



Federal Aviation Administration

Memorandum

Date: January 8, 2016

To: Manager, Seattle Aircraft Certification Office, ANM-100S

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Eric Lin, ANM-120S

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Stall Speeds on Model Boeing 757-200 Airplane, FAA Project No. SA12696SE-T

ELOS Memo #: SA12696SE-T-F-1

Regulatory Ref: §§ 25.103, 25.207

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 Model Boeing 757-200 airplane.

Background

The Aviation Partners Boeing (APB) winglet supplemental type certificate project for the Boeing 757-200 requires validation of the stall speeds for the modified (winglet equipped) airplane. It is the intent of APB that the stall speeds will be equal to, or better than, the stall speeds of the basic (unmodified) airplane. Unlike airplanes certified more recently, the stall speed basis for the original airplane was determined using the minimum speed in the stall (V_{\min}) rather than the 1-g speed. APB proposes using a back to back comparison of the 1-g speeds of the basic and modified airplanes as a basis for validating that the minimum speed in the stall is unchanged. Demonstration of 1-g speed equivalence between the basic and unmodified airplanes will allow use of the original V_{\min} stall speed basis and will allow use of the basic airplane flight manual during operation of the modified airplane.

Applicable regulation(s)

§§ 25.103 and 25.207

Regulation(s) requiring an ELOS finding

§§ 25.103, 25.207

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)

In lieu of § 25.103, the applicant will show back-to-back demonstrations of V_{s1-g} for both the basic and modified airplanes, and show that the resulting speeds for the modified airplane are equal to, or better than, the basic airplane. Successful demonstration will provide validation that the V_{min} stall speeds of the basic airplane are unchanged by the addition of winglets. In lieu of § 25.207, the applicant will show that the stall warning of the modified airplane not be degraded from that of the basic airplane. Successful demonstration will result in stall warning margins that are equal to, or better than, the unmodified airplane.

APB is not intending to take performance credit for any stall speed improvements that may be demonstrated, thereby providing additional margins over the current regulatory requirements, and over the basic recommended operating speeds.

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

Compliance with the test criteria stated above will validate that stall speeds and stall warning of the modified airplane are unchanged relative to the basic airplane, and use of the current airplane flight manual (AFM) operating speeds will result in safe operation of the airplane.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS finding in project Issue Paper G-6, titled Boeing Model 757-200 Series – Usage of Previously Applied Issue Papers and Policy Guidance Material. 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 finding. This ELOS memorandum number should be listed in the Limitations and Conditions section of the supplemental type certificate (STC) in accordance with the statement below:

Equivalent Level of Safety Findings have been made for the following regulation(s):
§ 25.103, 25.207 Stall Speed and Stall Warning
(documented in TAD ELOS Memorandum SA12696SE-T-F-1)

Original Signed by
Robert Duffer

Transport Airplane Directorate,
Aircraft Certification Service

February 2, 2016

Date

ELOS Originated by ACO: Seattle ACO	ACO Manager (or Project Engineer for ANM-116): Ross Landes	Routing Symbol: ANM-100S
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