Federal Aviation Administration

UNITED STATES GOVERNMENT SPECIFICATIONS

HELICOPTER ROUTE CHARTS

IAC 15
22 August 2022

Prepared by the Interagency Air Committee (IAC)

OK-10-1818

UNITED STATES GOVERNMENT SPECIFICATIONS FOR THE HELICOPTER ROUTE CHARTS

22 August 2022

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

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

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

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CHANGES APPLIED TO CURRENT EDITION

REQUIREMENT DOCUMENTS

a. RD 846 – Removal of Emergency References to Private Airports

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 2 AUGUST 2021

REQUIREMENT DOCUMENTS

a. RD 835 – Removal of International Flight Service Stations (IFSS)

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 26 APRIL 2021

REQUIREMENT DOCUMENTS

a. RD 830 – Update to Mode C Airspace Label

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 27 JANUARY 2021

REQUIREMENT DOCUMENTS

a. RD 827 – Airport Name Standardization

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 15 SEPTEMBER 2020

REQUIREMENT DOCUMENTS

a. RD 818 – 56 Day VFR Chart Production
b. RD 822 – FSS/RCO Emergency/Guard Frequencies

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 29 APRIL 2020

REQUIREMENT DOCUMENTS

a. RD 815 - Addition of Bureau of Land Management to Special Conservation Areas Note

EDITORIAL CHANGES

a. None applied in this edition

CHANGES APPLIED 3 APRIL 2020

REQUIREMENT DOCUMENTS

a. RD 814 - Medical Centers on Helicopter Route Charts

EDITORIAL CHANGES

a. None applied in this edition

AMENDMENT OF SPECIFICATIONS

1. PROCEDURE

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

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

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

Federal Aviation Administration /
Aeronautical Information Services
SSMC-4 Sta # 4445
1305 East-West Highway
Silver Spring, MD 20910

2. AMENDMENT SYSTEM

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

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CHAPTER 1 – GENERAL

CHAPTER 2 – LAYOUT AND FORMAT

CHAPTER 3 – CONTENT

CHAPTER 1
GENERAL

1.1 PURPOSE AND SCOPE

These specifications provide basic criteria and guidance for the production (compilation and color separation) and reproduction of Helicopter Route Charts.

The charts in this series shall be used for all types of VFR helicopter operations within and below the low altitude airway/airspace structure. The primary objective is to provide optimum presentation and portrayal of topographic and cultural features with an overprint of selected aeronautical data based on the user's requirements.

The purpose of the specifications is to provide appropriate guidelines to effect uniformity and standardization of content and portrayal techniques in the preparation of production of charts for use by pilots operating in the National Airspace System.

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

1.2 REQUIREMENTS

1.2.1 General

The Helicopter Route Charts shall be the primary navigational reference used by helicopter pilots operating under visual flight rules. The charts shall provide a large scale portrayal of selected metropolitan areas to satisfy pilotage and local control requirements.

1.2.2 Quality and Accuracy

The low altitude use of these charts and the critical characteristics of many of the missions emphasizes the need for graphics of the highest degree of accuracy. Final copy shall conform to the best accepted standards of practice with respect to clear, uniform, opaque lines, symbol and type as illustrated in the Appendices.

Care shall be exercised in the plotting and interpretation of the detail to be applied to the chart. The center and orientation of a symbol shall normally correspond with the center and orientation of the feature represented. All line features such as roads, railroads, power lines and streams shall be plotted in their true positions and shall retain, wherever scale permits, the variations of alignment which actually exist. Roads, railroads, streams, etc. lying parallel to and close to each other may require an exception to this rule. An exaggeration of the area covered may be necessary to show these features by the proper symbol. The displacement should be distributed evenly with the true center of the parallel features taken collectively and held wherever possible.

The graticule layout shall be accurate to within +/- .020 inch, overall diagonal measurement.

1.2.3 Colors

Colors for printing the various component parts of this chart series shall basically consist of the following. Detailed specifications of color separation shall be found in **Chapter 4** and the Appendices.

BLACK BLUE BROWN GREEN

1.2.4 Title

The name of each chart in this series shall include the name of the metropolitan area to be covered, e.g., NEW YORK HELICOPTER

The title of this series of charts shall be HELICOPTER ROUTE CHART.

1.2.5 Scale

The optimum scale desired is 1:125,000; however, the scale used should be dependent on sheet size and area of coverage. Inset scale should be tailored to the individual chart requirement.

1.2.6 Projection

The Lambert Conformal Conic Projection based on standard parallels which best accommodate the source materials from which the chart is compiled shall be used.

1.2.7 Area of Coverage

The area of coverage shall be restricted to selected areas within the United States.

The area of coverage shall be consistent with that area needed to satisfy local pilotage and control requirements as mutually agreed to by the participating and using agencies.

1.2.8 Symbolization

Symbolization on the final reproduction copy shall be in accordance with the Appendices included within this specification. The size and lineweights specified therein should also be adhered to but may be varied when necessary.

1.2.9 Type Styles

It is recognized that a variance occurs between different composition mediums such as Fotosetter, Photon, Monotype and Foundry settings. However, type styles specified within these specifications shall be as stated, or their equivalent, as may be determined by the manufacturers' nomenclature.

Unless otherwise specified, all type shall be Helvetica 65 Medium or its equivalent. Use of capital letters is intended, unless shown otherwise in the Appendices, or specified as "C/L" (caps and lower case).

1.3 SPECIFICATION APPENDICES AND REFERENCES

1.3.1 Appendices

References:

Appendix 1 - Topographic Information - Culture
Appendix 2 - Topographic Information - Hydrography
Appendix 3 - Topographic Information - Relief
Appendix 4 - Aeronautical Information - Airports
Appendix 5 - Aeronautical Information - Radio Aids to Navigation
Appendix 6 - Aeronautical Information - Flight Service Stations
Appendix 7 - Aeronautical Information - Airspace
Appendix 8 - Aeronautical Information - Navigational & Procedural
Appendix 9 - Type Styles & Sizes

1.3.2 References

Photon Photocomposition Specimen Catalog.

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CHAPTER 2
LAYOUT AND FORMAT

2.1 HELICOPTER CHARTS

2.1.1 General

The optimum layout shall be determined by the required area of coverage as determined by appropriate authority.

The term airport refers to all airports, heliports and seaplane bases.

2.1.2 Size and Dimensions

Sheet size shall be determined by the geographic requirement. Geographic requirements may also make it necessary to print the chart on the front and back of the sheet. This shall be determined by appropriate authority. It should be remembered that because of cockpit size, sheet size should be kept to a minimum. Changes in basic size shall normally be accomplished in increments of 5" in an east-west or north-south direction to provide for the addition or deletion of panels as needed to adequately portray the necessary information and coverage.

Charts shall be accordion folded to 5" x 10".

Size and dimensions shall be determined by appropriate authority.

2.1.3 Chart Insets

The basic chart coverage may be supplemented with inset charts. These inset charts are defined as large or small scale portrayals of areas of high density. Inset charts shall be positioned where appropriate.

Except for scale, portrayal techniques of chart insets shall resemble those of the basic chart, unless deviations are requested by appropriate authority. Content may be more detailed if required.

Inset charts shall be accompanied by a title and bar scale.

2.1.4 Tabulated Data

A tabulation of all charted control tower airports within the chart coverage shall be placed where space allows.

A tabulation of Special Use Airspace to include, Prohibited, Restricted and Warning Areas and Alert and Military Operations Areas (MOA) that appear on the chart shall be shown.

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CHAPTER 3
CONTENT

3.1 COMPILATION

3.1.1 General

In compiling local areas, features shall sometimes be encountered which are peculiar to the area and which are not specifically covered in these specifications. Similarly, local conditions shall exist which cannot be symbolized and should be handled by appropriate descriptive notes. In most cases, the features shall be sufficiently similar to those discussed to permit application of the standard symbol or minor modifications thereto.

3.1.2 Detail Selection and Density

The selection of criteria detailed herein should suffice to serve as general guidance in achieving the best overall balance and relativity of the chart features portrayed.

Discretion must be used in determining the quantity and selection of detail to be shown. Unnecessary information and indiscriminate selection of features is not advisable in congested areas and shall be avoided. However, all essential information required must still be retained, especially outstanding features for use as checkpoints.

The following basic rules governing the selection of detail should be followed:

- Features selected for portrayal in one area may be inappropriate in another area. In areas of sparse or moderate culture, the lesser chart features assume extreme importance because of their checkpoint value. In congested areas, these same features would not be seen by the low-level pilot and normally should not be shown.
- Significant recognizable topographic features relating to or aiding in the identification of airports or unique areas, and specifically requested and validated by operational users, shall be shown.
- Cultural features that are so unique and outstanding that they provide instantaneous orientation of the chart to the ground shall be shown short of over-congestion.
- The visual outline of a populated place, in itself, is not necessarily of landmark significance. Checkpoint features in the near vicinity are required to ensure positive identification.
- More specific criteria is furnished further on in these specifications under the paragraph heading designated for each chart feature.

3.1.3 Pictorialization of Checkpoint Features

Unique, three dimensional perspective drawings, referred to as “pictorial symbols”, may be developed to afford the pilot a preconceived image of outstanding checkpoints.

Features selected by appropriate authority for pictorial symbolization should be items of such unique nature that immediate recognition is possible. Features considered for pictorialization should include prominent buildings, factories/complexes, bridges and miscellaneous features.

Extreme care must be taken to position the symbol so that no doubt exists as to its true position. When necessary, a fine leader line from the pictorial symbol may be used to pinpoint true position. However, this practice should be kept to a minimum.

- Vertical symbols shall be oriented so that the vertical dimension is perpendicular to the parallels of latitude.
- Elongated symbols such as bridges, dams, etc. shall be oriented along the actual line of position.

3.2 NAMES AND LABELING

3.2.1 General

Names are required for planning, briefing and relating to supplementary publications such as the Chart Supplement, etc. Labeling is also necessary for coordination between the pilot and Air Traffic Control (ATC).

Extreme care should be exercised in naming chart features. Use of technical, cartographic and/or geographic terms shall be avoided in favor of a language that is readily understood by the airman. For example, the word “karst” alone has little or no meaning to the average user, nor is its definition readily available. Appropriate, common-language descriptive terms shall be used, such as “sinkholes”, “distorted surface area”, “area of distinctive terrain”, etc., whichever most adequately describes the condition. The word “karst” (in parentheses) may be positioned below or following the descriptive text.

This Chapter and the Appendices combined provide guidelines for type size and style, composition and positioning.

3.2.2 Name Selection

3.2.2.1 General

Names are selected on the basis of importance. It is extremely important that care be exercised to keep the chart free of unnecessary congestion.

3.2.2.2 Rules of Name Selection

The following rules govern the selection of names:

- In areas of sparse or moderate culture the lesser chart features assume extreme importance because they pinpoint landmarks and should be named provided they can be positioned without obscuring detail pertinent to the primary use.
- Features displayed must be clear and legible. They must not be obscured by names which are of less importance in operational use.
- Normally, names of air facilities are more important than remaining chart features.
- Names of cultural features, cities, highways, etc. are more important that those of topographic features.
- When there is doubt as to the value of a name it should be omitted.
- Local names may be used.

3.2.2.3 Hydrographic Features

In most cases names shall be shown for the following features:

- Oceans
- Seas
- Bays
- Gulfs
- Sounds
- Large inlets
- Large estuaries
- Channels and canals
- Double-line streams

Names shall be shown for the features where they do not cause congestion or overprint more pertinent chart detail.

- Smaller inlets and estuaries
- Single-line streams of considerable length

3.2.2.4 Relief

Only names for relief features of major significance are required, such as well known mountain ranges, peaks, capes and peninsulas.

3.2.2.5 Culture

3.2.2.5.1 Populated Places

Those populated places that serve an ATC function or are of significant landmark value may be named.

3.2.2.5.2 Roads

Freeways, expressways, divided avenues and major highways may be named.

3.2.2.5.3 Railroads

Railroads may be named.

3.2.2.5.4 Miscellaneous Cultural Features

Miscellaneous cultural features shall be named when they are a significant feature in an area.

3.2.3 Descriptive/Operational Notes

Notes are a means of furnishing pertinent data related to the chart area. These notes may identify a symbol; describe an area or a peculiar feature; be a note of caution; detail some valuable or unique aspect or activity of an area; or be instructions the pilot should follow such as an altitude, frequency or bearing and distance to/from a NAVAID. Size and style of a note may vary according to the importance of the activity being described.

All notes applied to the chart shall be those specified or approved by appropriate authority.

3.2.4 Basic Principles of Type Placement

Type shall be positioned so there is no ambiguity as to which feature is identified.

The selection of a type size for a feature shall be in proportion to its size and relative importance.

Generally, chart detail should take preference over names of secondary features such as small ponds, streams, etc.

Normally all type shall be positioned so that the wording may be read from left to right, from the bottom of the chart.

Type for islands and bodies of water shall be positioned within the outlines in the approximate center of their respective features. When the feature is not large enough to accommodate the type, the type shall be positioned adjacent to the feature.

Type for double-line steams shall be positioned within the shorelines when space permits.

Names of populated places shall be positioned parallel to lines of latitude.

Type for linear features shall normally follow the general direction and curvature of the feature. Overprinting should be avoided.

Names of extensive topographic features, such as valleys, mountain ranges, canyons, etc. shall be extended across the center of such features in a smooth curve.

Type for capes and points should preferably appear in the open water areas positioned parallel to lines of latitude.

3.3 MARGIN INFORMATION

Margin information shall be shown as depicted below.

References:
3.3 - Margin Information

3.3.1 Title Panel - Front Side Margin Information

The following data shall be positioned in the extreme left panel(s) of the chart. This side of the sheet shall be referred to as the front side of the chart.

3.3.1.1 Chart Name

The name of the chart shall be shown centered on the far left top panel.

Figure 3.1 Chart Name

HELICOPTER ROUTE CHART
LOS ANGELES

3.3.1.2 Chart Legend

The title “LEGEND” shall be shown centered below the chart name.

3.3.1.3 Chart Arrowheads

When charts are required to be printed on two sides, arrowheads shall be shown. These arrowheads shall be shown in the uppermost corners of the legend panel supplemented by text indicating content, e.g. Baltimore, Staten Island, etc., or cardinal directions “EAST” and “WEST” or “NORTH” and “SOUTH”.

Figure 3.2 Directional Arrowheads

3.3.2 Front Side Margin Information

The following data shall be positioned in the extreme left panel(s) of the chart. This side of the sheet shall be referred to as the front side of the chart.

3.3.2.1 Tabulated Data

3.3.2.1.1 Control Tower Frequencies Tabulated Data

A tabulation of all charted control tower airports within the chart coverage shall be shown. Airports shall be listed alphabetically by airport name.

The airport name extracted verbatim from the authoritative database, operating hours, Automatic Terminal Information Service (ATIS) frequencies, primary tower frequencies, specific helicopter tower frequencies, and primary ground control frequencies shall be listed. Frequencies shall be listed in ascending order.

3.3.2.1.2 Special Use Airspace and Military Operations Areas Tabulated Data

A tabulation of Special Use Airspace to include Prohibited, Restricted and Warning Areas, and a tabulation of Alert and Military Operations Areas (MOA) that appear on the chart shall be shown, listed numerically or alphabetically by number or name, and supplemented with altitude, time of use and the controlling agency/contact facility, and its frequency, when available. The controlling agency shall be shown when the contact facility and frequency data is unavailable.

In the list of definitions heading this tabulation, include the following:

> NOTAM - Use of this term in Restricted Areas indicates FAA and DoD NOTAM system. Use of this term in all other Special Use Airspace areas indicates the DoD NOTAM system.

The following note shall be placed at the bottom left corner of the Special Use Airspace (SUA) Tabulation box:

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

3.3.3 Space Available Information

The following information shall be positioned where space is available.

3.3.3.1 Caution Note

The following note shall appear on all charts above the left end of the Bar Scale where possible.

Figure 3.3 Caution Note

CAUTION: This chart is primarily designed for VFR navigational purposes and does not purport to indicate the presence of all power transmission and telecommunication lines, terrain or obstacles which may be encountered below reasonable and safe altitudes.

3.3.3.2 QR Code

The QR Code shall be positioned in the chart margin area.

3.3.3.3 Projection and Horizontal Datum Note

A note referencing the horizontal datum shall be positioned in the chart margin area.

Figure 3.4 Projection and Horizontal Datum Note

Lambert Conformal Conic Projection Standard Parallels 33° 20' and 38° 40'
Horizontal Datum: North American Datum of 1983 (World Geodetic System 1984)

3.3.3.4 NORAD Note

The following note shall appear on all charts.

Figure 3.5 NORAD Note

NORTH AMERICAN AEROSPACE DEFENSE COMMAND (NORAD) PROCEDURES

All aircraft operating in the U.S. national airspace, if capable, will maintain a listening watch on guard frequencies VHF 121.5 or UHF 243.0. It is incumbent upon all aviators to know and understand their responsibilities if intercepted. Review "AIM" section 5-6-13 for intercept procedures. Additionally, if U.S. military fighter jets intercept an aircraft and flares are dispensed in the area of that aircraft, aviators will pay strict attention, contact air traffic control immediately on the local frequency or on VHF guard 121.5 or UHF 243.0 and follow the interceptor visual ICAO signals. Be advised that non-compliance may result in the use of force.

3.3.3.5 Special Conservation Areas

Special conservation areas such as National Parks, Wildlife Refuges, Primitive and Wilderness areas requested by appropriate authority shall be shown and identified by name. The following note shall be shown in the margin of all relevant charts.

Figure 3.6 Special Conservation Area Note

REGULATIONS REGARDING FLIGHTS OVER CHARTED NATIONAL PARK SERVICE AREAS, U.S. FISH AND WILDLIFE SERVICE AREAS, BUREAU OF LAND MANAGEMENT AREAS AND U.S. FOREST SERVICE AREAS

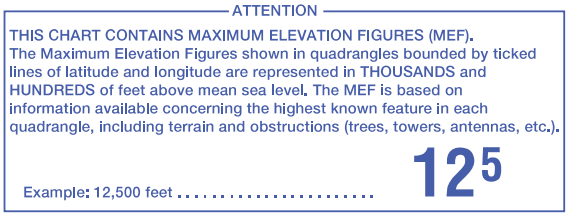
The landing of aircraft is prohibited on lands or waters administered by the National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management or U.S. Forest Service (hereafter referred to as Agency/Agencies) without authorization from the respective agency. Exceptions include: 1) when forced to land due to an emergency beyond the control of the operator, 2) at officially designated landing sites, or 3) on approved official business of the Federal Government. All aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, Scenic Riverways, Wildlife Refuges, Big Game Refuges, Game Ranges, Wildlife Ranges, Conservation Areas, Wild and Scenic Rivers, Wilderness Areas and Primitive Areas administered by the Agencies. FAA Advisory Circular (AC) 91-36, "Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas," defines the surface as: the highest terrain within 2,000 feet laterally of the route of flight, or the upper-most rim of a canyon or valley. Federal regulations also prohibit airdrops by parachute or other means of persons, cargo, or objects from aircraft on lands administered by the four agencies without authorization from the respective agency. Exceptions include: 1) emergencies involving the safety of human life, or 2) threat of serious property loss.

. . . . . Boundary of Agency Areas

3.3.3.6 Maximum Elevation Figure (MEF) Note

The following note addressing Maximum Elevation Figures (MEF) shall be shown.

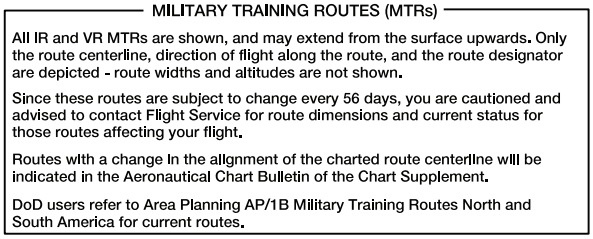
Figure 3.7 Maximum Elevation Figure (MEF) Note



3.3.3.7 Military Training Routes Note

The following note shall appear on all charts where military training routes exist.

Figure 3.8 Military Training Routes Note



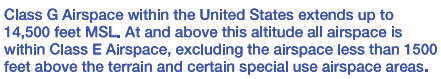
3.3.3.8 Description of Helicopter Routes

Description of helicopter routes and altitudes as required by appropriate authority.

3.3.3.9 Class G Airspace Note

The following note shall appear on all charts.

Figure 3.9 Class G Airspace Note



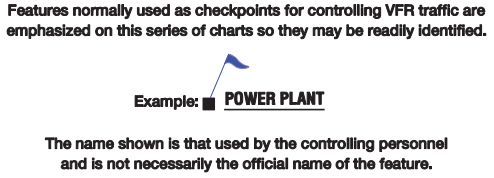
3.3.4 Corrections, Comments, Procurement Notes

Boxed notes denoting corrections, comments and procurement information shall be shown within the margin area.

3.3.5 VFR Checkpoint Note

The following VFR Checkpoint Note shall appear in the margin area of all charts.

Figure 3.10 VFR Checkpoint Note



3.3.6 Bottom of Chart Information

The following data shall be positioned at the bottom of the chart.

3.3.6.1 Bar Scale

A linear bar scale extending the full length of the image area of the chart shall be shown in black providing nautical miles above the statute miles in black 5.5 pt Futura Medium. A bar scale shall be shown on insets.

3.4 COLOR SEPARATION

Color separation of the various component parts of the chart shall consist principally of the following:

3.4.1 Brown

- Urban outline and tint
- LF/MF NAVAIDs and associated type
- Roads and associated type
- Sporting Event Temporary Flight Restriction Sites and associated type
- National Defense Airspace Temporary Flight Restriction (TFR) Areas and associated type
- Special overprints in response to local agreement
- Mode C Airspace and associated type
- Military Operation Areas (MOA) and Alert Areas and associated type
- Class C Airspace and associated type
- Class E Airspace beginning at the surface designated around airports and associated type
- Parachute Jumping, Glider Operation, Hang Gliding, Ultralight Activity, Unmanned Aircraft Activity areas, Aerobatic Practice areas, Space Launch Activity areas, and associated type
- VFR Checkpoint type when applicable
- Operational Notes

3.4.2 Blue

- Heliports, airports, seaplane bases, and associated type
- VHF/UHF NAVAIDs and associated type
- Prohibited, Restricted and Warning Areas and associated type
- Class B Airspace and associated type
- Class D Airspace and associated type
- Helicopter Routes and associated type
- Operational Notes
- Obstructions and associated type
- VFR checkpoint flags
- VFR Checkpoint type when applicable
- Names of hydrographic features, e.g., Lake Mead, Colorado River
- Natural shoreline
- Drainage
- Bodies of water, including double line streams, shall be shown with the drainage tint.
- Stipple fill for wet sand areas and non-perennial features
- Broadcasting Stations (commercial) and associated type
- Special overprint in response to local agreements
- Maximum Elevation Figures
- Special Conservation Areas and associated type
- National Security Flight Restricted Zones (FRZ) and associated type
- Special Security Notice Permanent Continuous Flight Restriction Areas

3.4.3 Black

- Neatline
- Railroads and associated type
- Graticule and values
- Transmission lines
- Bar Scale and associated type
- Political boundaries and associated type
- Spot elevations (symbol and type)
- Surface areas of Class B and Class C Airspace, and Terminal Radar Service Areas (TRSA)
- Military Training Routes (MTR) and associated type
- Miscellaneous cultural features and associated type
- Terminal Radar Service Areas (TRSA) and associated type
- Pictorial symbols and associated type
- VFR Checkpoint type when applicable

3.4.4 Green

- National Security Special Flight Rules Area (SFRA) and Temporary Flight Rules (TFR) symbol and associated type
- Special event area and associated notes (when requested by appropriate authority)

3.5 PROJECTION

3.5.1 General

Parallels and meridians shall be shown and graduated throughout the chart using a .006" lineweight. Graduation tick marks shall extend away from Greenwich and the Equator.

3.5.2 Line Spacing

Latitude and Longitude lines shall be spaced at 15' intervals.

3.5.3 Tick Intervals and Length

Lines shall be graduated for every minute. For each minute the length of the tick shall be .100". For every five minute tick the length shall be .400" centered on the projection line.

3.5.4 Graticule Values

Graticule Values shall be shown using 7 pt Helvetica Condensed Bold. Values of all lines shall be shown .100" inside the neatline, centered on a break in the line, oriented to true North.

3.6 CULTURE

References:

Appendix 1 - Topographic Information - Culture

3.6.1 Railroads

References:

Appendix 1 - Topographic Information - Culture

3.6.1.1 General

Railroads and related features are valuable navigational checkpoints. They are used to pinpoint position, by relationship to other features.

Railroads and related features shall be shown.

3.6.1.2 Density and Selection

All main lines shall be shown except where elimination is necessary to reduce congestion.

In areas of sparse detail with little or no good reference points, all railroads shall be shown.

In metropolitan areas those railroads which would cause undue congestion shall not be shown unless the landmark value is important as a navigational reference point. Generally, this shall include those railroads which:

Lend little or no visual significance to the overall pattern.

Are unimportant in regard to continuity, terminals and checkpoint value.

3.6.1.3 Single and Multiple Track Railroads

A distinction in symbolization shall be made between single track railroads and those of more than one track (double and multiple).

Sidings which are closely parallel to a main line shall, if shown, be symbolized as sidings and shall not be counted in determining double or multiple track lines.

3.6.1.4 Non-operating Railroads

Railroads that are abandoned or under construction shall be shown only in the absence of more prominent landmarks.

Proposed railroads shall not be shown.

3.6.1.5 Dismantled Railroads

Dismantled railroads shall not be shown.

3.6.1.6 Carlines, Tramways, etc.

Carlines, tramways and similar light load-bearing railways within metropolitan areas shall be shown if considered significant checkpoints.

3.6.1.7 Spur Tracks and Sidings

Spur tracks and sidings shall be shown as far as scale and density of detail shall permit.

Normally, spur tracks and sidings shall be symbolized the same as the main track railroad; where sidings are short, the cross ties may be omitted.

Spur tracks and sidings shall be shown entering the main line in a smooth curve.

3.6.1.8 Railroad Yards

Railroad yards (freight, marshalling, etc.) shall be shown wherever they are considered significant landmarks.

The correct shape of the yards shall be retained in so far as it is practicable. Only the limiting tracks shall be plotted.

When used as a navigation checkpoint, railroad yards or marshalling yards shall be labeled.

3.6.1.9 Railroad Stations

Railroad stations shall be shown if considered a significant landmark.

Railroad stations shall be named if used as an ATC navigational checkpoint.

3.6.2 Roads

3.6.2.1 General

Highways and roads are valuable landmarks and shall be shown short of over-congestion.

References:
Appendix 1 - Topographic Information - Culture

3.6.2.2 Density and Selection

The number of roads to be shown in an area is dependent on their significance as navigational aids.

In heavily populated areas, roads shall be depicted except where elimination is necessary to avoid congestion.

Trails shall not be shown.

3.6.2.3 Classification

On this series of charts, road classification shall be shown based on the following priority:

3.6.2.3.1 Dual Lane Divided Highway (Category 1)

Dual lane highways shall normally be shown. These are interpreted as primary roads with two directions of travel, separated by a median, such as the Interstate system.

3.6.2.3.2 Dual Lane Highways - Freeways (Category 1)

These are interpreted as primary roads two or more lanes with two directions of travel, such as turnpikes, major boulevards and major metropolitan streets.

3.6.2.3.3 Other Roads (Category 2)

Primary roads shall be shown short of over-congestion. When it is necessary to make a selection of primary roads in areas of dense cultural detail, those primary roads which form a distinct landmark shall be selected.

3.6.2.3.4 Roads Under Construction

Roads under construction may be shown when determined to be of significant navigational value.

3.6.2.4 Road Markers

Interstate highways and prominent federal or state highways shall be appropriately identified by road marker and number.

Highway names may be shown as requested by appropriate authority, or if deemed of significant navigation value.

3.6.3 Related Features (to railroads and roads)

References:

Appendix 1 - Topographic Information - Culture

3.6.3.1 Bridges and Viaducts

Bridges and viaducts shall be shown with conventional symbols, unless selected to be portrayed with a pictorial symbol.

The following criteria is established for conventional treatment:

- Where feasible all bridges and viaducts in excess of 500 feet shall be shown short of congestion.
- Railroad crossties shall be omitted on bridges and viaducts and within .250" of the abutment ticks at the ends of the symbol.
- Footbridges shall not be shown.

3.6.3.2 Overpasses, Underpasses

Overpasses and underpasses shall be shown.

Significant traffic interchanges, such as cloverleafs, shall be shown unless congestion is a significant factor. Those that cannot be plotted to scale shall be shown with a slight exaggeration of scale.

3.6.3.3 Tunnels

Tunnels for roads and railroads may be shown.

3.6.3.4 Ferries

When ferries are shown they shall be represented by the conventional symbol.

Ferries shall be shown only when requested or identified as a significant landmark.

3.6.4 Populated Places and Buildings

3.6.4.1 General

The shape of the metropolitan area is a valuable navigational aid when the city shape is contrasted against non-built-up areas.

All populated subdivisions of the major metropolitan area covered by the chart shall be portrayed. Built-up areas may be named if of significant landmark value or used as a navigational check-point.

Selected buildings may be shown.

References:

Appendix 1 - Topographic Information - Culture

3.6.4.2 Density and Selection

All built-up areas within the metropolitan area shall be shown by portrayal of their actual outline.

3.6.4.3 City Outlines

The outline shall reflect the physical shape of a developed area as viewed from the air. The visual outline need not conform to established boundaries, but should represent those permanent features that are an integral part of a developed area such as: street patterns, permanent buildings, industrial installations, resort structures and housing developments.

The city outline shall be broken whenever it coincides with a shoreline of an open water area or a double-line stream dividing a city area. In addition, that portion of a city outline coincident with a railroad, road or stream shall be omitted.

The visual outline of populated places shall be shown.

Built-up areas within the city outlines shall contain tint. See Section **4.4.1** - Files, Screens, and Colors.

3.6.4.4 Landmark Buildings

Significant outstanding buildings and factory complexes shall be indicated with the appropriate pictorial symbol when they meet the selection criteria for pictorialization.

The remaining buildings selected for portrayal shall be indicated with conventional symbolization.

3.6.5 Boundaries

3.6.5.1 General

Boundaries which are recognized or accepted by the U.S. Government and which reflect the current situation shall be shown.

Boundaries shall be shown in their entirety except along streams where portions may be omitted provided continuity is retained.

The following boundaries are permissible on this chart series:

- International
- State and Provincial

References:

Appendix 1 - Topographic Information - Culture

3.6.5.2 International Boundaries

All International Boundaries shall be shown, symbolized with the standard symbol.

All International Boundaries shall be overprinted with a continuous brown screened line, unless coincident with an ADIZ, and then the ADIZ shall be shown.

3.6.6 Miscellaneous Cultural Features

3.6.6.1 General

This paragraph includes those features which are prominent or are readily identifiable because of size, location or distinctive shape and have not been discussed in another section.

Miscellaneous cultural features may be shown by any one of three methods detailed below:

References:

Appendix 1 - Topographic Information - Culture

3.6.6.1.1 Pictorial Symbols

Outstanding miscellaneous cultural features meeting the selection criteria shall be pictorialized. Pictorial symbols are reserved for those features that are so unique as to provide the pilot instant orientation of the chart to the ground.

3.6.6.1.2 Conventional Symbols

Miscellaneous cultural features (those not selected for pictorialization) shall receive conventional treatment.

3.6.6.1.3 Located Object Symbols

Those miscellaneous cultural features for which standardized symbols are lacking shall be portrayed with appropriate located object symbol (solid square or circle) and identifying type, e.g., “mill”, “water”, “castle”, etc.

3.6.6.2 Mining Features

Mining features such as open pit mines and quarries, which are of significant navigational value may be added short of over-congestion.

3.6.6.3 Transmission Lines (T-lines)

Power transmission lines shall be shown short of over-congestion.

T-lines may be shown in open areas or where identified by the FAA as a significant hazard to flight. The type "CAUTION" shall be shown in blue adjacent to the T-line symbol when specified by the FAA.

3.6.6.4 Dams, Levees, and Similar Features

Dams may be shown short of over-congestion.

When a dam is used to carry a road, the feature shall be shown by the dam symbol with the road drawn to the end of the dam.

Levees may be shown short of over-congestion.

3.6.6.5 Harbor Structures

Prominent piers, breakwaters, jetties, seawalls and wharfs that are of significant landmark value shall be depicted as nearly as possible to the actual shape of the object.

3.6.6.6 Lookout Towers

Lookout towers may be shown where of significant landmark value.

3.6.6.7 Stadiums, Outdoor Theaters, Race Tracks and Athletic Fields

Prominent features in this category shall be shown and identified when considered of significant navigational value. Features shall be shown to scale when possible; otherwise they shall be shown using conventional symbols.

3.6.6.8 Tanks (Oil, Gas, and Water)

Tanks shall be shown providing their portrayal does not conflict with that of more pertinent data. Appropriate labeling may be applied (e.g., oil, gas, etc.)

Tanks of significant navigational value may be portrayed as pictorials and labeled as appropriate.

3.6.6.9 Unusual Landmark Areas

Cases sometimes exist in regions of sparse culture generally void of landmarks, where an area is so different in appearance from the surrounding terrain that it serves as an outstanding landmark. Where treatment and symbolization have not been elsewhere presented, such areas shall be outlined by a dashed line and labeled appropriately to explain the nature of the area.

3.6.6.10 Aerial Cableways, Ski Lifts, Conveyor Belts and Similiar Features

Only those that may fall into the obstruction category or have visual significance from the air shall be shown

Included in this category are linear features other than railroads whose function is the transportation of people or materials.

3.7 HYDROGRAPHY

3.7.1 General

This section on hydrography includes drainage features and coastal hydrography.

The term drainage encompasses all features, both natural and man-made, of which water is a constituent part. The permanent or temporary nature of the water within the feature establishes its classification within its type as perennial or non-perennial.

Isolated small lakes, streams and ponds too small to plot shall be omitted.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.2 Shorelines

Shorelines shall be mapped to correspond to coastal features at mean high water.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.3 Lakes and Reservoirs

Lakes and reservoirs that serve as significant ground reference points or have been identified as navigational checkpoints may be shown.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.4 Streams

References:

Appendix 2 - Topographic Information - Hydrography

3.7.4.1 Perennial Streams

Perennial streams shall be shown, scale permitting. In well watered areas, it is permissible to omit the shorter and less important branches. Wherever perennial drainage is heavy, their importance becomes minor and only those whose size or configuration makes them valuable as landmarks shall be shown. In arid areas it is important to include as much of the drainage pattern as possible.

Extended drains should be cut back slightly when the points of origin of two or more are in close proximity and direction of flow could be misinterpreted.

Streams measuring .015" in overall width shall be shown as double-line streams. Streams less than .015" overall width shall be shown as single-line streams.

3.7.4.2 Non-Perennial Streams

This category includes all features classified in descriptive terms as “dry”, “intermittent”, “dry wash”, “dry riverbed”, “wadi”, “gulch”, and “arroyo”. No distinction between them shall be made in symbolization.

In arid areas, non-perennial streams shall be shown wherever they exist, scale permitting.

Non-perennial streams which in flood measure .050" or more in width shall be shown by the double-line symbol and dot fill. Non-perennial streams less than .050" in width shall be shown by the single-line symbol.

3.7.4.3 Seasonally Fluctuating Drainage

The limits (high water stage) shall be outlined with the unsurveyed shoreline symbol and a dot fill. The normal channel of streams within the outline shall be shown with the appropriate perennial/non-perennial symbol.

In certain areas, the overflow area is confined within high banks which are distinctive and extremely significant as landmarks. In these isolated instances, the solid-line perennial shoreline symbol shall be used to delineate the limits of the overflow area in lieu of the unsurveyed shoreline symbol.

3.7.5 Wet Sand Areas

Areas of wet sand shall be shown when they are landmark significant or necessary to preserve the characteristic pattern of an area, especially within or adjacent to a desert area.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.6 Swamps and Marshes

All marshes and swamps shall be shown when determined to be of significant landmark value.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.7 Canals

Major canals shall be shown. Minor canals shall be omitted except where specifically requested.

In areas where canals are too numerous to delineate, the area should be labeled “Numerous Canals”.

Descriptive notes should be added only when they convey pertinent information to the user, or when required to clarify situations which would otherwise be confusing.

References:

Appendix 2 - Topographic Information - Hydrography

3.7.8 Coastal Hydrography

The term “coastal hydrography” includes all natural and relatively permanent cultural features on the seaward side of the shoreline.

When omission is necessary because of congestion, items selected for charting should be those of most significance from a landmark standpoint.

Descriptive notes should be added only when they convey pertinent information to the user, or when required to clarify situations which would otherwise be confusing or liable to misinterpretation.

References:

Appendix 2 - Topographic Information - Hydrography

3.8 RELIEF

3.8.1 General

Basic relief presentation shall be achieved by spot elevations.

References:

Appendix 3 - Topographic Information - Relief

3.8.2 Elevations

3.8.2.1 General

An adequate pattern of spot elevations should be distributed throughout the chart. Elevations which are not considered significant shall normally be omitted.

References:

Appendix 3 - Topographic Information - Relief

3.8.2.2 Accuracy Criteria

Spot elevations symbolized by a dot indicate accurate position and elevation within 100 feet.

3.8.2.3 Symbolization

Accurate Elevations.

3.9 AERONAUTICAL INFORMATION

3.9.1 General

The aeronautical information portrayed on the chart is intended to serve only as an adjunct to visual flight.

Visual reference data essential to VFR flight must not be obscured by overprints. At the same time, vital aeronautical information such as routes, radio aids to navigation and reporting points must be readable.

Aeronautical information shall be plotted at its true geographic position whenever possible. Aeronautical data should be depicted in its correct relative position to the surrounding base detail. Should it become necessary to displace aeronautical symbols to improve readability in congested areas, preference shall be given to the accurate plotting of NAVAIDs.

Bearings and radials shall be magnetic and shall be depicted by a three digit figure, e.g., 001, 012, 123. A degree sign (°) shall be shown with all bearing/radial values.

Textual data shall be positioned relative to true north unless otherwise specified.

Dotted leader lines may be used when necessary for clarity of detail.

Operational notes, e.g., hours of operation, shall be shown using local time. "0000" shall be used to denote the beginning of the day and "2400" the end of the day.

Aeronautical data shall be shown in blue color unless otherwise indicated.

References:

Appendix 4 - Aeronautical Information - Airports
Appendix 5 - Aeronautical Information - Radio Aids to Navigation
Appendix 6 - Aeronautical Information - Flight Service Stations
Appendix 7 - Aeronautical Information - Airspace
Appendix 8 - Aeronautical Information - Navigational & Procedural

3.9.2 Airports

3.9.2.1 General

Airports published in the FAA National Flight Data Digest (NFDD) shall be charted. Unverified airports provided by the AVN Flight Edit Program shall be charted. Other airports that have been requested by appropriate authority may be charted with an unverified notation.

Airports/heliports shall be plotted to true geographic position unless they conflict with a NAVAID at the same location. In such cases, the airport shall be displaced from or superimposed upon the NAVAID. In displacing, the positional relationship between the airport and the NAVAID shall be retained.

When depicting a seaplane base, the eye of the anchor symbol shall be as close to the docking area as possible, with the remainder of the symbol in the water (orientation is not an issue).

References:

Appendix 4 - Aeronautical Information - Airports

3.9.2.2 Criteria

Airports/heliports within the following criteria shall be charted:

- Public-use and Private-use Heliports, Airports, and Seaplane Bases
- Medical Center
- Military airports without charting restrictions
- Helipads at major airports (when requested by appropriate authority)
- Gliderports and ultralight flight parks/activities
- Unverified heliports/helipads (when requested by appropriate authority)
- Closed airports with hard surface runways
- Abandoned airports with at least a 3,000' paved runway and/or landmark value

3.9.2.3 Symbolization, Classification and Criteria

Airports/heliports shall be symbolized and classified in accordance to the following criteria.

- Heliport
- Medical Center
- Unverified airport
- Unverified heliport
- Civil, paved airport
- Civil, unpaved airport
- Seaplane base
- Military
- Gliderport
- Ultralight flight park

3.9.2.4 Runway Criteria

Airports with paved runways shall be shown by pattern, true to scale. Hard surfaced runways that exist in the authoritative source database as permanently closed shall be included in the charted pattern. Airport beacon lights operating continuously on or adjacent to public-use airports or on or adjacent to public or private heliports, helipads, etc. shall be charted.

3.9.2.5 Airport Name

Airports/heliports shall be identified by the designated facility name extracted verbatim from the authoritative database.

Duplication of names shall be avoided whenever possible. The radio aid to navigation or adjacent city or town name may be used for the airport if the airport name is the same and no misinterpretation shall result.

The type "(Pvt)" shall be shown at non-military private fields, positioned above or immediately after the airport name.

3.9.2.6 Airport Data

The airport/heliport name shall be supported by the following coded data when available, positioned immediately above, following or below the airport name as indicated.

3.9.2.6.1 Flight Service Stations (FSS)

Flight Service Stations (FSS) located on an airport shall be indicated by the letters "FSS" positioned above the airport name.

3.9.2.6.2 Airport/Heliport Name and Identifier(s)

Airports/heliports shall be identified by the facility name extracted verbatim from the authoritative database. Public-use, joint civil-military, and military airports shall include the three/four character alpha-numeric FAA airport identifier immediately after the name in parenthesis. Airports outside the contiguous U.S. shall be charted with both FAA airport identifier and ICAO location indicator as shown. When an ICAO location indicator does not exist for an airport only, the FAA designated airport identifier shall be used. The number zero shall be identified as "Ø" in order to differentiate from the letter "O".

3.9.2.6.3 Control Towers

Control towers shall be indicated on the chart by adding the letters "CT" with the primary VHF local control tower frequency and specific helicopter control tower frequencies. A five-pointed star shall follow each frequency to indicate part-time operation. Hours of operation shall be shown in the margin tab.

3.9.2.6.4 Helicopter Frequencies at an Airport or Helipad

All helicopter frequencies associated with any airport or helipad shall be charted in the airport data block and in the Control Tower Frequencies tabulation. In the tabulation, "HELI" shall be placed next to the frequency, i.e. "134.35 (HELI)". In the airport data block, following the frequency, "HELI" should be stated, i.e. "(134.35 HELI)".

3.9.2.6.5 Automated Terminal Information Service (ATIS)

Automatic Terminal Information Service (ATIS) shall be shown by the letters "ATIS" followed by the primary arrival VHF/UHF frequency/ies following the tower frequency.

3.9.2.6.6 Automated Weather Broadcast Service

Automated Weather Observing System (AWOS)/Automated Surface Weather Observing System (ASOS) shall be shown at public-use and military airports by the letters "AWOS" or "ASOS" followed by the number/letter indicating the type of system and the frequency shown below the tower frequency. AWOS/ASOS transmitted through a NDB shall be depicted with the frequency followed by the abbreviation for kilohertz (kHz). If full-time ATIS is available, AWOS or ASOS shall not be shown.

3.9.2.6.7 Airport/Helipad Elevation

The elevation of an airport is the highest point of the usable portion of the landing areas based on the most reliable information available. The elevation, in feet above mean sea level, shall be positioned immediately below the airport name. Show sea level elevations as "00". When elevation is below sea level, the word "minus" shall precede the figure.

3.9.2.6.8 Runway Lighting System

Runway lighting is a system of lights defining the usable runway surface. Lighting symbolization indicates availability of runway lighting at military and public-use airports and shall be shown below the airport name following the elevation. Lighting for all heliports shall be shown when available. Lighting in operation from sunset to sunrise shall be indicated by the letter "L".

Lighting for which limitations exist, such as available on request, part-time lighting, or pilot/airport-controlled lighting shall be shown by an asterisk (*) preceding the letter "L". When lighting is not available, a dash shall be shown. Dashes shall not be shown for heliports and helipads, unless additional information follows the elevation (e.g. UNICOM, CTAF). Portable lighting, temporary lighting, and "emergency use only" lighting (for airports outside the U.S.) shall be considered as an absence of runway lighting i.e., not available.

3.9.2.6.9 Airports of Entry (AOE)

Airports of entry shall be identified by the term "AOE" positioned immediately below the airport elevation and lighting information.

3.9.2.6.10 Aeronautical Advisory Stations (UNICOM)

Aeronautical Advisory Stations (UNICOM) shall be indicated by frequency assigned.

3.9.2.6.11 Common Traffic Advisory Frequency (CTAF)

The Common Traffic Advisory Frequency (CTAF) shall be indicated by a solid blue symbol (i.e., Ⓒ). When the frequency is already charted (e.g., tower or UNICOM) add the symbol behind the frequency in negative type. If necessary, add the symbol where the UNICOM is normally shown, or if UNICOM is already shown, place it immediately below and centered on the airport data block.

3.9.2.6.12 Ultralight Flight Park Names

Ultralight Flight Parks shall be identified by name only and type "(Pvt)" if applicable.

3.9.2.7 FAR Part 93 Airports

Airports for which a Special Air Traffic Rule is designated in FAR Part 93 shall be indicated by placing a box around the airport name. Refer to Section **3.9.8.15**.

3.9.2.8 Objectionable Airport Charting

Charted public-use airports (and private-use airports having landmark value) that have received an "Objectionable" airspace determination from the FAA Office of Airports shall be shown with standard airport symbology, with the annotation "OBJECTIONABLE" placed in close proximity to the airport symbol. No additional airport data (including airport name or identifier) shall be provided.

3.9.3 Radio Aids to Navigation (NAVAIDs)

3.9.3.1 General

Public-use (and outside of U.S. airspace private-use when utilized in the definition of an airway) operational and commissioned LF/MF and VHF/UHF NAVAIDs shall be shown as illustrated in the Appendices.

References:

Appendix 5 - Aeronautical Information - Radio Aids to Navigation

3.9.3.1.1 NAVAID Data

NAVAID data shall be boxed.

Arrangement of NAVAID data within the box shall be in the following sequence: name, frequency, channel (if applicable), identification letters and Morse code. The NAVAID name shall be centered above the frequency, channel, identification letters and Morse code within the box.

The FSS or FSS radio name providing the voice communication shall be shown in brackets parallel to and below the bottom line of the box. See Section 3.9.5.

3.9.3.1.2 NAVAIDs "Without Voice"

NAVAIDs "without voice" shall be indicated by underlining the frequency of the NAVAID. DME frequencies shall not be underlined.

3.9.3.1.3 Multiple NAVAIDs with Same Name, Different Identifier

When multiple NAVAIDs have the same name with different frequencies or channels or identification letters, and no misinterpretation shall result, the name of the NAVAID shall be indicated once within the identification box. VHF/UHF NAVAID names and identification boxes shall take precedence in same name NAVAID situations. The frequency only (or the frequency, identification, and Morse code when different from the same name NAVAID) shall be positioned below the associated VHF/UHF NAVAID identification within the common identification box.

Leader lines may be shown for clarity of information. If necessary, leader lines from combined NAVAID identifications may be individually portrayed.

Separate boxes may be used where, because of distance between NAVAIDs or chart congestion, it is impractical to use a combined box. Choice of separate or combined boxes shall be made on the basis of economy of space and clear identification of the NAVAIDs.

3.9.3.1.4 NAVAIDs Collocated on Airports

A NAVAID collocated on an airport depicted by a runway pattern shall be plotted to its true geographic position and depicted by a .032" diameter circle. A smaller diameter circle may be used if excessive runway displacement prohibits the use of the larger circle. The NAVAID type, e.g., VOR, VORTAC, etc., shall be positioned on and breaking the top line of the identification box. A leader line shall extend to the appropriate location on the airport.

3.9.3.1.5 Compass Roses

Compass roses shall be shown centered on all VOR and VORTAC NAVAIDs and oriented to the slaved magnetic variation on record of the NAVAID.

3.9.3.1.6 NAVAIDs for VFR Use Only

NAVAIDs for "VFR Use Only" shall be so identified on the chart, outside and adjacent to the identification box.

3.9.3.1.7 Part-Time NAVAIDs

NAVAIDs operating part-time or on request shall be indicated by the placement of a small five-pointed star to the left of the frequency, within the box.

3.9.3.1.8 Shutdown NAVAIDs

The operational status of "Shutdown" NAVAIDs shall be symbolized and the frequency and channel shall be overprinted with diagonal lines in NE to SW direction in same color as frequency and channel.

3.9.3.1.9 Automated Weather Broadcast Service

Automated Surface Observing Station (ASOS) and Automated Weather Observing Station (AWOS) broadcasts associated with a NAVAID shall be indicated by a  or  . These icons shall be placed in the upper right corner inside the NAVAID box. The icon shall be the same color as the associated NAVAID. If two NAVAIDs share a common frequency box and both have weather broadcasts, the color shall indicate which broadcast service is associated with which NAVAID.

3.9.3.2 VHF Omnidirectional Radio Range Stations (VOR)

VORs and VORs with TACAN DME shall be shown.

Stations shall be identified by name, frequency, channel if applicable, identification letters and Morse code.

3.9.3.3 VHF Omnidirectional Radio Range-Tactical Air Navigation (VORTAC)

VORTACs shall be shown.

VORTACs shall be identified by name, frequency, channel, identification letters and Morse code.

3.9.3.4 Distance Measuring Equipment (DME)

DMEs shall be shown.

DMEs shall be identified by name, channel, identification letters, Morse code, and paired frequency in parentheses.

DMEs shall not be depicted outside the United States unless utilized in the definition of an airway.

3.9.3.5 Nondirectional Radio Beacons (NDB)

NDBs shall be shown.

NDBs shall be identified by name, frequency, identification letters and Morse code. When DME is available at a NDB, the paired VHF frequency shall be shown in parenthesis following the DME/TACAN channel.

The NDB center symbol (circle and dot) shall be deleted when used in conjunction with marker beacons and airports.

3.9.3.6 NAVAIDs Utilized as FSS or FSS Radio A/G or RCO

FSS or FSS Radio A/G voice communications frequencies remoted to NAVAIDs (i.e. RCOs) or frequencies of RCOs collocated with a NAVAID (within 10 nautical miles) of the same name serving the same FSS or FSS Radio, may be indicated above the top line of the NAVAID identification box.

The FSS or FSS Radio providing voice communication shall be shown parallel to and below the bottom line of the box.

"L" shaped brackets shall be positioned .050" to the right and left of the FSS or FSS Radio name. When the name of the FSS or FSS Radio is longer than the box, the bottom line of the box may be extended left/right. The color of the brackets and type shall be the same as the box.

3.9.3.6.1 Canadian Dial-up RCOs

Canadian Dial-up Remote Communication Outlets shall be identified by placing the type "DRCO" below or immediately adjacent to the associated FSS or FSS Radio name.

3.9.3.7 NAVAIDs Defining Class B Airspace

NAVAIDs used in official descriptions of Class B airspace to define an airspace limit, and not otherwise charted, (e.g., LOM, ILS, ILS/DME, etc.) shall be charted.

The name, identification, frequency, and channel shall be shown. In the case of two ILS/DME systems which utilize a single, shared DME antenna, a single facility box shall be shown, with the location identifiers of both ILS systems listed, separated by a slash.

3.9.4 Broadcasting Stations (Commercial)

Commercial broadcasting stations shall be shown when specifically requested by appropriate authority.

Broadcasting stations shall be plotted in their true geographical location.

References:

Appendix 5 - Aeronautical Information - Radio Aids to Navigation

3.9.5 Flight Service Stations (FSS)

All flight service stations (FSS), except those with the same name as a NAVAID shall be shown, symbolized and identified by name and identification letters, and enclosed within an identification box.

FSSs with the same name as a NAVAID but with a different identifier shall be shown independently of the NAVAID, i.e., separate identification box with name and identifier.

Part-time FSSs shall be annotated with hours of operation.

NAVAIDs having the same name as the FSS and not designated as a remote communications outlet (RCO) shall be considered as the FSS. The NAVAID identification box will be augmented with the heavy line.

FSS A/G voice communications frequencies available at the FSS shall be shown positioned above the top line of the FSS identification box.

FSS standard frequencies 122.2 and 255.4 (Conterminous United States); 121.5, 122.2, 243.0 and 255.4 (Alaska); and 121.5, 126.7 and 243.0 (Canada) will not be shown.

FSS outlets-FSS Radio outlets (RCOs) when not associated with a NAVAID shall be shown as illustrated in the Appendices and identified by name and the letters "RCO" within an identification box.Where FSS outlets-FSS Radio outlets (RCOs) are associated with or collocated (within 10 nautical miles) with a NAVAID of the same name and serving the same FSS or FSS Radio, the frequencies may be positioned above the NAVAID box. All published RCO frequencies shall be shown.

References:

Appendix 6 - Aeronautical Information - Flight Service Stations

3.9.6 Off-Airport Automated Weather Broadcast Service

Automated Weather Observing System (AWOS)/Automated Surface Observing System (ASOS) not associated with a charted public-use airport or NAVAID shall be shown and identified by name, type of facility, e.g., AWOS/ASOS, frequency and FAA identifier.

3.9.7 VFR Waypoints

VFR waypoints, when specified by the FAA, shall be shown. VFR waypoint names consist of five letters beginning with the letters "VP" in black type.

Stand-alone VFR waypoints shall be depicted using the standard four-pointed waypoint star symbol. The VFR waypoint name shall be placed adjacent to the symbol.

VFR waypoints collocated with VFR checkpoints shall not be depicted with the four-pointed waypoint star symbol. The associated VFR checkpoint flag shall be used. The VFR waypoint name shall be shown in parenthesis below the VFR checkpoint name; both names shall be in black type.

References:

Appendix 8 - Aeronautical Information - Navigational & Procedural

3.9.8 Airspace Information

References:

Appendix 7 - Aeronautical Information - Airspace

3.9.8.1 Class B Airspace

Class B airspace shall be shown and plotted in its entirety, symbolized by outlines of the areas and internal sectors centered on the boundary and sector lines in blue.

Ceiling and floor sector altitudes above mean sea level (MSL) shall be shown in blue.

Show ceiling values above floor values separated by horizontal lines. Eliminate the last two digits and show surface as SFC.

Floors extending "upward from above" a certain altitude are preceded by a plus symbol "+".

Position altitude values within each sector at appropriate intervals. Use leader lines if the altitude value must, because of limited space, be placed outside its sector.

Type size shall vary dependent upon space limitations.

Areas beginning at the surface shall be shown by a black screen.

The Class B airspace name shall be shown in blue at or near the north position, outside the boundary.

Communication boxes shall be shown in designated sectors outside the Class B airspace boundary. The note will contain the approach call sign of the facility.

All radials used to define a boundary of Class B airspace shall be identified by the NAVAID identifier and magnetic bearing from the NAVAID. All arcs shall be identified by the NAVAID identifier and nautical miles from the NAVAID. In cases where a DME antenna shared by more than one ILS system defines the arc, both ILS location identifiers shall be shown, separated by a slash. Arcs and radials from geographic positions other than NAVAIDs shall be identified by magnetic bearings and nautical mileages when requested by appropriate authority.

3.9.8.2 Class C Airspace

Class C airspace shall be shown by a brown line.

Only the core areas, normally 5 and 10 nautical mile circles centered on the airport, and internal sectors shall be shown.

Ceiling and floor sector altitudes above mean sea level (MSL) shall be shown in brown.

Show ceiling values above floor values separated by horizontal lines. Eliminate the last two digits and show surface as SFC.

A ceiling value of "T" indicates the ceiling is to but not including the floor of overlying Class B airspace.

Position altitude values within each sector at appropriate intervals. Use leader lines if the altitude value must, because of limited space, be placed outside its sector.

Type size shall vary dependent upon space limitations.

Areas beginning at the surface shall be shown by a black screen.

The Class C airspace name shall be shown in brown at or near the north position, outside the boundary.

Communication boxes shall be shown in designated sectors outside the Class C airspace boundary. The note will contain the approach call sign of the facility.

Class C airspace identified in the legal description as operating less than continuous, shall be noted.

3.9.8.3 Class D Airspace

Class D airspace shall be shown in its entirety by a blue dashed line.

Class D airspace shall be depicted in its true position regardless of the necessity to offset the airport symbol. Exclusion areas within the Class D limits shall be depicted with a blue line.

Class D airspace identified in the legal description as operating less than continuous, shall be noted.

Ceilings (MSL) shall be shown in hundreds of feet dropping the last two digits. A minus in front of the figure shall be used to indicate "from surface to but not including…". The figure size shall vary and be enclosed within a dashed box. Leader lines may be used when the ceiling value must, because of space limitations, be placed outside the respective area.

3.9.8.4 Class E Airspace

Class E airspace beginning at the surface shall be shown by a brown dashed line.

Class E airspace shall be depicted at its true position regardless of the necessity to offset the airport symbol. Exclusion areas within the Class E limits shall be depicted with a brown line.

Class E airspace identified in the legal description as operating less than continuous shall be noted.

3.9.8.5 Police Zones

Police Zones shall be depicted when requested by appropriate authority.

3.9.8.6 Canadian/Mexican/Outside U.S. Airspace

3.9.8.6.1 Airspace Outside the U.S. Notes

Airspace outside of the U.S. other than those specified in sections below shall be depicted with the name/designator and the equivalent domestic symbol. The following note shall be charted near the border and in the margin area of the chart.

Figure 3.11 DoD Users Note

3.9.8.6.2 Canadian Airspace Notes

Canadian airspace shall be depicted. The following boxed notes shall be charted near the border and once in the chart margin.

Figure 3.12 Airspace Classification Note - Canada

Figure 3.13 Charts and Publications Note - Canada

3.9.8.6.3 Canadian VFR Airspace Restrictions Note

The following boxed note shall be charted once within Canadian territory.

Figure 3.14 VFR Airspace Restrictions Note - Canada

3.9.8.6.4 Mexican Airspace Notes

Mexican airspace shall be depicted with the name/designator and the equivalent domestic symbol. The following boxed notes shall be charted near the border and once in the chart margin.

Figure 3.15 Airspace Classification Note - Mexico

Figure 3.16 Charts and Publications Note - Mexico

3.9.8.7 Helicopter Routes

Helicopter Routes as designated by appropriate authority shall be shown.

Routes shall be designated as primary, secondary, transition or military routes.

Where the route follows a cultural feature such as a road, the base feature shall be overprinted using the appropriate route symbology.

Route altitudes and changeover points when designated shall be shown.

Routes shall be identified by placement of the route/name designator. Control tower frequencies may be added as required by appropriate authority.

Reporting points shall be shown where deemed necessary by appropriate authority. The name of the reporting point shall be underlined.

A helicopter route procedural note may be added when requested by appropriate authority.

One-way routes shall be shown by an arrow indicating the direction of traffic. No arrows shall be depicted when direction is both ways.

All route altitude designations, e.g. minimum, maximum, and recommended should be shown as well as changeover points as applicable. A minimum designation shall be depicted with a line below the numerals. A maximum designation shall be depicted with a line above the numerals. A recommended designation shall be depicted with lines below and above the numerals.

3.9.8.8 Flight Information Region (FIR)/ Control Area (CTA)

Flight Information Regions (FIRs)/Control Areas (CTAs) shall be identified by name and positioned within the area, adjacent to and parallel to the boundary. FIRs shall also have an identifier shown. Boundaries of FIRs/CTAs shall be shown.

When FIRs/CTAs adjoin one another, show alternating ‘ticks’ on both sides of the common delimiting line.

3.9.8.9 Special Use Airspace (SUA)

Prohibited, Restricted, Warning, National Security Flight Restricted Zones, Alert and Military Operations Areas (MOA) shall be shown by a delimiting line. Exclusion areas within the SUA shall be depicted with a line. Do not depict Class airspace exclusions common to all Alert Areas and described in the Legend and SUA Tabulated data table.

Special Use Airspace with a floor of 18,000 ft. MSL or above shall not be shown.

Special Use Airspace shall be identified by the designated letter and number, e.g., R-4801, A-203, etc., positioned either inside or immediately outside and adjacent to the area. MOAs shall be identified by name. The type of area shall also be spelled out, e.g., "RESTRICTED" (in blue), when space permits. Alert areas shall also indicate the type of activity conducted. Flight Restricted Zones shall be identified by the type "FLIGHT RESTRICTED ZONE" (in blue) either inside or immediately outside and adjacent to the area.

3.9.8.10 Air Defense Identification Zones (ADIZ, CADIZ)

ADIZs shall be shown. The continuous line indicates the limits of the area with the dots within the area.

When an international boundary, projection line, or other linear feature coincides with the limits of the ADIZ, the linear feature symbol shall suffice for the delimiting line of the ADIZ.

When a FIR boundary coincides with the limits of the ADIZ, the ADIZ symbol, without the line, shall be positioned adjacent to and in conjunction with the FIR symbol.

ADIZs and defense areas shall be identified adjacent to and parallel to the symbol, within the respective areas.

ADIZs and defense areas shall be identified at sufficient intervals to facilitate identification by users.

Defense areas shall be identified by name only outside the ADIZ boundary symbol.

3.9.8.11 National Oceanic and Atmospheric Administration (NOAA) Regulated National Marine Sanctuary Designated Areas

NOAA Regulated National Marine Sanctuary Designated Areas shall be shown by the symbol illustrated in **Appendix 7**. Boxed notes shall be depicted as requested by appropriate authority. An explanatory example as illustrated in **Appendix 7** shall be depicted in the vicinity of the marine sanctuary.

3.9.8.12 Military Training Routes (MTR)

All IFR (IR) and VFR (VR) MTRs (not including alternate entry and exit tracks) shall be shown.

MTRs shall be identified by route designators, e.g., IR123, VR321, etc. Route designators shall be shown in solid black on the unbroken route centerline, placed along the route to effect continuity.

Do not repeat the IR or VR when several routes have the same centerline, e.g., IR201-205.

Routes numbered 001 to 099 shall be shown as IR1 or VR99, eliminating the zero digits.

Direction of flight shall be indicated by small arrowheads adjacent to the designators.

3.9.8.13 Mode C Airspace

When the lateral limits of Mode C required airspace are not otherwise shown by Class C airspace symbol, the Mode C limits shall be shown by a brown line and shall be labeled "MODE C & ADS-B OUT". Mode C symbols shall stop at the U.S. International Boundary.

If the chart limit falls entirely within the limits of the 30 NM Mode C arc, a note shall be placed on the chart designating Mode C & ADS-B OUT requirement.

In Canada, altitude requirements associated with Mode C shall be shown in brown along the inner edge of the airspace limit, i.e. "6500".

3.9.8.14 Special Activity Areas

3.9.8.14.1 Parachute Jumping Areas

When specified by the FAA, parachute jumping areas shall be shown. When available, the ATC frequency for coordination of parachute operations shall be shown together with the parachute jumping area symbol.

3.9.8.14.2 Glider Operations Areas

When specified by the FAA, glider operation areas shall be shown.

3.9.8.14.3 Hang Gliding Activity Areas

When specified by the FAA, hang gliding activity areas shall be shown. Hang glider activity shall include paragliding activity.

3.9.8.14.4 Ultralight Activity Areas

When specified by the FAA, ultralight activity areas not associated with airports shall be shown.

3.9.8.14.5 Unmanned Aircraft Activity Areas

When specified by the FAA, Unmanned Aircraft System activity areas shall be shown.

3.9.8.14.6 Aerobatic Practice Areas

When specified by the FAA, aerobatic practice areas shall be shown.

3.9.8.14.7 Space Launch Activity Areas

When specified by the FAA, space launch activity areas shall be shown.

3.9.8.15 Special Air Traffic Rules/Airport Traffic Pattern (FAR Part 93) and Fixed Wing Special VFR Operations Prohibited (FAR Part 91)

Airports with a special air traffic rule designated in FAR Part 93 shall be indicated by placing a box around the airport name.

Special traffic pattern areas designated in FAR Part 93 and requested by the FAA shall be shown by a line pattern, positioned in a NE/SW direction within a delimiting line.

- The line pattern shall normally be .100" wide but it may be proportionately reduced if the area is too small for the specified band.
- An appropriate boxed note shall be shown adjacent to the area.

Airports where fixed wing special visual flight rules operations are prohibited (FAR Part 91) shall show the notation “NO SVFR” immediately above the airport name.

3.9.8.16 National Security Special Flight Rules Area (SFRA), National Security Temporary Flight Restrictions (TFR) and National Security Flight Restricted Zones (FRZ)

Boxed notes shall be placed as close as possible to the associated SFRA, TFR or FRZ boundaries without overprinting when possible. Boxed notes not placed close to the associated boundary may have a leader line from the note to call attention to it.

3.9.8.16.1 National Security SFRA

Chart National Security SFRA areas using standard symbology in green. Chart SFRA notes, boxed, as requested by appropriate authority in green. The name of the SFRA shall be shown in green.

3.9.8.16.2 National Security TFR

Chart National Security TFR areas using standard symbology in green. Chart TFR notes, boxed, as requested by appropriate authority in green.

A TFR may have a leader line from the boxed note to the TFR area as necessary to call attention to it. When a TFR is too small to have the necessary visual impact even with the TFR symbology, then all cultural tints shall be masked out leaving the entire area void of color, while retaining line features. If a TFR qualifies for complete color masking, a leader shall be used from the boxed note to the TFR area. The cartographer shall be responsible to determine when a TFR shall qualify for a complete color masking.

3.9.8.16.3 National Security FRZ

Chart National Security FRZ areas using standard Special Use Airspace (SUA) symbology in blue. Label “FLIGHT RESTRICTED ZONE” (in blue) within the area. Chart FRZ notes, boxed, as requested by appropriate authority in blue.

3.9.8.17 Special Security Notice Permanent Continuous Flight Restriction Areas

Chart Special Security Notice Permanent Continuous Flight Restriction Areas using standard symbology in blue. Chart associated notes, boxed, as requested by appropriate authority.

3.9.8.18 Sporting Event Temporary Flight Restriction Sites

Chart Sport Event Temporary Flight Restriction Sites using standard symbology in brwon.

3.9.8.19 National Defense Airspace Temporary Flight Restriction (TFR) Areas

Chart National Defense Airspace Temporary Flight Restriction (TFR) Areas using standard symbology in brown. Appropriate boxed notes will be shown. A TFR may have a leader line from the boxed note to the TFR area as necessary to call attention to it.

3.9.8.20 Terminal Radar Service Area (TRSA)

Terminal Radar Service Areas shall be shown and plotted in their entirety, symbolized by outlines of the areas and internal sectors. All lines shall be shown centered on the boundary and sector lines.

Ceiling and floor sector altitudes above mean sea level (MSL) shall be shown in black.

Show ceiling values above floor values separated by horizontal lines. Eliminate the last two digits and show surface as SFC.

Position altitude values within each sector at appropriate intervals. Use leader lines if the altitude value must, because of limited space, be placed outside its sector.

Type size shall vary dependent upon space limitations.

Areas beginning at the surface shall be shown by a black screen.

The TRSA name shall be shown in black at or near the north position, outside the boundary.

A boxed note advising where to obtain approach frequency information shall be shown adjacent to the TRSA.

3.9.9 Navigational & Procedural Information

3.9.9.1 VFR Checkpoints

Visual checkpoints designated and commonly used by controllers in the conduct of VFR flight, as provided by the FAA, shall be shown.

The flag symbol shall be associated with the feature.

The name used by the FAA shall be underlined and depicted in the same color as the feature.

3.9.9.2 Obstructions

Obstructions 300' or higher or as requested by appropriate authority shall be depicted on the Helicopter Route Chart. A group obstruction symbol shall be shown when two or more obstructions are in close proximity. The highest MSL value shall be shown. The highest AGL value shall be shown only if it corresponds to the highest MSL value.

The height of the structure above ground, as well as the elevation of the top of the obstruction above sea level, shall be shown. The height above ground shall be shown in parentheses below the height above mean sea level.

Obstructions shall be shown with a pictorial symbol or the conventional symbol.

The pictorial symbol for vertical obstructions of outstanding visual significance shall be shown in black; the elevation data shall be shown in blue.

3.9.9.2.1 Obstructions Under Construction

The letters "UC" shall be used to indicate obstructions under construction as well as reported obstructions, position and elevation unverified.

3.9.9.2.2 Obstructions with High Intensity Obstruction Lighting System

Obstructions equipped with high intensity obstruction lighting system (strobe) shall be shown on the chart by the obstruction or pictorial symbol with the lighting bolt staffs attached.

3.9.9.2.3 Wind Turbines

3.9.9.2.3.1 Individual Wind Turbines

Individual wind turbines shall be indicated by the wind turbine symbol, accompanied by the required elevation data, as illustrated in the Appendices.

3.9.9.2.3.2 Two or More Wind Turbines in Close Proximity

Two or more wind turbines in close proximity shall be indicated by the group wind turbine symbol, accompanied by the required elevation data, as illustrated in the Appendices.

3.9.9.2.3.3 Wind Turbines with High Intensity Lights

Wind turbines with high intensity lights (i.e. strobes) shall be indicated by the lighted wind turbine symbol, accompanied by the required elevation data, as illustrated in the Appendices.

3.9.9.2.3.4 Concentrated Groups or "Farms" of Wind Turbines

Concentrated groups or "farms" of wind turbines shall be portrayed by one or more wind turbine symbols outlined by a dashed line representing the approximate parameters of the farm. A boxed elevation figure, representing the elevation of the highest wind turbine within the area, shall be placed within the dashed area or, if space is limited, just outside and leadered to the area, as illustrated in the Appendices.

3.9.9.3 Maximum Elevation Figure (MEF)

3.9.9.3.1 General

MEF information shall be extracted from the TAC if available.

MEFs are required over all land masses and open water areas containing man-made obstructions, e.g., oil rigs.

The MEF represents the highest possible elevation including both terrain and vertical obstructions (towers, trees, etc.) in an area bounded by ticked lines of graticule. MEFs shall be shown by 1,000 foot digits and smaller 100 foot digits. The last two digits of the number are not shown. MEFs shall be shown centered in the area bounded by ticked lines of graticule.

3.9.9.3.2 Calculating MEFs

When calculating MEFs, increase them only to the point that it is assured that they represent the minimum clearance altitude based on the source material. Use the following procedure to calculate MEFs:

3.9.9.3.2.1 Man-Made Obstruction Greater Than 200'

When a man-made obstruction is more than 200 feet above the highest terrain within the area bounded by ticked lines of graticule:

Determine the elevation of the top of the obstruction (above mean sea level).

Add the possible vertical error of the source material to the above figure (100 feet or ½ the contour interval when interval on source exceeds 200 feet).

Round the resultant figure up to the next higher hundred foot level and this final figure is the MEF.

Figure 3.17 MEF Calculation - Man-Made Obstruction

Elevation of Obstruction Top (MSL)		2,424'
Possible Vertical Error	+	100'
		2,524'
Round Up to Next 100' Level		2,600'
Maximum Elevaton Figure (MEF)		26

3.9.9.3.2.2 Natural Terrain Feature

When a natural terrain feature (spot elevation, manufactured elevation or contour) or a natural vertical obstruction (trees) is the controlling figure within the area bounded by ticked lines of graticule:

Determine the elevation of the feature.

Add the possible vertical error of the source material to the above figure (100 feet or ½ the contour interval when interval on source exceeds 200 feet).

Add 200 feet to allow for natural or man-made obstructions which are not portrayed because they are below the minimum height at which the chart specification requires their portrayal by an obstruction symbol.

Round the resultant figure up to the next higher hundred foot level and this final figure is the MEF.

Figure 3.18 MEF Calculation - Natural Terrain Feature

Highest Terrain Elevation (MSL)		3,450'
Allowance for Uncharted Obstructions		200'
Possible Vertical Error	+	100'
		3,750'
Round Up to Next 100' Level		3,800'
Maximum Elevaton Figure (MEF)		38

In those areas consisting of less than a full quadrangle, the MEF value shall be shown except where the area is too small to accommodate the MEF type.

3.9.9.4 Navigation Data

The latitude/longitude of navigation data consisting of Visual Checkpoints, Navigation Reference Points and/or Fixes identified by the FAA, shall be shown as illustrated in the Appendices. If the navigation reference point does not coincide with a feature (e.g., building, obstacle, intersecting DME arcs, etc.) the position shall be indicated by a "+". Positions shall be shown to the nearest .010" if adequate source is available. If a definite position cannot be identified, e.g., the center of a town, or if accurate source is not available, the position shall be shown to the nearest .1'.

If the charting of navigation data creates clutter, the information can be shown in tabular form. Type shall be 7 pt Helvetica 65 Medium.

Figure 3.19 Navigation Data

NAVIGATION DATA
GEOGRAPHIC COORDINATES

NUMBER	TYPE	NAME	LATITUDE	LONGITUDE
	Checkpoint	Alpine Tower	N40°49.35'	W073°53.25'
	Fix	Rupee	N40°35.39'	W073°31.44'
1	Nav Ref Pt		N40°29.70'	W073°42.84'

The tabulation can be modified to fit the type of data. If only Visual Checkpoints are used, the table may be formatted as follows:

Figure 3.20 Navigation Data - Visual Checkpoints

VISUAL CHECKPOINTS
GEOGRAPHIC COORDINATES

NAME	LATITUDE	LONGITUDE
Alpine Tower	N40°49.35'	W073°53.25'

An unnamed navigation reference point can be identified by an associated circled number to refer to the item in the tabulation.

Figure 3.21 Unnamed Reference Point

3.9.9.5 Magnetic Unreliability Note

Magnetic Unreliability Notes shall be shown when designated by appropriate authority.

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CHAPTER 4
REPRODUCTION

4.1 GENERAL

Reproduction of charts in this series shall be by lithography. The final copy shall conform to the best lithographic standards with respect to clearness of copy, conformance to colors specified and accuracy of registration.

4.2 FILES

Files furnished shall be final color-separated and prescreened binary TIFF (1 Bit), suitable for Computer to Plate, plate making.

Files shall be prepared with uniform screen angles in order to reduce moiré effect to a minimum.

Files shall be appropriately identified by chart name, effective date, and color. A Negative Identification List shall be supplied as a guide for plate identity and screening requirements.

Color blocks, when used, shall be outside the trim line.

Individual chart features required on each color separation file are indicated in Section **3.4**.

4.3 PAPER REQUIREMENTS

Charts shall be printed on Paper Tyger paper (27 lbs. - Super White - Paper Tyger paper - Map Lithograph Finish).

4.4 PRINTING SCREENS AND COLORS

4.4.1 Files, Screens, and Colors

Table 4.1 Files, Screens and Colors

FILES	TONE	COLOR	PMS
Roads	40%/15°/120L	Brown	498
Road Type	Solid	Brown	498
Aero Type	Solid	Brown	498
Nondirectional Radio Beacons (NDBs)	Solid	Brown	498
Sporting Event Temporary Flight Restriction Sites	Solid	Brown	498
National Defense Airspace TFR	Solid	Brown	498
Urban Area	10%/60°/120L	Brown	498
Urban Outline	Solid	Brown	498
International Boundary	25%/30°/120L	Brown	498
Class E	60%/30°/120L	Brown	498
Class C	45%/45°/200L	Brown	498
SUA, Mode C	Solid	Brown	498
Banner	Solid	Blue	Reflex Blue
Banner	30%/15°/150L	Blue	Reflex Blue
Drainage	Solid	Blue	Reflex Blue
Drainage Type	45%/Biangle/200L	Blue	Reflex Blue
Open Water	10%/60°/120L	Blue	Reflex Blue
Class D, Compass Roses	60%/30°/120L	Blue	Reflex Blue
Helicopter Routes	60%/30°/120L	Blue	Reflex Blue
Swamp	45%/Biangle/200L	Blue	Reflex Blue
Class B	Solid	Blue	Reflex Blue
Aero Type, MEF	Solid	Blue	Reflex Blue
Special Security Notice Permanent Continuous Flight Restriction Areas	Solid	Blue	Reflex Blue
SUA, Wildlife Areas	Solid	Blue	Reflex Blue
Projection	Solid	Black	Process Black
Railroads and Boundaries	60%/30°/120L	Black	Process Black
Type	Solid	Black	Process Black
Landmarks	Solid	Black	Process Black
Man-Made Shorelines	Solid	Black	Process Black
Transmission Lines	Solid	Black	Process Black
Class B, Class C, and TRSA Surface Areas	10%/60°/120L	Black	Process Black
Topographic Type	45%/Biangle/200L	Black	Process Black

Table 4.1 Files, Screens and Colors (Continued)

FILES	TONE	COLOR	PMS
Police Zone	60%/30°/120L	Black	Process Black
Banner	30%/45°/150L	Black	Process Black
TRSA	45%/45°/200L	Black	Process Black
Military Training Route Type	Solid	Black	Process Black
Military Training Routes	25%/15°/120L	Black	Process Black
National Security SFRA and TFR	Solid	Green	354U
National Security SFRA and TFR Type	Solid	Green	354U
Special Event Areas	35%/30°/120L	Green	354U
Special Event Area Type	Solid	Green	354U

4.4.2 Screens

All screen angles are measured in degrees, starting with zero at 3 o'clock and progressing counter-clockwise.

4.5 BINDERY INSTRUCTIONS

4.5.1 Trimming

Due to the difference in the area of coverage for each chart, the trim size shall vary.

4.5.2 Folding

Charts shall be folded in vertical panels and horizontal folds, with legends on the outside panels. Folded size shall be approximately 5" x 10".

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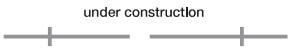
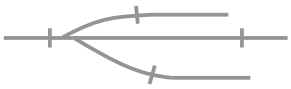
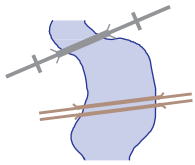
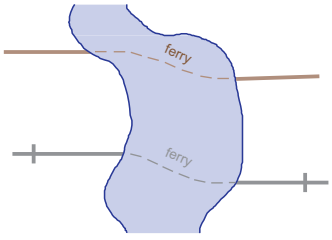
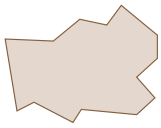
APPENDIX 1
TOPOGRAPHIC INFORMATION - CULTURE

RAILROADS			
Single Track			
Lineweight		.020"	
Crossties			
Lineweight		.020"	
Length		.100"	
Interval between crossties		1.000"	
Text	CAPS	6 pt Helvetica 66 Medium Italic	
Text character spacing		.002"	
Double Track			
Lineweight		.020"	
Crossties			
Lineweight		.020"	
Length		.100"	
Spacing between crossties		.100"	
Interval between dual crossties		1.000"	
Non-Operating, Abandoned or Under Construction			
Segment length		1.000" (shorter length may be used if necessary)	
Space between Segments		.100"	
Crossties		Centered on segment	
Text	L/C	6 pt Helvetica 65 Medium	
Railroad Yard			
Railroad Stations			
Text	L/C	6 pt Helvetica 65 Medium	
Symbol		.060" Square	
Railroad Sidings and Short Spurs			

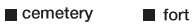
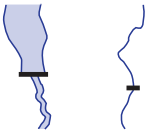
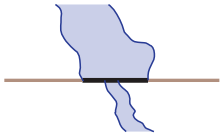
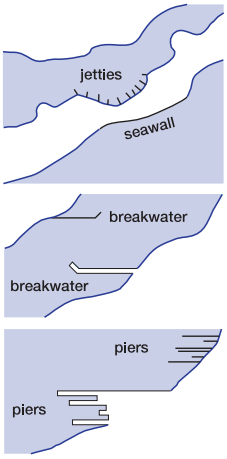
APPENDIX 1
TOPOGRAPHIC INFORMATION - CULTURE (CONTINUED)

ROADS			
Category 1			
Lineweight		.015"	
Spacing between Lines		.020"	
Category 2			
Lineweight		.020"	
Road Markers			
Interstate Route Number		8 pt Helvetica 65 Medium	
U.S. Route Number		8 pt Trade Gothic Condensed	
State Route Number		8 pt Helvetica 65 Medium	
Road Names	CAPS	5.5 pt Helvetica 65 Medium	
Roads Under Construction			
Lineweight		.015"	
Spacing between Lines		.020"	
Dash Length		.150"	
Spacing between Dashes		.020"	
Text	L/C	6 pt Helvetica 65 Medium	
RELATED FEATURES TO RAILROADS AND ROADS			
Bridges & Viaducts			
Railroad			
Road			
Overpasses and Underpasses			
Tunnels			
Railroads			
Lineweight		.012"	
Dash Length		.100"	
Spacing		.050"	
Roads			
Lineweight		.012"	
Dash Length		.100"	
Spacing		.050"	
Ferries			
Lineweight		.007"	
Dash Length		.060"	
Spacing		.030"	
Text	L/C	6 pt Helvetica 65 Medium	

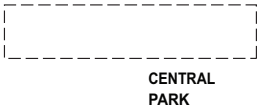
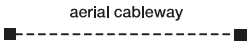
APPENDIX 1
TOPOGRAPHIC INFORMATION - CULTURE (CONTINUED)

POPULATED PLACES & BUILDINGS			
Urban Areas Lineweight		.006"	
BOUNDARIES			
International Lineweight Short Dash Length Long Dash Length Spacing Overprint Width		 .020" .100" .300" .120" .040"	
State & Provincial Lineweight Short Dash Length Long Dash Length Spacing		 .020" .100" .300" .120"	

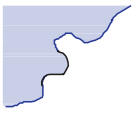
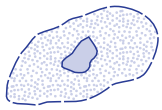
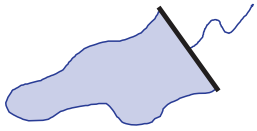
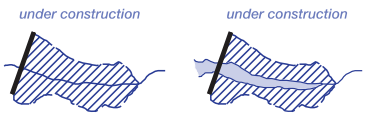
APPENDIX 1
TOPOGRAPHIC INFORMATION - CULTURE (CONTINUED)

MISCELLANEOUS FEATURES			
Pictorial Symbols			
Symbol			
Text	CAPS	6.5 pt Trade Gothic Bold	
Located Objects			
Symbol		.060" square	
Text	L/C	6 pt Helvetica 65 Medium	
Mines & Quarries			
Symbol			
Transmission Lines			
Symbol			
Lineweight		.008"	
Text	CAPS	9 pt Helvetica 65 Medium	
Dams			
Without carrying road			
Lineweight		.025"	
With carrying road			
Lineweight		.025"	
Harbor Stuctures			
Lineweight		.008"	
Text	L/C	6 pt Helvetica 65 Medium (plotted to shape and scale)	
Lookout Towers			
Symbol			
Text		8.5 pt Helvetica 66 Medium Italic	
Stadiums, Outdoor Theaters, Race Tracks & Athletic Fields			
Symbol			

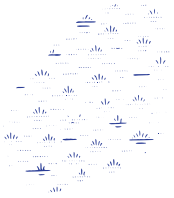
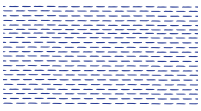
APPENDIX 1
TOPOGRAPHIC INFORMATION - CULTURE (CONTINUED)

MISCELLANEOUS FEATURES (CONTINUED)			
Tanks			
Symbol		.050" Diameter	
Text	L/C	6 pt Helvetica 65 Medium	
Landmark Areas			
Lineweight		.010"	
Dash Length		.065"	
Spacing		.025"	
Text (Proper)	CAPS	6 pt Helvetica 65 Medium	
Text (Descriptive)	L/C	6 pt Helvetica 65 Medium	
Aerial Cableways, Conveyors, etc.			
Lineweight		.010"	
Dash Length		.040"	
Spacing		.020"	
Terminals		.060" square	
Text	L/C	6 pt Helvetica 65 Medium	

APPENDIX 2
TOPOGRAPHIC INFORMATION - HYDROGRAPHY

SHORELINES			
Natural			
Lineweight		.008"	
Man-made			
Lineweight		.008"	
LAKES			
Perrenial			
Lineweight		.008"	
Text	CAPS or C/L	5 to 36 pt Helvetica 66 Medium Italic	
Non-perrenial			
Lineweight		.008"	
Dash Length		.012"	
Spacing		.015"	
Text	CAPS or C/L	5 to 36 pt Helvetica 66 Medium Italic	
Pattern		Blue Stipple	
RESERVOIRS			
Natural Shorelines			
Lineweight		.008"	
Text	CAPS, C/L or L/C	6 pt Helvetica 66 Medium Italic	
Man-made Shorelines			
Lineweight		.008"	
Text	CAPS, C/L or L/C	6 pt Helvetica 66 Medium Italic	
Under Construction			
Shoreline			
Lineweight		.008"	
Dash Length		.012"	
Spacing		.015"	
Text	L/C	6 pt Helvetica 66 Medium Italic	
Line Pattern (Hatching)			
Lineweight		.008"	
Line Spacing		.020"	
Orientation		45 degree angle from upper right to lower left	

APPENDIX 2
TOPOGRAPHIC INFORMATION - HYDROGRAPHY (CONTINUED)

STREAMS			
Perennial			
Single-Line Lineweight		.008"	
Double-Line Lineweight		.008"	
Non-perennial			
Single-Line			
Lineweight		.008"	
Dash Length		.250"	
Dash Spacing		.300"(three .016" diameter dots within space)	
Double-Line			
Lineweight		.008"	
Dash Length		.250"	
Spacing		.300"	
CANALS			
Not to Scale			
Lineweight		.015"	
Text	CAPS or C/L	5 to 6.5 pt Helvetica 66 Medium Italic	
To Scale			
Lineweight		.008"	
Text	CAPS or C/L	5 to 6.5 pt Helvetica 66 Medium Italic	
MISCELLANEOUS PATTERNS			
Swamps and Marshes			
Land Subject to Inundation			
Sand Areas			

APPENDIX 3
TOPOGRAPHIC INFORMATION - RELIEF

SPOT ELEVATIONS			
Symbol Text		.040" diameter 8.5 pt Helvetica 66 Medium Italic	2216 •
LEVEES			
Lineweight Text	L/C	.020" 6 pt Helvetica 65 Medium	levee

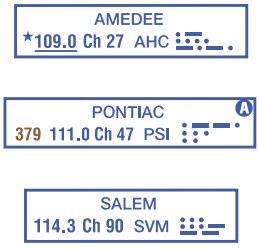
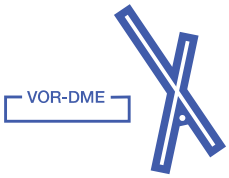
APPENDIX 4
AERONAUTICAL INFORMATION - AIRPORTS

AIRPORT TYPES			
Landplane Airport Symbol Rotating Beacon Symbol		*NOTE: All recognizable runways are shown for visual reference.*	
Public			
Private			
Unverified			
Abandoned			
Seaplane Base			
Heliports Public and Private			
Medical Center			
Located at Major Airports			
Ultralight Flight Park			
AIRPORT DATA GROUPING			
Airport Grouping Example			FSS NO SVFR NAME (NAM) (PNAM) CT - 119.1 ★ C (119.8 HELI) ATIS 115.4 ASOS/AWOS 135.42 285 L 122.95 (Unverified) AOE
Flight Service Station	CAPS	7 pt Helvetica 65 Medium	FSS
No Special VFR	CAPS	7 pt Helvetica 65 Medium	NO SVFR
Airport Name Name	CAPS	7 pt Helvetica 65 Medium	NAME
Box Lineweight		.008" *NOTE: Boxed airport name indicates airport for which a Special Traffic Rule has been established (FAR Part 93)*	
Location Indicator	CAPS	7 pt Helvetica 65 Medium	(NAM)
ICAO Location Indicator	CAPS	7 pt Helvetica 65 Medium	(PNAM)
Control Tower Designator	CAPS	7 pt Helvetica 65 Medium	CT -
Frequency		8 pt Helvetica Condensed Bold	118.3
Frequency (Helicopter)		8 pt Helvetica Condensed Bold	(119.8 HELI)
Part Time Operations Symbol			★
CTAF Symbol			C

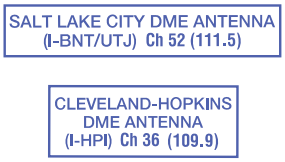
APPENDIX 4
AERONAUTICAL INFORMATION - AIRPORTS (CONTINUED)

AIRPORT DATA GROUPING			
Weather Reporting			
Designator	CAPS	7 pt Helvetica 65 Medium	ATIS
Frequency		7.5 pt Helvetica Condensed Bold	123.8
Field Elevation		6 pt Copperplate Gothic 31A-B Italic	285
Airport Lighting	CAPS	7 pt Helvetica 65 Medium	L
UNICOM & CTAF Frequency		6 pt Copperplate Gothic 31A-B Italic	122.95
Unverified Heliport	C/L	7 pt Helvetica 65 Medium	(Unverified)
Airport of Entry	CAPS	7 pt Helvetica 65 Medium	AOE

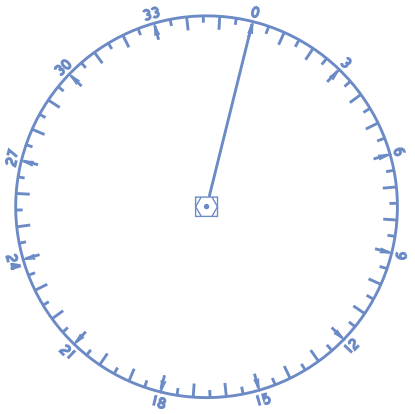
APPENDIX 5
AERONAUTICAL INFORMATION - RADIO AIDS TO NAVIGATION

VHF OMNI-DIRECTIONAL RADIO RANGE			
VOR Grouping Examples			
Symbols			
VOR			
VORTAC			
VOR/DME			
DISTANCE MEASURING EQUIPMENT			
DME Example			
Symbol			
Colocated with Airport Symbol Type of NAVAID	CAPS	.032" Diameter Dot (smaller if necessary) 6.5 pt Helvetica 65 Medium	
NAVAID Box Lineweight			
With FSS		.030"	
Without FSS		.015"	
NAVAID Box Content			
Weather Broadcast Symbol			
ASOS/AWOS			
Name	CAPS	6.5 pt Helvetica 65 Medium	AMEDEE
Frequency			
Numerals		6.5 pt Helvetica Condensed Bold	*109.0
Underline Lineweight		.010"	
Channel		6.5 pt Helvetica Condensed Bold	Ch 27
Identifier		6.5 pt Helvetica 65 Medium	AHC

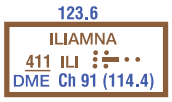
APPENDIX 5
AERONAUTICAL INFORMATION - RADIO AIDS TO NAVIGATION (CONTINUED)

NONDIRECTIONAL RADIO BEACONS (NDB)			
NDB Grouping Examples			
Symbols NDB			
NDB/DME		.114" Square (DME)	
NAVAID Box Lineweight		.015"	
NAVAID Box Content Name	CAPS	6.5 pt Helvetica 65 Medium	MONTAGUE
Frequency Numerals		6.5 pt Helvetica Condensed Bold	404
Underline Lineweight		.010"	
Identifier		6.5 pt Helvetica 65 Medium	MOG
DME Channel		6.5 pt Helvetica Condensed Bold	DME Ch 92 (114.5)
SHUTDOWN NAVAIDs			
Cross Hatch VOR/VORTAC/VOR-DME		NE to SW	
NDB		NE to SW	
NAVAIDs DEFINING CLASS B			
Grouping Examples			
Symbol			
NAVAID Box Lineweight		.015"	
NAVAID Box Content Name	CAPS	6.5 pt Helvetica 65 Medium	CLEVELAND-HOPKINS DME ANTENNA
Frequency		6.5 pt Helvetica Condensed Bold	(109.9)
Channel		6.5 pt Helvetica Condensed Bold	Ch 36
Identifier		6.5 pt Helvetica 65 Medium	(I-HPI)

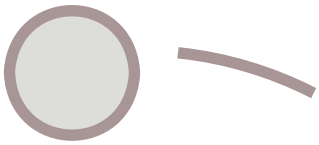
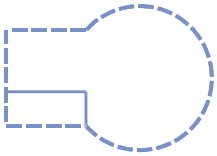
APPENDIX 5
AERONAUTICAL INFORMATION - RADIO AIDS TO NAVIGATION (CONTINUED)

COMPASS ROSE			
			
BROADCAST STATIONS			
Grouping Example			
Symbol			
Station Box			
Lineweight		.006"	
Title	CAPS	7 pt Helvetica 65 Medium	
Station Box Content			
Identifier	CAPS	7 pt Helvetica 65 Medium	KFTM
Frequency		6 pt Helvetica Condensed Bold	1400

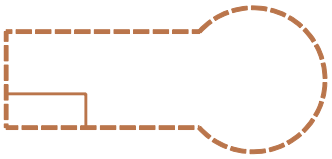
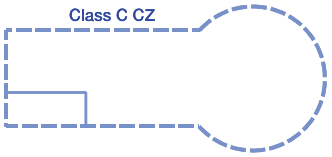
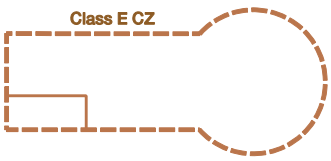
APPENDIX 6
AERONAUTICAL INFORMATION - FLIGHT SERVICE STATIONS

FLIGHT SERVICE STATIONS (FSS)			
Groupings			
No NAVAID of the same name as FSS			
FSS combined with VHF/UHF NAVAID			
FSS combined with LF/MF NAVAID			
Box			
Lineweight		.030"	
Text	CAPS	6.5 pt Helvetica 65 Medium	
Frequencies		6.5 pt Helvetica Condensed Bold	
Part-time Note	C/L	6.5 pt Helvetica 65 Medium	
REMOTE COMMUNICATIONS OUTLETS (RCO)			
Groupings			
No NAVAID of the same name as RCO			
RCO combined with VHF/UHF NAVAID			
RCO combined with LF/MF NAVAID			
Symbol			
Text	CAPS	6.5 pt Helvetica 65 Medium	
Frequencies		6.5 pt Helvetica Condensed Bold	
L-Bracket Lineweight		.010"	
OFF-AIRPORT AUTOMATED WEATHER REPORTING FACILITIES (AWOS/ASOS)			
Box Lineweight		.015"	
Text	CAPS	6.5 pt Helvetica 65 Medium	
Frequency		6.5 pt Helvetica Condensed Bold	

APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE

CLASS B AIRSPACE			
Name	CAPS	9 pt Trade Gothic Bold	LAS VEGAS CLASS B
Boundary Lineweight		.035"	
Boundary Text	CAPS	7 to 10 pt Helvetica 65 Medium	
Airspace Ceiling/Floor			70 / SFC
Numerals/Text	CAPS	8 to 24 pt Helvetica Condensed Bold	
Separator Lineweight		.020"	
Communications			
Box Lineweight		.030"	CTC LAS VEGAS APP ON 121.1 OR 257.8
Numerals/Text	CAPS	7 to 10 pt Helvetica 65 Medium	
Grouping Example			CTC LAS VEGAS APP ON 121.1 OR 257.8
CLASS C AIRSPACE			
Name	CAPS	9 pt Trade Gothic Bold	BURBANK CLASS C
Boundary Lineweight		.060"	
Airspace Ceiling/Floor			70 / 30
Text	CAPS	8 to 24 pt Helvetica Condensed Bold	
Separator Lineweight		.020"	
Communications			
Box Lineweight		.030"	CTC BURBANK APP WITHIN 20 NM ON 124.6 395.9
Text	CAPS	7 to 10 pt Helvetica 65 Medium	
Grouping Example			CTC BURBANK APP WITHIN 20 NM ON 124.6 395.9
Airspace Notes	C/L	6.5 pt Helvetica 65 Medium	See NOTAMs/Supplement for Class C eff hrs
CLASS D AIRSPACE			
Boundaries			
Dash Lineweight		.025"	
Dash Length		.100"	
Dash Spacing		.050"	
Exclusion Lineweight		.015"	
Airspace Ceiling			
Text	CAPS	8 to 12 pt Helvetica Condensed Bold	
Box Lineweight		.020"	
Airspace Notes	C/L	6.5 pt Helvetica 65 Medium	See NOTAMs/Supplement for Class D eff hrs

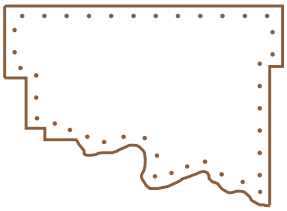
APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE (CONTINUED)

CLASS E AIRSPACE			
Boundaries			
Dash Lineweight		.025"	
Dash Length		.100"	
Dash Spacing		.050"	
Exclusion Lineweight		.015"	
Airspace Notes	C/L	6.5 pt Helvetica 65 Medium	See NOTAMs/Supplement for Class E (sfc) eff hrs
POLICE ZONES			
Boundary			
Dot		.032"	
Spacing		.032"	
Zone			
Text	CAPS	7 pt Futura Book	ZONE 8 / 1000
Separator Lineweight		.010"	
CANADIAN AIRSPACE			
Class B, C or D TCA			
Boundary Lineweight		.030"	
Airspace Ceiling/Floor			80 / 40
Text	CAPS	8 to 24 pt Helvetica Condensed Bold	
Separator Lineweight		.020"	
Class B, C or D Control Zone			
Boundaries			
Dash Lineweight		.025"	
Dash Length		.100"	
Dash Spacing		.050"	
Exclusion Lineweight		.015"	
Text	C/L	6.5 pt Helvetica 65 Medium	
Airspace Ceiling			
Text	CAPS	8 to 12 pt Helvetica Condensed Bold	
Box Lineweight		.020"	
Class E Control Zone			
Boundaries			
Dash Lineweight		.025"	
Dash Length		.100"	
Dash Spacing		.050"	
Exclusion Lineweight		.015"	
Text	C/L	6.5 pt Helvetica 65 Medium	
CANADIAN/MEXICAN AIRSPACE NOTES			
Specifications apply to all Canadian/ Mexican Notes (unless otherwise specificed)			NOTE: REFER TO CURRENT CANADIAN CHARTS AND FLIGHT INFORMATION PUBLICATIONS FOR INFORMATION WITHIN CANADIAN AIRSPACE
Boundary Lineweight		.015"	
Text	CAPS	6 pt Helvetica Medium	
Canadian VFR Airspace Restrictions Note			VFR AIRSPACE RESTRICTIONS No VFR flight within Canadian Class B Airspace is permitted above 12,500' MSL, or MEA, whichever is higher, to but not including 18,000' MSL without being controlled by ATC. For additional details see appropriate Canadian publications.
Title Text	CAPS	6 pt Helvetica Medium	
Descriptive Text	C/L	6 pt Helvetica Medium	

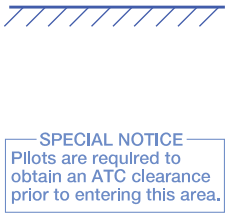
APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE (CONTINUED)

HELICOPTER ROUTES			
Routes			
Primary Lineweight		.100"	
Secondary Lineweight		.070"	
Transition Symbol			
Route Name & Frequency			
Box Lineweight		.007"	
Text	CAPS	7.5 pt Helvetica Condensed Bold	
Recommended Altitudes			
Separator Lineweight		.010"	
Text		7 pt Helvetica 65 Medium	
Reporting Points			
Symbols			
Non-compulsory			
Compulsory			
Name			
Text	CAPS	6.5 pt Trade Gothic Bold	
Underline Lineweight		.015"	
One-way Route			
Altitude Changeover Point			
Lineweight		.020"	
Length		.210"	
CTAs/FIRs			
Boundary Lineweight		.015"	
Tick Mark			
Lineweight		.015"	
Length		.035"	
Spacing		.300"	
Name	CAPS	6 to 24 pt Futura Book	MONCTON FIR CZQM OAKLAND OCEANIC CONTROL AREA

APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE (CONTINUED)

SPECIAL USE AIRSPACE			
Boundary Lineweight		.015"	
Cross Hatching			Prohibited, Restricted, Warning Areas or National Security Flight Restricted Zones
Lineweight		.007"	
Cross Hatching Width		.100"	
Cross Hatching Spacing		.025"	Military Operations or Alert Areas
Name	CAPS	6 to 18 pt Copperplate Gothic 31 A-B	FLIGHT RESTRICTED ZONE P-56 R-6401 W-518 A-631 FALCON 1 MOA
AIR DEFENSE INDENTIFICATION ZONE (ADIZ)			
Name	CAPS	8 to 32 pt Copperplate Gothic 31 A-B	CONTIGUOUS U.S. ADIZ
Boundary			
Lineweight		.015"	
Dot Size		.025" Diameter	
Width		.100"	
NOAA REGULATED NATIONAL MARINE SANCTUARY DESIGNATED AREAS			
Boundary			
Lineweight		.015"	
Dot Size		.025" Diameter	
Dot Spacing		.080"	
Note			
Box Lineweight		.015"	
Text	C/L	6.5 pt Helvetica 65 Medium	Flight operations below 2000' AGL over the designated areas within the Olympic Coast National Marine Sanctuary violate NOAA regulations. (see 15 CFR 922)
NOAA Text			NOAA REGULATED NATIONAL MARINE SANCTUARY DESIGNATED AREAS
Text (Note)	CAPS	10 pt. Helvetica Condensed Bold	
Text (Web Address)	L/C	6 pt Helvetica 65 Medium	
Web Address Underline		.007"	(see http://sanctuaries.noaa.gov/flight)
MILITARY TRAINING ROUTES			
Route Lineweight		.030"	
Route Identifier	CAPS	6 pt Copperplate Gothic 31 A-B	←VR269
MODE C & ADS-B OUT (FAR 91.125)			
		MODE C & ADS-B OUT REQUIRED WITHIN 30 NM OF BALTIMORE / WASHINGTON INTL; THURGOOD MARSHALL; WASHINGTON DULLES INTL; REAGAN WASHINGTON NATIONAL; ANDREWS AFB AIRPORTS (See FAR 91.215/AIM)	
Boundary Lineweight		.025"	MODE C & ADS-B OUT 30 NM
Text	CAPS	7 to 10 pt Helvetica 65 Medium	
Note			
Box Lineweight		.030"	
Text	CAPS & C/L	7 to 10 pt Helvetica 65 Medium	MODE C & ADS-B OUT REQUIRED...

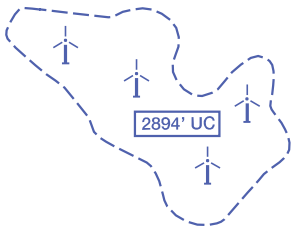
APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE (CONTINUED)

SPECIAL ACTIVITIES AREAS			
Parachute Jumping Areas Symbol Text Glider Operations Areas Ultralight Activity Areas Hang Gliding Activity Areas Unmanned Aircraft Activity Areas Aerobatic Practice Areas Space Launch Activity Areas		7 pt Helvetica Condensed Bold	
SPECIAL AIR TRAFFIC RULES/AIRPORT TRAFFIC AREAS (FAR PART 93)			
Boundary Lineweight Cross Hatching Lineweight Cross Hatching Width Cross Hatching Spacing Special Notice Box Lineweight Text	 CAPS and C/L	.015" .007" .100"/NE to SW .100" .006" 7 pt Helvetica 65 Medium	
NATIONAL SECURITY SPECIAL FLIGHT RULES AREA (SFRA)			
SFRA Name SFRA Boundary Lineweight Square Height Square Spacing	CAPS	9 pt Copperplate Gothic .030" .100" .250"	
NATIONAL SECURITY TFR BOUNDARY			
Lineweight Dash Length Spacing		.060" .150" .100"	
SPECIAL SECURITY NOTICE PERMANENT CONTINUOUS FLIGHT RESTRICTION AREAS			
Boundary Text Box Lineweight	 C/L	.015" 7 pt Helvetica 65 Medium .030"	
SPORTING EVENT TEMPORARY FLIGHT RESTRICTION SITES			
Text	CAPS	6 pt Helvetica 65 Medium	

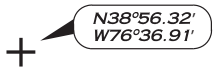
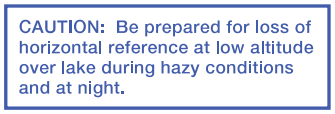
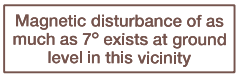
APPENDIX 7
AERONAUTICAL INFORMATION - AIRSPACE (CONTINUED)

NATIONAL DEFENSE AIRSPACE TEMPORARY FLIGHT RESTRICTION (TFR) AREAS			
Boundary Cross Hatching Width Cross Hatching Lineweight Cross Hatching Spacing		.015" .100" at 45° angle .007" .100"	
Text Box Lineweight *Appropriate boxed note as required shown adjacent to area.*	CAPS or C/L	7 to 11 pt Helvetica 65 Medium .015"	Dallas National Defense Airspace TFR Check NOTAMs
TERMINAL RADAR SERVICE AREA (TRSA)			
Name	CAPS	9 pt Trade Gothic Bold	PALM SPRINGS TRSA
Boundaries Lineweight		.060"	
Airspace Ceiling/Floor Text Separator Lineweight	CAPS	8 to 24 pt Helvetica Condensed Bold .020"	80 40
Communications Box Lineweight Text	CAPS	.030" 7 to 10 pt Helvetica 65 Medium	SEE TWR FREQ TAB
SPECIAL CONSERVATION AREAS			
Boundary Lineweight Dot Size (Diameter) Dot Spacing		.015" .025" .080"	
Name	CAPS	4.5 pt Copperplate Gothic 31 A-B	HAVASU LAKE NATIONAL WILDLIFE REFUGE

APPENDIX 8
AERONAUTICAL INFORMATION - NAVIGATIONAL & PROCEDURAL

VFR CHECKPOINTS			
Symbol Name Underline	CAPS	6.5 pt Trade Gothic Bold .010"	
VFR WAYPOINTS			
Symbol Name	CAPS	6.5 pt Helvetica Bold Oblique	
OBSTRUCTIONS			
			Individual / Group / High Intensity Lighting
Obstruction Symbols			
Wind Turbine Symbols			
Concentrated Groups or "Farm" of Wind Turbines Outline Lineweight Dash Length Dash Spacing		 .015" .100" .030"	
Highest Windmill/Wind Turbine Box Box Lineweight Text	 CAPS	 .015" 7 pt Helvetica 65 Medium	
Descriptive Text Obstruction Name MSL Elevation Height Above Ground Remarks	 C/L CAPS	 6 pt Helvetica 65 Medium 6.5 pt Copperplate Gothic 31 A-B Italic 7 pt Helvetica 65 Medium 6 pt Helvetica 65 Medium	 bldg 2049 (1149) UC
MAXIMUM ELEVATION FIGURE (MEF)			
1000' Digits 100' Digit		24 pt Helvetica Condensed Bold 18 pt Helvetica Condensed Bold	

APPENDIX 8
AERONAUTICAL INFORMATION - NAVIGATIONAL & PROCEDURAL (CONTINUED)

NAVIGATION DATA			
Symbol			
Lineweight		.018"	
Length (height & width)		.150"	
Box Lineweight		.015"	
			
Name	CAPS	8 pt Helvetica 65 Medium	
Coordinates	CAPS	6.5 pt Copperplate Gothic 31 A-B Italic	
Unnamed Reference Point			
Number		6 pt Futura Medium	
Circle Diameter		.137" Diameter	
Circle Lineweight		.007"	
Navigation Data Table			
Feature Number, Type & Name	C/L	10 pt Helvetica 65 Medium	Alpine Tower
Latitude & Longitude	CAPS	10 pt Helvetica 65 Medium	N40°29.70'
WARNING & CAUTION NOTES			
Box Lineweight		.006" to .030"	
Text		5 to 7 pt Helvetica 65 Medium	
MAGNETIC UNRELIABILITY NOTE			
Box Lineweight		.010"	
Text	C/L	7 pt Helvetica 65 Medium	

APPENDIX 9
TYPE STYLES & SIZES

TYPE STYLES AND SIZES			
City Name	CAPS CAPS C/L	9 pt New Century Schoolbook Roman 6.5 pt Helvetica 65 Medium 6.5 pt Helvetica 65 Medium	ST LOUIS NASHVILLE Frankfort
Country, State, and Province Names	CAPS CAPS CAPS	8 to 18 pt New Century Schoolbook Bold 5 to 6.5 pt Helvetica 65 Medium 5 to 24 pt Helvetica 65 Medium	MEXICO UNITED STATES (ARIZONA) CANADA
Mountain Peaks	CAPS	5 to 6.5 pt Helvetica 65 Medium	MOUNT SHASTA
Mountain Ranges, Ridges and Deserts	CAPS	8 to 36 pt Helvetica 65 Medium *(Spaced Proportionately)*	JURA MOUNTAINS
Road Names	CAPS	5.5 pt Helvetica 65 Medium	BRENNER
Elevations		8.5 pt Helvetica 66 Medium Italic	*1412*
Maximum Elevation Figure (MEF) 1000' Figure 100' Figure		 24 pt Helvetica Condensed Bold 18 pt Helvetica Condensed Bold	 12 4
Islands, Island Groups, Archipelagos, Peninsulas, Points And Capes	CAPS or C/L	5 to 36 pt Helvetica 65 Medium	SEYCHELLES ISLANDS
Miscellaneous Cultural Features (towers, tanks, wharfs, fishing stakes, cable areas, etc.)	L/C	6 pt Helvetica 65 Medium	athletic field
Oceans, Seas, Gulfs, Bays, Sounds, Harbors, Channels, Straits, Rivers, Lakes, Reservoirs	CAPS or C/L	5 to 36 pt Helvetica 66 Medium Italic	*PACIFIC*
Canals	CAPS or C/L	5 to 6.5 pt Helvetica 66 Medium Italic	*ERIE*
Various Offshore Area Features	L/C	6 pt Helvetica 65 Medium	breakwater
Labeling For Roads and Railroads (under construction, approximate alignment, etc.)	L/C	6 pt Helvetica 65 Medium	railroad-under construction road-under construction
Labeling For Ferry	L/C	6 pt Helvetica 65 Medium	ferry
Designated VFR Checkpoints	CAPS	6.5 pt Trade Gothic Bold	ANAHEIM TRACK

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