

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 1

Airspace

NEXT



The diagram shows a blue sky with white clouds. Dashed lines delineate four distinct regions of airspace. The top-left region is labeled 'Class A' in red. The top-right region is labeled 'Class D' in orange. The bottom-left region is labeled 'Class B' in blue. The bottom-right region is labeled 'Class C' in green.

When you get in your car to drive from Point A to Point B, there are many regulations that dictate the safe operation of your travel.

LEARN MORE

These regulations are posted on the road's pavement or as signs along your route, to mention a few. But, you can't post a sign in a cloud, or mark the lanes of travel in the air. The National Airspace System (NAS) has to be highly organized and regulated in order to keep it operating safely.

Imagine thousands of highways, extended in the sky, layered vertically and horizontally, and intersecting in a complicated web. Remember that these highways have no pavement or signs. Now picture having to avoid traffic on these highways – in a three-dimensional airspace – where traffic can be not only to your right or left, but also above or below you.

Air Traffic Control (ATC) manages such a complex network by classifying airspace and defining its dimensions.



Purpose

BACK

NEXT

This lesson explains how airspace is classified and organized by ATC and how it uses the airspace to safely direct and separate thousands of aircraft flights each day. This lesson introduces the different types of airspace as well as the references that provide for their establishment and use.



Objectives

BACK

NEXT

In this lesson, you will identify:

1. Classes of airspace and their uses
2. Special Use Airspace

You will meet the objectives in accordance with the following references:

- Federal Aviation Regulation (FAR), 61, 71, 73, and 91.
- FAA Orders
 - JO 7110.65, Air Traffic Control
 - FAA Order 7400.2, Procedures for Handling Airspace Matters
- Aeronautical Information Manual (AIM)

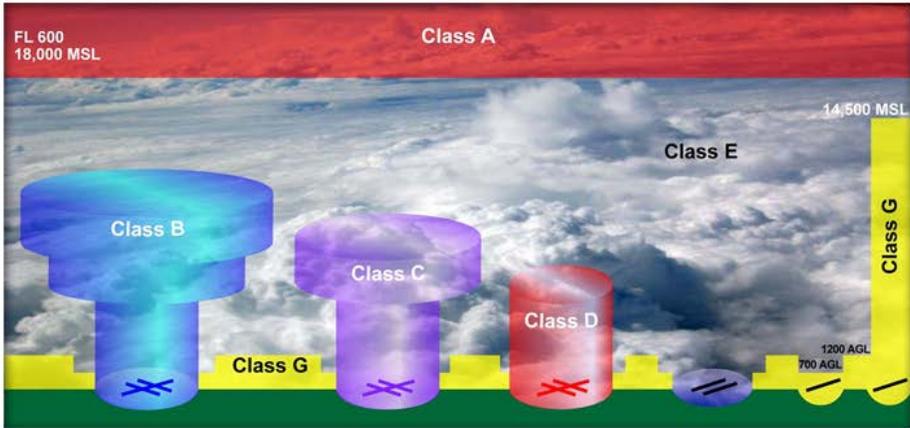


FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 4

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of U.S. airspace. At the top, Class A airspace is shown in red, extending from Flight Level 600 (18,000 MSL) to the top of the atmosphere. Below it is Class E airspace in yellow, extending from 14,500 MSL down to the base of Class B, C, or D. Class B (blue), Class C (purple), and Class D (red) are depicted as cylindrical volumes. Class G (yellow) is the uncontrolled airspace at the bottom, extending from 700 AGL up to the base of Class B, C, or D. The ground surface is shown in green with various navigation symbols.

Airspace

The Federal Aviation Act of 1958 established the authority to regulate the airspace over the United States.

LEARN MORE

Executive Order 10854 extends the description of U.S. airspace to include that airspace existing out to, but not beyond, the U.S. territorial limits.

NOTE: For purposes of this lesson, description of airspace that exists over land may also include extensions over the water, but not to exceed the U.S. territorial limits (territorial limits extend to 12NM from the U.S. coast).

All of the open sky covering the U.S. is America's airspace.

- There are two types of airspace:
 - Controlled
 - Uncontrolled
- The FAA divides controlled airspace into classes depending on uses (i.e., volume of traffic).

Reference: 7400.2, Chap. 2



Classes of Airspace

BACK

NEXT

Controlled Airspace

Controlled airspace is airspace of defined dimensions within which ATC service is provided to Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) flights in accordance with the airspace classification.

Controlled airspace in the United States includes Class A, Class B, Class C, Class D, and Class E airspace.

In controlled airspace, all aircraft operators are subject to:

- Certain pilot qualifications
- Operating rules
- Equipment requirements

JO 7110.65, Pilot/Controller Glossary AIM, Chap. 3



FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 8

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of airspace classes. At the top is Class A, shown as a red horizontal band from FL 600 to 18,000 MSL. Below it is Class E, a dark grey area extending up to 14,500 MSL. Class B is a blue cylindrical volume. Class C is a purple cylindrical volume. Class D is a red cylindrical volume. Class G is the unshaded area at the bottom, extending from the surface up to 1,200 AGL. A yellow vertical bar on the right side of the diagram is labeled 'Class G'.

Class A Airspace

Class A airspace is generally that airspace from 18,000 feet Mean Sea Level (MSL) up to and including FL600 (Flight Level Six Zero Zero).

LEARN MORE

- All operations must be conducted under IFR and are subject to ATC clearances and instructions.
- ATC provides separation services therefore two-way radio communication must be established and maintained.
- A 4096 transponder with functioning Mode C is required.

References:

- JO 7110.65, Pilot/Controller Glossary
- FAR, 71.31
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 7

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of Class B airspace. It shows a blue, mushroom-shaped volume of airspace. The top of this volume is labeled 'FL 600' and '18,000 MSL'. The bottom of the volume is labeled 'Class G'. To the right of the Class B volume, there is a purple volume labeled 'Class C', a red volume labeled 'Class D', and a yellow volume labeled 'Class E'. The bottom of the Class E volume is labeled '1200 AGL' and '500 AGL'. The top of the Class E volume is labeled '14,500 MSL'. The background is a dark, cloudy sky.

Class B Airspace

Class B airspace is generally that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports.

LEARN MORE

Configuration of Class B airspace:

- Individually tailored
- Designed to contain **all** published instrument approaches

To operate in Class B airspace:

- All aircraft require an ATC clearance to enter.
- ATC provides separation services therefore two-way radio communication must be established and maintained.
- A 4096 transponder with functioning Mode C is required.
- IFR aircraft require operable VHF Omni-directional Range (VOR) or Tactical Air Navigation (TACAN) navigation equipment.

References:

- JO 7110.65, Pilot/Controller Glossary
- FAR, 61.95, 71.41, 91.155
- AIM, Chap. 3



Classes of Airspace

BACK

NEXT

Class B Airspace

All aircraft (VFR or IFR) receive separation services while in this airspace.

Student pilots may not operate an aircraft on a solo flight unless:

- Pilot has received instruction on that specific Class B airspace
- Pilot's logbook has been endorsed within the preceding 90 days verifying instruction

JO 7110.65, Pilot/Controller Glossary; FAR, 61.95, 71.41, 91.155; AIM, Chap. 3

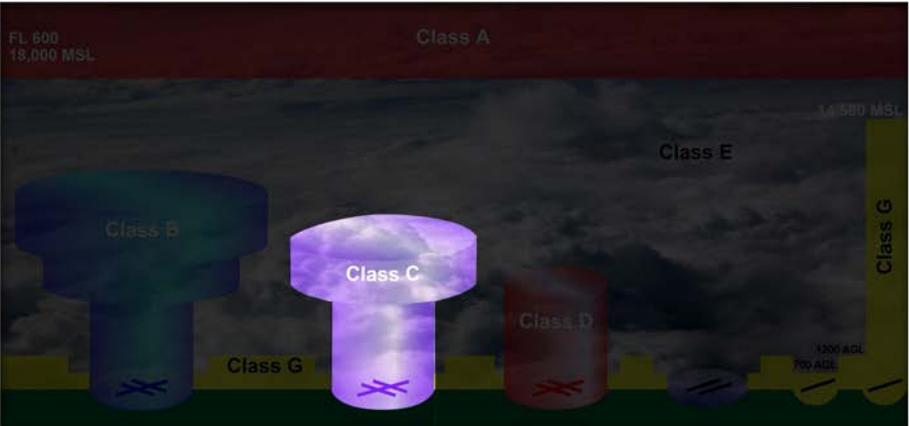


FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 9

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of airspace classes. At the top, Class A airspace is shown in a dark red band from FL 600 to 18,000 MSL. Below it is Class E airspace in a dark grey band up to 14,500 MSL. Class B is a blue cylindrical volume. Class C is a purple cylindrical volume. Class D is a red cylindrical volume. Class G is the unshaded area from the surface up to 1,200 AGL. A yellow vertical bar on the right is labeled Class G. A small blue cylinder is labeled 1,200 AGL and 700 AGL.

Class C Airspace

Class C airspace is generally that airspace from surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have:

- An operational control tower
- Service provided by a Radar Approach Control
- A certain number of IFR operations

LEARN MORE

Class C Airspace

Class C airspace is generally that airspace from surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have:

- An operational control tower
- Service provided by a Radar Approach Control
- A certain number of IFR operations



AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 10

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of airspace classes. At the top, Class A airspace is shown as a dark red cylinder extending from FL 600 (18,000 MSL) to the top of the frame. Below it, Class E airspace is a dark grey cylinder extending from 2,500 MSL to the bottom of the Class A cylinder. Class B is a blue cylinder, Class C is a purple cylinder, and Class D is a red cylinder, all situated between the surface and 2,500 MSL. Class G airspace is the unshaded area at the bottom, from the surface to 700 AGL. A yellow vertical bar on the right side of the diagram is labeled 'Class G' and spans from 700 AGL to 1,000 MSL.

Class D Airspace

Class D airspace is generally that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower.

LEARN MORE

Configuration of Class D airspace:

- Individually tailored
- Normally designed to contain published instrument approaches

ATC provides separation services therefore two-way radio communication must be established and maintained.

No separation services are provided to VFR aircraft.

References:

- JO 7110.65, Pilot/Controller Glossary
- FAR, 71.61, 91.155
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 11

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of airspace classes. At the top, Class A airspace is shown as a dark blue horizontal band from FL 600 to 18,000 MSL. Below it, Class E airspace is a light blue area extending from 14,500 MSL down to the surface or a designated altitude. Further down, Class G airspace is shown as a green area from the surface up to 1,200 AGL. In the middle, Class B (dark blue), Class C (purple), and Class D (red) are shown as vertical columns. Class B and C have wider tops, while Class D is narrower. Class G is also shown as a thin layer between Class D and Class E. A small blue circle with a white 'X' is shown near the surface. A 'LEARN MORE' button is at the bottom.

Class E Airspace

If airspace is controlled and it is not Class A, Class B, Class C, or Class D, it must be considered Class E.

- Extends upward from either the surface or a designated altitude to the overlying airspace

LEARN MORE

Federal airways (“Victor”) and low altitude RNAV routes (“Tango”) are Class E airspace areas and unless otherwise specified, extend upward from 1,200 feet Above Ground Level (AGL) to, but not including 18,000 feet MSL.

When designated as a surface area, the airspace will be configured to contain all instrument procedures.

There is no communication requirement or separation provided for VFR aircraft.

References:

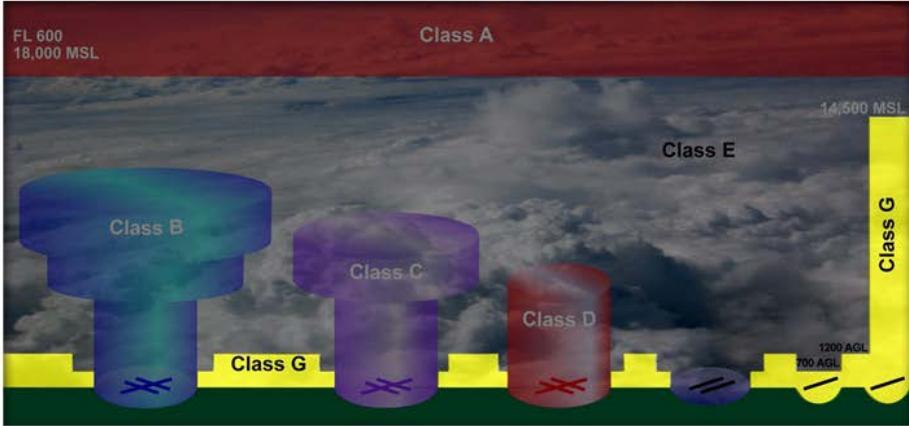
- JO 7110.65, Pilot/Controller Glossary
- FAR, 71, 91.155
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 12

Classes of Airspace

BACK NEXT



The diagram illustrates the vertical structure of airspace classes. At the top is Class A, a dark red horizontal band from FL 600 to 18,000 MSL. Below it is Class E, a light blue horizontal band from 14,500 MSL to the base of Class A. Below Class E are three vertical columns representing Class B (blue), Class C (purple), and Class D (red). Below these are several yellow vertical bars representing Class G airspace. The ground level is marked with 1200 AGL and 700 AGL. A yellow vertical bar on the right is labeled Class G. A 'LEARN MORE' button is at the bottom.

Uncontrolled (Class G) Airspace

Class G airspace is uncontrolled airspace that normally extends from the surface upwards to the base of the overlying controlled airspace.

LEARN MORE

Uncontrolled airspace in the United States is that which has not been designated as Class A, B, C, D, or E.

ATC has neither the authority nor the responsibility for exercising control over air traffic in this airspace. Pilots are required to provide their own separation.

References:

- FAR 91.155
- AIM, Chap. 3



Classes of Airspace

BACK

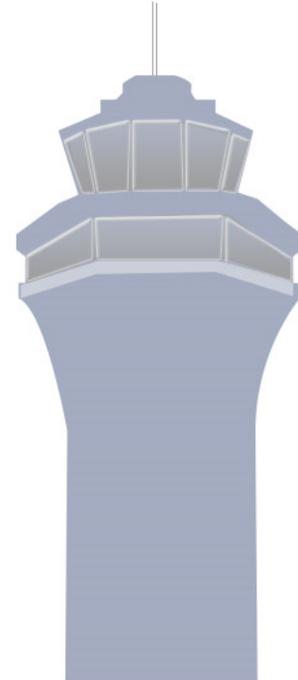
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Airspace Hierarchy

Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace:

- Class A preempts Class B
- Class B preempts Class C
- Class C preempts Class D
- Class D preempts Class E
- Class E preempts Class G

FAR, 71.9





Classes of Airspace

BACK

NEXT

Terminal Radar Service Areas

Terminal Radar Service Area (TRSA)

- Airspace surrounding some airports wherein ATC:
 - Provides radar service
 - Separates all IFR aircraft
 - Separates participating VFR aircraft
- Not a class of airspace, but charted on VFR charts

7110.65, Pilot/Controller Glossary





Classes of Airspace

BACK

NEXT

Temporary Flight Restrictions (TFRs)

Temporary Flight Restrictions (TFRs) are protected airspace over areas of natural disasters, specific hazards, large public gatherings, and locations visited by the President, Vice President, and other dignitaries.

Published via FDC NOTAM, they vary in size from 2 to 60 miles in diameter, and may extend several thousand feet above the surface.

Aircraft may be forbidden from flying in a TFR, and may encounter military interception and possibly armed intervention.

- Flight under specified conditions may be allowed within a specific TFR.

FAR, 91.137, 91.138, 91.141; AIM, Chap. 3



FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 16

Classes of Airspace

BACK NEXT

Review

Class E

- Generic controlled airspace
- Generally extends from 1,200 AGL to the base of the overlying controlled airspace
- Selected areas extended down to 700 AGL or the surface

Class D

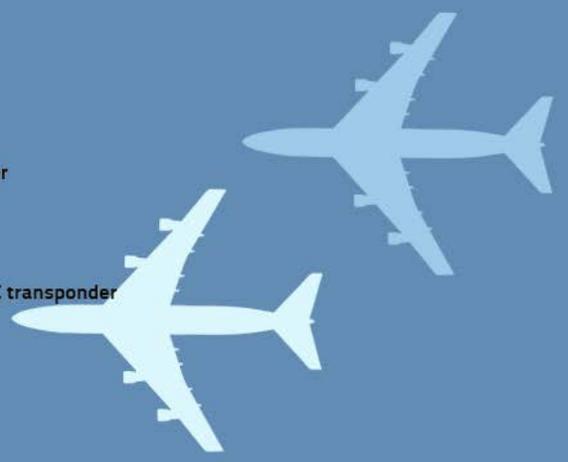
- Requires two-way radio communication
- Only in effect when the tower is open
- No separation provided for VFR aircraft

Class C

- Requires two-way communication, and Mode C transponder
- VFR aircraft separated from IFR aircraft

Class B

- Requires a clearance, two-way communication, and Mode C transponder
- Separation provided to all aircraft
- Student pilots require specific training



LEARN MORE

Class A

- All aircraft must be IFR
- Requires two-way communication, and Mode C transponder
- Extends upward from 18,000 feet MSL to FL600

Note: See Appendix A for U.S. Airspace Classes Quick Reference Chart.



Special Use Airspace (SUA)

BACK

NEXT



Special Use Airspace (SUA)

Special Use Airspace (SUA) is airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

JO 7110.65, Pilot/Controller Glossary



Special Use Airspace (SUA)

BACK

NEXT

Special Use Airspace Programs

SUA programs are designed to accommodate:

- National Defense, security, and welfare
- Necessary military activity

SUA programs also:

- Identify where activity occurs
- Protect other users from hazardous operations

7400.2, Chap. 21





Special Use Airspace (SUA)

BACK

NEXT

Controlling Agency

Joint-use SUA means when the airspace is not in use, it is available for access by non-participating aircraft.

Joint-use SUA requires the assignment of a controlling agency, which is either:

- The FAA ATC facility controlling the area whenever it is not in use by the military
- or
- The military ATC facility that uses the SUA

7400.2, Chap. 21





Special Use Airspace (SUA)

BACK

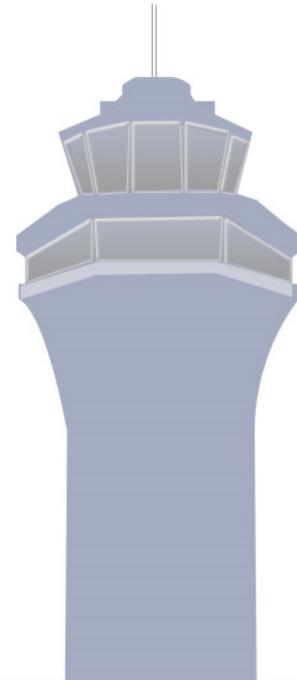
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Using Agency

Normally, the using agency is the agency, organization, or military command that establishes the requirement for Special Use Airspace.

- The using agency generally schedules the use.

7400.2, Chap. 21





Special Use Airspace (SUA)

BACK

NEXT

Special Use Airspace Characteristics

SUA areas are described in terms of lateral boundaries and vertical (altitude) limits.

Dimensions and times of operations are:

- Reflected in aeronautical publications
- Depicted on aeronautical charts

or

- Publicized in a NOTAM

There are seven types of Special Use Airspace:

- Prohibited Area (P)
- Restricted Area (R)
- Warning Area (W)
- Alert Area (A)
- Controlled Firing Area (CFA)
- Military Operations Area (MOA)
- National Security Area (NSA)

7400.2, Chap. 21

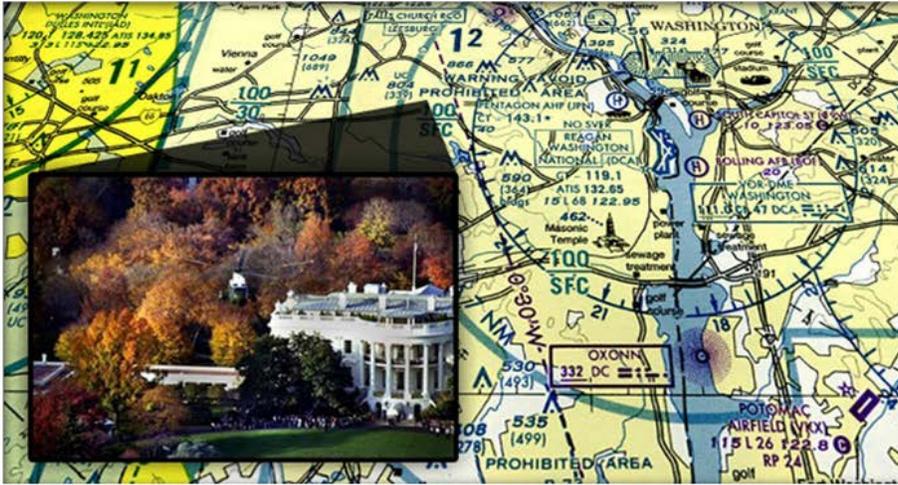




Special Use Airspace (SUA)

BACK

NEXT



Prohibited Area

A Prohibited Area is designated airspace where the flight of aircraft is not permitted, without permission of the using agency.

[LEARN MORE](#)

A Prohibited Area:

- Begins at the surface of the earth and extends upward to a defined altitude
- Is established for security or other reasons associated with the national welfare (e.g., the White House, Fort Knox)
- Is depicted on aeronautical charts
 - Identified by the letter “P,” a dash, plus a number

Example: P-57

References:

- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 22
- FAR, 73
- AIM, Chap. 3



Special Use Airspace (SUA)

BACK

NEXT



Restricted Area

A Restricted Area is designated airspace above U.S. land areas or territorial waters, within which flight of aircraft is not totally prohibited, but is subjected to restrictions.

[LEARN MORE](#)

A Restricted Area is depicted on aeronautical charts:

- Identified by the letter “R,” a dash, plus a number

Example: R-9310

Military has first call on Restricted Areas. However, if the military is **not** using the airspace, ATC can direct other aircraft through the area.

These areas denote the existence of hazards to aircraft, such as artillery firing, aerial gunnery, and/or guided missiles.

References:

- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 23
- FAR, 73
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 24

Special Use Airspace (SUA)

BACK NEXT



Warning Area

A Warning Area is airspace of defined dimensions established beyond 3NM from the coast of the United States.

LEARN MORE

A Warning Area may be designated over domestic or international waters or both.

- Contains activity that may be hazardous to nonparticipating aircraft
- Is depicted on aeronautical charts
 - Identified by the letter “W,” a dash, plus a number

Example: W-104

Military has first call on Warning Areas. However, if the military is **not** using the airspace, ATC can direct other aircraft through the area.

References:

- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 24
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 25

Special Use Airspace (SUA)

BACK NEXT



Alert Area

In an Alert Area, airspace may contain a high volume of pilot training activities or unusual types of aerial activities, neither of which is hazardous to aircraft.

LEARN MORE

An Alert Area is depicted on aeronautical charts to inform nonparticipating pilots of airspace usage.

- Identified by the letter “A,” a dash, plus a number

Example: A-71

All activities within the airspace are conducted in accordance with the Federal Aviation Regulations (FARs).

Participating and nonparticipating pilots are equally responsible for collision avoidance.

References:

- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 26
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 26

Special Use Airspace (SUA)

BACK NEXT



Controlled Firing Area (CFA)

Controlled Firing Area (CFA) is airspace designated to contain activities that if not conducted in a controlled environment would be hazardous to nonparticipating aircraft.

LEARN MORE

Airspace activities are suspended immediately when spotter aircraft, ground observers, or radar indicates an aircraft is approaching the area.

Airspace is not depicted on any chart, since nonparticipating aircraft are not required to change their flight plans.

References:

- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 27
- AIM, Chap. 3



Special Use Airspace (SUA)

BACK

NEXT



Military Operations Area (MOA)

Military Operations Area (MOA) is airspace of defined vertical and lateral limits established outside Class A airspace for the purpose of separating certain military training activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

[LEARN MORE](#)

Military Operations Area:

- IFR traffic is provided separation from the military operations, or rerouted around the airspace.
- Airspace is depicted on sectional, VFR terminal, and En Route low altitude charts.
 - Identified by word/name plus “MOA”

Example: Hollis MOA

Activities in an active MOA may include air combat tactics, air intercepts, aerobatics, formation flight training, and low altitude flight in excess of the normal 250-knot speed limit below 10,000 feet.

References:

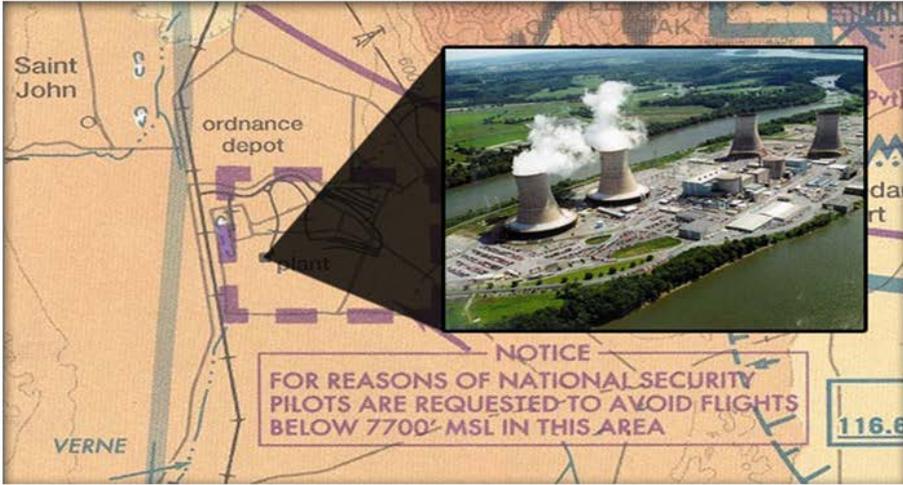
- JO 7110.65, Pilot/Controller Glossary
- 7400.2, Chap. 25
- AIM, Chap. 3

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 9: Airspace

ALL LESSONS FRAME: 28

Special Use Airspace (SUA)

BACK NEXT



National Security Area (NSA)

A National Security Area (NSA) consists of airspace of defined lateral and vertical dimensions established at locations where there is a requirement for increased security of ground facilities.

LEARN MORE

Pilots are requested to voluntarily avoid flying through an NSA.

If a greater level of security is deemed necessary, flight through an NSA may be temporarily prohibited.

- Restrictions to flight operations are disseminated via NOTAMs.

References:

- 7400.2, Chap. 28
- AIM, Chap. 3



Exercise 1: Airspace

BACK

NEXT

[Click here for Exercise 1.](#)





Conclusion

BACK

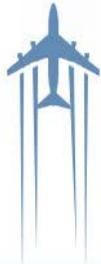
NEXT

Lesson Summary



This lesson covered:

- Classes of Airspace
- Special Use Airspace





Appendix A: Airspace Classes Quick Reference Chart

BACK

[Click here to access all the Appendices for Lesson 9.](#)

