



Federal Aviation Administration

Memorandum

Date: July 24, 2014

To: Manager, Small Airplane Directorate, ACE-100

From: Manager, Wichita Aircraft Certification Office, ACE-115W

Prepared by: David Enns, ASE (Mechanical Systems), ACE-116W

Subject: Extension of Equivalent Level of Safety for Cabin Pressurization –
Exceedance of 15,000 Foot Cabin Altitude Limit for Cessna Model 525C

ELOS Memo#: ACE-00-05B Rev 1

Regulatory ref: 14 CFR 23.841(a)

This memorandum requests your office to review and provide concurrence with the proposed extension of the equivalent level of safety for the Model 525C exceedance of 15,000 foot cabin altitude.

References

- 1) Cessna letter L390-09-1211, dated March 25, 2009 requesting extension of ELOS ACE-00-05 to the Model 525C.
- 2) FAA Memorandum ACE-00-05 granting the ELOS for 14 CFR 23.841(a) for the Model 525A.
- 3) FAA Memorandum ACE-00-05A extending the ELOS Memorandum ACE-00-05 to the Model 525B.

Background

In Reference 1 above, Cessna requested an extension of ELOS ACE-00-05 to the Model 525C.

Section 23.841(a) requires a cabin pressure altitude of not more than 15,000 feet in the event of any probable failure or malfunction in the pressurization system. For the Model 525C aircraft, failure of one of the outflow valves to close until overridden by the Altitude Limiter is a probable failure or malfunction in the pressurization system. Company flight testing showed that for this type of failure the cabin pressure altitude could exceed 15,000 ft. for approximately five seconds, reaching a maximum of 15,310 ft.

An ELOS was issued for the model 525A by Reference 2 and then extended to the model 525B by Reference 3 for exceedance of 15,000 ft. cabin pressure altitude during failures limited by the Altitude Limiter. For comparison, the Model 525A test showed the cabin

pressure altitude exceeds 15,000 ft. for approximately seven seconds reaching a maximum of 15,745 ft. which is a greater exceedance than the Model 525C.

Applicable regulation(s)

The Cessna Model 525C will be certified in the Commuter Category to the certification basis of 14 CFR Part 23 as amended through Amendment 55.

Regulation(s) requiring an ELOS finding

14 CFR § 23.841(a) requires that; “If certification for operation over 25,000 feet is requested, the airplane must be able to maintain a cabin pressure altitude of not more than 15,000 feet in event of any probable failure or malfunction in the pressurization system.”

Description of compensating design features or alternate Methods of Compliance (MoC) which allow the granting of the ELOS (include design changes, limitations or equipment need for equivalency)

See the attached copy of the ELOS memo dated July 19, 2000, which granted ELOS ACE-00-05 for the Model 525A. The same compensating design features exist on the Model 525C.

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

See the attached copy of the ELOS memo dated July 19, 2000, which granted ELOS ACE-00-05 for the Model 525A. The same rationale explaining how the design features provide an equivalent level of safety to the level of safety intended by the regulation is applicable to the Model 525C.

ACO recommendation

The Wichita ACO has reviewed the information presented in Cessna Letter L390-09-1211, dated March 25, 2009 and the information in the ELOS memo dated July 19, 2000, and concurs that it is appropriate to extend ELOS ACE-00-05 to the Model 525C.

ACE-00-05B Rev 1 corrects an error in the second paragraph in the Background section. The failure referenced should be a failure of the valve to close. The previous version, AC-00-05B, referenced the failure of the valve to open.

Concurrence:

<i>Margaret Kline</i>	<i>16 October 2012</i>
Manager, Wichita Aircraft Certification Office, ACE-115W	Date

<i>Patrick R. Mullen</i>	<i>July 23, 2014</i>
Manager, Standards Office, ACE-110	Date

<i>Earl Lawrence</i>	<i>July 24, 2014</i>
Manager, Small Airplane Directorate, Aircraft Certification Service, ACE-100	Date