



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 29

[Docket No. FAA-2024-2383; Notice No. 29-24-02-SC]

Special Conditions: Carson Helicopters Inc., Sikorsky Model S-61A, S-61L, and S-61N (Including Those Modified by Supplemental Type Certificate (STC) No.

SH640NE) Helicopters; Overload Protection Device in a Hoist

AGENCY: Federal Aviation Administration (FAA), Department of Transportation.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for a supplemental type certificate (STC) to install a helicopter hoist equipped with an overload protection device (OLPD) on Sikorsky Model S-61A, S-61L, and S-61N (including those modified by STC No. SH640NE, which shortens the S-61N by 50 inches) helicopters. These helicopters, as modified by Carson Helicopters, Inc. (Carson), will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category rotorcraft. This design feature is an OLPD installed in the hoist. 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 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by Docket No. FAA-2024-2383 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: Scott Johnson, Mechanical Systems Section, AIR-623, Technical Policy Branch, Policy and Standards Division, Aircraft Certification Service, Federal Aviation Administration, telephone 202-267-4644; e-mail Scott.R.Johnson@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 reference 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 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 September 21, 2021, Carson applied for an amendment to STC No. SR02507NY to add a hoist with an OLPD, to be installed on Sikorsky Model S-61A, S-61L, and S-61N (including those modified by STC No. SH640NE, which shortens the S-61N by 50 inches) helicopters. The S-61 helicopter is a twin-engine rotorcraft. The maximum takeoff weight is between 19,000 and 22,000 pounds, depending on configuration, and the helicopter has a maximum capacity of 39 passengers and a crew of 2.

Type Certification Basis

Under the provisions of § 21.101, Carson must show that the helicopters, for which they make application to modify by STC No. SR02507NY, as will be changed, continue to meet the applicable provisions of the regulations listed in each helicopter's respective type certificate or the applicable regulations in effect on the date of application for the change except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 29) do not contain adequate or appropriate safety standards for the Sikorsky Model S-61A, S-61L, and S-61N (including those modified by STC No. SH640NE) helicopters 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 Sikorsky Model S-61A, S-61L, and S-61N (including those modified by STC No.

SH640NE) helicopters must comply with the exhaust-emission requirements of part 34, and the noise-certification requirements of part 36.

The FAA issues special conditions, as defined in § 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Feature

The Sikorsky Model S-61A, S-61L, and S-61N (including those modified by STC No. SH640NE) helicopters will incorporate the following novel or unusual design feature:

An OLPD installed in a hoist.

Discussion

These special conditions are necessary because regulations concerning external load carriage requirements for part 29 rotorcraft do not address hoists that include an OLPD feature.

In 1991 the FAA tasked the External Load Working Group (Working Group) of the Aviation Rulemaking Advisory Committee (ARAC) with investigating the need to complement the rotorcraft 14 CFR part 133 Class D external load carriage regulations (including transport of passengers external to the rotorcraft). Upon completion of their review, the Working Group issued a report¹ recommending updates to the external load regulations in 14 CFR part 27 and part 29.

Based on the Working Group's report, the FAA recommended several changes to part 27 and part 29 to improve safety. On July 13, 1998, the FAA published a Notice of Proposed Rulemaking² (NPRM) (63 FR 37746). This NPRM proposed amendments to the airworthiness standards for rotorcraft load combination certification. The FAA issued

¹ External Load Working Group report
https://www.faa.gov/sites/faa.gov/files/advisory_rulemaking_committees/RelwgT1-12041991.pdf.
² Docket No. 29277; Notice No. 98-6, "Rotorcraft Load Combination Safety Requirements."

the final rule based on this NPRM for part 27 at amendment 27-36 and part 29 at amendment 29-43; however, the revised parts 27 and 29 did not address OLPD features in hoist systems. As a result, the current §§ 27.865 and 29.865 do not address hoist systems with OLPD features.

The hoist being installed by Carson includes an OLPD in its design. The OLPD reduces the likelihood of the loss of rotorcraft and crew due to an entanglement of the hoist cable. Upon activation, the OLPD affords the pilot time to respond and potentially jettison the load to save the aircraft and the crew onboard.

Because the OLPD activation range is less than the limit static load factor for human external cargo published in §§ 27.865 and 29.865, it introduces a risk that the cable could completely unspool (i.e., loss of cargo), particularly if unspooling is not subsequently arrested once the load is reduced below the activation threshold. Despite this risk, the overall safety will be improved with the inclusion of this OLPD. Meeting the requirements of these proposed special conditions demonstrates that the OLPD in the hoist installed by Carson will activate to allow a slip and recapture in response to the load conditions outlined in these proposed special conditions. By “activation” the FAA means all states of its intended function, which consists of uncommanded cable payout (i.e., slippage) and the recapture of the load (i.e., arresting the slippage). The FAA intends the activation range to bound both payout and arrest. The FAA proposes that the activation range for these special conditions would be 2.2 to 3.2 times the rated load. The functionality and activation requirement comes from SAE AS6342, “Minimum Operational Performance Standard (MOPS) for Helicopter Hoist Systems,” December 2020, section 4.7 paragraph 2.³ The OLPD must slip and recapture load only within the activation range of 2.2 to 3.2 times the rated load. These special conditions do not change

³ SAE AS6342 is available for purchase at <https://saemobilus.sae.org/standards/as6342-minimum-operational-performance-standard-mops-helicopter-hoist-systems>.

the structural limit load factors specified in §§ 27.865 and 29.865. 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.

In addition to the activation range explained previously, the OLPD must be designed to continue working correctly or as expected in every way (i.e., function properly) when experiencing the maximum external limit load specified in §§ 27.865 and 29.865.

Applicability

As discussed above, these special conditions are applicable to the helicopter models listed on the AML of STC No. SR02507NY, which is available at DRS. Should Carson apply at a later date for a change to STC No. SR02507NY to include any new models on the AML to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action only affects the application for an STC to approve installation of hoists that contain an OLPD listed on the AML of STC No. SR02507NY. 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 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 Proposed Special Conditions

Accordingly, the FAA proposes the following special conditions as part of the type certification basis for the Model S-61A, S-61L, and S-61N, and S-61N (including those modified by STC No. SH640NE) helicopters listed on the AML of STC No. SR02507NY, as modified by Carson.

(a) The Overload Protection Device (OLPD) must:

(1) Function properly for all loads up to and including the § 29.865(a) maximum external limit load.

(2) Be designed to hold any load up to 2.2 times the rated load and shall activate between 2.2 times the rated load and 3.2 times the rated load. This activation range must take into account production and maintenance tolerances, variations due to the environment (e.g., temperature and humidity), and operations (e.g., length of cable paid out). The above requirements must be met over the entire activation range.

(3) Protect the helicopter and cargo by incorporating design activation limits (i.e., defined set point(s)) which:

(i) Prevent excess cable tension that might result in cable failure or loads on the helicopter that endanger the aircraft,

(ii) Prevent uncommanded cable payout when experiencing cable loads below the activation range,

(iii) Allow cable payout when experiencing loads above the activation range, and

(iv) Arrest cable unspooling to prevent loss of cargo after an activation event.

(b) The OLPD installation, maintenance, and inspection instructions must be made a part of the applicable section(s) of the Instructions for Continued Airworthiness (ICA).

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

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