

# Become a Professional Drone Pilot





# Sectional Charts

## Part II





# Latitude & Longitude

## Latitude & Longitude

In school, most kids learn a trick to remember which lines are latitude and which are longitude. I learned that latitude is like a ladder—with horizontal rungs going up toward the north pole—and that longitude lines are all equally long as they wrap the earth vertically.

However you remember it, you'll need to know it for your test. Most questions concerning sectional charts will ask you to find something at a specific coordinate.



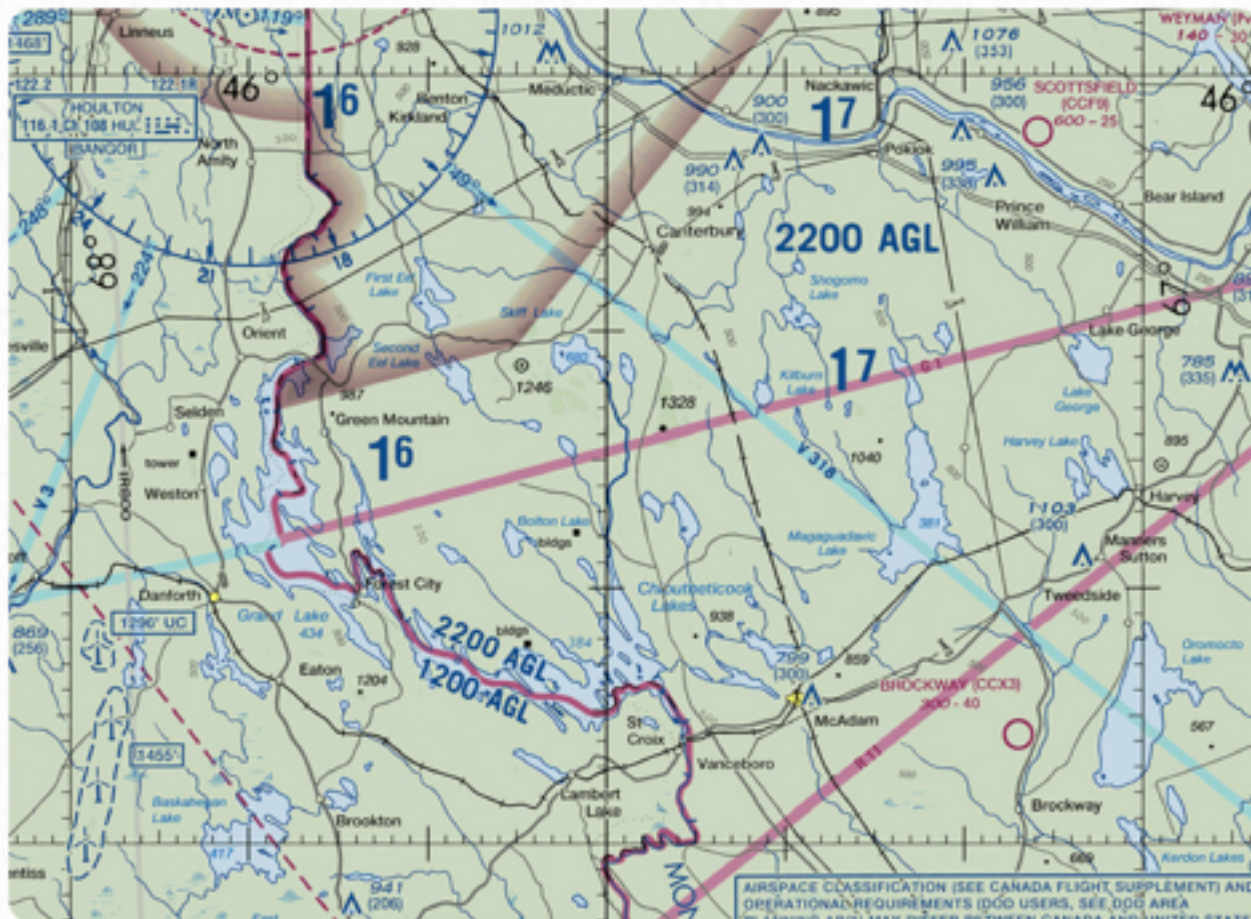
On sectional charts, latitude and longitude are measured with a grid of black lines with tick marks. These lines are drawn at every half a degree. In the example above, the horizontal line at the bottom is 45° North Latitude. In the northern hemi-



sphere, latitude increases as we move north, so the horizontal line at the very top is 46° North Latitude. The horizontal line in the center is 45° 30 minutes North Latitude. Every degree has 60 minutes, and every tick mark is one minute.

The vertical line on the right is 66° West Longitude. In the western hemisphere, longitude increases as we move west, so the vertical line directly to the left is 66° 30 minutes West Longitude and the vertical line in the center is 67° West Longitude.

It's important to remember that, over the United States, latitude increases as you move north and longitude increases as you move west. You won't always be able to see more than one degree marking.



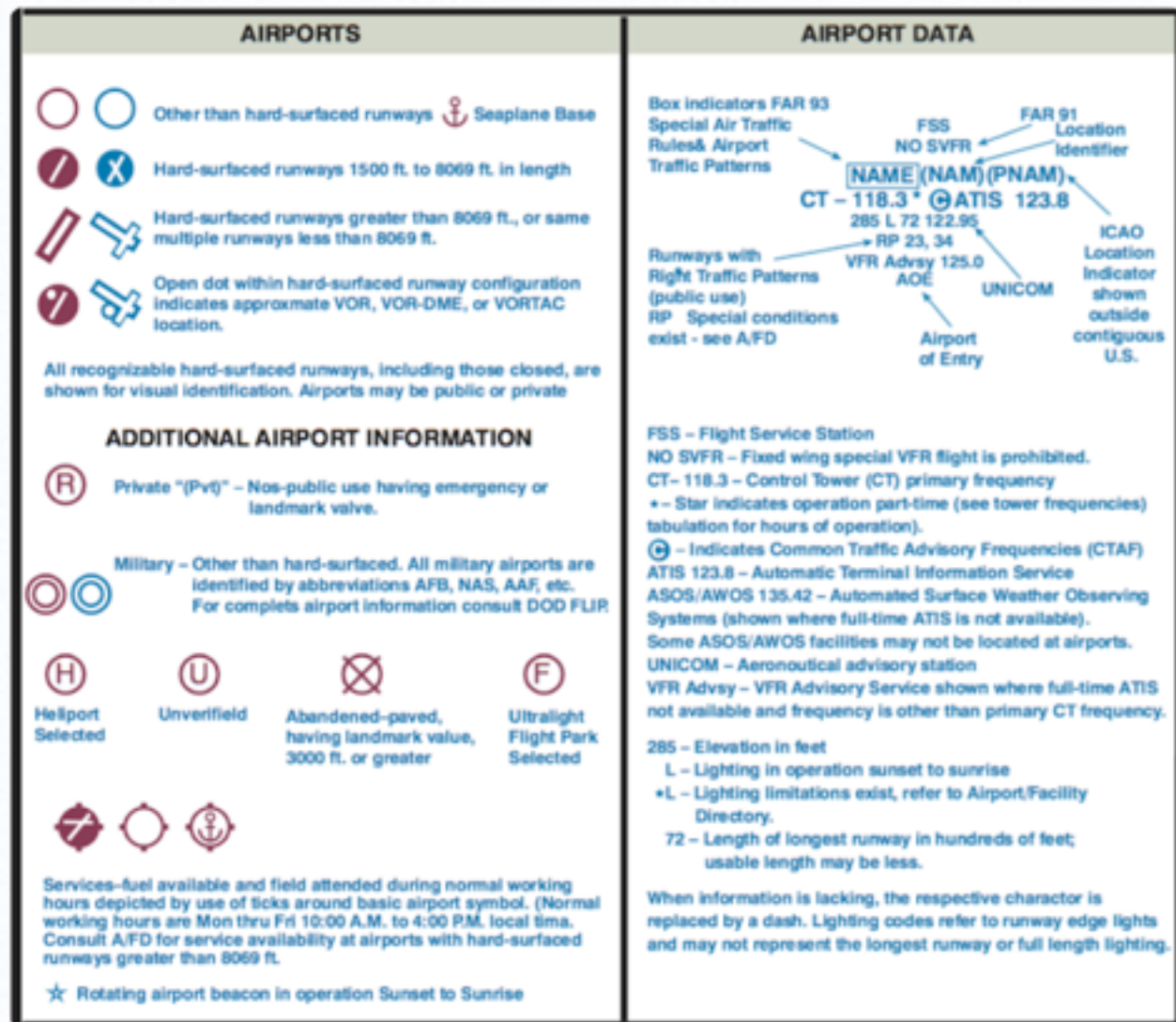


Here's an example. On your test, the FAA might ask about a lake at  $45^{\circ} 12$  minutes N Latitude and  $67^{\circ} 12$  minutes W Longitude. You should be able to pinpoint those coordinates at Maguadavic Lake.



# II

## Airports



Most test questions about airports can be answered with the sectional chart legend. While the test won't include too much about airports, you should be able to recognize some common elements.



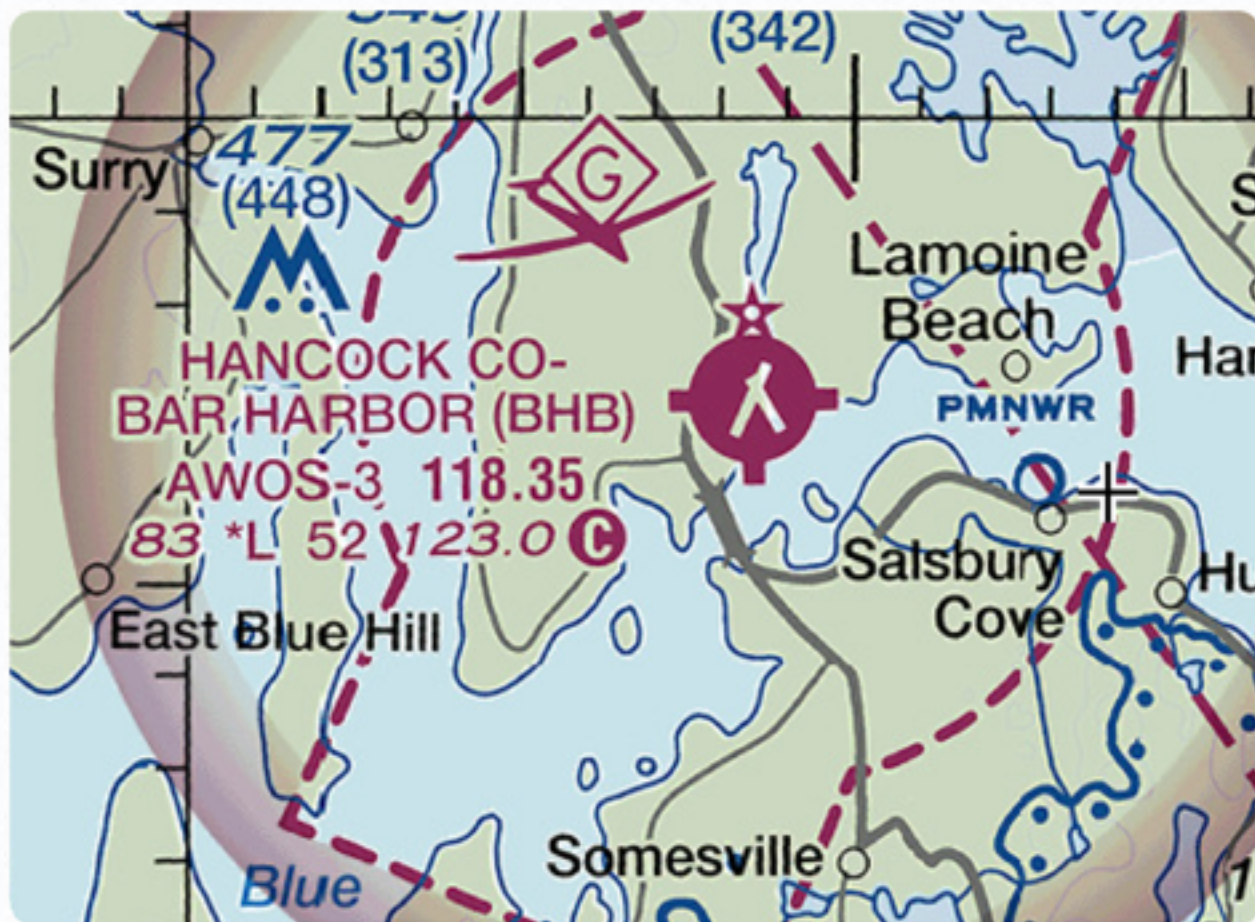


With only a few exceptions, airport information shows up in this format.

Airport Name (Airport Code) /  
Weather Reporting System /  
Elevation + Runway Lighting + Longest Runway Length +  
Contact Frequency

That last line is the most important for your test taking purposes. The most important element to remember is where to find the common traffic advisory frequency (or CTAF). That is the frequency with a (C) next to it. The FAA wants you to know that, as a remote-pilot, you should monitor this frequency using an aviation hand-held radio to stay aware of the position of manned aircraft around you.





It's easy to assume that the CTAF frequency for BHB is 118.35, since it's bold. But the CTAF frequency here is 123.0. Just look for the (C)!





# Obstacles, Hazards, & Landmarks

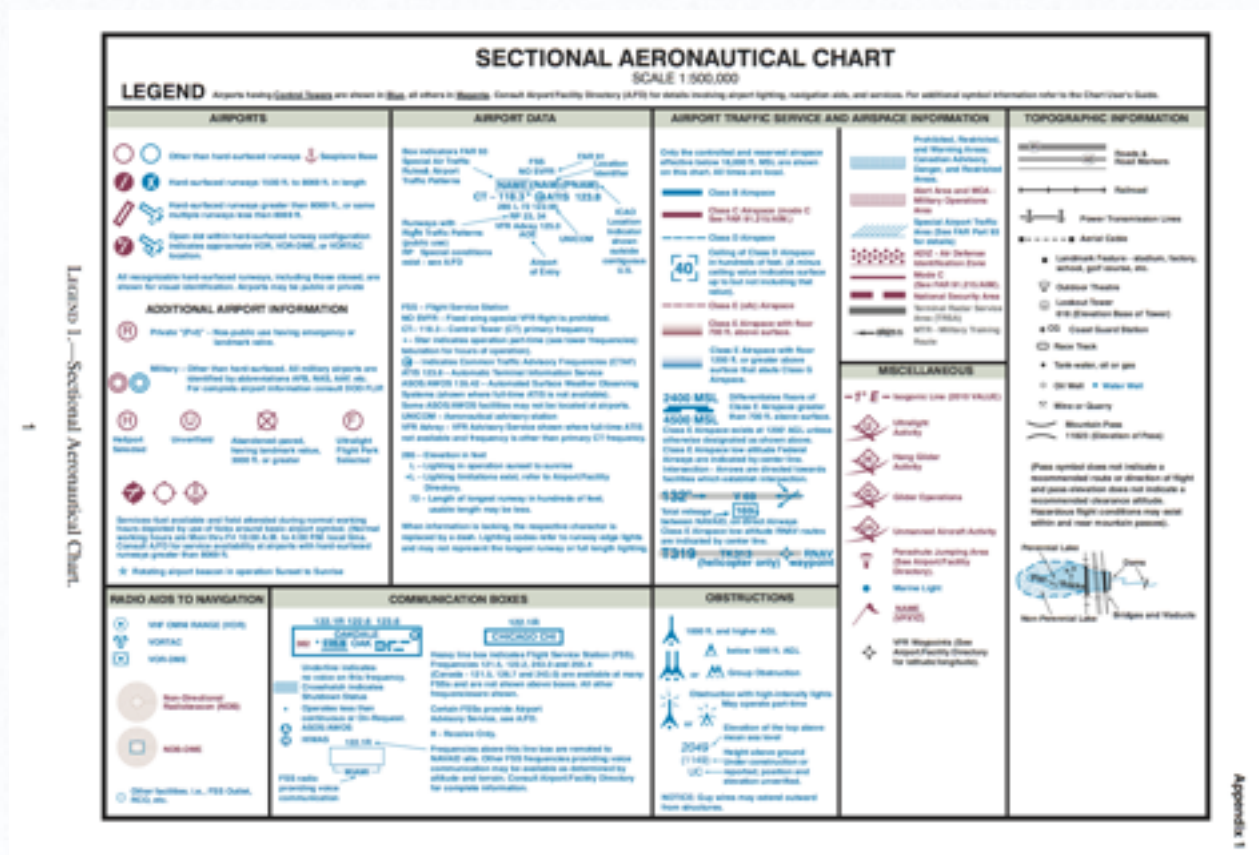
Let's have another look at our sectional chart of the Boston area.



We know that by looking for the ceiling and floor labels in the blue circles, we can determine the shape of the regulated air-space. But there's still a lot going on. Oftentimes, that extra clutter comes from little icons that represent potential hazards to pilots. They're quite straightforward, and they're all defined in the sectional chart legend.

So let's zoom in. Feel free to follow along with the legend.





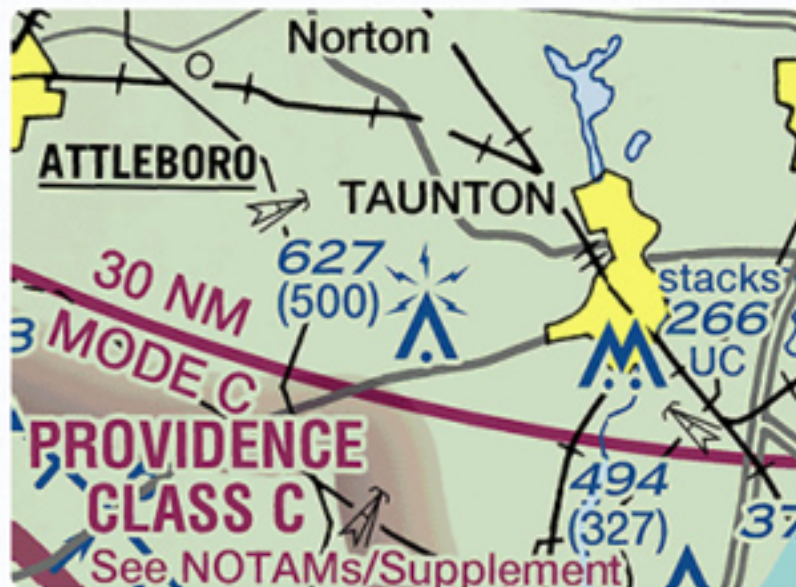
## Obstacles



These are all examples of “obstacles” that you’ll find all over sectional charts. They’re included to let pilots know what obstacles they may need to avoid. Notice how each example shows an icon with a number or numbers beside it. The icon refers to the type of object while the number refers to its height in MSL.



In this first image, we have three icons. Two with a single peak, which refer to singular obstacles, and one with two peaks, which refers to a cluster of many obstacles. The numbers 488, 354, and 559 are the heights in MSL, since most altimeters measure altitude relative to sea level. The (460) is the height in AGL, which helps pilots account for elevation.



This image shows a single obstacle. But notice the lightning bolts. That is the common graphic given to obstacles that light up at night.





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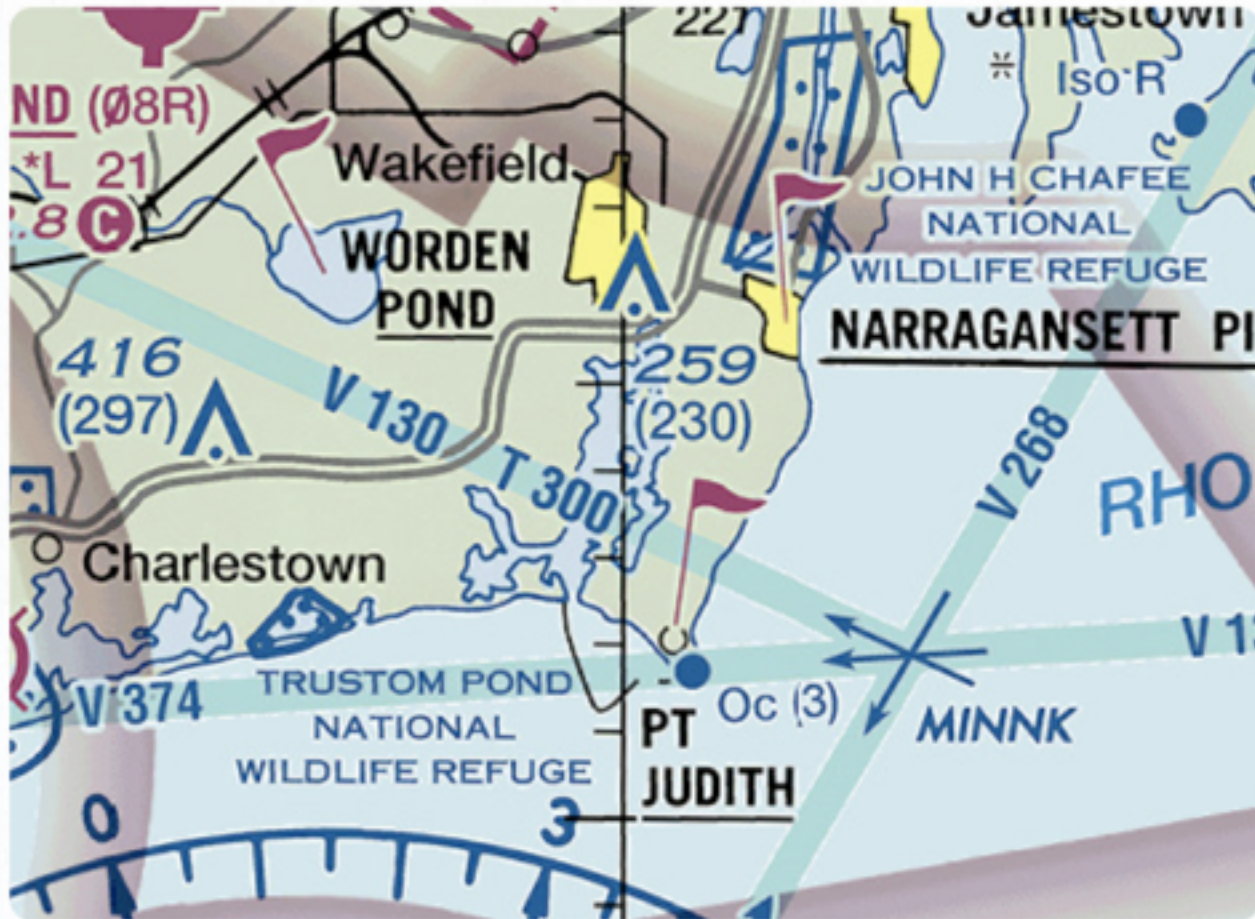
# Hazards



Sectional charts include icons in areas where aerial activities are common. For example, the plane with a <G> in the image above means there are often gliders in the area. Just below the glider icon is a small parachute. Which means, you guessed it, lots of people are checking off a bucketlist item right here.



# Landmarks



These magenta flags show the location of common landmarks that pilots can refer to when calling in to an airport. The name of the landmark is written in black. These are often defined on sectional charts when a significant amount of air traffic passes through an area.

These points can also help pilots plan a flight. In the image above, for example, a prepared pilot would check for Pt Judith to be sure she was still on the correct airway between Martha's Vineyard and New London.



# Airways

What are airways you ask? Basically highways in the sky.

There are a few different types that will be valuable to know for your test.

## MTR (Military Training Routes)





If you see a grayish purple line, like the one above, then you're looking at a Military Training Route. The FAA wants you to know about these because they can come quite close to the ground, and you need to know to stay clear.

## VR & IR

You will see two different prefixes for MTRs. VR, as with VFR, simply means the route is for visual flight rules aircraft (reminder: smaller aircraft in which pilots are responsible for all navigation, etc.).

IR signifies instrument rules (larger aircraft that can't quite see and respond their surroundings).

## Three Digits or Four

This part can be a little confusing, but there is almost always a question about it.

**If a route has 3 numbers, it includes segments above 1,500 feet AGL.**

**If a route has 4 numbers, all of its segments are below 1,500 feet AGL.**

Whether you brute force that into your memory or come up with a way to remember it, I'm fairly sure it will show up on your test. And, unfortunately, it's not on the sectional chart legend.

When I learned it, I repurposed an old electronic music phrase "four on the floor" to remind myself: "four numbers under floor." Maybe that will help you.



## VFR Routes

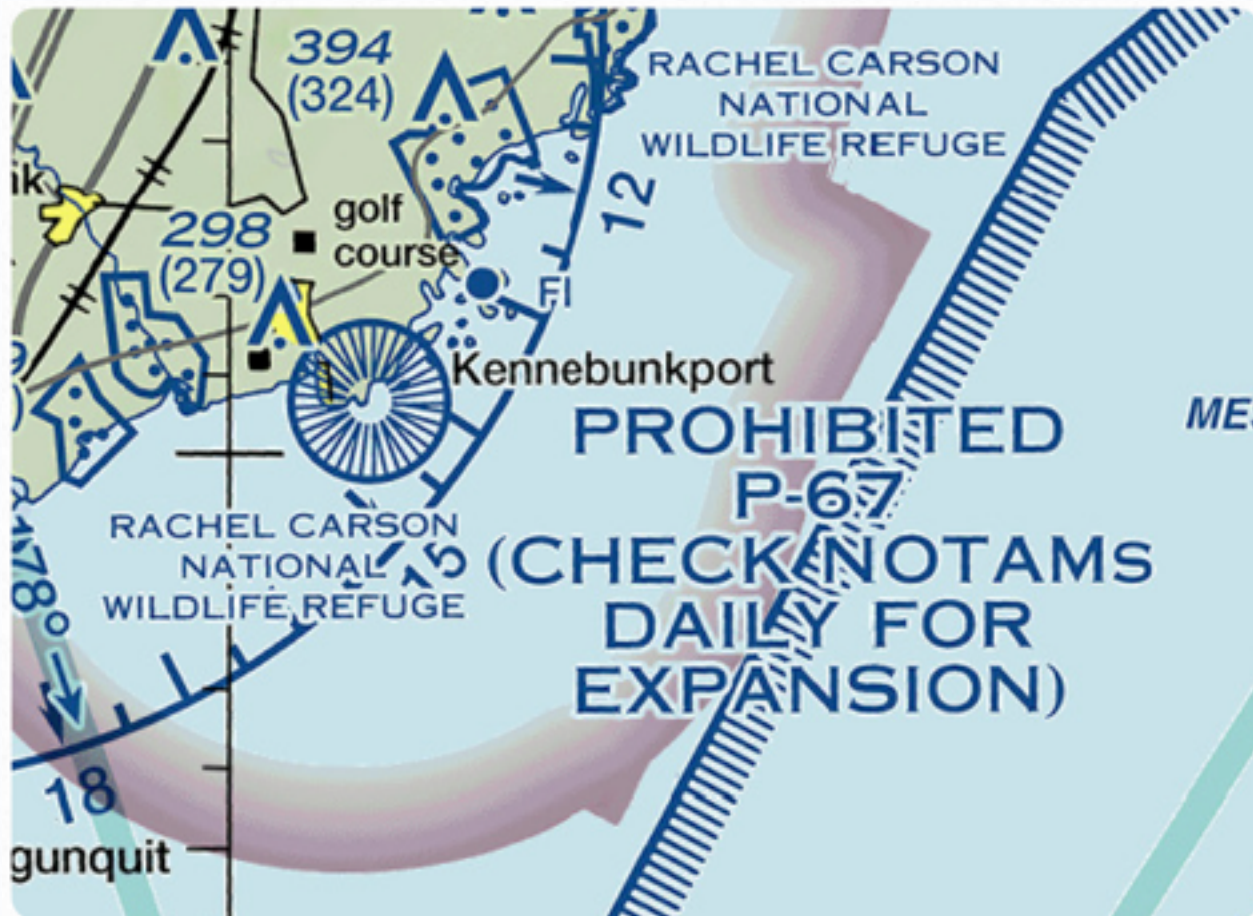


Light blue lines designate VFR corridors, or common routes that pilots can use to avoid complex airspace. Each VFR route is labeled with a V and a number, along with a compass heading that pilots can use to make sure they're on the right route.



# Military & Special Use Airspace

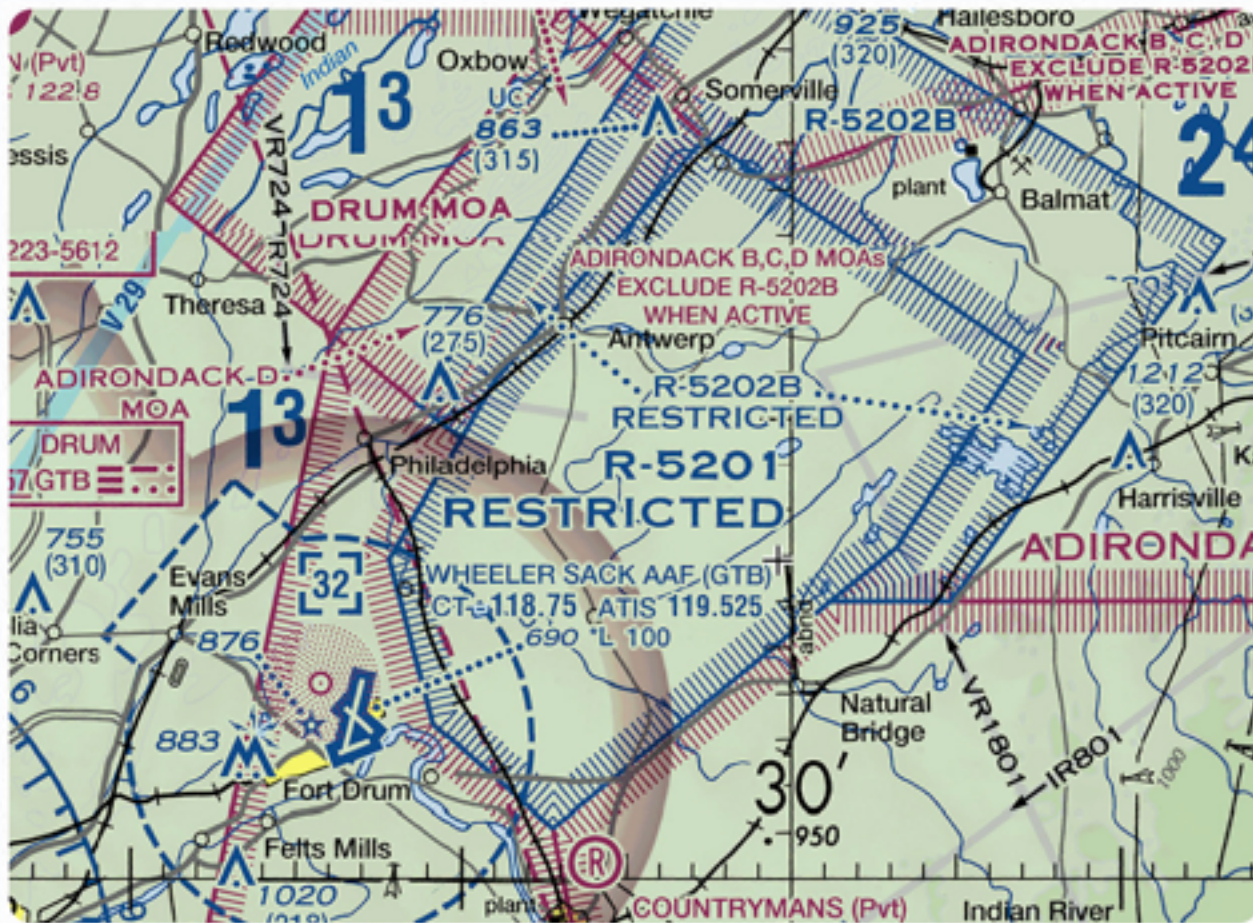
## Prohibited Airspace



Prohibited airspace is an absolute no-go. A blue line with dashes pointing inwards defines the border, and a clear “PROHIBITED” label lets you know it can’t be entered.



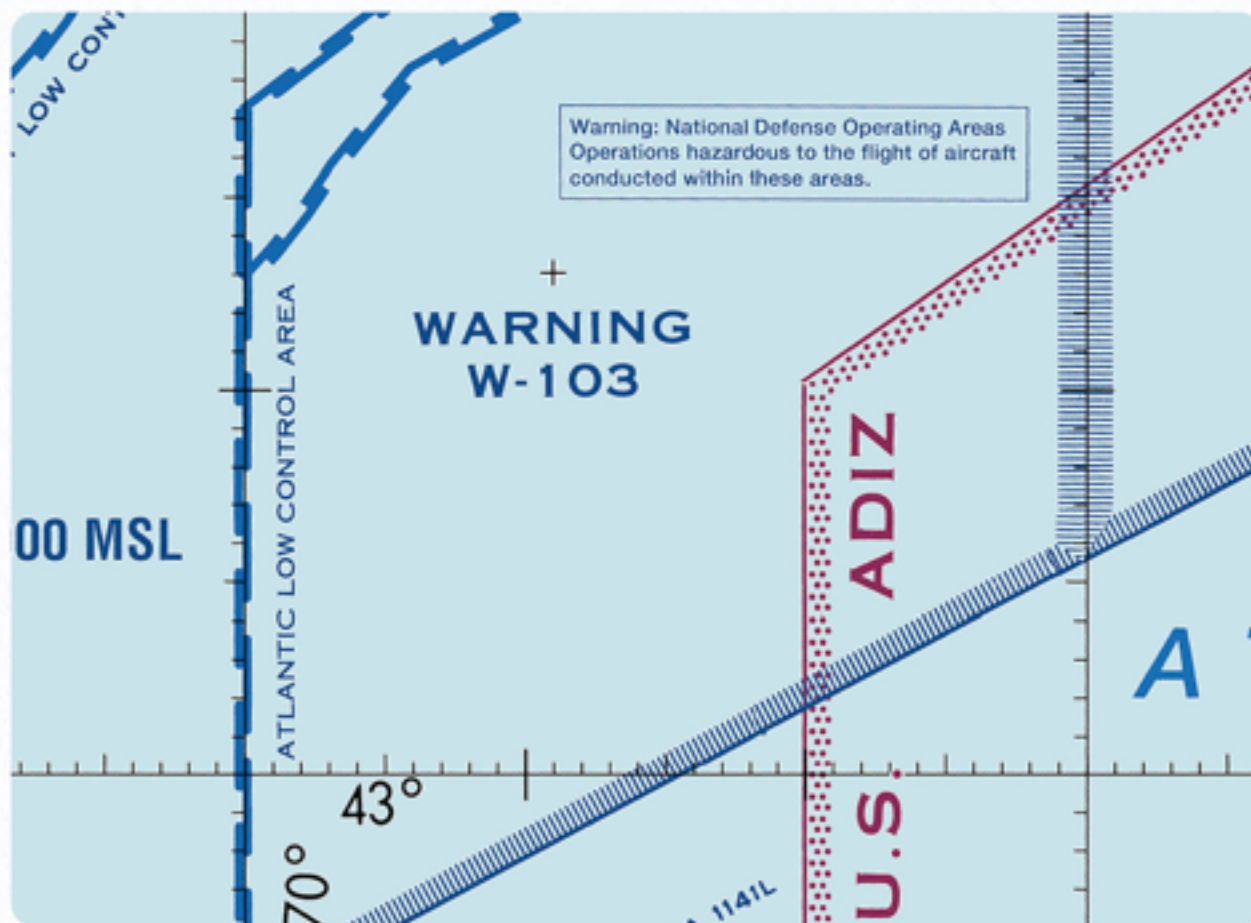
## Restricted Airspace



Slightly less off-limits than prohibited airspace, but still off-limits, the FAA wants you to know that RESTRICTED airspace is often used for “the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles.”

Restricted airspace is defined with the same dashed blue lines and is labeled “RESTRICTED.”

## Warning Areas



The third use of the dashed blue lines is for Warning Areas. The FAA wants you to that this airspace can include activity that is hazardous to pilots.



## Military Operations Areas (MOAs)



MOAs, or Military Operations Areas, are defined by dashed magenta lines. Pilots should exercise “extreme caution” in these areas.

## National Parks & Wilderness Areas



A solid blue line with dots along the inner border designate National Parks and Wilderness Areas. These areas require pilots to stay above 2,000ft AGL. Since drones can't pass 400ft, they are prohibited. Sadly.