



Federal Aviation Administration

Memorandum

Date: February 24, 2010

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

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Andrew Guion, ANM-150S

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for Lighted "No Smoking" Signs for Flight Structures Inc. (FSI) Project Nos. s ST10717SE-T and A8FS804SE-01 on Airbus A330-200/-300 aircraft

ELOS Memo#: ST10717SE-T-C-1

Regulatory Ref: §§ 25.791(a)

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate on the establishment of an equivalent level of safety finding for Flight Structures Inc. (FSI) modified Airbus A330-200/-300 aircraft.

Background

(Ref. FAA Policy Statement PS-ANM-03-115-05)

Title 14, Code of Federal Regulations (14 CFR) 25.791(a) requires that at least one "No Smoking" placard be legible to each occupant seated in compartments where smoking is prohibited. These placards act as continuous reminders to the occupants that smoking is prohibited. Manufacturers have previously requested that lighted "No Smoking" signs be used to meet this requirement. The FAA has found that a lighted sign can be considered a placard if it is continuously illuminated for the occupants. Lighted signs that are used as placards should illuminate without the cockpit or cabin crew having to turn the signs on. FAA policy allows lighted "No Smoking" signs to not be operable by the crew (Amendment 25-32)/flightcrew (Amendment 25-72). However, during fault conditions, the crew should be able to safely remove the power from the lighted signs without jeopardizing operation of other essential loads or relying on pulling circuit breakers.

FSI is reconfiguring the interiors of certain A330 aircraft. FSI is proposing to control the lighted "No Smoking" signs on the A330 airplanes via the use of software control without modifying the existing flight deck ON-AUTO-OFF switch, in order to comply with the current policy that the

lighted "No Smoking" signs be turned on at all times. This is the first time that the FAA is evaluating controlling lighted "No Smoking" signs through the use of software control functions with the flight deck switch in the "AUTO" position as a means of compliance to § 25.791.

Some operators have elected placarding the flight deck "No Smoking" sign control switch to indicate ON-ON-OFF in lieu of ON-AUTO-OFF. However, implementing this placarding scheme on the Airbus Model A330 aircraft would result in conflict with the aircraft's type certified design and operation. This conflict results from the aircraft design which combines operation of the "No Smoking" signs, the emergency "EXIT" signs and the cabin emergency lighting system onto the same flight deck control switch. Furthermore, improper operation of this switch may result in insufficient charge capacity on the emergency power supply unit (EPSU) batteries.

Applicable regulation(s)

§§ 21.21(b)(1), 25.601, 25.791, 25.869, 25.1301, 25.1309, 25.1333, 25.1351, 25.1353, 25.1357, 25.1431, 25.1529, and 25.853(c)

Regulation(s) requiring an ELOS finding

§ 25.791 at Amendment 25-32
 § 25.853(c) at Amendment 25-51

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

FSI has proposed an alternative method under the equivalent level of safety provisions of § 21.21(b)(1) for compliance to § 25.791 and the recommendations cited in Policy Memo ANM-03-115-05, involving no changes to the "No Smoking" sign control switch placarding. FSI will use software to ensure constant illumination of the "No Smoking" signs with the flight deck switch in the AUTO position, and FSI will provide an airplane flight manual (AFM) supplement stipulating proper use of the flight deck switch.

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

FSI will program the cabin intercommunication data system (CIDS) via a cabin assignment module (CAM) to turn on all the illuminated "No Smoking" passenger signs at all times when the airplane is in flight and on the ground without revisions to the "No Smoking" control switch architecture or placarding. This method will prevent conflict with the intended (and type-certified) operation of the "EXIT" signs and the EPSU batteries that support them. Once incorporated, the ON-AUTO-OFF switch configuration will remain unchanged, and the passenger "No Smoking" signs will always be illuminated when the flight deck switch is in the AUTO mode. FSI will stipulate a limitation in the AFM stating that the flight crew must set the "No Smoking" switch in the AUTO position during all phases of flight. This is already indicated

in the Airbus Flight Crew Operating Manual (FCOM), and must be accomplished in the pre-flight procedures. In fault conditions, the flight crew would have the ability to remove power from the "No Smoking" signs by turning the commercial bus switch to the OFF position, as prescribed in the FCOM and AFM.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned equivalent level of safety finding in project issue paper C-1. This memorandum provides standardized documentation of the ELOS finding 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 Level of Safety Findings have been made for the following regulation(s):
§§ 25.791, Passenger information signs and placards (documented in TAD ELOS Memo ST10717SE-T-C-1)

Original Signed by

Franklin Tiangsing

Manager, Transport Airplane Directorate,
Aircraft Certification Service

March 16, 2010

Date

ELOS Originated by ACO:	Project Engineer	Routing Symbol
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