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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 27**

**[Docket No. FAA-2025-2303; Notice No. 27-25-01-SC]**

# Special Conditions: Skyryse, Robinson Model R66 Helicopter; Static Longitudinal Stability

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed special conditions.

**SUMMARY:** This action proposes special conditions for a modified Robinson Model R66 helicopter. This helicopter, as modified by Skyryse, will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for normal category rotorcraft. This design features a four-axis full authority digital fly-by-wire (FBW) flight control system (FCS), which provides aircraft control through pilot input or coupled autopilot modes. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** Send comments on or before [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by Docket No. FAA-2025-2303 using any of the following methods:

*Federal eRegulations Portal:* Go to 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 or Courier:* Take comments to 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.

*Fax:* Fax comments to Docket Operations at 202-493-2251.

*Docket:* Background documents or comments received may be read at www.regulations.gov at any time. Follow the online instructions for accessing the docket or go to 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:** Mitch Soth, Product Policy Management, AIR-62B, Technical Policy Branch, Policy and Standards Division, Aircraft Certification Service, Federal Aviation Administration, FAA Southwest Regional Office, 10101 Hillwood Parkway, Fort Worth, TX 76177; telephone 817-222-5104; e-mail mitch.soth@faa.gov.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments refer to a specific portion of the proposed special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments and will consider comments filed late if it is possible to do so without incurring delay. The FAA may change these special conditions based on the comments received.

**Privacy**

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in title 14, Code of Federal Regulations (14 CFR) 11.35, the FAA will post all comments received without change to www.regulations.gov, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about these special conditions.

**Confidential Business Information**

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to these special conditions contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to these special conditions, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of these proposed special conditions. Send submissions containing CBI to the individual listed in the For Further Information Contact section above. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for these proposed special conditions.

**Background**

On April 10, 2023, Skyryse applied for a supplemental type certificate (STC) for the installation of novel control inputs and a fly-by-wire system in the Model R66 helicopter. The Robinson Model R66 helicopter, currently approved under Type Certificate No. R00015LA, is a single-engine, five passenger helicopter with a maximum takeoff weight of 2,700 pounds.

**Type Certification Basis**

Under the provisions of 14 CFR 21.101, Skyryse must show that the changes to the Robinson Model R66 helicopter continue to comply with the applicable provisions of the regulations specified in Type Certificate No. R00015LA or with the regulations in effect on the date of the application for the change, except for any earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 27) do not contain adequate or appropriate safety standards for the Robinson Model R66 helicopter because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Robinson Model R66 helicopter must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with title 14, Code of Federal Regulations (14 CFR) § 11.38, and they become part of the type certification basis under § 21.101.

**Novel or Unusual Design Features**

The Robinson Model R66 helicopter will incorporate the following novel or unusual design feature:

A four-axis full authority digital FBW FCS that provides aircraft control through pilot control inputs or coupled autopilot modes in addition to degraded modes.

**Discussion**

The Skyryse Robinson Model R66 helicopter is configured with a FBW FCS, which needs to be evaluated for acceptable static stability characteristics.

For conventional rotorcraft having mechanical linkages from the primary cockpit flight controls to the rotor, static longitudinal stability means that a pull displacement or force on the cyclic will result in a reduction of speed relative to the trim speed, and that a push displacement or force will result in a higher speed relative to the trim speed. Acceptable longitudinal stability is necessary for the following reasons:

- Airspeed change cues are provided to the pilot through increased and decreased forces on the controller.
- Short periods of unattended control of the rotorcraft do not result in significant changes in attitude, airspeed, or load factor.
- A predictable pitch response is provided to the pilot.
- An acceptable level of pilot workload, to attain and maintain trim speed and attitude, is provided to the pilot.
- Longitudinal stability provides gust stability.

The pitch control movement of the cyclic for the FBW FCS is an attitude command, which results in a rotor movement to attain the commanded pitch attitude. The

flight path commanded by the initial cyclic input will remain stick-free until the pilot gives another command. This control function is applied during "normal" control laws within the approved flight envelope.

Sections 27.171, 27.173, and 27.175 establish the minimum requirements for static longitudinal stability for visual flight rules (VFR), and appendix B of part 27, sections IV and VII, "Airworthiness Criteria for Helicopter Instrument Flight", provides the airworthiness criteria for helicopter instrument flight. However, these requirements are inadequate for the modified Skyryse Robinson R-66 helicopter because the longitudinal control laws may permit neutral or negative static stability, rather than requiring positive static stability throughout the approved flight envelope. As detailed in § 27.173(b) and considered in Advisory Circular (AC) 27.173(A), "Static Longitudinal Stability", which is contained within AC 27-1B, "Certification of Normal Category Rotorcraft", and the positive control force stability requirements in appendix B to part 27, sections IV and VII, the slope of the control position (cyclic) versus the airspeed curve must be positive (i.e., provide positive static stability) throughout the full range of altitude for which certification is requested with the throttle and collective pitch held constant.

The design of the Skyryse FBW FCS is such that the static stability requirements identified under part 27 and appendix B, section IV, may not be met for all flight conditions.

The proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**Applicability**

As discussed above, these proposed special conditions are applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate

to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would apply to the other model as well.

**Conclusion**

This action affects only a certain novel or unusual design feature on the Model R66 of helicopters. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the helicopter.

**List of Subjects in 14 CFR Part 27**

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

**Authority Citation**

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(f), 40113, 44701, 44702, and 44704.

**The Proposed Special Conditions**

Accordingly, the FAA proposes the following special conditions as part of the type certification basis for Robinson Model R66 helicopters, as modified by Skyryse.

In lieu of the requirements of §§ 27.173(b) and 27.175 for VFR operations, and the airworthiness criteria for helicopter instrument flight requirements in part 27, appendix B, sections IV and VII, the following special conditions apply:

The rotorcraft must be shown to have suitable longitudinal stability in any condition normally encountered in service, including the effects of atmospheric disturbance. The showing of suitable static longitudinal stability must be based primarily on a positive control movement (positive control sense of motion as referenced in AC 27.173A), in addition to rotorcraft handling qualities by assessing pilot workload, cues, and pilot compensation for specific test procedures during the flight test evaluation.

Issued in Kansas City, Missouri, on November 14, 2025.

Patrick R. Mullen,
Manager, Technical Policy Branch,
Policy and Standards Division,
Aircraft Certification Service.

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