



Federal Aviation Administration

Memorandum

Date: October 31, 2011

To: Manager, International Branch, ANM-116

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Mike McRae, ANM-112

Subject: INFORMATION: Equivalent Level of Safety Finding for turbine engine tailpipe fire protection, § 25.1203 Gulfstream Aerospace LP (GALP) G280 Type Validation Program (FAA Project Number AT0329IB-T)

ELOS Memo#: AT0329IB-T-P-6

Regulatory Ref.: § 21.21(b)(1) and 25.1203(a)

The purpose of this memorandum is to inform the International Branch of an evaluation made by the Transport Airplane Directorate on the establishment of an equivalent level of safety (ELOS) finding for the GALP Model G280 series of aircraft.

Background

The GALP G280 is powered by two AS907-2 turbofans mounted in the rear fuselage. GALP has indicated that the AS907-2 will not incorporate a fire detection system in the engine thrust reverser zone. The thrust reverser is considered a fire zone, and therefore would normally require a fire detection system in accordance with § 25.1203(a).

Paragraph § 25.1203(a) states that "There must be approved, quick acting fire or overheat detectors in each designated fire zone, and in the combustion, turbine, and tailpipe sections of turbine engine installations, in numbers and locations ensuring prompt detection of fire in those zones."

Applicable regulation(s)

§§ 21.21(b)(1), 25.1203(a), 25.1207

Regulation(s) requiring an ELOS

§ 25.1203(a)

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

GALP intends to provide an equivalent level of safety to the requirement of § 25.1203(a), based on substantiating, by analysis, the following aspects of the design:

- Low propensity of ignition of skydrol
- Small volume of skydrol in zone
- Isolation of fluid in all flight conditions
- Adequate drainage of zone in excess of the requirements of § 25.1203(a)
- Isolation of the zone with fireproof boundaries and lack of combustible material within the zone

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

The thrust reverser zone aft of the engine firewall contains hydraulic fluid lines which are normally nonflowing except when the thrust reverser is being deployed or stowed on ground. The plausible ignition source comes from wiring and switches, which can only be considered as such in failure conditions. The zone will comply with the drainage and ventilation requirements of § 25.1187. The skin temperature of the duct itself will not reach a temperature to be considered an ignition source.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding in project issue paper P-6. This Equivalent Level of Safety Finding was granted for the GALP G280 design. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate 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 (TC's & ATC's) or in the Limitations and Conditions Section of the STC Certificate. An example of an appropriate statement is provided below.

Equivalent Safety Findings have been made for the following regulation(s): § 25.1203(a), "Fire Detector Systems" (documented in TAD ELOS Memo AT0329IB-T-P-6).

Original Signed by

<i>Victor Wicklund</i>		<i>October 31, 2011</i>
Manager, Transport Airplane Directorate, Aircraft Certification Service		Date

ELOS Originated by Transport Airplane Directorate International Branch:	Mike Borfitz	ANM-116
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