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FAA Adopts Final Rules for UAS Remote ID, Flights over People, and at Night

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The Federal Aviation Administration (FAA) released long-awaited final rules yesterday governing unmanned aircraft system (UAS or drone) remote identification (remote ID) and flights over people and at night. Specifically, the rules will (i) require drones to broadcast information identifying the drone in flight and the location of the drone control station, but will *not* require an internet connection or transmission of information to a network service provider; (ii) allow qualified operators to fly small UAS over people, including over moving vehicles; and (iii) permit operation of small UAS at night under certain conditions. These rulemaking documents have been highly anticipated by the UAS industry given that the FAA and public safety and security stakeholders have viewed remote ID implementation as a necessary hurdle before the FAA could issue rules expanding permitted commercial UAS operations. The new rules allowing flights over people and at night are significant because they represent the first such expansion of the FAA's Part 107 rules for small UAS, which were adopted more than four years ago.

Two departures from the FAA's proposals are particularly notable: a switch from internet-based to broadcast-based remote ID, and the ability to operate UAS over moving vehicles under the rules authorizing flights over people. **First, the FAA reversed course on the means of transmission for the remote ID message** (aircraft location, timestamp, etc.), switching from a proposed two-tiered scheme that would have required that the message be transmitted via internet connection to a UAS service supplier (USS) in all cases (network remote ID), while allowing the option of also broadcasting the message over radiofrequency spectrum (broadcast remote ID) in addition to internet transmission to enable beyond visual line of sight

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operations. **Instead, the FAA will require broadcast remote ID in all cases, and will not require network remote ID at all.**

Citing "challenges" that "it had not foreseen or accounted for" with respect to network remote ID, the FAA opted for a "simplified approach" of using broadcast remote ID. The shift in approach reflects the FAA's recognition that although a network-based remote ID solution could be a key building block for the UAS Traffic Management system (UTM) that will ultimately allow full UAS integration into the airspace, UTM continues to be a long way off, and a broadcast-based solution is sufficient to address the short-term problem that remote ID is designed to solve: enabling public safety entities to identify aircraft and operators during UAS flights. Consistent with the notice of proposed rulemaking (NPRM), broadcast remote ID systems will transmit information about the aircraft and flight using unlicensed spectrum governed by Part 15 of the Federal Communications Commission's (FCC) rules.

The final rule contemplates three potential paths to compliance: (1) an aircraft that, as manufactured, meets the remote ID standard; (2) an aircraft that is retrofitted with a broadcast remote ID "module"; or (3) consistent with the NPRM, an aircraft without remote ID equipment that operates at an FAA recognized identification area. The broadcast module is intended to allow remote ID compliance for homebuilt aircraft or aircraft built prior to the remote ID rule, and generally mirrors the requirements for aircraft manufactured in compliance with the rule. **The key distinction is that an aircraft equipped with a broadcast remote ID module cannot be operated beyond visual line of sight.** This is because while the standard remote ID rules require the aircraft to report the real-time location of its control station, those applying broadcast remote ID modules use the aircraft's take-off location as a proxy for the location of the operator—the FAA found that allowing these aircraft to fly beyond line of sight would thus make it too difficult to locate the operator.

Second, the FAA switched course in its flights over people rulemaking to allow operation over moving vehicles. In the NPRM, the agency proposed to altogether prohibit operations over moving vehicles in the regulations authorizing operations over people under certain circumstances. Agreeing with commenters that "operations over people in moving vehicles could be conducted safely, subject to certain conditions," the final rules enabling flights over people will allow operations over moving vehicles in two circumstances: (1) the operations are within a closed- or restricted-access site and people located within vehicles are on notice; and (2) if not in a closed- or restricted-access site, the operator can transit the airspace above moving vehicles but cannot maintain sustained flight over them. The FAA's decision to allow operations over moving vehicles eliminates what would have been a major barrier to expanded operations.

An overview of the major details of the final rules follows.

Remote ID

- **Means of Communication: Broadcast-Only; No Internet/USS Transmission.** As set forth above, the final rules depart significantly from the NPRM, requiring solely broadcast remote ID and not using any form of network remote ID. Broadcast remote ID systems will transmit information about the flight and aircraft using unlicensed spectrum in accordance with Part 15 of the FCC's rules. Remote ID UAS and

broadcast modules must be designed and produced consistent with an FAA-accepted means of compliance. Notably, the FAA declined to adopt a proposed rule that would require that the UAS "incorporate cybersecurity protections" for broadcast or network remote ID, agreeing with commenters that broadcasting the message elements does not raise cybersecurity concerns.

- **Means of Equipage: Retrofitting Permitted, But only for VLOS Operations**. As set forth above, the final rules contemplate two types of aircraft equipped with remote ID capabilities: those with built-in remote ID capabilities, and those retrofitted with a "broadcast module." The modules function in the same manner as built-in remote ID, transmitting over unlicensed radio frequencies consistent with the FCC's Part 15 rules. Further, an aircraft equipped with an add-on module must operate in much the same way as an aircraft with remote ID built-in, with one key difference: Aircraft using broadcast modules are prohibited from flying beyond line of sight. This is because the broadcast modules do not transmit the location of the aircraft's control station, as is required for built-in Remote ID. Instead (in addition to the current location of the aircraft), they are required to transmit their take-off location, which is intended to serve as a proxy for the location of the operator.
- **FRIAs: Educational Institutions May Also Apply**. Aircraft without either built-in remote ID or an add-on broadcast module can generally operate only in designated, FAA-recognized identification areas (FRIA). The final rule preserves the FRIA concept from the NPRM, but makes a number of changes designed to broaden the availability of FRIAs, including expanding eligibility to apply for the establishment of an FRIA "to include educational institutions in addition to community-based organizations (CBOs)," and removing the proposed 12-month limitation on time to submit applications. The FAA also notes that it intends to clarify the application review criteria and required information for applications in an advisory circular that it will publish following the rulemaking.
- **Implementation Timeline:** The FAA anticipates that the rule will likely be published in the Federal Register in January of 2021; effective dates are keyed off publication.
  - Part 89, the new rule part containing the remote ID requirements, generally takes effect **60 days** following publication.
  - **18 months** after the rules take effect, unmanned aircraft may not be produced for operation in the airspace of the United States unless they meet the remote ID standard, and entities may begin applying for FRIAs.
  - **30 months** after the rules take effect, unmanned aircraft may not be operated in the airspace of the United States unless they meet the remote ID rules.
- **ADS-B Out: Generally Prohibited; Where Permitted, Obviates Remote ID**. The FAA adopted its proposal to prohibit Automatic Dependent Surveillance-Broadcast (ADS-B) Out use by the vast majority of UAS (to prevent strain on the spectrum used for ADS-B Out communications, which are required in manned aircraft). However, the FAA agreed with commenters that in the limited circumstances where ADS-B Out is permitted, remote ID would be redundant, so UAS using ADS-B Out are exempt from remote ID requirements.

Flights over People

- **4 Categories of UAS that Can Operate Over People**. The FAA adopted rules largely as proposed in the NPRM to allow three categories of UAS to operate over people, with the first category based on size (weighing less than or equal to 0.55 lbs) and the latter two based on the severity of injury caused by collision. Consistent with the NPRM, Category 2 and 3 UAS must be produced according to FAA-accepted means of compliance. The FAA also adopted a new category, Category 4, for UAS that operate under an airworthiness certificate.
  - Category 1 UAS. Must weigh no more than 0.55 lbs and may not have any exposed rotating parts that would lacerate human skin on impact (new requirement).
    - Note that the FAA commits in the final rule to conducting a retrospective study to determine whether the Category 1 weight limit should be increased or the lacerating parts requirement should be modified.
  - Category 2 UAS. Must be designed so as not to cause injury to a person equal or greater in severity than that caused by a transfer of 11 foot-pounds of kinetic energy upon impact from a rigid object and may not have any exposed rotating parts that would lacerate human skin on impact.
  - Category 3 UAS. Subject to the same design requirements as Category 2, but using a kinetic energy threshold of 25 foot-pounds. Consistent with the NPRM, such UAS may not be operated over open-air assemblies of people, and operations must fit one of two operating scenarios: (1) operations are conducted in closed- or restricted-access sites with people within the sites on notice; or (2) the operator does not maintain sustained flight over people unless those people are participating in the operation or are sufficiently protected by a structure or stationary vehicle.
  - Category 4 UAS. Must have an airworthiness certificate issued under Part 21 of the FAA's rules. Must be "operated in accordance with the operating limitations specified in the approved Flight Manual or as otherwise specified by the Administrator" and meet certain maintenance requirements.
- **Remote ID Required for Sustained Flight over Open Air Assemblies**. The final rules leverage the fact that the FAA simultaneously adopted final remote ID rules, but at the same time, for the most part, do not delay the ability to operate over people until all covered UAS are equipped with remote ID. Under this middle-of-the-road approach, Category 1, 2, and 4 UAS must have standard remote ID or be equipped with broadcast remote ID modules to conduct "sustained flight over open-air assemblies of human beings." This means that although all UAS subject to registration rules will be required to comply with the remote ID rules 30 months after Federal Register publication, the flights over people rule allows operations over people, short of sustained flight over open air assemblies, *before* remote ID compliance is required.
- **Operations over Moving Vehicles**. As set forth above, the final rules change course with respect to operations over moving vehicles. While the NPRM proposed to prohibit such operations in all cases, the final rules permit operations over moving vehicles by UAS in Categories 1, 2, and 3 in two circumstances: (1) the operations are within a closed- or restricted-access site and people located

within vehicles are on notice; and (2) if not in a closed- or restricted-access site, the operator can transit the airspace above moving vehicles but cannot maintain sustained flight over them. Category 4 UAS can operate over moving vehicles as long as the UAS are "operated in accordance with the operating limitations specific in the approved Flight Manual or as otherwise specified by the Administrator," consistent with the general operating limitations for that category set forth above.

- **Timing**. The flights over people rules will be effective 60 days after Federal Register publication, but because of preconditions required before certain UAS can operate, only Category 1 UAS will be able to operate over people at that time. Specifically:
  - Beginning **60 days** after Federal Register publication, Category 1 UAS can be operated over people if they are designed so as to have no exposed parts that can lacerate, or if the operator installs protective devices like propeller guards.
  - Operators of Category 2 and 3 UAS will be able to operate over people only once UAS designers or manufacturers (or operators that modify UAS designed or manufactured by others) are able to submit declarations of compliance certifying that the aircraft conforms to an FAA-accepted means of compliance. The executive summary states that operators will be able to begin meeting these requirements **9-12 months after the effective date** of the rules.
  - Operators of Category 4 UAS must have an airworthiness certificate that enables them to fly over people; the executive summary states that such operators will be able to start obtaining such **certificates 6-12 months after the effective date** of the rules.

Operations at Night

- **Testing or Training Required**. Consistent with its proposal, the FAA will update its initial aeronautical knowledge test and its recurrent training to include questions on the challenges of and requirements for operating UAS at night. All operators will be required to pass the new initial knowledge test or complete the recurrent training before operating at night.
  - Note that the aeronautical knowledge content will change for all operators; accordingly, even those not seeking to operate at night will be tested/trained on nighttime operations. However, for knowledge recency, the final rules replaced the previous requirement to take recurrent tests with a rule requiring only recurrent training, so UAS pilot requirements will be easier in that respect.
- **Anti-Collision Lighting Required**. The FAA adopts its proposal to require that the aircraft be equipped with anti-collision lighting visible at a distance of at least 3 statute miles. The final rule clarifies that the light must have a flash rate sufficient to avoid collision.
- **Timing/termination of waivers**. The new testing and training will be available 45 days after the final rules are published in the Federal Register, and the new rule will be effective and thus enable nighttime operations **60 days after Federal Register publication**. Operators currently using Part 107 waivers for nighttime operations will be given a 60-day grace period after that to continue operating under the waiver instead of meeting the new requirements. Accordingly, all pre-existing waivers of Section 107.29 of the FAA's rules will terminate **120 days after Federal Register publication**.

In addition to the final rule documents linked above containing the regulations and narrative analysis and discussion, the FAA has provided executive summaries of the final rules (remote ID here; flights over people and at night here). The FAA expects the final rules to be published in the Federal Register in January 2021, and as discussed above in the context of specific requirements, most of the rules will become effective 60 days after Federal Register publication.

For more information about these new UAS regulations or assistance with compliance, please contact the authors.