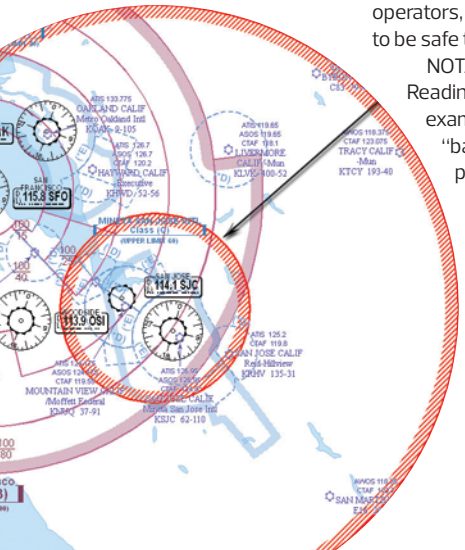
BY **JEFFREY ANTONELLI**

A Guide to NOTAMs, TFRs, and Airspace Classification

If flying a drone/UAV (unmanned aerial vehicle) commercially under Part 107 of the Federal Aviation Administration (FAA) rules is your first foray into the aviation world, the alphabet soup of information you need to know can be intimidating. Reading sectional charts or deciphering NOTAMs (Notices to Airmen) and TFRs (Temporary Flight Restrictions) can send chills through an inexperienced pilot. This month's column will briefly discuss some of these items to give readers a basic understanding of some of the commonly used terms that might cause confusion. It is not a comprehensive Part 107 study guide.

TFR over president-elect Donald Trump's New York City residence.

TFR over 2016 Super Bowl in San Jose, California.



This column should not be used as a substitute for study. I strongly encourage you to visit the FAA's website (faa.gov) to review the materials available on each of these subjects and consider sitting through a ground-school class, either at a local community college or through an experienced course operator, to gain a greater working knowledge of these topics.

Notice to Airmen (NOTAM)

A NOTAM is a notice filed with an aviation authority to alert aircraft pilots of potential hazards along a flight route or at a location that could affect the safety of the flight. In addition to TFRs, which are all issued as NOTAMs, pilots may expect to see updates regarding weather conditions, closed runways, or military operations. NOTAMs will also list restricted areas and prohibited areas. Some information listed in NOTAMs will be pertinent to drone operators, but some will be irrelevant. That said, it's better to be safe than sorry.

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NOTAMs are often issued in abbreviated format. Reading one can feel like deciphering a code. For example, "BR SCT 007" translates to scattered "baby rain" (aka mist) at 700 feet. NOTAMs for a particular area can be found at pilotweb.nas.faa.gov. Pull up NOTAMs for different areas until you get the hang of reading them.

Drone operators in the past have been required to have NOTAMs issued 24 hours before a flight—a notification that is sometimes referred to as a "DROTAM" (Drone Notices to Airmen). These can be found on some websites that provide sectional maps to users, such as skyvector.com.

Temporary Flight Restriction (TFR)

A TFR is a type of NOTAM that temporarily restricts certain aircraft from operating within a defined area in order to protect people or property in the air or on the ground. TFRs all begin with the phrase "Flight Restrictions" and include the following information:

- Location of the TFR area
- Effective period
- Defined area
- Altitudes affected
- FAA coordination facility and telephone number
- Reason for the TFR
- Agency directing relief activities (if applicable) and telephone number
- Any other information considered appropriate

To view current TFRs, operators can visit the website http://tfr.faa.gov/tfr2/list.html. Some high-profile TFRs will also be announced as news from the FAA in order to increase public awareness. For example, in summer 2016, both the Democratic and the Republican National Conventions were declared "Drone Free Zones" when the FAA issued TFRs for Cincinnati and Philadelphia. In November 2016, the FAA also issued a TFR over the Standing Rock protests in South Dakota. Note: Sometimes exceptions can be made. As an example, my law firm helped a client obtain FAA permission to fly at Standing Rock for newsgathering purposes via a Certificate of Authorization/Waiver (COA).

There are a number of different types of TFRs that may be issued. They are regularly issued when the president, vice president, or other important public figures are in town. This makes sense—it limits the amount of air traffic around these figures for the purposes of national security.

TFRs are also issued for major sporting events, including but not limited to MLB and NFL games, Division I sporting events, and NASCAR races. Expect to see TFRs and news bulletins over Houston, Texas, for Super Bowl Sunday in February 2017. These restrictions make sense as well—tens of thousands of people attend these events and are in a densely packed area. Should something go wrong, the potential for injury is incredibly high.

Sectional aeronautical charts, like this, are a primary navigational reference tool for pilots. As you can see, they might seem complicated if you don't know what you're looking for.

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The FAA may also issue TFRs in disaster or hazardous areas in order to prevent all but expressly approved drones/UAVs from operating in that area. Again, this restriction makes sense. If drones and helicopters are being used to assist with recovery or if authorized news outlets are flying overhead, "rubbernecking" operators will cause congestion and confusion, and could add unnecessary chaos to relief efforts.

Violators of TFRs could face monetary penalties and imprisonment, which is why it is important to check for TFRs prior to every flight and why it is important to use common sense before flying. As cool as a video might be, it is not worth injuring someone else and it is not worth facing hefty fines or jail time.

Sectional Maps and Classes of Airspace

Sectional maps are another area of aviation that can make drone operators feel the need to invest in a decipher ring. Websites like skyvector.com and iflightplanner.com make it easier for operators to locate the area they want to operate in to determine whether TFRs or other NOTAMs have been issued, what airports or densely populated areas are nearby, and the class of airspace the location is in. Being able to interpret these maps is a necessary skill to pass the Part 107 remote-pilot licensure exam, so make sure you practice reading them.

The last item I want to briefly address is airspace classification. Different areas on the map are classified based on how busy a particular area of airspace is or the complexity of the airspace. Maps are, by necessity, produced in a flat, two-dimensional medium, but we need to think in 3D. Picture an upside-down wedding cake—the smallest tier will have its center point at an airport. The airspace at the surface will be concentrated where planes are taking off and landing. The second tier will be farther from the ground but wider, where aircraft are beginning their descent.

Class B, which is the highest classification of airport, has a third tier up top. There are 37 Class B airports in the United States. These include Chicago O'Hare, Atlanta, and New York LaGuardia. Class C airports are smaller but still include airports that passengers regularly fly in and out of, including Chicago Midway; Des Moines, Iowa; or Sacramento, California. Class D airports have a functioning control tower but do not see commercial flights. Class E airspace begins at either 700 or 1200 feet above ground level and would only be a concern for drone operators looking to operate at those altitudes. Class G airspace includes any airspace that is not controlled, and that is where the majority of drone flights take place. Yes, there is also Class A airspace beginning at 18,000 feet above ground level; however, we will not see regular commercial drone flights at those altitudes for quite some time.

Being able to recognize these airspace classifications on a map is important because these classifications will tell you if you need to request special airspace permission to fly your drone in that area. As of December 2016, the FAA has allowed Part 107 waivers to be requested for Classes B, C, D, and E to Part 107 operators.

Final Word

Drone technology makes it much easier for new operators to jump head first into flying. Drones are sleek, easy to use, and fun! The ease of which you can operate, however, does not excuse you from FAA regulations—aka learning the rules of the road—which includes being able to read, interpret, and understand these tenets of manned aviation that are also applicable to unmanned flight. It is well worth taking the time to learn this language. It will make you a more prepared and, ultimately, safer operator.

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With a legal background in corporate outside counsel, civil litigation, insurance defense, and intellectual property and drone/UAV law, Jeffrey began flying radio-controlled aircraft several years ago, which lead him to research new technologies, including first-person viewing (FPV) and drones.

Disclaimer: *None of this article constitutes legal advice. Please consult an attorney if you have legal questions. Kate Fletcher, counsel to Antonelli Law and 737 pilot with one of the world's largest airlines, and associate attorney Amelia Niemi assisted Jeffrey Antonelli with this article.*