”, “PAR” or “ASR/PAR” appear in the Note section immediately below the “T” and “A” symbols it indicates there are published Radar Instrument Approach Minimums. Where radar is approved for approach control service, it is used not only for radar approaches (Airport Surveillance Radar [ASR] and Precision Approach Radar [PAR]) but is also used to provide vectors in conjunction with published non-radar approaches based on radio NAVAIDs (ILS, VOR, NDB, TACAN). Radar vectors can provide course guidance and expedite traffic to the final approach course of any established IAP or to the traffic pattern for a visual approach.

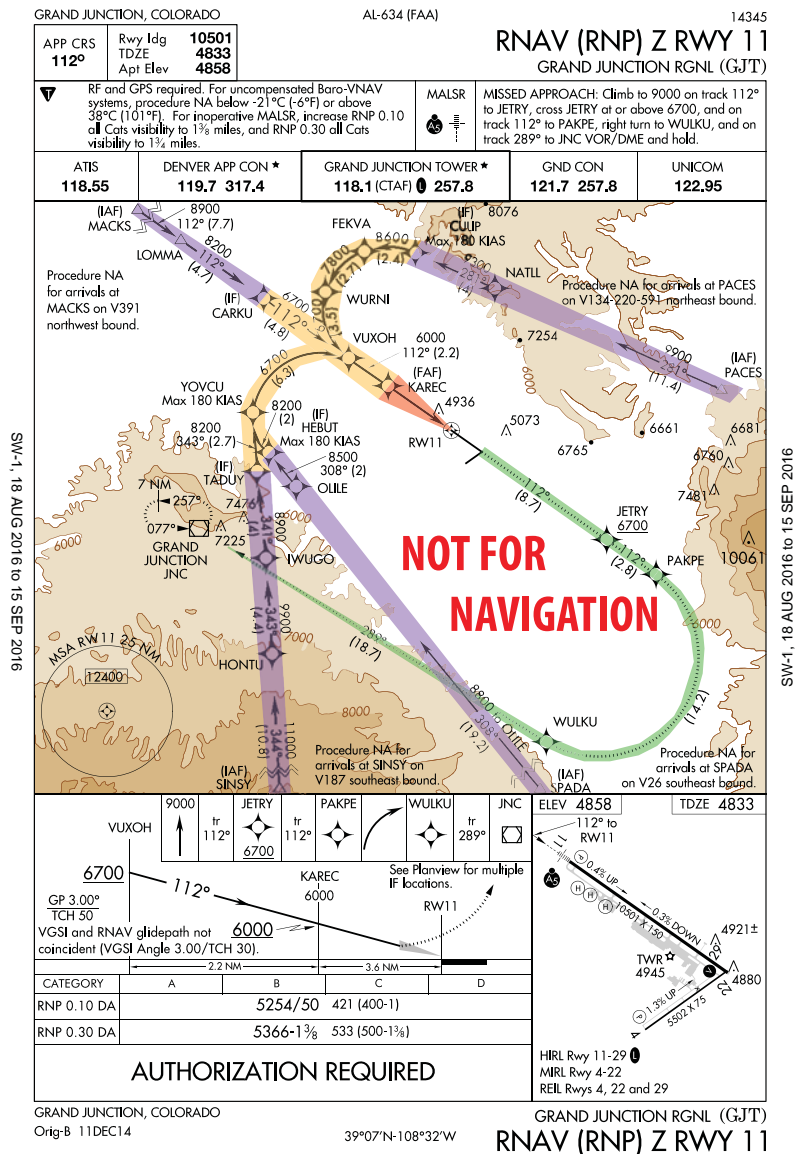
Bottom Briefing Strip (Communications Information)

The communications briefing strip contains communication information when available, in separate boxes, listed from left to right in the order that they would be used during arrival with the tower frequency box bolded:

ATIS XXXXX	APP CON XXXX XXXX	TOWER XXXX XXXX	GND CON XXXXX	CLNC DEL XXXXX	UNICOM XXXXX
----------------------	-----------------------------	----------------------------------	-------------------------	--------------------------	------------------------

- ATIS, AFIS (AK Only) or ASOS/AWOS frequencies (when available, ATIS or AFIS will be the only weather frequency/s published)
- the Approach Control (APP CON) name and frequencies; when the approach service is provided by other than Approach Control, e.g. FSS (Radio), Tower, Center, the appropriate air traffic facility call name is provided.
- the Control Tower (TWR) name and frequencies, to include Precision Radar Monitoring (PRM) and frequency
- Ground Control (GND CON) frequencies
- Clearance Delivery (CLNC DEL) frequencies; where a Control Tower does not exist or is part-time, a remoted CLNC DEL may be listed.
- Controller Pilot Data Link Communication (CPDLC)
- Ground Communications Outlet (GCO) frequency
- Common Traffic Advisory Frequency (CTAF), shown in parentheses when shares a frequency, e.g. UNICOM 122.8 (CTAF)
- UNICOM or AUNICOM frequency

Note: Part-time operations will be annotated with a star. Check Chart Supplement for times of operation.



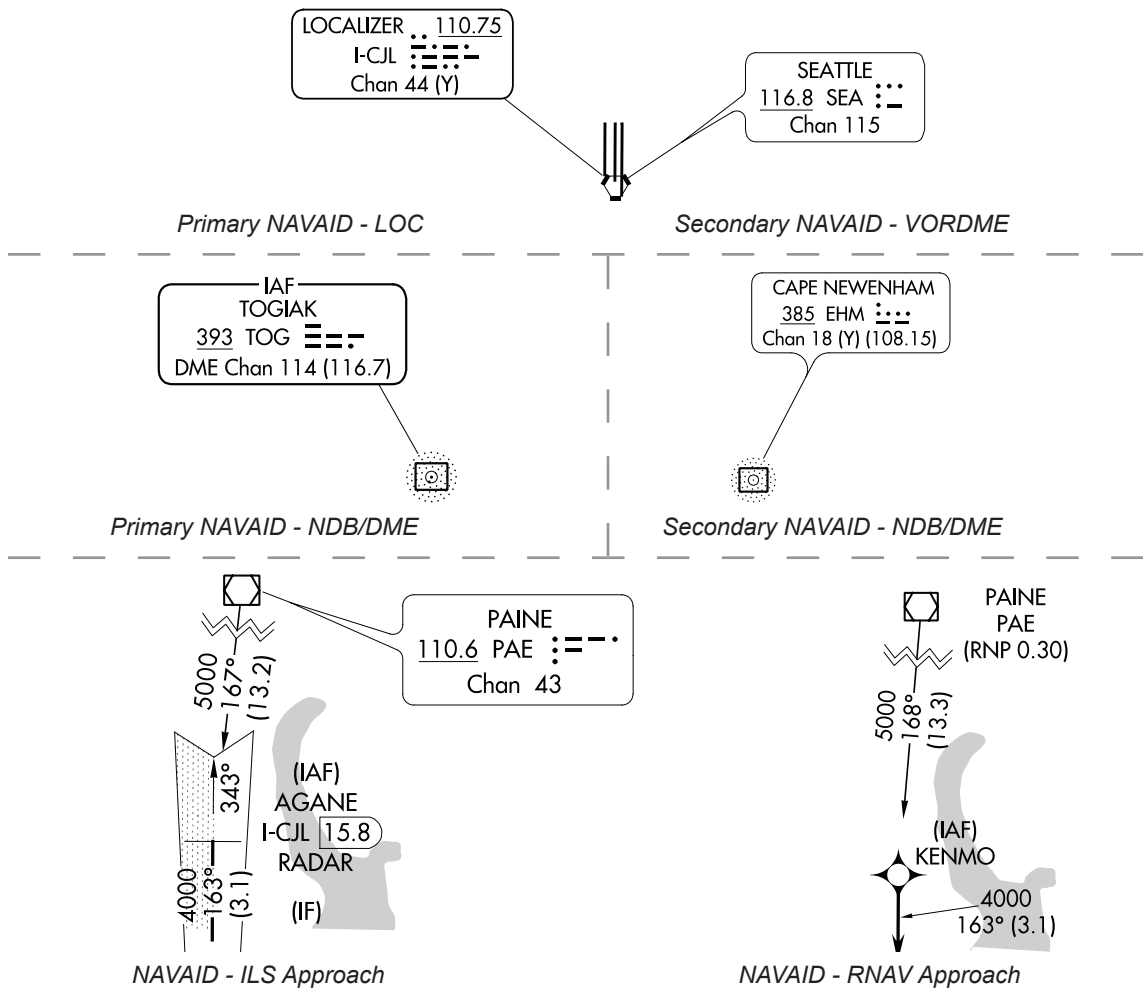
Complex IAP Example with RF Legs

- Feeder Routes** (highlighted in blue - See Simple IAP Example on previous page) may be used to provide a transition from the enroute structure to the IAF.
- Initial Approach** (highlighted in purple in examples above) is the segment between the initial approach fix (IAF) and the intermediate fix (IF) or the point where the aircraft is established on the intermediate course or final approach course.
- Intermediate Approach** (highlighted in yellow in examples above) is the segment between the intermediate fix or point and the final approach fix.
- Final Approach Course** (highlighted in red in the examples above) is the segment between the final approach fix or point and the runway, airport, or missed approach point.
- Missed Approach** (highlighted in green in the example above) begins at the MAP and continues until the designated fix or waypoint. Missed Approach Procedure Track is shown as a hash marked line in the planview. If the missed approach fix falls outside of the area of the planview it will be shown in a separate box in the planview.

NAVAIDS

NAVAIDs used on ground based charts will show the appropriate symbol accompanied by a data box that contains the facility name, frequency, identifier and Morse code. A NAVAID box with a heavy line indicates the primary NAVAID used for the approach.

NAVAIDs used on GPS based charts show the appropriate symbol identified with the name and identifier.



Localizer Depiction

The localizer is depicted in the Planview using the following symbol. The size of the charted localizer symbol does not serve as an indication of the service volume.



Restrictive Airspeeds Along the Procedure Track

Restrictive airspeeds along the procedure track are shown paired with their respective fix/facility.

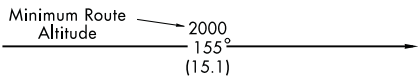
Type	Description	Example
Recommended Speed	Recommended speed is depicted with no lines above or below it	180K
Minimum Speed	Minimum speed is depicted as a number with a line below it	120K
Maximum Speed	Maximum speed is depicted as a number with a line above it	250K
Mandatory Speed	Mandatory speed is depicted as a number with a line above and below it	175K

Altitudes

Restrictive altitudes along the procedure track are shown paired with their respective fix/ facility. Minimum, Maximum, Mandatory and Recommended Altitudes are shown.

Type	Description	Example
Recommended Altitude	Recommended altitude is depicted with no lines above or below it	3000
Minimum Altitude	Minimum altitude is depicted as a number with a line below it	<u>2500</u>
Maximum Altitude	Maximum altitude is depicted as a number with a line above it	<u>4300</u>
Mandatory Altitude	Mandatory altitude is depicted as a number with a line above and below it	<u>5500</u>
Mandatory Block Altitude	Mandatory block altitude is depicted with a minimum and a maximum altitude.	<u>5000</u> <u>3000</u>

Altitudes that are shown along a route are minimum altitudes.

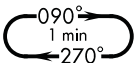


Holding Patterns and Procedure Turns

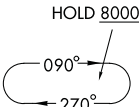
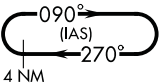
Holding Patterns are used for many reasons, including deteriorating weather or high traffic volume. Holding might also be required following a missed approach. Each holding pattern has a fix, a direction to hold from the fix, and an airway, bearing, course, radial, or route on which the aircraft is to hold. These elements, along with the direction of the turns, define the holding pattern.



Missed Approach



Hold In-Lieu of Procedure Turn

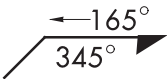


Arrival

If a holding pattern has a non-standard speed restriction, it will be depicted by an icon with the limiting air speed shown inside the holding pattern symbol. These elements, along with the direction of the turns, define the holding pattern. If two types of holds are located at the same point, the procedural holding pattern will be shown in-lieu of arrival or missed approach holding patterns. Timing or distance limits for Hold-in-lieu of Procedure Turn Holding Patterns will be shown.

Waypoints designated as a holding fix are shown as fly-by, without the circle around the symbol. However, in the event the holding fix/waypoint is also designated in some other part of the procedure (i.e., IAF) with a fly-over function, then the holding fix/waypoint will be charted as a fly-over point.

A procedure turn (PT) is the maneuver prescribed to perform a course reversal to establish the aircraft inbound on an intermediate or final approach course. The procedure turn or hold-in-lieu-of procedure turn is a required maneuver when it is depicted on the approach chart. However, the procedure turn or the hold-in-lieu-of PT is not permitted when the symbol “NoPT” is depicted on the initial segment being flown, when a RADAR VECTOR to the final approach course is provided, or when conducting a timed approach from a holding fix. The procedure turn will be shown in the planview and in the profile of the chart.



FAA Chat User's Guide - Terminal Procedures Publication (TPP) - Terms

Hydrography (Water)



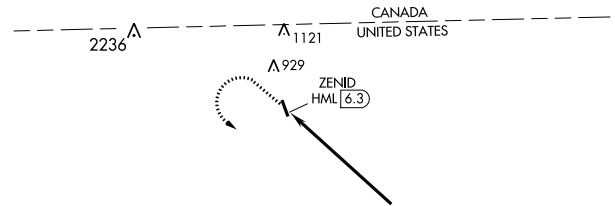
- If the terrain within the planview exceeds 4,000 feet above the airport elevation, or
- If the terrain within a 6.0 nautical mile radius of the Airport Reference Point (ARP) rises to at least 2,000 feet above the airport elevation.

Water Depiction is depicted in grey, in the planview portion of IAPs. See previous example. The following hydrographic features are shown:

- Oceans
- Significant rivers and streams
- Significant lakes - If only one river or one small lake is involved, not located in the immediate airport vicinity, the hydrographic information requirement may be waived.

International Boundary

When the planview includes a boundary of another country the International boundaries are shown by a dashed line. International boundaries are identified with country name within the country area.

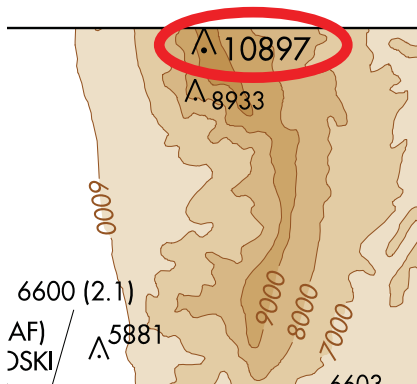


Obstacles (Man-made, Terrain and Vegetation)

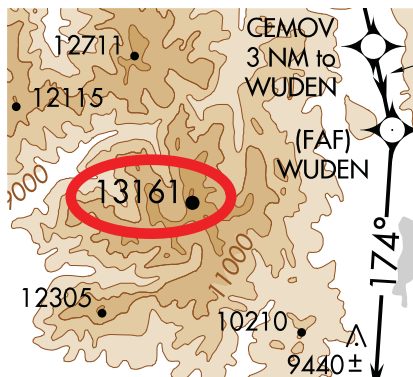
Obstacles are shown as Δ when they are man-made or vegetation or as a \bullet when they are terrain. The highest obstacle, whether man-made or terrain is depicted with a bolder and larger symbol along with larger elevation font size. Any obstacle which penetrates a slope of 67:1 emanating from any point along the centerline of any runway shall be considered for charting within the area shown to scale. Obstacles specifically identified by the approving authority for charting shall be charted regardless of the 67:1 requirement.

Unverified obstacles shall be indicated by a doubtful accuracy symbol \pm following the elevation value.

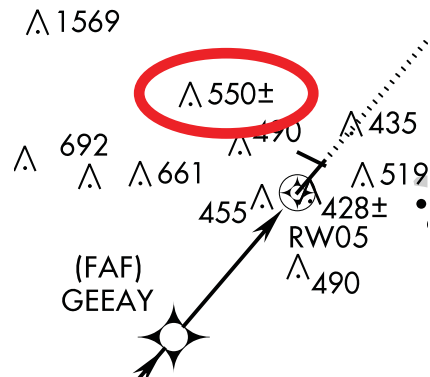
On non-precision approaches, obstacles should be considered when determining where to begin descent from the MDA.



Highest Point - Obstacle



Highest Point - Terrain



Unverified Obstacle - Obstacle

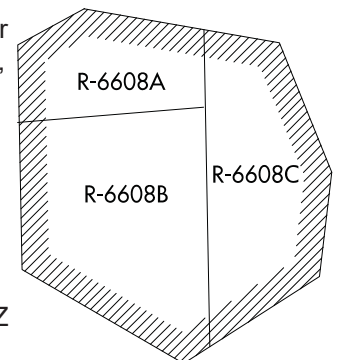
Special Use Airspace (SUA)

SUAs consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both. These are prohibited areas, restricted areas, warning areas, Military Operations Areas (MOAs), and alert areas. SUA that falls within the area of coverage of the instrument approach procedure chart are shown only when designated by the approving authority.

Air Defense Identification Zone (ADIZ)

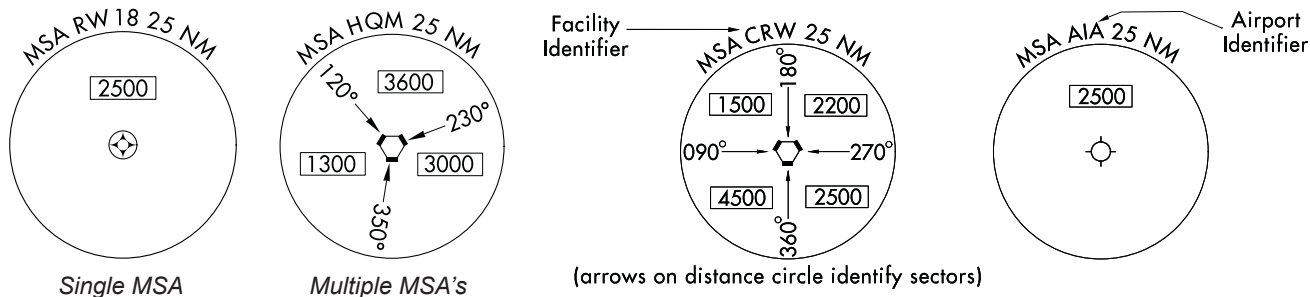
ADIZ is an area of airspace in which the identification, location, and control of aircraft is required in the interest of national security. When designated by the approving authority, ADIZ boundaries that fall within the area of coverage of the chart are shown.

CONTIGUOUS U.S. ADIZ



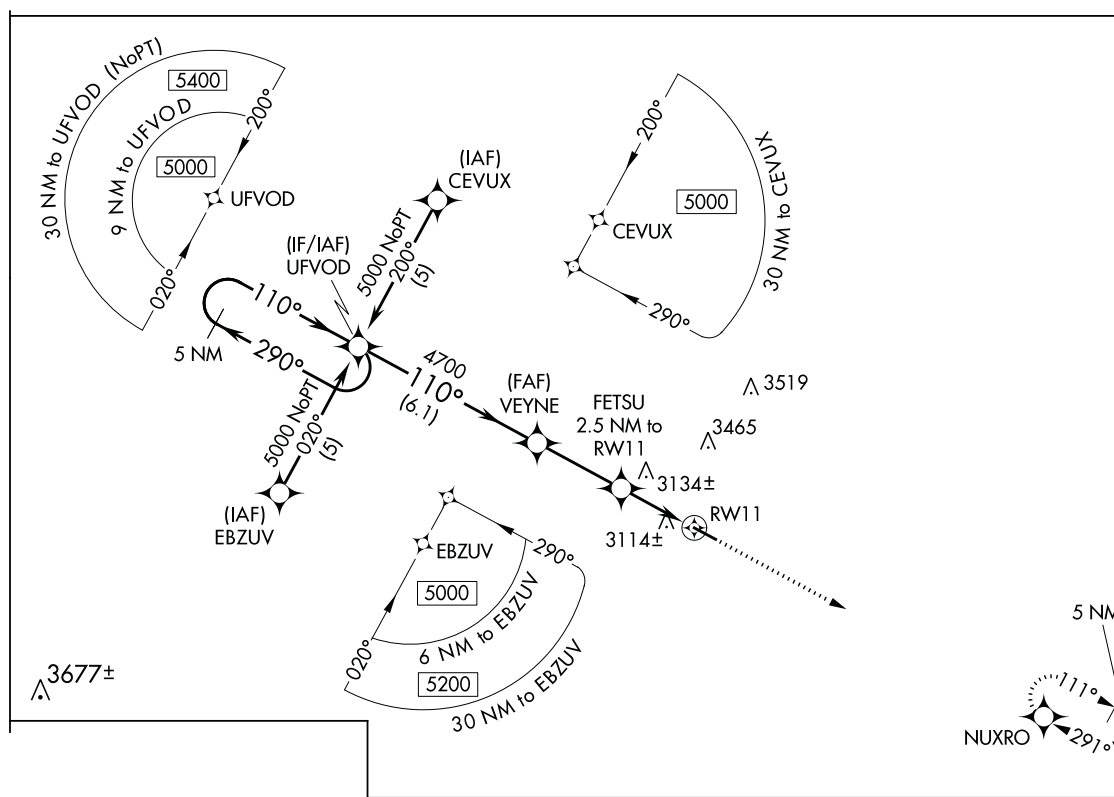
Minimum Safe Altitude (MSA)

MSAs are published for emergency use on IAP charts. MSAs appear in the planview of all IAPs except on approaches for which a Terminal Arrival Area (TAA) is used. The MSA is based on the primary NAVAID, waypoint, or airport reference point on which the IAP is predicated. The MSA depiction on the approach chart contains the identifier of the NAVAID/waypoint/airport used to determine the MSA altitudes. MSAs are expressed in feet above mean sea level and normally have a 25 NM radius; however, this radius may be expanded to 30 NM if necessary to encompass the airport landing surfaces. Ideally, a single sector altitude is established and depicted on the planview of approach charts; however, when necessary to obtain relief from obstructions, the area may be further sectorized and as many as four MSAs established. When established, sectors may be no less than 90° in spread. MSAs provide 1,000 feet clearance over all obstructions but do not necessarily assure acceptable navigation signal coverage.



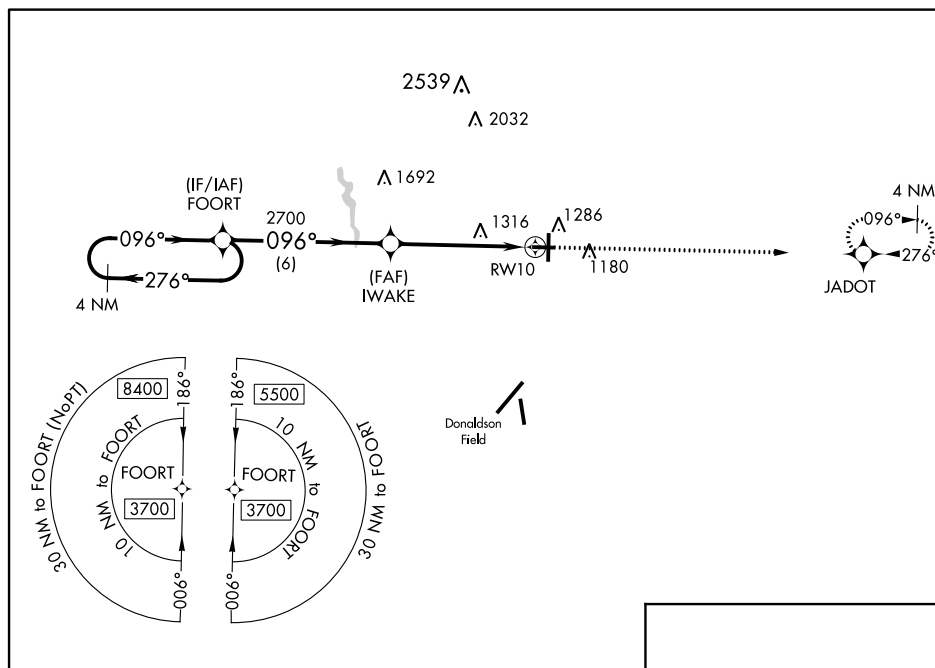
Terminal Arrival Areas (TAAs)

The TAA icons will be positioned in the planview relative to their relationship to the procedure. The icon will not have feeder routes, airways, or radar vectors depicted. The TAA provides a transition from the enroute structure to the terminal environment with little required pilot/air traffic control interface for aircraft equipped with Area Navigation (RNAV) systems. A standard TAA has three areas: straight-in, left base, and right base. The arc boundaries of the three areas of the TAA are published portions of the approach. A TAA provides minimum altitudes with standard obstacle clearance when operating within the TAA boundaries. TAAs are primarily used on RNAV approaches but may be used on an ILS approach when RNAV is the sole means for navigation to the IF; however, they are not normally used in areas of heavy concentration of air traffic.



Example of Standard TAA

Non-standard TAAs may also be published; i.e., one base leg, no base legs.



Example of Non-Standard TAA

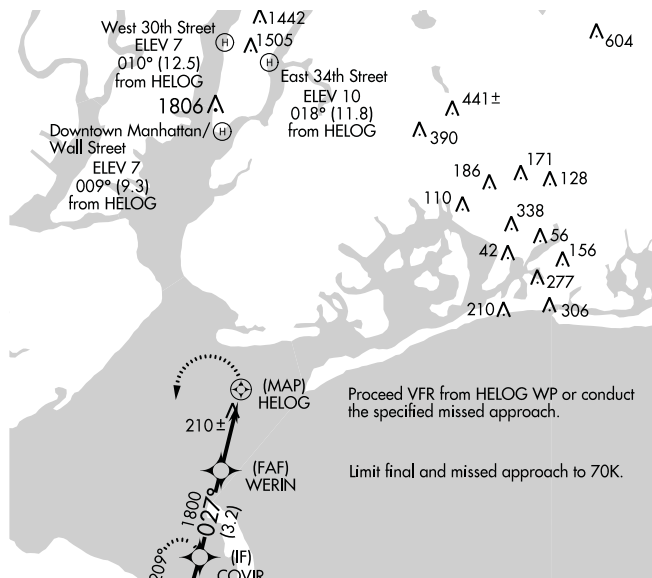
Helicopter (Copter) Procedures

Copter procedures may contain either a visual or a VFR segment. Visual segments are depicted using the dashed line symbol below.



Visual Flight Segment

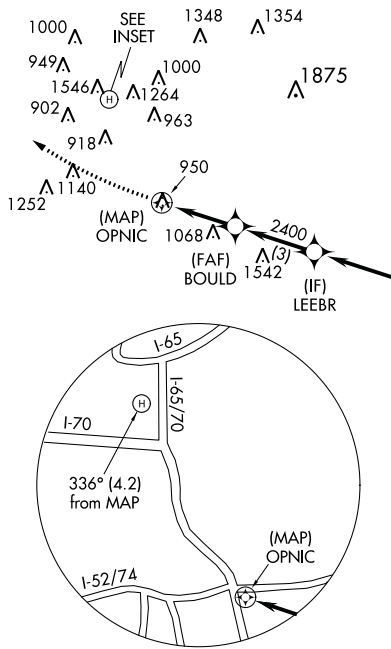
VFR Segments are not depicted with a line, but include the reference bearing and distance information at the endpoint of the VFR Segment, when provided, as shown below.



Example of Copter with VFR Segment (JFK)

When a visual flight path or VFR segment is required from the MAP to the heliport or alighting area, and as necessary for an explicit portrayal, an inset of the MAP area may be provided. This MAP area will depict significant landmark visual features. The procedure track, value and distance to the MAP and the visual segment and value to the landing point shall be shown within this inset. If it is a VFR segment, the reference bearing and distance text will be shown at the landing

point.



Example of Copter with Inset

MISSED APPROACH INFORMATION

Missed approach information is shown in 3 locations on the chart:

- The Middle Briefing Strip - The complete textual missed approach instructions are provided at the top of the approach chart in the middle pilot briefing strip.
- The Planview - The missed approach track is drawn using a thin, hash marked line with a directional arrow. If the missed approach fix is off the chart, the missed approach track shall extend to the chart border.

.....➡
Missed Approach

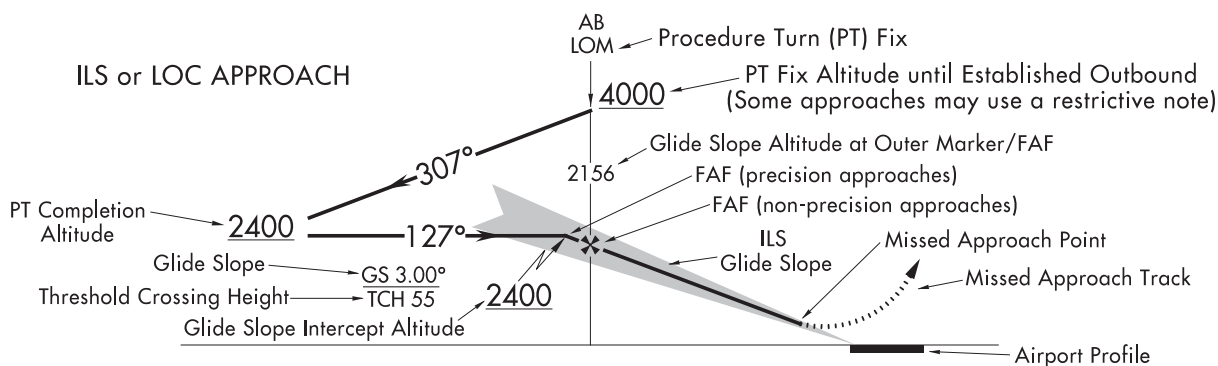
- The Profile Box - Missed Approach Icons will be depicted in the upper left or upper right of the profile box. The Missed Approach Icons are intended to provide quick, at a glance intuitive guidance to the pilot, to supplement the textual missed approach instructions in the briefing strip. Space permitting, all textual missed approach instructions will be graphically depicted in sequence. If space does not permit the depiction of all missed approach icons, only the first four icon boxes will be shown.

Example Missed Approach Icons	Missed Approach Text
<div><div>13000 ↑ RIL R-250</div><div>TEKGU INT RIL 19</div><div>EKR R-179</div><div>WOKPA EKR 44.2</div></div>	MISSED APPROACH: Climb to 13000 on RIL VOR/DME R-250 to TEKGU INT/RIL 19 DME and on EKR VOR/DME R-179 to WOKPA/EKR 44.2 DME and hold, continue climb-in-hold to 13000.
<div><div>8000 ↖ SVC R-128</div><div>Reverse Course</div><div>SVC</div></div>	MISSED APPROACH: Climbing left turn to 8000 via SVC R-128, then reverse course to SVC VOR/DME and hold.
<div><div>9000 ↑ tr 112°</div><div>JETRY 6700</div><div>tr 112°</div><div>PAKPE</div><div>↗</div><div>WULKU</div><div>tr 289°</div><div>JNC</div></div>	MISSED APPROACH: Climb to 9000 on track 112° to JETRY, cross JETRY at or above 6700, and on track 112° to PAKPE, right turn to WULKU, and on track 289° to JNC VOR/DME and hold.

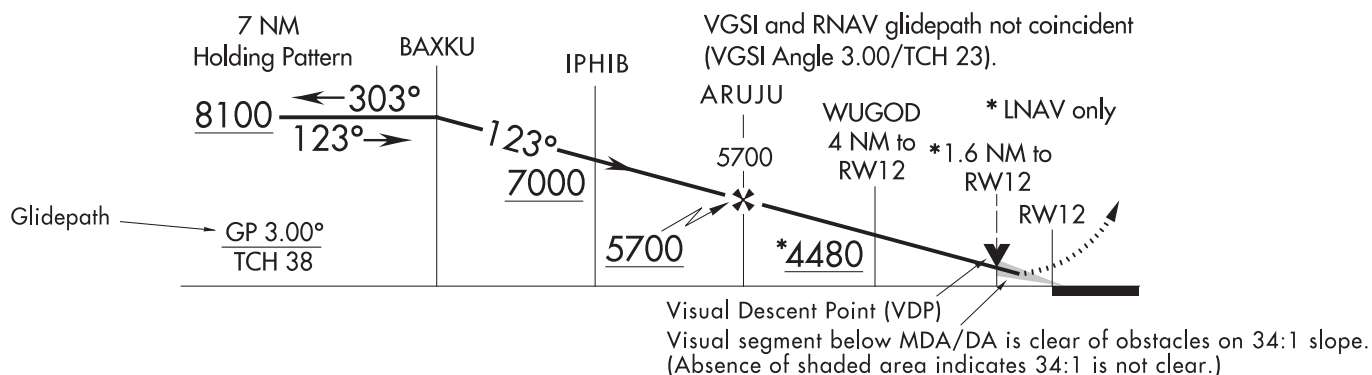
Example Missed Approach Icons	Missed Approach Text
<div> <div>14000 ↑ crs 174°</div> <div>HOMDU ✱</div> <div>160° tr</div> <div>DEVEC ✱</div> <div>160° tr</div> <div>FTI ⬡</div> </div>	MISSED APPROACH: Climb to 14000 via 174° course to HOMDU and via 160° track to DEVEC and 160° track to FTI VORTAC and hold.
<div> <div>5800 ↑</div> <div>10000 ↶ hdg 190°</div> <div>SVC R-193</div> <div>KUNRE △</div> </div>	MISSED APPROACH: Climb to 5800, then climbing left turn to 10000 via heading 190° and SVC VOR/DME R-193 to KUNRE INT/SVC VOR/DME 24.1 DME and hold.

PROFILE VIEW

A profile diagram of the instrument approach procedure is shown below the planview. The published descent profile and graphical depiction of the vertical path using those facilities, intersections, fixes, etc. identified in the procedure to the runway are shown. A profile view of the procedure track is shown. The approach track begins toward the top of the primary facility line, unless otherwise dictated by the procedure, and shall descend to where the final approach ends and the missed approach begins.

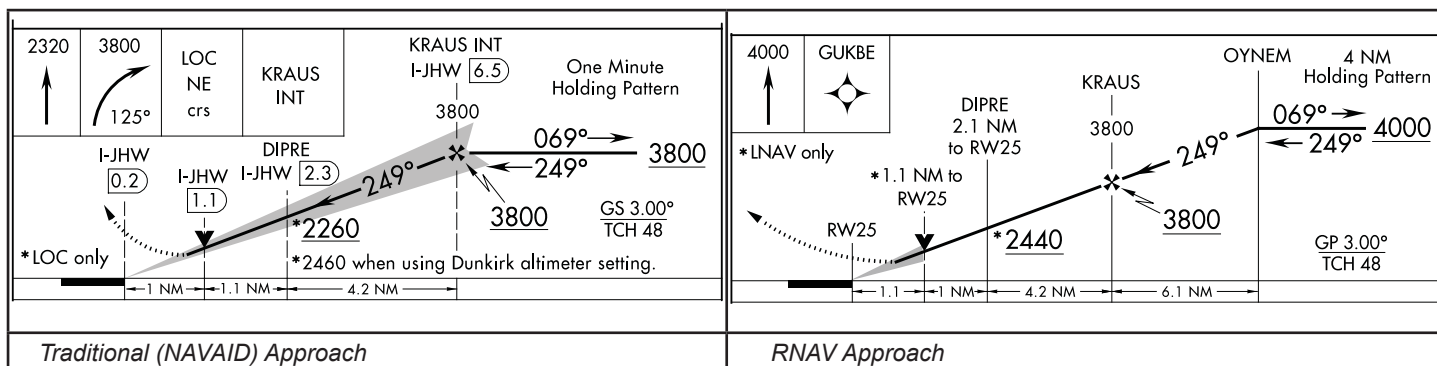


RNAV and GLS PROCEDURES WITH VERTICAL GUIDANCE



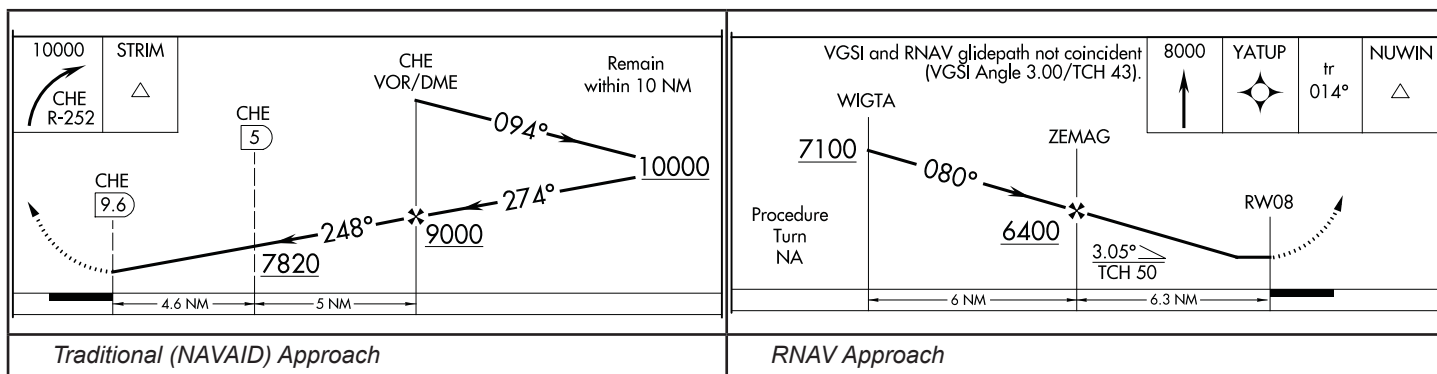
Precision Approaches

On precision approaches, the glideslope (GS) intercept altitude is illustrated by a zigzag line and an altitude. This is the minimum altitude for GS interception after completion of the procedure turn. Precision approach profiles also depict the GS angle of descent, threshold crossing height (TCH) and GS altitude at the outer marker (OM) or designated fix.



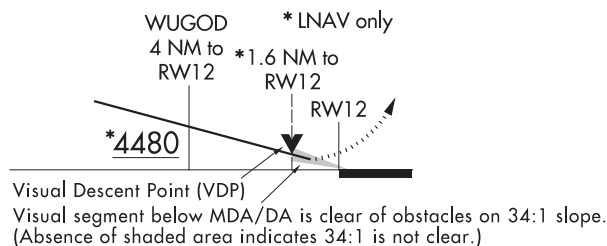
Non-Precision Approaches

On nonprecision approaches, the final segment begins at the Final Approach Fix (FAF) which is identified with the Maltese cross symbol ✕. When no FAF is depicted, the final approach point is the point at which the aircraft is established inbound on the final approach course. Stepdown fixes may also be provided between the FAF and the airport for authorizing a lower minimum descent angle (MDA) and are depicted with the fix or facility name and a dashed line. On RNAV procedures without precision minima i.e., DAs, the approach track descends to the MDA or VDP point, thence horizontally to the missed approach point. On non-RNAV procedures without precision minima, the horizontal segment is shown from the VDP, when it exists, or the MDA when there is no VDP, and a vertical glide angle/TCH is provided.



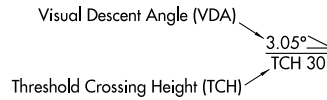
Visual Descent Point (VDP)

The Visual Descent Point (VDP), is shown by a bold letter "V" positioned above the procedure track and centered on the accompanying dashed line. (See example below.) The VDP is a defined point on the final approach course of a non-precision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced.



Visual Descent Angle (VDA) and Threshold Crossing Heights (TCH)

A VDA and TCH may be published on non-precision approaches. For Copter approach procedures, a Heliport Crossing Height (HCH) will be depicted in place of the TCH. The VDA is strictly advisory and provides a means to establish a stabilized descent to the MDA. The presence of a VDA does not guarantee obstacle protection in the visual segment. If there are obstacles in the visual segment that could cause an aircraft to destabilize the approach between MDA and touchdown, the profile will not show a VDA and will instead show a note that states either “Descent Angle NA” or “Descent Angle NA-Obstacles”.

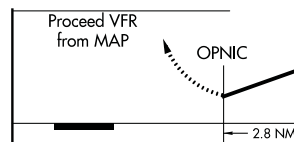


Visual Flight Path

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” on Copter procedures) along with the bearing and distance shall be shown leadered to the visual flight path.

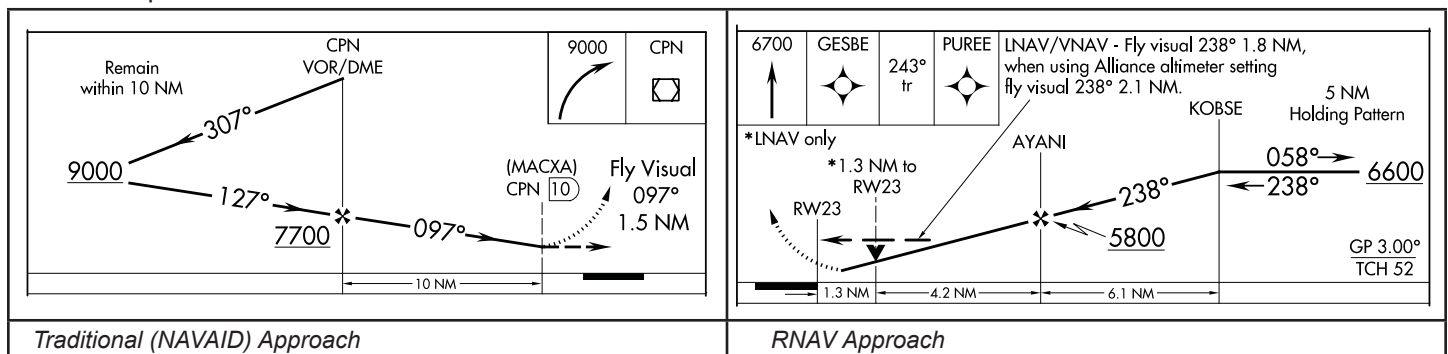
RNAV charts sometimes have visual flight for LNAV/VNAV minima which do not start at the missed approach point. An additional note indicating “LNAV/VNAV” will be placed above the note.

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.



Copter VFR Segment

Chart Examples



ILS Glide Slope and RNAV Glidepath

A note providing the glide slope (GS) or glidepath (GP) angle and the threshold crossing height (TCH), are positioned in the lower half of the profile box

- GS will be shown on all ILS procedures.
- GP will be shown GLS procedures and all RNAV procedures with a published decision altitude

Threshold Crossing Height (TCH) has been traditionally used in “precision” approaches as the height of the glide slope above threshold. With publication of LNAV/VNAV minimums and RNAV descent angles, including graphically depicted descent profiles, TCH also applies to the height of the “descent angle,” or glidepath, at the threshold.

34:1 Surface Clear Stipple Symbol

On RNAV approach charts, a small shaded arrowhead shaped symbol from the end of the VDA to the runway indicates that the 34:1 Obstacle Clearance Surface (OCS) for the visual segments is clear of obstacles. (See example in VDP Section.)

LANDING MINIMUMS

The landing minimums section is positioned directly below the profile. This section gives the pilot the lowest altitude and visibility requirements for the approach. There are two types of landing minimums: Straight-in landing or Circling. Straight-in landing minimums are the MDA and visibility, or DH and visibility, required for a straight-in landing on a specified runway. Circling minimums are the MDA and visibility required for the circle-to-land maneuver.

The minimums for straight-in and circling are located under each aircraft category. When there is not a division line between minimums for each category, the minimums apply to two or more categories.

LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.

CATEGORY	A	B	C	D
S-ILS 27	1352/24		200 (200-½)	
S-LOC 27	1440/24	288	(300-½)	1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)

COPTER MINIMA ONLY

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

Annotations:

- DA:** Decision Altitude
- Visibility (RVR 100's of feet):** 24, 288, 461, 561
- Aircraft Approach Category HAT/HATh:** A, B, C, D
- MDA:** Minimum Descent Altitude
- HAA:** Height Above Airports
- Visibility in Statute Miles:** 361, 461, 561
- Copter Approach Direction:** H-176°
- Height of MDA/DA Above Landing Area (HAL):** 680-½, 363
- No circling minimums are provided**
- All weather minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.**

Additional Labels:

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

A second category of straight-in minimums called "sidestep" may be depicted where parallel runways exist.

CATEGORY	A	B	C	D
S-ILS 24R	320/18 200 (200-½)			
S-LOC 24R	460/24 340 (400-½)			460/40 340 (400-¾)
SIDESTEP RWY 24L	580/50 459 (500-1)			580-1½ 459 (500-1½)

The terms used to describe the minimum approach altitudes differ between precision and nonprecision approaches. Precision approaches use DH, which is referenced to the height above touchdown elevation (HAT). Nonprecision approaches use MDA, referenced to "feet MSL." The MDA is also referenced to HAT for straight-in approaches, or height above airport (HAA) for circling approaches. The figures listed parenthetically are for military operations and are not used in civil aviation.

The visibility values are shown after the DA/DH or MDA. They are provided in statute miles or runway visual range (RVR). RVR is reported in hundreds of feet. If the visibility is in statute miles, there is an altitude number, hyphen, whole or fractional number, e.g. 530-1. This indicates 530 feet MSL and 1 statute mile of visibility. The RVR value is separated from the minimum altitude with a slash, e.g., 1540/24. This indicates 1540 feet MSL and RVR of 2400 feet. When an RVR value is shown, the comparable statute mile equivalent is shown within the military minimums in parentheses as shown in the examples above. This value is determined from the Comparable Values of RVR and Visibility table located in the TPP Legend.

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	$\frac{1}{4}$	2400	$\frac{1}{2}$	3500	$\frac{3}{8}$	5500	1
1800	$\frac{1}{2}$	2600	$\frac{1}{2}$	4000	$\frac{3}{4}$	6000	$1\frac{1}{4}$
2000	$\frac{1}{2}$	3000	$\frac{3}{8}$	4500	$\frac{7}{8}$		
2200	$\frac{1}{2}$	3200	$\frac{3}{8}$	5000	1		

When a reference mark (*, **, #, etc.) is shown on a line of minimums, the qualifying footnote is provided in the notes section.

FALMOUTH, MASSACHUSETTS

AL-10362 (FAA)

17061

LOC/DME I-BNX
110.75
Chan 44(Y)

APP CRS
322°

Rwy Idg
TDZE
Apt Elev

9501
116
130

ILS or LOC RWY 32

CAPE COD COAST GUARD AIR STATION (F'MH)

Circling NA northeast of Rwy 14 and northwest of Rwy 23.
*RVR 1800 authorized with use of FD or AP or HUD to DA.

MALSR

MISSED APPROACH: Climb to 1400 then climbing left turn to 2000 on heading 112° and I-BNX localizer SE course to HAGTU INT/I-BNX 6.6 DME and hold.

ATIS
120.475 236.825

CAPE APP CON ★
284.6

COAST GUARD TOWER
128.425

GND CON
124.15 275.8

ELEV 130

TDZE 116

1400

2000

hdg 112°

I-BNX SE crs

HAGTU INT

HAGTU INT I-BNX 6.6

MVY 15

One Minute Holding Pattern

1700

142°

322°

1700

GS 3.00°

TCH 50

REIL Rwy 5 and 14

HIRL Rwy 5-23 and 14-32

FAF to MAP 4.2 NM

TWR 214

☆ 269

322° 4.8 NM from FAF

Category	A	B	C	D
S-ILS 32 *	316/24 200 (200- $\frac{1}{2}$)			
S-LOC 32	520/24 404 (400- $\frac{1}{2}$)		520/40 404 (400- $\frac{3}{4}$)	
CIRCLING	580-1 450 (500-1)	640-1 510 (600-1)	640-1 $\frac{1}{2}$ 510 (600-1 $\frac{1}{2}$)	680-2 550 (600-2)

FALMOUTH, MASSACHUSETTS

CAPE COD COAST GUARD AIR STATION (F'MH)

Amdt 1B 21JUL16

41°40'N-70°31'W

ILS or LOC RWY 32

30

Circling Minimums

There was a change to the TERPS criteria in 2012 that affects circling area dimension by expanding the areas to provide improved obstacle protection. To indicate that the new criteria had been applied to a given procedure, a **C** is placed on the circling line of minimums. The new circling tables and explanatory information is located in the Legend of the TPP.

The approaches using standard circling approach areas can be identified by the absence of the **C** on the circling line of minima.

CATEGORY	A	B	C	D
LPV DA	308/24 200 (200-½)			
LNAV/DA VNAV	804-2 696 (700-2)			
LNAV MDA	800/24 692 (700-½)	800-1½ 692 (700-1½)		
CIRCLING	800-1 687 (700-1)	800-2 687 (700-2)	860-2½ 747 (800-2½)	

Apply Standard Circling Approach Maneuvering Radius Table

CATEGORY	A	B	C	D
C CIRCLING	9120-1¼ 1709 (1800-1¼)	9120-1½ 1709 (1800-1½)	9260-3 1849 (1900-3)	NA

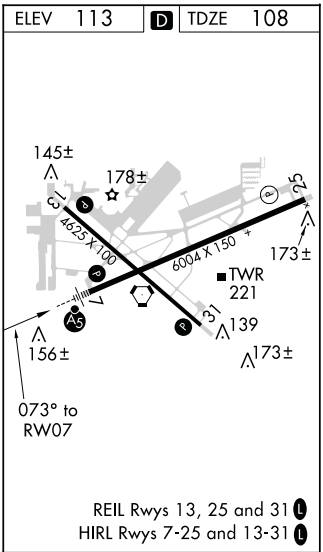
Apply Expanded Circling Approach Maneuvering Airspace Radius Table

AIRPORT SKETCH

The airport sketch is a depiction of the airport with emphasis on runway pattern and related information, positioned in either the lower left or lower right corner of the chart to aid pilot recognition of the airport from the air and to provide some information to aid on ground navigation of the airport. The runways are drawn to scale and oriented to true north. Runway dimensions (length and width) are shown for all active runways.

Runway(s) are depicted based on what type and construction of the runway.

Hard Surface	Other Than Hard Surface	Metal Surface	Closed Runway	Under Construction
Stopways, Taxiways, Parking Areas	Displaced Threshold	Closed Pavement	Water Runway	



Taxiways and aprons are shaded grey. Other runway features that may be shown are runway numbers, runway dimensions, runway slope, arresting gear, and displaced threshold.

Other information concerning lighting, final approach bearings, airport beacon, obstacles, control tower, NAVAIDs, helipads may also be shown.

Airport Elevation and Touchdown Zone Elevation

The airport elevation is shown enclosed within a box in the upper left corner of the sketch box and the touchdown zone elevation (TDZE) is shown in the upper right corner of the sketch box. The airport elevation is the highest point of an airport's usable runways measured in feet from mean sea level. The TDZE is the highest elevation in the first 3,000 feet of the landing surface. Circling only approaches will not show a TDZE.

Runway Declared Distance Information

Runway declared distance information when available will be indicated by **D** and is shown to the right of the airport elevation in the sketch box. Declared distances for a runway represent the maximum distances available and suitable for meeting takeoff and landing distance performance requirements.

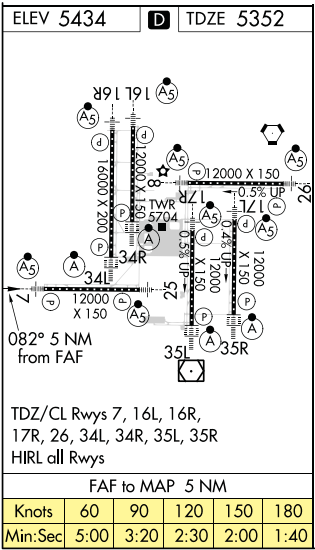
Runway Lights

Notes regarding approach lighting systems are shown at the bottom of the sketch box. Runway lights (HIRL) (MIRL) (LIRL) (TDZL)(TDZ/CL) shall be indicated by a note, e.g. HIRL Rwy 9-27.

Other approach lighting is shown on the airport sketch as a symbol on the side of the runway where they are actually located. Symbols that are shown in negative indicate pilot-controlled lighting.

Runway centerline lights (CL) are installed on some precision approach runways to facilitate landing under adverse visibility conditions. They are located along the runway centerline and are spaced at 50 foot intervals. Runways with CL are shown in a negative dot pattern through the middle of the solid runway as illustrated in the airport sketch to right.

Runway centerline lights will be indicated by a note only when paired with TDZL, e.g., TDZ/CL Rwys 6 and 24.



Time/Distance Table

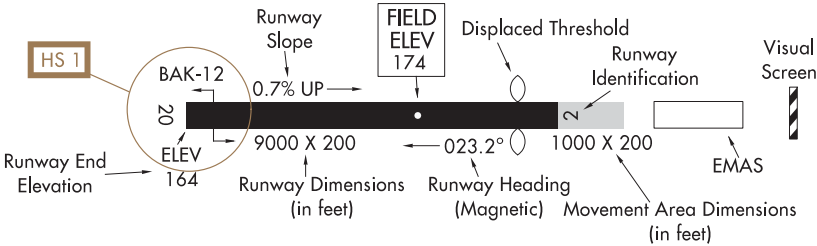
When applicable, a Time/Distance Table is provided below the airport sketch. The table provides the distance and time that is required from the final approach fix to the missed approach point for select groundspeeds.

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.

AIRPORT DIAGRAMS

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 for use in approach and landing or departure operations. An airport diagram assists pilots in identifying their location on the airport, thus reducing requests for “progressive taxi instructions” from controllers.



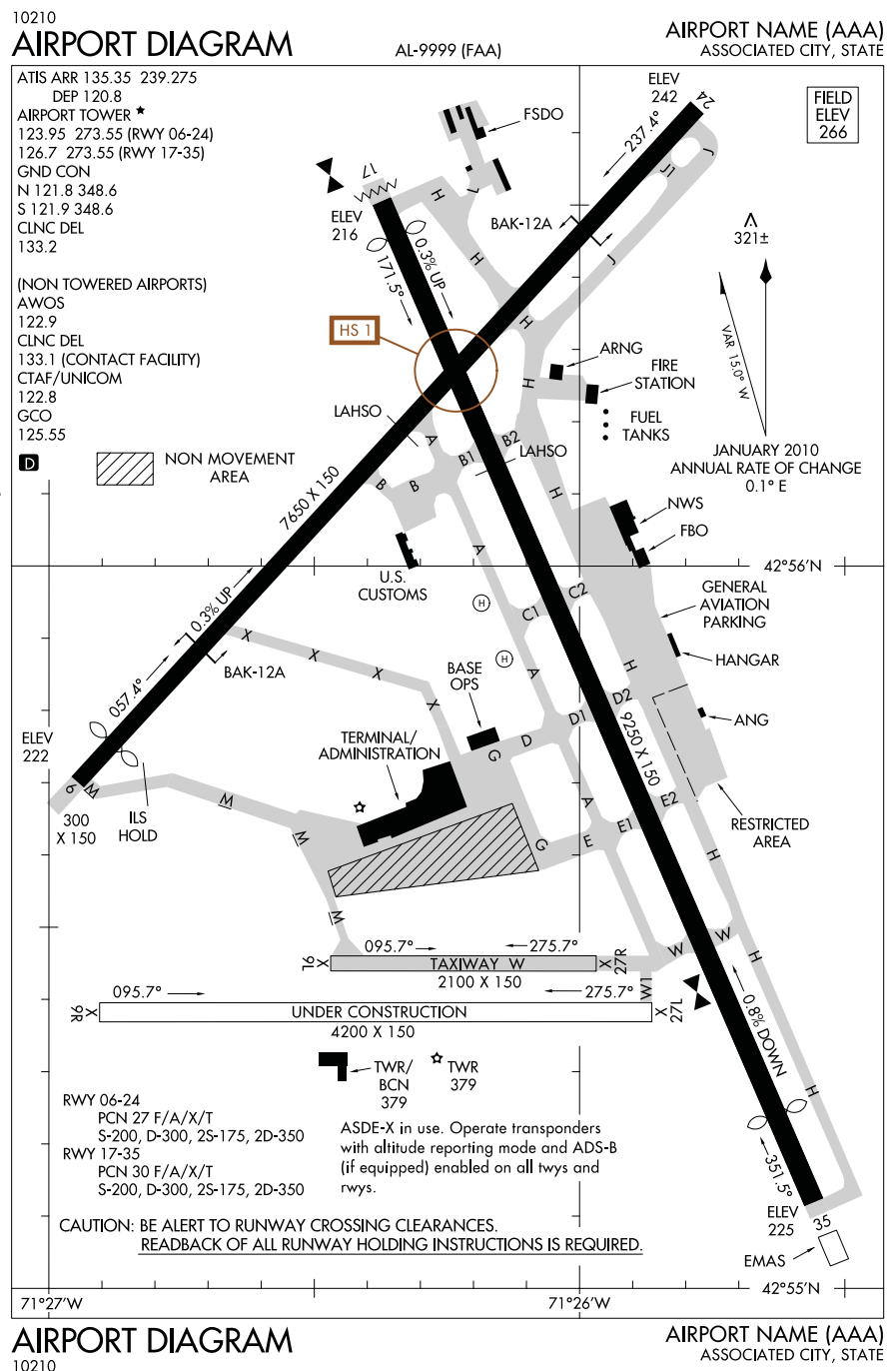
Airport Diagram Features:

1. Runways

- a. complete with magnetic headings (including magnetic variation and epoch year) and identifiers.
- b. Runways under construction shall also be shown.
- c. Runway dimensions, displaced thresholds, runway end elevations.
- d. Runway surface composition
- e. Weight bearing capacity (landing gear configuration or Pavement Classification Number)
- f. Land and Hold Short (LAHSO) lines, ILS hold lines, Localizer/Glide Slope Critical Areas.
- g. Arresting Gear. To include Engineered Materials Arresting System (EMAS).










- Taxiways, with identifiers. Taxiways under construction shall also be shown.
- Hot Spot locations.
- Parking areas, run-up pads, alert areas, landing pads, "Non-Movement" areas (where pilot is NOT under air traffic control), ramps, aprons and hold pads.
- Turnarounds, blast pads, stopways, overruns, and clearways (include dimensions when known).
- Large tanks, including fueling area.
- Control towers (include tower height).
- Airport beacon.
- Helicopter pads.
- Radar reflectors.
- Highest obstruction within diagram boundary.
- Any building that pilot can taxi to. Other buildings to include terminal/administration and Base operations, fire station, NWS, AFSS, FAA, FSDO, ANG, USCG, FBO.
- Comm Frequencies.

Note: Star when used in the Comm
Frequencies indicates part-time status.
Check Chart Supplement for times of
operation.



Runway Construction

Runway construction is depicted as follows:

Hard Surface	Other Than Hard Surface	Metal Surface	Closed Runway	Under Construction
				
Stopways, Taxiways, Parking Areas	Displaced Threshold	Closed Pavement	Water Runway	
				

Hot Spots

Hot Spots (HS) are a runway safety related problem area or intersection on an airport. Typically it is a complex or confusing taxiway/taxiway or taxiway/runway intersection. A confusing condition may be compounded by a miscommunication between a controller and a pilot, and may cause an aircraft separation standard to be compromised. The area may have a history of surface incidents or the potential for surface incidents.

Hot Spots are indicated on the Airport Diagram with a brown open circle or polygon leadered to a Hot Spot number, e.g., HS 1. The number corresponds to a listing and description on the Hot Spot page in the front the TPP. More information and location of Hot Spots can be found at http://www.faa.gov/airports/runway_safety/hotspots/hotspots_list/.

DEPARTURE PROCEDURES (DPs)

Departure Procedures (DPs) are 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. There are two types of DPs: Obstacle Departure Procedures (ODPs), printed either textually or graphically and Standard Instrument Departures (SIDs), always printed graphically. SIDs are primarily designed for system enhancement and to reduce pilot/controller workload, and require ATC clearance. ODPs provide obstruction clearance via the least onerous route from the terminal area and may be flown without ATC clearance. All DPs provide the pilot with a safe departure from the airport and transition to the enroute structure.

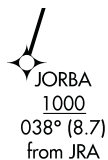
Generally, DP charts are depicted “not to scale” due to the great distances involved on some procedures or route segments. A “to scale” portrayal may be used if readability is assured.

The DP will show the departure routing, including transitions to the appropriate enroute structure. All routes, turns, altitudes, NAVAIDs, facilities forming intersections and fixes, and those facilities terminating the departure route are shown. A textual description of the departure procedure is also provided. For RNAV DPs, the transition text consists of the transition name and associated computer code. On non-RNAV DPs, the transition text will also include the description of all turns, altitudes, radials, bearings and facilities/fixes needed to guide the user from the common departure point to the terminating facility fix.

Copter DPs may also include a visual or VFR segment. Visual segments are depicted using the dashed line symbol below.



VFR Segments are not depicted with a line, but include the reference bearing and distance information at the endpoint of the VFR Segment, when provided, as shown below.



(H)

Example of Copter with VFR Segment

STANDARD TERMINAL ARRIVAL (STARs) CHARTS

STARs are pre-planned Instrument Flight Rule (IFR) air traffic control arrival procedures for pilot use in graphic and/or textual form. STARs depict prescribed routes to transition the aircraft from the enroute structure to a fix in the terminal area from which an instrument approach can be conducted. STARs reduce pilot/controller workload and air-ground communications, minimizing error potential in delivery and receipt of clearances.

STAR charts generally shall be depicted 'not to scale' due to the great distances involved on many procedures and route segments. A 'to scale' depiction may be used only if readability is assured.

The STAR will show the arrival routing, including transitions from the appropriate enroute structure. All routes, turns, altitudes, NAVAIDs, facilities forming intersections and fixes, and those facilities/fixes terminating or beginning the arrival route shall be shown in the graphic depiction. A textual description of the arrival procedure is also provided. For RNAV STARs, transition text will consist of the transition name and associated computer code. For non-RNAV STARs, the transition text will also include a description of all turns, altitudes, radials, bearings and facilities/fixes needed to guide the user from the entry point to the common facility/fix.

CHARTED VISUAL FLIGHT PROCEDURE (CVFP) CHARTS

CVFPs are charted visual approaches established for environmental/noise considerations, and/or when necessary for the safety and efficiency of air traffic operations. The approach charts depict prominent landmarks, courses, and recommended altitudes to specific runways. CVFPs are designed to be used primarily for turbojet aircraft. CVFPs are not instrument approaches and do not have missed approach segments.

CVFPs are 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. The CVFP charts are divided into planview and notes sections separated by a bar scale in 1 NM increments. The planview of the CVFP includes the portrayal of visual approach procedures information, such as landmarks, NAVAIDs, visual track, hydrography, special use airspace and cultural features, as applicable.

CVFPs originate at or near, and are designed around, prominent visual landmarks and typically do not extend beyond 15 flight path miles from the landing runway. Visual tracks start at a geographical point or landmark where the procedure must be flown visually to the airport. The visual track is indicated by a dashed line. Visual tracks may include the track value, distance and minimum or recommended altitudes.

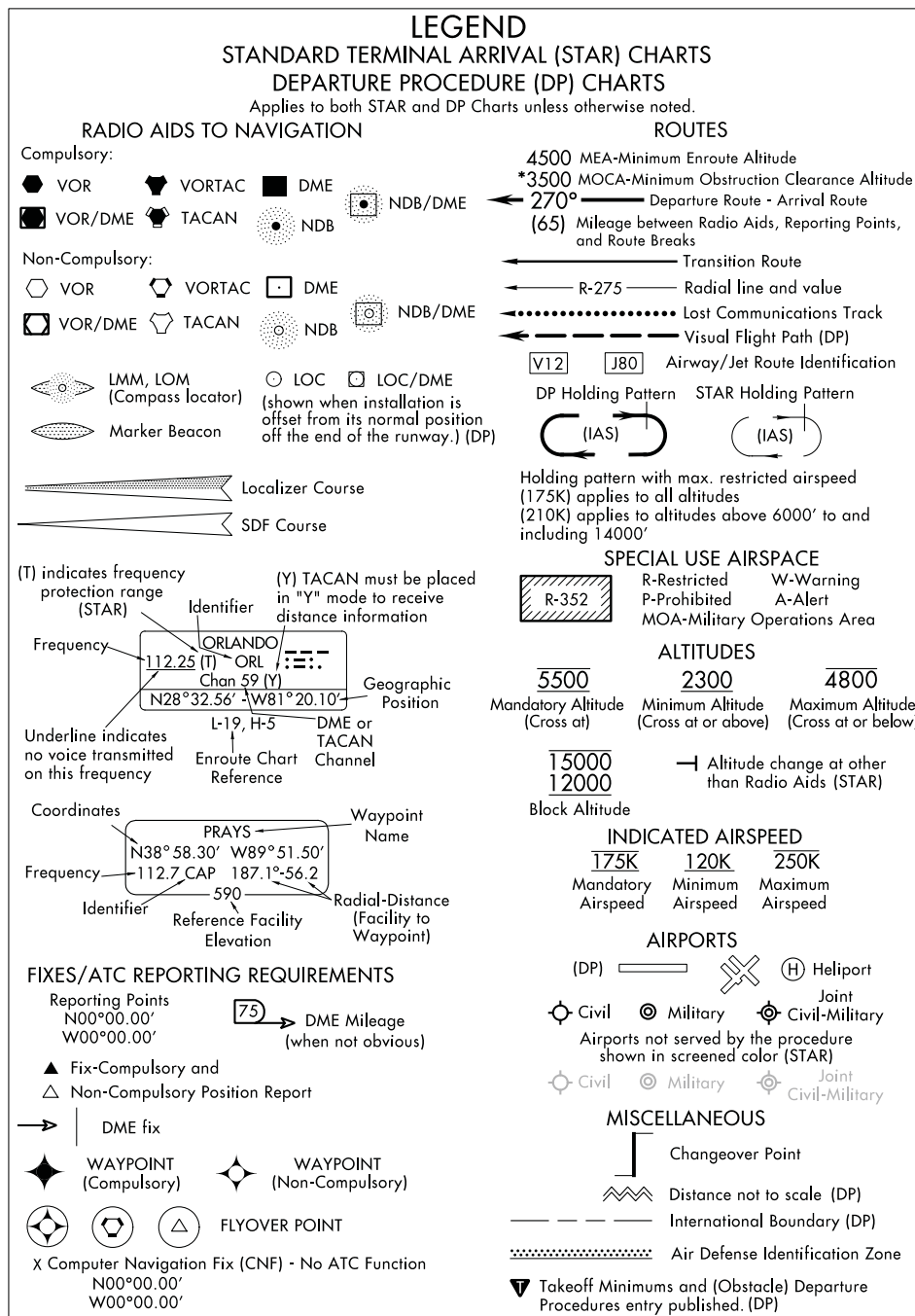
U.S. TERMINAL PROCEDURES PUBLICATION SYMBOLS

GENERAL INFORMATION

Symbols shown are for the Terminal Procedures Publication (TPP) which includes Standard Terminal Arrival (STARs) Charts, Departure Procedures (DPs), Instrument Approach Procedures (IAP) and Airport Diagrams.

LEGEND - STANDARD TERMINAL ARRIVAL (STAR) CHARTS - DEPARTURE PROCEDURE (DP) CHARTS

LEGEND 19059



LEGEND 19059

FAA Chart User's Guide - Terminal Procedures Publication (TPP) - Symbols

INSTRUMENT APPROACH PROCEDURES (CHARTS)

APPROACH LIGHTING SYSTEM - UNITED STATES

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).

ALSF-1

RED

GREEN

WHITE

SEQUENCED FLASHING LIGHTS

(High Intensity)

LENGTH 2400/3000 FEET

SAME LIGHT CONFIGURATION
AS SSALR.

38

APPROACH LIGHTING SYSTEM (Continued)

LEGEND 18256

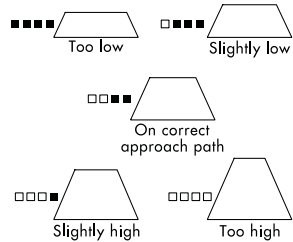
INSTRUMENT APPROACH PROCEDURES (CHARTS)

APPROACH LIGHTING SYSTEM - UNITED STATES

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

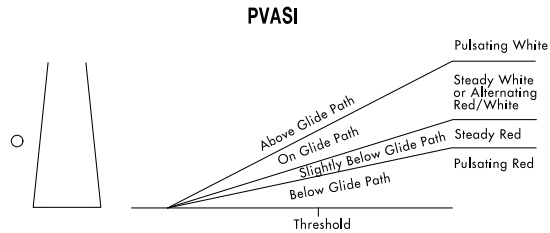
A dot "•" portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A₁). Negative symbology, e.g., (A₁), (V) indicates Pilot Controlled Lighting (PCL).

PRECISION APPROACH
PATH INDICATOR
PAPI



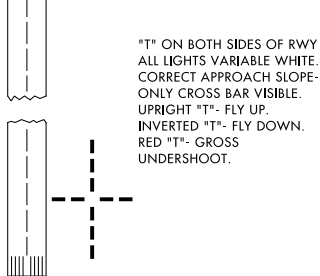
Legend: ■ White ■ Red

(V₂) PULSATING VISUAL APPROACH SLOPE INDICATOR



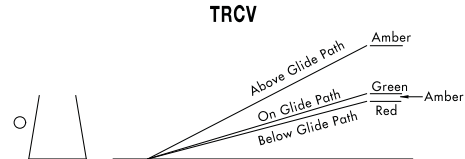
CAUTION: When viewing the pulsating visual approach slope indicators in the pulsating white or pulsating red sectors, it is possible to mistake this lighting aid for another aircraft or a ground vehicle. Pilots should exercise caution when using this type of system.

(V₁) "T"-VISUAL APPROACH
SLOPE INDICATOR
"T"-VASI



"T" ON BOTH SIDES OF RWY
ALL LIGHTS VARIABLE WHITE.
CORRECT APPROACH SLOPE-
ONLY CROSS BAR VISIBLE.
UPRIGHT "T"- FLY UP.
INVERTED "T"- FLY DOWN.
RED "T"- GROSS
UNDERSHOOT.

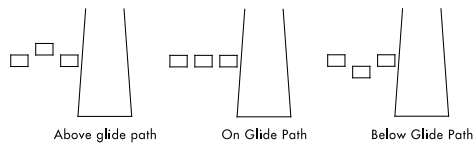
④ TRI-COLOR VISUAL APPROACH
SLOPE INDICATOR



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

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.

30 JAN 2020 to 27 FEB 2020

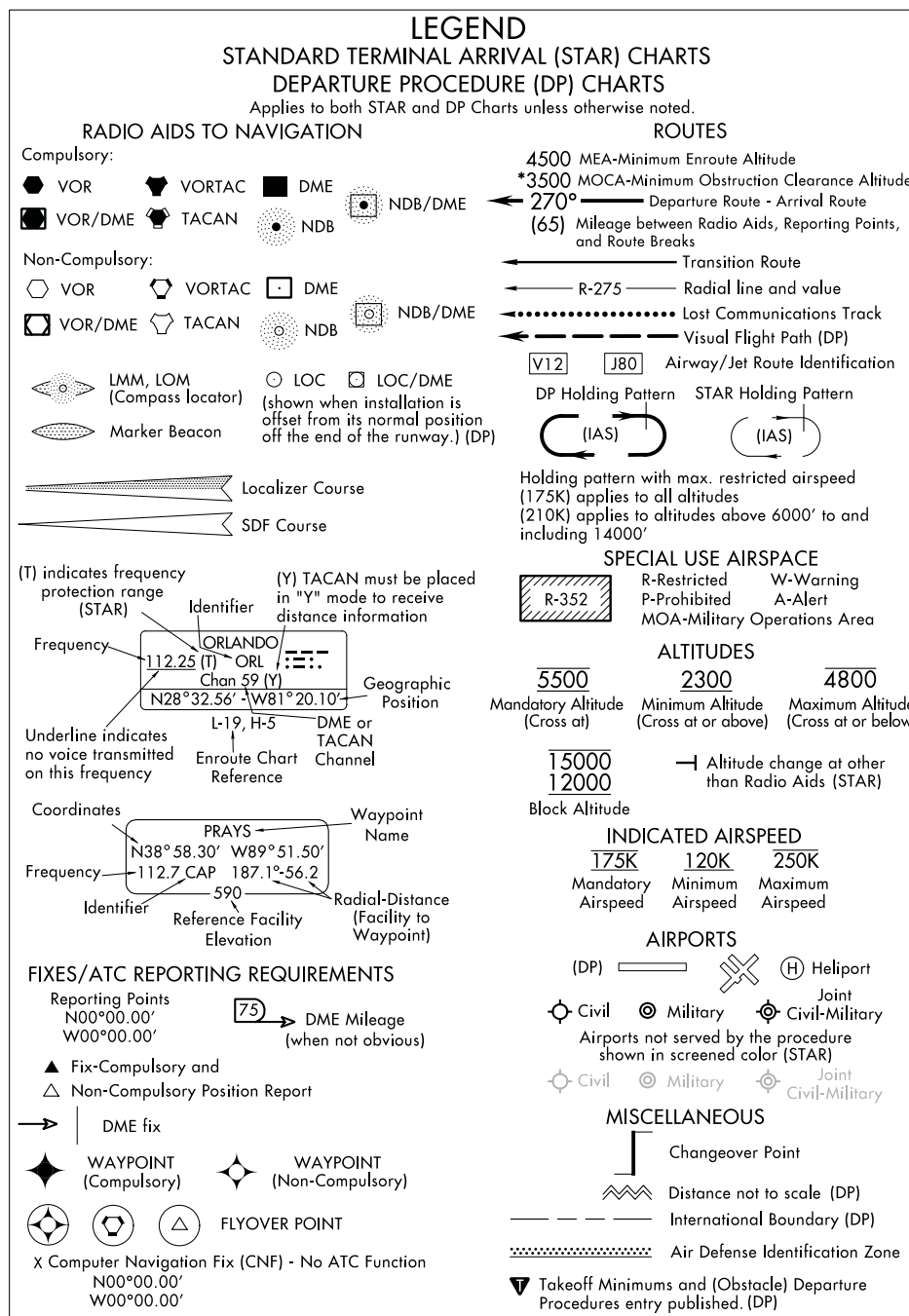
30 JAN 2020 to 27 FEB 2020

FAA Chart User's Guide - Terminal Procedures Publication (TPP) - Symbols

LEGEND 18256

AIRPORT DIAGRAM/AIRPORT SKETCH

LEGEND 19059



LEGEND 19059

30 JAN 2020 to 27 FEB 2020

30 JAN 2020 to 27 FEB 2020

PLANVIEW SYMBOLS

LEGEND 19339 INSTRUMENT APPROACH PROCEDURES (CHARTS)

Procedure Track

Missed Approach

Visual Flight Path

3100 NoPT 5.6 NM to GS Intcpt

Minimum Route Altitude

Feeder Route

Mileage

045°

(14.2 to LOM)

155°

(15.1)

165°

345°

Procedure Turn
(Type degree and point of turn optional)

090°

270°

Missed Approach

Hold-in-lieu of Procedure Turn

Arrival

090°

270°

1 min

090°

270°

(IAS)

4 NM

HOLD 8000

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.

Reporting Point

▲ Name (Compulsory)

△ Name (Non-Compulsory)

✦ WAYPOINT (Compulsory)

✧ WAYPOINT (Non-Compulsory)

⬢ FLYOVER POINT

⊕ MAP WP (Flyover)

Computer Navigation Fix (CNF) - No ATC Function
x (NAME) ("x" omitted when it conflicts with runway pattern)

15

DME Distance

From Facility

AUSTN INT

ARC/DME/RNAV Fix

R-198

LR-198

LB-198

Radial line and value

Lead Radial

Lead Bearing

5500

2500

4300

Mandatory Altitude

Minimum Altitude

Maximum Altitude

3000

5000

3000

Recommended Altitude

Mandatory Block

Altitude

175K

120K

250K

180K

Mandatory Airspeed

Minimum Airspeed

Maximum Airspeed

Recommended Airspeed

110.1

Underline indicates No Voice transmitted on this frequency

Compulsory:

✶ VOR

✶ VOR/DME

✶ VORTAC

✶ TACAN

■ DME

● NDB

⊙ NDB/DME

Non-Compulsory:

○ VOR

○ VOR/DME

○ VORTAC

○ TACAN

□ DME

○ NDB

⊙ NDB/DME

◁ LOM/LMM (Compass locator at Outer Marker/Middle Marker)

◁ Marker Beacon

◁ Marker beacons that are not specifically part of the procedure but underlie the final approach course are shown in screened color.

◁ Localizer (LOC/LDA) Course

◁ SDF Course

⊙ LOC/DME

⊙ LOC/LDA/SDF Transmitter
(shown when installation is offset from its normal position off the end of the runway.)

Primary Navaid with Coordinate Values

114.5 UMA

Chan 92

512°00.80'

W77°07.00'

Secondary Navaid

LMM

UMA

248 NT

SCOTT

Chan 59

SKE

(112.2)

VHF

Paired Frequency

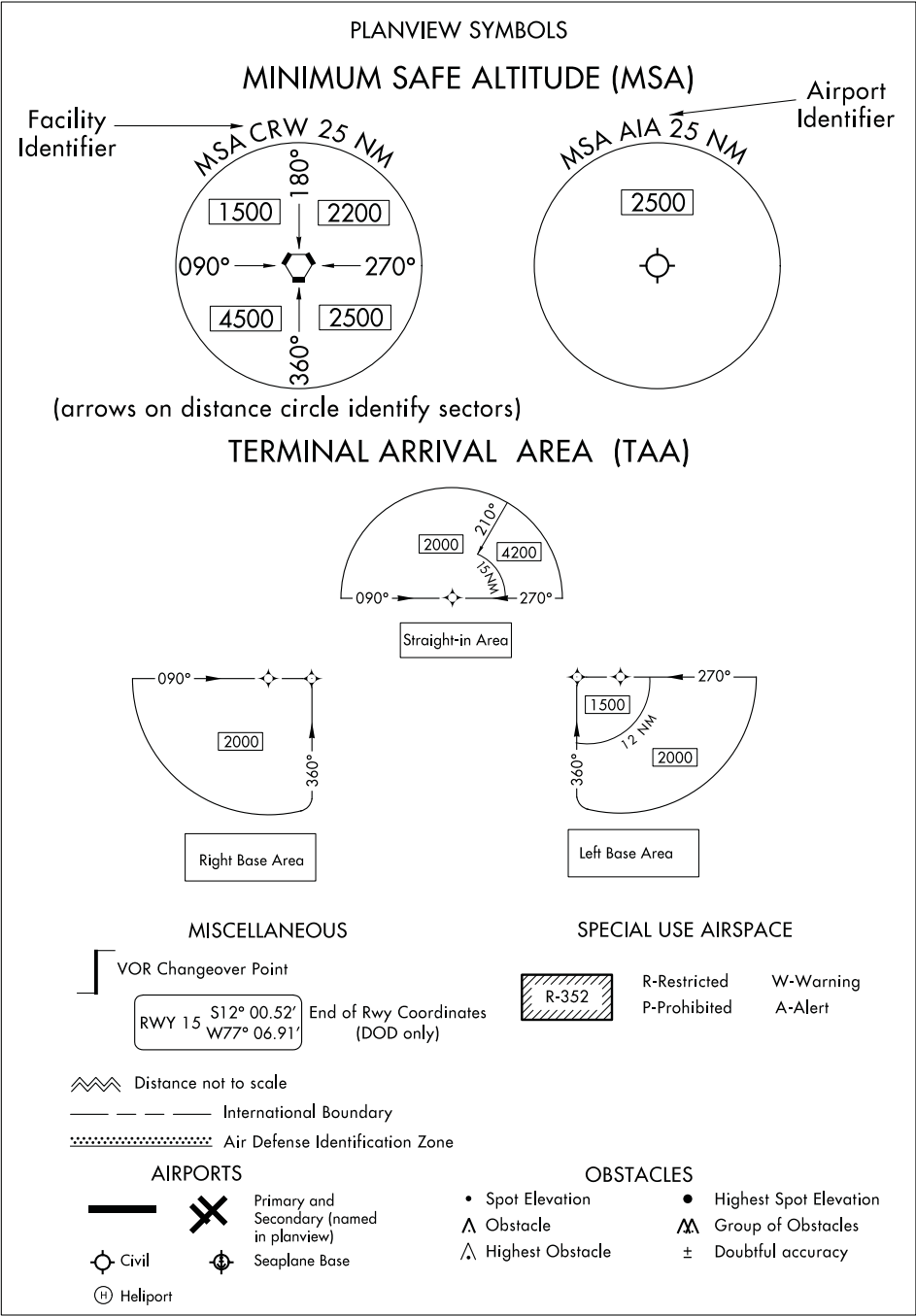
LEGEND 19339

FAA Chart Users Guide - Terminal Procedures Publication (TPP) - Symbols

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PLANVIEW SYMBOLS (Continued)

LEGEND 19171 INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND 19171

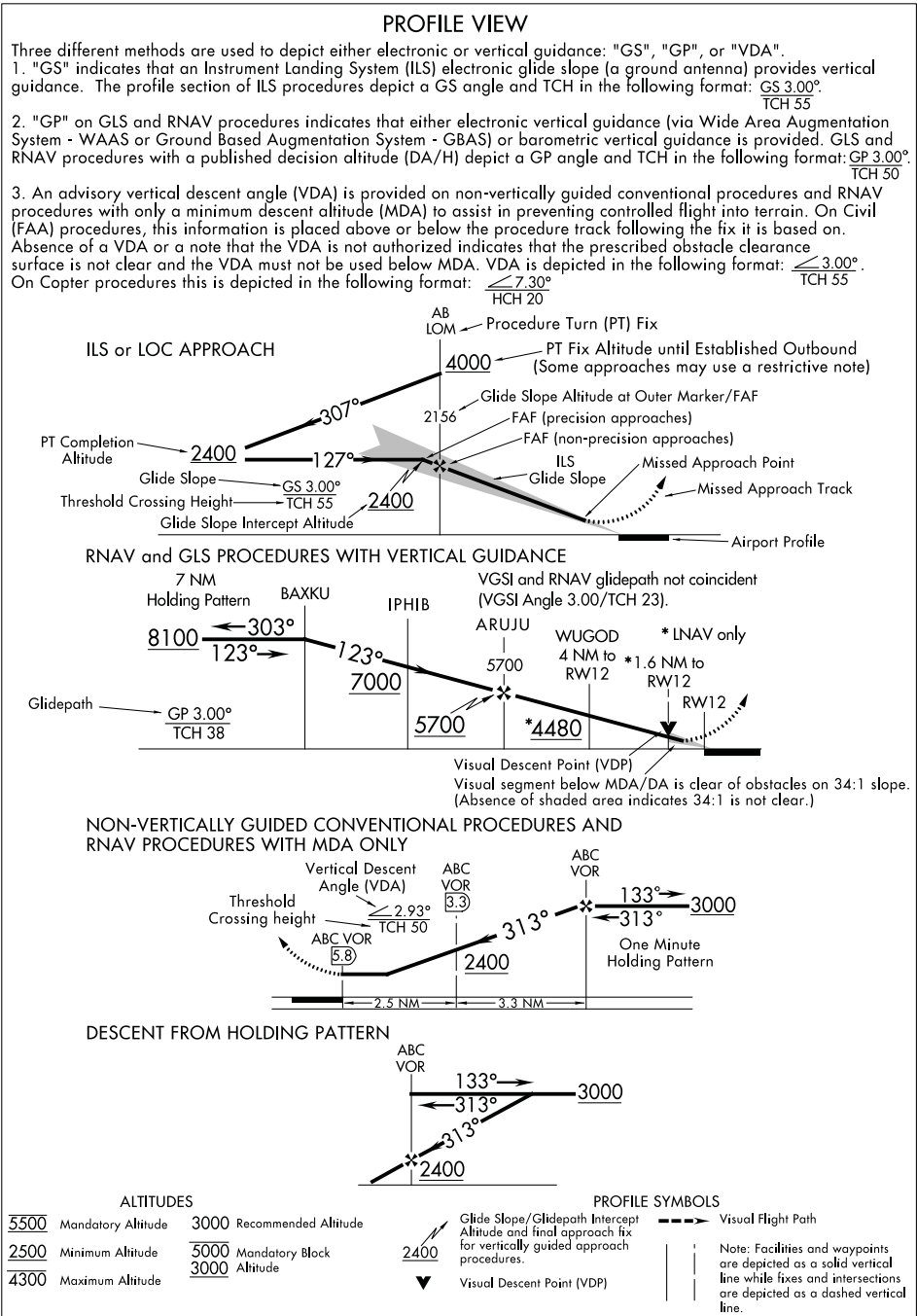
FAA Chart User's Guide - Terminal Procedures Publication (TPP) - Symbols

30 JAN 2020 to 27 FEB 2020

30 JAN 2020 to 27 FEB 2020

PROFILE VIEW


LEGEND 18200 INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND 18200

COLD TEMPERATURE AIRPORTS

COLD TEMPERATURE RESTRICTED AIRPORTS


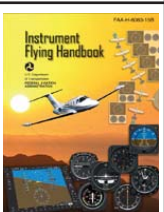

NOTE: A -12°C symbol indicates a cold temperature altitude correction is required at this airport when reported temperature is at or below the published restricted temperature. Pilots familiar with cold temperature procedure in the Notice to Airman Publication (NTAP) and correcting all altitudes from the IAF to the MA final holding altitude do not have to reference the NTAP. Pilots wishing to correct on individual segments must reference the NTAP airport list for affected segments. See Notice to Airman Publication (NTAP) Graphic Notices General for complete list of published airports, temperature, segments, and procedure information. www.faa.gov/air_traffic/publications/notices. Pilots will advise ATC with the required altitude correction when making a correction to any segment other than the final segment. See following Cold Temperature Error Table to make manual corrections.

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

REFERENCES

There are several references available from the FAA to aid pilots and other interest parties to learn more about FAA Charts and other aspects of aviation.

Publication		FAA Publication ID
	Aeronautical Information Manual (AIM) URL: http://www.faa.gov/air_traffic/publications/	
	Airplane Flying Handbook URL: https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/airplane_handbook/	FAA-H-8083-3A
	Helicopter Flying Handbook URL: http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/helicopter_flying_handbook/	FAA-H-8083-21A
	Instrument Procedures Handbook URL: http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/instrument_procedures_handbook/	FAA-H-8083-16B
	Instrument Flying Handbook URL: http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/FAA-H-8083-15B.pdf	FAA-H-8083-15B
	Pilot's Handbook of Aeronautical Knowledge URL: https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/	FAA-H-8083-25B
	Remote Pilot - Small Unmanned Aircraft Systems Study Guide URL: http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/remote_pilot_study_guide.pdf	FAA-G-8082-22

ABBREVIATIONS

A

AAF - Army Air Field
AAS - Airport Advisory Service
AAUP - Attention All Users Page
AC - Advisory Circular
ADF - Automatic Direction Finder
ADIZ - Air Defense Identification Zone
ADS - Automatic Dependent Surveillance
ADS-B - Automatic Dependent Surveillance-Broadcast
Advstry - Advisory
AFB - Air Force Base
AFIS - Automatic Flight Information Service
AFS - Air Force Station
AFSS - Automated Flight Service Station
AGL - Above Ground Level
AIM - Aeronautical Information Manual
AIRAC - Aeronautical Information Regulation And Control
AK - Alaska
AL - Approach and Landing
ANG - Air National Guard
APP - Approach
APP CON - Approach Control
APP CRS - Approach Course
Apt - Airport
APV - Approaches with Vertical Guidance
ARP - Airport Reference Point
ARTCC - Air Route Traffic Control Center
ASDA - Accelerate-Stop Distance Available
ASDE-X - Airport Surface Detection Equipment-Model X
ASOS - Automated Surface Observing Station
ASR - Airport Surveillance Radar
ATC - Air Traffic Control
ATIS - Automatic Terminal Information Service
ATS - Air Traffic Service
AUNICOM - Automated Aeronautical Advisory Station
AWOS - Automated Weather Observing Station

B

Baro-VNAV - Barometric Vertical Navigation
BS - Broadcast Station

C

CAC - Caribbean Aeronautical Chart
CAT - Category
CFA - Controlled Firing Areas
CFR - Code of Federal Regulations
CH - Channel
CL - Runway Centerline Lights
CLNC DEL - Clearance Delivery
CNF - Computer Navigation Fix
COP - Changeover Point
CPDLC - Controller Pilot Data Link Communication
CRS - Course
CT - Control Tower

CTAF - Common Traffic Advisory Frequency
CVFP - Charted Visual Flight Procedure
CZ - Control Zone (Canada)

D

DA - Decision Altitude
DA - Density Altitude
D-ATIS - Digital Automatic Terminal Information Service
DH - Decision Height
DME - Distance Measuring Equipment
DND - Department of National Defense (Canada)
DoD - Department of Defense
DOF - Digital Obstacle File
DP - Departure Procedure
DT - Daylight Savings Time
DVA - Diverse Vector Area

E

E - East
EFAS - Enroute Flight Advisory Service
EFB - Electronic Flight Bag
Elev - Elevation
EMAS - Engineered Materials Arresting System

F

FAA - Federal Aviation Administration
FAF - Final Approach Fix
FAP - Final Approach Point
FAR - Federal Aviation Regulation
FBO - Fixed-Based Operator
FIR - Flight Information Region
FL - Flight Level
FLIP - Flight Information Publication
FMS - Flight Management System
FREQ - Frequency
FRZ - Flight Restricted Zone
FSDO - Flight Standards District Office
FSS - Flight Service Station

G

GBAS - Ground-Based Augmentation System
GCO - Ground Communications Outlet
GLS - GBAS Landing System
GND - Ground
GND CON - Ground Control
GNSS - Global Navigation Satellite System
GP - Glide Path
GPS - Global Positioning System
GS - Glide Slope
GS - Ground Speed

H

HAA - Height Above Airport
 HAR - High Altitude Redesign
 HAT - Height Above Touchdown
 HCH - Heliport Crossing Height
 HF - High Frequency
 HIRL - High Intensity Runway Lights
 HS - Hot Spot

I

IAC - Interagency Air Committee
 IACC - Interagency Air Cartographic Committee
 IAF - Initial Approach Fix
 IAP - Instrument Approach Procedure
 ICAO - International Civil Aviation Authority
 IDT - Identifier
 IF - Intermediate Fix
 IFR - Instrument Flight Rules
 ILS - Instrument Landing System
 IMC - Instrument Meteorological Conditions
 INS - Inertial Navigation System
 IR - Instrument Route (Military)
 IRU - Inertial Reference Unit

J

JO - Joint Order

K

KIAS - Knots

L

LAA - Local Airport Advisory
 LAAS - Local Area Augmentation System
 LAHSO - Land and Hold Short
 LDA - Landing Distance Available
 LDA - Localizer-type Directional Aid
 Ldg - Landing
 LF - Low Frequency
 LIRL - Low Intensity Runway Lights
 LNAV - Lateral Navigation
 LOC - Localizer
 LOM - Locator Outer Marker
 LPV - Localizer Performance with Vertical Guidance
 LRRS - Long Range Radar Station
 LTP - Landing Threshold Point

M

MAA - Maximum Authorized Altitude
 MAP - Missed Approach Point
 MCA - Minimum Crossing Altitude
 MCAS - Marine Corps Air Station
 MDA - Minimum Descent Altitude
 MDH - Minimum Descent Height

MEA - Minimum Enroute Altitude
 MEF - Maximum Elevation Figure
 MF - Medium Frequency
 MIA - Minimum IFR Altitude
 MIRL - Medium Intensity Runway Lights
 MOA - Military Operations Areas
 MOCA - Minimum Obstruction Clearance Altitude
 MON - Minimum Operational Network
 MORA - Minimum Off-Route Altitude
 MRA - Minimum Reception Altitude
 MSA - Minimum Safe Altitude
 MSL - Mean Sea Level
 MTA - Minimum Turning Altitude
 MTR - Military Training Route
 MVA - Minimum Vector Altitude

N

N - North
 N/A - Not Applicable
 NA - Not Authorized
 NAAS - Naval Auxiliary Air Station
 NAS - Naval Air Station
 NAS - National Airspace System
 NAV - Naval Air Facility
 NAVAID - Navigational Aid (Ground based)
 NDB - Non-Directional Radiobeacon
 NextGen - Next Generation Air Transportation System
 NFDC - National Flight Data Center
 NFPO - National Flight Procedures Office
 NM - Nautical Mile
 NOAA - National Oceanic and Atmospheric Administration
 NO A/G - No Air-to-Ground Communication
 NOTAM - Notice to Airman
 NoPT - No Procedure Turn
 NPA - Non-Precision Approach
 NTAP - Notices to Airman Publication
 NWS - National Weather Service

O

OAT - Outside Air Temperature
 OBS - Omni Bearing Selector
 OCA - Ocean Control Area
 OCS - Obstacle Clearance Surface
 ODP - Obstacle Departure Procedure
 OM - Outer Marker
 OROCA - Off Route Obstruction Clearance Altitude

P

PA - Precision Approach
 PAR - Precision Approach Radar
 PBN - Performance-Based Navigation
 PRM - Precision Runway Monitor
 PT - Procedure Turn
 PTP - Point-to-Point
 Pvt - Private

R

R - Radial
 R - Receive
 R - Restricted Area (Special Use Airspace)
 RCO - Remote Communications Outlet
 RF - Radius-to-Fix
 RNAV - Area Navigation
 RNP - Required Navigation Performance
 RNP AR - Required Navigation Performance Authorization
 Required
 ROC - Required Obstacle Clearance
 RP - Right Pattern
 RVR - Runway Visual Range
 RVSM - Reduced Vertical Separation Minimum
 Rwy - Runway

S

S - South
 SAAAR - Special Aircraft and Aircrew Authorization
 Required
 SAAR - Special Aircraft and Aircrew Requirements
 SATNAV - Satellite Navigation
 SDF - Simplified Directional Facility
 SER - Start End of Runway
 SFAR - Special Flight Rules Area
 SFC - Surface
 SFRA - Special Flight Rules Area
 SIAPs - Standard Instrument Approach Procedures
 SID - Standard Instrument Departure
 SM - Statute Mile
 SMAR - Special Military Activity Routes
 SMGCS - Surface Movement Guidance and Control
 System
 SOIA - Simultaneous Offset Instrument Approaches
 SSV - Standard Service Volume
 STAR - Standard Terminal Arrival Procedure
 SUA - Special Use Airspace
 SVFR - Special Visual Flight Rules

T

T - Transmit
 TA - Travel Advisory
 TAA - Terminal Arrival Area
 TAC - Terminal Area Chart
 TACAN - Tactical Air Navigation
 TAS - True Air Speed
 TCA - Terminal Control Areas (Canada)
 TCH - Threshold Crossing Height
 TDZ - Touchdown Zone
 TDZE - Touchdown Zone Elevation
 TDZL - Touchdown Zone Lights
 TDZ/CL - Touchdown Zone/Centerline Lights
 TERPS - U.S. Standard for Terminal Instrument Procedures
 TFR - Temporary Flight Restriction
 TIBS - Telephone Information Briefing Service
 TIS-B - Traffic Information Service - Broadcast

TOC - Top of Climb
 TOD - Top of Descent
 TODA - Takeoff Distance Available
 TOGA - Takeoff/Go Around
 TORA - Takeoff Runway Available
 TPP - Terminal Procedures Publication
 TRSA - Terminal Radar Service Area
 TWR - Tower

U

UC - Under Construction
 UHF - Ultra High Frequency
 UIR - Upper Information Region
 UNICOM - Universal Communications
 U.S. - United States
 USA - United States Army
 USAF - United States Air Force
 USCG - United State Coast Guard
 UTA - Upper Control Area

V

VCOA - Visual Climb Over Airport / Airfield
 VDA - Visual Descent Angle
 VDP - Visual Decent Point
 VFR - Visual Flight Rules
 VGSI - Visual Glide Slope Indicator
 VHF - Very High Frequency
 VMC - Visual Meteorological Conditions
 VNAV - Vertical Navigation
 VOR - VHF Omnidirectional Radio Range
 VORTAC - VHF Omnidirectional Radio Range/Tactical Air
 Navigation
 VPA - Vertical Path Angle
 VR - Visual Route (Military)

W

W - Warning Area (Special Use Airspace)
 W - West
 WAAS - Wide-Area Augmentation System
 WAC - World Aeronautical Chart
 WP - Waypoint
 WX CAM - Weather Camera (Alaska)