

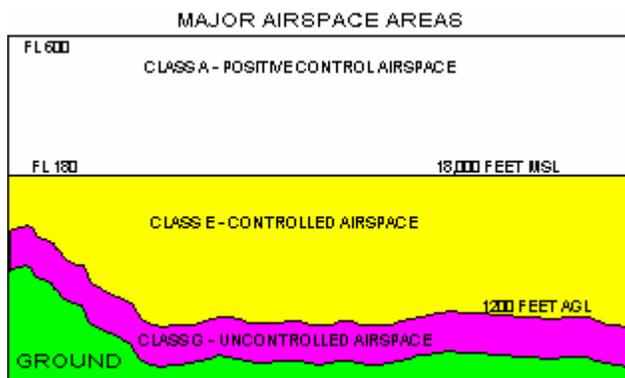
Airspace And Airport Types

In September of 1993, the FAA adopted the International Civil Aviation Organization (ICAO) definition of airspace segments. The ICAO classifications of airspace are named A through G. The classification of “F” is not used in the USA.

NOTE: It will be helpful while studying this section to have a Sectional Aeronautical Chart available. Refer to the front panel of the chart as well as to content of the chart as you study this chapter.

The 3 predominant types of airspace are:

- **Positive Control (Class A) - White**
- **Controlled (Class E - Yellow)**
- **Uncontrolled (class G) - Magenta**



Class G Airspace

ATC exercises no jurisdiction over Class G airspace. It is the airspace shown in magenta at left, and generally extends from the ground up to 1200 feet above ground level (AGL). As such it is classified as **Uncontrolled** airspace.

ATC exercises some jurisdiction, at varying degrees to all other airspace. Thus all other airspace is classified as **Controlled** airspace.

Class A - Positive Control

ATC exercises complete control in the Positive Controlled airspace. Jets are the primary user of Class A airspace. It ranges from 18,000 feet (Flight Level 180) to 60,000 feet (FL600). Altitudes 18,000 feet and above are called Flight Levels (FL).

Class A airspace is not specifically charted on aeronautical charts. Operation is in accordance to Instrument Flight Rules (IFR). The aircraft must be equipped with appropriate IFR instrumentation, including a Mode C altitude reporting

transponder. The pilot must be instrument rated. An IFR flight plan is required. ATC exercises full control of route, speed, and altitude. ATC is responsible for aircraft separation in Class A airspace.

Class E - Controlled

Class E airspace is from altitude 1200 feet Above Ground Level (AGL) up to 18,000 feet. All airspace from 14,500 feet (MSL) to 18,000 feet (MSL) is Class E. It contains the Low Altitude Victor airway system. These airways are designated on the aeronautical charts as blue lines about 1/16 inch wide, and have numbers like V12, V245, etc. written on them. They are ***roads in the sky***. All Victor airways are Class E extending 6 nautical miles each side of the airway centerline. In mountainous terrain, class G airspace may exist from the surface to 14,500 feet outside the boundaries of the airway. In non-mountainous terrain (such as Eastern US), all the airspace above 1200 AGL is Class E unless specified otherwise.

ATC exercises no control over flights operating under Visual Flight Rules (VFR) in Class E airspace. Radio communication and transponder are not required. Specific cloud clearance and visibility requirements apply to Class E airspace. These are listed in the chart at the end of this section. ATC does exercise control of aircraft operating under Instrument Flight Rules (IFR). IFR flights must maintain altitudes, routes and speeds as directed by ATC. IFR flights must be capable of communicating with ATC, and must be Mode C Transponder equipped (capable of reporting altitude to the radar scope).

There are no specific certification requirements, other than normal pilot certificates. Class E airspace may be designated from the surface upward as extension to class B, C, and D airspace (defined later) to accommodate IFR traffic requirements. Class E airspace will extend downward to 700 feet AGL around uncontrolled airports that have published instrument approach procedures.

These areas around uncontrolled airports where the Class E airspace goes down to 700 feet AGL instead of the standard 1200 feet AGL are depicted on aeronautical charts by a wide shaded magenta colored band around the airport. The reason the Class E airspace extends nearer to the ground is to provide a controlled airspace transition area for aircraft operating IFR and making an IFR approach.

Class G - Uncontrolled

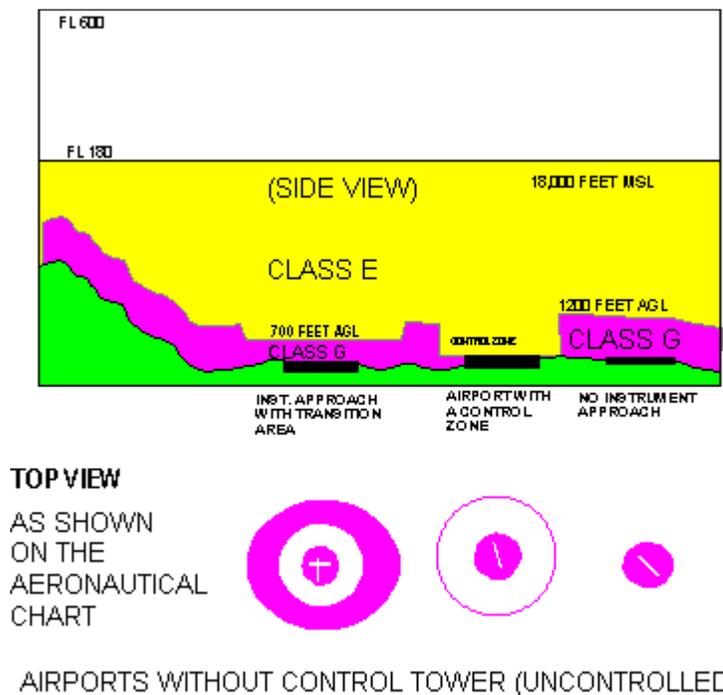
Most Class G airspace is that space from the surface up to 1200 feet. However, there are areas in mountainous terrain where airspace outside the Victor

Airways is Class G from the ground to 14,500 feet AGL. Class G space may underlie Classes B, C, and D, but has no specific symbol indicated on the chart. The presence of the airspace is implied. Less stringent minimum cloud clearance and visibility requirements apply to VFR flight in Class G space since ATC does not maintain jurisdiction over this airspace. See last page of this section.

As mentioned in the Class E section, airports with published instrument approaches have class E airspace extending down to 700 feet AGL. Obviously, in these areas, Class G only extends from the surface to 700 feet AGL.

Uncontrolled Airports

Airports without a control tower are classified as **uncontrolled**. Three types of uncontrolled airports are shown below.



The airport on the right does not have an instrument approach or a control zone around the airport. The airspace overlying this type airport is Class G up to 1200 feet, then Class E above. It is depicted on the charts as a magenta circle (unpaved) or a solid circle with white runways (paved).

The airport in the middle has a Class E Control Zone around it, depicted by the dotted circle around it. If the line is magenta in color, it is a control zone at an airport where an FAA Flight Service Station (FSS) is on the field but no control tower. The FSS provides airport traffic advisory service. Class E airspace extends down to the surface. The zone is depicted on charts as a dashed

MAGENTA circle around the airport. These airports usually have instrument approach procedures as well.

The airport at left has an instrument approach procedure for the airport. Such airports have a broad lightly shaded magenta band around them. Within the outer edge of the band, Class G airspace only extends up to 700 feet AGL. Class E extends down to 700 feet to provide a **transition zone** for aircraft making instrument approaches to the airport. The transition area is approximately 5 miles in radius.

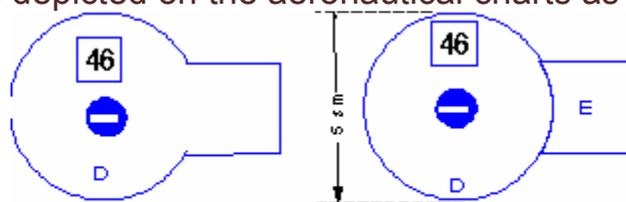
Controlled Airports

These are airports that have sufficient air traffic to warrant a Control Tower, and in some cases Approach Control and Ground Control Radar. They are used by air carrier operations, and can have a mix of jet, high performance piston and turbine aircraft, as well as smaller single engine aircraft. The control tower is responsible for aircraft separation within its jurisdiction. Certain clearances must be obtained from ATC for operations on the airport surface, and within the controlled airspace around the airport.

There are 3 Classes of airspace around controlled airports. The type of airspace depends upon the traffic volume and types of flight. These Classes are B, C, and D airspace

Class D - Airports with Control Tower

The lowest level of control is at airports with a low volume of traffic. It has a control tower and is depicted on the aeronautical charts as shown below.



CLASS D AIRSPACE

Class D airports are depicted on aeronautical charts by a blue dashed circle around the airport symbol. Within the dashed circle is a number enclosed in a dashed square. This number indicates the top of the Class D airspace, expressed in hundreds of feet (MSL). In the diagram, the top is 4,600 feet MSL. This airspace may have a Class E extension as shown in the diagram for an IFR approach transition area.

The control tower has jurisdiction within the Class D airspace which is 5 Statute Miles radius around the control tower. The top of the Class D airspace extends 2500 feet above the surface of the airport. Two way radio contact must be

maintained with the Control Tower while in this airspace. The pilot should contact the control tower **prior** to entering the airspace.

Terminal Radar Service Areas (TRSA)

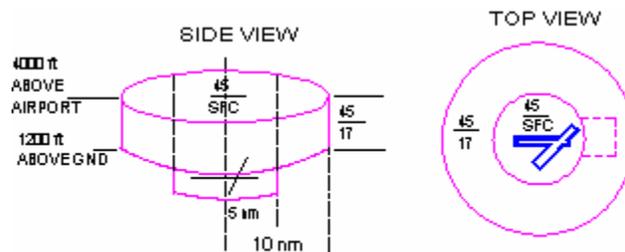
Some Class D airports have a local radar service called a Terminal Radar Service Area (TRSA). The service is available for conflict resolution and traffic sequencing to departing and arriving aircraft. However contact with the radar is not mandatory and the pilot may decline the service.

These airports are depicted on the aeronautical charts in the normal Class D manner, but have a dark gray circular line around the airport out at the boundary of the radar service range. Wilmington NC and Augusta Ga. are examples of airports with TRSA. There is no specified regulatory radius for the radar service.

Class C Airspace (Mandatory Radar)

Class C airspace has two concentric tiers. The inner circle is 5 nautical mile core area extending to 4000 feet above the surface. It is similar in function to Class D airspace where the tower usually maintains jurisdiction.

A shelf area with an outer radius of 10 nautical miles surrounds the core area. It extends from 1200 feet AGL to 4000 feet AGL. The airspace is depicted on charts as 2 concentric magenta circles.



CLASS C AIRSPACE

For example, an airport with a surface altitude of 500 feet MSL is depicted above. The left diagram is a side profile of the airspace. The right diagram shows how the airspace is depicted on the aeronautical chart.

The ceiling of the Class C airspace is 4,500 feet (MSL). This is calculated as runway altitude of 500 feet plus 4000 feet. The floor of the outer shelf is 1,700 feet MSL. (1200 + 500 feet). The space under the shelf is Class G. These altitudes are indicated by 45 over SFC for the core circle, and 45 over 17 on the outer shelf.

Contact with Approach and Departure Radar Control is **mandatory** within the core and shelf airspace. During takeoff and landing, the tower and radar

controller coordinate their activity. You will be told by either controller when to switch frequency to the other controller. Aircraft must be capable of two-way communication with the radar facility and the tower. A 4096 Altitude Reporting (Mode C) Transponder is required when operating within, under or above Class C airspace.

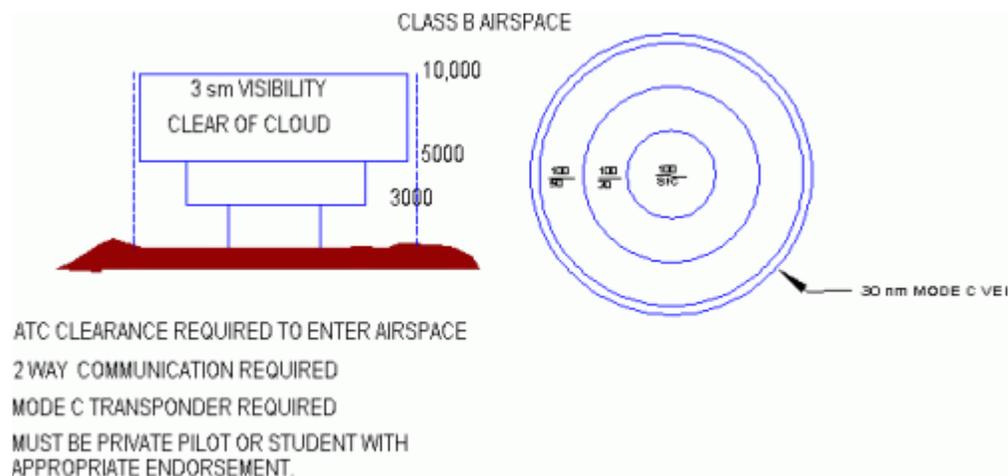
Before entering Class C airspace, the pilot **MUST** establish communication with the radar service. Radio contact with radar and/or tower must be maintained when in this airspace.

You may request **Flight Following Radar Service** outside the 10 mile shelf. It may be granted on a **workload permitting basis**. The service can usually be provided to about a 20 NM radius of the airport.

Class B - Large Terminal Airports

Large terminal areas such as the New York, Chicago, and Los Angeles areas have a high volume of air traffic. The airspace around these airports is under rigid control of ATC, and are called Class B airspace.

AIRCRAFT MUST HAVE ATC CLEARANCE PRIOR TO ENTRY INTO THIS AIRSPACE.



The airspace is composed generally of three concentric tiers. A core area around the airport is generally surrounded by two additional shelf areas extending approximately 30 nautical mile radius from the primary airport.

The core area extends from the surface to 10,000 feet AGL. The second shelf has a wider radius and has both a floor and a ceiling. The ceiling is the same as the inner circle. The floor may vary at differing altitudes in various sections to accommodate smaller airports that underlie the middle tier of airspace.

The third shelf extends out approximately 30 nm from the airport. It has the same ceiling as the other two tiers, but has a higher floor than the middle shelf. This floor may also be variable in altitude to accommodate airports lying beneath the Class B airspace.

The actual configuration of the airspace varies to accommodate local operational requirements. The purpose of the Class B structure is to allow large high performance jet traffic to transition down to landing at the airport under IFR procedures, and with positive control and traffic separation.

Class B operational rules require:

- Two way radio capable of communication with ATC.
- Private pilot (or special student certification). Several airports prohibit student operations entirely.
- Altitude reporting Transponder (Mode C).
- If operating IFR, an operable VOR or TACAN receiver.

NOTE: Student pilots must have had training in Class B operations and appropriate sign-off of a Certified Flight Instructor.

A student may not operate from the following Class B airports.

Atlanta Hartsfield Airport (GA), Newark Airport (NJ), Boston Logan Airport (MA), Kennedy (NY), Chicago O'Hare Airport (IL), LaGuardia (NY), Dallas/Ft.Worth Airport (TX), San Francisco Airport (CA), Los Angeles Airport (CA), Washington National Airport (DC), Miami Airport (FL), Andrews AFB (MD).

Mode C Veil

Around Class B airspace is an area called the **Mode C Veil**. It is shown as a thin blue concentric line of 30 Nautical Mile radius around the Class B airport. An altitude reporting Transponder (Mode C) is required **within this area** and when operating under the floor or above the ceiling of the Class B airspace. Radio communication with ATC is not required as long as you stay outside the Class B airspace.

Special Use Airspace

A number of "special use" airspace areas exist for various usage. It means that certain activities have been confined to those areas of airspace. Limitations are placed on aircraft operations in these areas which are not a part of the activity. These are:

- Prohibited areas

- Restricted areas
- Warning Areas
- Military Operations Areas
- Alert Areas
- Controlled Firing Areas
- Military Training Routes
- Air Defense Identification Zone
- Temporary Restricted Areas



Prohibited and Restricted airspace are regulatory use airspace whose rules are defined by FAR Part 73. Warning areas, MOA's, Alert Areas, National Security Areas, and controlled firing areas are non-regulatory special use airspace.

Prohibited Areas

These are areas over which flight by civilian aircraft is prohibited by FAA Regulation. Operation within such an area can be justification for military interception or other action. The area around the White House in Washington DC is an example. The symbol is a blue feathered box shown at right with the words Prohibited in or near the box.

Restricted Areas

These are designated areas in which flight, although not totally prohibited, are subject to certain restrictions. These areas denote the existence of unusual, often invisible, hazards to aircraft. Such activities may be artillery firing, aerial gunnery, or guided missiles. Penetration of these areas without authorization of the controlling agency may be extremely dangerous. They are marked on the charts by blue feathered boundaries.

An identifying number such as R-5306 will be listed near or within the area. A listing on the bottom of the aeronautical chart identifies the area by number, and indicates the location of the area, the altitude limits of the space, the time of use, and the name of the controlling agency. It is good practice to plan to avoid such areas. If penetration of such an area is planned, the controlling agency should be consulted as to the status of activity in the area prior to any penetration.

Warning Areas

These are areas outside the 3 mile limit from shore in international airspace. They are similar to Restricted Areas. Activities which are unusual or may be dangerous to aircraft may be in progress. They cannot however be designated as Restricted Areas since they are over international waters

Warning areas are also identified by a blue feathered box with a number (such as W-74). Information concerning these areas is listed on the aeronautical charts in the same section as Restricted Areas. One should treat a Warning Area the same as a Restricted area, and follow the same procedures.

Military Operation Areas (MOA)

MOA's consist of airspace of defined vertical and lateral limits for the purpose of separating certain military training activities and IFR traffic. They are depicted by magenta colored feathered areas similarly to Prohibited, Restricted and Warning areas. They are denoted by names such as Beaufort MOA within or near the MOA-defined area. ATC can grant clearance to IFR traffic through an MOA if adequate IFR separation can be assured. If not, ATC will restrict routing IFR traffic through the area.

Most military training activities necessitate acrobatic or abrupt maneuvers. Pilots operating under VFR should exercise extreme caution while flying in an MOA when military activity is being conducted. Military pilots on officially designated operations are exempt from conducting aerobatic maneuvers on the regions of Victor Airways.

VFR pilots should maintain caution when flying through an MOA when it is active. Pilots should contact a Flight Service Station (FSS) within 100 miles of the MOA to obtain real-time report of activity within the MOA. Prior to entry, pilots should contact the controlling agency for traffic advisories. Information about MOAs is listed in the same location on the aeronautical chart as the Restricted and Warning area information. The data is printed in Magenta.

Alert Areas

Alert areas are shown on charts to inform pilots of areas where intensive pilot training or other types of unusual aerial activity may take place. The area is depicted in a similar manner to the other special use areas, but indicated by a blue outline with the area crosshatched as shown.

Controlled Firing Areas

These areas contain operations such as artillery firing. They are not marked on charts, and pilots need not avoid. Spotter aircraft, radar or ground personnel monitor for aircraft in the area, and firing is suspended immediately upon the

approach of aircraft.

Military Training Routes

Military training routes are used by high speed military aircraft conducting low and medium level high speed training activity. The routes above 1500 feet AGL are designed to be flown mostly under IFR rules. They may occur in either IFR or VFR meteorological conditions. The routes at 1500 feet and below are generally developed to be flown under VFR rules. Flight visibility must be 5 miles or more, with ceilings 3000 feet or more.



MTR's with no segment above 1500 feet will be designated by a 4 digit number; i.e. IR 1206, VR 1207. Routes that include one or more segments above 1500 feet are designated by 3 digit numbers; i.e. IR206, VR207.

The routes are shown on aeronautical charts are gray in color, and will have numbers like IR718 or VR4003. Vigilance should be observed when operating near or crossing an MTR. Contact FSS within 100 miles to obtain current information on the activity along the MTRs. Give FSS your altitude and route of flight and destination when requesting MTR information.

Temporary Restricted Areas

The FAA may publish temporary restricted areas that may be due natural disaster, or other events, in which unauthorized civilian flight is inadvisable or may interfere with rescue or relief efforts. These temporary restrictions are published through the system called "Notices To Airmen" (NOTAMS). They are disseminated through the FAA Flight Service Stations. Contact FSS prior to any flight which may be in the vicinity of such events as air crashes, earthquake damage, floods, etc.

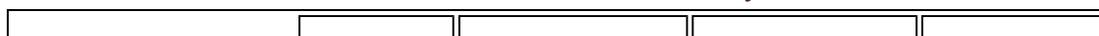
Airspace Rules

The various types of airspace have rules concerning weather limitations and equipment requirements for operation in the given airspace. The listing below summarizes these requirements.

Standard VFR Cloud Clearance and Visibility

Hereinafter, reference will be made to standard VFR Rules for Cloud Clearance and Visibility. These are:

VFR Cloud Clearance and Visibility Rules



	Visibility	Above Cloud	Below Cloud	Horizontal
Below 10,000 ft.	3	1000 ft	500 ft	2000 ft
Above 10,000 ft.	5	1000 ft.	1000 ft.	1 SM.

Class A Airspace Rules

- Operations - Instrument Flight Rules Only
- ATC Clearance Required - Yes
- Radio Contact Required - Yes
- Minimum Pilot Qualifications - Instrument Rating
- Mode C Altitude Encoding Transponder Required - Yes
- Cloud Clearance Requirements - None (IFR Rules apply)

Class B Airspace Rules

While in Class B airspace, the following rules apply.

- Operations Permitted - IFR and VFR
- ATC Clearance Required - Yes
- Radio Contact Required - Yes
- Minimum Pilot Qualifications - Private (Student if Signed-Off)
- Mode C Altitude Reporting Transponder required - Yes
- Cloud Clearance Requirements below 10,000 ft. - Clear of Clouds
- Cloud Clearance Requirements above 10,000 ft. - Standard VFR
- VFR Visibility Requirements below 10,000 ft. - Standard VFR
- VFR Visibility Requirements above 10,000 feet - Standard VFR

Class C Airspace Rules

While in Class C airspace, the following rules apply.

- Operations Permitted - IFR and VFR
- ATC Clearance Required - IFR - Yes : VFR - No
- Radio Contact Required - Yes
- Minimum Pilot Qualifications - Student
- Mode C Altitude Reporting Transponder required - Yes
- Cloud Clearance Requirements below 10,000 ft. - Standard VFR
- Cloud Clearance Requirements above 10,000 ft. - Standard VFR
- VFR Visibility Requirements below 10,000 ft. - Standard VFR
- VFR Visibility Requirements above 10,000 feet - Standard VFR

Class D Airspace Rules

While in Class D airspace, the following rules apply.

- Operations Permitted - IFR and VFR
- ATC Clearance Required - IFR -Yes: VFR - No
- Radio Contact Required - Yes
- Minimum Pilot Qualifications - Student
- Mode C Altitude Reporting Transponder required - No
- Cloud Clearance Requirements below 10,000 ft. - Standard VFR
- Cloud Clearance Requirements above 10,000 ft. - Standard VFR
- VFR Visibility Requirements below 10,000 ft. - Standard VFR
- VFR Visibility Requirements above 10,000 feet - Standard VFR

Class G Airspace Rules

While in Class G airspace, the following rules apply.

- Operations Permitted - VFR
- ATC Clearance Required - No
- Radio Contact Required - No
- Minimum Pilot Qualifications - Student
- Mode C Altitude Reporting Transponder required - No
- Cloud Clearance Requirements below 10,000 ft. - Clear of Clouds (Day) : Standard VFR (night)
- Cloud Clearance Requirements above 10,000 ft. - Standard VFR (day and Night)
- VFR Visibility Requirements below 10,000 ft. - 1 SM (day): 3 SM (night)
- VFR Visibility Requirements above 10,000 feet - Standard VFR (day and night)

[Back to Home](#)

[Back to Table of Contents](#)

[To Aeronautical Charts](#)



cfibart@warwick.net

MAIL

