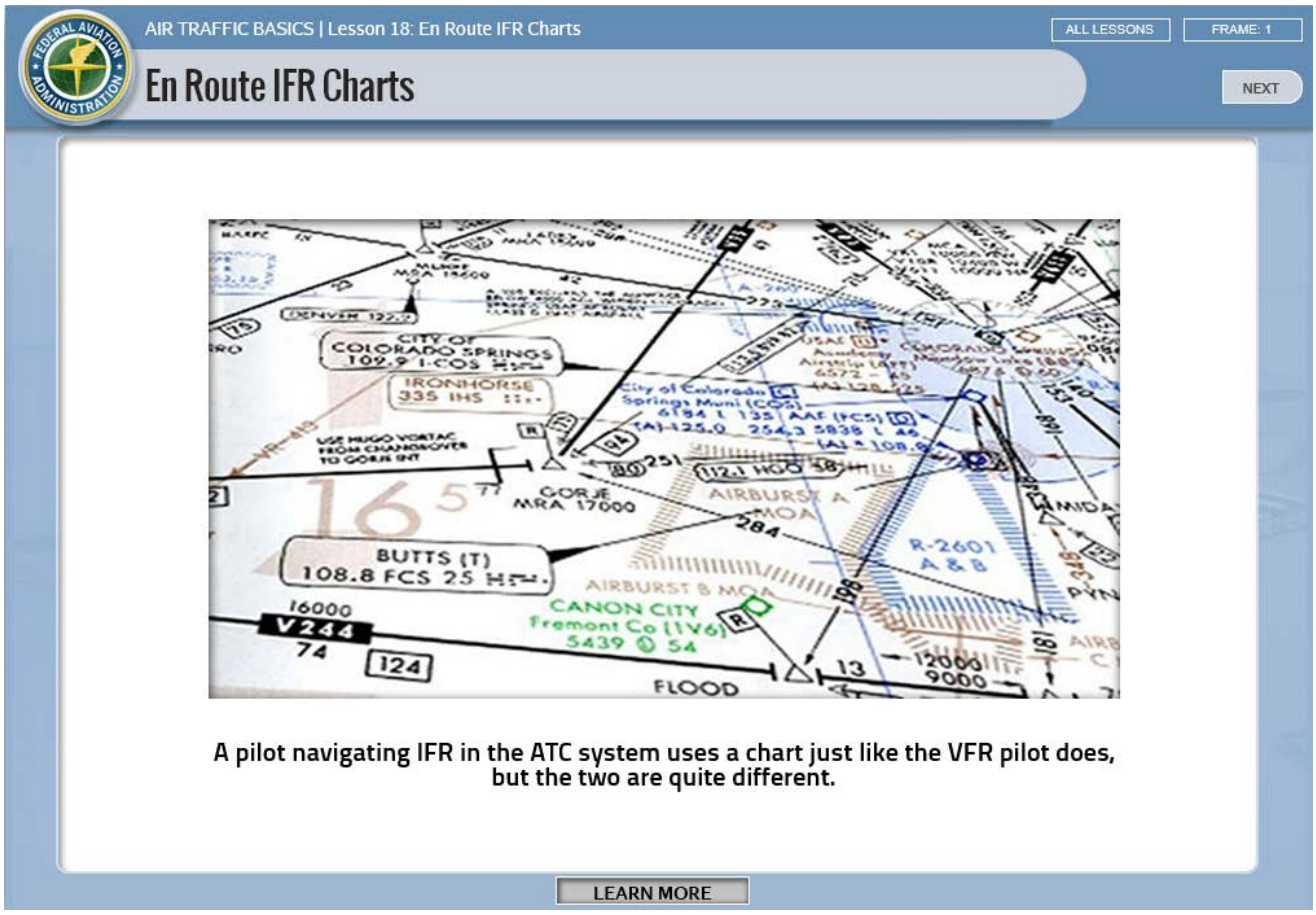
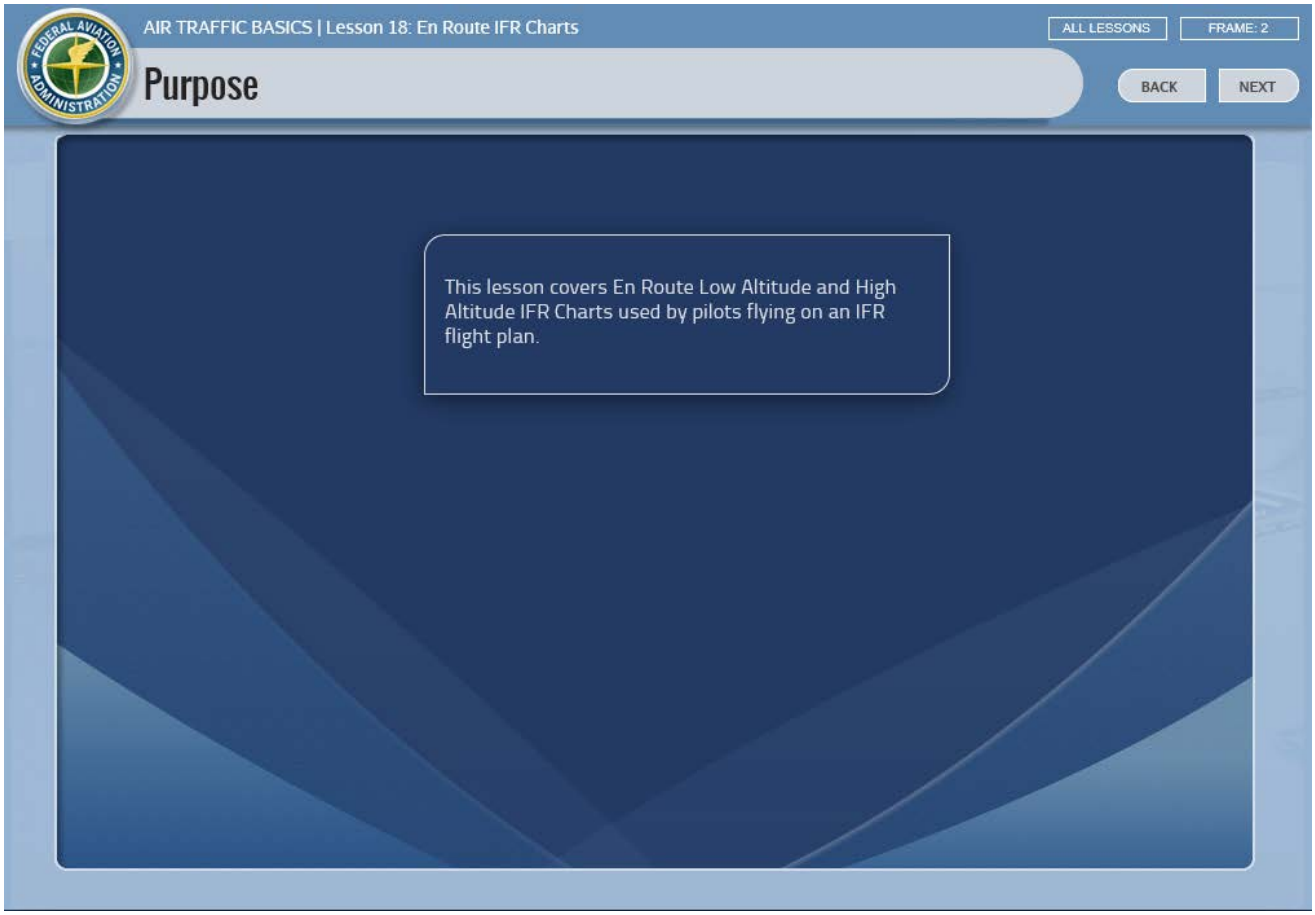
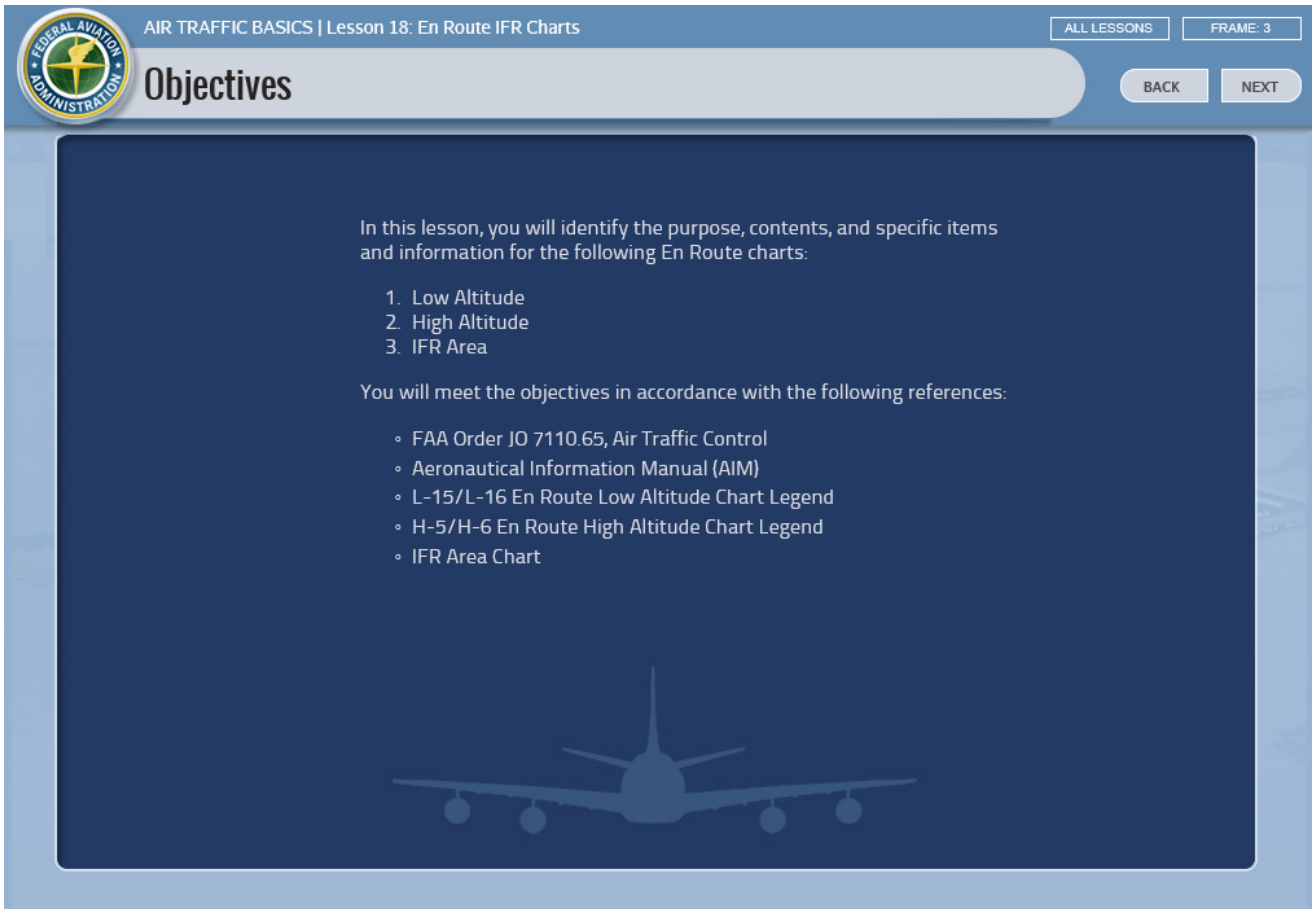


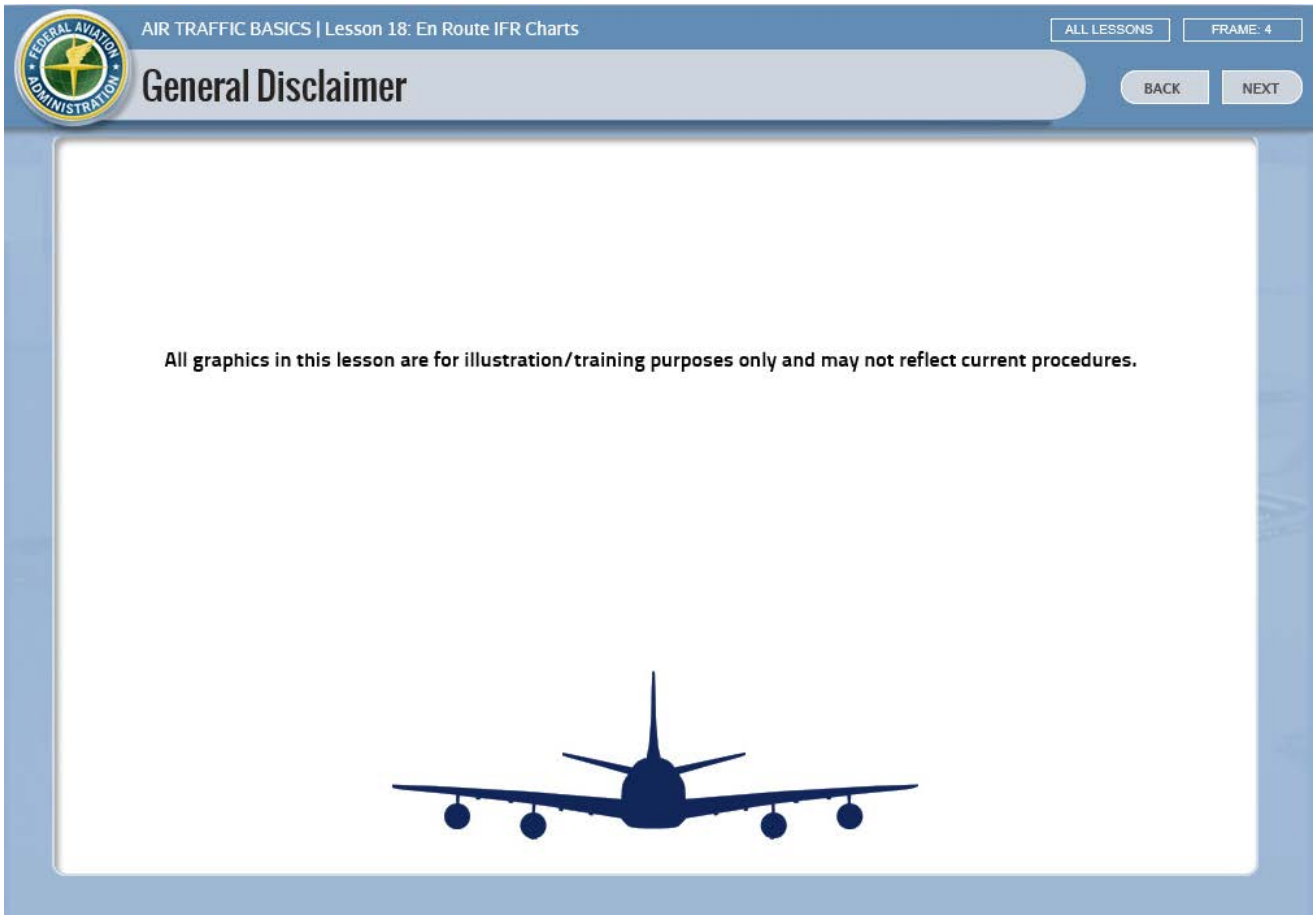
A pilot navigating IFR in the ATC system uses a chart just like the VFR pilot does, but the two are quite different.

IFR charts do not depict the terrain features, which can be seen outside the window. An IFR pilot needs to know a totally new set of symbols, which are used for navigating without any visual reference to landmarks on the ground.

IFR charts present the pilot with graphic and numerical data, which guide the aircraft safely to its destination solely by reference to instruments. As a controller, having thorough knowledge of the IFR charts a pilot uses is important because the information contained on them tells you exactly what you can expect a pilot to do.


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 2
Purpose
BACK
NEXT
This lesson covers En Route Low Altitude and High Altitude IFR Charts used by pilots flying on an IFR flight plan.


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 3
Objectives
BACK
NEXT
In this lesson, you will identify the purpose, contents, and specific items and information for the following En Route charts:
1. Low Altitude
2. High Altitude
3. IFR Area
You will meet the objectives in accordance with the following references:
FAA Order JO 7110.65, Air Traffic Control
Aeronautical Information Manual (AIM)
L-15/L-16 En Route Low Altitude Chart Legend
H-5/H-6 En Route High Altitude Chart Legend
IFR Area Chart


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 4
General Disclaimer
BACK
NEXT
All graphics in this lesson are for illustration/training purposes only and may not reflect current procedures.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 5

En Route Low Altitude Charts

BACK NEXT

Warning: Refer to current foreign charts and flight information publications for information within foreign airspace

L-16 PANELS FGHIJ 1"=10 NM

L-15 PANELS ABCDE 1"=10 NM

UNITED STATES GOVERNMENT
FLIGHT INFORMATION PUBLICATION

IFR ENROUTE LOW ALTITUDE - U.S.

For use up to but not including 18,000' MSL

EFFECTIVE 0901Z 13 JAN 2011
TO 0901Z 10 MAR 2011

Consult NOTAMs for latest information

Published by the
U.S. Department of Transportation
Federal Aviation Administration
AeroNav Services
http://AERONAV.FAA.GOV

CORRECTIONS, COMMENTS, AND/OR PROCUREMENT

FOR RECOMMENDATIONS REGARDING FORMAT AND CONTENT CONTACT:
FAA, Aeronautical Information Services, AJR-321
800 Independence Ave., S.W.,
Washington, D.C. 20591
Online at http://nfdc.faa.gov
Email: 9-AWA-A70R-AIS-feedback@faa.gov
Telephone: 1-866-295-8236

FOR PROCUREMENT CONTACT:
FAA, National Aeronautical Navigation Services
Distribution Team, ATO-W
10201 Good Luck Road
Glenn Dale, MD 20769-9700
Online at http://AERONAV.FAA.GOV
Email: 9-AMC-Charts-sales@faa.gov
Tel. 1-800-638-8972 Fax 301-436-6829
or any authorized chart agent

FOR CHARTING ERRORS CONTACT:
FAA, National Aeronautical Navigation Services, ATO-W
SSMC-4, Sta. # 4259
1305 East-West Highway
Silver Spring, MD 20910-3281
Telephone 1-800-626-3677
Email: 9-AMC-Aerochart@faa.gov

MILITARY
For Corrections Information, See Chapter 11 of General Planning (GP). For Procurement refer to DOD Catalog of Aeronautical Charts and Flight Information Publications.

Frequently asked questions (FAQ) are answered on our web site at http://AERONAV.FAA.GOV.
See the FAQs prior to contact via toll free number or email.

ATTENTION

THIS CHART CONTAINS OFF ROUTE OBSTRUCTION CLEARANCE ALTITUDES (OROCA).
The off route obstruction clearance altitudes shown in quadrangles bounded by ticked lines of latitude and

Description

En Route Low Altitude Charts are designed to provide aeronautical information for en route navigation during instrument flight below 18,000 feet Mean Sea Level (MSL).

En Route Low Altitude Charts are updated every 56 days.

They are used for navigation in instrument meteorological conditions on an IFR flight plan.

JO 7110.65, Pilot/Controller Glossary; AIM, Chap. 9; En Route Low Altitude Chart Legend

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 6

En Route Low Altitude Charts

BACK NEXT

Layout

The geographical area is normally divided with the western half on one side and the eastern half on the other, but a few are oriented north/south to make it easier to navigate along the coasts.

- Each side of the chart is numbered separately, with each chart containing two distinct areas.

Example: L-15 on one side, L-16 on the other.

- Some overlap exists to aid the pilot in planning and following a route of flight.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 7

En Route Low Altitude Charts

BACK NEXT

Types of Information

A wide variety of aeronautical information is depicted on the charts, such as:

- VHF Omnidirectional Range (VOR) or "Victor" airways with distances between intersections and Navigational Aids (NAVAIDs)
- NAVAIDs such as, VORs, VORTACs, VOR/Distance Measuring Equipment, (DMEs), and Nondirectional Beacons (NDBs), as well as their position, identification, and frequencies
- Selected airports
- Special Use Airspace (SUA), Military Training Routes (MTRs), and related information
- Limits of controlled airspace
- Minimum en route altitudes and minimum obstruction clearance altitudes

AIM, Chap. 9

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 8

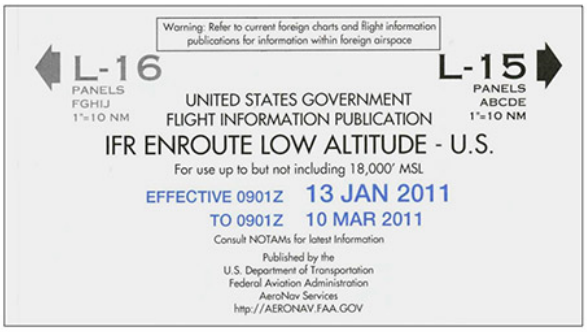
En Route Low Altitude Charts

BACK NEXT

Publication Information

Each chart is numbered and prefaced with an "L" for low altitude.

- **Each "L" chart consists of several panels.**
- **The chart scale is listed under the chart number in the corners.**
- **Effective dates shown are identical for charts L-1 through L-36.**
  - **The "effective" date is the first day when the map can be used for navigation.**
  - **The "to" date is when the current one can no longer be used, which is also the scheduled date of the next revision.**
  - **L-1 through L-36 are published together, along with the IFR Area Charts which cover several congested areas.**



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 9

En Route Low Altitude Charts

BACK NEXT

MILITARY TRAINING ROUTES

NUMBER	ALTITUDE RANGE	NUMBER	ALTITUDE RANGE
IR-66	100 AGL TO 5000	IR-172	500 AGL TO 6000
IR-67	100 AGL TO 5000	IR-173	500 AGL TO 6000
IR-77	5000	IR-174	500 AGL TO FL230
IR-78	6000	IR-175	500 AGL TO 4000
IR-105	100 AGL TO 7000	IR-177	200 AGL TO FL230
IR-107	100 AGL TO 10000	IR-181	500 AGL TO 6000
IR-109	100 AGL TO 16000	IR-182	500 AGL TO 6000
IR-111	100 AGL TO 16000	IR-183	500 AGL TO 6000
IR-113	100 AGL TO 11500	IR-185	500 AGL TO 6000
IR-117	SURFACE TO 4000	IR-193	300 AGL TO 5000
IR-120	100 AGL TO 5000	IR-308	SURFACE TO 13000

Military Training Routes (MTRs)

En Route Low Altitude charts list Military Training Routes (MTRs) depicted on the chart.

IFR Routes (IRs) are listed first in ascending numerical order, followed by the VFR Routes (VRs), also in ascending numerical order.

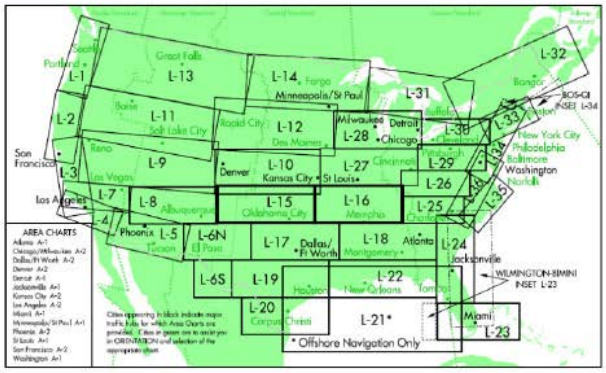
The altitude range of each military route is listed next to the route number.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 10

En Route Low Altitude Charts

BACK NEXT



Geographical Area Presentation

Map of the U.S. shows the area covered by each Low Altitude Chart.

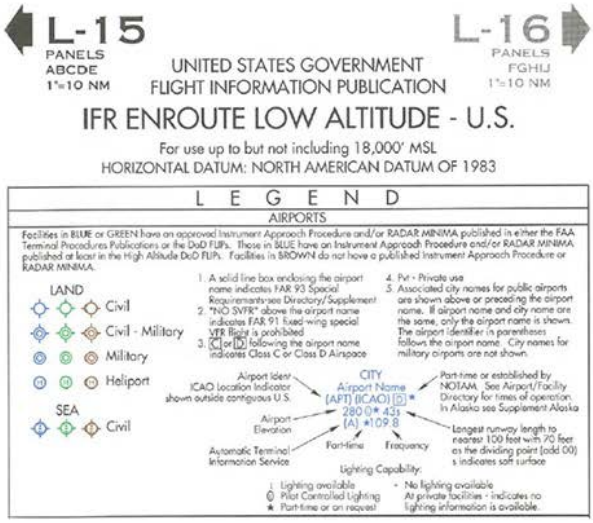
- Major cities are depicted to aid the user in chart selection.
- The darkest outlining indicates areas covered by this chart.
- A list of all U.S. cities covered by an Area Chart is found in the lower left corner.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 11

En Route Low Altitude Charts

BACK NEXT



En Route Low Altitude Charts

Chart Legend

The En Route Low Altitude Chart Legend is divided into several major categories of information, including:

- Airports
- NAVAIDS and Communication Boxes
- Air Traffic Services
- Airspace Information

Major category areas are subdivided into sections containing similar types of information.

Some information and graphical data is color-coded for easier identification or to distinguish between facilities or airspace areas with different operational characteristics.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 13

En Route Low Altitude Charts

BACK NEXT

Airports and Symbols

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

Airports

1. All airports with an IAP are depicted.
2. All airports with a hard surfaced runway 3000' are depicted.
3. Airports/Seaplane bases shown in BLUE and GREEN have an approved Instrument Approach Procedure published.
4. Those in BLUE have an approved Department of Defense (DoD) Instrument Approach Procedure and/or DoD RADAR MINIMA published at least in the High Altitude DoD FLIPS.
5. Airports/Seaplane bases shown in BROWN do not have a published Instrument Approach Procedure.
6. Civil and military airports, as well as heliports and seaplane bases, are shown.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 14

En Route Low Altitude Charts

BACK NEXT

Airports

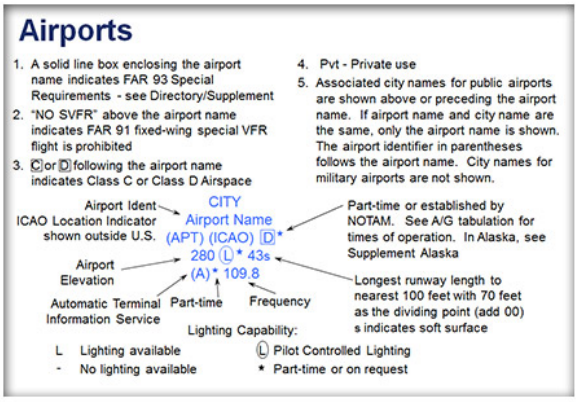
Airport data includes:

- City name (if different from airport name)
- Airport name
- Airport location identifier
- Field elevation
- Lighting availability
- Longest runway length
- Automatic Terminal Information Service (ATIS) and frequency

Notations are included for private use airports, as well as for airports with Class C and D airspace.

Prohibition of Special VFR procedures is indicated by "NO SVFR."

A star (*) indicates part-time status, or availability on request.



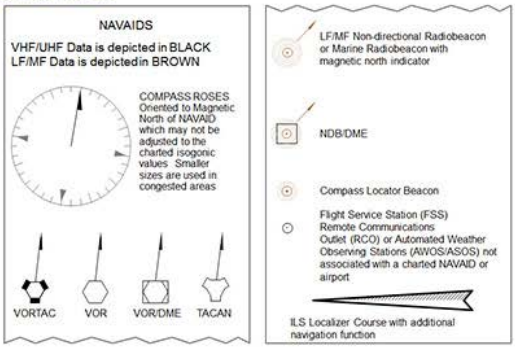
AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 15

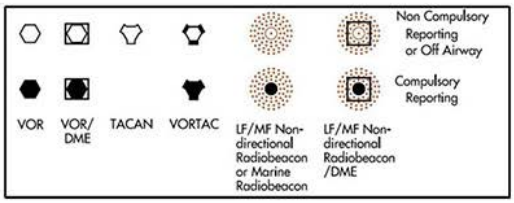
En Route Low Altitude Charts

BACK NEXT

NAVAIDs



NAVAIDs (Cont'd)



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 16

En Route Low Altitude Charts

BACK NEXT

NAVAIDS

Compass roses are oriented to magnetic north, with the accompanying data color-coded to indicate the type of facility.

- VHF/UHF data appears in black.
- LF/MF data appears in brown.

Symbols for various types of NAVAIDs are depicted.

- VORTAC, VOR, VOR/DME, and TACAN
- NDB, NDB/DME, Compass Locator Beacon

AFSS Remote Communication Outlets (RCOs) and Automated Weather Observing Stations (AWOS/ASOS) not associated with a charted NAVAID or airport are represented by a dotted circle.

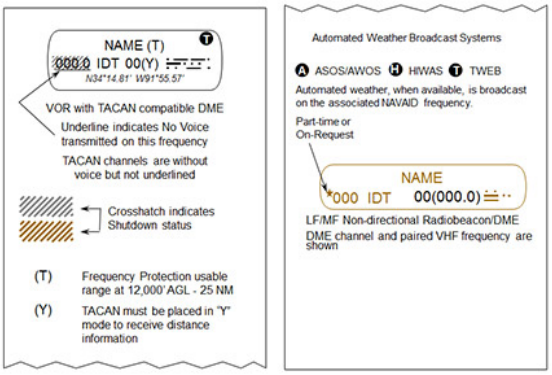
ILS localizer courses are oriented on the chart so they are aligned with the runway they serve.

En Route Low Altitude Charts

Communication Boxes

Navigation facility communications boxes display the name, frequency, three-letter and Morse Code identifiers, and related information pertaining to a NAVAID.

- **Abnormal NAVAID shaded status indicators require a pilot to check for the latest information.**
- **If the frequency is underlined, the pilot cannot receive transmissions from the AFSS, but can receive recorded broadcasts such as Hazardous Inflight Weather Advisory Service (HIWAS) and Transcribed Weather Broadcast (TWEBs).**
- **(T) is displayed to indicate a Terminal class NAVAID with a service volume of 25NM and 12,000 feet.**
- **HIWAS and TWEB broadcast availability are indicated.**
- **NDB/DMEs and TACANs will display the paired VHF frequency (000.0) enabling VOR/DME equipment to receive DME.**

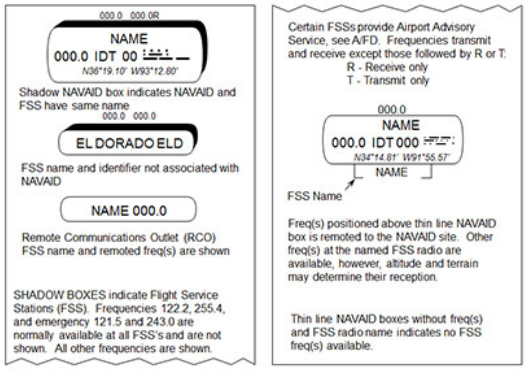


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 18

En Route Low Altitude Charts

BACK NEXT



Communication Boxes

A shadowed heavy-lined box indicates an Automated Flight Service Station (AFSS) associated with the NAVAID, and the corresponding frequencies are found above the box.

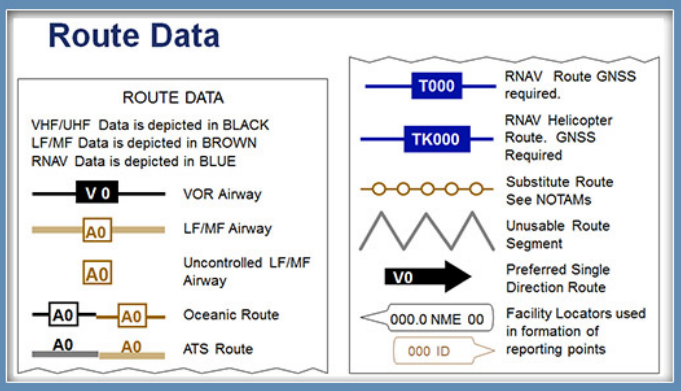
- **Frequencies listed above thin-lined boxes are remoted to the NAVAID site from the controlling FSS named under the box.**
- **Some thin-lined boxes depict no FSS frequencies because none are available through that facility.**
- **Common FSS frequencies are omitted because they are normally available at all FSSs.**
- **Transmit (T) and Receive (R) indicators denote those frequencies on which the FSS has only that specific capability.**

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 19

En Route Low Altitude Charts

BACK NEXT

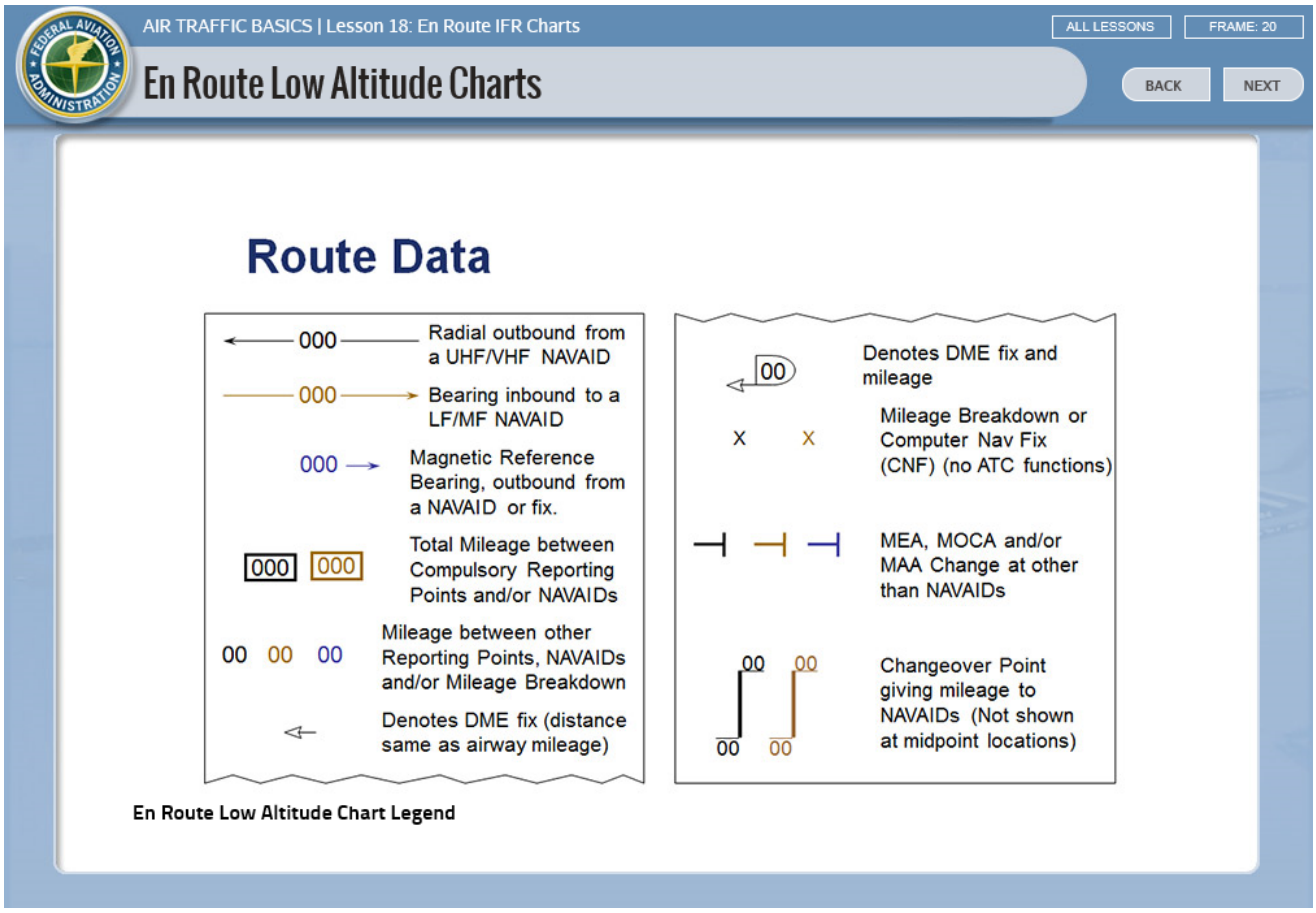


Air Traffic Services Route Data

Types of airways, airway segments, and related data are indicated by various styles of line designs, shadings, and labels.

Significant radials, bearings, and mileages, as well as altitudes and fix data of importance to the pilot are each depicted in a unique location for quick recognition.

- Radial/bearing information and DME fix distances aid in intersection identification.


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 20
En Route Low Altitude Charts
BACK
NEXT
Route Data
000
Radial outbound from a UHF/VHF NAVAID
000
Bearing inbound to a LF/MF NAVAID
000
Magnetic Reference Bearing, outbound from a NAVAID or fix.
000 000
Total Mileage between Compulsory Reporting Points and/or NAVAIDs
00 00 00
Mileage between other Reporting Points, NAVAIDs and/or Mileage Breakdown
Denotes DME fix (distance same as airway mileage)
00
Denotes DME fix and mileage
X X
Mileage Breakdown or Computer Nav Fix (CNF) (no ATC functions)
MEA, MOCA and/or MAA Change at other than NAVAIDs
00 00
00 00
Changeover Point giving mileage to NAVAIDs (Not shown at midpoint locations)
En Route Low Altitude Chart Legend

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 21

En Route Low Altitude Charts

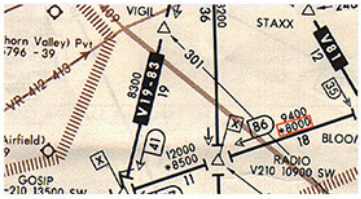
BACK NEXT

Minimum Obstruction Clearance Altitude (MOCA)

Minimum Obstruction Clearance Altitude (MOCA) is the lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR.

Minimum Obstruction Clearance Altitude (MOCA)

The MOCA is the altitude preceded by an asterisk.



JO 7110.65, Pilot/Controller Glossary; En Route Low Altitude Chart Legend

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 22

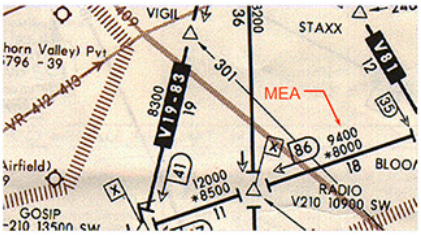
En Route Low Altitude Charts

BACK NEXT

Minimum En Route Altitude (MEA)

Minimum En Route Altitude (MEA) is the lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes.

Minimum En Route Altitude (MEA)



JO 7110.65, Pilot/Controller Glossary;

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 23

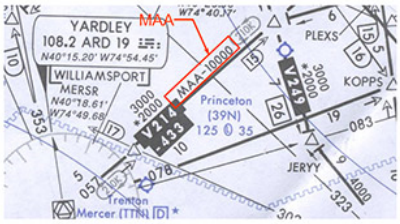
Maximum Authorized Altitude (MAA) Definition

BACK NEXT

Maximum Authorized Altitude (MAA)

Maximum Authorized Altitude (MAA) is a published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude at which adequate reception of navigation aid signals is assured.

Maximum Authorized Altitude (MAA)



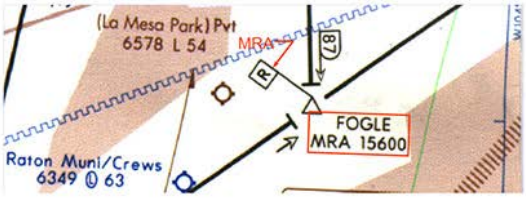
JO 7110.65, Pilot/Controller Glossary;

En Route Low Altitude Charts

Minimum Reception Altitude (MRA)

Minimum Reception Altitude (MRA) is the lowest altitude at which an intersection can be determined.

Minimum Reception Altitude (MRA)



JO 7110.65, Pilot/Controller Glossary;

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 25

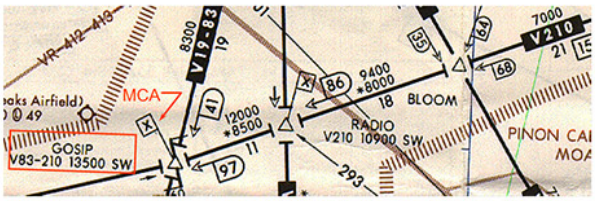
En Route Low Altitude Charts

BACK NEXT

Minimum Crossing Altitude (MCA)

Minimum Crossing Altitude (MCA) is the lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA).

Minimum Crossing Altitude (MCA)



JO 7110.65, Pilot/Controller Glossary;

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 28

En Route Low Altitude Charts

BACK NEXT

Air Traffic Services – Reporting Points and Holding Fixes

Depiction of reporting points on chart differentiates the types, and the charted holding patterns indicate direction of turns.

- **Pilots must report over compulsory reporting points when not in radar contact.**

REPORTING POINTS

Compulsory Reporting Point

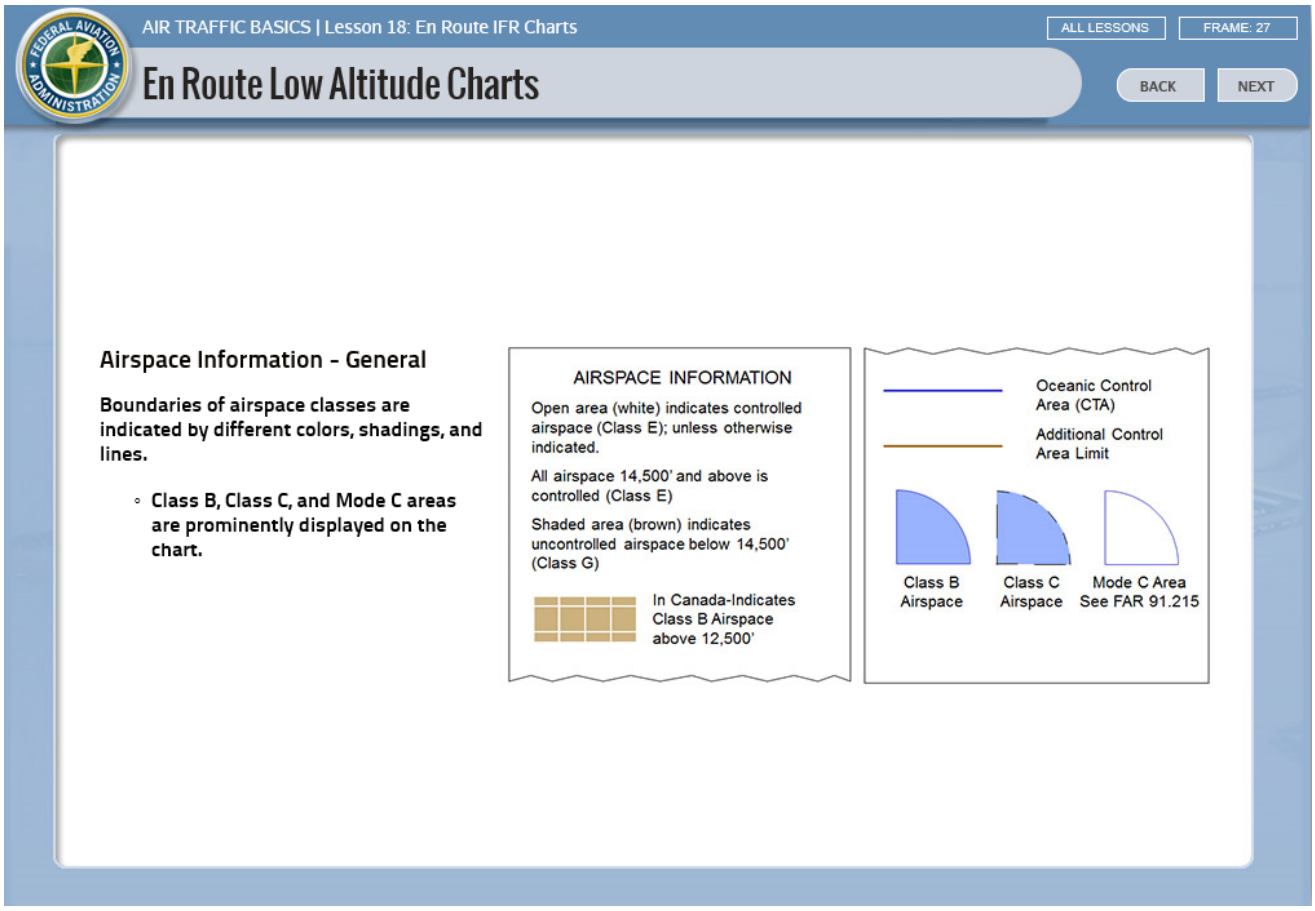
Non-compulsory Reporting Point

Off-set arrows indicate facility forming a reporting point (away from VHF/UHF, toward LF/MF)

RNAV Waypoint Compulsory and Non-Compulsory Position Report

Holding Pattern with max. restricted airspeed

(IAS) 210K applies to altitude above 6,000' to and including 14,000'
175K applies to all altitudes

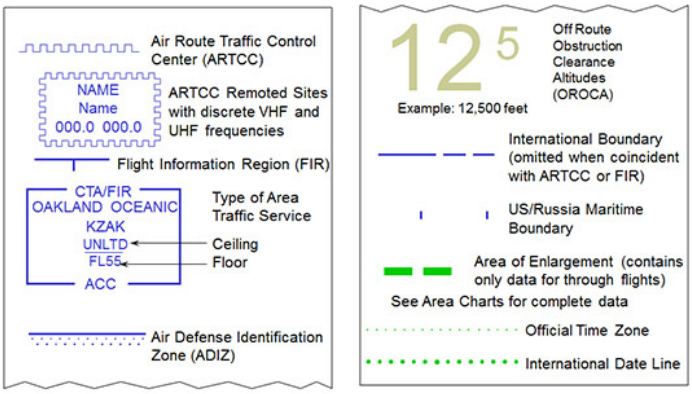

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 27
En Route Low Altitude Charts
BACK
NEXT
Airspace Information - General
Boundaries of airspace classes are indicated by different colors, shadings, and lines.
Class B, Class C, and Mode C areas are prominently displayed on the chart.
AIRSPACE INFORMATION
Open area (white) indicates controlled airspace (Class E); unless otherwise indicated.
All airspace 14,500' and above is controlled (Class E)
Shaded area (brown) indicates uncontrolled airspace below 14,500' (Class G)
In Canada-Indicates Class B Airspace above 12,500'
Oceanic Control Area (CTA)
Additional Control Area Limit
Class B Airspace
Class C Airspace
Mode C Area See FAR 91.215

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 28

En Route Low Altitude Charts

BACK NEXT



Airspace Information - Boundaries

- Air Route Traffic Control Center (ARTCC) boundaries are depicted on the chart by a notched blue line, and the names of the adjacent ARTCCs appear along those boundaries.
- ARTCC remote communication site frequencies appear in a box in the general location of the sectors which use the discrete VHF and UHF frequencies listed.
- International Flight Information Region (FIR), international airspace, and time zone boundaries each have distinct symbology.
- Oceanic airspace information and Air Defense Identification Zone (ADIZ) lines are charted where applicable.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 29

Off Route Obstruction Clearance Altitude

BACK NEXT

An Off Route Obstruction Clearance Altitude (OROCA) is depicted within each quadrangle on the chart bounded by lines of latitude and longitude.

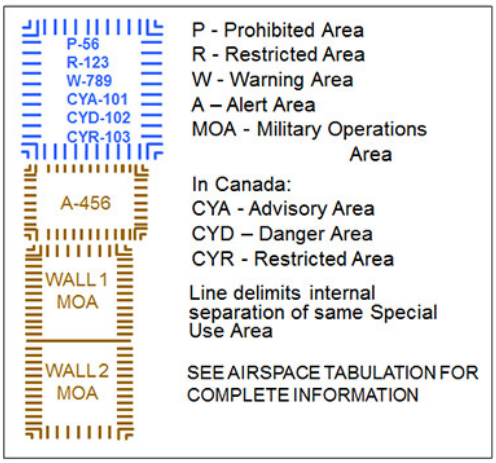
- Altitude provides obstruction clearance based on the highest known feature (either terrain or obstructions) to be found within that section of the chart.
  - 1,000-foot buffer in designated non-mountainous areas
  - 2,000-foot buffer in designated mountainous areas
- The OROCA does not guarantee NAVAID signal reception or communications coverage.
- The large number represents thousands of feet and the small number represents hundreds of feet above Mean Sea Level (MSL).

En Route Low Altitude Charts

Airspace Information – Special Use Airspace (SUA)

Prohibited, Restricted, and Warning Areas are shown within a blue hatched boundary; Alert Areas and Military Operations Areas (MOAs) are confined within a light brown hatched boundary.

- **Solid lines within a Special Use Airspace (SUA) area depict internal separation within that area.**



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 31

En Route Low Altitude Charts

BACK NEXT

ALTIMETER Altimeter Setting Change

4°E 2005 Isogonic Line and Value

All Mileages are Nautical except as noted

All Radials and Bearings are magnetic except as noted

All Altitudes are MSL except as noted

All Time is Coordinated Universal Time (UTC), Days are local

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

North American Datum of 1983 (NAD 83), for charting purposes is considered equivalent to World Geodetic System 1984 (WGS 84)

FOR ADDITIONAL SYMBOL INFORMATION REFER TO THE CHART USER'S GUIDE.

Miscellaneous

This section of the legend lists standards which are common to all data found on the En Route Low Altitude Chart pertaining to distance, radials, altitudes, and time.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 32

En Route Low Altitude Charts

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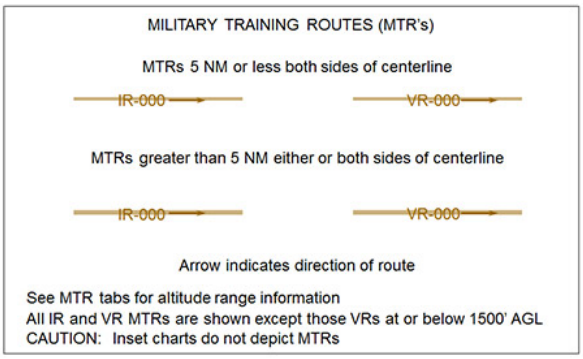
Military Training Routes (MTRs)

IFR and VFR Military Training Routes (MTRs) are shown by shaded lines accompanied by the route number.

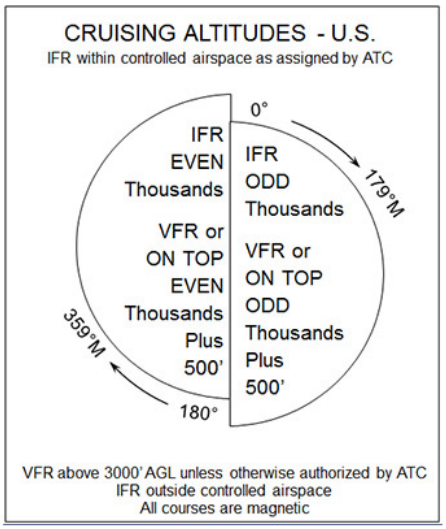


AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 33

En Route Low Altitude Charts

BACK NEXT



Cruising Altitudes

The chart contains a drawing of the correct cruising altitudes for IFR, VFR, and VFR ON TOP flights within U.S. controlled airspace.

NOTE: AGL means Above Ground Level.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 34

En Route Low Altitude Charts

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Special Use Airspace

P - PROHIBITED, R - RESTRICTED, A - ALERT, W - WARNING AREAS
CANADA: CYA - ADVISORY, CYD – DANGER, CYR - RESTRICTED AREAS

All altitudes are MSL unless otherwise indicated
FL - Flight Level
Time - Hours shown are UTC unless otherwise indicated
Days - Sunrise to Sunset except Canada where it means 1/2 hr before sunrise to 1/2 hour after sunset
Nights - Sunset to Sunrise except Canada where it means 1/2 hr after sunset to 1/2 hr before sunrise

Cont - Continuous: 24 hrs a day, 7 days a week
‡ - During periods of Daylight Saving Time (DT) effective hours will be one hour earlier than shown.
NOTAM - Use of this term in Restricted Areas indicates FAA And DoD NOTAM systems. Use of this term in all other Special Use areas indicates the DoD NOTAM system.

NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC			CONTROLLING AGENCY A/G CALL	PANEL LOCATION
		DAYS	HOURS	WEATHER		
P-47	To 4800 (1200AGL)	Cont	Cont	VFR-IFR	No A/G	B
R-2401A,B	To 30000	Cont*1	Days	VFR-IFR	ZME CNTR/FSS	F
R-2402	To 30000	Cont*1	Days	VFR-IFR	ZME CNTR/FSS	F
R-3701A	To 5000	By NOTAM	By NOTAM	VFR-IFR	FORT CAMPBELL AAF RAPCON	I
R-3702A	To 10000	By NOTAM	By NOTAM	VFR-IFR	ZME CNTR/FSS	I
R-3702B	10000 To FL 220	By NOTAM	By NOTAM	VFR-IFR	ZME CNTR/FSS	I
R-3704A	To 10000	Cont*1	1100-0500Z‡	VFR-IFR	STANDIFORD CONTROL TOWER	J
R-3704B	10000 To 20000	By NOTAM	By NOTAM	VFR-IFR	STANDIFORD CONTROL TOWER	J
R-4501A	To But Not Including 2200	Mon-Sat *1	1230-0300Z‡	VFR-IFR	ZKC CNTR/FSS	G

*1 - Other Times By NOTAM7

Special Use Airspace (SUA) Information

Information pertaining to Special Use Airspace (SUA) within the boundaries of the chart are listed on the reverse side of the chart.

- **SUAs are divided into two sections for easier identification.**

En Route Low Altitude Charts

Prohibited, Restricted, Alert, and Warning Areas

Prohibited, Restricted, Alert, and Warning Areas are listed in numerical order within each category of SUA.

- SUA information includes the vertical limits, time of use, controlling agency for each SUA, and the location of the SUA on the chart.

Military Operations Areas

MILITARY OPERATIONS AREAS

NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC. DAYS	HOURS	WEATHER	CONTROLLING AGENCY A/G CALL	PANEL LOCATION
CAMPBELL 1	500 AGL To 10000	Cont *1	1300-0200Z‡	VFR-IFR	U.S. ARMY FORT CAMPBELL ARAC	I
CAMPBELL 2	1500 AGL To 10000	Cont *1	1300-0200Z‡	VFR-IFR	U.S. ARMY FORT CAMPBELL ARAC	I
CANNON A	300 AGL *2	Tue-Sat*1	1500-2200Z‡	VFR-IFR	ZDV CNTR/FSS	G
CANNON B	100 AGL *2	Tue-Sat*1	1500-2200Z‡	VFR-IFR	ZDV CNTR/FSS	G
COLUMBUS 4	10000 *2	Mon-Fri*1	Days	VFR-IFR	ZDV CNTR/FSS	I
EUREKA HIGH	6000 *2	Mon-Fri Ocally Sat-Sun	Days	VFR-IFR	ZDV CNTR/FSS	E
EUREKA LOW	2500 To But Not Including 6000	Mon-Fri*1 Ocally Sat-Sun	Days	VFR-IFR	ZDV CNTR/FSS	E
HOG JRTC	100 AGL *2	Mon-Fri*1	1100-0200Z‡	VFR-IFR	ZDV CNTR/FSS	F
HOG HIGH N	6000 *2	Mon-Fri*1	1100-0200Z‡	VFR-IFR	ZDV CNTR/FSS	F
HOG LOW N	100 AGL To But Not Including 6000	Mon-Fri*1	1100-0200Z‡	VFR-IFR	ZDV CNTR/FSS	F
HOWS	11000 *2	Mon-Fri Exc Holidays*1	1 Hour Before SR To 1 Hour After SS	VFR-IFR	ZDV CNTR/FSS	C
LA VETA HIGH	13000*2	Mon-Fri*1	1400-2300Z‡	VFR-IFR	ZDV CNTR/FSS	A
LINDBERGH A	7000*2	Mon-Fri*1	1500-1630Z‡ 1900-2030Z‡	VFR-IFR	ZDV CNTR/FSS	G,H
LINDBERGH B	8000*2	Mon-Fri*1	1500-1630Z‡ 1900-2030Z‡	VFR-IFR	ZDV CNTR/FSS	G
LINDBERGH C	8000*2	Mon-Fri*1	1500-1630Z‡ 1900-2030Z‡	VFR-IFR	ZDV CNTR/FSS	G

*1 Other Times By NOTAM
*2 To But Not Including FL 180

Military Operations Areas (MOAs)

Military Operations Areas (MOAs) are listed in alphabetical order.

MOA information includes:

- **Vertical limits**
- **Time of use**
- **Controlling agency for each MOA**
- **Location of the MOA on the chart**

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 37

En Route High Altitude Charts

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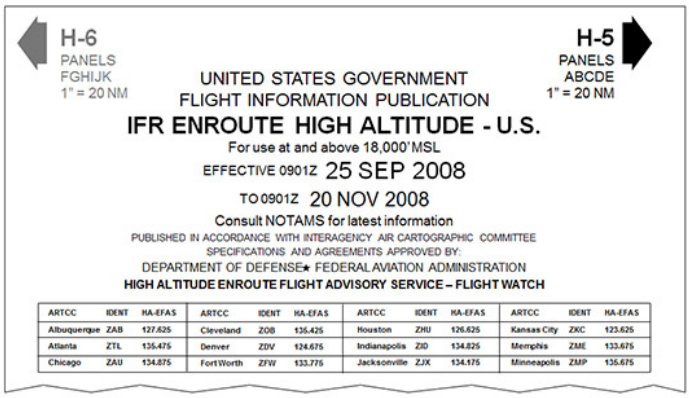
Publication Information



H-6
PANELS
FGHIJK
1" = 20 NM

H-5
PANELS
ABCDE
1" = 20 NM

UNITED STATES GOVERNMENT
FLIGHT INFORMATION PUBLICATION

IFR ENROUTE HIGH ALTITUDE - U.S.

For use at and above 18,000' MSL

EFFECTIVE 0901Z 25 SEP 2008

TO 0901Z 20 NOV 2008

Consult NOTAMS for latest information

PUBLISHED IN ACCORDANCE WITH INTERAGENCY AIR CARTOGRAPHIC COMMITTEE SPECIFICATIONS AND AGREEMENTS APPROVED BY:

DEPARTMENT OF DEFENSE★ FEDERAL AVIATION ADMINISTRATION

HIGH ALTITUDE ENROUTE FLIGHT ADVISORY SERVICE – FLIGHT WATCH

ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS	ARTCC	IDENT	HA-EFAS
Albuquerque	ZAB	127.625	Cleveland	ZOB	135.425	Houston	ZHU	126.625	Kansas City	ZKC	123.625
Atlanta	ZTL	135.475	Denver	ZDV	124.675	Indianapolis	ZID	134.825	Memphis	ZME	133.675
Chicago	ZAU	134.875	Fort Worth	ZFW	133.775	Jacksonville	ZJX	134.175	Minneapolis	ZMP	135.675

Description

En Route High Altitude Charts provide aeronautical information for en route navigation during instrument flight at or above 18,000 feet MSL.

- **Published every 56 days, on the same schedule as the En Route Low Altitude Charts**

JO 7110.65, Pilot/Controller Glossary; AIM, Chap. 9; En Route High Altitude Chart Legend

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 38

En Route High Altitude Charts

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Layout

Chart layout is similar to the En Route Low Altitude Chart, with two geographical areas per chart, printed on opposite sides.

- Each side of the chart is numbered separately (e.g., H-5 on one side, H-6 on the other).
- Some overlap exists to aid the pilot in planning and following a route of flight.

Map scale is generally 1" = 20NM

- Due to smaller scale than the En Route Low Altitude Charts, only 12 charts are needed to cover the contiguous U.S.

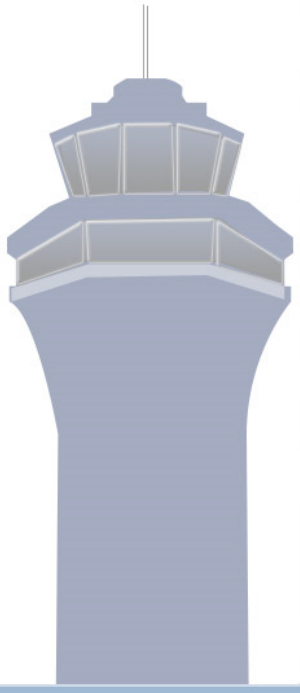
Legend is similar to the En Route Low Altitude Chart, but depicts jet (J) and RNAV (Q) routes instead of low altitude airways.

En Route High Altitude Charts

Types of Information Presented

The chart depicts information pertinent to flight in the high altitude stratum, such as:

- Jet routes, RNAV routes, and distances
- Identification and frequencies of radio aids
- Airports with at least a 5,000 foot hard-surfaced runway
- Time zones
- Special Use Airspace and related information



En Route High Altitude Charts

Special Use Airspace (SUA) Information

The cover flaps of the En Route High Altitude Chart list information pertaining to SUA within the boundaries of the chart.

- If needed, the listing may be continued on an inside flap of the chart next to the chart legend.

En Route High Altitude Charts

Special Use Airspace

P - PROHIBITED, R - RESTRICTED, W - WARNING AREAS
CANADA: CYA - ADVISORY, CYR - RESTRICTED AREAS

All altitudes are MSL unless otherwise indicated
Days - Sunrise to Sunset except Canada where it means 1/2 hr before sunrise to 1/2 hour after sunset
Nights - Sunset to Sunrise except Canada where it means 1/2 hr after sunset to 1/2 hr before sunrise
Time - Hours shown are UTC unless otherwise indicated

Continuous - 24 hrs a day and/or 7 days a week
Mon-Fri - indicates that area is active every day from Monday through Friday
FL - Flight Level
‡ - During periods of Daylight Saving Time (DT) effective hours will be one hour earlier than shown

NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC. DAYS	HOURS	WEATHER	CONTROLLING AGENCY A/G CALL	PANEL
R-2104D,E	To 4800 (1200AGL)	By NOTAM	By NOTAM	VFR-IFR	ZME CNTR/FSS	J
R-2401A,B	To 30000	Cont*1	Days	VFR-IFR	ZME CNTR/FSS	H
R-2402	To 30000	Cont*1	Days	VFR-IFR	ZME CNTR/FSS	H
R-2601B	To 5000	By NOTAM	By NOTAM	VFR-IFR	ZDV CNTR/FSS	A
R-2601C	To 10000	By NOTAM	By NOTAM	VFR-IFR	ZDV CNTR/FSS	A
R-2601D	10000 To FL 220	By NOTAM	By NOTAM	VFR-IFR	ZDV CNTR/FSS	A
R-2915A	To 10000	Cont	Cont	VFR-IFR	ZJX CNTR/FSS	J
R-3401A	10000 To 20000	5/1-9/30 Cont 10/1-4/30 Tue-Sat *1	Cont 1300-0400Z	VFR-IFR	ZID CNTR/FSS	E
R-3403A	To 10000	Cont	1130-0500Z	VFR-IFR	ZID CNTR/FSS	E

*1 - Other Times By NOTAM

Special Use Airspace (SUA) Information

Prohibited, Restricted, and Warning Areas are listed in numerical order within each category of SUA.

- **MOAs exist only outside of Class A airspace and are not listed on En Route High Altitude Charts.**

SUA information includes:

- **Vertical limits**
- **Time of use**
- **Controlling agency for each SUA**
- **Location of the SUA on the chart**

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 42

En Route High Altitude Charts

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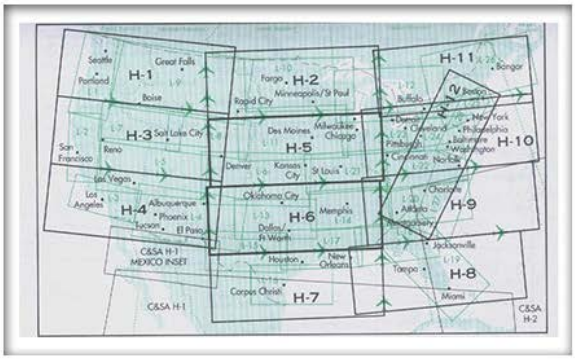
Geographical Area Presentation

Map of the U.S. shows the area covered by each En Route High Altitude Chart.

- **Major cities are depicted to aid the user in chart selection.**
- **Darkest outlining indicates areas covered by this chart.**



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 43

En Route High Altitude Charts

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Chart Legend

Most symbols and recognition features on the En Route High Altitude Chart Legend are identical to those found on the En Route Low Altitude Chart.

- Airports are depicted using the same color-coding.
- Some details and symbols which are only relevant to the low altitude stratum are omitted.
  - Only airports with hard-surfaced runways at least 5,000 feet long are shown.
  - Terminal Air/Ground frequencies are excluded.
  - City names (if different from airport name), airport names, and airport location identifiers are printed next to the airport depiction, but airport data is omitted.
    - Frequencies, lighting information, elevation, and localizer alignment depictions are not relevant.
- MOCAs and MTRs are not shown.
- MEAs are shown in MSL altitudes, but only if higher than 18,000.
- Maximum Authorized Altitudes (MAAs) are shown in MSL altitudes, but only if lower than 45,000.
- All NAVAIDs shown are "H" class, unless identified as "L" or "T."
  - "L" or "T" class NAVAIDs located off jet routes are shown in light gray.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 44

En Route High Altitude Charts

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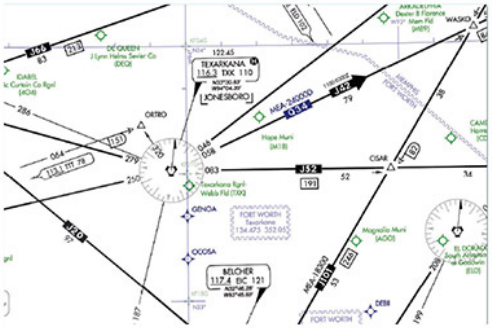
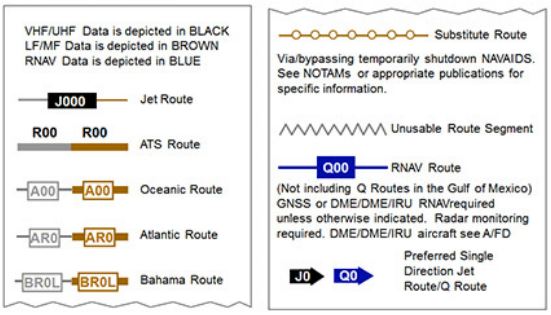
Examples of Legend Data

Morse Code is omitted from the NAVAID frequency boxes.

Identification Box



Route Data



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 45

En Route High Altitude Charts

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Examples of Legend Data

The MEA on Q routes is dependent on the type of RNAV equipment in use, which can be determined by the equipment suffix filed in the flight plan.

Route Data

MEA-00000	Minimum En Route Altitude (MEA) shown when other than 18,000'
MAA-00000	Maximum Authorized Altitude (MAA) shown when other than 45,000'
MEA-00000G	MEA for GNSS RNAV aircraft. Shown when other than 18,000'
MEA-00000D	MEA for DME/DME/IRU RNAV aircraft. Shown when other than 18,000'

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

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En Route High Altitude Charts

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Examples of Legend Data

Airspace Information

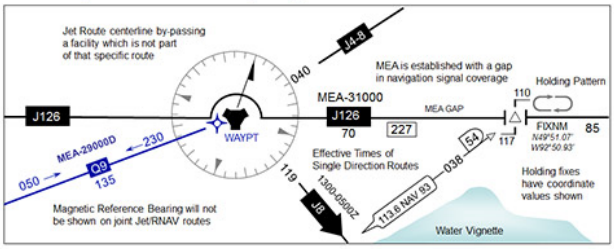
Open area (white) indicates controlled airspace (Class A)

Shaded area (brown) indicates uncontrolled airspace (Class G)

Class A Airspace

That airspace of the United States and designated offshore airspace from 18,000' MSL to and including FL600 excluding the portion south of Lat 25°04'00"N

Example of Grouping



Class A airspace is depicted on En Route High Altitude Charts by the open white areas.

Class G airspace is depicted on En Route High Altitude Charts in brown shading where it exists above 18,000 feet MSL (in Alaska and beyond 12NM from the coast of the 48 contiguous states).

Jet airways which bypass a NAVAID have a unique depiction.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 47

IFR Area Charts

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Description

IFR Area Charts furnish terminal data for IFR flight in congested areas.

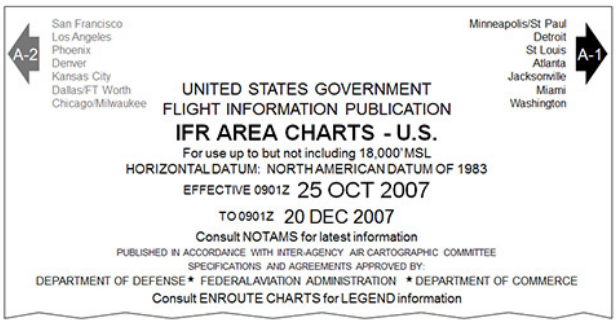
- **Large scale provides greater detail than the En Route Low Altitude Charts, generally 1" = 5 to 8 miles.**
  - **Each chart has its own scale depending on the amount of detail and congestion within the depicted area.**

IFR Area Charts do not contain a legend, but use the same symbols as are found on the En Route Low Altitude and En Route High Altitude Charts.

- **IFR Area Charts are published every 56 days, and are bound together with the En Route Low Altitude Charts.**

JO 7110.65, Pilot/Controller Glossary; AIM, Chap. 9; IFR Area Chart Title Page

Publication Information



AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 48

IFR Area Charts

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Layout

The IFR Area Charts publication has two sides, labeled A-1 and A-2, with multiple charts depicted on each side of the map, each named for an individual city or city-pair.

- Some charts are larger than others due to the number and proximity of busy airports, distance of feeder fixes from the main airport, or size of the surrounding Class B or C airspace.

AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts

ALL LESSONS FRAME: 49

IFR Area Charts

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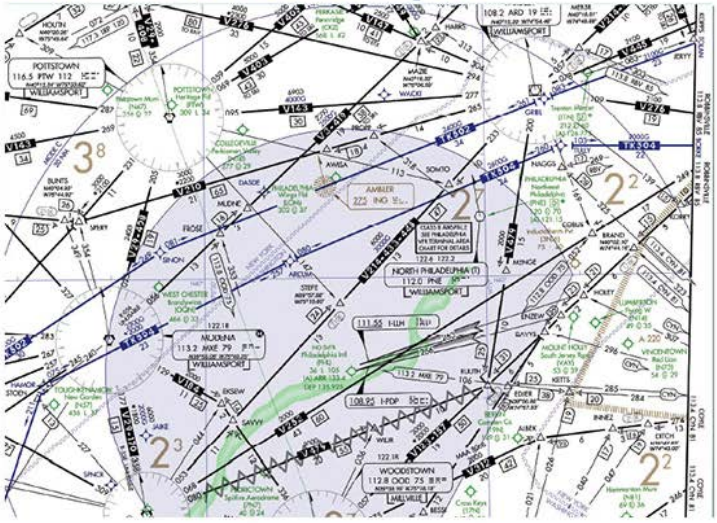
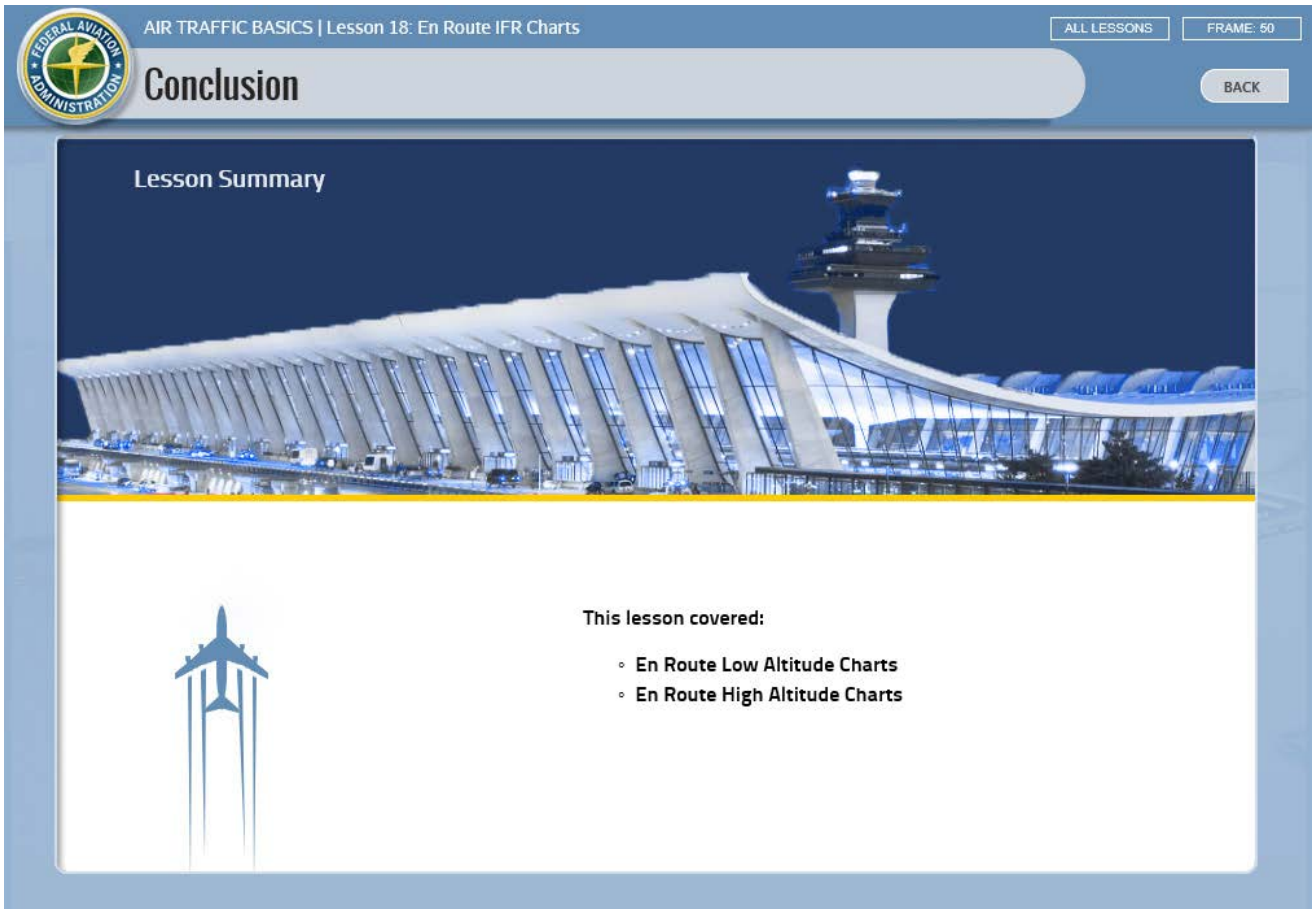
IFR Area Chart Example




AIR TRAFFIC BASICS | Lesson 18: En Route IFR Charts
ALL LESSONS
FRAME: 50
Conclusion
BACK
Lesson Summary
This lesson covered:
◦ En Route Low Altitude Charts
◦ En Route High Altitude Charts