

Best practices for making a drone waiver safety case to the U.S. FAA

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Companies in a range of industries — from real estate, to agriculture, to Hollywood film production and beyond — are using unmanned aircraft systems (UAS) to improve operations or services. Most operators can accomplish their objectives within the Federal Aviation Administration’s (FAA) regulatory parameters. But waivers can be requested for special operations, such as flying a drone at night, directly over people, above 400 feet, near airports, or beyond the pilot’s visual line-of-sight (BVLOS).

Operators who have questions about the regulations governing drone operations can turn to the FAA’s DroneZone portal to find some of the answers they need. The portal provides “Waiver Safety Guideline Questions” that describe the type of information that should be included in supplemental documents for different types of waivers.

The key issue for applicants is to demonstrate to the FAA that they can operate safely if granted the requested waiver or waivers. However without templates or lists of documents that should be included in a waiver package, most applicants could benefit from a list of best practices.

In this hoganlovells.com interview, Matthew Clark, a senior associate at Hogan Lovells, provides insight into what the FAA looks for in a safety waiver case and what applicants should consider when requesting a waiver.

A company or pilot can apply for a waiver to operate a UAS outside the FAA’s standard regulations. What is included in a waiver?

Clark: On the FAA’s database, you can see all of the Part 107 waivers that have been granted by the FAA. It’s typically a three- or four-page document that says you have a waiver from a particular FAA regulation, and it lists the waiver’s common and special provisions. Those provisions might say, for example, that you must have lights on the vehicle, it has to weigh less than a specific amount, that you have to have extra training for your pilot, or that you will conduct the operations in accordance with the manual that you gave the FAA — essentially what you said you would comply with when you applied for the waiver.

You’ll see from the waiver that the FAA went through the person’s safety case and then came up with a list of provisions and said, well, okay, we’ll give them a waiver, but they have to do these

extra things that go beyond the basic minimums of Part 107 to ensure safety. But what you won't be able to see are the underlying safety case documents that the applicant provided to the FAA. We'll talk about those shortly.

What is the process for submitting a waiver application?

Clark: The way it used to be is that you completed an online form that didn't have much substance, and then you e-mailed your safety case documents to the FAA. But now you can submit your application and supplemental documents on the FAA's DroneZone portal. And if you've ever registered a UAS online, the account information that you used to register your drone is now your DroneZone account. The FAA envisions it as its one-size-fits-all, one-stop shop to make your airspace waivers, seek authorizations, or register your vehicle.

When preparing a waiver safety case, what supplemental documents do you have to submit, and which of those are publicly available?

Clark: What you have to give the FAA will vary based on what you're asking for and how risky the operation is. A night waiver is going to be a lot easier for you to get than a BVLOS waiver or a waiver to fly with people. And that's really a product of the risk involved. There are risks to flying at night, but I think, from the FAA's perspective, there's more risk associated with flying BVLOS and flying over people.

There are not official formats or names for the documents you submit as part of the waiver case, and you might use some of them and not others — it's really going to depend on the unique nature of your UAS operation. They will all be unique to the individual operation and individual operator: what they're flying, where they're flying, what are their mitigations.

The documents commonly submitted are the Concept of Operations, or CONOPS; Operational Risk Assessment; operating manual and checklists; crew training material; vehicle design and test data; and a letter or matrix demonstrating how the material you are providing to the FAA answers the FAA's Waiver Safety Guideline Questions for the waiver or waivers you are asking for. These are not publicly available documents because they are typically proprietary to the person or company that is applying for the waiver.

What information should you include in the CONOPS?

Clark: The CONOPS is really going to be one of the key documents. It's where you tell the FAA what you want to do, what are you flying, where you are flying, and who your crew members are. The FAA has to understand exactly what you want to do if they're going to be able to assess the risks of that operation. The Waiver Safety Guideline Questions provide a helpful framework for the content of your CONOPS.

The CONOPS is where you're going to talk about your UAS, such as its onboard technology,

operational history, test data, and autopilot capabilities. Then you'll describe the personnel involved with the operation, and include their qualifications and responsibilities before, during, and after the flight.

You'll also describe the operating environment, including the proximity to buildings, people on the ground, roadways, and airports. Then you'll talk about operating procedures, such as emergency and safety procedures.

What are the purpose and contents of an operational risk assessment?

Clark: That's where you look at your hazards and risks associated with the operation — what is the likelihood of something happening, and if it does happen, what's the level of severity? You're going to explain these to the FAA in some sort of risk assessment document and describe how you'll mitigate those risks. Again, there's no official name for it, but the FAA wants to know that you sat down, took an approach to actually identify what the potential risks and hazards are, and that you mitigated them. Some people might combine this into one document with the CONOPS, but you'll also have to have some sort of risk assessment.

Some terms commonly used in an assessment to explain risks are “hazard,” which is a condition that could cause or contribute to an accident. “Likelihood” is an estimate of probability or frequency of a hazard's effect. And “severity” is the consequence of a hazard's effect and the potential degree of loss or harm.

Would you provide some examples of potential hazards?

Clark: Some things you might want to include in a risk assessment are — what happens if the battery fails? What if the aircraft is incapable of stable flight? What if the aircraft flight control electronics fail?

Other risks could be a catastrophic structural failure of aircraft, losing the C2 link, intruding into unauthorized airspace, a midair collision with another aircraft or a collision with a structure, or pilot distraction by events on the ground.

You know, for a lot of the risks, the end result is going to be the same: the drone's going to crash. You're not going to be able to control its flight. And so what happens? And that's really going to be unique to your operating environment.

For example, if you're flying over sensitive critical infrastructure with pipelines that might be flammable and explosive on the ground, that's a lot different than if you're flying over a cornfield. So again, the scope and complexity of these documents is really going to be relative to what you're asking to do.

About Matt Clark

Matt Clark works with clients throughout the aviation community to navigate federal regulatory issues. He advises UAS operators, users, and manufacturers on FAA regulatory and other legal issues that arise when innovation and regulation collide. Matt works with UAS clients in various industries developing new and innovative commercial UAS applications, including utility and infrastructure, precision agriculture, construction, insurance, real estate, architecture and engineering, media and news gathering, and higher education institutions.

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