Federal Aviation Administration

Aeronautical Information Services

Aeronautical Chart Users' Guide

IFR Enroute Charts

Effective as of 21 May 2020

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WHAT'S NEW?

Update as of 21 May 2020

The following charting items have been added to the Online Chart Users' Guide since the Guide was last published on 26 March 2020:

VFR CHARTS

Revision of Trauma Center and Hospital Helipad Designations on Helicopter Route Charts

Beginning with the 18 June 2020 effective date, users' will begin to see Trauma Center and Hospital Helipad designations charted under the broader heading of Medical Center.

IFR ENROUTE CHARTS

Coincident Airways/Routes with Unusable Segment

No Changes Applied

TERMINAL PROCEDURE PUBLICATIONS (TPPS)

No Changes Applied

INTRODUCTION

This Chart Users' 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 USERS' GUIDE AND UPDATES

All information in this guide is effective as of **21 May 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 Users' 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/

EXPLANATION OF IFR ENROUTE TERMS

FAA charts are prepared in accordance with specifications of the Interagency Air Committee (IAC), and are approved by representatives of the Federal Aviation Administration and the Department of Defense (DoD). Some information on these charts may only apply to military pilots.

The explanations of symbols used on Instrument Flight Rule (IFR) Enroute Charts and examples in this section are based primarily on the IFR Enroute Low Altitude Charts. Other IFR products use similar symbols in various colors. The chart legends portray aeronautical symbols with a brief description of what each symbol depicts. This section provides more details of the symbols and how they are used on IFR Enroute charts.

AIRPORTS

Active airports are shown on IFR Enroute Charts.

Low Charts:

- All IAP Airports are shown on the Low Altitude Charts (US and Alaska).
- Non-IAP Airports are shown on the U.S. Low Altitude Charts (Contiguous US) have a minimum hard surface runway of 3,000'.
- Non-IAP airports are shown on the U.S. Low Altitude Alaska Charts are show if the runway is 3000' or longer, hard or soft surface.
- Public heliports with an Instrument Approach Procedure (IAP) or requested by the FAA or DoD are depicted on the IFR Enroute Low Altitude Charts.
- Seaplane bases requested by the FAA or DoD are depicted on the IFR Enroute Low Altitude Charts.

On IFR Enroute Low Altitude Charts, airport tabulation is provided which identifies airport names, IDs and the panels they are located on.

High Charts:

- Airports shown on the U.S. High Enroute Charts (Contiguous US) have a minimum hard surface runway of 5000'.
- Airports shown on the U.S. High Enroute Alaska Charts have a minimum hard surface runway of 4000'.

Charted airports are classified according to the following criteria:

LOW/HIGH ALTITUDE

Blue - Airports with an Instrument Approach Procedure and/or RADAR MINIMA published in the high altitude DoD Flight Information Publications (FLIPs)

Green - Airports which have an approved Instrument Approach Procedure and/or RADAR MINIMA published in either the U.S. Terminal Procedures Publications (TPPs) or the DoD FLIPs

Brown - Airports without a published Instrument Approach Procedure or RADAR MINIMA

Airports are plotted at their true geographic position.

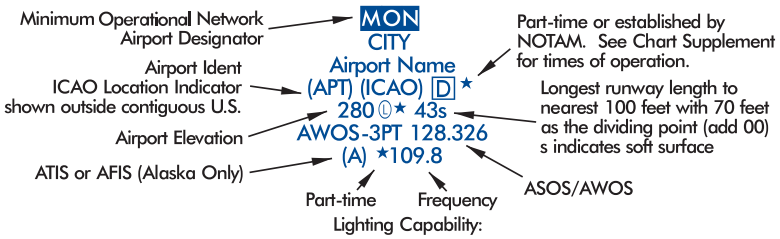
Airports are identified by the airport name. In the case of military airports, Air Force Base (AFB), Naval Air Station (NAS), Naval Air Facility (NAF), Marine Corps Air Station (MCAS), Army Air Field (AAF), etc., the abbreviated letters appear as part of the airport name.

Airports marked "Pvt" immediately following the airport name are not for public use, but otherwise meet the criteria for charting as specified above.

Runway length is the length of the longest active runway (including displaced thresholds but excluding overruns) and is shown to the nearest 100 feet using 70 feet as the division point; e.g., a runway of 8,070' is labeled 81. The following runway compositions (materials) constitute a hard-surfaced runway: asphalt, bitumen, chip seal, concrete, and tar macadam. Runways that are not hard-surfaced have a small letter "s" following the runway length, indicating a soft surface.

AIRPORT DATA DEPICTION

Low Altitude



1. Airport elevation given in feet above or below mean sea level

2. Pvt - Private use, not available to general public

3. A solid line box enclosed the airport name indicates FAR 93 Special Requirements - see Directory/Supplement

4. “NO SVFR” above the airport name indicates FAR 91 fixed-wing special VFR flight is prohibited.

5. C or D following the airport identifier indicates Class C or Class D Airspace

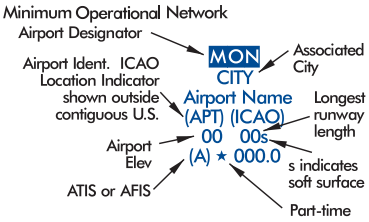
High Altitude - U.S.

6. Associated city names for public airports are shown above or preceding the airport name. If airport name and city name are the same, only the airport name is shown. The airport identifier in parentheses follows the airport name. City names for military and private airports are not shown.

7. Airport Ident ICAO Location Indicator shown outside contiguous U.S.

8. AFIS Alaska only

High Altitude - Alaska



LIGHTING CAPABILITY

Lighting Available	L	Part-time or on request	★
Pilot Controlled Lighting	Ⓛ	No lighting available At private facilities- indicates no lighting information is available	-

A L symbol between the airport elevation and runway length means that runway lights are in operation sunset to sunrise. A Ⓛ symbol indicates there is Pilot Controlled Lighting. A L★ symbol means the lighting is part-time or on request, the pilot should consult the Chart Supplement for light operating procedures. The Aeronautical Information Manual (AIM) thoroughly explains the types and uses of airport lighting aids.

VOR Minimum Operational Network (MON) Airports Designator

MON Airports with the MON Airport designator at the top of the Airport Data Block. The MON designation is to alert pilots to those airports that have retained ILS and VOR instrument approach procedures for safe recovery in the event of a GPS outage. Refer to the Aeronautical Information Manual (AIM) for expanded MON Airport guidance.

RADIO AIDS TO NAVIGATION

All IFR radio NAVAIDs that have been flight checked and are operational are shown on all IFR Enroute Charts. Very High Frequency/Ultrahigh Frequency (VHF/UHF) NAVAIDs, Very high frequency Omnidirectional Radio range (VORs), Tactical Air Navigation (TACANs) are shown in black, and Low Frequency/Medium Frequency (LF/MF) NAVAIDs, (Compass Locators and Aeronautical or Marine NDBs) are shown in brown.

On IFR Enroute Charts, information about NAVAIDs is boxed as illustrated below. To avoid duplication of data, when two or more NAVAIDs in a general area have the same name, the name is usually printed only once inside an identification box with the frequencies, TACAN channel numbers, identification letters, or Morse Code Identifications of the different NAVAIDs are shown in appropriate colors.

NAVAIDs in a shutdown status have the frequency and channel number crosshatched. Use of the NAVAID status "shutdown" is only used when a facility has been decommissioned but cannot be published as such because of pending airspace actions.

NAVIGATION AND COMMUNICATION BOXES - COMMON ELEMENTS	
LOW ENROUTE CHARTS *RCO Frequencies* *NAVAID Name* *FREQ, Ident, CH, Morse Code* *Latitude, Longitude* *Controlling FSS Name*	000.0 NAME 000.0 IDT 000 N00°00.00' W000°00.00' NAME
HIGH ENROUTE CHARTS *RCO Frequencies* *NAVAID Name* *Frequency, Ident, Channel,* *Latitude, Longitude* *Controlling FSS Name*	000.0 NAME 000.0 IDT 000 N00°00.00' W000°00.00' NAME
COMMON ELEMENTS (HIGH AND LOW CHARTS)	
RCO FREQUENCY *Single Frequency* *Multiple Frequencies* *Frequencies transmit and receive except those followed by R and T:* *R - Receive Only* *T - Transmit Only*	122.6 255.4 243.0 123.6 122.65 122.2 122.1R 121.5
NAVAID BOX *Thin line NAVAID boxes without frequency(s) and FSS radio name indicates no FSS frequencies available.* *Shadow NAVAID box indicates NAVAID and Flight Service Station (FSS) have same name.*	VHF/UHF LF/MF
FREQUENCY PROTECTION *Frequency Protection usable range at 18,000' AGL - 40 NM* *Frequency Protection usable range at 12,000' AGL - 25 NM*	 (L) (T)
DISTANCE MEASURING EQUIPMENT *Facilities that operate in the "Y" mode for DME reception*	 (Y)
VOICE COMMUNICATIONS VIA NAVAID *Voice Transmitted* *No Voice Transmitted*	 112.6 111.0
NAVAID SHUTDOWN STATUS	**VHF/UHF** **LF/MF**
PART TIME OR ON-REQUEST	**VHF/UHF** ★ **LF/MF** ★

AUTOMATED WEATHER BROADCAST SERVICES **ASOS/AWOS** - *Automated Surface Observing Station/Automated Weather Observing Station*	VHF/UHF LF/MF A A *Automated weather, when available, is broadcast on the associated NAVAID frequency.*
LATITUDE AND LONGITUDE *Latitude and Longitude coordinates are provided for those NAVAIDs that make up part of a route/airway or a holding pattern. All TACAN facilities will include geographic coordinates.*	**LOW ENROUTE** *N00°00.00' W000°00.00'* **HIGH ENROUTE** *N00°00.00' W000°00.00'*

AIRSPACE INFORMATION

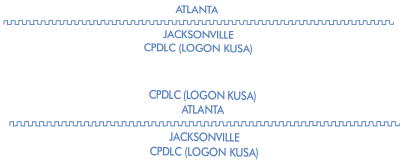
CONTROLLED AIRSPACE

Controlled airspace consists of those areas where some or all aircraft are subjected to air traffic control within the following airspace classifications of A, B, C, D, & E.

Air Route Traffic Control Centers (ARTCC) are established to provide Air Traffic Control to aircraft operating on IFR flight plans within controlled airspace, particularly during the enroute phase of flight. Boundaries of the ARTCCs are shown in their entirety using the symbol below.

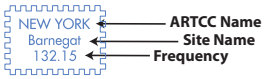
Air Route Traffic Control Center (ARTCC)

When Controller Pilot Data Link Communication (CPDLC) exists for an ARTCC, the text CPDLC (LOGON KUSA) will be shown parallel to the boundary above or below the ARTCC identification as shown below.



Air Route Traffic Control Center (ARTCC) with Controller Pilot Data Link Communication (CPDLC)

The responsible ARTCC Center names are shown adjacent and parallel to the boundary line. ARTCC sector frequencies are shown in boxes outlined by the same symbol.



ARTCC Remoted Sites with discrete VHF and UHF frequencies

Class A Airspace is depicted as open area (white) on the IFR Enroute High Altitude Charts. It consists of airspace from 18,000 Mean Sea Level (MSL) to FL600.

Class B Airspace is depicted as screened blue area with a solid line encompassing the area.

Class C Airspace is depicted as screened blue area with a dashed line encompassing the area with a letter “C” enclosed in a box following the airport name.

Class B and Class C Airspace consist of controlled airspace extending upward from the surface or a designated floor to specified altitudes, within which all aircraft and pilots are subject to the operating rules and requirements specified in the Federal Aviation Regulations (UHF) 71. Class B and C Airspace are shown in abbreviated forms on IFR Enroute Low Altitude Charts. A general note adjacent to Class B airspace refers the user to the appropriate VFR Terminal Area Chart.

Class D Airspace (airports with an operating control tower) are depicted as open area (white) with a letter “D” enclosed in a box following the airport name.

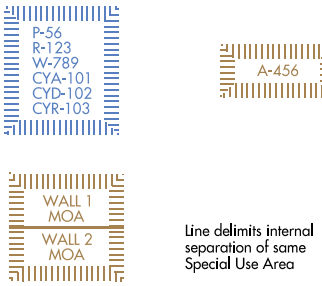
Class E Airspace is depicted as open area (white) on the IFR Enroute Low Altitude Charts. It consists of airspace below FL180.

UNCONTROLLED AIRSPACE

Class G Airspace within the United States extends to 14,500' MSL. This uncontrolled airspace is shown as screened brown.

SPECIAL USE AIRSPACE

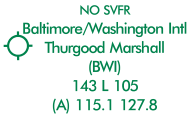
Special Use Airspace (SUA) confines certain flight activities, restricts entry, or cautions other aircraft operating within specific boundaries. SUA areas are shown in their entirety, even when they overlap, adjoin, or when an area is designated within another area. SUA with altitudes from the surface and above are shown on the IFR Enroute Low Altitude Charts. Similarly, SUA that extends above 18,000' MSL are shown on IFR Enroute High Altitude Charts. IFR Enroute Charts tabulations identify the type of SUA, ID, effective altitudes, times of use, controlling agency and the panel it is located on. Users need to be aware that a NOTAM addressing activation will NOT be issued to announce permanently listed times of use.



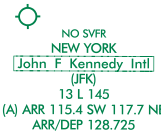
High and Low	Low Altitude Only	Canada Only	Caribbean Only
P - Prohibited Area	MOA - Military Operations Area	CYA - Advisory	D - Danger
R - Restricted Area	A - Alert Area *	CYD - Danger Area	
W - Warning Area		CYR - Restricted Area	
* Alert Areas do not extend into Class A, B, C and D airspace, or Class E airport surface areas.			
See Airspace Tabulation on chart for complete information.			

OTHER AIRSPACE

FAR 91 Special Air Traffic Rules are shown with the type NO SVFR above the airport name.



FAR 93 Special Airspace Traffic Rules are shown with a solid line box around the airport name, indicating FAR 93 Special Requirements see Chart Supplement.



Mode C Required Airspace (from the surface to 10,000' MSL) within 30 NM radius of the primary airport(s) for which a Class B airspace is designated, is depicted on IFR Enroute Low Altitude Charts as a blue circle labeled MODE C 30 NM.

Mode C is also required for operations within and above all Class C airspace up to 10,000' MSL, but not depicted. See FAR 91.215 and the AIM.

INSTRUMENT AIRWAYS

The FAA has established two fixed route systems for air navigation. The VOR and LF/MF system-designated from 1,200' Above Ground Level (AGL) to but not including FL 180 is shown on IFR Enroute Low Altitude Charts, and the Jet Route system designated from FL 180 to FL 450 inclusive is shown on IFR Enroute High Altitude Charts.

VOR LF/MF AIRWAY SYSTEM (IFR LOW ALTITUDE ENROUTE CHARTS)

In this system VOR airways - airways based on VOR or VORTAC NAVAIDs - are depicted in black and identified by a "V" (Victor) followed by the route number (e.g., "V12").

LF/MF airways - airways based on LF/MF NAVAIDs - are sometimes called "colored airways" because they are identified by color name and number (e.g., "Amber One", charted as "A1"). In Alaska Green and Red airways are plotted east and west, and Amber and Blue airways are plotted north and south. Regardless of their color identifier, LF/MF airways are shown in brown.

AIRWAY/ROUTE DATA

On both series of IFR Enroute Charts, airway/route data such as the airway identifications, magnetic courses bearings or radials, mileages, and altitudes (e.g., Minimum Enroute Altitudes (MEAs), Minimum Reception Altitudes (MRAs), Maximum Authorized Altitudes (MAAs), Minimum Obstacle Clearance Altitudes (MOCAs), Minimum Turning Altitudes (MTAs) and Minimum Crossing Altitudes (MCAs)) are shown aligned with the airway.

As a rule the airway/route data is charted and in the same color as the airway, with one exception. Charted in blue, Global Navigation Satellite System (GNSS) MEAs, identified with a "G" suffix, have been added to "V" and "colored airways" for aircraft flying those airways using Global Positioning System (GPS) navigation.

Airways/Routes predicated on VOR or VORTAC NAVAIDs are defined by the outbound radial from the NAVAID. Airways/Routes predicated on LF/MF NAVAIDs are defined by the inbound bearing.

- **Minimum Enroute Altitude (MEA)** - The MEA is the lowest published altitude between radio fixes that assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment, RNAV low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route. MEAs for routes wholly contained within controlled airspace normally provide a buffer above the floor of controlled airspace consisting of at least 300 feet within transition areas and 500 feet within control areas. MEAs are established based upon obstacle clearance over terrain and man-made objects, adequacy of navigation facility performance, and communications requirements.

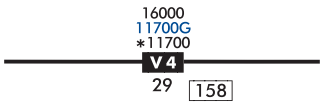
- **Minimum Reception Altitude (MRA)** - MRAs are determined by FAA flight inspection traversing an entire route of flight to establish the minimum altitude the navigation signal can be received for the route and for off-course NAVAID facilities that determine a fix. When the MRA at the fix is higher than the MEA, an MRA is established for the fix and is the lowest altitude at which an intersection can be determined.

- **Maximum Authorized Altitude (MAA)** - An MAA is a published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, RNAV low or high route, or other direct route for which an MEA is designated at which adequate reception of navigation signals is assured.

- **Minimum Obstruction Clearance Altitude (MOCA)** - The MOCA is the lowest published altitude in effect between fixes on VOR airways, off-airway routes, or route segments that meets obstacle clearance requirements for a VOR. The MOCA seen on the enroute chart may have been computed by adding the required obstacle clearance (ROC) to the controlling obstacle in the primary area or computed by using a TERPS chart if the controlling obstacle is located in the secondary area. This figure is then rounded to the nearest 100 foot increment (i.e., 2,049 feet becomes 2,000, and 2,050 feet becomes 2,100 feet). An extra 1,000 feet is added in mountainous areas, in most cases.

- **Minimum Turning Altitude (MTA)** - Minimum turning altitude (MTA) is a charted altitude providing vertical and lateral obstruction clearance based on turn criteria over certain fixes, NAVAIDs, waypoints, and on charted route segments. When a VHF airway or route terminates at a NAVAID or fix, the primary area extends beyond that termination point. When a change of course on VHF airways and routes is necessary, the enroute obstacle clearance turning area extends the primary and secondary obstacle clearance areas to accommodate the turn radius of the aircraft. Since turns at or after fix passage may exceed airway and route boundaries, pilots are expected to adhere to airway and route protected airspace by leading turns early before a fix. The turn area provides obstacle clearance for both turn anticipation (turning prior to the fix) and flyover protection (turning after crossing the fix). Turning fixes requiring a higher MTA are charted with a flag along with accompanying text describing the MTA restriction.

- **Minimum Crossing Altitude (MCA)** - An MCA is the lowest altitude at certain fixes at which the aircraft must cross when proceeding in the direction of a higher minimum enroute IFR altitude. MCAs are established in all cases where obstacles intervene to prevent pilots from maintaining obstacle clearance during a normal climb to a higher MEA after passing a point beyond which the higher MEA applies. The same protected enroute area vertical obstacle clearance requirements for the primary and secondary areas are considered in the determination of the MCA.

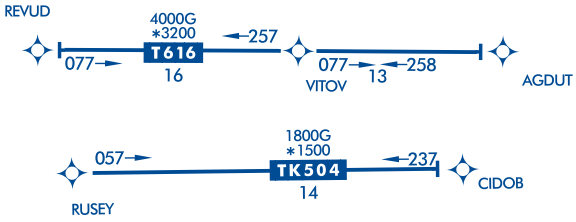


Victor Route (with RNAV/GPS MEA shown in blue)

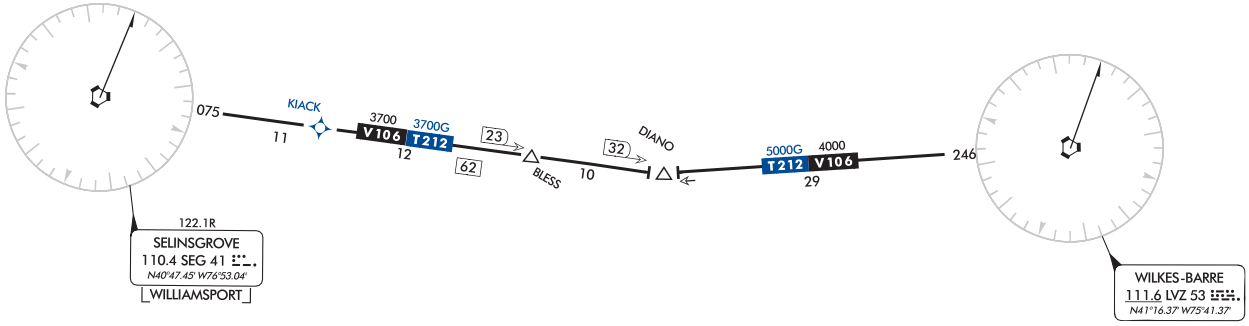
AREA NAVIGATION (RNAV) "T" ROUTE SYSTEM

The FAA has created new low altitude area navigation (RNAV) "T" routes for the enroute and terminal environments. The RNAV routes will provide more direct routing for IFR aircraft and enhance the safety and efficiency of the National Airspace System. To utilize these routes aircraft are required to be equipped with IFR approved GNSS. In Alaska, TSO-145a and 146a equipment is required.

Low altitude RNAV only routes are identified by the prefix "T", and the prefix "TK" for RNAV helicopter routes followed by a three digit number (T-200 to T-500). Routes are depicted in blue on the IFR Enroute Low Altitude Charts. RNAV route data (route line, identification boxes, mileages, waypoints, waypoint names, magnetic reference courses and MEAs) will also be printed in blue. Magnetic reference courses will be shown originating from a waypoint, fix/reporting point or NAVAID. GNSS MEA for each segment is established to ensure obstacle clearance and communications reception. GNSS MEAs are identified with a "G" suffix.

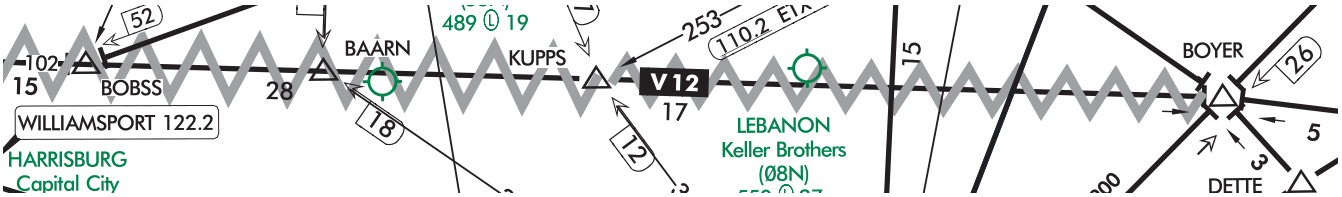


Joint Victor/RNAV routes are charted as outlined above except as noted. The joint Victor route and the RNAV route identification boxes are shown adjacent to each other. Magnetic reference courses are not shown. MEAs are charted above the appropriate identification box or stacked in pairs, GNSS and Victor. On joint routes, RNAV specific information will be printed in blue.



UNUSABLE AIRWAY/ROUTE SEGMENTS

Airway/Route segments designated by the FAA as unusable will be depicted as shown below.



Unusable Victor Route

Pilots should not file a flight plan for or accept a clearance that includes navigation on any route or route segment depicted as unusable. Pilots using RNAV may request ATC clearance to fly point-to-point between valid waypoints or fixes, even those on routes depicted as unusable (refer to AC 90-108 for RNAV eligibility).

Coincident Airways/Routes with Unusable Segment

When two airways/routes are coincident, but only one airway/route is designated as unusable, the following note indicating which airway the unusable symbology applies to will be placed in close proximity to the airway/route identifiers.

OFF ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA)

The Off Route Obstruction Clearance Altitude (OROCA) is depicted on IFR Enroute Low Altitude and Pacific charts and is represented in thousands and hundreds of feet above MSL. OROCAs are shown in every 30 x 30 minute quadrant on Area Charts, every one degree by one degree quadrant for IFR Enroute Low Altitude Charts - U.S. and every two degree by two degree quadrant on IFR Enroute Low Altitude Charts - Alaska. The OROCA represents the highest possible obstruction elevation including both terrain and other vertical obstruction data (towers, trees, etc.) bounded by the ticked lines of latitude/longitude including data 4 NM outside the quadrant. In this example the OROCA represents 12,500 feet.

OROCA is computed just as the Maximum Elevation Figure (MEF) found on Visual Flight Rule (VFR) Charts except that it provides an additional vertical buffer of 1,000 feet in designated non-mountainous areas and a 2,000 foot vertical buffer in designated mountainous areas within the United States. For areas in Mexico and the Caribbean, located outside the U.S. Air Defense Identification Zone (ADIZ), the OROCA provides obstruction clearance with a 3,000 foot vertical buffer. Evaluating the area around the quadrant provides the chart user the same lateral clearance an airway provides should the line of intended flight follow a ticked line of latitude or longitude. OROCA does not provide for NAVAID signal coverage, communication coverage and would not be consistent with altitudes assigned by Air Traffic Control. OROCAs can be found over all land masses and open water areas containing man-made obstructions (such as oil rigs).

12 5

MILITARY TRAINING ROUTES (MTRs)

Military Training Routes (MTRs) are routes established for the conduct of low-altitude, high-speed military flight training (generally below 10,000 feet MSL at airspeeds in excess of 250 knots Indicated Air Speed). These routes are depicted in brown on IFR Enroute Low Altitude Charts, and are not shown on inset charts or on IFR Enroute High Altitude Charts. IFR Enroute Low Altitude Charts depict all IFR Military Training Routes (IRs) and VFR Military Training Routes (VRs), except those VRs that are entirely at or below 1,500 feet AGL.

MTRs are identified by designators (IR-107, VR-134) which are shown in brown on the route centerline. Arrows are shown to indicate the direction of flight along the route. The width of the route determines the width of the line that is plotted on the chart:

Route segments with a width of 5 NM or less, both sides of the centerline, are shown by a .02" line.

Route segments with a width greater than 5 NM, either or both sides of the centerline, are shown by a .035" line.

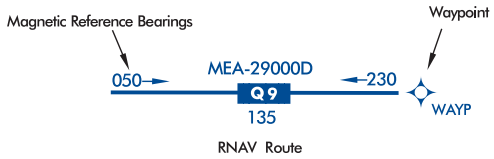
MTRs for particular chart pairs (ex. L1/2, etc.) are alphabetically, then numerically tabulated. The tabulation includes MTR type and unique identification and altitude range.

JET ROUTE SYSTEM (HIGH ALTITUDE ENROUTE CHARTS)

Jet routes are based on VOR or VORTAC NAVAIDs, and are depicted in black with a "J" identifier followed by the route number (e.g., "J12"). In Alaska, Russia and Canada some segments of jet routes are based on LF/MF NAVAIDs.

AREA NAVIGATION (RNAV) "Q" ROUTE SYSTEM (IFR ENROUTE HIGH ALTITUDE CHARTS)

The FAA has adopted certain amendments to Title 14, Code of Federal Regulations which paved the way for the development of new area high altitude navigation (RNAV) "Q" routes in the U.S. National Airspace System (NAS). These amendments enable the FAA to take advantage of technological advancements in navigation systems such as the GPS. RNAV "Q" Route MEAs are shown when other than FL 180 MEAs for DME/DME/Inertial Reference Unit (IRU) RNAV aircraft have a "D" suffix.



RNAV routes and associated data are charted in blue."Q" Routes on the IFR Gulf of Mexico charts are shown in black. Magnetic reference courses are shown originating from a waypoint, fix/reporting point, or NAVAID.

Joint Jet/RNAV route identification boxes will be located adjacent to each other with the route charted in black. With the exception of Q-Routes in the Gulf of Mexico, GNSS or DME/DME/IRU RNAV are required, unless otherwise indicated. DME/DME/IRU RNAV aircraft should refer to the Chart Supplement for DME information. Q-Routes in Alaska are GNSS Only. Altitude values are stacked highest to lowest.

Joint Jet/RNAV Route

TERRAIN CONTOURS ON AREA CHARTS

Based on a recommendation of the National Transportation Safety Board, terrain contours have been added to the Enroute Area Charts and are intended to increase pilots' situational awareness for safe flight over changes in terrain. The following Area Charts portray terrain: Anchorage, Denver, Fairbanks, Juneau, Los Angeles, Nome, Phoenix, San Francisco, Vancouver and Washington.

When terrain rises at least a 1,000 feet above the primary airports' elevation, terrain is charted using shades of brown with brown contour lines and values. The initial contour will be 1,000 or 2,000 feet above the airports' elevation. Subsequent intervals will be 2,000 or 3,000 foot increments.

Contours are supplemented with a representative number of spots elevations and are shown in solid black. The highest elevation on an Area Chart is shown with a larger spot and text.

The following boxed note is added to the affected Area Charts.

NOTE: TERRAIN CONTOURS HAVE BEEN ADDED TO THOSE AREA CHARTS WHERE THE TERRAIN ON THE CHART IS 1000 FOOT OR GREATER THAN THE ELEVATION OF THE PRIMARY AIRPORT

IFR ENROUTE LOW / HIGH ALTITUDE SYMBOLS (U.S., PACIFIC AND ALASKA CHARTS)

AIRPORTS

Airport Data - Low/High Altitude

Civil — **Charts: High/Low**

Civil And Military — **Charts: High/Low**

Military — **Charts: High/Low**

Seaplane - Civil — **Charts: Low**

Heliport — **Charts: Low**

Emergency Use Only

Pacific Only

Facilities in BLUE or GREEN have an approved Instrument Approach Procedure and/or RADAR MINIMA published in either the FAA Terminal Procedures Publication or the DoD FLIPs. Those in BLUE have an Instrument Approach Procedure and/or RADAR MINIMA published at least in the High Altitude DoD FLIPs. Facilities in BROWN do not have a published Instrument Procedure or RADAR MINIMA.

All IAP Airports are shown on the Low Altitude Charts.

Non-IAP Airports shown on the U.S. Low Altitude Charts have a minimum hard surface runway of 3000'.

Airports shown on the U.S. High Altitude Charts have a minimum hard surface runway of 5000'.

Airports shown on the Alask High Altitude Charts have a minimum hard or soft surface runway of 4000'.

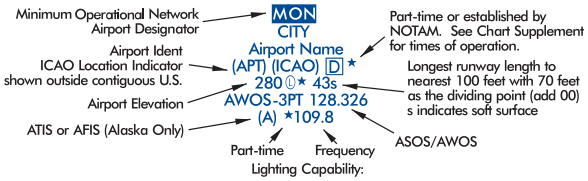
Associated city names for public airports are shown above or preceding the airport name and city name are the same only the airport name is shown. City names for military and private airports are not shown.

The airport identifier in parentheses follows the airport name or Pvt.

Pvt - Private Use

AIRPORT DATA DEPICTION

Low Altitude



1. Airport elevation given in feet above or below mean sea level

2. Pvt - Private use, not available to general public

3. A solid line box enclosed the airport name indicates FAR 93 Special Requirements - see Directory/Supplement

4. "NO SVFR" above the airport name indicates FAR 91 fixed-wing special VFR flight is prohibited.

5. C or D following the airport identifier indicates Class C or Class D Airspace

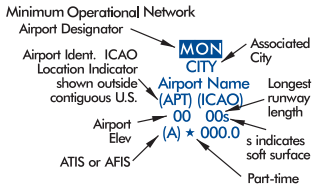
6. Associated city names for public airports are shown above or preceding the airport name. If airport name and city name are the same, only the airport name is shown. The airport identifier in parentheses follows the airport name. City names for military and private airports are not shown.

7. Airport Ident ICAO Location Indicator shown outside contiguous U.S.

8. AFIS Alaska only

High Altitude - U.S.

High Altitude - Alaska



Airports (Continued)

LIGHTING CAPABILITY

Lighting Available	L	Part-time or on request	★
Pilot Controlled Lighting	Ⓛ	No lighting available At private facilities- indicates no lighting information is available	-

RADIO AIDS TO NAVIGATION

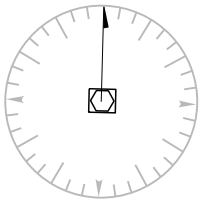
NAVAIDS

VOR	VOR/DME	TACAN	DME	NDB	NDB/DME	Reporting Function
⬡	⬡	⏢	□	◎	◎	Non Compulsory Reporting or Off Airway
⬢	⬢		■	◉	◉	Compulsory Reporting

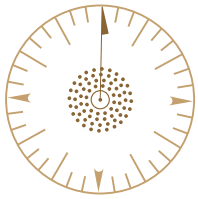
Note: VHF/UHF is depicted in Black. LF/MF is depicted in Brown. RNAV is depicted in Blue

Compass Roses

VHF/UHF



LF/MF

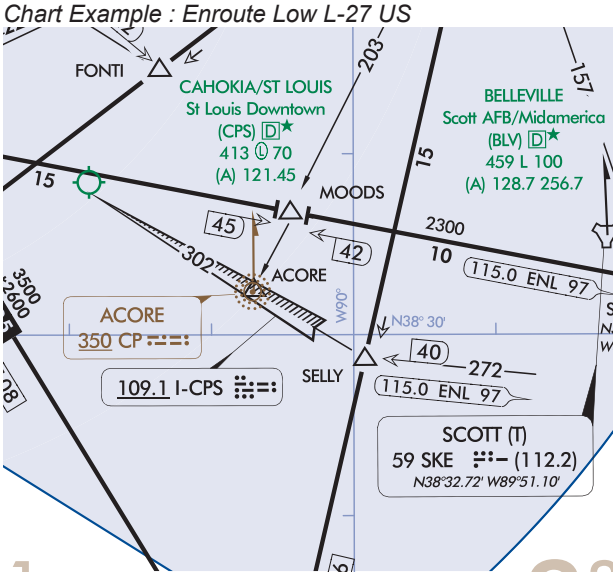


Compass Roses are orientated to Magnetic North of the NAVAID which may not be adjusted to the charted isogonic values.

Compass Locator Beacon

LOW ALTITUDE

Chart Example : Enroute Low L-27 US



FAA Chart Users' Guide - IFR Enroute Symbology

RADIO AIDS TO NAVIGATION (Continued)

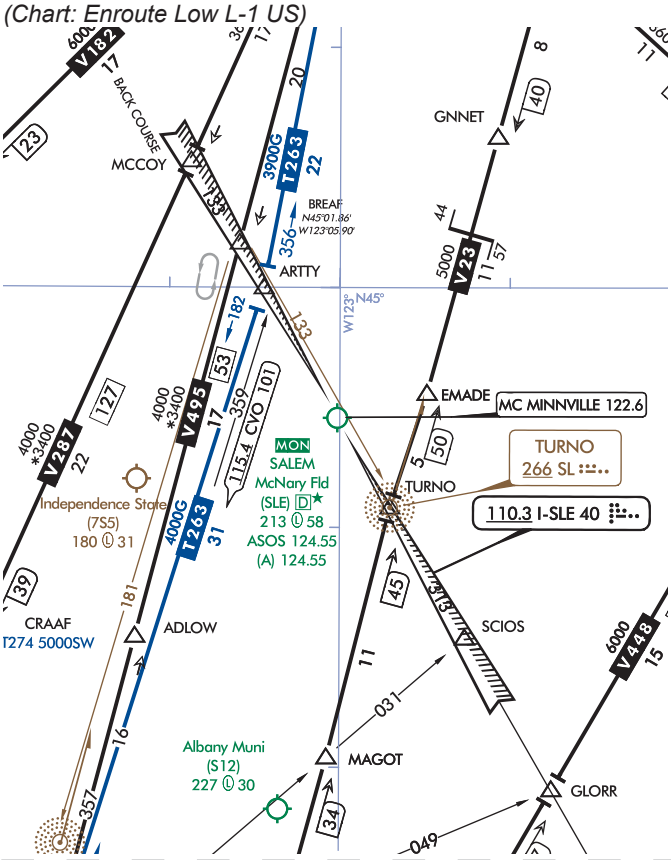
LOW ALTITUDE

ILS LOCALIZER

ILS Localizer Course with additional navigation function

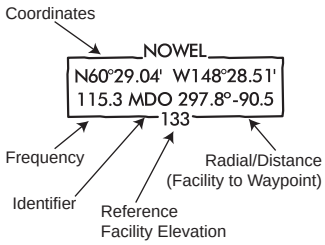
ILS Localizer Back Course with additional navigation function

ILS Localizer Example with Back Course
(Chart: Enroute Low L-1 US)



HIGH ALTITUDE - ALASKA

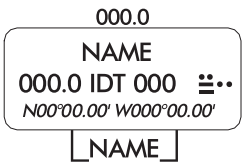
VOR/DME RNAV WAYPOINT DATA



NAVIGATION AND COMMUNICATION BOXES - COMMON ELEMENTS

LOW ENROUTE CHARTS

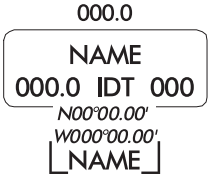
RCO Frequencies
NAVAID Name
FREQ, Ident, CH, Morse Code
Latitude, Longitude
Controlling FSS Name



HIGH ENROUTE CHARTS

RCO Frequencies
NAVAID Name
Frequency, Ident, Channel,
Latitude, Longitude

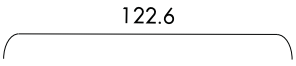
Controlling FSS Name



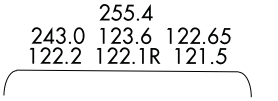
COMMON ELEMENTS (HIGH AND LOW CHARTS)

RCO Frequency

Single Frequency



Multiple Frequencies
Frequencies transmit and receive except those followed by R and T:
R - Receive Only T - Transmit Only



NAVAID Box

Thin line NAVAID boxes without frequency(s) and FSS radio name indicates no FSS frequencies available.

Shadow NAVAID box indicates NAVAID and Flight Service Station (FSS) have same name.

RADIO AIDS TO NAVIGATION (Continued)

Navigation and Communication Boxes - Common Elements

Frequency Protection

Frequency Protection usable range at 18,000' AGL - 40 NM (L)

Frequency Protection usable range at 12,000' AGL - 25 NM (T)

DISTANCE MEASURING EQUIPMENT

Facilities that operate in the "Y" mode for DME reception (Y)

VOICE COMMUNICATIONS VIA NAVAID

Voice Transmitted 112.6

No Voice Transmitted 111.0

NAVAID SHUTDOWN STATUS

VHF/UHF LF/MF

PART TIME OR ON-REQUEST

VHF/UHF ★ LF/MF ★

AUTOMATED WEATHER BROADCAST SERVICES

ASOS/AWOS - Automated Surface Observing Station/Automated Weather Observing Station

VHF/UHF (A) LF/MF (A)

LATITUDE AND LONGITUDE

Latitude and Longitude coordinates are provided for those NAVAIDs that make up part of a route/airway or a holding pattern. All TACAN facilities will include geographic coordinates.

LOW ENROUTE *N00°00.00' W000°00.00'*

HIGH ENROUTE *N00°00.00' W000°00.00'*

Navigation and Communication Boxes - Examples

LOW ENROUTE CHARTS

VOR

R - Receive only 122.1R

122.1R
ALLENDALE
116.7 ALD
N33°00.75' W81°17.53'
ANDERSON

Controlling FSS Name - ANDERSON

(T) - Service Volume

POLK (T)
108.4 FXU

Receive & Transmit on 122.35
(T) - Service Volume
Latitude and Longitude
Controlling FSS Name - MACON

122.35
TIFT MYERS (T)
112.5 IFM
N31°25.72' W83°29.33'
MACON

HIGH ENROUTE CHARTS

VOR

CECIL
117.9 VQQ
N30°12.78'
W81°53.45'

RADIO AIDS TO NAVIGATION (Continued)

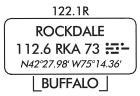
Navigation And Communication Boxes - Examples (Continued)

LOW ENROUTE CHARTS

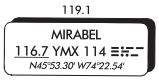
VOR/DME

No Voice Communications
(Y) Mode DME

R - Receive only 122.1R
Controlling FSS Name - BUFFALO

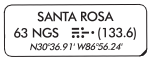


Shadow NAVAID Box
FSS Associated with NAVAID



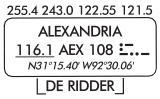
TACAN

TACAN Channels are without
voice but not underlined



Part Time NAVAID

VORTAC



Shutdown status

DME

DME Channel, Ident, Morse Code,
VHF Frequency

NDB

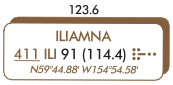
A - ASOS/AWOS Available

Shutdown status

NDB/DME

No Voice Communications
(Y) Mode DME

Shadow NAVAID Box
FSS Associated with NAVAID

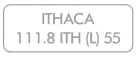


Notes:

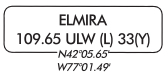
HIGH ENROUTE CHARTS

VOR/DME

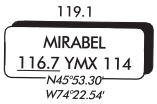
Off Route (Greyed NAVAID Box
and NAVAID)



Service Volume - L
DME in Y Mode

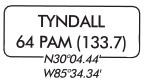


Shadow NAVAID Box
FSS Associated with NAVAID

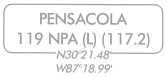


TACAN

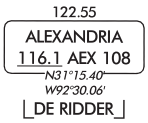
Off Route



Off Route - Part Time NAVAID
(Greyed NAVAID Box and NAVAID)
Service Volume - L



VORTAC

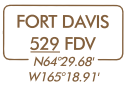


Off Route (Greyed NAVAID Box
and NAVAID)
Service Volume - L

DME

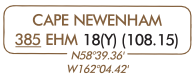
DME Channel, Ident,
VHF Frequency

NDB



NDB/DME

No Voice Communications
(Y) Mode DME



Shadow NAVAID Box
FSS Associated with NAVAID

Notes: *Morse Code is not shown on High NAVAID Boxes.*

RADIO AIDS TO NAVIGATION (Continued)

Stand Alone Flight Services and Communication Outlets

Flight Service Station (FSS)

Shadow NAVAID boxes indicate Flight Service Station (FSS) locations. Frequencies 122.2, 255.4 and emergency 121.5 and 243.0 are available at many FSSs and are not shown. All other frequencies are show above the box.

Certain FSSs provide Local Airport Advisory (LAA) on 123.6.

Frequencies transmit and receive except those followed by R and T:
R - Receive Only
T - Transmit Only

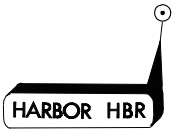
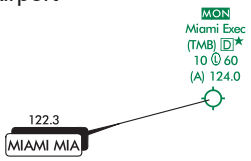
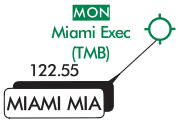
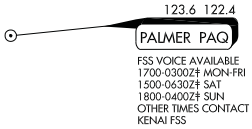
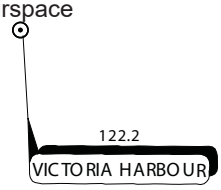
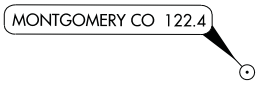
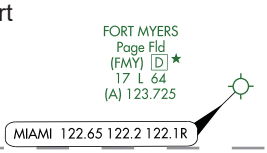
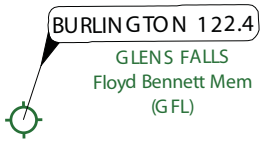
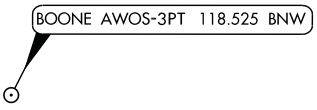
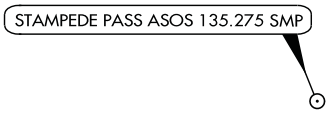
In Canada, shadow boxes indicate FSSs with standard group frequencies of 121.5, 126.7 and 243.0.

Remote Communications Outlet (RCO)

Thin line NAVAID boxes without frequencies and controlling FSS name indicate no FSS frequencies available. Frequencies positioned above the thin line boxes are remoted to the NAVAID sites. Other frequencies at the controlling FSS named are available, however altitude and terrain may determine their reception.

In Canada, a "D" after the frequency indicates a dial-up remote communications outlet.

Stand Alone AWOS & ASOS

	LOW CHARTS	HIGH CHARTS
Stand Alone FSS		
Stand Alone FSS Associated with an Airport		
Part-time FSS		
Stand Alone FSS within Canadian Airspace		
Stand Alone RCO		
RCO Associated/Co-located with an Airport		
Stand Alone AWOS & ASOS		

AIRSPACE INFORMATION

Airway/Route Types
Low and High Enroute Airway Data:

VHF/UHF Data is depicted in Black.
LF/MF Data is depicted in Brown.
RNAV Route data is depicted in Blue

Low Enroute Charts

Victor Airways

LF/MF Airway

Uncontrolled LF/MF Airway

RNAV T Route

GNSS Required

RNAV TK Helicopter Route

GNSS Required

Preferred Single Direction Victor Route

Unusable Route Segment

Direction of Flight Indicator Canadian Routes Only

Military Training Routes (MTR)

MTRs 5NM or less both sides of centerline

MTRs greater than 5NM either or both sides of centerline

Arrow indicates direction of route

See MTR tabulation for altitude range information

All IR and VR MTRs are shown except those VRs at or bleow 1500' AGL

CAUTION: Inset charts do not depict MTRs

High Enroute Charts

Jet Routes

Atlantic Routes

Bahama Routes

RNAV Q Routes

Alaska Q Routes require GNSS and radar surveillance. Within the CONUS, GNSS or DME/DME/IRU RNAV required, unless otherwise indicated. DME/DME/IRU aircraft require radar surveillance. Refer to Chart Supplement for DME information.

Preferred Single Direction Jet Routes

Preferred Single Direction RNAV Q Routes

Single Direction ATS Route

Unusable Route Segment

By-Pass Route

Jet Route Centerline by-passing a facility which is not part of that specific route.

Low and High Enroute Charts

ATS Route

Oceanic Route

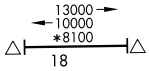
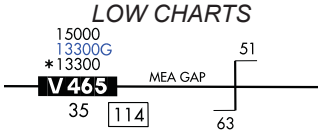
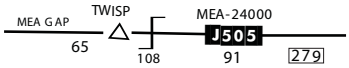
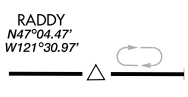
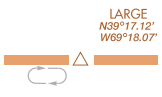
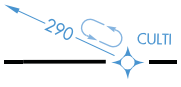
Substitute Route

All relative and supporting data shown in brown.

See NOTAMs or appropriate publication for specific information.

FIXES VHF/UHF	FIXES LF/MF	REPORTING FUNCTION	WAYPOINTS RNAV
		Compulsory Position Reporting	
		Non-Compulsory Position Reporting	
N25°46.47' W76°16.28'	N29°36.00' W88°01.00'	**Fix or Waypoint Coordinates** *Fix Coordinates are shown for compulsory, offshore and holding fixes.* *Waypoints Coordinates are shown when waypoint is not part of a RNAV route and when located on or beyond the boundary of the U.S. Continental Control (12 mile limit).*	N44°25.36' W64°11.00'
		Off-set arrows indicate facility forming a fix *- Arrow points away from the VHF/UHF NAVAID* *- Arrow points towards the LF/MF NAVAID*	N/A
		Distance Measuring Equipment (DME) Fix *Denotes DME fix (distance same as airway / route mileage)*	N/A
VHF/UHF		**Distance Measuring Equipment (DME) Fix** *Denotes DME fix (encircled mileage shown when not otherwise obvious)*	RNAV N/A
		Example: *First segment, 5NM; second segment 10NM; total milage provided in encircled DME arrow.*	N/A
VHF/UHF	LF/MF	**Total Mileages between Compulsory Reporting Points or NAVAIDs** *Note: All mileages are in Nautical Miles*	RNAV N/A
54	125	**MILEAGE BETWEEN OTHER FIXES, NAVAIDs AND/OR MILEAGE BREAKDOWN**	125
(AFWOX)	(MSABI)	**Mileage Breakdown or Computer Navigation Fix (CNF)** *Five letter identifier in parentheses indicates CNF with no ATC function*	N/A
000.0 IDT 000	000 ID	**FACILITY LOCATOR BOATS** *Crosshatch indicates Shutdown status of NAVAID*	N/A
000	N/A	**RADIAL OUTBOUND FROM A VHF/UHF NAVAID** *All Radials are magnetic.*	N/A
N/A	000	**BEARING INBOUND TO AN LF/MF NAVAID** *All Bearings are magnetic.*	N/A
N/A	N/A	**MAGNETIC REFERENCE BEARING**, outbound from a NAVAID or Fix *Note: Not shown on joint Victor/RNAV or Jet/RNAV Routes.*	000

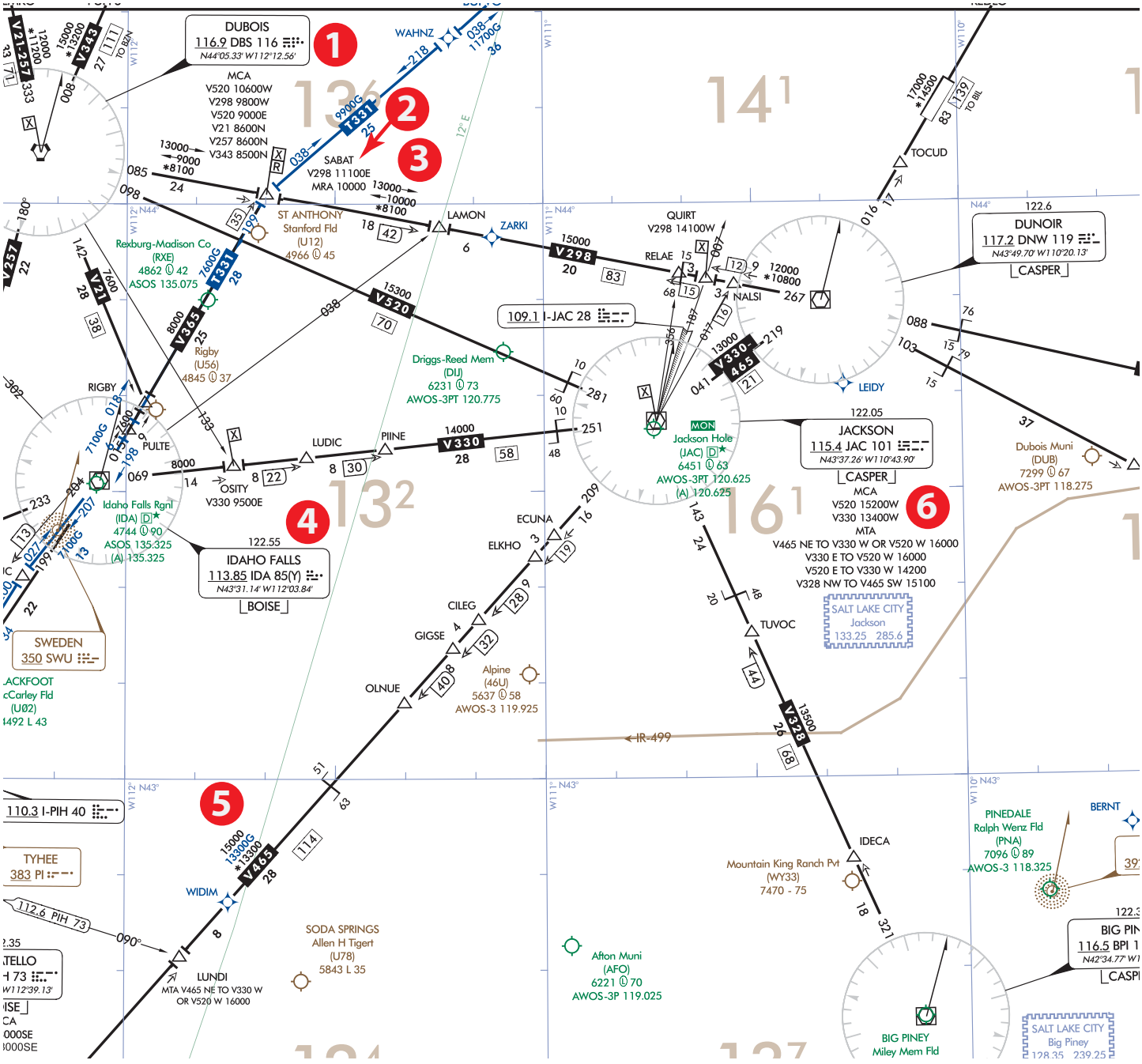
Airspace Information (Continued)

VHF/UHF	LF/MF		RNAV
LOW CHARTS	*LOW CHARTS*	**MINIMUM ENROUTE ALTITUDE (MEA)** All Altitudes Are MSL Unless Otherwise Noted.	*LOW CHARTS*
0000	0000		0000G
		Directional MEAs	
HIGH CHARTS	*HIGH CHARTS*		*HIGH CHARTS*
MEA-29000	MEA-FL240	MEAs are shown on IFR High Altitude Charts when MEA is other than 18,000'.	MEA for GNSS RNAV aircraft MEA-24000G MEA for DME/DME/IRU RNAV aircraft MEA-24000D
LOW CHARTS  *HIGH CHARTS* 		**MINIMUM ENROUTE ALTITUDE (MEA) GAP** MEA is established when there is a gap in navigation signal coverage.	N/A
LOW / HIGH CHARTS	*LOW / HIGH CHARTS*	**Maximum Authorized Altitude (MAA)** All Altitudes Are MSL Unless Otherwise Noted.	*LOW / HIGH CHARTS*
MAA-00000	MAA-00000	MAAs are shown on IFR High Altitude Charts when MAA is other than 45,000'.	MAA-00000
LOW CHARTS	*LOW CHARTS*	**Minimum Obstruction Clearance Altitude (MOCA)** All Altitudes Are MSL Unless Otherwise Noted.	*LOW CHARTS*
*0000	*0000		*0000
LOW CHARTS	*LOW CHARTS*	**Minimum Turning Altitude (MTA) and Minimum Crossing Altitude (MCA)** See Low Enroute Chart Example below for examples of both MTAs and MCAs.	*LOW CHARTS*
		MINIMUM RECEPTION ALTITUDE (MRA)	N/A
		ALTITUDE CHANGE MEA, MOCA and/or MAA change at other than NAVAIDs	
LOW / HIGH CHARTS 	*LOW / HIGH CHARTS* 	**CHANGEOVER POINT** Changeover Point giving mileage to NAVAIDs (Not shown at midpoint locations.)	N/A
  		**HOLDING PATTERNS** RNAV Holding Pattern Magnetic Reference Bearing is determined by the isogonic value at the waypoint or fix. Holding Pattern with maximum restriction airspeed 210K applies to altitudes 6000' to and including 14000'. 175K applied to all altitudes. Airspeed depicted is Indicated Airspeed (IAS)	

AIRSPACE INFORMATION (Continued)

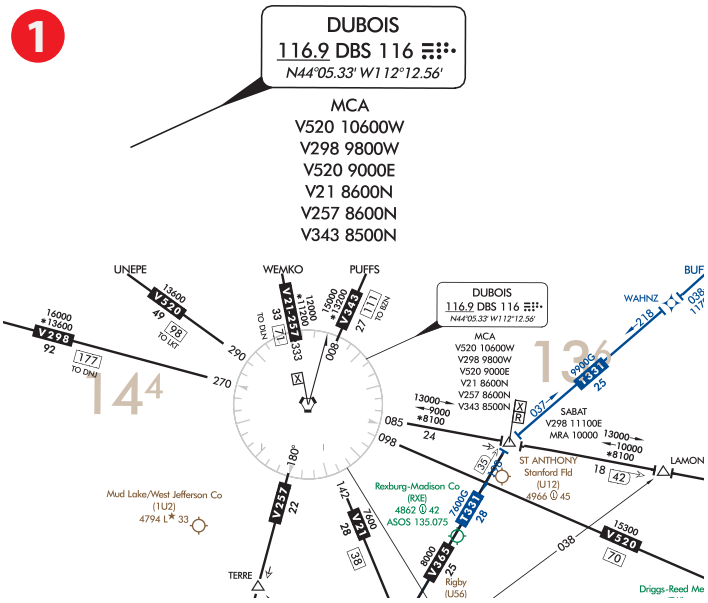
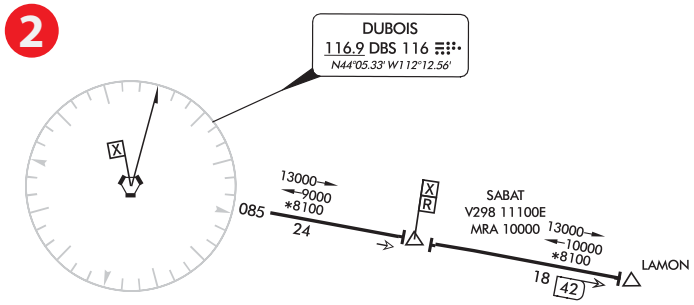
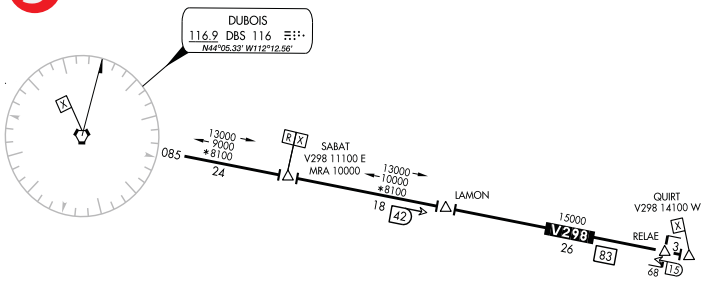
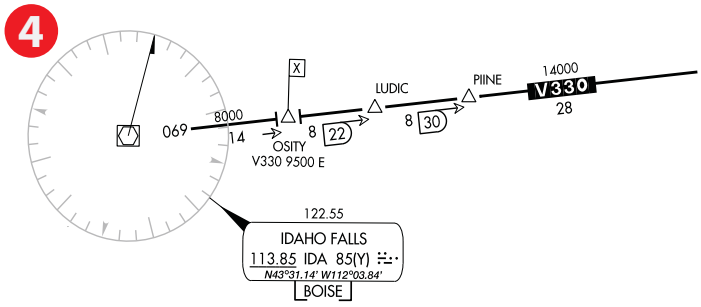
Enroute Chart Examples

Low Enroute Chart



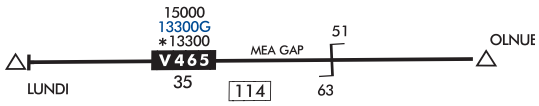
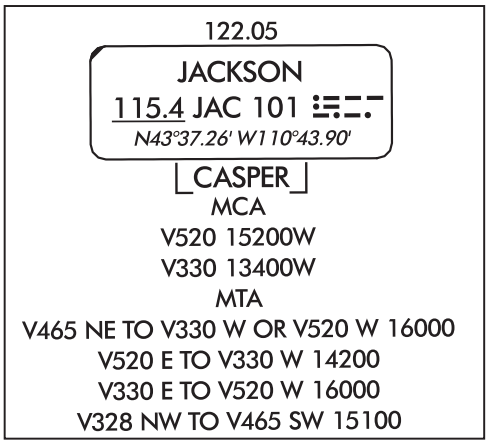
AIRSPACE INFORMATION (Continued)

Enroute Chart Examples
Low Enroute Chart (Continued)

Reference Number	Description
1 	**Multiple MCAs at a NAVAID** V21 and V257 - MCA at DBS of 8600' traveling North V298 - MCA at DBS of 9800' traveling West V343 - MCA at DBS of 8500' traveling North V520 - MCA at DBS of 9000' traveling East V520 - MCA at DBS of 10600' traveling West
2 	**MCA and MRA at a Fix** MCA at SABAT on V298 of 11,100 traveling East. MRA at SABAT of 10000.
3 	**Example of MOCA and directional MEAs along a Victor Route** Traveling East from DBS, MEA 13,000' the first two segments, 15,000 along third segment. Traveling West from QUIRT, MEA of 15,000' the first segment, MEA of 10,000 the second segment and MEA of 9,000 the third segment. MOCA for DBS to SABAT and SABAT to LAMON segments of 8100
4 	**MCA Example** MCA at OSITY on V330. MCA of 9500' traveling East on V330 from Idaho Falls (IDA) VOR-DME.

Enroute Chart Examples

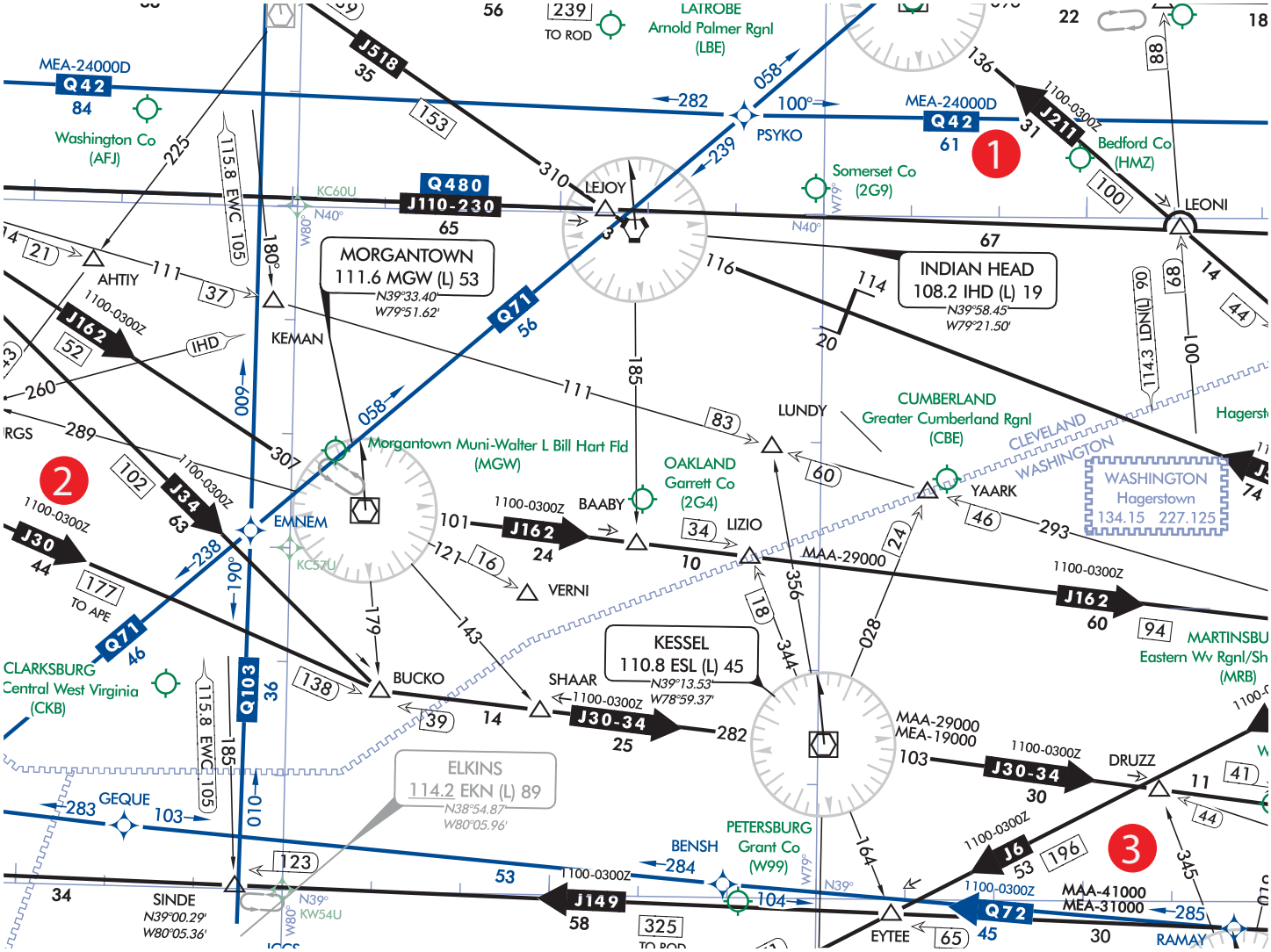
Low Enroute Chart (Continued)

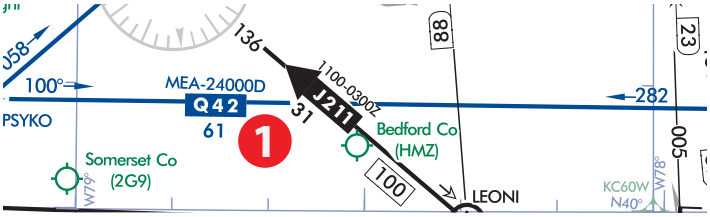
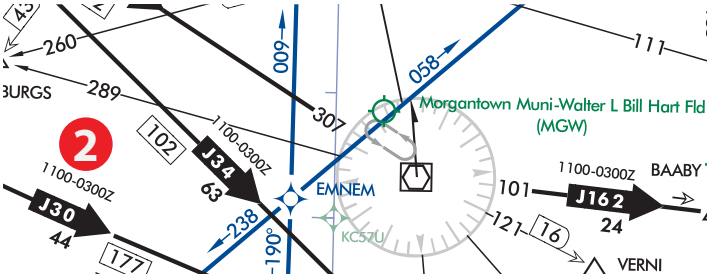
Reference Number	Description
5 	**MEA VHF and RNAV Example** MEA for aircraft utilizing VHF NAVAID of 15000’ MEA for aircraft utilizing RNAV of 13300’ MOCA of 13300’
6 	**MCA and MTA Example at a NAVAID** MCA for aircraft traveling West along V520 to cross JAC at 15200’ MCA for aircraft traveling West along V330 to cross JAC at 13400’ MTA for aircraft crossing over and turning at JAC: Aircraft traveling NE on V465 and turning to V330 on a W heading or turning to V520 on a W heading must turn at altitude of 16000’ or higher Aircraft traveling E on V520 and turning to V330 on a W heading must turn at altitude of 14200’ Aircraft traveling E on V330 and turning to V520 on a W heading must turn at altitude of 16000’ or higher Aircraft traveling NW on V328 and turning to V465 on a SW heading must turn at altitude of 15100’ or higher.

Airspace Information (Continued)

Enroute Chart Examples

High Enroute Chart

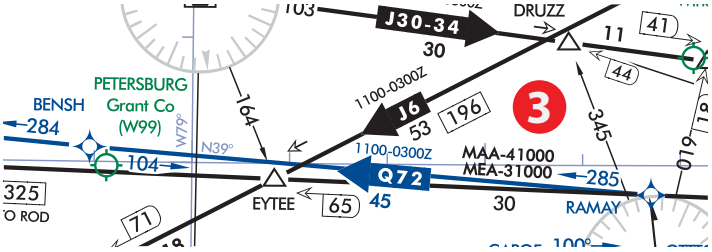


Reference Number	Description
	**High RNAV Route with MEA for DME/DME/IRU RNAV Aircraft** *MEA of 24,000'*
	**Directional Jet Route with Time Restrictions** *Jet Route 34 available between 1100 - 0300Z*

AIRSPACE INFORMATION (Continued)

Enroute Chart Examples
High Enroute Chart (Continued)

Reference Number



Description

Directional Jet Route with Time Restrictions, MAA and MEA

Jet Route 149 available between 1100 - 0300Z
MAA - 41,000'
MEA - 31,000'

AIRSPACE BOUNDARIES

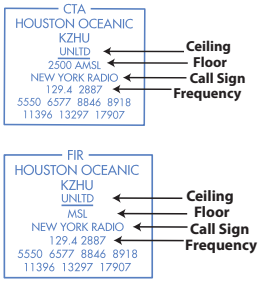
Air Defense Identification Zone (ADIZ)

LOW / HIGH CHARTS

Adjoining ADIZ

Air Traffic Service Identification Data

LOW / HIGH CHARTS

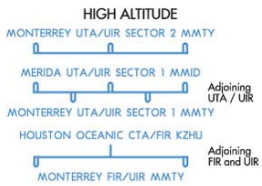


Flight Information Regions (FIR)

LOW / HIGH CHARTS

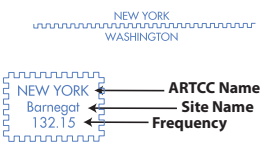
Upper Information Regions (UIR)

Upper Control Areas (UTA)



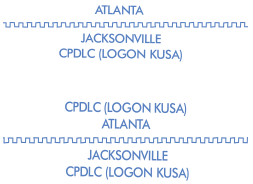
Air Route Traffic Control Center (ARTCC)

LOW / HIGH CHARTS



ARTCC Remoted Sites with discrete VHF and UHF frequencies

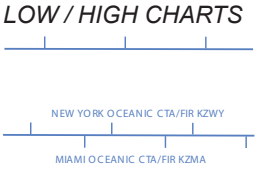
Air Route Traffic Control Center (ARTCC) with Controller Pilot Data Link Communications (CPDLC)



Altimeter Setting Change

Control Areas (CTA)

LOW / HIGH CHARTS



Adjoining CTA

Additional Control Areas

LOW ALTITUDE

HIGH ALTITUDE

Airspace - U.S.

Class A

High Chart Only

Controlled Airspace

Open Area (White)

That airspace from 18,000' MSL to and including FL 600, including the airspace overflying the waters within 12 NM of the coast of the contiguous United States and Alaska and designated offshore areas, excluding Santa Barbara Island, Farallon Island, the airspace south of latitude 25° 04'00" N, the Alaska peninsula west of longitude 160°00'00" W, and the airspace less than 1,500' AGL.

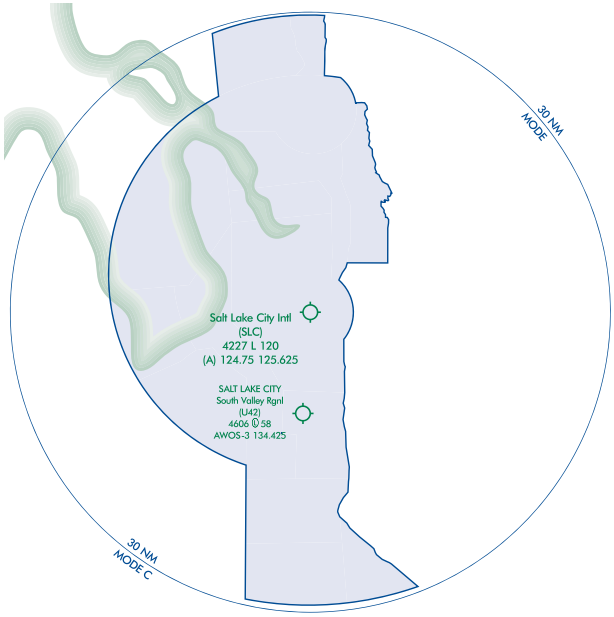
That airspace from 18,000' MSL to and including FL 450, including Santa Barbara Island, Farallon Island, the Alaska peninsula west of longitude 160°00'00" W, and designated offshore areas.

Class B

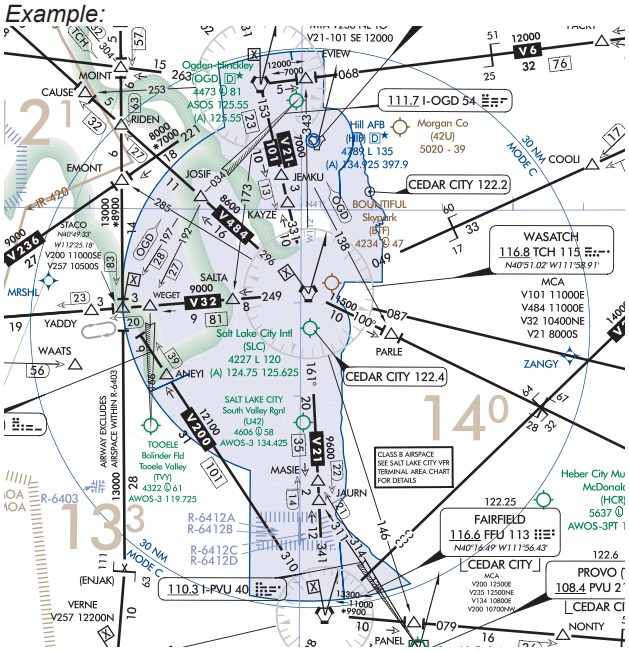
Low Chart Only

Controlled Airspace

Screened Blue with a Solid Blue Outline



Example:



That airspace from the surface to 10,000' MSL (unless otherwise designated) surrounding the nation's busiest airports. Each Class B airspace area is individually tailored and consists of a surface area and two or more layers.

Mode C Area

Low Chart Only

Controlled Airspace

A Solid Blue Outline

That airspace within 30 NM of the primary airports of Class B airspace and within 10 NM of designated airports. Mode-C transponder equipment is required. (See FAR 91.215)

Example:

See Chart example above.

AIRSPACE INFORMATION (Continued)

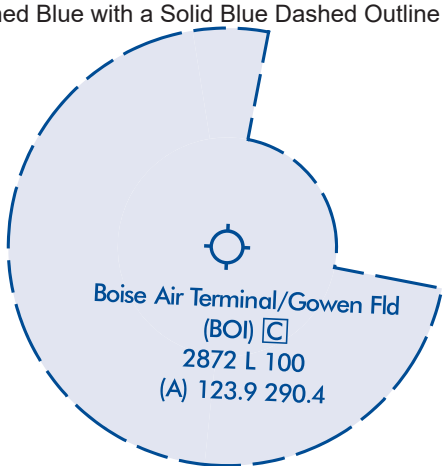
Airspace - U.S. (Continued)

CLASS C

Low Chart Only

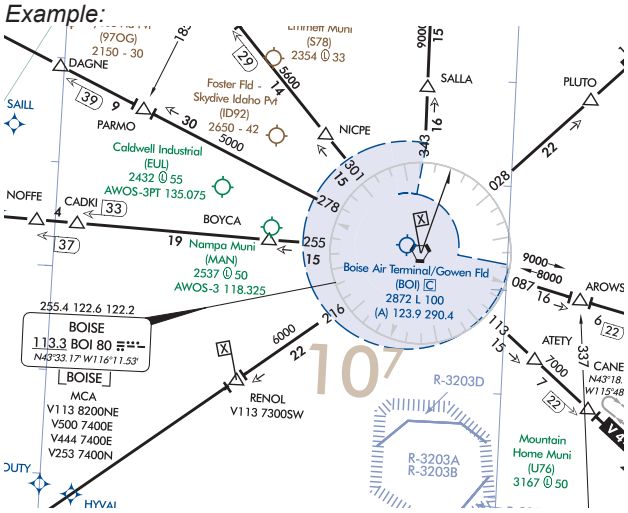
Controlled Airspace

Screened Blue with a Solid Blue Dashed Outline



That airspace from the surface to 4,000' (unless otherwise designated) above the elevation of selected airports (charted in MSL). The normal radius of the outer limits of Class C airspace is 10NM. Class C airspace is also indicated by the letter C in a box following the airport name.

Example:



CLASS D

Open Area (White)

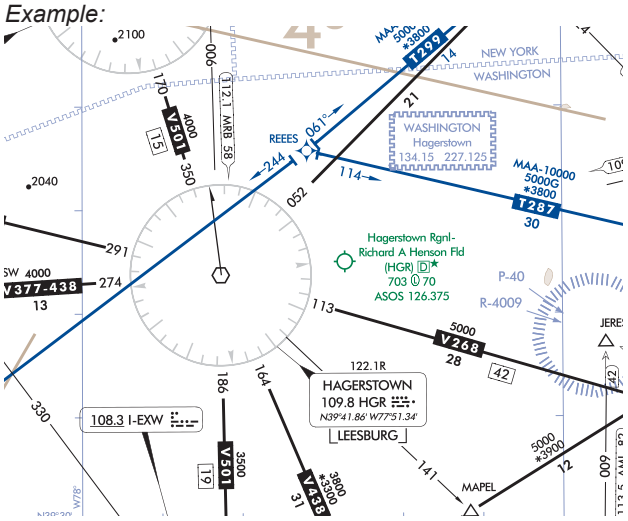
Low Chart Only

Controlled Airspace

Hagerstown Rgnl-
Richard A Henson Fld
(HGR) D★
703 L 70
ASOS 126.375

That airspace from the surface to 2,500' unless otherwise designated) above the airport elevation (charted in MSL), surrounding those airports that have an operational control tower. Class D airspace is indicated by the letter D in a box following the airport name.

Example:



CLASS E

Low Chart Only

Controlled Airspace

Open Area (White)

That controlled airspace below 14,500' MSL which is not Class B, C or D.

Federal Airways from 1,200' AGL to but not including 18,000' MSL (unless otherwise specified).

Other designated control areas below 14,500' MSL.

Not Charted

That airspace from 14,500' MSL to but not including 18,000' MSL, including the airspace overflying the waters within 12 NM of the coast of the contiguous United States and Alaska and designated offshore areas, excluding the Alaska peninsula west of longitude 160°00'00" W, and the airspace less than 1,500' AGL.

Airspace Information (Continued)

AIRSPACE - U.S.

CLASS G

Screened Brown Area

High and Low Chart

Uncontrolled Airspace

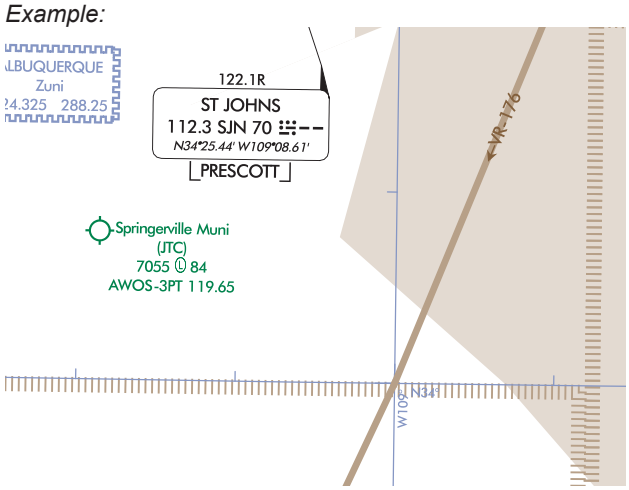
Low Altitude

That portion of the airspace below 14,500' MSL that has not been designated as Class B, C, D or E Airspace.

High Altitude

That portion of the airspace from 18,000' MSL and above that has not been designated as Class A airspace.

Example:



AIRSPACE - CANADIAN

CLASS B

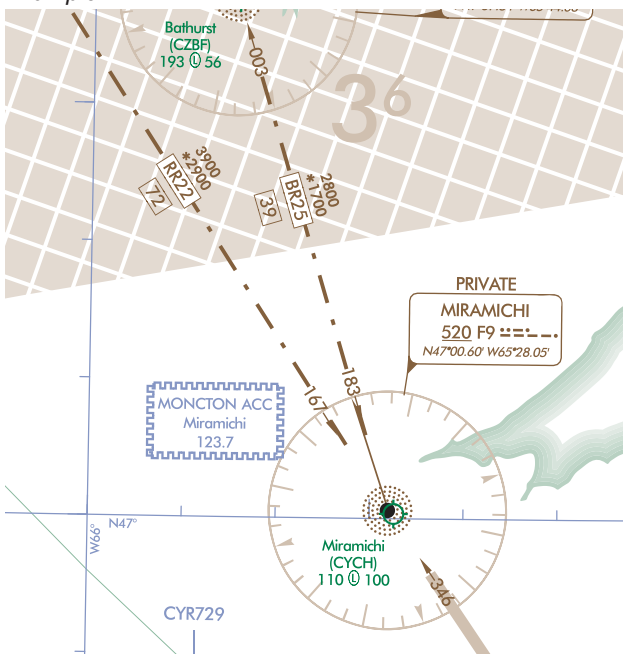
Screened Brown Checkered Area

Low Charts Only

Controlled Airspace

Controlled airspace above 12,500' MSL

Example:



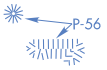
AIRSPACE INFORMATION (Continued)

Special Use Airspace - U.S.

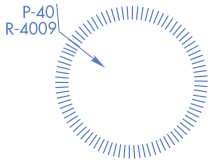
Low and High Charts

P - Prohibited Area

Example: P-56 - Washington DC, Area A-1 Chart

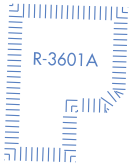


Example: P-40 and R-4009 - Washington DC, Area A-1 Chart



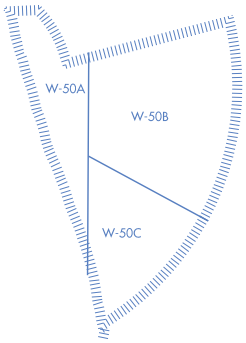
R - Restricted Area

Example: R3601A -



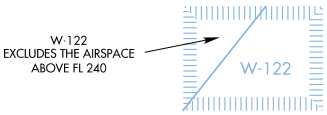
W - Warning Area

Example: W-50



See Airspace Tabulation on each chart for complete documentation information on:

Area Identification
Effective Altitude
Operating Times
Controlling Agency Voice Call

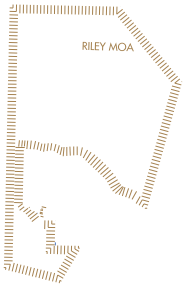


Low Charts Only

A - Alert Area

** Alert Areas do not extend into Class A, B, C and D airspace, or Class E airport surface areas.*

MOA - Military Operations Area



See Airspace Tabulation on each chart for complete documentation information on:
Area Identification
Effective Altitude
Operating Times
Controlling Agency Voice Call

AIRSPACE INFORMATION (Continued)

Off Route Obstruction Clearance Altitude (OROCA)

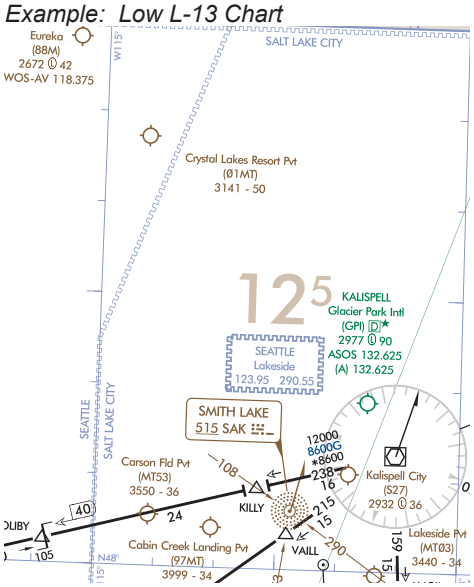
Low Charts Only

OROCA is computed similarly to the Maximum Elevation Figure (MEF) found on Visual charts except that it provides an additional vertical buffer of 1,000 feet in designated non-mountainous areas and a 2,000 foot vertical buffer in designated mountainous areas within the United States.

Example: 12,500 feet

12 5

Example: Low L-13 Chart

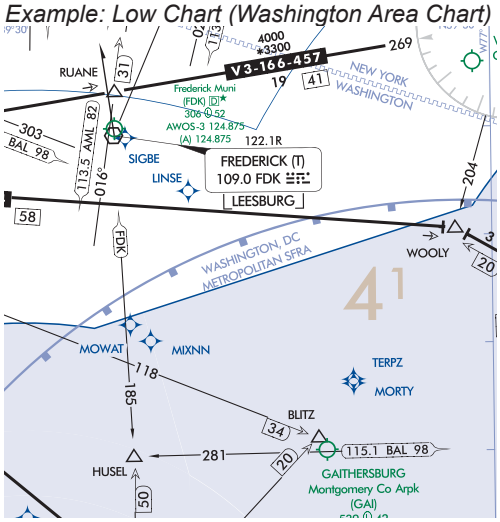


Special Flight Rules Area (SFRA)

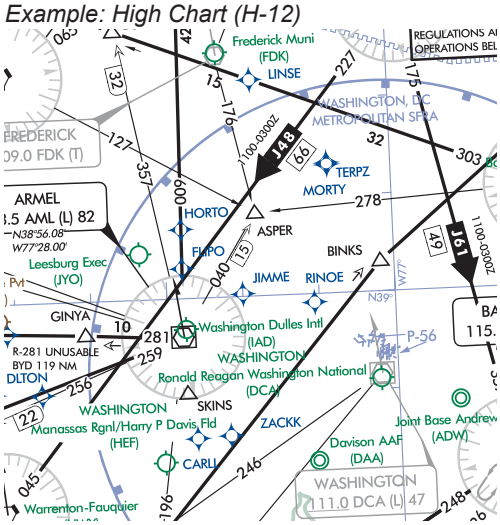
Low and High Charts

SFRA Symbology

Example: Low Chart (Washington Area Chart)



Example: High Chart (H-12)



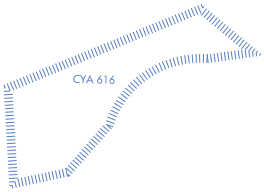
AIRSPACE INFORMATION (Continued)

Special Use Airspace - Canada & Caribbean

Low and High Charts

Canada Only

CYA - Advisory Area

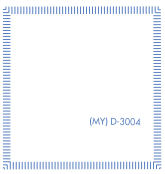


CYD - Danger Area

CYR - Restricted Area

Caribbean Only
D - Danger Area

In the Caribbean, the first two letters represent the country code, i.e. (MY) Bahamas, (MU) Cuba



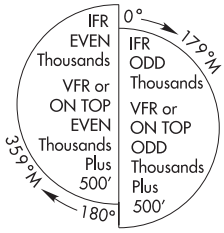
NAVIGATIONAL AND PROCEDURAL INFORMATION

Cruising Altitudes - Low Charts - U.S. Only

IFR outside controlled airspace.

IFR within controlled airspace as assigned by ATC.

ALL courses are magnetic.



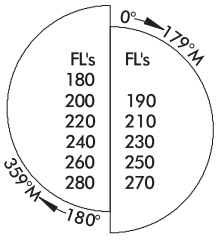
VFR above 3000' AGL unless otherwise authorized by ATC.

Cruising Altitudes - High Charts - U.S. Only

IFR within controlled airspace as assigned by ATC

All courses are magnetic.

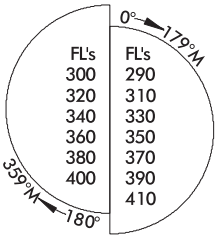
18,000' MSL to FL280



VFR or VFR On Top add 500'

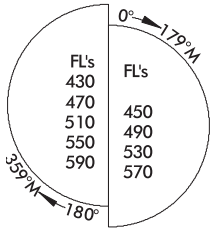
No VFR flights within Class A Airspace above 3000' AGL unless otherwise authorized

RVSM Levels FL290 to FL410



No VFR or VFR On Top authorized above FL285 in RVSM airspace.

FL430 and above



Navigational and Procedural Information (Continued)

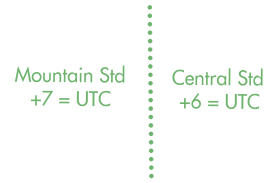
ISOGONIC LINE AND VALUE

LOW/HIGH CHARTS

ENLARGEMENT AREA

TIME ZONE

All time is Coordinated Universal Time (UTC)



During periods of Daylights Savings Time (DT), effective hours will be one hour earlier than shown. All states observe DT except Arizona and Hawaii

MATCH MARK

LOW/HIGH CHARTS

MORSE CODE

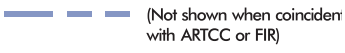
A ·–	F ··–·	K –·–	P ·––·	U ··–	1 ·————	6 –····			
B –···	G ––·	L ·–··	Q ––·–	V ···–	2 ··–––	7 ––···			
C –·–·	H ····	M ––	R ·–·	W ·––	3 ···––	8 –––··			
D –··	I ··	N –·	S ···	X –··–	4 ····–	9 ––––·			
E ·	J ·–––	O –––	T –	Y –·––	5 ·····	0 –––––			
				Z ––··					

CULTURE

Boundaries

International

LOW/HIGH ALTITUDE



U.S./Russia Maritime Line

LOW/HIGH ALTITUDE

Date Line

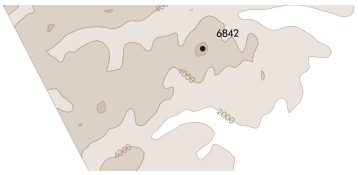
LOW/HIGH ALTITUDE

HYDROGRAPHY

SHORELINES

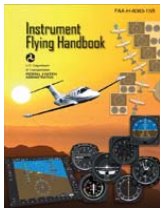
TOPOGRAPHY

TERRAIN
Area Charts



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
Advsry - 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 - Vertical 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)