EXPLANATION OF VFR TERMS AND SYMBOLS

This chapter covers the Sectional Aeronautical Chart (Sectional). These charts include the most current data at a scale of (1:500,000) which is large enough to be read easily by pilots flying by sight under Visual Flight Rules. Sectionals are named after a major city within its area of coverage.

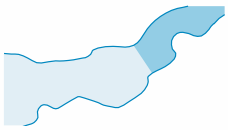
The chart legend includes aeronautical symbols and information about drainage, terrain, the contour of the land, and elevation. You can learn to identify aeronautical, topographical, and obstruction symbols (such as radio and television towers) by using the legend.

A brief description next to a small black square indicates the exact location for many of the landmarks easily recognized from the air, such as stadiums, pumping stations, refineries, etc. A small open circle indicates an Oil Well. Small black circles with a label show the location of water, oil and gas tanks. The scale for some items may be increased to make them easier to read on the chart.

AeroNav Products' charts are prepared in accordance with specifications of the Interagency Air Cartographic Committee (IACC) and are approved by representatives of the Federal Aviation Administration (FAA) and the Department of Defense (DoD).

WATER FEATURES (HYDROGRAPHY)

Water features are depicted using two tones of blue, and are considered either "Open Water" or "Inland Water." "Open Water," a lighter blue tone, shows the shoreline limitations of all coastal water features at the average (mean) high water levels for oceans and seas. Light blue also represents the connecting waters like bays, gulfs, sounds, fjords, and large estuaries.

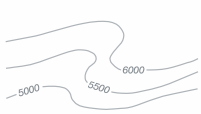


Exceptionally large lakes like the Great Lakes, Great Salt Lake, and Lake Okeechobee, etc., are considered Open Water features. The Open Water tone extends inland as far as necessary to adjoin the darker blue "Inland Water" tones. All other bodies of water are marked as "Inland Water" in the darker blue tone.

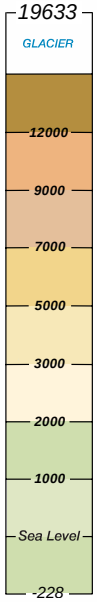
LAND FEATURES (TERRAIN) AND OBSTRUCTIONS

The elevation and configuration of the Earth's surface is important to pilots. Our Aeronautical Information Specialists are devoted to showing the contour of the earth and any obstructions clearly and accurately on our charts. We use five different techniques: contour lines, shaded relief, color tints, obstruction symbols, and Maximum Elevation Figures (MEF).

1. Contour lines join points of equal elevation. On Sectionals, basic contours are spaced at 500' intervals. Intermediate contours are typically at 250' intervals in moderately level or gently rolling areas. Auxiliary contours at 50', 100', 125', or 150' intervals occasionally show smaller relief features in areas of relatively low relief. The pattern of these lines and their spacing gives the pilot a visual concept of the terrain. Widely spaced contours represent gentle slopes, while closely spaced contours represent steep slopes.



2. Shaded relief shows how terrain may appear from the air. Shadows are shown as if light is coming from the northwest, because studies show that our visual perception has been conditioned to this view.



3. Different color tints show bands of elevation relative to sea level. These colors range from light green for the lower elevations, to dark brown for the higher elevations.
4. Obstruction symbols show man made vertical features that could affect safe navigation. FAA's Aeronautical Information Management (AIM) maintains a database of over 1,200,000 obstacles in the United States, Canada, the Caribbean, Mexico and U.S. Pacific Island Territories. Aeronautical Specialists evaluate each obstacle based on charting specifications before adding it to a visual chart. When a Specialist is not able to verify the position or elevation of an obstacle, it is marked UC, meaning it is "under construction" or being reported, but has not been verified.

The FAA uses a Digital Obstacle File (DOF) to collect and disseminate data. Because land and obstructions frequently change, the source data on obstructions and terrain is occasionally incomplete or not accurate enough for use in aeronautical publications. For example, when the FAA receives notification about an obstruction, and there is insufficient detail to determine its position and elevation, the FAA Flight Edit Program conducts an investigation.

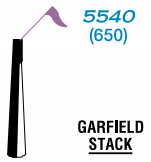
The Flight Edit crew visually verifies the cultural, topographic, and obstacle data. Charts are generally flight-checked every four years. This review includes checking for any obstruction that has been recently built, altered, or dismantled without proper notification.

Obstacles less than 1000' AGL.

Obstacles greater than 1000' AGL.

Sectional Charts and Terminal Area Charts (TACs) typically show manmade obstacles extending more than 200' Above

Ground Level (AGL), unless they appear in yellow city tint. Features considered to be hazardous obstacles to low-level flight are; smokestacks, tanks, factories, lookout towers, and antennas, etc. On World Aeronautical Charts (WACs) only those obstacles at 500' AGL and higher are charted.



Manmade features used by FAA Air Traffic Control as checkpoints use a graphic symbol shown in black with the required elevation data in blue. The elevation of the top of the obstacle above Mean Sea Level (MSL) and the height of the structure (AGL) is also indicated (when known or can be reliably determined by a Specialist). The AGL height is in parentheses below the MSL elevation. In extremely congested areas, the FAA typically omits the AGL values to avoid confusion.

Group Obstacle Symbol

Whenever possible, the FAA depicts specific obstacles on charts. However, in high-density areas like city complexes, only the highest obstacle is represented on the chart using the group obstacle symbol to maximize legibility.

(1501) UC
If space is available, the AGL height of the obstruction is shown in parentheses.

Obstacles under construction are indicated by placing the letters UC next to the obstacle type.


Guy wires may extend outward from obstacles.

Obstacles with high-intensity strobe lighting systems may operate part-time or by proximity activation and are shown as follows:

5. The Maximum Elevation Figure (MEF) represents the highest elevation within a quadrant, including terrain and other vertical obstacles (towers, trees, etc.). A quadrant on Sectionals is the area bounded by ticked lines dividing each 30 minutes of latitude and each 30 minutes of longitude. MEF figures are rounded up to the nearest 100' value and the last two digits of the number are not shown.

12^{5}
In this example the MEF represents 12,500'.

MEFs over land and open water areas are used in areas containing manmade obstacles such as oil rigs.

In the determination of MEFs, the FAA uses extreme care to calculate the values based on the existing elevation data shown on source material. Aeronautical Information Specialists use the following procedure to calculate MEFs:

When a manmade obstacle is more than 200' above the highest terrain within the quadrant:

1. Determine the elevation of the top of the obstacle above MSL.
2. Add the possible vertical error of the source material to the above figure (100' or 1/2 contour interval when interval on source exceeds 200'. U.S. Geological Survey Quadrangle Maps with contour intervals as small as 10' are normally used).
3. Round the resultant figure up to the next higher hundred-foot level.

Example:

Elevation of obstacle top (MSL) =	**2424**
Possible vertical error	**+100**
equals	**2524**
Raise to the following 100' level	**2600**
Maximum Elevation Figure	**26**

When a natural terrain feature or natural vertical obstacle (e.g. a tree) is the highest feature within the quadrangle:

1. Determine the elevation of the feature.
2. Add the possible vertical error of the source to the above figure (100' or 1/2 the contour interval when interval on source exceeds 200').
3. Add a 200' allowance for uncharted natural or manmade obstacles. Chart specifications don't require the portrayal of obstacles below minimum height.
4. Round the figure up to the next higher hundred-foot level.

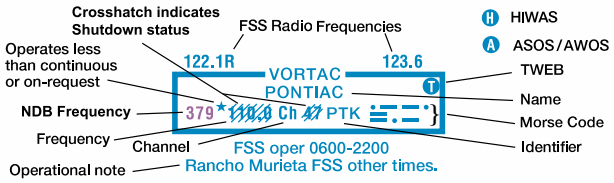
Example:

Elevation of obstacle top (MSL) =	**3450**
Possible vertical error	**+100**
Obstacle Allowance	**+200**
equals	**3750**
Raise to the following 100' level	**3800**
Maximum Elevation Figure	**38**

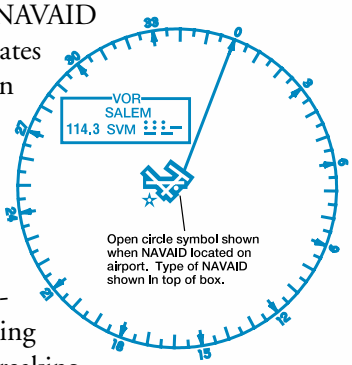
Pilots should be aware that while the MEF is based on the best information available to the Specialist, the figures are not verified by field surveys. Also, users should consult the Aeronautical Chart Bulletin in the A/FD or AeroNav Products website to ensure that your chart has the latest MEF data available.

RADIO AIDS TO NAVIGATION

On VFR Charts, information about radio aids to navigation (NAVAID) is boxed, as illustrated. Duplication of data is avoided. When two or more radio aids in a general area have the same name with different frequencies, Tactical Air Navigation (TACAN) channel numbers, or identification letters, and no misinterpretation can result, the name of the radio aid may be indicated only once within the identification box. Very High Frequency/Ultra High Frequency (VHF/UHF) Navigation Aid (NAVAID) names and identification boxes (shown in blue) take precedence. Only those items that differ (e.g., frequency, Morse Code) are repeated in the box in the appropriate color. The choice of separate or combined boxes is made in each case on the basis of economy of space and clear identification of the radio aids.



A NAVAID that is physically located on an airport may not always be represented as a typical NAVAID symbol. A small open circle indicates the NAVAID location when collocated with an airport icon. The type of NAVAID will be identified by: "VOR," (VHF Omni-Directional Range) "VORTAC" (VOR Tactical Aircraft Control) or "VOR-DME," (VOR-Distance Measuring Equipment) positioned on and breaking the top line of the NAVAID box.



AIRPORTS

Airports in the following categories are charted as indicated (additional symbols are shown later in this Section).

Public use airports:

- Hard-surfaced runways greater than 8069' or some multiple runways less than 8069'
- Hard-surfaced runways 1500' to 8069'
- Other than hard-surfaced runways
- Seaplane bases

Military airports:

- Other than hard-surfaced runways

Hard-surfaced U.S. military runways are depicted like public-use airports. They are identified by abbreviations such as: AAF (Army Air Field), AFB (Air Force Base), MCAS (Marine Corps Air Station), NAS (Naval Air Station), NAF (Naval Air Facility), NAAS (Naval Auxiliary Air Station), etc.

Canadian military airports are identified by the abbreviation DND (Department of National Defense).

Services available:

Tick marks around the basic airport symbol indicate that fuel is available and the airport is tended during normal working hours (Monday through Friday 10:00 A.M. to 4:00 P.M. local time).

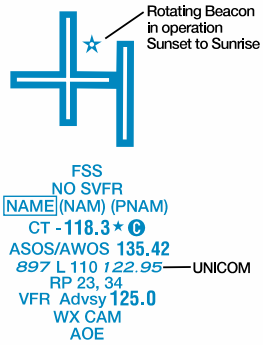
Other airports with or without services:

(H) (F) (U) (R)

Airports are plotted in their true geographic position unless the symbol conflicts with a NAVAID at the same location. In such cases, the airport symbol will be displaced, but the relationship between the airport and the NAVAID will be retained.

Airports are identified by their designated name. Generic parts of long airport names (such as "airport," "field," or "municipal") and the first names of persons are commonly omitted unless they are needed to distinguish one airport from another with a similar name.

The figure at right illustrates the coded data that is provided along with the airport name.



The elevation of an airport is the highest point on the usable portion of the landing areas. Runway length is the length of the longest active runway, including displaced thresholds and excluding overruns. Runway length is shown to the nearest 100', using 70 as the rounding point; a runway 8070' in length is charted as 81, while a runway 8069' in length is charted as 80. If a seaplane base is collocated with an airport, there will be additional seaplane base water information listed for the elevation, lighting and runway.

FSS - Flight Service Station on field
NO SVFR - Airports where fixed wing special visual flight rules operations are prohibited (shown above airport name) F.A.R. 91
[ ] - Indicates F.A.R. 93 Special Air Traffic Rules and Airport Traffic Patterns
(NAM) - Location Identifier
(PNAM) - ICAO Location Indicator
CT - 118.3 - Control Tower (CT) - primary frequency
★ - Star indicates operation part-time. See tower frequencies tabulation for hours of operation
C - Follows the Common Traffic Advisory Frequency (CTAF) (Not shown on WAC)
ATIS 123.8 - Automatic Terminal Information Service
AFIS 135.2 - Automatic Flight Information Service
ASOS/AWOS 135.42 - Automated Surface Weather Observing Systems; shown when full-time ATIS is not available. (Not shown on WAC) Some ASOS/AWOS facilities may not be located at airport.
897 - Elevation in feet
L - Lighting in operation Sunset to Sunrise
*L - Lighting limitations exist; refer to Airport/Facility Directory.
110 - Length of longest runway in hundreds of feet; usable length may be less.
UNICOM - Aeronautical advisory station ("U" only on WAC)
RP 23, 34 - Runways with Right Traffic Patterns (public use) (Not shown on WAC)
RP* - (See Airport/Facility Directory)
VFR Advsy 125.0 - VFR Advisory Service shown where ATIS is not available and frequency is other than primary CT frequency.
WX CAM - Weather Camera (AK)
AOE - Airport of Entry

Airports with Control Towers (CT) and their related data are shown in blue. All other airports and their related data are shown in magenta. The L symbol indicates that runway lights are on from dusk to dawn. A *L indicates that the pilot must consult the Airport/Facility Directory (A/FD) to determine runway lighting limitations, such as: available on request (by radio-call, letter, phone, etc), part-time lighting, or pilot/airport controlled lighting. Lighting codes refer to runway edge lights. The lighted runway may not be the longest runway available, and lights may not be illuminated along the full length of the runway. The A/FD has a detailed description of airport and air navigation lighting aids for each airport. A dash represents no runway edge lights.

The symbol ☆ indicates the existence of a rotating or flashing airport beacon operating from dusk to dawn. The Aeronautical Information Manual (AIM) thoroughly explains the types and uses of airport lighting aids.

Right traffic information is shown using the abbreviation 'RP' for right pattern, followed by the appropriate runway number(s) (RP 18). Special conditions or restrictions to the right pattern are indicated by the use of an asterisk (RP*) to direct the pilot to the Airport/Facility Directory for special instructions and/or restrictions.

An airport with an objectionable airspace will be labeled as such, "OBJECTIONABLE." This airport may adversely affect airspace use. FAA Airports Offices are responsible for airspace determinations and follow FAA Order 7400.2. If an airport owner or chart user wishes to challenge the objectionable status, he or she should contact their FAA Regional Airports Office.

CONTROLLED AIRSPACE

Controlled airspace consists of those areas where some or all aircraft may be subject to air traffic control, such as: Class A, Class B, Class C, Class D, Class E Surface (SFC) and Class E Airspace.

Class A Airspace within the United States extends from 18,000' up to 60,000' MSL. While visual charts do not depict Class A, it is important to note its existence.

Class B Airspace is shown in abbreviated form on the World Aeronautical Chart (WAC). The Sectional Aeronautical Chart (Sectional) and Terminal Area Chart (TAC) show Class B in greater detail. The MSL ceiling and floor altitudes of each sector are shown in solid blue figures with the last two zeros omitted. Floors extending "upward from above" a certain altitude are preceded by a (+). Operations at and below these altitudes are outside of Class B Airspace. Radials and arcs used to define Class B are prominently shown on TACs. Detailed rules and requirements associated with the particular Class B are shown. The name by which the Class B is identified is shown as LAS VEGAS CLASS B for example.

Class B MSL Altitudes 90 / 20

Class C Airspace is shown in abbreviated form on WACs. Sectionals and TACs show Class C in greater detail.

The MSL ceiling and floor altitudes of each sector are shown in solid magenta figures with the last two zeros eliminated.

Class C MSL Altitudes 70 / 15

The figure at right identifies a sector that extends from the surface to the base of the Class B.

T / SFC

Class C airspace is identified by name: BURBANK CLASS C.

Separate notes, enclosed in magenta boxes, give the approach control frequencies to be used by arriving VFR aircraft to establish two-way radio communication before entering the Class C (generally within 20 NM): CTC BURBANK APP WITHIN 20 NM ON 124.6 395.9.

Class D Airspace is identified with a blue dashed line. Class D operating less than continuous is indicated by the following note: See NOTAMs/Directory for Class D eff hrs.

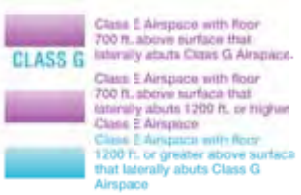
Ceilings of Class D are shown as follows: [30].

A minus in front of the figure is used to indicate "from surface to, but not including..."

Class E Surface (SFC) Airspace is symbolized with a magenta dashed line. Class E (SFC) operating less than continuous is indicated by the following note:

See NOTAMs/Directory for Class E (sfc) eff hrs.

Class E Airspace exists at 1200' AGL unless designated otherwise. The lateral and vertical limits of all Class E, (up to, but not including 18,000') are shown by narrow bands of vignette on Sectionals and TACs.



Controlled airspace floors of 700' above the ground are defined by a magenta vignette; floors other than 700' that laterally abuts uncontrolled airspace (Class G) are defined by a blue vignette; differing floors greater than 700' above the ground are annotated by a symbol and a number indicating the floor.

If the ceiling is less than 18,000' MSL, the value (preceded by the word "ceiling") is shown along the limits of the controlled airspace. These limits are shown with the same symbol indicated above.

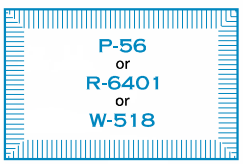
UNCONTROLLED AIRSPACE

Class G Airspace within the United States extends up to 14,500' Mean Sea Level. At and above this altitude is Class E, excluding the airspace less than 1500' above the terrain and certain special use airspace areas.

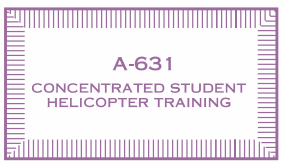
SPECIAL USE AIRSPACE

Special Use Airspace (SUA) confines certain flight activities and restricts entry, or cautions other aircraft operating within specific boundaries. Except for Controlled Firing Areas, SUA areas are depicted on VFR Charts. Controlled Firing Areas are not charted because their activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area. Nonparticipating aircraft are not required to change their flight paths. SUA areas are shown in their entirety (within the limits of the chart), even when they overlap, adjoin, or when an area is designated within another area. The areas are identified by type and identifying name/number, and are positioned either within or immediately adjacent to the area.

PROHIBITED, RESTRICTED or WARNING AREA



ALERT AREA



MILITARY OPERATIONS AREA (MOA)

OTHER AIRSPACE AREAS

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 is designated, is depicted by a solid magenta line.

Mode C is required, but not depicted for operations within and above all Class C up to 10,000' MSL. Enroute Mode C requirements (at and above 10,000' MSL except in airspace at and below 2500' AGL) are not depicted. See FAR 91.215 and the AIM.

FAR 93 Airports and heliports under Federal Aviation Regulation 93 (FAR 93), (Special Air Traffic Rules and Airport Traffic Patterns), are shown by "boxing" the airport name.

FAR 91 Airports where fixed wing special visual flight rules operations are prohibited (FAR 91) are shown with the type "NO SVFR" above the airport name.

National Security Areas indicated with a broken magenta line and **Special Flight Rules Areas (SFRAs)** indicated with the following symbol: , consist of airspace with defined vertical and lateral dimensions established at locations where there is a requirement for increased security and safety of ground facilities. Pilots should avoid flying through these depicted areas. When necessary, flight may be temporarily prohibited.

The Washington DC Flight Restricted Zone (FRZ) is related to National Security. It is depicted using the Prohibited/Restricted/Warning Area symbology and is located within the SFRA. It is defined as the airspace within approximately a 13 to 15 NM radius of the DCA VOR-DME. Additional requirements are levied upon aviators requesting access to operate inside the National Capital Region.

Temporary Flight Restriction (TFR) Areas Relating to National Security are indicated with a broken blue line . A Temporary Flight Restriction (TFR) is a type of Notice to Airmen (NOTAM). A TFR defines an area where air travel is restricted due to a hazardous condition, a special event, or a general warning for the entire airspace. The text of the actual TFR contains the fine points of the restriction. It is important to note that only TFRs relating to National Security are charted.

Air Defense Identification Zones (ADIZs) are symbolized using the ADIZ symbol: . As defined in Code of Federal Regulations 14 (CFR 14) Part 99, an ADIZ is an area in which the ready identification, location, and control of all aircraft is required in the interest of national security. ADIZ boundaries include Alaska, Canada and the Contiguous U.S.

Terminal Radar Service Areas (TRSAs) are shown in their entirety, symbolized by a screened black outline of the entire area including the various sectors within the area .

The outer limit of the entire TRSA is a continuous screened black line. The various sectors within the TRSA are symbolized by narrower screened black lines.

Each sector altitude is identified in solid black color by the MSL ceiling and floor values of the respective sector, eliminating the last two zeros. A leader line is used when the altitude values must be positioned outside the respective sectors because of charting space limitations. The TRSA name is shown near the north position of the TRSA as follows: **PALM SPRINGS TRSA**. Associated frequencies are listed in a table on the chart border.

Military Training Routes (MTRs) are shown on Sectionals and TACs. They are identified by the route designator: ← IR21 . Route designators are shown in solid black on the route centerline, positioned along the route for continuity. The designator IR or VR is not repeated when two or more routes are established over the same airspace, e.g., IR201-205-227. Routes numbered 001 to 099 are shown as IR1 or VR99, eliminating the initial zeros. Direction of flight along the route is indicated by small arrowheads adjacent to and in conjunction with each route designator.

The following note appears on Sectionals and TACs covering the conterminous United States.

MILITARY TRAINING ROUTES (MTRs)

All IR and VR MTRs are shown, and may extend from the surface upwards. Only the route centerline, direction of flight along the route and the route designator are depicted - route widths and altitudes are not shown.

Since these routes are subject to change every 56 days, and the charts are reissued every 6 months, you are cautioned and advised to contact Flight Service for route dimensions and current status for those routes affecting your flight.

Routes with a change in the alignment of the charted route centerline will be indicated in the Aeronautical Chart Bulletin of the Airport/Facility Directory.

DoD users refer to Area Planning AP/1B Military Training Routes North and South America for current routes.

There are IFR (IR) and VFR (VR) routes as follows: Route identification:

a. Routes at or below 1500' AGL (with no segment above 1500') are identified by four-digit numbers; e.g., VR1007, etc. These routes are generally developed for flight under Visual Flight Rules.

b. Routes above 1500' AGL (some segments of these routes may be below 1500') are identified by three or fewer digit numbers; e.g., IR21, VR302, etc. These routes are developed for flight under Instrument Flight Rules.

MTRs can vary in width from 4 to 16 miles. Detailed route width information is available in the Flight Information Publication (FLIP) AP/1B (a Department of Defense publication), or through the 56 Day NASR Subscription from the National Flight Data Center (NFDC).

Special Military Activity areas are indicated on Sectionals by a boxed note in black type. The note contains radio frequency information for obtaining area activity status.

SPECIAL MILITARY ACTIVITY
CTC MOBILE RADIO
ON 123.6
FOR ACTIVITY STATUS

TERMINAL AREA CHART (TAC) COVERAGE

TAC coverage is shown on appropriate Sectionals by a 1/4" masked line as indicated below.

Within this area pilots should use TACs, which provide greater detail. A note indicating that the area is on the TAC appears near the masked boundary line.

LOS ANGELES TERMINAL AREA
Pilots are encouraged to use the Los Angeles VFR Terminal Area Chart for flights at or below 10,000'

INSET COVERAGE

Inset coverage is shown on appropriate Sectionals by a 1/8" masked line as indicated below. A note to this effect appears near the masked boundary line.

If inset chart is on the same chart as outline:

INDIANAPOLIS INSET
See inset chart for additional detail

If inset chart is on a different chart:

INDIANAPOLIS INSET
See inset chart on the St. Louis Sectional for additional information

Airport Tower Communications are provided in a columnized tabulation for all tower-controlled airports that appear on the respective chart. Airport names are listed alphabetically. If the airport is military, the type of airfield, e.g., AAF, AFB, NAS, is shown after the airfield name. In addition to the airport name, tower operating hours, primary Very High Frequency/Ultra High Frequency (VHF/UHF) local Control Tower (CT), Ground Control (GND CON), and Automatic Terminal Information Service (ATIS) frequencies, when available, will be given. An asterisk (*) indicates that the part-time tower frequency is remoted to a collocated full-time Flight Service Station (FSS) for use as Airport Advisory Service (AAS) when the tower is closed. Airport Surveillance Radar (ASR) and/or Precision Approach Radar (PAR) procedures are listed when available.

Approach Control Communications are provided in a columnized tabulation listing Class B, Class C, Terminal Radar Service Areas (TRSA) and Selected Approach Control Facilities when available. Primary VHF/UHF frequencies are provided for each facility. Sectorization occurs when more than one frequency exists and/or is approach direction dependent. Availability of service hours is also provided.

Special Use Airspace (SUA): Prohibited, Restricted and Warning Areas are presented in blue and listed numerically for U.S. and other countries. Restricted, Danger and Advisory Areas outside the U.S. are tabulated separately in blue. A tabulation of Alert Areas (listed numerically) and Military Operations Areas (MOA) (listed alphabetically) appear on the chart in magenta. All are supplemented with altitude, time of use and the controlling agency/contact facility, and its frequency when available. The controlling agency will be shown when the contact facility and frequency data is unavailable.

Airports with control towers are indicated on the face of the chart by the letters CT followed by the primary VHF local control frequency (ies). Information for each tower is listed in the table below. Operational hours are local time. The primary VHF and UHF local control frequencies are listed. An asterisk (*) indicates the part-time tower frequency is remoted to a collocated full-time FSS for use as Airport Advisory Service (AAS) during hours the tower is closed. The primary VHF and UHF ground control frequencies are listed.

Automatic Terminal Information Service (ATIS) frequencies shown on the face of the chart are primary arrival VHF/UHF frequencies. All ATIS frequencies are listed in the table below. ATIS operational hours may differ from tower operational hours.

ASR and/or PAR indicate Radar Instrument Approach available.

"MON-FRI" indicates Monday through Friday.

O/T indicates other times.

Frequencies (VHF/UHF)

CONTROL TOWER	OPERATES	TWR FREQ	GND CON	ATIS	ASR/PAR
AIRBORNE	0700 MON-1800 SAT 0600-1800 SUN	119.475	121.6	124.925	
BLUE GRASS	CONTINUOUS	119.1 257.8	121.9	126.3	
BOLTON	0730-1930	128.1	121.3 (E) 121.8 (W)		ASR/PAR
CHARLOTTESVILLE-ALBEMARLE	0600-2300	124.5 338.275	121.9 338.275	118.425	PAR
CINCINNATI/NORTHERN KENTUCKY INTL	CONTINUOUS Runway dependent	118.3 (RWYS 18R/36L & 09/27) 118.975 360.85 (RWY 18L/36R)	121.3 (E) 121.7 (W)	134.375 (ARR) 135.3 (DEP)	ASR
COX DAYTON INTL	CONTINUOUS	119.9 257.8	121.9	125.8	
EASTERN WV RGNL/ SHEPHERD	0700-2200 TUE-THU 0700-1600 FRI-SAT 1300-1800 SUN O/T BY NOTAM	124.3 236.6	121.8 275.8		

Airport Name

Radar Instrument Approach available

Hours of Operation (local time)

Approach direction dependent

Frequencies (VHF/UHF)

CLASS B, CLASS C, TRSA AND SELECTED APPROACH CONTROL FREQUENCIES

FACILITY	FREQUENCIES	SERVICE AVAILABILITY
CINCINNATI CLASS B	VHF 119.7 (RWY 09/27 090°-269°) (RWY 18R/36L 180°-359°) UHF 123.875 (RWY 09/27 270°-089°) (RWY 18L/36R 360°-179°) 363.15	CONTINUOUS
CHARLESTON CLASS C	124.1 269.125 (N) 119.2 269.125 (S)	CONTINUOUS
COLUMBUS CLASS C	120.2 317.775 (280°-099°) 132.3 279.6 (100°-279°)	CONTINUOUS
DAYTON CLASS C	127.65 294.5 (360°-090°) 118.85 327.1 (091°-180°) 134.45 316.7 (181°-359°)	CONTINUOUS
BRISTOL TRSA	134.425 349.0 (047°-227°) 125.5 317.5 (228°-046°) O/T 127.85 371.85 ZTL CNTR	0600-2400 local time
HUNTINGTON TRSA	119.75 257.8 (S) 132.95 257.8 (N)	CONTINUOUS
PERKINSON/BAAF	118.75 353.9	CONTINUOUS

Airspace Name

Sectors for VHF and UHF traffic

SPECIAL USE AIRSPACE ON SECTIONAL CHART

Unless otherwise noted altitudes are MSL and in feet. Time is local.
"TO" an altitude means "To and including."
FL – Flight Level
NO A/G – No air to ground communications.
Contact Flight Service for information.

† Other times by NOTAM.
NOTAM – Use of this term in Restricted Areas indicates FAA and DoD NOTAM systems. Use of this term in all other Special Use areas indicates the DoD NOTAM system.

U.S. P–PROHIBITED, R–RESTRICTED, W–WARNING, A–ALERT, MOA–MILITARY OPERATIONS AREA

NUMBER	ALTITUDE	TIME OF USE	CONTROLLING AGENCY/ CONTACT FACILITY	FREQUENCIES
R-6602 A	TO BUT NOT INCL 4000	CONTINUOUS MAY 1-SEP 15 †24 HRS IN ADVANCE	WASHINGTON CNTR	118.75 377.1
R-6602 B	4000 TO BUT NOT INCL 11,000	BY NOTAM 24 HRS IN ADVANCE	WASHINGTON CNTR	118.75 377.1
R-6602 C	11,000 TO BUT NOT INCL 18,000	BY NOTAM 24 HRS IN ADVANCE	WASHINGTON CNTR	118.75 377.1
A-220	TO 4000 AGL	0800-2200	NO A/G	

VHF/UHF

MOA NAME	ALTITUDE*	TIME OF USE†	CONTROLLING AGENCY/ CONTACT FACILITY	FREQUENCIES
BRUSH CREEK	100 AGL TO BUT NOT INCL 5000	0800-2200 MON-SAT	INDIANAPOLIS CNTR	134.0 135.57
BUCKEYE	5000	0800-2200 MON-FRI 0800-1600 SAT-SUN	INDIANAPOLIS CNTR	134.0 135.57
EVERS	1000 AGL	SR-SS BY NOTAM	WASHINGTON CNTR	

VHF/UHF

*Altitudes indicate floor of MOA. All MOAs extend to but do not include FL 180 unless otherwise indicated in tabulation or on chart.
†Other times by DoD NOTAM.

Sunrise to Sunset

CANADA R–RESTRICTED, D–DANGER AND A–ADVISORY AREA

NUMBER	LOCATION	ALTITUDE	TIME OF USE	CONTROLLING AGENCY
CYR754	CONFEDERATION BRIDGE, PE	TO 500	CONTINUOUS	
CYD734	HALIFAX, NS	TO FL 200	OCCASIONAL BY NOTAM	MONCTON ACC
CYA702 (P)	GREENWOOD, NS	TO 500	CONT DAYLIGHT	
CYA752 (M)	LIVERPOOL, NS	TO FL 280	CONT DAYLIGHT MON-FRI EXC HOL†	MONCTON ACC

Restricted
Danger
Advisory

A-Acrobatic F-Aircraft Test Area H-Hang Gliding M-Military Operations P-Parachuting S-Soaring T-Training

AIRPORTS

LANDPLANE: CIVIL

Airports having control towers (CT) are shown in blue, all others are shown in magenta.

All recognizable runways, including some which may be closed, are shown for visual identification purposes. Refueling and repair facilities for normal traffic.

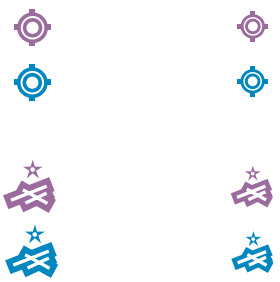
Runway patterns will be depicted at airports with at least one hard surfaced runway 1500′ or greater in length.

WAC

SEAPLANE: CIVIL

WAC

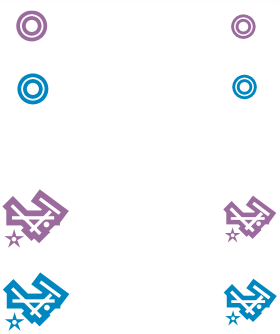
LANDPLANE: CIVIL-MILITARY



WAC

LANDPLANE: MILITARY

Refueling and repair facilities not indicated.



WAC

AIRPORTS

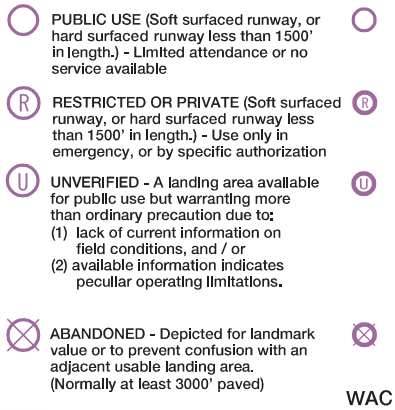
LANDPLANE: EMERGENCY

No facilities,

or

Complete information is not available.

Add appropriate note as required for hard surfaced runways only: "(CLOSED)"



WAC

SEAPLANE: EMERGENCY

No facilities, or complete information is not available.

WAC

HELIPORT

(Selected)

WAC

ULTRALIGHT FLIGHT PARK

(Selected)

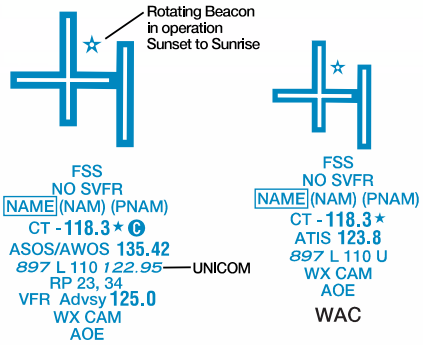
Not shown on WAC

AIRPORTS

AIRPORT DATA GROUPING

(Pvt): Non-public use having emergency or landmark value.

"OBJECTIONABLE": This airport may adversely affect airspace use.



FSS - Flight Service Station on field

NO SVFR - Airports where fixed wing special visual flight rules operations are prohibited (shown above airport name) F.A.R. 91

[ ] - Indicates F.A.R. 93 Special Air Traffic Rules and Airport Traffic Patterns

(NAM) - Location Identifier

(PNAM) - ICAO Location Indicator

CT - 118.3 - Control Tower (CT) - primary frequency

★ - Star indicates operation part-time. See tower frequencies tabulation for hours of operation

C - Follows the Common Traffic Advisory Frequency (CTAF) (Not shown on WAC)

ATIS 123.8 - Automatic Terminal Information Service

AFIS 135.2 - Automatic Flight Information Service

ASOS/AWOS 135.42 - Automated Surface Weather Observing Systems; shown when full-time ATIS is not available. (Not shown on WAC) Some ASOS/AWOS facilities may not be located at airport.

897 - Elevation in feet

L - Lighting in operation Sunset to Sunrise

*L - Lighting limitations exist; refer to Airport/Facility Directory.

110 - Length of longest runway in hundreds of feet; usable length may be less.

UNICOM - Aeronautical advisory station ("U" only on WAC)

RP 23, 34 - Runways with Right Traffic Patterns (public use) (Not shown on WAC)

RP★ - (See Airport/Facility Directory)

VFR Advsy 125.0 - VFR Advisory Service shown where ATIS is not available and frequency is other than primary CT frequency.

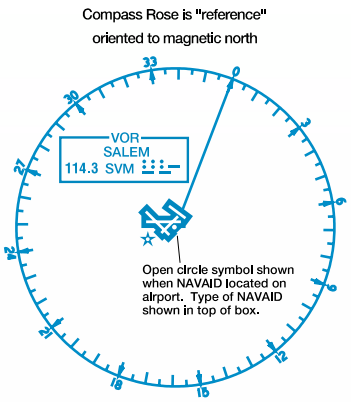
WX CAM - Weather Camera (AK)

AOE - Airport of Entry

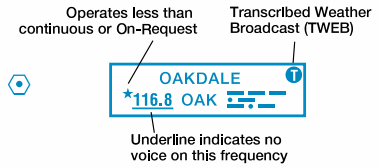
When information is lacking, the respective character is replaced by a dash. Lighting codes refer to runway edge lights and may not represent the longest runway or full length lighting

RADIO AIDS TO NAVIGATION

VHF OMNI-DIRECTIONAL RADIO (VOR) RANGE

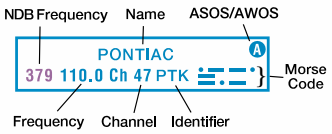


VOR

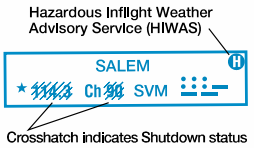


VORTAC

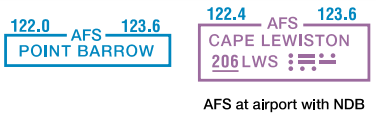
When an NDB NAVAID shares the same name and Morse Code as the VOR NAVAID the frequency can be collocated inside the same box to conserve space.



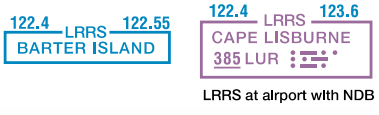
VOR-DME



AIR FORCE STATION (AFS)



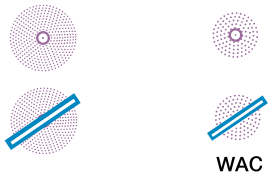
LONG RANGE RADAR STATION (LRRS)



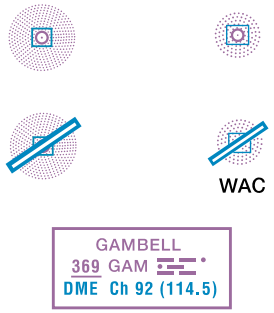
OFF AIRPORT AWOS/ASOS

RADIO AIDS TO NAVIGATION

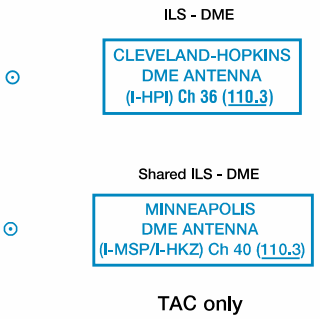
NON-DIRECTIONAL RADIO BEACON (NDB)



NDB-DME



NAVAIDS USED TO DEFINE CLASS B AIRSPACE



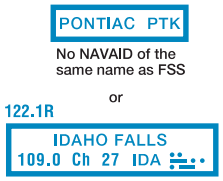
BROADCAST STATIONS (BS)

On request by the proper authority or when a VFR Checkpoint.

RADIO AIDS TO NAVIGATION

FLIGHT SERVICE STATION (FSS)

Heavy line box indicates Flight Service Station (FSS). Frequencies 121.5, 122.2, 243.0 and 255.4 (Canada - 121.5, 126.7 and 243.0) are available at many FSSs and are not shown above boxes.
All other frequencies are shown.
Certain FSSs provide Airport Advisory Service, see A/FD.
R - Receive only

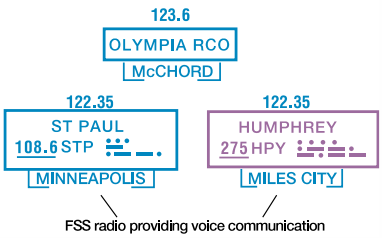


Transoceanic VHF frequencies are long range four digit numbers. These were used during the World War II era. They now have become legacy frequencies that some Alaska FSSs still maintain by doing radio checks with the U.S. Coast Guard.

REMOTE COMMUNICATIONS OUTLET (RCO)

Frequencies above thin line box are remoted to NAVAID site. Other FSS frequencies providing voice communication may be available as determined by altitude and terrain. Consult Airport/Facility Directory for complete information.

Thin line box without frequencies and controlling FSS name indicates no FSS frequency available.



ALASKA WEATHER CAMERA

Stand-Alone

Collocated with Airport - Must be within 2 NM to have same name.

AIRSPACE INFORMATION

CLASS B AIRSPACE

Appropriate notes as required may be shown.

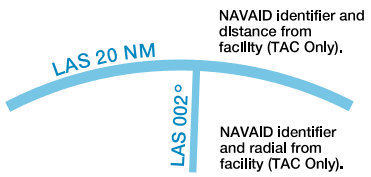
Only the airspace effective below 18,000 feet MSL are shown.

(Mode C see FAR 91.215 /AIM)

All mileages are nautical (NM).

All radials are magnetic.

LAS VEGAS CLASS B



WAC

FOR FLIGHTS AT AND BELOW 8000′ MSL SEE KANSAS CITY VFR TERMINAL AREA CHART

WAC only

80 - Ceiling of Class B in hundreds of feet MSL
40 - Floor of Class B in hundreds of feet MSL

(Floors extending "upward from above" a certain altitude are preceded by a +. Operations at and below these altitudes are outside of Class B Airspace.)

CTC LAS VEGAS APP ON 121.1 OR 257.8

TAC only

AIRSPACE INFORMATION

CLASS C AIRSPACE

Appropriate notes as required may be shown.

(Mode C see FAR 91.215/AIM)

BURBANK CLASS C

BOISE CLASS C

WAC

FOR FLIGHTS AT OR BELOW 6600 MSL SEE PHOENIX VFR SECTIONAL CHART

WAC only

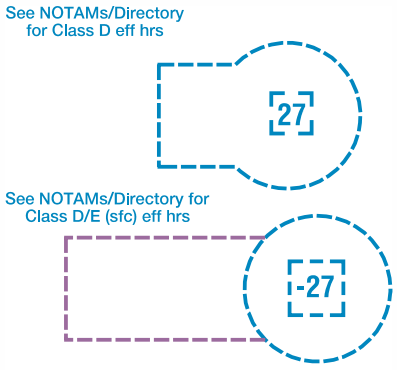
48 - Ceiling of Class C in hundreds of feet MSL
30 - Floor of Class C in hundreds of feet MSL

T - Ceiling is to but not including floor of Class B
SFC - Surface

CTC BURBANK APP WITHIN 20 NM ON 124.6 395.9

Not shown on WAC

CLASS D AIRSPACE



(A minus in front of the figure is used to indicate "from surface to but not including...")

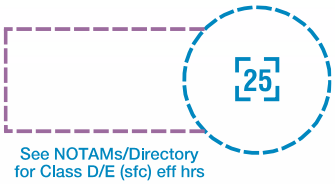
ALTITUDE IN HUNDREDS OF FEET MSL

Not shown on WAC

AIRSPACE INFORMATION

CLASS E AIRSPACE

The limits of Class E airspace shall be shown by narrow vignettes or by the dashed magenta symbol. Individual units of designated airspace are not necessarily shown; instead, the aggregate lateral and vertical limits shall be defined by the following:



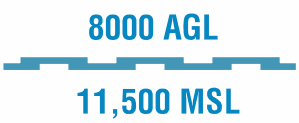
Airspace beginning at the surface (sfc) designated around airports...

Airspace beginning at 700 feet AGL...

Airspace beginning at 700 feet AGL that laterally abuts uncontrolled airspace (Class G)...

Airspace beginning at 1200 feet AGL or greater that laterally abuts uncontrolled airspace (Class G)...

Differentiates floors of airspace greater than 700 feet above the surface...

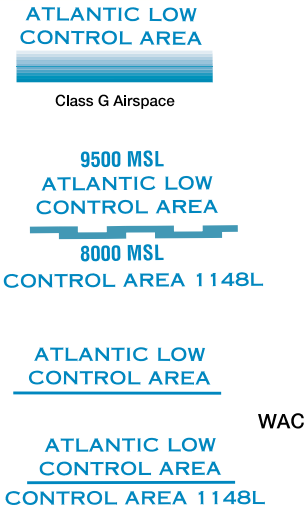


Not shown on WAC

When the ceiling is less than 18,000 feet MSL, the value, prefixed by the word "ceiling," shall be shown along the limits.

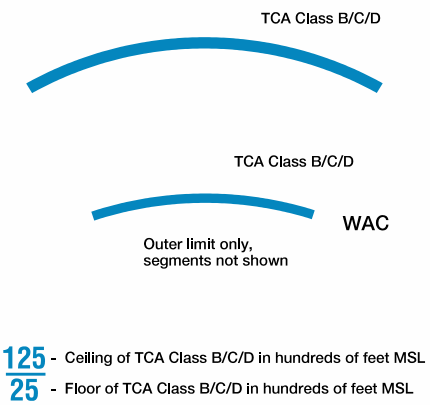
AIRSPACE INFORMATION

OFFSHORE CONTROL AREAS



CANADIAN AIRSPACE

Individual units of designated Canadian airspace are not necessarily shown; instead, the aggregate lateral and vertical limits shall be portrayed as closely as possible to the comparable U.S. airspace.



Not shown on WAC

Appropriate notes as required may be shown.

AIRSPACE CLASSIFICATION (SEE CANADA FLIGHT SUPPLEMENT) AND OPERATIONAL REQUIREMENTS (DOD USERS, SEE DOD AREA PLANNING AP/1) MAY DIFFER BETWEEN CANADA AND UNITED STATES

NOTE: REFER TO CURRENT CANADIAN CHARTS AND FLIGHT INFORMATION PUBLICATIONS FOR INFORMATION WITHIN CANADIAN AIRSPACE

AIRSPACE INFORMATION

AIRSPACE OUTSIDE OF U.S.

Other than Canada

Appropriate notes as required may be shown.

NOTE: DOD USERS, REFER TO CURRENT DOD (NGA) FLIGHT INFORMATION PUBLICATIONS FOR INFORMATION OUTSIDE OF U.S. AIRSPACE

FLIGHT INFORMATION REGIONS (FIR)

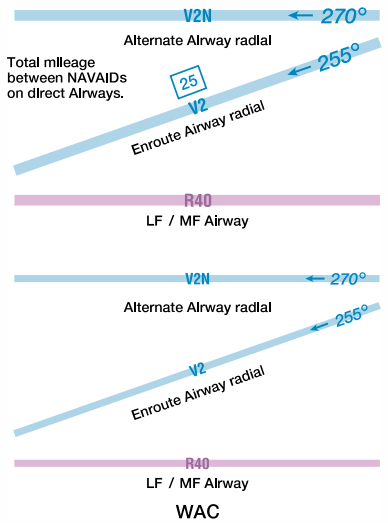
OCEANIC CONTROL AREAS (OCA)

CONTROL AREAS (CTA)

LOW ALTITUDE AIRWAYS VOR AND LF/MF (CLASS E AIRSPACE)

Low altitude Federal Airways are indicated by centerline.

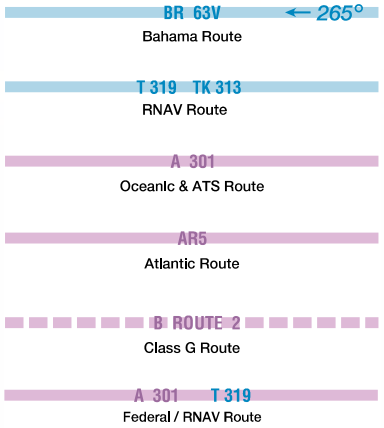
Only the controlled airspace effective below 18,000 feet MSL is shown.

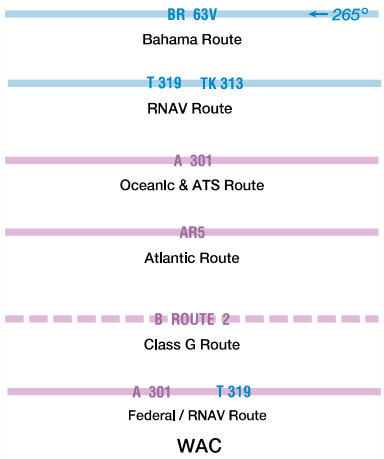


AIRSPACE INFORMATION

MISCELLANEOUS AIR ROUTES

Combined Federal Airway/RNAV "T" Routes are identified in solid blue type adjacent to the solid magenta federal airway identification. The joint route symbol is screened magenta.



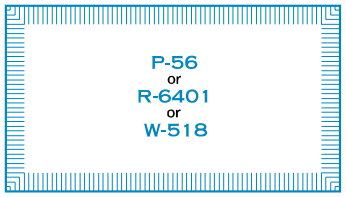


AIRSPACE INFORMATION

SPECIAL USE AIRSPACE

Only the airspace effective below 18,000 feet MSL is shown.

The type of area shall be spelled out in large areas if space permits.



PROHIBITED, RESTRICTED or WARNING AREA

ALERT AREA

MILITARY OPERATIONS AREA (MOA)

MILITARY TRAINING ROUTES (MTR)

Not shown on WAC

SPECIAL MILITARY ACTIVITY ROUTES (SMAR)

Boxed notes shown adjacent to route.

SPECIAL MILITARY ACTIVITY
CTC MOBILE RADIO
ON 123.6
FOR ACTIVITY STATUS

40 – – – Ceiling of SMAR in hundreds of feet MSL
05 AGL – – Floor of SMAR in hundreds of feet AGL

Not shown on WAC

AIRSPACE INFORMATION

SPECIAL AIR TRAFFIC RULES / AIRPORT PATTERNS (FAR 93)

Appropriate boxed note as required shown adjacent to area.

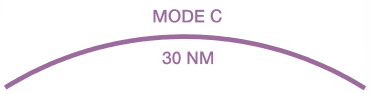
SPECIAL NOTICE
Pilots are required to obtain an ATC clearance prior to entering this area.

SPACE OPERATIONS AREA (FAR 91.143)

Not shown on WAC

MODE C (FAR 91.215)

Appropriate notes as required may be shown.



MISCELLANEOUS AIRSPACE AREAS

Parachute Jumping Area with Frequency

Glider Operating Area

Ultralight Activity

Hang Glider Activity

Unmanned Aircraft Activity

Not shown on WAC

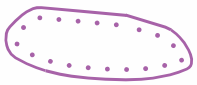
AIRSPACE INFORMATION

SPECIAL CONSERVATION AREAS

National Park, Wildlife Refuge, Primitive and Wilderness Areas, etc.

Not shown on WAC

NOAA Regulated National Marine Sanctuary Designated Areas



Flight operations below 1000' AGL over the designated areas within the Gulf of Farallones National Marine Sanctuary violate NOAA regulations (see 15 CFR 922).

SPECIAL AIRSPACE AREAS

SPECIAL FLIGHT RULES AREA (SFRA) RELATING TO NATIONAL SECURITY

Example: Washington DC

Appropriate notes as required may be shown.
Note: Delimiting line not shown when it coincides with International Boundary, projection lines or other linear features.

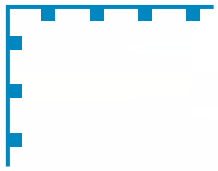
Washington DC Metropolitan Area Special Flight Rules Area/Flight Restricted Zone restrictions are in effect.
Special regulations apply to all aircraft operations from the surface to but not including Flight Level 180 in the Washington DC Metropolitan Area. Pilots should contact a local FSS for NOTAM information prior to flight in the Washington DC Metropolitan Area.

FLIGHT RESTRICTED ZONE (FRZ) RELATING TO NATIONAL SECURITY

Example: Washington DC

AIRSPACE INFORMATION

SPECIAL FLIGHT RULES AREA (SFAR)



CAUTION
Pilots should not attempt flight in the Grand Canyon Special Flight Rules area (GCN SFRA) below 18,000 feet using this chart as their primary navigational reference. Pilots intending to fly within the Grand Canyon SFRA should refer to the Grand Canyon VFR Aeronautical Chart for detailed information. Chart is available from the Federal Aviation Administration (phone 1-800-638-8972) or authorized agents.

TEMPORARY FLIGHT RESTRICTION (TFR) RELATING TO NATIONAL SECURITY

Example:

Appropriate notes as required may be shown.

CAUTION
P-40 AND R-4009 EXPANDED BY TEMPORARY FLIGHT RESTRICTION. CONTACT AFSS FOR LATEST STATUS AND NOTAMS

Not shown on WAC

AIR DEFENSE IDENTIFICATION ZONE (ADIZ)

Note. Delimiting line not shown when it coincides with International Boundary, projection lines or other linear features.

CONTIGUOUS U.S. ADIZ

NATIONAL SECURITY AREA

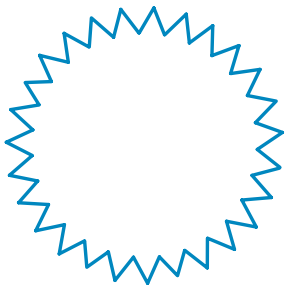
Appropriate notes as required may be shown.

NOTICE
FOR REASONS OF NATIONAL SECURITY PILOTS ARE REQUESTED TO AVOID FLIGHT BELOW 1200 MSL IN THIS AREA

Not shown on WAC

AIRSPACE INFORMATION

HIGH ENERGY RADIATION AREAS



Appropriate notes as required may be shown.

HAZARDOUS LASER
TRANSMISSIONS SFC to infinity
See Airport Facility/Directory

WAC

TERMINAL RADAR SERVICE AREA (TRSA)

PALM SPRINGS TRSA

80 - Ceiling of TRSA in hundreds of feet MSL
40 - Floor of TRSA in hundreds of feet MSL

Appropriate notes as required may be shown.

SEE TWR FREQ TAB

Not shown on WAC

IFR ROUTES

Arrival

Departure

TAC only

VFR TRANSITION ROUTES

Appropriate notes as required may be shown.

VFR TRANSITION ROUTE
ATC CLEARANCE REQUIRED
SEE SHOWBOAT GRAPHIC
ON SIDE PANEL

Uni-directional

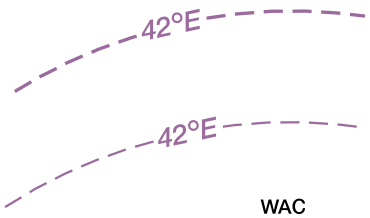
Bi-directional

TAC only

NAVIGATIONAL AND PROCEDURAL INFORMATION

ISOGONIC LINE AND VALUE

Isogonic lines and values shall be based on the five year epoch magnetic variation model.



LOCAL MAGNETIC NOTES

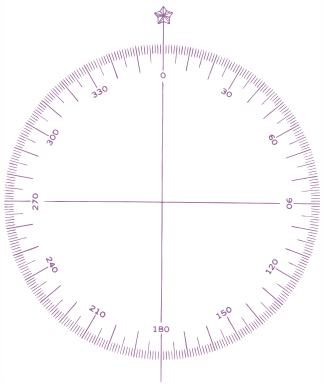
Unreliability Notes

Magnetic disturbance of as much as 78° exists at ground level and 10° or more at 3000 feet above ground level in this vicinity.

COMPASS ROSETTE

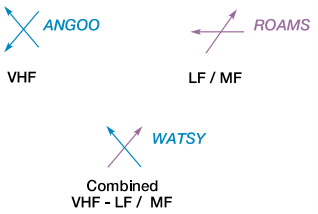
Shown only in areas void of VOR roses.

Compass rosette will be based on the five year epoch magnetic variation model.



INTERSECTIONS

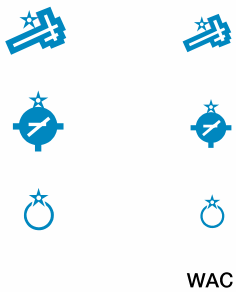
Named intersections used as reporting points. Arrows are directed toward facilities which establish intersection.



Not shown on WAC

AIRPORT BEACONS

Rotating or Flashing

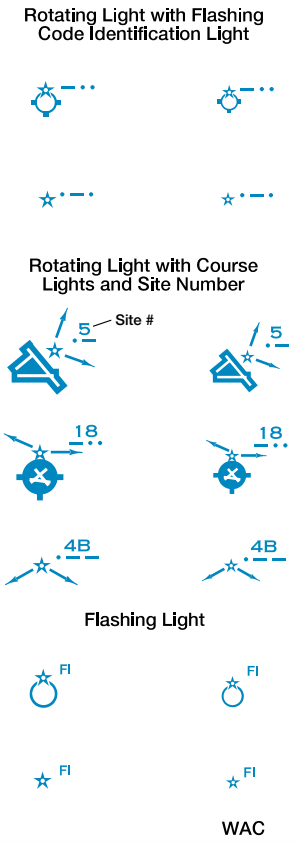


WAC

NAVIGATIONAL AND PROCEDURAL INFORMATION

AERONAUTICAL LIGHTS

By Request



MARINE LIGHTS

With Characteristics of Light

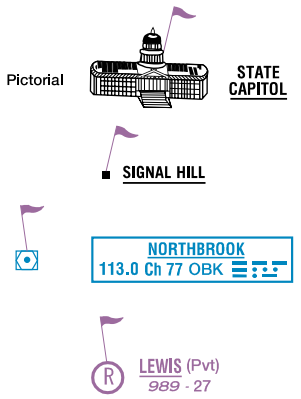
R	Red
*W	White
G	Green
B	Blue
SEC	Sector
F	Fixed
Oc	Single Occulting
Oc (2)	Group Occulting
Oc (2+1)	Composite Group Occulting
Iso	Isophase
Fl	Flashing
Fl (2)	Group Flashing
Fl (2+1)	Composite Group Flashing
Q	Quick
IQ	Interrupted Quick
Mo (A)	Morse Code
FFl	Fixed and Flashing
*Al	Alternating
Gp	Group
LFl	Long Flash
Q (3)	Group Quick Flashing
IQ	Interrupted Quick Flashing
VQ	Very Quick Flashing
VQ (3)	Group Very Quick Flashing
IVQ	Interrupted Very Quick Flashing
UQ	Ultra Quick Flashing
IUQ	Interrupted Ultra Quick Flashing

*Marine Lights are white unless otherwise noted. Alternating lights are red and white unless otherwise noted.

NAVIGATIONAL AND PROCEDURAL INFORMATION

VFR CHECKPOINTS

Underline indicates proper name of VFR Checkpoint



Not shown on WAC

VFR WAYPOINTS

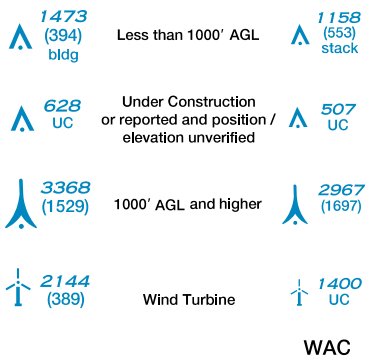
RNAV

Stand-Alone

Collocated with VFR Checkpoint

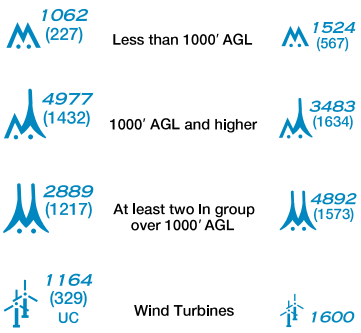
Not shown on WAC

OBSTRUCTION



WAC

GROUP OBSTRUCTION

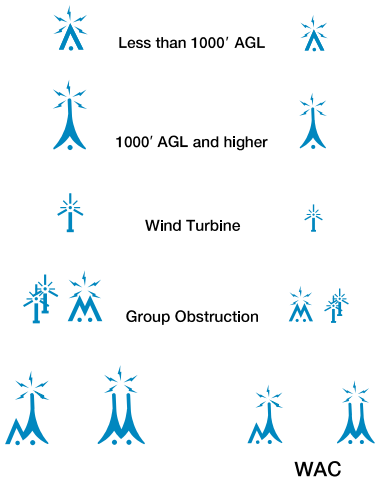


WAC

NAVIGATIONAL AND PROCEDURAL INFORMATION

HIGH-INTENSITY OBSTRUCTION LIGHTS

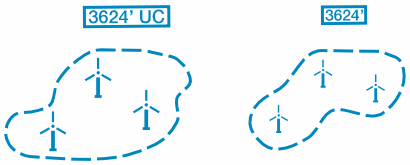
High-intensity lights may operate part-time or by proximity activation.



WAC

WIND TURBINE FARMS

When highest wind turbine is unverified, UC will be shown after MSL value.



WAC

MAXIMUM ELEVATION FIGURE (MEF)

(see page 7 for explanation).

135

WARNING AND CAUTION NOTES

Used when specific area is not demarcated.

WARNING
Extensive fleet and air operations being conducted in offshore areas to approximately 100 miles seaward.

CAUTION: Be prepared for loss of horizontal reference at low altitude over lake during hazy conditions and at night.

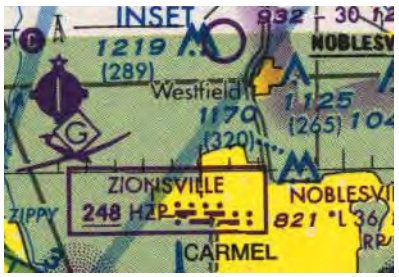
CHART LIMITS

OUTLINE ON SECTIONAL OF TERMINAL AREA CHART

LOS ANGELES TERMINAL AREA
Pilots are encouraged to use the Los Angeles VFR Terminal Area Chart for flights at or below 10,000'

Not shown on WAC

OUTLINE ON SECTIONAL OF INSET CHART



If inset chart is on a different chart:

INDIANAPOLIS INSET
See inset chart on the St. Louis Sectional for additional information

If inset chart is on the same chart as outline:

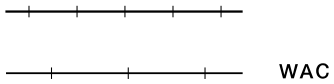
INDIANAPOLIS INSET
See inset chart for additional detail

Not shown on WAC

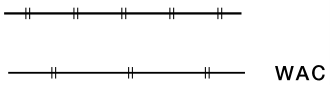
CULTURE

RAILROADS

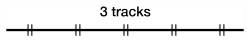
Single Track



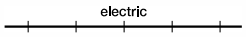
Double Track



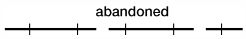
More Than Two Tracks



Electric

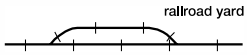


Non-operating, Abandoned or Under Construction

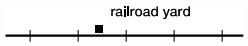


RAILROAD YARDS

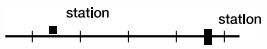
Limiting Track To Scale



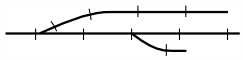
Location Only



RAILROAD STATIONS



RAILROAD SIDINGS AND SHORT SPURS



CULTURE

ROADS

Dual-Lane Divided Highway Category 1

Primary Category 2

Secondary Category 2

TRAILS

Category 3

Provides symbolization for dismantled railroad when combined with label "dismantled railroad."

ROAD MARKERS

Interstate Route No.

U.S. Route No.

Air Marked Identification Label

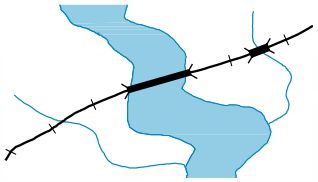
ROAD NAMES

ROADS UNDER CONSTRUCTION

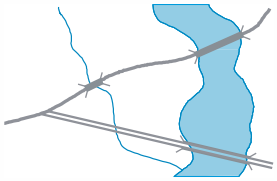
CULTURE

BRIDGES AND VIADUCTS

Railroad

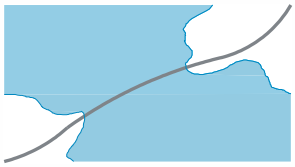


Road

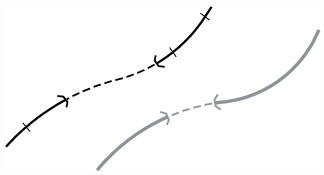


OVERPASSES AND UNDERPASSES

CAUSEWAYS

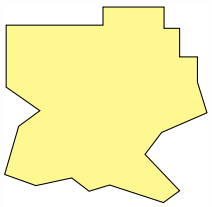


TUNNELS-ROAD AND RAILROAD



POPULATED PLACES

Large Cities Category 1



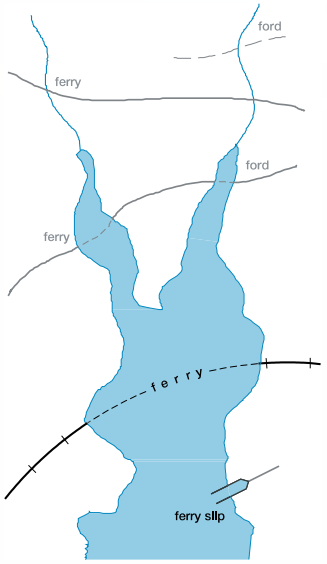
Cities and Large Towns Category 2

Towns and Villages Category 3

WAC

CULTURE

FERRIES, FERRY SLIPS AND FORDS



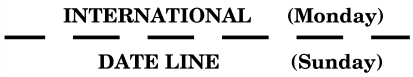
BOUNDARIES

International

State or Province

Convention or Mandate Line

Date Line



TIME ZONES

Not shown on WAC

MINES OR QUARRIES

Shaft Mines or Quarries

POWER TRANSMISSION AND TELECOMMUNICATION LINES

WAC

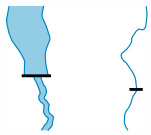
CULTURE

PIPELINES

pipeline

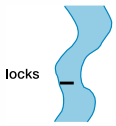
Underground — underground pipeline

DAMS

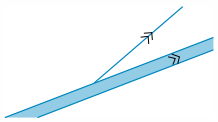


DAM CARRYING ROAD

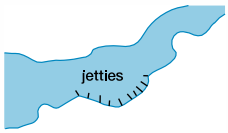
PASSABLE LOCKS



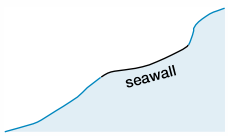
SMALL LOCKS



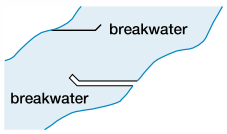
WEIRS AND JETTIES



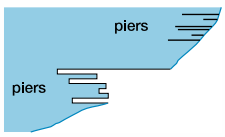
SEAWALLS



BREAKWATERS



PIERS, WHARFS, QUAYS, ETC.



CULTURE

MISCELLANEOUS CULTURAL FEATURES

- stadium
- fort
- cemetery

OUTDOOR THEATER

WELLS

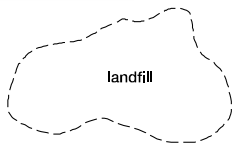
Other than water — oil

RACE TRACKS

LOOKOUT TOWERS

618 (Elevation Base of Tower)

LANDMARK AREAS



TANKS

- water
- oil
- gas

COAST GUARD STATION

CG

AERIAL CABLEWAYS, CONVEYORS, ETC.

aerial cableway — aerial cableway

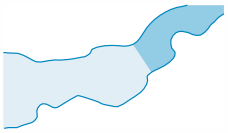
WAC

HYDROGRAPHY

OPEN WATER

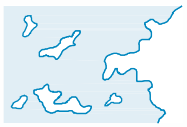
INLAND WATER

OPEN/INLAND WATER



SHORELINES

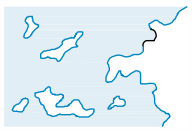
Definite



Fluctuating

Unsurveyed
Indefinite

Man-made

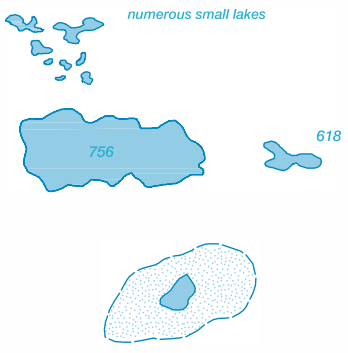


LAKES

Label as required

Perennial
When too numerous to show individual lakes, show representative pattern and descriptive note. Number indicates elevation.

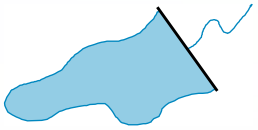
Non-Perennial
(dry, intermittent, etc.)
Illustration includes small perennial lake



HYDROGRAPHY

RESERVOIRS

Natural Shorelines

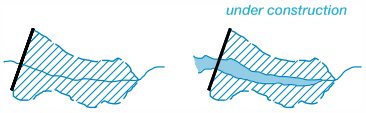


Man-made Shorelines

Label when necessary for clarity

Too small to show to scale

Under Construction

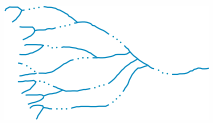


STREAMS

Perennial

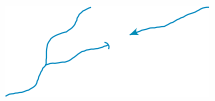
Non-Perennial

Fanned Out
Alluvial fan



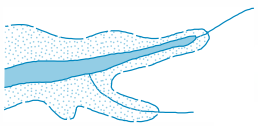
Braided

Disappearing

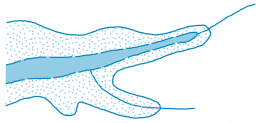


Seasonally Fluctuating

with undefined limits

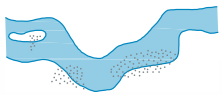


with maximum bank limits, prominent and constant



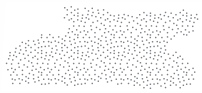
HYDROGRAPHY

Sand Deposits in and along riverbeds



WET SAND AREAS

Within and adjacent to desert areas



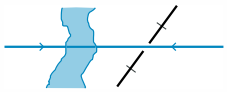
AQUEDUCTS

Abandoned or Under Construction

Underground

Suspended or Elevated

Tunnels

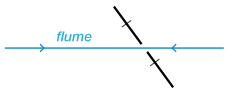


Kanats

Underground with air vents

FLUMES, PENSTOCKS AND SIMILAR FEATURES

Elevated

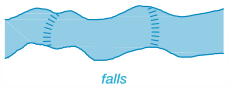


Underground

HYDROGRAPHY

FALLS

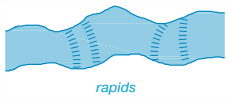
Double-Line



Single-Line

RAPIDS

Double-Line



Single-Line

CANALS

To Scale

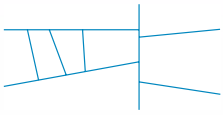
Abandoned or Under Construction

Abandoned to Scale

HYDROGRAPHY

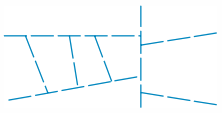
SMALL CANALS AND DRAINAGE / IRRIGATION DITCHES

Perennial



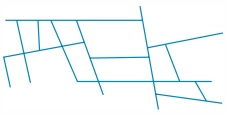
Non-Perennial

Abandoned or Ancient



Numerous

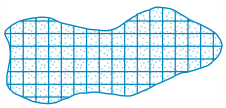
Representative pattern and/or descriptive note.



Numerous

numerous canals and ditches

SALT EVAPORATORS AND SALT PANS MAN EXPLOITED



SWAMPS, MARSHES AND BOGS

HUMMOCKS AND RIDGES

MANGROVE AND NIPA

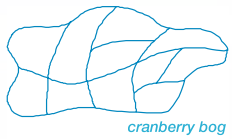
PEAT BOGS

HYDROGRAPHY

TUNDRA

tundra

CRANBERRY BOGS



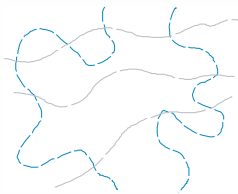
RICE PADDIES

Extensive areas indicated by label only.

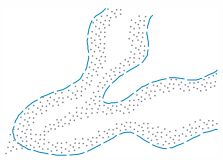
LAND SUBJECT TO INUNDATION

SPRINGS, WELLS AND WATERHOLES

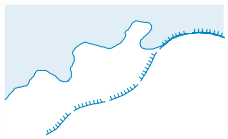
GLACIERS



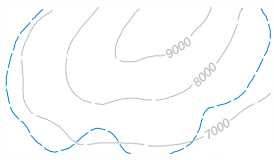
GLACIAL MORAINES



ICE CLIFFS



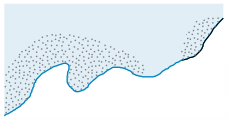
SNOWFIELDS, ICE FIELDS AND ICE CAPS



ICE PEAKS

HYDROGRAPHY

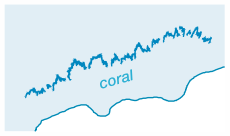
FORESHORE FLATS
Tidal flats exposed at low tide.



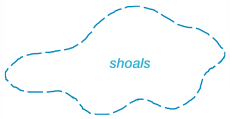
ROCKS-ISOLATED
Bare or Awash

WRECKS
Exposed

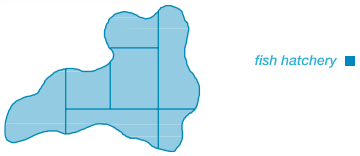
REEFS-ROCKY OR CORAL



MISCELLANEOUS UNDERWATER FEATURES NOT OTHERWISE SYMBOLIZED



FISH PONDS AND HATCHERIES

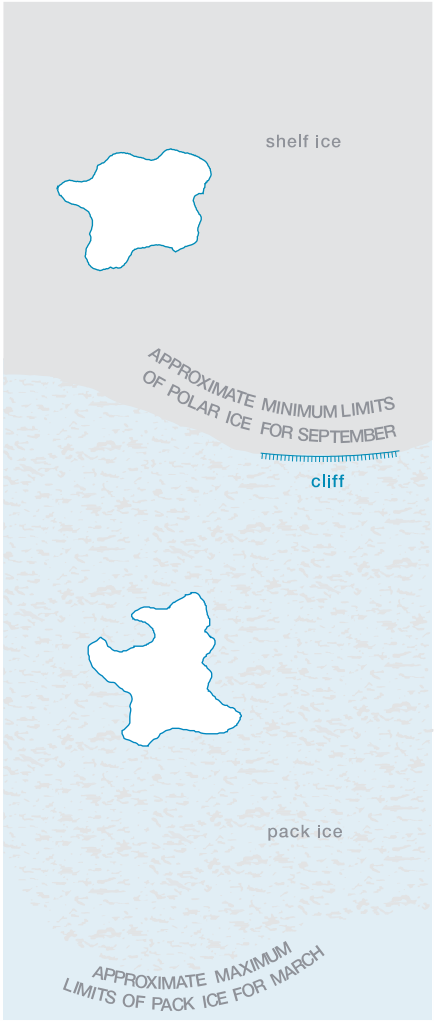


HYDROGRAPHY

ICE

Permanent Polar Ice

Pack Ice



RELIEF

CONTOURS

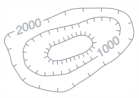
Basic

Approximate

Intermediate

Auxiliary

Depression (Illustration includes mound within depression)



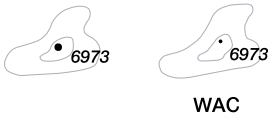
Values

SPOT ELEVATIONS

Position Accurate

Position Accurate, Elevation Approximate

Highest in General Area



Highest on Chart

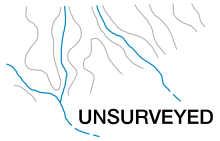
RELIEF

MOUNTAIN PASS

HACHURING

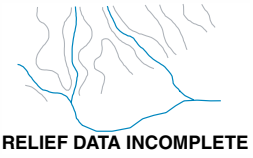
UNSURVEYED AREAS

Label appropriately as required



UNCONTOURED AREAS

Label appropriately as required



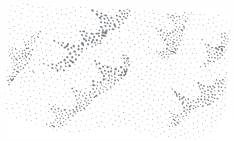
DISTORTED SURFACE AREAS

LAVA FLOWS

SAND OR GRAVEL AREAS

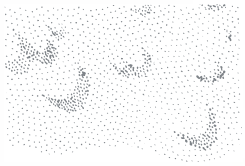
SAND RIDGES

To Scale



SAND DUNES

To Scale

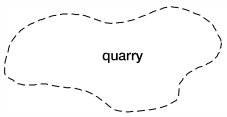


RELIEF

SHADED RELIEF

ROCK STRATA OUTCROP

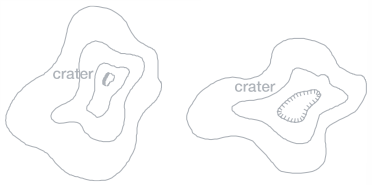
QUARRIES TO SCALE



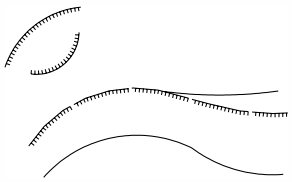
STRIP MINES, MINE DUMPS AND TAILINGS

To Scale

CRATERS



ESCARPMENTS, BLUFFS, CLIFFS, DEPRESSIONS, ETC.



LEVEES AND ESKERS