HOW TO CONDUCT AIRSPACE RESEARCH

Airspace research is one of the biggest challenges for drone pilots.

It's one thing to answer a multiple-choice question on the Aeronautical Knowledge Test about controlled vs. uncontrolled airspace. It's quite another thing to conduct airspace research in the real world, which requires you to analyze an upcoming flight mission, look at the Sectional Chart, interpret the regulations, and think through your intended flight operations and how to best mitigate risk — all of this can be intimidating for a lot of folks.

So in this video, I want to run through the basics of conducting airspace research as a drone pilot.

First, we'll go through our airspace research checklist, then we'll go over a few of the most popular airspace research tools and how to use them.

Let's dive in.

Airspace Research

Airspace research is something you can do days or weeks before a flight. It's different from a pre-flight checklist, where those are items you'd go through just before your flight, or the night before as you're packing up for a flight mission the next day. A pre-flight checklist is more closely associated with your actual

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flight, whereas this airspace research checklist is all the other research you can do in advance.

With airspace research, the first thing to remember is to start early. The sooner you understand the environment you're flying in, both from a regulatory and also a risk-mitigation perspective, the better. What permissions might be needed. Or what flight paths you might want to take or shots you might want to get. Whether or not you even want to commit to doing the flight.

So when it comes to flight mission planning, airspace research is your first step.

1) Would I be flying in prohibited airspace?

First, you'll want to check out the Sectional Chart for prohibited airspace. That could be a quick indication that your flight mission likely isn't going to happen. Keep in mind there are several other prohibited areas like the National Park System, Washington D.C., Department of Energy sites, military bases, penitentiary systems and other Department of Interior locations like the Statue of Liberty. When in doubt, do a bit of Googling to see if you might need to rethink your flight mission.

2) Would I be flying in controlled or uncontrolled airspace?

The next thing you'll want to analyze is whether or not you would be flying in Class G uncontrolled airspace vs. Class B, C, D, or E controlled airspace. If you're in Class G airspace, no permission from the FAA is required, but if you're in Class B, C, D, or E airspace, you'll need clearance from the FAA. If you need

to review how FAA airspace authorization works and how to get that clearance, make sure to [check out our step-by-step guide](#) which I'll link to below this video.

Just a quick reminder that there are many airports and heliports that sit in Class G uncontrolled airspace, so you may very well be operating near an airport. And, regardless of whether or not you plan to operate in uncontrolled or controlled airspace, if you'd be flying in close proximity to an airport, it's a best practice to consult the Chart Supplement for that airport, or even to consider making contact with the airport directly to better understand things like local manned aircraft traffic patterns, air traffic control and airport operating hours, or typical flight volume during the week. A more informed pilot-in-command is a safer, more responsible pilot-in-command.

3) Are there other Special Use airspace considerations?

Would you be flying in a Military Operations Area? How about a Warning or Alert Area? A Restricted Area? Make sure to review our lecture on Special Use airspace, where we show you how to look at a Sectional Chart to see if you'd be operating in any of these areas. That lecture also explains how you can look at the border of the Sectional Chart for more information on area parameters and who to contact for questions.

4) Are there TFRs / NOTAMs in effect?

While Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs) are something you'll want to check just prior to operating to ensure you're not

missing any last-minute additions, these are alerts you can (and should) check for ahead of time as well.

On any given day, there are typically several TFRs in place across the National Airspace System (NAS), including the Stadium TFR, which is a standing flight restriction that prohibits flights at or below 3,000 ft. AGL within a 3 NM radius of any stadium with a seating capacity of 30,000 or more when there's a major league baseball game, NFL game, NCAA Division I football game, or major motor speedway event. This TFR takes effect from one hour before the scheduled event time until one hour after the event concludes.

You can check for TFRs and NOTAMs at the following links, which I'll include below this video as well:

- Check for TFRs at http://tfr.faa.gov
- Check for NOTAMs at https://notams.aim.faa.gov/notamSearch

5) Are there local laws at play?

Here's a fun fact. You might be in full compliance with the Part 107 Federal Aviation Administration regulations, but you could still be in violation of local laws.

Long story short, there continues to be a lot of tension between what's happening federally and what's happening locally. We do our best to track significant local drone regulations, like what happened in the city of Orlando, Florida, or how if you're flying in the state of North Carolina, you need to pass a

separate NCDOT test and submit your information to the state prior to conducting commercial drone operations. When in doubt, Google can be your friend. And so can connecting with other local pilots in your area to get a few opinions.

At the end of the day, and sorry to get on my soapbox here for a second, but use good judgment and handle regulatory issues, particularly at the local level, with as much grace and professionalism as possible. As a remote-pilot-in-command, you're an advocate for all other drone pilots and the future of this industry. Just be mindful and respectful and do the best you can out there.

6) What's my flight perimeter / operating area?

OK, you've decided that you're able to fly, and you're starting to get into actual flight mission planning. So at this point, I'd open up Google Maps or drive to the location or look at other available photos or schematics of the area, and I'd think about things like:

- Where are my different take-off and landing zones?
- Is there a potential for electromagnetic interference?
- What does the local terrain look like, both natural and man-made?
- Are there towers, wires, buildings, trees, or other obstructions to look out for?
- What kind of pedestrians and/or animals can I expect operating in this area?

- Would I benefit from having a Visual Observer (VO) or other crew member to help?
- Based on the flight mission, do I have emergency landing or holding areas mapped out?

Bottom line, it's a best practice to think about your immediate flight area and what your actual operations will look like the day of the flight.

Airspace Research Tools

So before we get into demonstrating a few of the most popular airspace research tools, I want to talk briefly about Sectional Charts and the FAA's B4UFLY app.

Sectional Charts

A VFR Sectional Chart is like a Rand McNally atlas road map but for the sky. It shows geographical and man-made obstacles, certain airspace boundaries and a whole bunch of other important pieces of information in amazing detail.

There are just over 50 Sectional Chart maps that cover the continental United States, Alaska, and Hawaii, each one named for a city on the map. And these charts are updated every few months with the latest information from the FAA.

Traditionally, you would buy a paper version of a Sectional Chart, but these days most drone pilots are using apps on their computer, tablet, or phone to conduct airspace research.

Which brings us to our next question.

Should I Use the B4UFLY App?

Short answer? No, not if you're operating commercially.

We get this question a lot, since the B4UFLY app is positioned as the official FAA app for drone pilots. But where many folks get confused is that the B4UFLY app was built for hobbyist or recreational fliers, not for commercial Part 107 operations. So it'll show all these circles if you're within 5 miles of any airport, but it doesn't take into account the different classes of controlled airspace and Part 107-specific operating rules.

OK, let's wrap up this lecture by looking at a few digital tools you can use to help your airspace research. There are many airspace research tools out there. This is not an exhaustive list. We're just going to go through three that we think are good options. If you have a preferred tool you'd like us to work into this lecture, shoot us an email at support@dronepilotgroundschool.com.

VFRMap.com

OK, so first tool.

VFRMap.com offers free, digitized Sectional Charts, allowing you to zoom in and out and click into airports to get more detailed information. See how they're all stitched together? Pretty cool!

With VFRMap, you can find airports by typing in their 3 or 4-letter airport code, by the name of the airport, or by city or state.

You're going to get the most amount of information by keeping the tab on Hybrid VFR, but check out how you can also toggle between Google Maps road map view and satellite view.

At higher zoom levels, you will see small dots overlying many airports. These are airport markers, and when you click or tap on a marker, you will see the Chart Supplement open up for that corresponding airport. Make sure to review our lecture on Chart Supplements if you need a reminder about why these are important and what kind of info you can find here.

SkyVector.com

I also like to use SkyVector, which is designed very similarly to VFRMap. While you can't zoom in as much as in VFRMap, you're getting some extra features with SkyVector. And I want to spend the next few minutes going through those features.

- You can see the exact latitude / longitude coordinates.
- If you click "Layers," you can see Temporary Flight Restrictions (TFRs) and METAR / TAF reports.
- You can isolate the actual Sectional Chart for a particular region in order to view information on the border of that chart.

● While Sectional Charts are mapped at a 1:500,000 scale, they're complemented by Terminal Area Charts (TACs) at a 1:250,000 scale for the areas around major U.S. airports. So if you see these white boxes around major airports, you can actually click to see the more zoomed in Terminal Area Chart (TAC).

So SkyVector is a little more robust than VFRMap, but both are great free tools for airspace research.

AirMap

AirMap is also a great airspace research tool, but it functions differently than the raw sectional chart data. Personally I like to use both AirMap and a digital Sectional Chart tool when doing airspace research.

The first thing you'll want to do with AirMap is to toggle from "Fly for Fun" to "FAA Part 107 Certified" if it's not already set to that.

Then, in the search bar, you can plug in not only the same airport coordinates and city / state combinations, but you can also punch in an exact address or zip code. So the search features are just a little more robust, which is nice.

And in this What's Your Mission section, you can add other filters as well. You can see how AirMap has their own recommended advisories that'll show hospitals, schools, airports, penitentiary systems, power plants, and other sensitive areas, so that even if you're looking at Class G uncontrolled airspace,

you're getting a quick overview of other potential regulatory or risk mitigation issues. It's a nice gut check and a feature I like to use quite a bit.

Finally, one more helpful gut check feature here is that AirMap seems to be trying to integrate local regulations into their maps. So like in Los Angeles, it shows me information about film permits and noise ordinances and other local rules. Or in Nashville, it shows me that if I'm operating at Vanderbilt University, I need to submit my flight details to them and to get special permission to fly.