



Federal Aviation Administration

Memorandum

Date: August 26, 2015

To: Manager, International Branch, ANM-116

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Greg Schneider, ANM-115

Subject: INFORMATION: Equivalent Safety Finding for Failure Criteria
Considered Under the Aeroelastic Stability Requirements of § 25.629 on
Embraer Model EMB-550 and EMB-545 airplanes, FAA Project #
TC0717IB-T and AT10256IB-T

ELOS Memo #: TC0717IB-T-A-2

Regulatory Ref: §§ 25.629, 25.671, 25.1309

Revision Description: The FAA revised the memo to add the Embraer Model EMB-545.

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate (TAD) on the establishment of an equivalent level of safety (ELOS) finding for the Embraer Model EMB-545 and EMB-550 airplanes.

Background

The aeroelastic stability requirements of Title 14, Code of Federal Regulations (14 CFR) 25.629 include consideration of the failure criteria identified in §§ 25.671 (Control Systems) and 25.1309 (Equipment, Systems, and Installations).

Embraer has filed two separate, but related, equivalent safety finding requests. They have requested to comply with the criteria contained in draft harmonized proposal from the Aviation Rulemaking Advisory Committee (ARAC) Flight Controls Harmonization Working Group (FCHWG), including Advisory Circular (AC)/Advisory Material Joint (AMJ) 25.671 Final Draft, dated March 19, 2001, in lieu of the failures defined in § 25.671 in demonstrating compliance to § 25.629(d)(9). They have also requested to comply with the criteria contained in the draft harmonized proposal from the ARAC

Systems Design & Analysis Harmonization Working Group (SDAHWG), including AC/AMJ 25.1309 Draft arsenal, dated June 10, 2002, in lieu of the failures defined in § 25.1309, in demonstrating compliance to § 25.629(d)(9).

Therefore, in order demonstrate compliance with the failure criteria referenced in § 25.629, Embraer is requesting to use the draft harmonized proposal from the FCHWG ARAC in lieu of the current § 25.671, as well as the draft harmonized AC/AMJ 25.1309 (“ARSENAL” version) from the System Design and Analysis Harmonization Working Group (SDAHWG) in lieu of the current § 25.1309.

Applicable regulation(s)

§ 25.629, 25.671, 25.1309

Regulation(s) requiring an ELOS finding

§ 25.629

Description of compensating design features or alternative standards which allow the granting of the ELOS finding (including design changes, limitations or equipment need for equivalency)

Although this equivalent safety finding is to § 25.629, it is similar to Embraer’s request for equivalent safety finding to §§ 25.671 and 25.1309. For a complete discussion of the compensating design features or alternative standards which allow granting of the ELOS, please see ELOS Memo # TC0717IB-T-S-3, “Flight Control System Failure Criteria” and ELOS Memo # TC0717IB-T-S-2 “ARAC Recommended Revision To §§ 25.1301, 25.1309, and 25.1310 on Embraer Model EMB-550 Program.” These equivalent safety findings apply to § 25.629, as it requires the consideration of the failure criteria in §§ 25.671 and 25.1309.

Explanation of how design features or alternative standards provide an ELOS to that intended by the regulation

Although this equivalent safety finding is to § 25.629, it is similar to Embraer’s request for equivalent safety finding to §§ 25.671 and 25.1309. For a complete discussion of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation, please see ELOS Memo #TC0717IB-T-S-3, “Flight Control System Failure Criteria” and ELOS Memo #TC0717IB-T-S-2 “ARAC Recommended Revision To §§ 25.1301, 25.1309, and 25.1310 on Embraer Model EMB-550 Program.” These equivalent safety findings apply to § 25.629, as it requires the consideration of the failure criteria in §§ 25.671 and 25.1309.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS finding in project issue paper A-2, Failure Criteria Considered Under the Aeroelastic Stability Requirements of 25.629. This memorandum provides standardized documentation of the ELOS finding that is non-proprietary and can be made available to the public. The TAD has assigned a unique ELOS memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS memorandum number should be listed in the type certificate data sheet under the Certification Basis section in accordance with the statement provided below.

Equivalent Level of Safety Findings have been made for the following regulation(s):

§ 25.629 Aeroelastic Stability Requirements (documented in TAD ELOS Memo TC0717IB-T-A-2)

Original Signed by

Suzanne Masterson

August 26, 2015

Transport Airplane Directorate,
Aircraft Certification Service

Date

ELOS Originated by: Airframe & Cabin Safety Branch	Project Engineer: Greg Schneider	Routing Symbol: ANM-115
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