



April 16, 2015

Honorable Michael Huerta
Administrator
Federal Aviation Administration
800 Independence Avenue SW
Washington, DC 20591

**RE: Comments on the sUAS NPRM
Docket FAA-2015-0150**

Dear Administrator Huerta,

The Permanent Editorial Board¹ of the Aviators Model Code of Conduct² initiative provides the following comments responding to the Notice of Proposed Rulemaking (NPRM) entitled "Operation and Certification of Small Unmanned Aircraft Systems."³

Respectfully submitted,

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For the Permanent Editorial Board, AMCC

¹ Members of the Permanent Editorial Board include: Michael S. Baum, JD, MBA, ATP, Deonna Neal, Ph.D., CFI, Ric Peri, Michael Radomsky, CFII, Bill Rhodes, Ph.D., Rusty Sachs, JD, DhE, MCFI, Josh Smith, CFII, Capt. Don Steinman, ATP, CFII, and Thomas P. Turner, ATP, MCFI. See <http://www.secureav.com/PEB.pdf> . Contact: PEB@secureav.com .

² See <http://www.secureav.com> .

³ 80 Fed. Reg. 9544 (Feb. 23, 2015), available at <http://www.faa.gov/uas/nprm> .

The NPRM represents welcome and helpful progress towards sUAS integration—but needs further development. The following comments are limited primarily to flight safety considerations and a few technical corrections. Future possible rulemaking regarding micro-UAS is not addressed.

1. **107.3 Definition of Unmanned Aircraft** – “means an aircraft operated without the possibility of direct human intervention from within or on the aircraft.”

Discussion: This definition may unintentionally permit (infant) passengers. The definition would be better constructed to simply prohibit occupancy by any individual. The definition should stand on its own – and it currently is either incomplete or requires reference to later sections.

Proposed Change: Revise the definition to state that no person may occupy or otherwise be transported on or within a sUAS.

2. **107.15 Airworthiness** – The condition of sUAS must be determined during preflight check per 107.49.

Discussion: There is no explicit obligation to complete *operational* checks, such as hover-checks for multicopters and rotorcraft. Such checks serve an important flight safety purpose.

Proposed Change: As an extension of preflight checks, include certain operational checks, such as hover-checks for multicopters and rotorcraft.

3. **107.31 Visual line of sight aircraft operation** – The operator must “...(b) [d]etermine the unmanned aircraft’s ...altitude,” and **107.51 Operating Limitations** [altitude] states “(b) altitude...cannot be higher than 500 ft. above ground level.”

Discussion: The NPRM does not indicate how operators shall ascertain altitude to comply with altitude restrictions. Absent altimetric technology (such as altimeters or GPS), altitude would need to be estimated from the ground. Ground-based estimates of altitude are generally inaccurate, without effective methodology, and may cause significant noncompliance and safety challenges. Separately, the NPRM fails to substantiate the efficacy of an ample

buffer if permitting sUAS operations at 500 ft. AGL (discussed in paragraph 14, below).

Proposed Change: Require use of a practical and effective technique for sUAS operators to estimate altitude with sufficient accuracy, otherwise require the use of altimetric technology.

4. 107.51 Operating Limitations [Speed] – sUAS “(a) may not exceed 87 knots.”

Discussion: The NPRM fails to demonstrate the safety of its 87 knot speed limitation. Consider that birds (in contrast to most UAS) are generally less dense, more frangible, slower, and (attempt to) avoid aircraft. Also, the NPRM’s Preface does not explain why 87 knots is safe to the extent that such speed substantially exceeds the speed limitations proscribed in most of the 333 exemptions.

Proposed Change: Establish a speed that will (at least) create no greater harm than caused by most birds (approximately 30 knots) until such time as further data demonstrates the safety of a higher sUAS speed limitation.

5. 107.51 Operating Limitations [Cloud Clearance] – sUAS must maintain a minimum distance from clouds of 500 feet below, 2000 feet laterally (107.51(d)), and have at least 3 miles visibility (107.51(c)).

Discussion: Because some sUAS are orders of magnitude smaller than manned aircraft, sUAS are inherently more difficult to see and avoid than manned aircraft. Moreover, unlike aircraft (even during daytime), sUAS are generally not lighted. And yet, the NPRM does not require commensurately greater visibility minimums for sUAS. Note that ICAO’s Manual on Remotely Piloted Aircraft Systems (2015) states:

10.3.3 If a very small RPA is to be integrated into non-segregated airspace, it is doubtful that it will be visible to manned aircraft. Even if the RPA has a transponder or ADS-B, not all manned aircraft will have the capability to detect it. As a result, it may be difficult to integrate such non-conspicuous RPA into non-segregated airspace unless they can be made visible to pilots of manned aircraft.

Consequently, the FAA should either increase sUAS minimums, or

acknowledge that manned aircraft are incapable of seeing and avoiding sUAS. If the latter, then the FAA should expressly place the exclusive burden of seeing and avoidance on sUAS, and such a fact should inform the position taken in the NPRM.

Proposed Change: Increase sUAS distance from clouds and visibility requirements to reflect their comparative non-conspicuousness. Additionally, the Agency should consider requiring the use of highly visible color(s).

6. 107.61 Eligibility - Operators must be at least 17 years old.

Discussion: The NPRM does not indicate why the operator of a sUAS must be older than either the certificated pilot of a glider (16 years old per Part 61.103(a)), or the student solo pilot of a glider (14 years old per Part 61.83(b)).

Proposed Change: Reduce the minimum operator age of sUAS from 17 to 16 years old.

7. 107.61 Eligibility [No Practical Test]

Discussion: Operator *perception of*, and *ability to estimate* altitudes are critical skills (absent implemented altimetric technology) and yet such skills are not (and cannot effectively be) demonstrated via written knowledge test requirement. Similarly, there is no verification of sufficient sUAS operator skills to maintain control should sUAS auto-stabilization fail. sUAS operator applicants would be better tested via oral and practical test than via written knowledge test. Note that the NPRM already provides the option for a sUAS operator applicant to appear before a CFI or DPE for identity purposes. The oral and practical could be rolled into the same meeting.

Proposed Change: Require an oral and practical test rather than the proposed written knowledge test. Alternatively, permit a brief oral and practical test to substitute (optionally) for a written knowledge test.

8. 107.65 Aeronautical Knowledge Recency – Requires a recurrent aeronautical knowledge test every 24 calendar months.

Discussion: The NPRM does not indicate why recurrent testing could not be better undertaken as an oral and practical test, and administered by CFIs and DPEs. (See the discussion in paragraph 7, above). Even if initial testing were via written knowledge test, subsequent recurrent testing via oral and practical test could achieve better results. Consider that certificated pilot recurrent testing is exclusively via oral and practical, not written knowledge testing.

Proposed Change: Authorize CFIs and DPEs to administer oral and practical recurrent testing as a (optional) substitute for written aeronautical knowledge testing.

9. **107.61 Eligibility** – Certificated pilots not exempted from knowledge test requirements.

Discussion: Certificated pilots are tested rigorously on airspace, weather, separation, communications, human factors, and most other areas relevant to safe sUAS operation. Consequently, requiring certificated pilots to complete a sUAS-specific knowledge test is redundant, unnecessary, and wasteful. To the extent that certain areas of sUAS operations are not covered in written knowledge tests for certificated pilots, such areas could be tested orally and practically by CFIs and DPEs.

Proposed Change: Eliminate written knowledge test requirements for certificated pilots. Alternatively, eliminate all tested tasks/domains of sUAS written tests that are covered in written knowledge tests for certificated pilots.

10. **Community-based set of safety guidelines** – The NPRM’s Preface mentions “community-based set of safety guidelines” regarding model aircraft (p. 46).

Discussion: To the extent that the FAA considers relegating any sUAS operational safety requirements to a “community-based set of safety guidelines” analogous to those used by the model aircraft community, the FAA should first demonstrate the efficacy of such an approach.

11. **Table - “autonomous operations”** are mentioned in the NPRM’s Preface (Table, p. 55).

Proposed Change: The mention of autonomous operations requires explanation and context.

- 12. In-Flight Emergency Powers** - The NPRM precluded sUAS operators from invoking Part 91.3(b) (in-flight emergency) powers.

Discussion: There are scenarios where sUAS penetration of unauthorized controlled airspace may be required to avoid an accident.

Proposed Change: Authorize sUAS operators to penetrate controlled airspace to the extent necessary to avoid (at least) personal injury or death.

- 13. Class G Airports** – The NPRM does not require sUAS to avoid operation within 5 statute miles of airports or otherwise pre-notify airport authorities in Class G airspace.

Discussion: Airports in Class G airspace endure certain heightened risks regarding traffic separation compared to towered airports. Among other things, such airports are dependent on pilot self-announcing position and maintaining situational awareness. Enhanced caution in such terminal areas should be reflected in the NPRM.

Proposed Change: Require sUAS to avoid operation within 5 statute miles of airports within Class G airspace absent pre-notification with airport authorities.

- 14. Ample Buffer** - The NPRM states, "...a 500-foot altitude ceiling for small UAS operations would create a buffer between a small unmanned aircraft and most manned aircraft flying in the NAS." (Preface, p. 78)

Discussion: To the contrary, a 500 ft. ceiling for sUAS would *not* buffer sUAS from many manned aircraft operations, including but not limited to: helicopter air ambulance, airborne law enforcement (fixed and rotary wing), and agricultural operations. Also, the NPRM does not suggest that retaining the 400 ft. AGL ceiling would impede sUAS operations.

Proposed Change: Retain the 400 ft. AGL maximum altitude for sUAS stated in FAA Advisory Circular AC 91-57.

- 15. Codification of Part 101** to provide appropriate enforcement authority to prohibit model aircraft operators from endangering the NAS is welcomed. Also, the FAA should require that each model aircraft contain a conspicuous notice stating that its operation is regulated under 14 Code of Federal Regulations (CFR) part 101, and that its operation, other than as a hobby is regulated under 14 CFR part 107.
