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COMMENTARY

FAA Releases Notice of Proposed Rulemaking for Small Unmanned Aircraft Systems

On February 15, 2015, the Federal Aviation Administration ("FAA") released its notice of proposed rulemaking ("NPRM") for the regulation of small unmanned aircraft systems ("sUAS"). Although more accommodating of the commercial considerations associated with sUAS operations than anticipated, the NPRM leaves room for improvement in many areas. The NPRM was published in the Federal Register on February 23, 2015, and the 60-day comment window will close on April 24, 2015.[1]

As anticipated, the NPRM defines "sUAS" as those systems weighing less than 55 pounds, including all fuel, sensors, and payload onboard. Rather than modify 14 C.F.R. Part 91 and other regulations to accommodate sUAS operations, the FAA proposed creating an entirely new Part—14 C.F.R. Part 107—to regulate sUAS operations.[2] The new Part 107 proposes limiting sUAS operations to no more than 100 miles per hour (87 knots) and less than 500 feet above ground level ("AGL"). It also allows sUAS to operate in Class G airspace without air traffic control's ("ATC") permission but prohibits sUAS operation in Class A airspace. Furthermore, sUAS may not enter Class B, C, D, and E airspace without ATC permission. Part 107 also limits sUAS operations to daylight hours.[3]

In addition to these basic operational limitations, the NPRM also proposes several more complex limitations that will require careful consideration and modification if sUAS are to be utilized in commercial operations to their fullest capacity.

Visual Line-of-Sight Operation

The new Part 107 proposes that all sUAS operations be conducted within visual line-of-sight ("VLOS") of the sUAS operator. The operator may not use any devices other than corrective lenses (i.e., eyeglasses) to maintain VLOS. The FAA also contemplates that visual observers may be used along with the operator, provided the visual observers remain in communication with the operator at all times. Using a visual observer does not remove the requirement that the sUAS remain with VLOS of the operator. Instead, visual observers may be used to facilitate collision avoidance by looking out for, and warning the operator of, other aircraft within the airspace.

The FAA emphasizes the VLOS requirement by explicitly noting that the use of one or more visual observers may not be used to create a "daisy chain" to extend

the VLOS limitations of the operator. Likewise, while the proposed Part 107 permits the operator to employ a first-person view ("FPV") camera, the operator would not be able not rely on FPV to satisfy the see-and-avoid or VLOS requirements. The FAA also notes that an operator may not extend his or her VLOS by riding on a moving platform. Interestingly, the FAA makes an exception to this restriction, allowing that an operator may be stationed in a mobile watercraft while conducting sUAS operations over water, surmising that there is less risk of interaction with members of the general public over water than over land. The FAA does not address how the risks introduced by a mobile operator over water are any greater than those for a mobile operator conducting operations in uncongested airspace over unpopulated land.

There is little doubt that the VLOS requirement will mitigate the risk sUAS operations pose to other aircraft. However, it effectively eliminates the greatest commercial asset sUAS possess—the ability to operate remotely. By restricting sUAS to operations within VLOS of an operator on the ground, the FAA recognizes that sUAS may be unpiloted, but they cannot be "unmanned" in the truest and most efficient sense of the word.

Loss of Positive Control

Arguably, the proposed Part 107 views the loss of the data link between the operator's control station and the unmanned aircraft—defined as loss of positive control—as one of the largest risk factors associated with sUAS operations. The FAA initially considered requiring that sUAS contain a flight termination system that would automatically terminate the flight in the event of the loss of positive control of the unmanned aircraft. The NPRM rejects this proposal, however, and instead adopts a "performance-based-operator-responsibility standard" to mitigate the risk due to a loss of control.

The FAA proposes to mitigate the risk of loss of positive control by requiring the operator to assess the area of operations[4] for potential hazards prior to flight, and to conduct a preflight inspection of the sUAS to include checking that all control links are operating correctly. Additionally, the NPRM limits the operation of sUAS to 87 knots calibrated airspeed, ostensibly because an aircraft without positive control traveling with less airspeed poses less of a risk to persons and property than one traveling at a higher airspeed.

Most significantly, however, the NPRM seeks to mitigate loss of positive control by prohibiting flight over persons not "directly" involved or participating in the operation of the unmanned aircraft. "Directly" is defined narrowly, to include only those whose "involvement is necessary for the safe operation of the small unmanned aircraft."[5] Practically, this limits sUAS overflight to only its operator and visual observers.

This standard seems to eliminate many commercial sUAS flights. The FAA suggests that before flight, an operator could ask each uninvolved individual within the area of operations to stay indoors for the duration of the flight. Such compliance, however, would be voluntary, and the FAA acknowledges that should a single individual refuse to comply with the request, the sUAS flight could not take place.

Subjecting sUAS flights to the uncertainty of voluntary compliance again removes the efficiency sUAS bring to commercial operations. Importantly, sUAS operations cannot be conducted over individuals even when they are aware of, and consent to, the sUAS flight. For example, a company that hopes to use a sUAS to assist with the placement and inspection of natural gas wells and drilling pads would be able to conduct the flight only if it removed all personnel from the area of operations for the duration of the sUAS flight, or required them to remain sheltered under cover throughout the duration of the flight.

Operator Requirements

The proposed Part 107 eliminates the requirement that sUAS operators obtain a pilot's license. Instead, operators must obtain an unmanned aircraft operator certificate with a sUAS rating. To obtain this certificate, operators need to be at least 17 years old and need approval by the Transportation Security Administration. Additionally, operators must pass an initial aeronautical knowledge test, as well a recurrent aeronautical knowledge test every 24 months.

Visual observers will not be required to obtain any certificate or undergo any training or knowledge-based tests.

Unmanned Aircraft Requirements

The FAA has proposed that sUAS will not require an FAA airworthiness certificate. Instead, the operator must maintain the sUAS in a condition safe for flight and must make the sUAS available to the FAA for testing and inspection upon request. Additionally, the operator is required to perform a preflight inspection on the sUAS prior to each flight, ensuring it is in a condition safe for flight. All sUAS, however, must be registered with the FAA in the same manner as existing aircraft and are required to display the same markings as a traditional aircraft.[6]

The FAA also proposes that sUAS will not be required to conform to an inspection or maintenance program. The FAA proposes that the parts or products used on sUAS need not be approved for use by the FAA. Notwithstanding this exemption from approval, should a manufacturer use parts that are presently approved for use by the FAA, those parts would be subject to airworthiness directives and could impose additional maintenance requirements on the owner or operator.

The FAA notes that it imposed this same requirement on light-sport aircraft in its 2004 rulemaking. Yet, this proposed rule serves as a disincentive to produce UAS using previously approved and FAA-certificated parts by imposing additional maintenance and monitoring requirements.

While the concession that sUAS need not obtain an airworthiness certificate appears favorable to manufacturers and users, in reality it may prove problematic. By requiring airworthiness certificates and establishing comprehensive standards for each aircraft part and system, many jurisdictions have held that the FAA has preempted the states from enacting their own standards or enforcing state tort law standards. Other jurisdictions have found that some federal regulations governing aircraft design and safety are not pervasive enough to displace state tort law standards governing product liability. If the FAA chooses not to impose a national standard upon sUAS, then there is a potential that the latter view may apply, and each state may determine that it has the authority to enact its own airworthiness and maintenance standards. A patchwork of state regulations could substantially affect sUAS development.[7]

Micro-UAS

The proposed Part 107 also considers creating a sub-class of sUAS, termed "micro-UAS." These micro-UAS would be less than 4.4 pounds (2.0 kg) in total weight, and they would be required to be made out of frangible materials that break, distort, or yield upon impact in order to minimize the damage to persons or property in the event of a collision. The proposed rules allow micro-UAS to be operated below 400 feet AGL in Class G airspace. Flight into any other airspace is prohibited, as is flight within five miles of an airport. The FAA reasons that because of their very small size, these micro-UAS pose even less of a threat to persons, property, and other aircraft than sUAS and should be regulated accordingly.

Some of the proposed micro-UAS regulations are obviously designed to recognize the reduced risk. For example, micro-UAS flight over *any* individual—and not just those "directly" involved in its operation—is permitted. Additionally, while a micro-UAS operator is required to obtain an operator's certificate, he or she is not required to pass a knowledge test. Instead, the operator is allowed to self-certify that he or she possesses the required aeronautical knowledge to conduct micro-UAS operations.

Other proposed micro-UAS operations seem less related to the reduced risk posed by small, frangible aircraft. Most notably, while autonomous operations are contemplated for sUAS in general, such operations are prohibited for micro-UAS. Autonomous operations are those that do not require (or permit) operator input during flight.[8] For example, a micro-UAS outfitted with GPS navigation that is programmed before flight to fly to a series of waypoints and then does so without operator input is considered to be operating autonomously.

The prohibition of autonomous operations excludes these types of flights by micro-UAS. It is incongruous that micro-UAS, which pose a reduced risk to the public, would be prohibited from operating autonomously while sUAS, which pose a greater threat, would be allowed. This is particularly true when the proposed micro-UAS regulations would allow flight over individuals not directly involved in the micro-UAS operation. This allowance, coupled with autonomous flight not restricted to the VLOS of an operator, would provide micro-UAS with an enormous amount of flexibility to enhance commercial operations.

The proposed micro-UAS regulations also prohibit FPV during operations. Given that the proposed VLOS, operator, and visual observer regulations for micro-UAS would be the same as those for sUAS, it is unclear why FPV would not be permitted on micro-UAS.

Conclusion

The FAA's proposed rules regulating sUAS are an important—and significant—step in the right direction toward comprehensive yet permissive regulations for sUAS. Still, more work remains to be done before the final regulations reflect the commercial realities of sUAS operations. Industries, as well as individual sUAS users and manufacturers, should coordinate public comments to the NPRM that emphasize the economic efficiencies and safety enhancements sUAS operations bring to their operations.

Lawyer Contacts

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Endnotes

1 The NPRM can be found at 80 Fed. Reg. 9544 (Feb. 23, 2015).

2 Part 107 does incorporate some standards currently in place. In particular, sUAS would be subject to 14 C.F.R. Parts 45 (aircraft identification and markings) and 47 (aircraft registration), and the restrictions on drug and alcohol use in 14 C.F.R. §§ 91.17 and 91.19.

3 The FAA also promulgated an overview of the NPRM, summarizing the proposed limitations in these areas. This overview can be found here.

4 Part 107 defines the area bounded horizontally by the operator's VLOS and vertically by the mandatory 500 feet AGL ceiling as the sUAS's area of operations.

5 Operation and Certification of Small Unmanned Aircraft Systems, 80 Fed. Reg. 9563 (Feb. 23, 2015).

6 sUAS that are too small to display the necessary markings would be required to display their registration number in as large a manner as practical.

7 In fact, 20 states have already enacted some type of statute or regulation governing UAS operations, although none has thus far sought to regulate UAS airworthiness or maintenance standards. At present, it is unclear what authority states have to enact regulations concerning UAS and UAS operations.

8 However, autonomous UAS operations would still be restricted to the VLOS of an operator, although the operator would, in these cases, merely be observing the UAS conduct its mission and not controlling the aircraft.