



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 29

[Docket No. FAA-2025-2038; Special Conditions No. 29-060-SC]

Special Conditions: Airbus Helicopters Model EC175B Helicopters; Search and Rescue (SAR) Modes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Airbus Helicopters (Airbus) Model EC175B helicopter. This helicopter will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category helicopters. This design feature is associated with the installation of an optional search and rescue (SAR) automatic flight control system (AFCS). The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These 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: This action is effective on Airbus on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. 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-2025-2038 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: Gregory Thumann, Performance and Environment Unit, AIR-621A, Technical Policy Branch, Policy and Standards Division, Aircraft Certification Service, Federal Aviation Administration, Wichita Dwight D. Eisenhower Airport, FAA AIR Office - Wichita, 1801 S. Airport Rd, Wichita, Kansas 67209-2190; telephone and fax 405-666-1052; e-mail Gregory.G.Thumann@faa.gov.

SUPPLEMENTARY INFORMATION:

The substance of these special conditions has been published in the *Federal Register* for public comment in several prior instances with no substantive comments received. Therefore, the FAA finds, pursuant to Title 14, Code of Federal Regulations (14 CFR) 11.38(b), that new comments are unlikely, and notice and comment prior to this publication are unnecessary.

Privacy

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in § 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 special conditions. Send submissions containing CBI to the individual listed in the For Further Information Contact section above. Comments the FAA receive, which are not specifically designated as CBI, will be placed in the public docket for these special conditions.

Comments Invited

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the 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. The FAA may change these special conditions based on the comments received.

Background

On September 14, 2022, Airbus requested FAA type certificate validation for the Airbus Model EC175B helicopter, identified by project Type Certificate No. TC14123SE-R. The Model EC175B helicopter is a large-passenger Transport Category, 14 CFR Part 29, twin-engine conventional helicopter certificated for Category A operations and also for instrument flight under the requirements of Appendix B of Part 29. This model is powered by two Pratt & Whitney Canada PT6C-67E engines with a dual channel Full Authority Digital Engine Control system, has five main rotor blades, a maximum gross weight of 17,196 pounds, and a velocity not exceeding 175 knots. The Model EC175B helicopter features an integrated modular avionics suite with four 6x8-inch multi-function displays called Common Integrated Global Avionics for Light Helicopters. This rotorcraft is capable of carrying 18 passengers and two crew members. Its initial customer base included offshore oil and search and rescue operations.

Type Certification Basis

Under the provisions of 14 CFR 21.17, Airbus must show that the Model EC175B helicopter meets the applicable provisions of Part 29, as amended by Amendments 29-1 through 29-52. The Airbus Model EC175B certification basis date is March 1, 2009.

If the Administrator finds that the applicable airworthiness regulations (e.g., Part 29) do not contain adequate or appropriate safety standards for the Airbus Model EC175B helicopter because of a novel or unusual design feature, special conditions are prescribed under the provisions of 14 CFR 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, these special conditions would also apply to the other model under 14 CFR 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Airbus Model EC175B helicopter must comply with the 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 § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Airbus Model EC175B helicopter will incorporate the following novel or unusual design feature:

The SAR system is composed of a navigation computer with SAR modes, an AFCS that provides coupled SAR functions, hoist operator control, a hover speed reference system, and two radio altimeters. The AFCS coupled SAR functions include:

- (a) Hover hold at selected height above the surface.
- (b) Ground speed hold.
- (c) Transition down and hover to a waypoint under guidance from the navigation computer.
- (d) SAR pattern, transition down, and hover near a target over which the helicopter has flown.
- (e) Transition up, climb, and capture a cruise height.
- (f) Capture and track SAR search patterns generated by the navigation computer.
- (g) Monitor the preselected hover height with an automatic increase in collective if the aircraft height drops below the safe minimum height.

These SAR modes are intended to be used over large bodies of water in areas clear of obstructions. Further, the use of the modes that transition down from cruise to hover will include operation at airspeeds below V_{MINI} .

The SAR system only entails navigation, flight control, and coupled AFCS operation of the helicopter. The system does not include the additional equipment that

may be required for over water flight or external loads to meet other operational requirements.

Discussion

Airbus Model EC175B will include the installation of an optional SAR AFCS.

The use of dedicated AFCS upper modes, in which a fully coupled autopilot provides operational SAR profiles, is necessary for SAR operations conducted over water in offshore areas clear of obstructions. The SAR modes enable the helicopter pilot to fly fully coupled maneuvers, including predefined search patterns during cruise flight, and to transition between cruise flight to a stabilized hover, as well as from hover back to cruise. The SAR AFCS also includes an auxiliary crew control that allows another crewmember (such as a hoist operator) to have limited authority to control the helicopter's longitudinal and lateral position during hover operations.

Flight operations conducted over water at night may have an extremely limited visual horizon, with little visual reference to the surface, even when conducted under visual meteorological conditions. Consequently, the certification requirements for SAR modes must meet the requirements outlined in Appendix B to Part 29. While Appendix B to Part 29 prescribes airworthiness criteria for instrument flight, it does not consider operations below the instrument flight minimum speed (VMINI), whereas the SAR modes allow for coupled operations at low speed, all-azimuth flight to zero airspeed (hover).

Since SAR operations have traditionally been a public-use mission, the use of SAR modes in civil operations requires special airworthiness standards (special conditions) to ensure a level of safety consistent with Category A and Instrument Flight Rule (IFR) certification in accordance with Appendix B to Part 29. In this regard, Part 29 lacks adequate airworthiness standards for AFCS SAR mode certification, including flight characteristics, performance, and installed equipment and systems.

These 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 special conditions are applicable to the Airbus Model EC175B helicopter. Should Airbus apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only a certain novel or unusual design feature on the Airbus Model EC175B helicopter. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 29

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 Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Airbus Helicopters Model EC175B helicopter.

In addition to the Part 29 certification requirements for Category A and helicopter instrument flight (Appendix B to Part 29), the following additional requirements must be met for certification of the optional search and rescue (SAR) automatic flight control system (AFCS):

(a) SAR Flight Modes. The coupled SAR flight modes must provide:

(1) Safe and controlled flight in the three axes at all airspeeds (lateral position and speed, longitudinal position and speed, and height and vertical speed) from the previous instrument flight minimum speed (VMINI) to a hover (within the maximum demonstrated wind envelope).

(2) Automatic transition to the helicopter instrument flight (Appendix B to Part 29) envelope as part of the normal SAR mode sequencing.

(3) A pilot-selectable “Go-Around” mode that safely interrupts any other coupled mode and automatically transitions the helicopter to the instrument flight (Appendix B to Part 29) envelope.

(4) A means to prevent unintended flight below a safe minimum height. Pilot-commanded descent below the safe minimum height is acceptable, provided the alerting requirements in paragraph (b)(8)(i) of these special conditions alert the pilot of this descent below safe minimum height.

(b) SAR Mode System Architecture. To support the integrity of the SAR modes, the following system architecture is required:

(1) Ground mapping radar function that presents real-time information to the pilots.

(2) A system for limiting the engine power demanded by the AFCS when any of the automatic piloting modes are engaged so that full authority digital engine control power limitations, such as torque and temperature, are not exceeded.

(3) A system providing the aircraft height above the surface and the final pilot-selected height at a location on the instrument panel in a position acceptable to the FAA that will make it plainly visible to and usable by any pilot at their station.

(4) A system providing the aircraft heading and the pilot-selected heading at a location on the instrument panel in a position acceptable to the FAA that will make it plainly visible to and usable by any pilot at their station.

(5) A system providing the aircraft longitudinal and lateral ground speeds and the pilot-selected longitudinal and lateral ground speeds when used by the AFCS in the flight envelope where airspeed indications become unreliable. This information must be presented at a location on the instrument panel in a position acceptable to the FAA that is plainly visible to and usable by any pilot at their station.

(6) A system providing wind speed and wind direction when automatic piloting modes are engaged or while transitioning from one mode to another.

(7) A system that monitors flight guidance deviations and failures and contains an alerting function that provides the flight crew with enough information to take appropriate corrective action.

(8) An alerting system that provides visual or aural alerts, or both, to the flight crew under any of the following conditions:

(i) When the stored or pilot-selected safe minimum height is reached.

(ii) When a SAR mode system malfunction occurs.

(iii) When the AFCS changes modes automatically from one SAR mode to another. For normal transitions between SAR modes, a single visual or aural alert may suffice. For a SAR mode malfunction or a mode having a time-critical component, the flight crew alerting system must activate early enough to allow the flight crew to take timely and appropriate action. The alerting system means must be designed to alert the flight crew in order to minimize crew errors that could create an additional hazard.

(9) The SAR system hoist operator control is considered a flight control with limited authority and must comply with the following:

(i) The hoist operator control must be designed and located to provide for convenient operation and to prevent confusion and inadvertent operation.

(ii) The helicopter must be safely controllable by the hoist operator control throughout the range of that control.

(iii) The hoist operator control may not interfere with the safe operation of the helicopter.

(iv) Pilot and copilot flight controls must be able to smoothly override the limited control authority of the hoist operator control, without exceptional piloting skill, alertness, or strength, and without the danger of exceeding any other limitation because of the override.

(10) The reliability of the AFCS must be related to the effects of its failure. The occurrence of any failure condition that would prevent continued safe flight and landing must be extremely improbable. For any failure condition of the AFCS that is not shown to be extremely improbable:

(i) The helicopter must be safely controllable and capable of continued safe flight without exceptional piloting skill, alertness, or strength. Additional unrelated probable failures affecting the control system must be evaluated.

(ii) The AFCS must be designed so that it cannot create a hazardous deviation in the flight path or produce hazardous loads on the helicopter during normal operation or in the event of a malfunction or failure, assuming corrective action begins within an appropriate period of time. Where multiple systems are installed, subsequent malfunction conditions must be evaluated in sequence unless their occurrence is shown to be improbable.

(11) A functional hazard assessment and a system safety assessment must address the failure conditions associated with SAR operations:

(i) For SAR catastrophic failure conditions, changes may be required to the following:

(A) System architecture.

(B) Software and complex electronic hardware design assurance levels.

(C) High intensity radiated field (HIRF) test levels.

(D) Instructions for continued airworthiness.

(ii) The assessments must consider all the systems required for SAR operations, including the AFCS, all associated AFCS sensors (for example, radio altimeter), and primary flight displays. Electrical and electronic systems with SAR catastrophic failure conditions (for example, AFCS) must comply with the § 29.1317(a)(4) High Intensity Radiated Field (HIRF) requirements.

(c) SAR Mode Performance Requirements.

(1) The SAR modes must be demonstrated for the requested flight envelope, including the following minimum sea state and wind conditions:

(i) Sea State: Wave height of 2.5 meters (8.2 feet), considering both short and long swells. This is in addition to the sea state demonstrated in reference to the airframe's ditching capability.

(ii) Wind: 25 knots headwind; 17 knots for all other azimuths.

(2) The selected hover height and hover velocity must be captured (including the transition from one captured mode to another captured mode) accurately and smoothly and not exhibit any significant overshoot or oscillation.

(3) The minimum use height (MUH) for the SAR modes must be no more than the maximum loss of height following any single failure or any combination of failures not shown to be extremely improbable, plus an additional margin of 15 feet above the surface. MUH is the minimum height at which any SAR AFCS mode may be engaged.

(4) The SAR mode system must be usable up to the maximum certified gross weight of the aircraft or to the lower of the following weights:

(i) Maximum emergency flotation weight.

(ii) Maximum hover out-of-ground effect (OGE) weight.

(iii) Maximum demonstrated weight.

(d) Flight Characteristics.

(1) The basic aircraft must meet all of the Part 29 airworthiness criteria for helicopter instrument flight (Appendix B to Part 29).

(2) For SAR mode coupled flight below VMINI, at the maximum demonstrated winds, the helicopter must be able to maintain any required flight condition and make a smooth transition from any flight condition to any other flight condition without requiring exceptional piloting skill, alertness, or strength, and without exceeding the limit load factor. This requirement also includes aircraft control through the hoist operator's control.

(3) For coupled flight below the previously established VMINI, the following stability requirements replace the stability requirements of paragraphs IV, V, and VI of Appendix B to Part 29:

(i) Static Longitudinal Stability: The requirements of Appendix B to Part 29, paragraph IV, are not applicable.

(ii) Static Lateral-Directional Stability: The requirements of Appendix B to Part 29, paragraph V, are not applicable.

(iii) Dynamic Stability: The requirements of paragraph VI of Appendix B are replaced with the following two paragraphs:

(A) Any oscillation must be damped, and any aperiodic response must not double in amplitude in less than 10 seconds. This requirement must also be met with degraded upper modes of the AFCS. An "upper mode" is a mode that utilizes a fully coupled autopilot to provide an operational SAR profile.

(B) After any upset, the AFCS must return the aircraft to the last commanded position within 10 seconds or less.

(4) With any of the upper modes of the AFCS engaged, the pilot must be able to manually recover the aircraft and transition to the normal (Appendix B to Part 29) IFR flight profile envelope without exceptional skill, alertness, or strength.

(e) One-Engine Inoperative (OEI) Performance Information.

(1) The following performance information must be provided in the Rotorcraft Flight Manual Supplement (RFMS):

(i) OEI performance information and emergency procedures, providing the maximum weight that will provide a minimum clearance of 15 feet above the surface, following failure of the critical engine in a hover. The maximum weight must be presented as a function of the hover height for the temperature and pressure altitude range requested for certification. The effects of wind must be reflected in the hover performance information.

(ii) Hover OGE performance with the critical engine inoperative for OEI continuous and time-limited power ratings for those weights, altitudes, and temperatures for which certification is requested.

Note: These OEI performance requirements do not replace performance requirements that may be needed to comply with the airworthiness or operational standards (14 CFR 29.865 or 14 CFR Part 133) for external loads or human external cargo.

(2) [Reserved]

(f) RFMS.

(1) Limitations necessary for the safe operation of the SAR system to include:

(i) Minimum crew requirements. No fewer than two pilots, except for approved external load operations, which will also require a hoist operator.

(ii) Maximum SAR weight as determined by the lower of the SAR mode performance requirement of paragraph (c)(4) of these special conditions or the aircraft performance information provided by paragraph (e) of these special conditions.

(iii) Maximum demonstrated sea state conditions for ditching compliance.

(iv) Engagement criteria for each of the SAR modes to include MUH (as determined in subparagraph (c)(3)) of these special conditions.

(v) Normal and emergency procedures for operation of the SAR system (including operation of the hoist operator control), with AFCS failure modes, AFCS degraded modes, and engine failures.

(2) Performance information:

(i) OEI performance and height-loss.

(ii) Hover OGE performance information, utilizing OEI continuous and time-limited power ratings.

(iii) The maximum wind envelope demonstrated in the flight test.

(iv) Information and advisory information concerning operations in a heavy salt spray environment, including any airframe or power effects as a result of salt encrustation.

(g) Flight Demonstration.

(1) Before approval of the SAR system, an acceptable flight demonstration of all the coupled SAR modes is required.

(2) The AFCS must provide fail-safe operations during coupled maneuvers. The demonstration of fail-safe operations must include a pilot workload assessment associated with manually flying the aircraft to an altitude greater than 200 feet above the surface and an airspeed of at least the best rate of climb airspeed (V_y).

(3) For any failure condition of the SAR system not shown to be extremely improbable, the pilot must be able to make a smooth transition from one flight mode to another without exceptional piloting skill, alertness, or strength.

(4) Failure conditions that are not shown to be extremely improbable must be demonstrated by analysis, ground testing, or flight testing. For failures demonstrated in flight, the following normal pilot recovery times are acceptable:

(i) Transition modes (Cruise-to-Hover/Hover-to-Cruise) and hover modes:

Normal pilot recognition plus 1 second.

(ii) Cruise modes: Normal pilot recognition plus 3 seconds.

(5) All AFCS malfunctions must include evaluation of the low-speed and high-power flight conditions typical of SAR operations. Additionally, AFCS hard-over, slow-over, and oscillatory malfunctions, particularly in yaw, require evaluation. AFCS malfunction testing must include a single or a combination of failures (such as erroneous data from and loss of the radio altimeter, attitude, heading, and altitude sensors) that are not shown to be extremely improbable.

(6) The flight demonstration must include the following environmental conditions:

(i) Swell into wind.

(ii) Swell and wind from different directions.

(iii) Cross swell.

(iv) Swell of different lengths (short and long swell).

(7) The flight demonstration must also evaluate OEI procedures from hover while hoisting an external load.

Issued in Fort Worth, Texas, on March 6, 2026.

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