U.S. Department of Transportation

Federal Aviation Administration

Memorandum

Subject:	INFORMATION: Equivalent Level of Safety Finding for Airbus Model A380-800 FAA Project Number CP101	Date:	20 September 05
		Reg Ref:	§ 25.963(d)
From:	Manager, Transport Standards Staff, Airframe/Cabin Safety Branch, ANM-115	Reply to Attn of:	Rich Yarges ANM-115
To:	Manager, Transport Standards Staff, International Branch, ANM-116	ELOS Memo #:	CP101-A-10

Background

The Model A380-800 airplane will be an all-new, four-engine jet transport airplane with a full double-deck, two-aisle cabin. The maximum takeoff weight will be 1.235 million pounds with a typical three-class layout of 555 passengers.

Airbus requested an equivalent safety finding to the existing requirements of § 25.963(d). Airbus proposed to use a recently harmonized set of design criteria for the fuel tank emergency loads requirement recommended by the Aviation Rulemaking Advisory Committee (ARAC).

Applicable regulation(s)

§ 25.963(d)

Regulation(s) requiring an ELOS

§ 25.963(d)

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

Airbus requested an equivalent safety finding to the existing requirements of § 25.963(d). Airbus proposed to use a recently harmonized set of design criteria for the fuel tank emergency loads requirement recommended by the Aviation Rulemaking Advisory Committee (ARAC). Furthermore, Airbus proposed that this new set of criteria would not only be equivalent to the existing § 25.963(d) but would also cover the concerns raised in previous special conditions issued for Airbus Models incorporating tail fuel tank installations. (ref. “Tailplane Tank Emergency Landing Loads,” recorded as item 8 of Special Conditions: Airbus Industrie Model A340 Series Airplanes Docket No. NM-75, Special Condition No. 25-ANM-69).

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

The current section § 25.963(d) requires that fuel tanks be designed to the loads associated with an emergency landing (§ 25.561). This paragraph applies only to fuel tanks inside the fuselage contour of the airplane although the FAA has imposed special conditions to provide criteria for fuel tanks located in the horizontal tail.

The ARAC harmonization effort has resulted in a complete set of design inertia loads criteria for fuel tank design under emergency landing conditions that cover all fuel tanks on the airplane, both inside and outside the fuselage (i.e., within the wings and tail). This would obviate the need for special conditions for tail fuel tank designs.

Part of the ARAC proposal came under scrutiny as a result of FAA attempting to apply these criteria to a specific design and the final rule adopted by FAA may change as a result. However, the majority of the ARAC proposal, as adopted for the A380, provide at least an equivalent level of safety to § 25.963(d), which addresses the fuel tank inertia load factors for emergency landing conditions.

Further, the JAA augmented the ARAC proposal to add some additional, potentially more restrictive, requirements for wing fuel tanks located near the fuselage and near engines. Airbus concurs with the JAA augmented requirement.

Although the ARAC rulemaking proposal has not yet been acted on by FAA, and the requirement applied to the A380 is not identical to the ARAC proposal, the FAA considers the alternate requirement adopted for the A380 program to be equivalently safe to the currently effective §25.963(d).

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding in project issue paper A-10. 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 Finding(s) have been made for the following regulation(s):
§ 25.963(d), Fuel tanks: general (documented in TAD ELOS Memo CP101-A-10)

Original Signed by Franklin Tiangsing — *September 20, 2005*

Manager, Transport Standards Staff, Airframe/Cabin Safety Branch, ANM-115 — Date

ELOS Originated by TSS:	Project Engineer Rich Yarges	Routing Symbol ANM-115