Federal Aviation Administration

Memorandum

Date: December 13, 2010

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

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Stephen Styskal

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for the Boeing 767-200/300 Type III Exit Accessibility, FAA Project # TD7075SE-T

ELOS Memo #: TD7075SE-T-C-1

Reg. Ref.: §§ 21.21(b), 25.2, 25.803, 25.807(c) and 25.813(c)

The purpose of this memorandum is to inform the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate on the establishment of an equivalent level of safety (ELOS) finding for two configurations of Boeing Model 767-200/300 airplanes equipped with in-seat video systems (IVS) which can protrude into the projected exit opening of Type III overwing exits.

Background

The Boeing Company has proposed two configurations that include IVS which can protrude into the projected exit opening of Type III overwing exits on 767-200/300 airplanes with an A-III-III-A exit arrangement. Title 14, Code of Federal Regulations (14 CFR) 25.813(c)(1) at Amendment 25-32, requires, for airplanes that have a passenger seating configuration of 20 or more, that the projected opening of the Type III exit provided may not be obstructed by seats, berths, or other protrusions (including seatbacks in any position) for a distance from that exit not less than the width of the narrowest passenger seat installed on the airplane. As clarified in the preamble to Amendment 25-32, this rule requires that the seat design preserve the access requirements by including lockout features which prevent any encroachment. Therefore, items which can rotate into the projected exit opening, such as these video monitors, do not comply with § 25.813(c)(1).

The intent of § 25.813(c)(1) is to ensure that a completely clear space next to a Type III exit exists so that there would be no interference in opening the exit during an evacuation and rapid egress through the exit would not be impeded. As a condition for a ELOS finding, the monitors, in any position, must not interfere with the opening of the Type III exit, and sufficient compensating features must be provided to address the requirement that the monitors, in any position, must not encroach into the projected exit opening. As such, an ELOS finding would be necessary if the proposed approach was utilized as part of the showing of compliance to section 25.813(c)(1).

Applicable regulation(s)

§§ 21.21(b), 25.2, 25.803, 25.807(c) and 25.813(c)

Regulation(s) requiring an ELOS finding

§ 25.813(c)(1)

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

The FAA has considered the proposed configurations and finds that the following compensating features justify an ELOS finding:

- For the configuration where the monitors can encroach into the projected openings of the aft pair of Type III exits, the passenger seating capacity must be 255 or less. For the configuration the monitors can encroach into the projected openings of both the forward and aft pairs of Type III exits, the passenger seating capacity must be 230 or less.
- For both configurations, there must be a type design limitation which requires at least one flight attendant to occupy a flight attendant seat near the Type III exits during taxi, take-off, and landing.
- Placards, which require the monitors to be stowed during taxi, take-off and landing, must be visible to the seated occupants immediately inboard of any of the Type III exits.

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

Discussion of Compensating Features where the monitors can encroach into the projected openings of the aft pair of Type III exits

The most significant compensating feature is that the airplane will be limited to a maximum passenger capacity of 255. The aft pair of Type III exits was not installed to increase the passenger capacity as limited by §§ 25.803 and 25.807(c). However, this aft pair of Type III exits is required for compliance with § 25.2, which requires that no passenger exit shall be more than 60 feet from any adjacent passenger exit. Note that the 767-200 has been certified with an A-III-A exit configuration, with a maximum passenger capacity of 255. Limiting the number of passengers to 255 would result in fewer passengers who would need to use the emergency exits, and therefore, would provide compensation for a reduced flow rate that would result from having any IVS monitor encroach into the projected openings at the aft Type III exits.

Limiting the passenger capacity to 255 does not provide sufficient compensation alone. The aft pair of Type III exits with unobstructed projected openings are required even with a maximum passenger capacity of 255. A type design limitation which requires a flight attendant to occupy a flight attendant seat near the Type III exits must also be provided. A flight attendant would provide evacuation assistance and could assist in clearing any evacuation impediments in this area.

Placards will also be required to inform seated passengers immediately inboard of the aft Type III exits of the requirement to stow IVS monitors during taxi, take-off and landing, thus minimizing the possibility of IVS monitors protruding into the projected opening.

Discussion of Compensating Features where the monitors can encroach into the projected openings of both the forward and aft pairs of Type III exits

The non-compliance caused by IVS protruding into the projected exit openings occurs at both the forward and aft pair of Type III exits. Even at a maximum passenger capacity of 255, the forward pair of Type III exits would be critical in determining compliance with the passenger capacity requirement of § 25.807(c) and evacuation criteria of § 25.803. The FAA considers that limiting the maximum passenger capacity to 230, in addition to the flight attendant and placard requirements presented above for the previous configuration, would provide appropriate compensation to provide an ELOS.

Note that the FAA considers that the location of the flight attendant seats in this configuration is significant in providing compensation due to visibility that flight attendants will have of the projected exit openings of the forward pair of Type III exits. Visibility for the forward pair of Type III exits is considered necessary because of the significance of these exits for meeting §§ 25.803 and 25.807(c).

Since the two configurations are unique, this ELOS finding is applicable to the following aircraft:

ANA, Boeing Effectivity VS721 thru VS729:

- The passenger count for these airplanes is 214.
- Flight attendant occupancy placards are installed at both LH & RH flight attendant seats located within the Type III Exit area. It is also understood that only one attendant occupancy placard is required, however the aircraft type design installed two placards.
- In-seat monitors are placarded for stowage during TT&L.

GEF, Boeing Effectivity VS861:

- The passenger count for this airplane is 230.
- Flight attendant occupancy placards are installed at both LH & RH flight attendant seats located within the Type III Exit area. It is also understood that only one attendant occupancy placard is required, however the aircraft type design installed two placards.
- In-seat monitors are placarded for stowage during TT&L.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS 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 TAD 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. An example of an appropriate statement is provided below.

Equivalent Level of Safety Findings have been made for the following regulation(s):
§ 25.813(c)(1) (documented in TAD ELOS Memo TD7075SE-T-C-1).

Original Signed by
Franklin Tiangsing — February 8, 2011

Manager, Transport Airplane Directorate, Aircraft Certification Service — Date

ELOS Originated by Seattle ACO:	Project Engineer Stephen Styskal	Routing Symbol ANM-150S

Email:
julie.zachary@faa.gov, ANM-102S

ANM-150S:SRStyskal:x6439:12-15-2010
O:\SACO_Public\LETTER\150S\2010\###.doc
File Code: 8110.1.1(1).TD7075SE-T
WTS: SRS/548/10