BASICS FOR AIR TRAFFIC CONTROL – EN ROUTE IFR CHARTS

MODULE OVERVIEW

Purpose: The purpose of this module is to identify the purpose, contents, specific items, and information on IFR Area En Route Charts.

MODULE OUTLINE

Lesson: En Route Low Altitude Charts, Part 1

Purpose: The purpose of this lesson is to identify the En Route Low Altitude chart, its purpose, and contents.

Objective:

- Identify the purpose and contents of En Route Low Altitude charts

Topics:

- En Route Low Altitude Charts
  - Description
  - Layout
- Types of Information Presented
  - Chart Designations
  - Military Training Routes (MTRs)
  - Geographical Area Presentation
- Knowledge Check
  - Chart Legend
  - Airports and Symbols
  - Airports
- Knowledge Check
  - NAVAIDs
  - Communication Boxes
- Knowledge Check
  - Route Data
  - Minimum Obstruction Clearance Altitude (MOCA)
  - Minimum En Route Altitude (MEA)
  - Maximum Authorized Altitude (MAA)
  - Minimum Reception Altitude (MRA)
  - Minimum Crossing Altitude (MCA)
  - Reporting Points and Holding Fixes
- Review/Summary

Activity – Symbol Matching

Question and Answer Session – *Parking Lot*

Lesson: En Route Low Altitude Charts, Part 2

Purpose: The purpose of this lesson is to identify the En Route Low Altitude chart, its purpose, and its contents.

Objective:

- Identify the purpose and contents of En Route Low Altitude charts

Topics:

- Specific Items in En Route Low Altitude Charts
  - Airspace Information
  - Off Route Obstruction Clearance Altitude (OROCA)
  - Airspace Information – Special Use Airspace (SUA)
  - Miscellaneous
- Knowledge Check
  - Military Training Routes (MTRs)
  - Cruising Altitudes
- Knowledge Check
  - Special Use Airspace (SUA) Information
  - Prohibited, Restricted, Alert, and Warning Areas
  - Military Operations Areas (MOAs)
- Review/Summary

Exercise – En Route Low Altitude Charts Review

Lesson: En Route High Altitude Charts

Purpose: The purpose of this lesson is to identify the En Route High Altitude chart, its purpose, and its contents.

Objective:

- Identify the purpose and contents of En Route High Altitude charts

Topics:

- En Route High Altitude Charts Information
  - Description
  - Public Information
  - Layout
- Types of Information Presented
  - Special Use Airspace (SUA) Information
  - Geographical Area Presentation
  - Chart Legend
  - Identification Box
  - Route Data
  - Airspace Information
  - Examples of Grouping
- Knowledge Check
- Review/Summary

Lesson: IFR Area Charts

Purpose: The purpose of this lesson is to identify the Instrument Flight Rules (IFR) Area chart, its purpose, and its contents.

Objective:

- Identify the purpose and contents of IFR Area charts

Topics:

- En Route IFR Area Charts
  - Description
  - Layout
  - Publication Information
- Knowledge Check
- Review/Summary

Exercise – Where's the Information

Question and Answer Session – *Parking Lot*

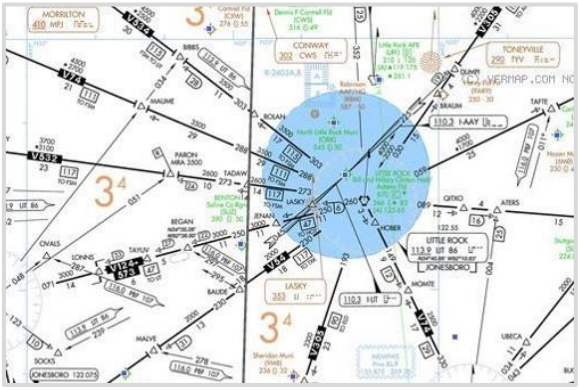
End-of-Module (EOM) Test

INTRODUCTION

LESSONS	■ En Route Low Altitude Charts, Part 1 ■ En Route Low Altitude Charts, Part 2 ■ En Route High Altitude Charts ■ IFR Area Charts
TOTAL ESTIMATED RUN TIME	5 hrs. 02 mins.
MODULE CONTENT	■ Module Overview ■ Lesson: En Route Low Altitude Charts, Part 1 ■ Activity – Symbol Matching ■ Q&A Session – Parking Lot ■ Lesson: En Route Low Altitude Charts, Part 2 ■ Exercise – En Route Low Altitude Charts Review ■ Lesson: En Route High Altitude Charts ■ Lesson: IFR Area Charts ■ Exercise – Where's the Information ■ Q&A Session – Parking Lot ■ End-of-Module Test

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to select ***En Route IFR Charts*** module link within Blackboard ■ Instruct students to read the module introduction and then wait quietly for additional instructions	Blackboard
	EST. RUN TIME
	2 mins.

A pilot navigating Instrument Flight Rules (IFR) in the Air Traffic Control (ATC) system uses a chart just like the Visual Flight Rules (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 that are used for navigating without any visual reference to landmarks on the ground. IFR charts present the pilot with graphic and numerical data that guide the aircraft safely to its destination solely by reference to instruments.

As a controller, having a 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. This module will teach you about En Route Low Altitude and High Altitude IFR Charts used by pilots flying on an IFR flight plan.

The purpose of this module is to identify the purpose, contents, specific items and information on IFR Area En Route Charts.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE** ***En Route Low Altitude Charts, Part 1***, lesson in Blackboard and ***Symbol Matching*** activity in ***Exercises and Activities*** folder in Blackboard ■ Instruct students to navigate to the ***En Route Low Altitude Charts, Part 1***, lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson instruct students to proceed to ***Symbol Matching*** activity in ***Exercises and Activities*** folder in Blackboard ■ Instruct students to answer each question ■ The activity will evaluate the students' performance and provide feedback after each answer is submitted ■ Instruct students to complete the activity individually until instructed to stop working	Blackboard and Activity **EST. RUN TIME** 40 mins.

EN ROUTE LOW ALTITUDE CHARTS, PART 1

Purpose: The purpose of this lesson is to identify the En Route Low Altitude chart, its purpose, and contents.

Objective:

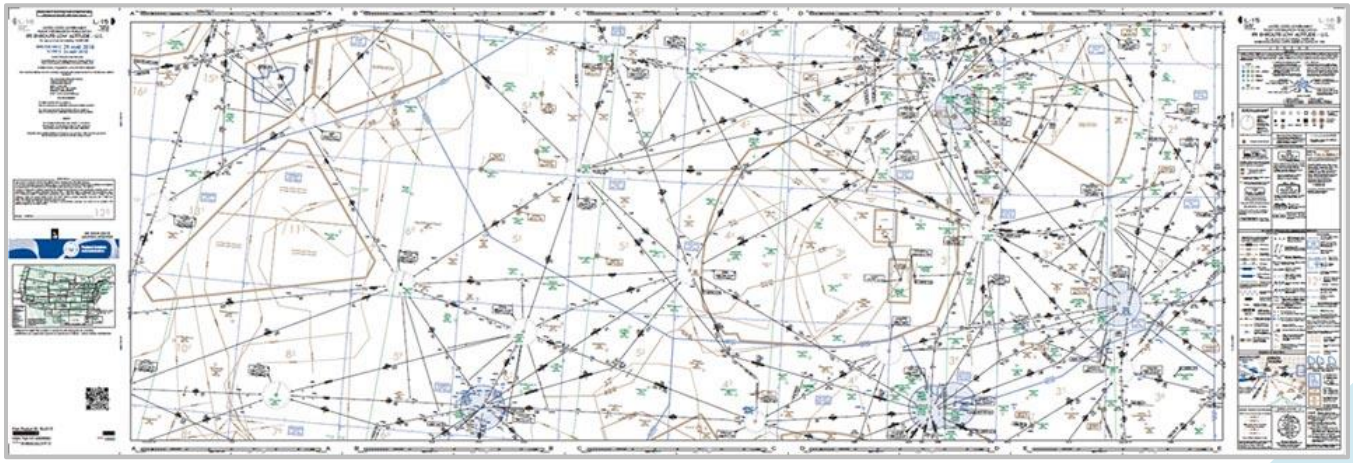
- Identify the purpose and contents of En Route Low Altitude charts

References for this lesson are as follows:

- FAA Order JO 7110.65, Air Traffic Control
- Aeronautical Information Manual (AIM)
- L-15/L-16 En Route Low Altitude, IFR Area Charts
- South Central Chart Supplement

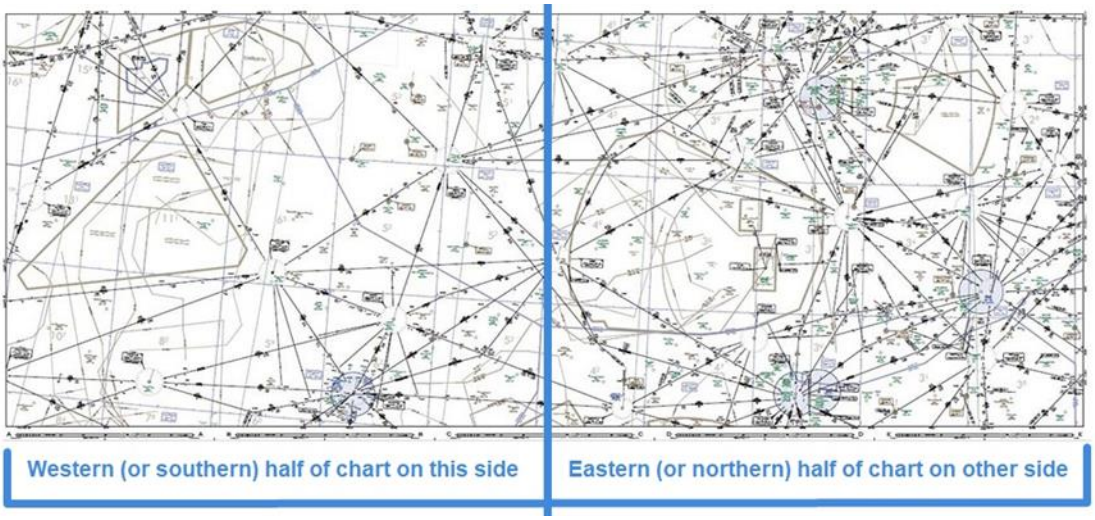
En Route Low Altitude Chart

En Route Low Altitude Charts are designed to provide aeronautical information for en route navigation during instrument flight below 18000 MSL. The charts are updated every 56 days.



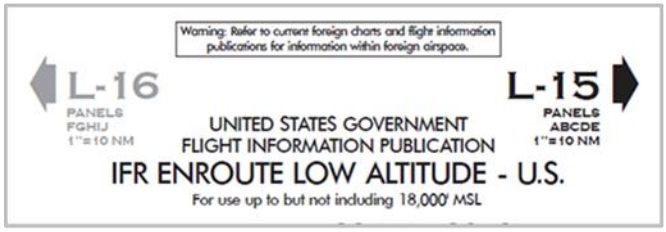
Layout

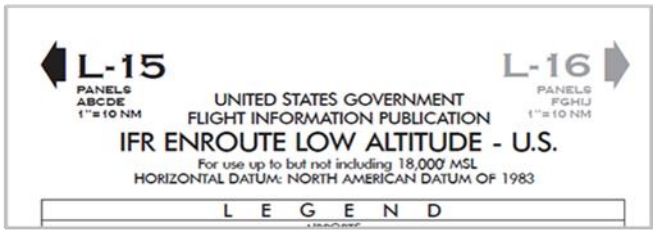
The geographical area is normally divided with the western half on one side and the eastern half on the other, but a few are oriented north/south to make it easier to navigate along the coasts.



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.



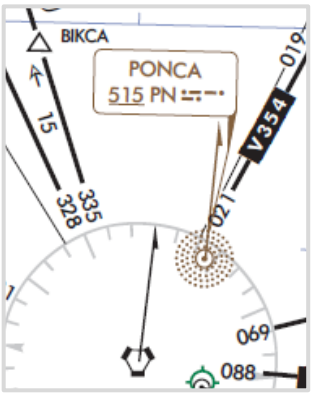


Types of Information Presented

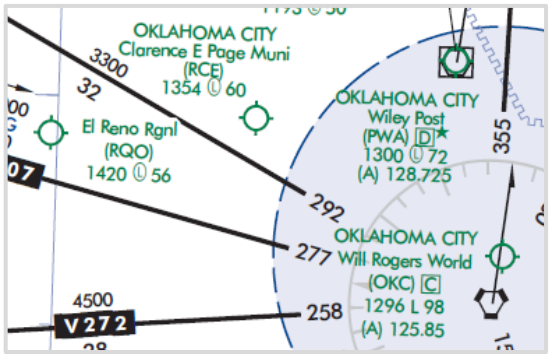
A wide variety of aeronautical information is depicted on the charts, such as:

- VHF Omnidirectional Range (VOR) or “Victor” airways with distances between intersections and Navigational Aids (NAVAIDs)

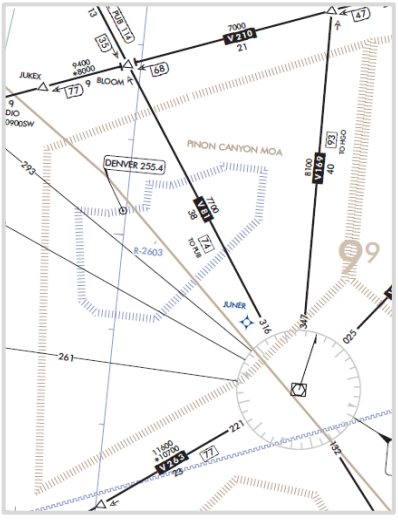
- NAVAIDs, such as VORs, VORTACs, VOR/DMEs, and NDBs, as well as their position, identification, and frequencies

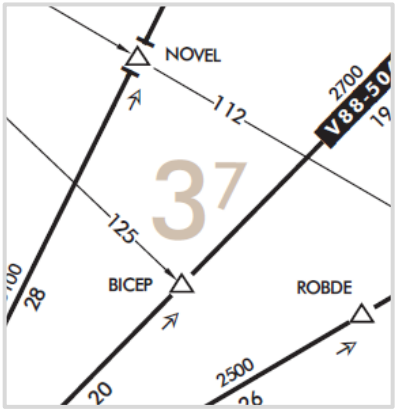


- Selected airports



- Special Use Airspace (SUA), Military Training Routes (MTRs), and related information



■ Limits of controlled airspace	
■ Minimum en route altitudes and minimum obstruction clearance altitudes	

Note: *This listing is just a sampling of information found on the En Route Low Altitude Chart.*

Chart Designations

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.

Military Training Routes (MTRs)

En Route Low Altitude charts list 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.

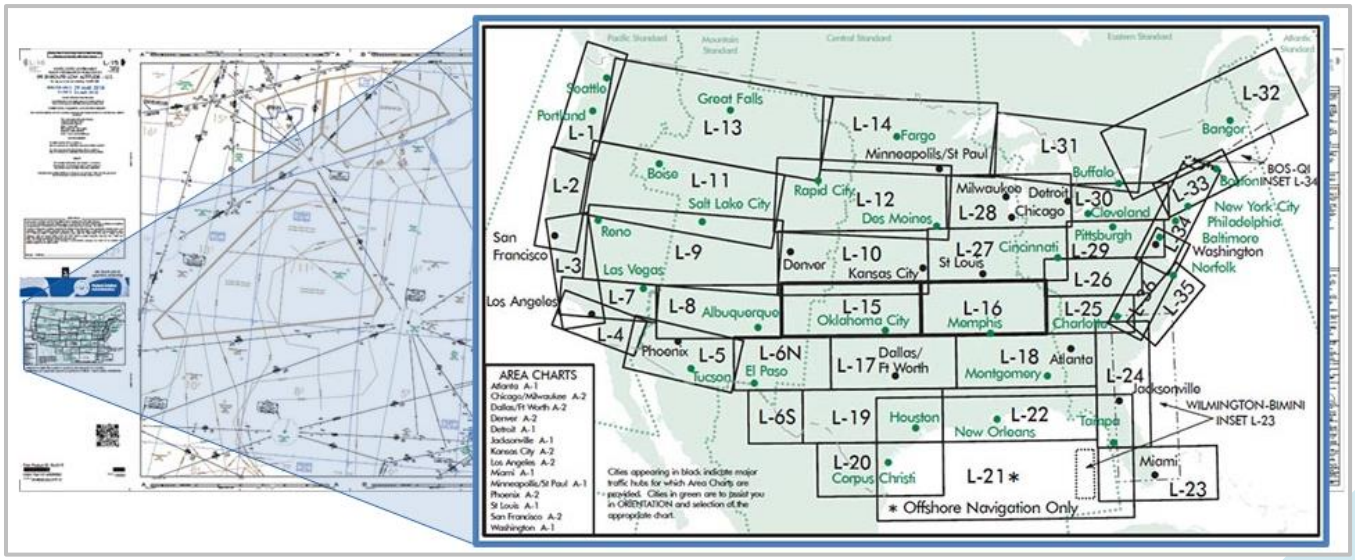
The altitude range of each military route is listed next to the route number.

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

Geographical Area Presentation

Map of the U.S. shows the area covered by each Low Altitude Chart (L-1 through L-36).

- 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



Knowledge Check A

REVIEW what you have learned so far about En Route Low Altitude Charts. ANSWER the questions listed below.

1. En Route Low Altitude Charts are published every _____. *(Select the correct answer.)*
   - ❑ 28 days
   - ❑ **56 days**
   - ❑ 6 months

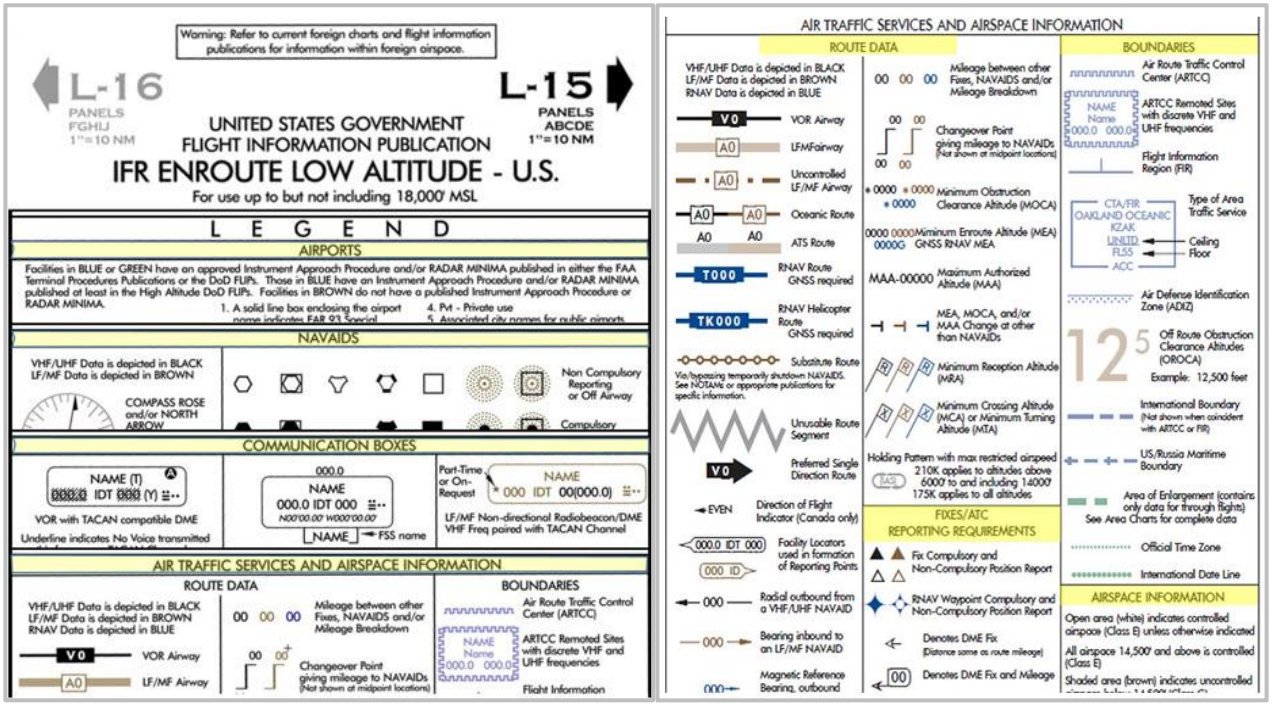
2. Which statement is true concerning En Route Low Altitude Charts? *(Select the correct answer.)*
   - ❑ Areas of mountainous terrain are depicted
   - ❑ Military Training Routes include times of use
   - ❑ **There are a total of 36 charts**

3. En Route Low Altitude Charts are for use below _____ MSL. *(Select the correct answer.)*
   - ❑ **18000**
   - ❑ 12500
   - ❑ 10000

Chart Legend

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

- Airports
- NAVAIDs
- Communications boxes
- Air Traffic Services and Airspace Information

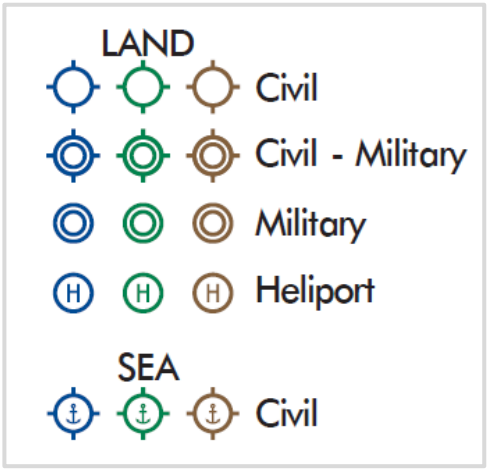


Major category areas are subdivided into sections containing similar types of information.

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

Airports and Symbols

All airports with an Instrument Approach Procedures (IAP) and/or a hard-surfaced runway ≥3000' are depicted.



Airports/seaplane bases shown in BLUE and GREEN have an approved IAP published.

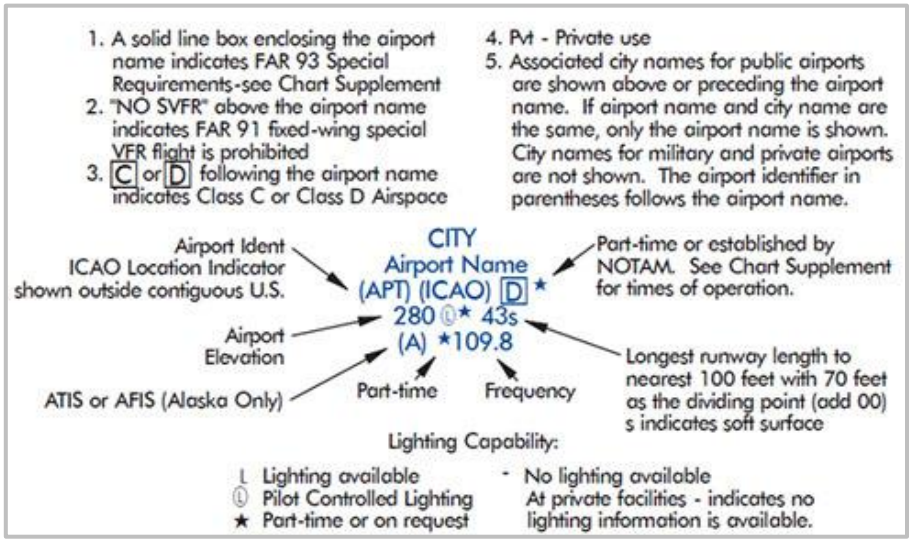
Those in BLUE have an approved Department of Defense (DoD) IAP and/or DoD RADAR MINIMA published at least in the High Altitude DoD Flight Information Publication (FLIP).

Airports/seaplane bases shown in BROWN do not have a published IAP.

Civil and military airports, as well as heliports and seaplane bases, are shown.

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.

Knowledge Check B

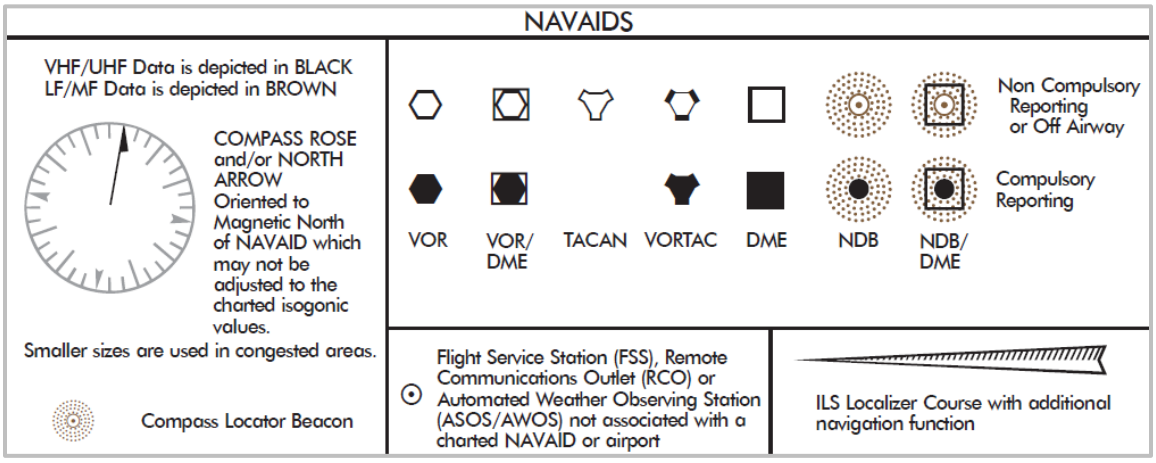
REVIEW what you have learned so far about En Route Low Altitude Charts. ANSWER the questions listed below.

1. Airports with approved IAPs are depicted in _____ and _____. *(Select the correct answer.)*
   - ❑ Green; brown
   - ❑ Brown; blue
   - ❑ **Blue; green**

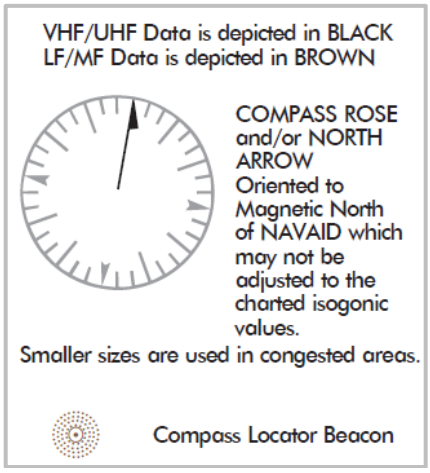
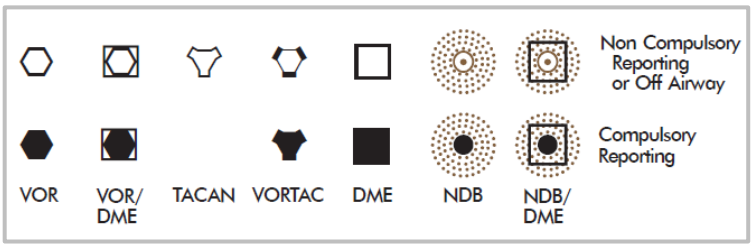
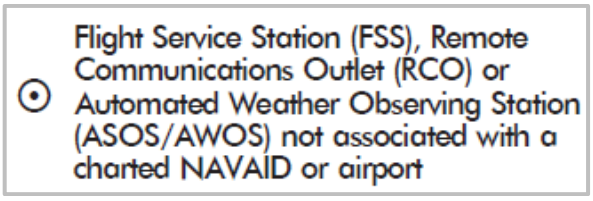
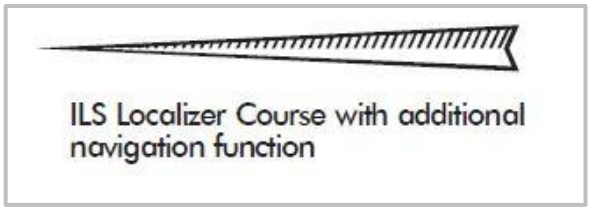
2. When included in the airport data, (A) means _____. *(Select the correct answer.)*
   - ❑ The airport is surrounded by Class A airspace
   - ❑ Alternate approach minimums are applicable at that airport
   - ❑ **Automatic Terminal Information Service (ATIS) is available**

3. A star (★) in the airport data could be used to indicate _____. *(Select the correct answer.)*
   - ❑ **Part-time status of surrounding airspace**
   - ❑ Pilot-controlled lighting
   - ❑ Presence of a rotating beacon on the field

NAVAIDs

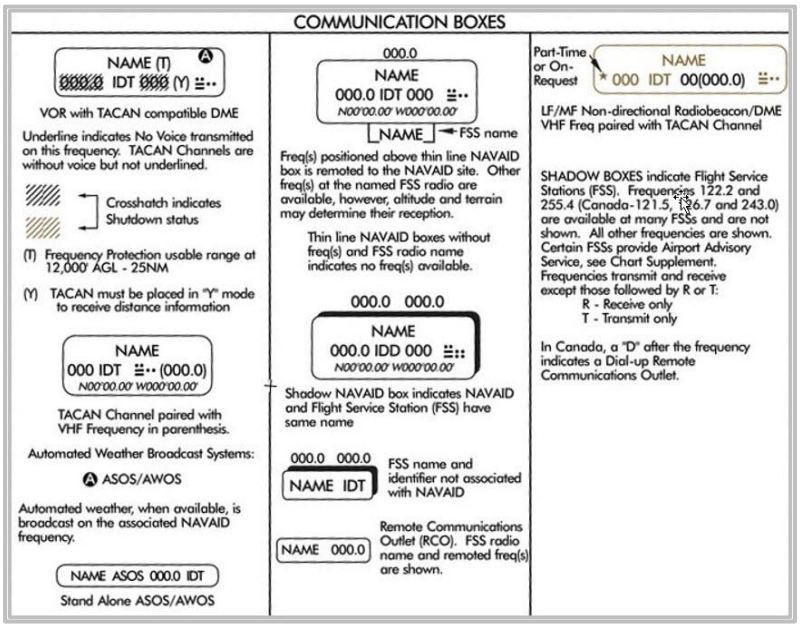


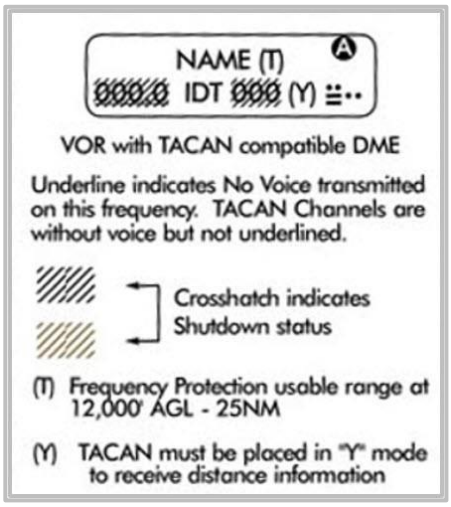
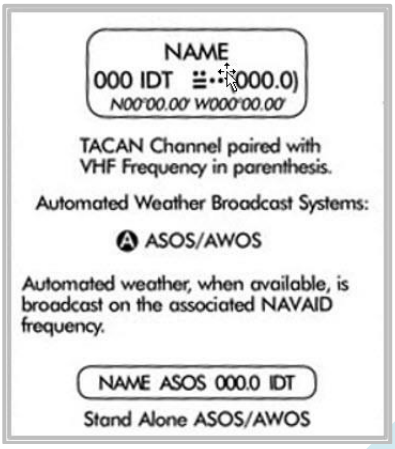
NAVAIDs include the following:

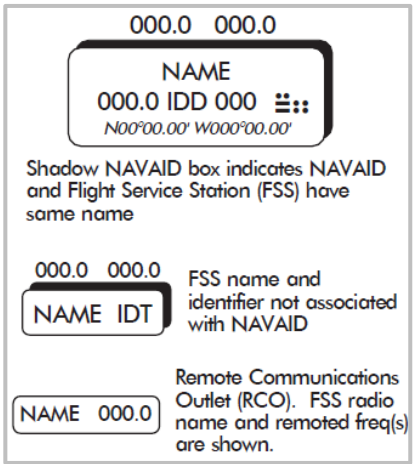
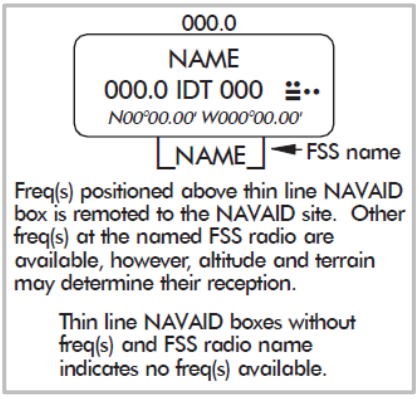
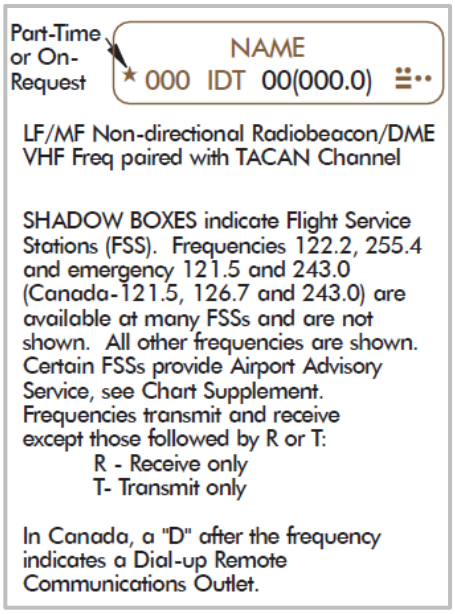
Compass Rose Compass roses are oriented to magnetic north, with the accompanying data color-coded to indicate the type of facility. ■ VHF/ Ultra High Frequency (UHF) data appears in black ■ Low Frequency (LF)/ Medium Frequency (MF) data appears in brown	
Symbols Symbols for various types of NAVAIDs are depicted. ■ VORTAC, VOR, VOR/DME, and Tactical Air Navigation (TACAN) ■ NDB, NDB/DME, Compass Locator Beacon	
RCOs and AWOS/ASOS FSS, RCOs, and AWOS/ASOS not associated with a charted NAVAID or airport are represented by a dotted circle.	
ILS Localizer Courses Instrument Landing System (ILS) localizer courses are oriented on the chart so they are aligned with the runway they serve.	

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 FSS but **can** receive recorded broadcasts. (T) is displayed to indicate a Terminal class NAVAID with a service volume of 25 NM and 12,000 feet.	
NDB/DMEs and TACANs will display the paired VHF frequency (000.0), enabling VOR/DME equipment to receive DME	

A shadowed heavy-lined box indicates an FSS 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.	

Knowledge Check C

REVIEW what you have learned so far about En Route Low Altitude Charts. ANSWER the questions listed below.

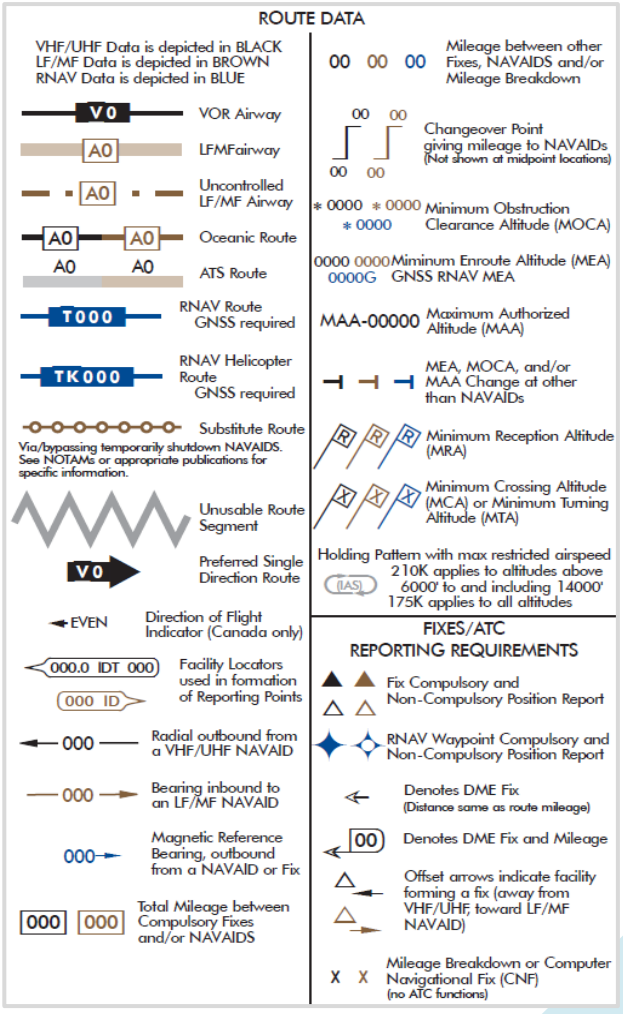
1. A frequency that is underlined within a communication box indicates that _____. *(Select the correct answer.)*
   - ❑ No TWEB broadcast is available through that facility
   - ❑ **There is no voice transmitted on that frequency**
   - ❑ A NOTAM is issued pertaining to an abnormal status situation

2. A (T) depicted next to the facility name means _____. *(Select the correct answer.)*
   - ❑ The facility is temporarily unmonitored
   - ❑ Transcribed Weather Broadcasts are available
   - ❑ **The facility is a Terminal class NAVAID**

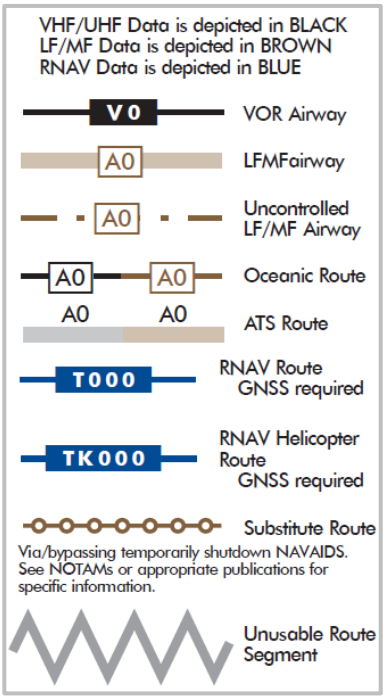
3. Which of the following is **NOT** found in a communication box? *(Select the correct answer.)*
   - ❑ NAVAID frequency
   - ❑ **Symbol indicating the availability of ATIS broadcasts**
   - ❑ Morse Code identification of the NAVAID

Route Data

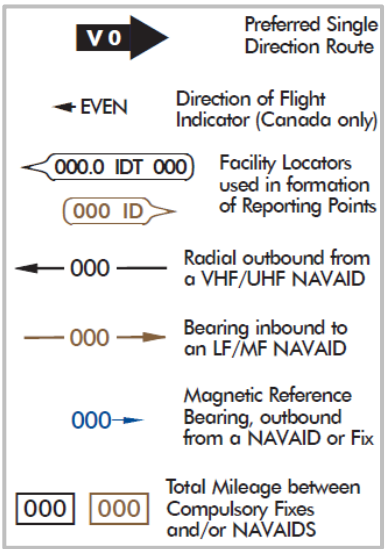
Types of airways, airway segments, and related data are indicated by various styles of line designs, shadings, and labels.



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.



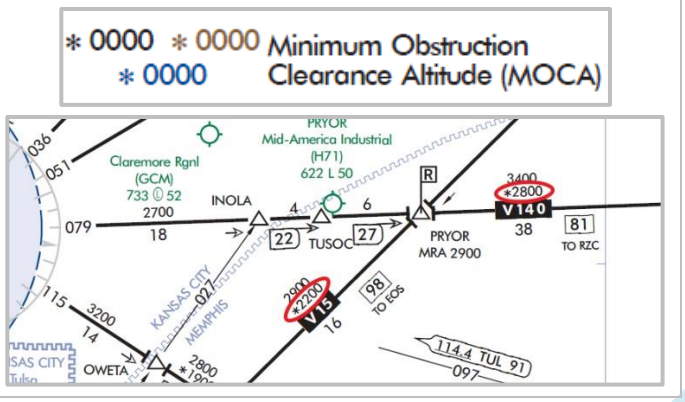
Radial/bearing information and DME fix distances aid in intersection identification.



Minimum Obstruction Clearance Altitude (MOCA)

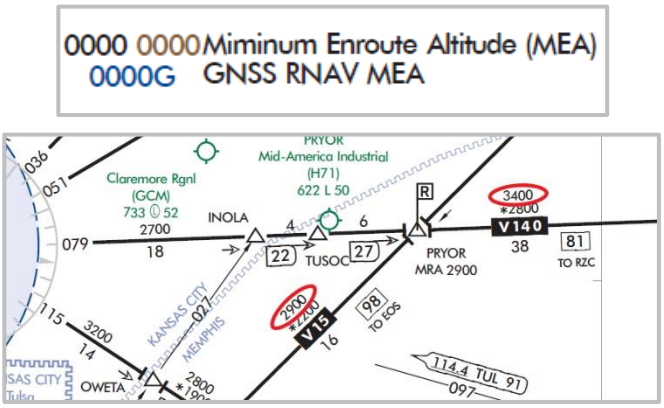
Minimum Obstruction Clearance Altitude (MOCA) is the lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments that meets obstacle clearance requirements for the entire route segment and that assures acceptable navigational signal coverage only within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

The MOCA is the altitude preceded by an asterisk.



Minimum En Route Altitude (MEA)

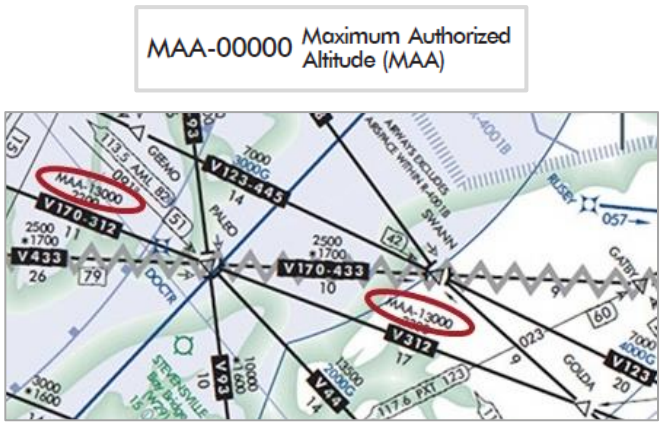
Minimum En Route Altitude (MEA) is the lowest published altitude between radio fixes that assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes.



Maximum Authorized Altitude (MAA)

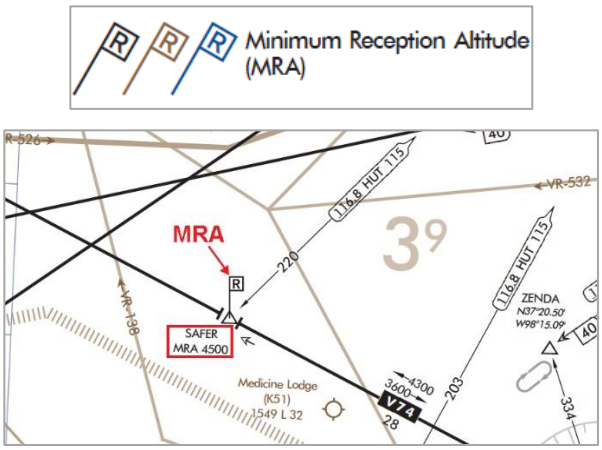
Maximum Authorized Altitude (MAA) is a published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude at which adequate reception of NAVAID signals is assured.

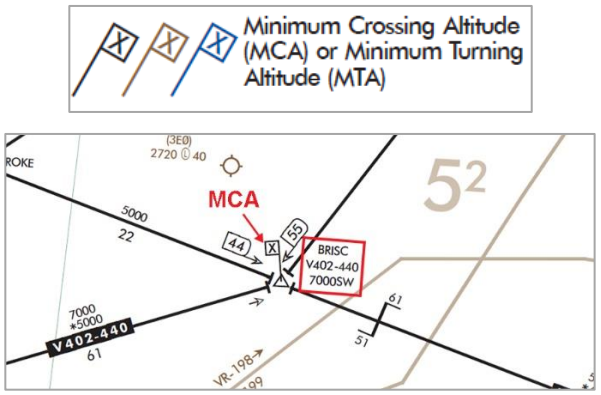
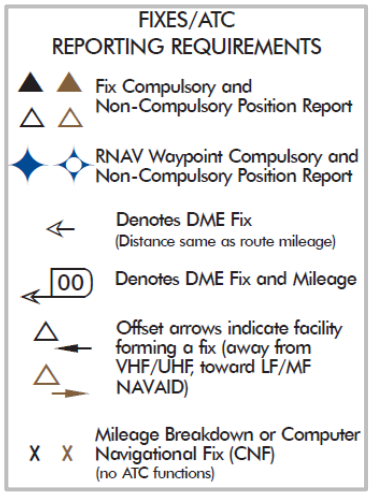
***Note**: MAAs are usually found in the high altitude structure, but this is an example of a few that may be found near very congested terminal areas where VORs are located much closer together. Because VHF NAVAIDs have line-of-sight reception, MAAs are usually established to avoid reception of two NAVAIDs that have the same frequency, even though they may be hundreds of miles apart.*



Minimum Reception Altitude (MRA)

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



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 MEA.	
Reporting Points and Holding Fixes Depiction of reporting points on charts differentiates the type, and the charted holding patterns indicate direction of turns. Pilots must report over compulsory reporting points when **NOT** in radar contact. ***Note:*** *Computer Navigation Fix (CNF) is for use by the pilot using GPS or similar database-equipped systems and provides these systems with position-identifying information.*	

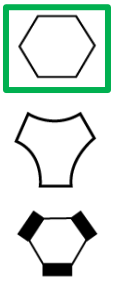
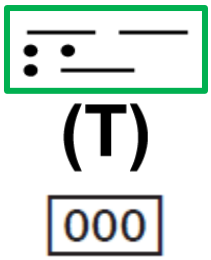
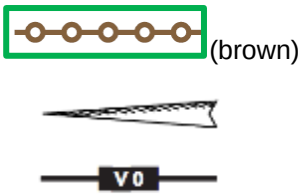
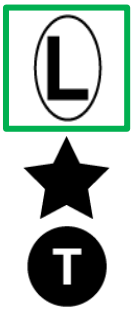
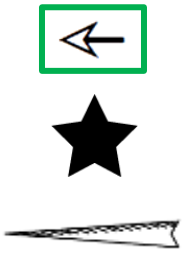
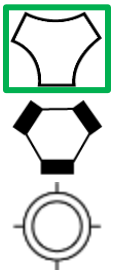
En Route Low Altitude Charts, Part 1, Summary

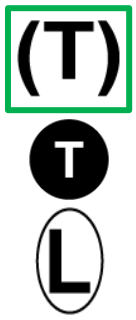
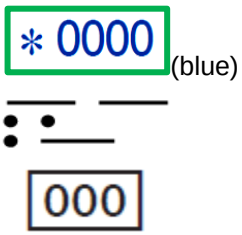
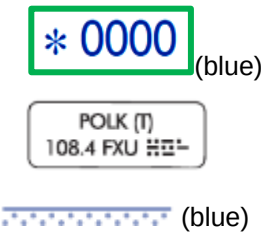
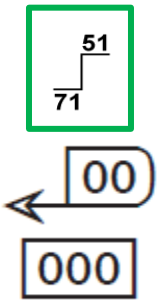
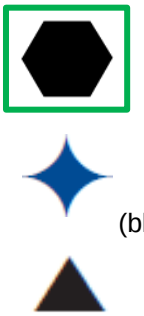
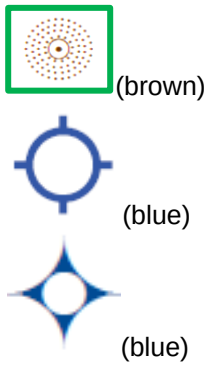
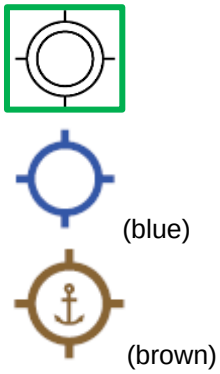
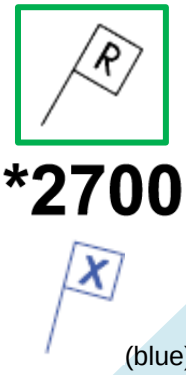
This concludes part one of En Route Low Altitude charts.

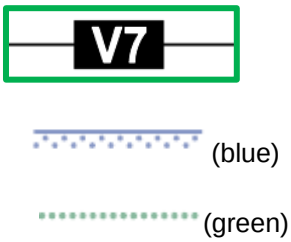
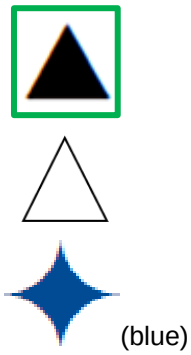
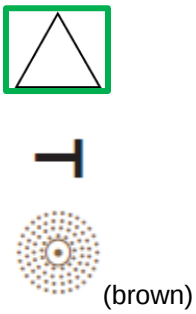
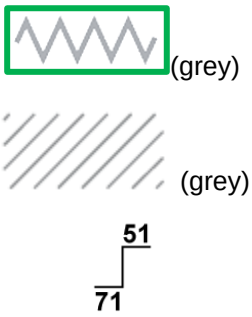
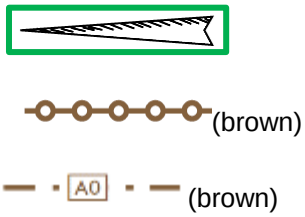
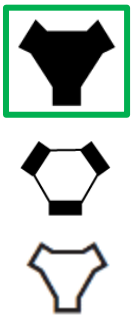
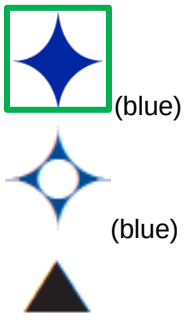
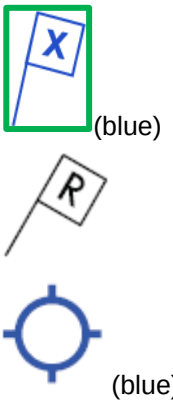
FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ ***Note: Symbol Matching*** should have already been enabled in Blackboard, if not ensure it is enabled ■ Instruct students to navigate to the ***Exercises and Activities*** folder in Blackboard ■ Instruct students to locate activity ***Symbol Matching***, located in this folder ■ The activity will be performed individually ■ Instruct students to answer each question ■ The activity will evaluate the students' performance and provide feedback after each answer is submitted ■ Suggest allowing opportunities to repeat the activity during periods of down time	Activity **EST. RUN TIME** 20 mins.

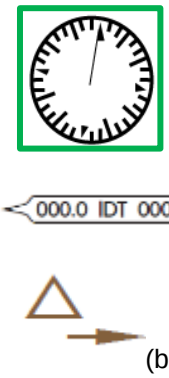
ACTIVITY: SYMBOL MATCHING (ANSWER KEY)

Note: *Unless otherwise noted, symbols are black.*

Question	Answer	Question	Answer
1. Azimuth only		6. Ensures NAVAID reception and obstruction clearance	
2. 3-letter identifier		7. Substitute routing	 (brown)
3. Indicates the runway lights are controlled by the pilot		8. OROCA	
4. DME fix		9. VOR/DME	
5. Navigation only by military		10. Helipad	

Question	Answer	Question	Answer
11. NAVAID usable within 25 NM		16. There is NO published IAP at this facility	
12. Used within 22 NM of the NAVAID		17. MOCA	
13. Switch to next NAVAID frequency		18. Compulsory reporting VOR	
14. VORTAC		19. Compass Locator Beacon	
15. Combined civil/military airport		20. MRA	

Question	Answer	Question	Answer
21. Low altitude airway		25. Compulsory fix	
22. Noncompulsory reporting point		26. Unusable route	
23. ILS Localizer Course		27. Compulsory reporting VORTAC	
24. Compulsory waypoint		28. MCA	

Question	Answer	Question	Answer
29. Part-time status of an airport		31. Oriented to the magnetic north of NAVAID	 (brown)
30. Indicates shutdown status	 (grey)   (brown)		

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Review content presented in ***En Route Low Altitude Charts, Part 1***, lesson ■ Navigate to the ***Parking Lot*** link within Blackboard and review any student questions ■ Address ***Parking Lot*** questions and facilitate a brief discussion of the lesson content	Facilitated Discussion **EST. RUN TIME** 15 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *En Route Low Altitude Charts, Part 2***, lesson in Blackboard ■ Instruct students to navigate to the ***En Route Low Altitude Charts, Part 2***, lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard **EST. RUN TIME** 20 mins.

EN ROUTE LOW ALTITUDE CHARTS, PART 2

Purpose: The purpose of this lesson is to identify the En Route Low Altitude chart, its purpose, and contents.

Objective:

- Identify the purpose and contents of En Route Low Altitude charts

References for this lesson are as follows:

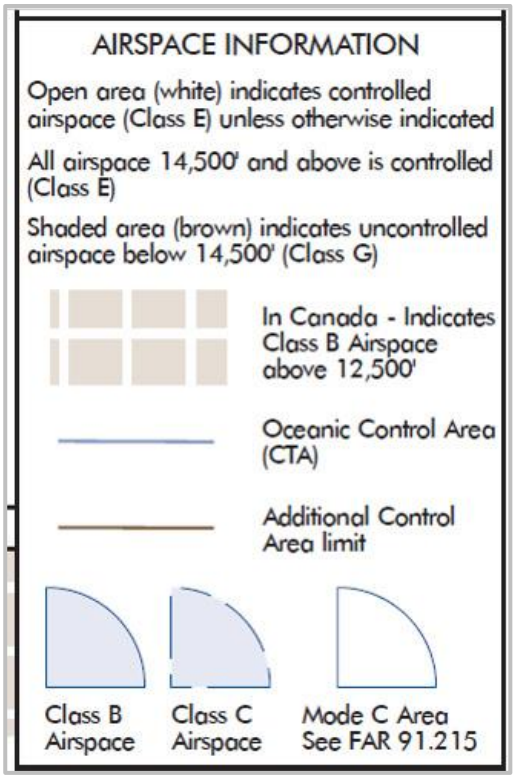
- L-15/L-16 En Route Low Altitude, IFR Area Charts
- South Central Chart Supplement

Specific Items in En Route Low Altitude Charts

Airspace Information

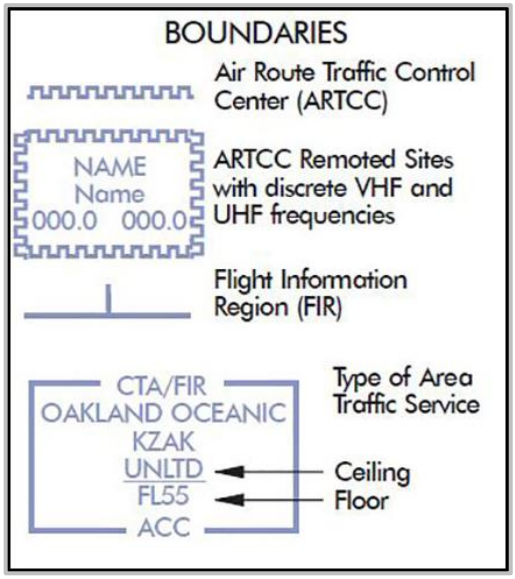
Boundaries of airspace classes are indicated by different colors, shadings, and lines.

Class B, Class C, and Mode C areas are prominently displayed on the chart.



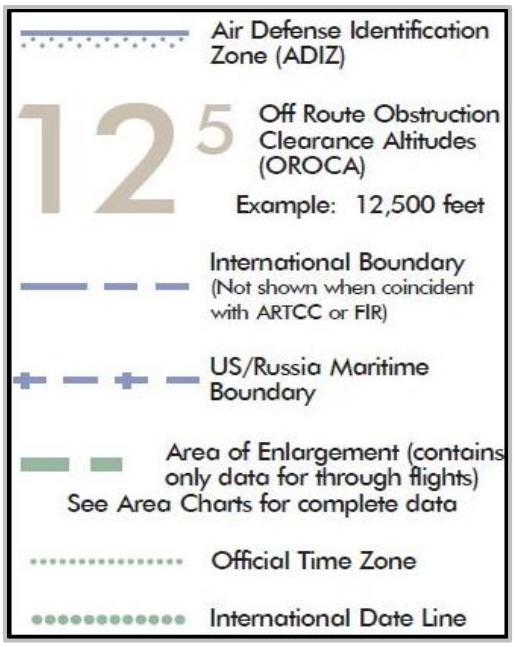
Air Route Traffic Control Center (ARTCC) boundaries are depicted on the chart by a notched blue line, and the names of the adjacent ARTCCs appear along those boundaries.

ARTCC remote communication site frequencies appear in a box in the general location of the sectors that use the discrete Very High Frequency (VHF) and Ultra High Frequency (UHF) frequencies listed.



Oceanic airspace information and Air Defense Identification Zone (ADIZ) lines are charted where applicable.

International Flight Information Region (FIR), international airspace, and time zone boundaries each have distinct symbology.



Off Route Obstruction Clearance Altitude (OROCA)

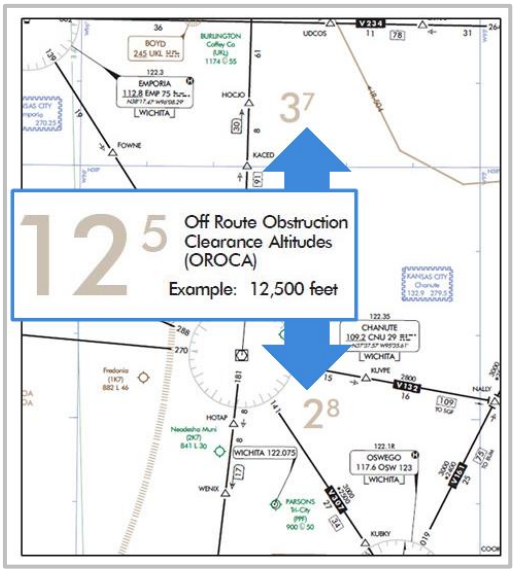
An Off Route Obstruction Clearance Altitude (OROCA) is depicted within each quadrangle on the chart bounded by lines of latitude and longitude.

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 Navigation Aid (NAVAID) signal reception or communications coverage.

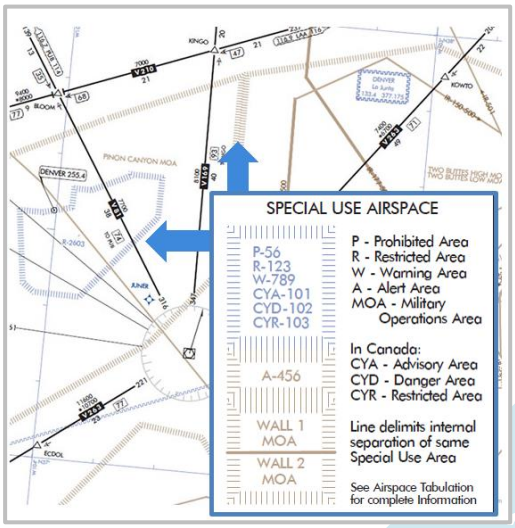
The large number represents thousands of feet, and the small number represents hundreds of feet above Mean Sea Level (MSL).



Airspace Information – Special Use Airspace

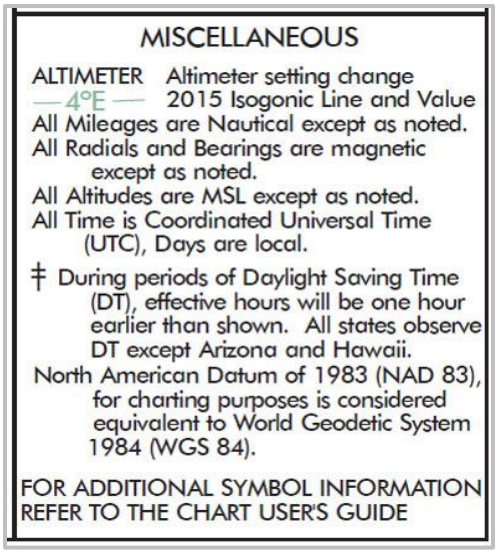
Prohibited, Restricted, and Warning Areas are shown within a blue hatched boundary; Alert Areas and Military Operations Areas (MOAs) are confined within a light brown hatched boundary.

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



Miscellaneous

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



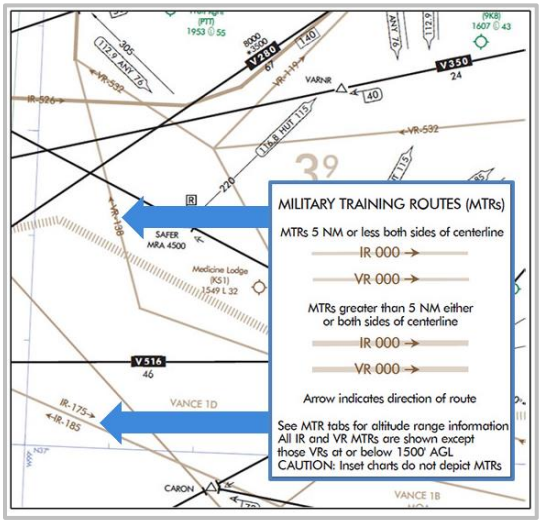
Knowledge Check D

REVIEW what you have learned so far about En Route Low Altitude Charts. ANSWER the question listed below.

1. The OROCA ensures an aircraft of _____ coverage. *(Select the correct answer.)*
   - ❑ **Obstruction clearance but NO NAVAID/communications**
   - ❑ NAVAID signal reception but **NO** communications
   - ❑ Communications coverage but **NO** NAVAID signal

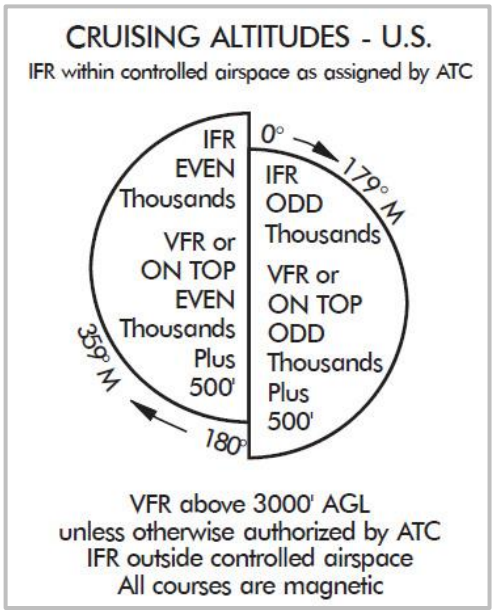
Military Training Routes (MTRs)

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



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.



Knowledge Check E

REVIEW what you have learned so far about En Route Low Altitude Charts. ANSWER the questions listed below.

1. Light brown shading indicates the presence of _____. *(Select the correct answer.)*
   - ❑ **Uncontrolled airspace**
   - ❑ Controlled airspace
   - ❑ A Warning Area

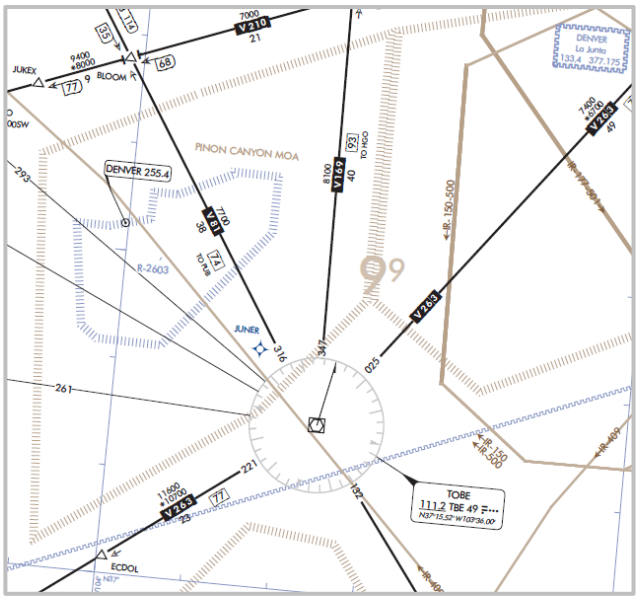
2. A Mode C Area, which requires an aircraft to have Mode C equipment onboard, is depicted by _____. *(Select the correct answer.)*
   - ❑ Solid blue shading inside of a solid blue outline
   - ❑ A hatched blue line around the boundary
   - ❑ **A solid blue outline**

3. An appropriate IFR altitude for an aircraft on a true heading of 178° is _____. *(Select the correct answer.)*
   - ❑ **NOT able to be determined**
   - ❑ 15,000 feet
   - ❑ 8,000 feet

Special Use Airspace (SUA) Information

Information pertaining to SUAs within the boundaries of the chart is listed on the reverse side of the chart.

SUAs are divided into two sections for easier identification.



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
Cont - Continuous: 24 hours 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.

SPECIAL USE AIRSPACE

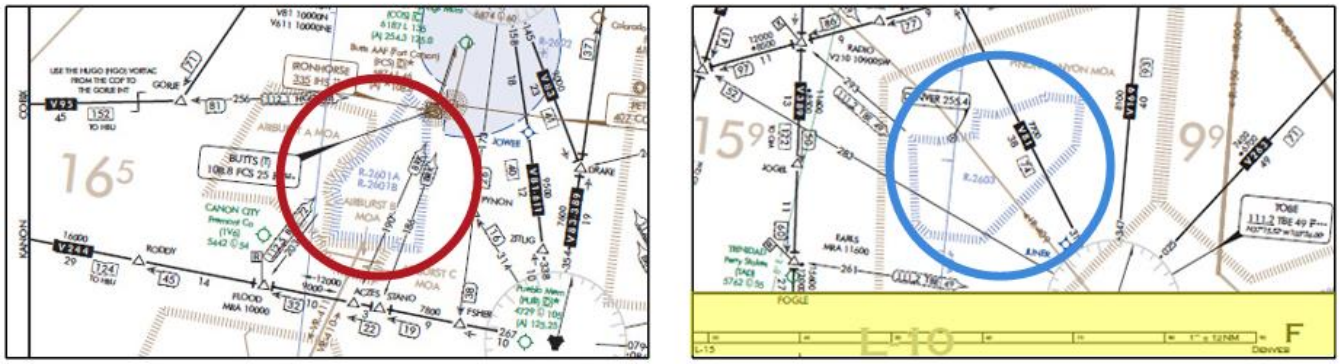
NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC	CONTROLLING AGENCY A/G CALL	PANEL
R-2505	SFC TO UNLTD	CONT	JOSHUA CONTROL FACILITY EDWARDS AFB CA	A
R-2530	SFC TO 8600	1600 - 0200Z‡ MON - FRI; *1	ZOA	A
R-2601A	SFC TO BUT NOT INCL 12500	1200 - 0700Z‡ MON - FRI; *1 1 HR IN ADVANCE	ZDV	F
R-2601B	12500 TO BUT NOT INCL 22500	BY NOTAM 1 HR IN ADVANCE	ZDV	F
R-2602	SFC TO 1000 AGL	CONT	ZDV	F
R-2603	SFC TO BUT NOT INCL 10000	BY NOTAM	ZDV	F
R-3601A	SFC *2	1500 - 2300Z‡ MON - SAT; *1	ZKC	I
R-3602A,B	SFC TO FL 290	CONT	ZKC	I
R-4803	SFC *2	1515 - 0730Z‡ DAILY; *1	ZOA	A
R-4804A	SFC *2	1515 - 0730Z‡ DAILY; *1	ZOA	A
R-4806E	100 AGL TO UNLTD	1300 - 0400Z‡ MON - SAT; *1	ZLA	B

*1 Other Times by NOTAM

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, and controlling agency for each SUA and the location of the SUA on the chart.

NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC	CONTROLLING AGENCY A/G CALL	PANEL
R-2505	SFC TO UNLTD	CONT	JOSHUA CONTROL FACILITY EDWARDS AFB CA	A
R-2530	SFC TO 8600	1600 - 0200Z‡ MON - FRI; *1	ZOA	A
R-2601A	SFC TO BUT NOT INCL 12500	1200 - 0700Z‡ MON - FRI; *1 1 HR IN ADVANCE	ZDV	F
R-2601B	12500 TO BUT NOT INCL 22500	BY NOTAM 1 HR IN ADVANCE	ZDV	F
R-2602	SFC TO 1000 AGL	CONT	ZDV	F
R-2603	SFC TO BUT NOT INCL 10000	BY NOTAM	ZDV	F



Military Operations Areas (MOAs)

The MOAs are listed in alphabetical order. MOA information includes vertical limits, time of use, and controlling agency for each MOA and the location of the MOA on the chart.

MILITARY OPERATIONS AREAS

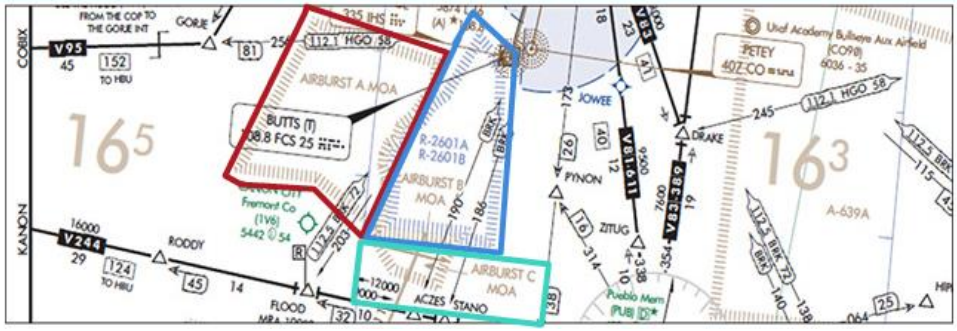
NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC	CONTROLLING AGENCY A/G CALL	PANEL
ADA E	7000 *2	SR - SS MON - FRI; OCNL ON SAT-SUN BY NOTAM	ZKC	I
ADA W	7000 *2	SR - SS MON - FRI; OCNL ON SAT-SUN BY NOTAM	ZKC	H,I
AIRBURST A	1500 AGL *2	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F
AIRBURST B	500 AGL *2	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F
AIRBURST C	500 AGL TO BUT NOT INCL 8500	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F
BISHOP	200 AGL *2	1400 - 0600Z‡ MON - FRI *1	JOSHUA CONTROL FACILITY EDWARDS AFB CA	A
BISON	1000 AGL *2	1430 - 1730Z‡ 1930 - 2200Z‡ MON - FRI; 1430 - 1730Z‡ 1930 - 2200Z‡ ONE SAT-SUN MONTHLY BY NOTAM; *1	ZKC	H
CARSON	500 AGL *2	1515 - 0730Z‡ DAILY; *1	ZOA	A
CHURCHILL HIGH	9000 *2	1515 - 0645Z‡ MON - FRI; 1600 - 0200Z‡ SAT; *1	ZOA	A
CHURCHILL LOW	500 AGL TO 9000	1515 - 0645Z‡ MON - FRI; 1600 - 0200Z‡ SAT; *1	ZOA	A
COUGAR HIGH	11000 *2	1400 - 0500Z‡ TUE - FRI; *1 EXC BTWN 0500	ZDV	G

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

MOAs Example

MILITARY OPERATIONS AREAS

NUMBER	EFFECTIVE ALTITUDE	TIMES USED, UTC	CONTROLLING AGENCY A/G CALL	PANEL
ADA E	7000 *2	SR - SS MON - FRI; OCNL ON SAT-SUN BY NOTAM	ZKC	I
ADA W	7000 *2	SR - SS MON - FRI; OCNL ON SAT-SUN BY NOTAM	ZKC	H,I
AIRBURST A	1500 AGL *2	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F
AIRBURST B	500 AGL *2	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F
AIRBURST C	500 AGL TO BUT NOT INCL 8500	SR - SS TUE - SAT; *1 EXC BTWN 0500 - 1400Z‡	ZDV	F



En Route Low Altitude Charts, Part 2, Summary

En Route Low Altitude Charts are aeronautical charts designed for aircraft flying IFR navigation below 18000 MSL. They provide data essential for safety. As a controller, being able to interpret these charts allows you to effectively communicate and provide the proper guidance when requested by pilots.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to locate student exercise ***En Route Low Altitude Charts Review*** in the printed ***Student Guide*** ■ Instruct the students to locate ***ENR-L10*** in the ***Student Guide and References*** folder ■ Instruct the students to refer to the map to answer the questions ■ The exercise will be performed individually ■ At the end of the exercise, the exercise will be evaluated during a whole class discussion ■ Randomly select students to provide answers orally ■ Instruct other students to assess their answers when provided ■ Encourage student discussion with this exercise and resolve any questions	Exercise **EST. RUN TIME** 45 mins.

EXERCISE: EN ROUTE LOW ALTITUDE CHARTS REVIEW

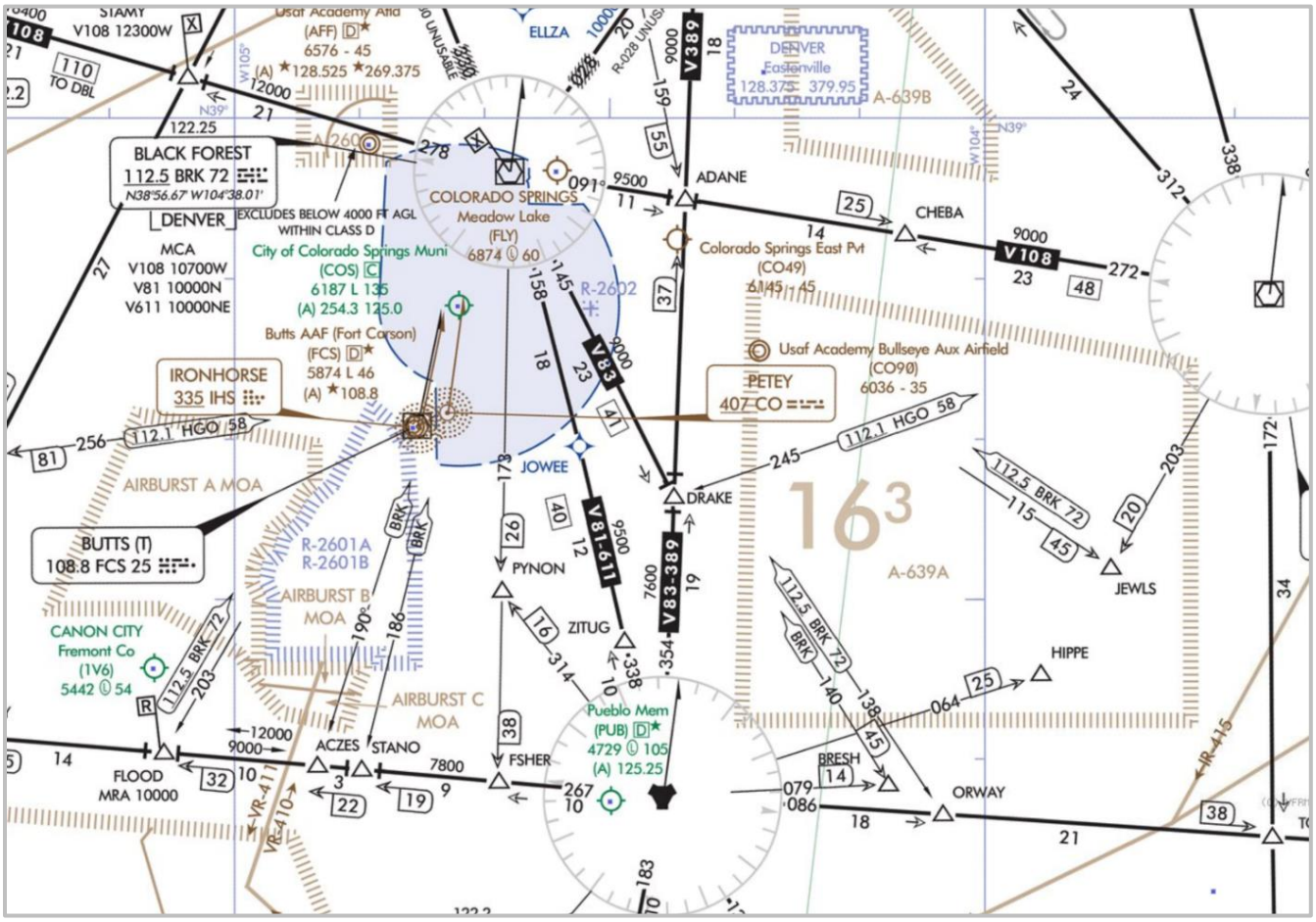
Purpose

This exercise reinforces your ability to read En Route Low Altitude Charts.

Detailed Facilitator Instructions: *Direct students to work individually to answer the following questions. After completion, select students randomly to provide answers orally while other students assess their own answers. Encourage student discussion with this exercise and resolve any questions the students may have on the exercise or reading En Route Low Altitude Charts.*

Directions

Refer to the section of ***ENR-L10, IFR Low Altitude Chart*** shown to locate the answers to the following questions.



Question	Answer
1. Does PUB have an Airport Traffic Control Tower (ATCT)?	**Yes, part time Class D airspace**
2. What is their Automated Terminal Information Service (ATIS) frequency?	**125.25**
3. What is the Minimum Reception Altitude (MRA) at FLOOD?	**10000**
4. What is the Minimum En Route Altitude (MEA) from FLOOD to STANO?	**9000; it is 12000 from STANO to FLOOD**
5. What is the Minimum Crossing Altitude (MCA) at BRK?	**V108 10700W, V81 10000N, V611 10000NE**
6. Is STANO an intersection or a Distance Measuring Equipment (DME) fix?	**Both**
7. What class airspace is Colorado Springs?	**Class C**
8. What Off Route Obstruction Clearance Altitude (OROCA) is displayed?	**16300**
9. What is the elevation of Cannon City airport?	**5442**
10. Does Cannon City have airport lighting?	**Yes, pilot controlled**
11. What intersection is the Black Forest VOR/DME 138 radial part of?	**ORWAY in the lower right corner**
12. What frequency for Denver ARTCC is displayed?	**Pueblo RCAG, 128.37/379.95**

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *En Route High Altitude Charts*** and ***IFR Area Charts*** lessons in Blackboard ■ Instruct students to navigate to the ***En Route High Altitude Charts*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of ***En Route High Altitude Charts*** instruct students to navigate to the ***IFR Area Charts*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard **EST. RUN TIME** 20 mins.

EN ROUTE HIGH ALTITUDE CHARTS

Purpose: The purpose of this lesson is to identify En Route High Altitude Charts, their purpose, and contents.

Objective:

- Identify the purpose and contents of En Route High Altitude charts

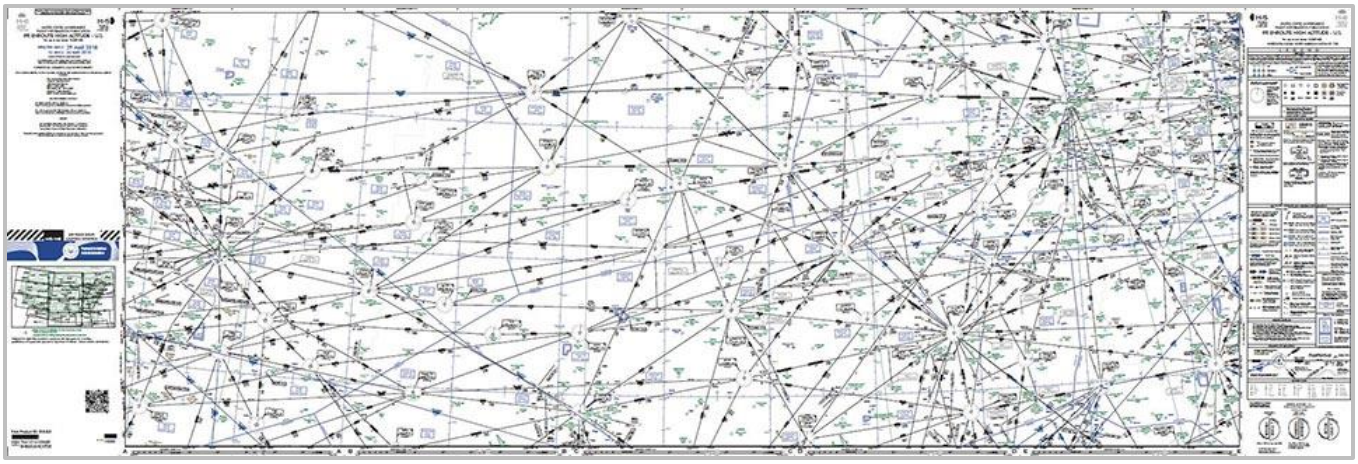
References for this lesson are as follows:

- FAA Order JO 7110.65, Air Traffic Control
- En Route High Charts
- South Central Chart Supplement

En Route High Altitude Charts Information

En Route High Altitude Charts provide aeronautical information for en route navigation during instrument flight at or above 18000 MSL. The charts are published every 56 days, on the same schedule as the En Route Low Altitude Charts.

Map scale is generally 1" = 20 NM. Due to smaller scale than the En Route Low Altitude Charts, only 12 charts are needed to cover the contiguous U.S.

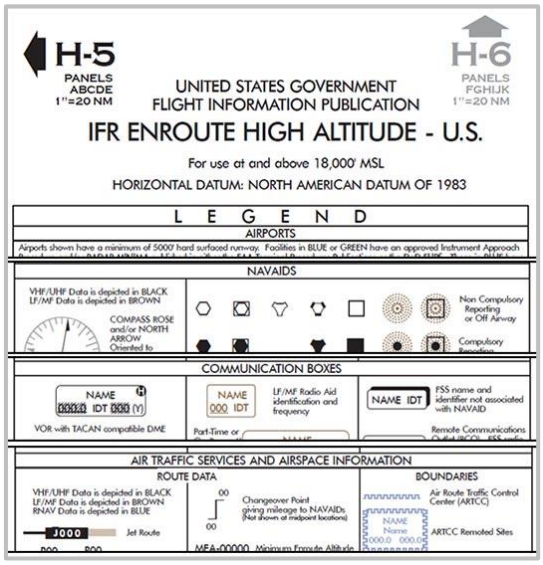


Layout

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.

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



Types of Information Presented

The chart depicts different types of 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 (SUA) and related information

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.

Prohibited, Restricted, and Warning Areas are listed in numerical order within each category of SUA. Military Operations Areas (MOAs) exist only outside of Class A airspace and are not listed on En Route High Altitude Charts.

SUA information includes:

- Effective altitudes
- Time of use
- Controlling agency for each SUA
- Location of the SUA on the chart

SPECIAL USE AIRSPACE

P - Prohibited, R - Restricted, 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
Cont - Continuous: 24 hours 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
R-2104D,E	12000 TO FL 300	BY NOTAM	ZME	K
R-2401A,B	SFC TO 30000	SR - SS MON - SUN; ●1	ZME	I
R-2402A	SFC TO 30000	SR - SS DAILY; ●1	ZME	I
R-2402B	10000 TO BUT NOT INCL FL 220	SR - SS DAILY; ●1	ZME	I
R-2402C	12000 TO BUT NOT INCL FL 220	SR - SS DAILY; ●1	ZME	I
R-2601B	12500 TO BUT NOT INCL 22500	BY NOTAM 1 HR IN ADVANCE	ZDV	A
R-2601C	22500 TO BUT NOT INCL 35000	BY NOTAM	ZDV	A
R-2601D	35000 TO BUT NOT INCL 60000	BY NOTAM	ZDV	A
R-2915A	SFC TO UNLTD	CONT	ZJX	K
R-3401A	SFC TO 40000	MAY 1 - SEP 30 CONT ; OCT 1 - APR 30 1300 - 0400Z‡ TUE - SAT; ●1	ZID	E
R-3403A	SFC TO 43000	1130 - 0500Z‡ DAILY	ZID	E
R-3403B	1200 AGL TO FL 180	1300 - 0400Z‡ DAILY	ZID	E
R-3601B	FL 180 TO FL 230	1500 - 2300Z‡ MON - SAT; ●1	ZKC	B,C
R-3602A,B	SFC TO FL 290	CONT	ZKC	C
R-3702B	10000 TO FL 220	BY NOTAM	ZME	J,K
R-3702C	FL 220 TO FL 270	BY NOTAM	ZME	J,K
R-3704B	10001 TO 20000	BY NOTAM	ZID	E
R-3801C	FL 180 TO FL 230	1400 - 0400Z‡ MON - FRI; ●1	US ARMY FORT POLK APP CON	I
R-3803A	SFC TO FL 180	CONT	ZHU	I
R-3803B	FL 180 TO BUT NOT INCL FL 350	BY NOTAM	ZHU	I
R-3804A	SFC TO FL 180	BY NOTAM	ZHU	I
R-3804C	FL 180 TO BUT NOT INCL FL 350	BY NOTAM	ZHU	I
R-4401D	FL 180 TO BUT NOT INCL FL 230	BY NOTAM	ZHU	J

Geographical Area Presentation

Map of the U.S. shows the area covered by each En Route High Altitude Chart (H-1 through H-12).

- Major cities are depicted to aid the user in chart selection
- The darkest outlining indicates areas covered by this chart

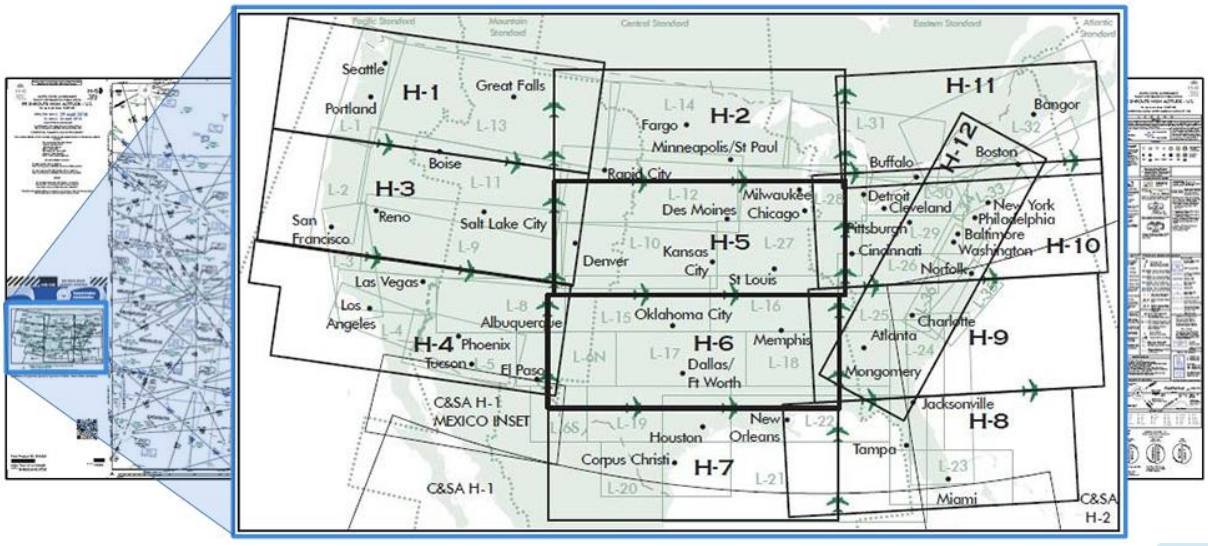
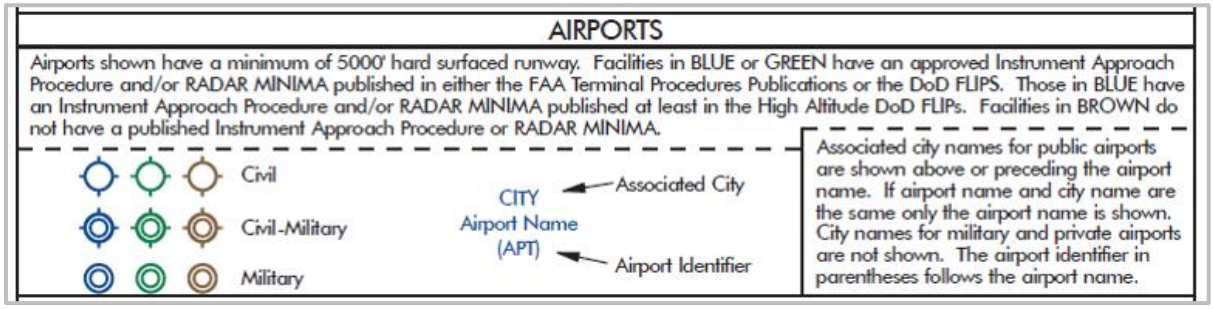


Chart Legend

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. Some details and symbols that are only relevant to the low altitude stratum are omitted.



Only airports with hard-surfaced runways at least 5,000 feet long are shown.

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
- Terminal Air/Ground frequencies are excluded

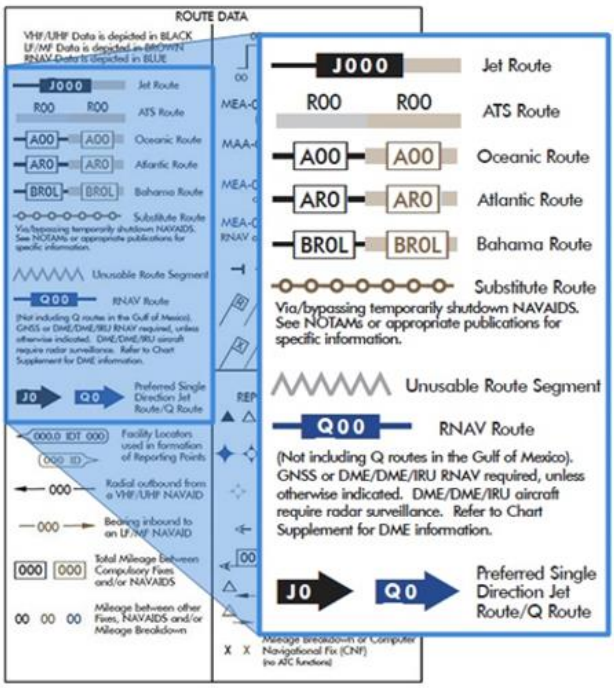
All Navigational Aids (NAVAIDs) shown on En Route High Altitude charts are “H” class unless identified as “L” or “T.”

“L” or “T” class NAVAIDs located off jet routes are shown in light gray.

Morse code is omitted from the NAVAID frequency boxes.

Route Data

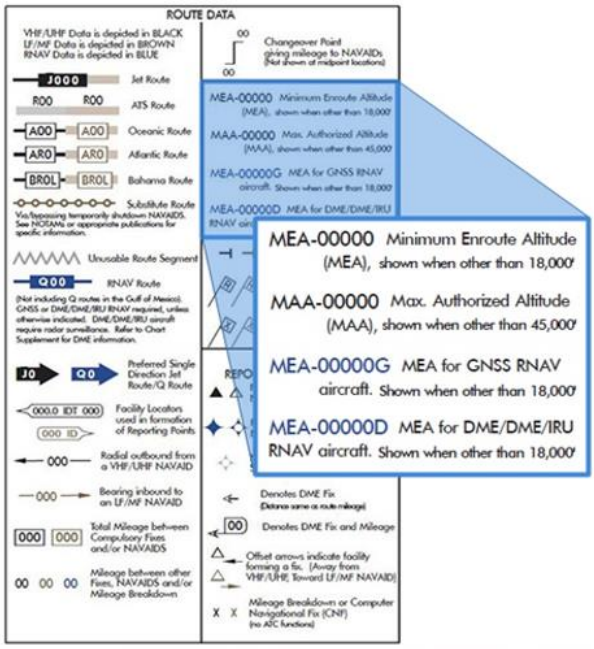
Rather than having Very High Frequency (VHF) Omnidirectional Range (VOR) airways and Low Frequency (LF)/Medium Frequency (MF) airways, as the En Route Low Altitude Charts show, the En Route High Altitude Charts show jet routes and Air Traffic Services (ATS) routes.



Minimum Obstruction Clearance Altitudes (MOCAs) and Military Training Routes (MTRs) are not shown.

Minimum En Route Altitudes (MEAs) are shown in MSL altitudes, but only if higher than 18,000. 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.

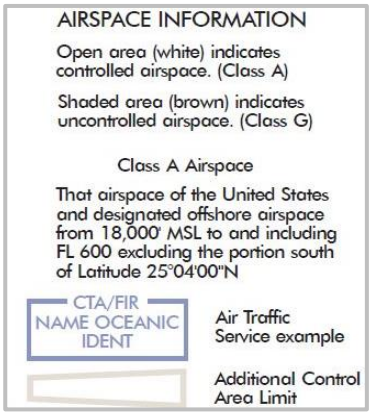
Maximum Authorized Altitudes (MAAs) are shown in MSL altitudes, but only if lower than 45,000.



Airspace Information

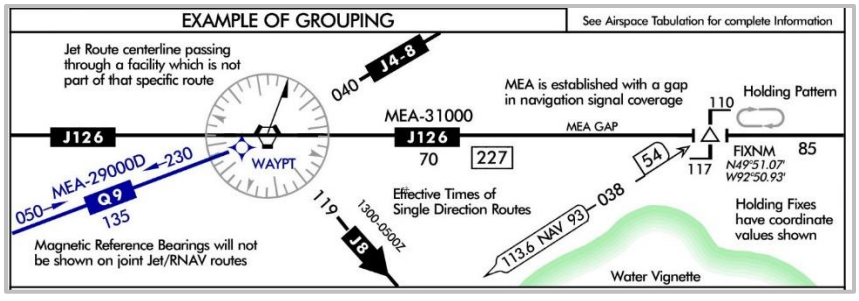
Class A airspace is depicted on En Route High Altitude Charts by the open white areas.

Class G airspace is depicted on En Route High Altitude Charts in brown shading where it exists above 18000 MSL (in Alaska and beyond 12 NM from the coast of the 48 contiguous states).



Example of Grouping

Jet airways that bypass a NAVAID are depicted as below.



Knowledge Check F

REVIEW what you have learned so far about the En Route High Altitude Charts. ANSWER the questions listed below.

1. NAVAIDs classed as _____ or _____ located off jet routes are shown in light gray on an En Route High Altitude Chart. *(Select the correct answer.)*
   - ❑ H; L
   - ❑ T; H
   - ❑ **L; T**

2. Airports shown on an En Route High Altitude Chart have a minimum of a _____-foot, hard-surfaced runway. *(Select the correct answer.)*
   - ❑ 3,000
   - ❑ **5,000**
   - ❑ 10,000

3. Which of the following is **NOT** shown on an En Route High Altitude Chart? *(Select the correct answer.)*
   - ❑ MEAs
   - ❑ **MOCAs**
   - ❑ MAAs

En Route High Altitude Charts Summary

En Route High and Low Altitude charts have many similarities, but the most notable difference is En Route High Altitude charts are designed for those flying over 18000 MSL.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ ***Note: IFR Area Charts*** lesson should already have been enabled in Blackboard, if not ensure it is enabled ■ Instruct students to navigate to the ***IFR Area Charts*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard **EST. RUN TIME** 10 mins.

IFR AREA CHARTS

Purpose: The purpose of this lesson is to identify Instrument Flight Rules (IFR) Area Charts, their purpose, and contents.

Objective:

- Identify the purpose and contents of IFR Area charts

References for this lesson are as follows:

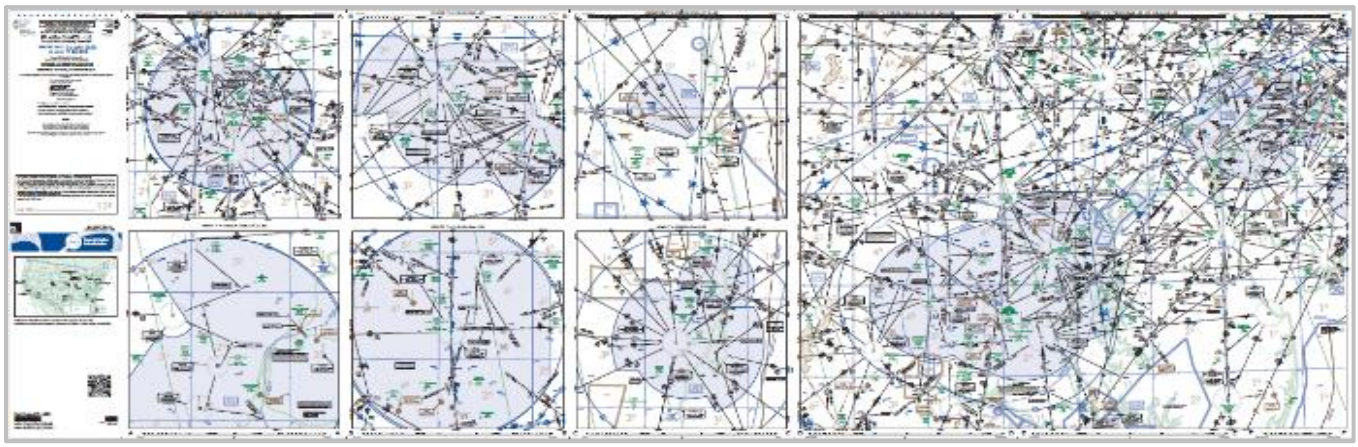
- FAA Order JO 7110.65, Air Traffic Control
- H-5/H-6 En Route High Altitude Chart, IFR Area Chart
- South Central Chart Supplement

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. For instance:

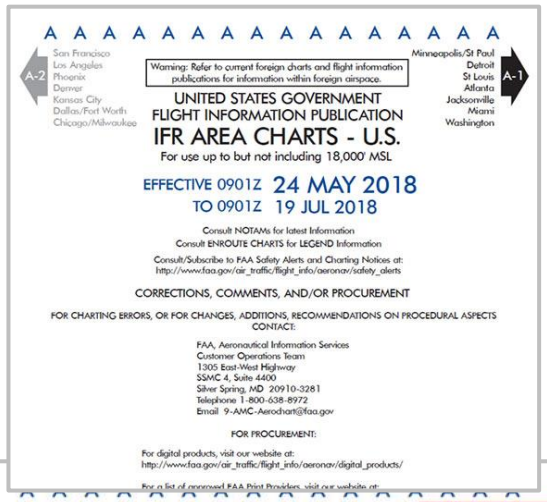
- Detroit 1” = 5 NM
- Atlanta 1” = 6 NM
- Minneapolis/St Paul 1” = 8 NM



Publication Information

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.


A A A A A A A A A A A A A A A A A A

A-2 San Francisco, Los Angeles, Phoenix, Denver, Kansas City, Dallas/Fort Worth, Chicago/Milwaukee

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

A-1 Minneapolis/St Paul, Detroit, St Louis, Atlanta, Jacksonville, Miami, Washington

UNITED STATES GOVERNMENT
FLIGHT INFORMATION PUBLICATION
IFR AREA CHARTS - U.S.

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

EFFECTIVE 0901Z 24 MAY 2018
TO 0901Z 19 JUL 2018

Consult NOTAMs for latest Information
Consult ENROUTE CHARTS for LEGEND Information
Consult/Subscribe to FAA Safety Alerts and Charting Notices at:
http://www.faa.gov/air_traffic/flight_info/aeronav/safety_alerts

CORRECTIONS, COMMENTS, AND/OR PROCUREMENT

FOR CHARTING ERRORS, OR FOR CHANGES, ADDITIONS, RECOMMENDATIONS ON PROCEDURAL ASPECTS CONTACT:

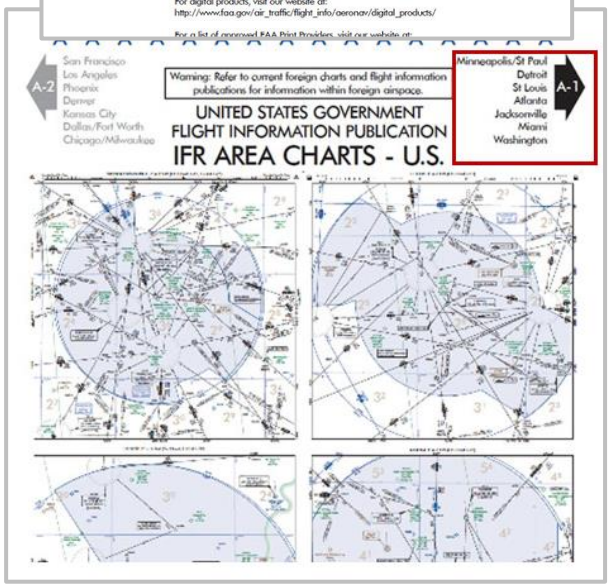
FAA, Aeronautical Information Services
Customer Operations Team
1305 East-West Highway
SSMC 4, Suite 4400
Silver Spring, MD 20910-3281
Telephone 1-800-638-8972
Email 9-AMC-Aerochart@faa.gov

FOR PROCUREMENT:

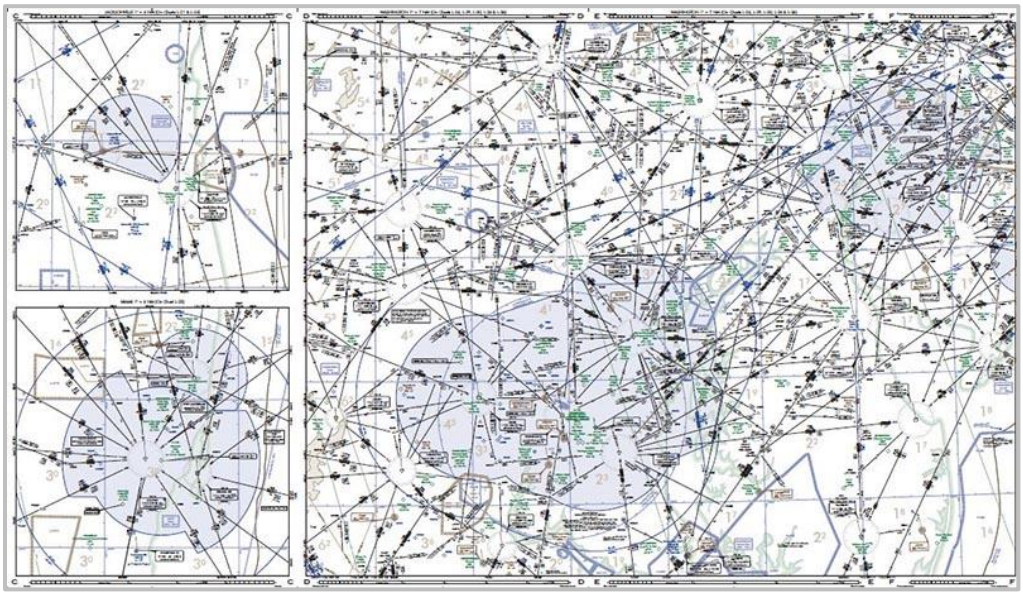
For digital products, visit our website at:
http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/

Layout

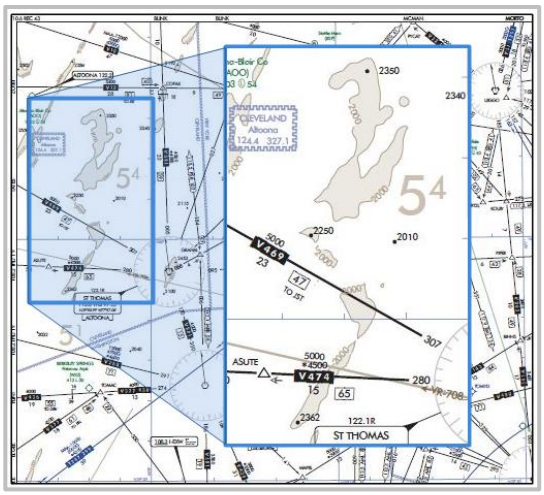
The IFR Area Chart's publication has two sides, labeled A-1 and A-2, with multiple charts depicted on each side of the map, each named for an individual city or city-pair.



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.



When terrain rises at least 1,000 feet above the primary airport's elevation, terrain is charted using shades of brown with brown contour lines and values.



Knowledge Check G

REVIEW what you have learned so far about the IFR Area Charts. ANSWER the questions listed below.

1. The primary purpose of an IFR Area Chart is to furnish _____. *(Select the correct answer.)*
   - ❑ Visual landmarks for use in congested areas
   - ❑ **Terminal data for IFR flights**
   - ❑ Navigation information using a smaller scale than the En Route Low Altitude Charts

2. IFR Area Charts are published _____. *(Select the correct answer.)*
   - ❑ **Every 56 days**
   - ❑ Every 6 months
   - ❑ At the same time as the Terminal Area Charts

IFR Area Charts Summary

IFR Area Charts provide pilots with terminal data for congested areas.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to locate student exercise ***Where's the Information*** in the printed ***Student Guide*** ■ Instruct students to locate ***ENR-L15, ENR-L16, ENR-H05, and ENR-H06, FAA Order JO 7350.9,*** and the ***Chart Supplement South Central*** in the ***Student Guide and References*** folder ■ Instruct the students to refer to the map to answer the questions ■ The exercise will be performed in small teams ■ Instruct students to answer each question ■ At the end of the exercise, the exercise will be evaluated during a whole class discussion ■ Randomly select students to provide answers orally ■ Instruct other students to assess their answers when provided ■ Encourage student discussion with this exercise and resolve any questions	Exercise **EST. RUN TIME** 70 mins.

EXERCISE: WHERE'S THE INFORMATION

Purpose
This exercise gives you an opportunity to work with and compare the data found in both the En Route Low Altitude and En Route High Altitude Charts.

Being able to read both charts is a skill that is essential for an air traffic controller. You must be able to find and interpret information quickly in order to help IFR pilots requesting specific information or to relay charted data to a pilot who has lost or misplaced a chart.

Detailed Facilitator Instructions: *Divide students into groups. Have them answer the questions using the exercise worksheet and identify where the answers were found by checking the appropriate box. Allow the students 35 mins working time and then use the remaining time to check answers. When all have completed the exercise, call on students for answers. Check the answers with the findings of the whole class to verify consistency or to point out differences.*

Directions
The following questions pertain to data found on the En Route Low Altitude Chart, the En Route High Altitude Chart, or both. Use charts ***ENR-L15, ENR-L16, ENR-H05,*** and ***ENR-H06*** located in ***Student Guide and References*** folder for this exercise.

The location of some items can be found by using a combination of the chart(s), ***FAA Order JO 7350.9,*** and the ***Chart Supplement South Central. FAA Order JO 7350.9,*** and the ***Chart Supplement South Central*** are located in ***Student Guide and References folder.*** For the remainder, coordinates or chart panel numbers have been provided to help you in your search. Complete the worksheet and be prepared to discuss where you found each item of information.

		Where did you find this information? Check one.		
		L-15/ L-16	**H-5/ H-6**	**Both**
1.	What is the MEA between Chanute (CNU) (37°38'N, 95°36'W) and Wichita (ICT) on V350? **Answer: 3,600 feet**	**X**		
2.	Can an aircraft receive range information from the Bartlesville (BVO) NAVAID? (TUL335040) **Answer: Yes, BVO is a VOR/DME.**			**X**
3.	What is the longitude of the Emporia, KS, (EMP) VORTAC? (L-15 Panel E) **Answer: 96°08.29' West**	**X**		
4.	Which ARTCCs will the pilot contact during a flight from Montgomery, AL, (MGM) to Liberal, KS, (LBL) via J20? **Answer: Atlanta ARTCC, Memphis ARTCC, Fort Worth ARTCC, Kansas City ARTCC**		**X**	
5.	What is the published MOCA between Tulsa (TUL) and Kingfisher (IFI) on V140? **Answer: 3,100 feet**	**X**		

		Where did you find this information? Check one.		
		L-15/ L-16	H-5/ H-6	Both
6.	What is the mileage from the KUDDO DME fix to the Dodge City VORTAC (DDC) via V502? (L-15 Panel C) **Answer: 16 NM**	X		
7.	What type of airspace surrounds the Hutchinson (HUT) (38°04'N, 97°52'W) airport? **Answer: Class D airspace part-time**	X		
8.	What jet route overlies V161 between Tulsa (TUL) and Butler (BUM)? **Answer: J87 overlies V161**		X	
9.	Texarkana (TXK) is within the boundaries of which ARTCC? **Answer: Fort Worth ARTCC**		X	
10.	What class and type of NAVAID is Stillwater (SWO)? (OKC020057) **Answer: SWO is a Terminal (T) class VOR/DME.**			X
11.	Can you receive voice transmission from the Sidney (SNY) VOR-DME (41°05'N, 102°58' W)? ***Answer: Yes***		X	
12.	What is the lowest MEA between Northbrook (OBK, H5/E) and Sidney (SNY) on J84? **Answer: 18000 MSL (OBK – DBQ, also OBK – SNY). There is also an MEA GAP on this route.**		X	
13.	What is the MAA between MMB and ICT on J26? **Answer: 45000 MSL, according to the chart legend.**		X	
14.	Can an aircraft depart Memphis (H6/J) and fly J42 at FL 220 all the way to Abilene? **Answer: YES and NO. Yes, if flying from MEM to ABI before 1100Z or after 0300Z; otherwise, no. From 1100Z to 0300Z, even though FL 220 is above all MEAs, J42 is a preferred single-direction, northeast-bound jet route between TXK and MEM.**		X	
15.	What FSS is associated with the MMB VORTAC? What FSS frequency is remoted to that site? **Answer: McAlester FSS; 122.55 (Both charts show the RCO at the Gage Airport)**			X
16.	Where is the NAVAID changeover point between Memphis (MEM) and Nashville (BNA) on J42? **Answer: 119 NM northeast of MEM or 56 NM southwest of BNA**		X	
17.	What do the solid blue lines and blue shading of the airspace that overlies the Memphis International Airport (35°01'N, 89°59'W) indicate? **Answer: It is Class B airspace and a Mode C Area requiring an altitude encoding transponder within 30 NM of the airport.**	X		

		Where did you find this information? Check one.		
		L-15/ L-16	H-5/ H-6	Both
18.	What is the MCA on V611 at the GOSIP intersection 110 NM northeast of Cimarron (CIM) (36°29'N, 104°52'W)? **Answer: There is no MCA at GOSIP on V611.**	X		
19.	What is noteworthy about the ATIS at Tinker AFB northeast of the Will Rogers VORTAC (35°22'N, 97°37'W)? **Answer: The ATIS is broadcast on a part-time basis and it is a UHF frequency. 270.1.**	X		
20.	What is the three-letter identifier for the McConnell TACAN southeast of Wichita? What is the three-letter identifier of McConnell AFB? **Answer: Both identifiers are IAB. (Navigation facilities and airports that are collocated share the same identifier.)**	X		
21.	What ARTCC should an aircraft contact for flight following in the vicinity of Walnut Ridge (ARG) (36°07'N, 90°57'W)? **Answer: Memphis ARTCC**	X		
22.	What class(es) of airspace does the H-5/H-6 En Route High Altitude Chart depict? **Answer: Only Class A airspace. Discuss possibility of Class G in areas of terrain above 18,000.**		X	
23.	What high altitude RNAV route terminates at GRAZN waypoint? (H-6 Panel I) **Answer: Q28**		X	

SUMMARY

The purpose of this module is to identify the purpose, contents, specific items, and information on IFR Area En Route Charts.

In accordance with FAA Order JO 7110.65, Air Traffic Control; Aeronautical Information Manual (AIM); L-15/L-16 En Route Low Altitude Chart, and H-5/H-6 En Route High Altitude, IFR Area Charts; you should now be able to:

- Identify the purpose and contents of En Route Low Altitude Charts
- Identify the purpose and contents of En Route High Altitude charts
- Identify the purpose and contents of IFR Area Charts

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Navigate to the ***Parking Lot*** link within Blackboard and review any student questions ■ Address ***Parking Lot*** questions and facilitate a brief discussion of the lesson content ■ Instruct students to prepare for the End-of-Module test by putting away their Student Guides	Facilitated Discussion **EST. RUN TIME** 15 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *En Route IFR Charts End-of-Module Test*** link in Blackboard ■ Instruct students: ○ Clear desks ○ Do not write anything during or after the test ○ Navigate to the ***En Route IFR Charts End-of-Module Test*** link in Blackboard ○ Once they are satisfied with their responses, click “Save and Submit;” do not click “OK” to review results until directed to do so ○ Choose “Cancel” if they receive a warning message that the test has unanswered questions; choosing OK will submit the test and not allow them to go back and answer the questions ○ Leave the room after submitting the test and return at the “Be Back” time ■ ***Note:*** *This test is scored but not graded* ■ During test, monitor students to ensure a secure testing environment ■ Identify the most commonly missed questions by reviewing student statistics in Blackboard ■ Instruct students to click “View Results” when ready to review commonly missed questions ■ Review commonly missed questions with students	Blackboard Assessment **EST. RUN TIME** 10 mins.

END OF MODULE TEST (ANSWER KEY)

Note: *Test questions in Blackboard are presented to the students in random order. Please be aware the test key question order will not match the student version.*

1. On an En Route Low Altitude chart, restricted areas are shown within _____ boundaries. *(Select the correct answer.)*
   - ❑ **Blue hatched**
   - ❑ Solid gray
   - ❑ Light brown
   - ❑ Solid magenta

   Reference(s): En Route Low Altitude Chart Legend

2. En Route Low Altitude charts are published every _____. *(Select the correct answer.)*
   - ❑ **56 days**
   - ❑ 112 days
   - ❑ 3 months
   - ❑ 6 months

   Reference(s): JO 7110.65 Pilot/Controller Glossary

3. How is Class A airspace depicted on an En Route High Altitude chart? *(Select the correct answer.)*
   - ❑ **Open white area**
   - ❑ As a shaded brown area
   - ❑ In blue, with a solid blue border
   - ❑ With a hatched blue line around the boundary

   Reference(s): En Route High Altitude Chart Legend

4. IFR Area charts use the same symbols as those found in the _____. *(Select the correct answer.)*
   - ❑ **En Route High Altitude charts**
   - ❑ Terminal Area charts
   - ❑ Sectional charts
   - ❑ Chart Supplements

   Reference(s): JO 7110.65, Pilot/Controller Glossary