



Federal Aviation Administration

Memorandum

Date: October 17, 2016

To: Timothy P. Smyth, Manager, Chicago Aircraft Certification Office, ACE-115C

From: Pat Mullen, Acting Manager, Small Airplane Directorate, ACE-100

Prepared by: Wess Rouse, Propulsion and Program Management Branch, ACE-118C

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Cirrus Design Corporation, Model Vision SF50.

ELOS Memo#: ACE-15-04

Regulatory Ref: 14 CFR 23.729(f)

Revision Description: The FAA revises ELOS Memo ACE-15-04, dated February 27, 2015 by updating paragraphs 1 and 2 in the “Description of compensating design features or alternative Methods of Compliance (MoC) which allow the granting of the ELOS (including changes, limitations, or equipment needed for equivalency)” section.

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Accountable Directorate on the establishment of an equivalent level of safety finding for the Cirrus Design Corporation (Cirrus) Model Vision SF50 jet.

Background:

Cirrus proposes the use of an enhanced landing gear warning as standard equipment on the Model Vision SF50 jet. The system complies with § 23.729(f) except the warnings will be suppressed when the airplane is at a sufficiently high altitude or airspeed that landing is not possible. Part 23 does not address automatic inhibit of warning features based on height above ground within the existing regulations. An equivalent level of safety is necessary to certify the design. The Cirrus Model Vision SF50 jet will be certified in the Normal Category to the certification basis of 14 CFR part 23 through amendment 23-62.

Applicable regulation:

14 CFR 23.729(f)(1) and (2)

Regulations requiring an ELOS finding:

14 CFR 23.729(f), amendment 23-62

Description of compensating design features or alternative Methods of Compliance (MoC) which allow the granting of the ELOS (including changes, limitations, or equipment needed for equivalency):

The following is a description of the proposed Cirrus landing gear warning system:

1. The first gear warning sounds when—
 - a. The landing gear is not down and locked, and either—
 - 1) The throttles are closed beyond the power settings normally used for landing approach; or
 - 2) The flaps are extended beyond the maximum approach flap position.
 - b. The first gear warning is inhibited if—
 - 1) Height is 800 feet Above Ground Level (AGL) or greater; or
 - 2) Airspeed is 125 Knots Indicated Airspeed (KIAS) or greater.
2. The second gear warning sounds (or replaces the first warning) when—
 - a. The landing gear is not down and locked; and
 - b. Height is less than 400 feet AGL, which is sufficient for gear extension or go around.
 - c. The second gear warning is inhibited if—
 - 1) Airspeed is 140 KIAS or greater; or
 - 2) During takeoff.
 - d. The second gear warning does not require the throttle to be reduced or the flaps to be extended to enable the alert.
3. The landing gear warning system proposed by Cirrus provides an enhanced level of safety by:
 - a. Providing multiple layers of warning protections.
 - b. Reducing desensitization to the flight crew due to nuisance warnings.
 - c. Reducing probability of undesired habitual deactivation of nuisance warnings.

Explanation of how design features or alternative Methods of Compliance (MoC) provide an equivalent level of safety intended by the regulation:

The intent of the regulation is to aide in minimizing the risk of inadvertent landings with the gear not properly extended. Cirrus acknowledges that the regulations provided in transport category § 25.729 (e)(2) through (e)(6) offer methods of compliance that are different from § 23.729 and allow means to inhibit the warning, yet, do not allow manual shut-off. Cirrus believes the landing gear warning altitude and airspeed limitations will eliminate or notably reduce nuisance landing gear warnings; therefore, pilots will be less inclined to inhibit the landing gear warning safety feature manually.

FAA approval and documentation of the ELOS finding:

The FAA has approved the aforementioned equivalent level of safety finding in project issue paper S-5. This memorandum provides standardized documentation of the ELOS finding that is non-proprietary and can be made available to the public. The Accountable Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number must be listed in the Type Certificate Data Sheet under the Certification Basis section Type Certificate (TC) and Amended Type Certificate (ATC) or in the Limitations and Conditions section of the Supplemental Type Certificate (STC). An example of an appropriate statement is provided below.

An Equivalent Level of Safety Finding has been made for the following regulation:

14 CFR 23.729(f) Landing gear warning
(documented in ELOS Memo ACE-15-04)]

//SIGNED//

10/17/2016

Pat Mullen, Acting Manager, Small Airplane Directorate
Aircraft Certification Service

Date

ELOS Originated by: Chicago ACO	Timothy P. Smyth Manager, Chicago Aircraft Certification Office	Routing Symbol: ACE-115C
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