[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 21

[Docket No. FAA-2017-1058]

Airworthiness Criteria: Special Class Airworthiness Criteria for the FlightScan Corporation Camcopter S-100

AGENCY: Federal Aviation Administration (FAA), DOT

ACTION: Notice of proposed interim airworthiness criteria.

SUMMARY: The FAA announces the availability of and requests comments on proposed airworthiness criteria for the Unmanned Aircraft System, FlightScan Corporation, Camcopter S-100. This document provides proposed policy for airworthiness criteria to address the designation of applicable regulations and other criteria for special classes of aircraft. In addition to the proposed airworthiness criteria presented in this document, we are also referencing operational considerations that have been used to support the development of the airworthiness criteria. We consider these proposed criteria to be interim because we anticipate the evolution of new operational criteria will necessitate additional airworthiness criteria in order to allow for the operation of the Camcopter S-100 in the National Airspace System. When those additional operational criteria are further established, we will again provide public notice of proposed policy with additional airworthiness criteria along with changes incorporated to these criteria based on the public comments received.

DATES: Send comments on or before [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: Send comments identified by docket number FAA-2017-1058 using any of the following methods:

- Federal eRegulations Portal: Go to http://www.regulations.gov and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- Hand Delivery of Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, DC, between 9 a.m., and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to http://regulations.gov, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at http://DocketsInfo.dot.gov.

Docket: Background documents or comments received may be read at http://www.regulations.gov at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m., and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. Raymond Johnston, AIR-692, Federal Aviation Administration, Policy & Innovation Division, Small Airplane Standards Branch, Aircraft Certification Service, 901 Locust, Room 301, Kansas City, MO 64106, telephone (816) 329-4159, facsimile (816) 329-4090.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in the development of this policy by sending written comments, data, or views. The most helpful comments reference a specific portion of the airworthiness criteria, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will consider all comments received on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these airworthiness criteria based on received comments or based on evolving operational criteria.

Background

FlightScan Corporation (FlightScan) applied to the Federal Aviation Administration on June 1, 2015 for special class type certification under Title 14, Code of Federal Regulations (14 CFR) 21.17(b) for the Camcopter S-100 Unmanned Aircraft System (UAS).

The Camcopter S-100 UAS (S-100) consists of the unmanned aircraft (UA) and its associated elements (including communication links and the components that control the unmanned aircraft). The S-100 is a vertical take-off UAS that is of the traditional main/tail rotor helicopter design. The fuselage is made of carbon fiber and titanium. The S-100 is powered by a liquid cooled rotary engine and has a maximum take-off weight of 440 pounds which can include

a maximum payload of up to 110 pounds. The main rotor diameter is approximately 134 inches. The UAS is intended to be used to conduct airborne surveying of power transmission infrastructure using aerial photogrammetry.

Risk Classes

To facilitate the establishment of an initial risk class for UAS, the FAA proposes a scale of risk based on kinetic energy[1]. These proposed risk classes are based on logical break points between data clusters that parallel the existing classes of aircraft defined in AC 23.1309-1E[2], the size boundaries for Light-Sport Aircraft, and the size boundaries in 14 CFR part 107. These energy based classifications for UAS are given in the definitions section of the *Airworthiness Criteria for the FlightScan Camcopter S-100,* which has been placed in the docket. The S-100 would be considered Risk Class 3.

Operational Considerations

The following operational considerations were evaluated during the development of this document:

1. The S-100 would be used for power transmission line survey operations. It operates in a designated corridor and area within the right-of-way of the power transmission lines and is operationally limited to 100 feet above and laterally within 100 feet of the power line it would be surveying.

2. While there is minimal population exposure within the power transmission line right-of-way, the mission path would cross several public highways and pass in close proximity to several neighborhoods with population densities of less than 950 people per square mile.

[1] Within these risk categories, the FAA recognizes the opportunity to further define risk classes based on UAS operational considerations in the National Airspace System.

[2] http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/719E41E1D26099108625795D005D5302?OpenDocument&Highlight=ac%2023.1309-1e

3. The S-100 would operate Beyond Visual Line of Sight (BVLOS). BVLOS for this UAS is defined as those operations that do not conform to the definition of Visual Line of Sight (VLOS) in 14 CFR part 107.31 at amendment 107-1.

4. The radio control uplink and downlink would operate within frequencies approved by the Federal Communications Commission (FCC).

5. This S-100 is designed to operate both autonomously and manually by the pilot-in-command (PIC).

6. Minimum crew includes one PIC, one mission specialist, and one mission flight director.

7. The minimum crew would operate only one S-100 at any time.

8. The aircraft would remain within Radio Line of Sight (RLOS) of the control station. RLOS refers to the straight and unobstructed path between the transmitting and receiving antennas.

9. The control station would be ground based.

10. All crew would be FAA certified airmen with current and applicable medical credentials.

11. All crew would successfully complete required crew training.

12. Maintenance personnel would hold appropriate FAA maintenance certificates.

13. Maintenance personnel would complete required maintenance training.

Unresolved Criteria

The FAA's ongoing development of operational criteria will necessitate the incorporation of additional airworthiness criteria into the S-100 and may also necessitate future clarity of the airworthiness criteria published in the *Airworthiness Criteria for the FlightScan Camcopter S-100*, available in the docket. These may include but are not necessarily limited to the following—

1. Command and Control (*)[3] – UAS control and communications link security is a key safety and interoperability requirement in integrating civil UAS into the National Airspace System NAS;

2. Sense and Avoid (SAA) Equipage (*) –SAA systems could serve as a means of compliance with 14 CFR 91.113 right-of-way rules and others. Issues associated with the use of SAA systems to comply with 14 CFR 91 requirements and others, if any, must be identified; and

3. Noise Act Finding (*) – Noise standards have not been developed for UAS.

Proposed Airworthiness Criteria

The FAA has not previously published airworthiness criteria for UAS. The FAA proposes new type certification airworthiness criteria for the FlightScan Camcopter S-100 as found in *Airworthiness Criteria for the FlightScan Camcopter S-100,* Revision 0, dated November 3, 2017. Locate the document at http://www.regulations.gov using docket number FAA-2017-1058.

Issued in Kansas City, Missouri on November 8, 2017.

Pat Mullen
Manager, Small Airplane Standards Branch
Aircraft Certification Service

[3] Criteria that have not yet been developed are identified with an asterisk (*).

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