



Federal Aviation Administration

Memorandum

Date: September 24, 2015

To: Manager, Transport Standards Staff, International Branch, ANM-116

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Douglas Bryant, ANM-112

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Fire Safety Requirements for the Pratt & Whitney Model PW1100G-JM Engine Fan Compartment on the Airbus Single Aisle New Engine Option Model Airplanes (FAA Project Number AT00949IB-T)

ELOS Memo #: AT00949IB-T-P-15

Regulatory Ref.: §§ 25.863, 25.865, 25.867, 25.869, 25.1181, & 25.1185 through 25.1203

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 Airbus Single Aisle (SA) New Engine Option (NEO) Model A319-151n/171n, A320-251n/271n, & A321-251n/271n airplanes.

Background

Title 14, Code of Federal Regulations (14 CFR) 25.1181(a)(6) identifies the compressor and accessory sections of turbine engines as a designated fire zone. Section 25.1181(b) requires that each designated fire zone must meet the requirements of §§ 25.863, 25.865, 25.867, 25.869, and 25.1185 through 25.1203. Airbus has proposed not to identify the fan compartment as a designated fire zone on the Airbus SA model airplanes equipped with Pratt & Whitney Model PW1100G-JM engines. The fan of a turbofan engine is part of the engine compressor section. This proposal does not directly comply with the designated fire zone requirements of § 25.1181(a)(6) & (b).

Applicable regulation(s)

§§ 25.863, 25.865, 25.867, 25.869, 25.1181, 25.1185 through 25.1203

Regulation(s) requiring an ELOS finding

§§ 25.1181(a)(6) & (b), and 25.1195 through 25.1203

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)

The compensating design factors are as follows:

- The accessory gearbox is not located in the fan compartment,
- Adequate drainage and ventilation of the fan compartment,
- Fireproof design oil tank and oil lines,
- Fire resistant hydraulic components and lines, and
- There are no ignition sources present within the fan compartment during normal and foreseeable failure conditions other than low energy electrical wiring,

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

Although noncompliant with the regulations, the lack of ignition sources and incorporation of design features that minimize flammable fluid that would otherwise feed a fire in the fan compartment is considered to provide an equivalent level of safety to demonstrating that the SA NEO model airplanes equipped with PW1100G-JM engines complies with §§ 25.1181(a)(6) & (b), which includes the fire detection and extinguishing requirements in §§ 25.1195 through 25.1203. Airbus will show the fan compartment complies with the other requirements listed in § 25.1181(b), §§ 25.863, 25.865, 25.867, 25.869 and 25.1185 through 25.1193, as applicable.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS finding in the project issue paper P-15, titled “PW1100G-JM / Fan Zone Non-Fire Zone.” 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 Type Certificate Data Sheet under the Certification Basis section in accordance with the statement below:

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

14 CFR 25.1181(a)(6) & (b) , Designated fire zones; regions included

14 CFR 25.1195, Fire extinguishing systems

14 CFR 25.1197, Fire extinguishing agents

14 CFR 25.1199, Extinguishing agent containers

14 CFR 25.1201, Fire extinguishing system materials

14 CFR 25.1203, Fire detector system

(documented in TAD ELOS Memo AT00949IB-T-P-15)

Original Signed by Christopher Parker

September 24, 2015

Transport Airplane Directorate,
Aircraft Certification Service

Date

ELOS Originated by: Propulsion and Mechanical Systems Branch	Project Engineer: Douglas Bryant	Routing Symbol: ANM-112
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