



# Federal Aviation Administration

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## Memorandum

Date: October 6, 2014

To: Manager, Boeing Aviation Safety Oversight Office, ANM-100B

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Jim Cashdollar, ANM-100B

Subject: INFORMATION: Equivalent Level of Safety Finding for Escape Slide Inflation Times on Boeing Model 767-400ER and 767-2C Airplanes, FAA Project Numbers AT2251SE-T and PS09-0863

ELOS Memo #: AT2251SE-T-C-2

Regulatory Ref: 14 CFR 21.21(b)(1) and 25.810(a)(1)(ii)

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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 Boeing Model 767-400ER and 767-2C airplanes.

### Background

The requirement that emergency exit assist means (i.e., slide/rafts) must be “automatically erected within 10 seconds after deployment is begun” was introduced at Amendment 25-15 in Title 14, Code of Federal Regulation (14 CFR) 25.809(f)(1)(ii). This requirement was later moved to § 25.810(a)(1)(ii) at Amendment 25-72. At Amendment 25-88, the requirement was changed from 10 seconds to six seconds for all assist means except those installed at Type C exits. Section 25.810 was revised at Amendment 25-114, but the requirement for assist means erection time remained unchanged.

Type certification of Boeing Model 767-200 and 767-300 airplanes was accomplished prior to Amendment 25-88, so assist means were required to be automatically erected within 10 seconds after initiation of deployment. The Model 767-400ER and 767-2C derivative airplanes, which use the same Type A exits and slide deployment mechanisms installed on the respective baseline airplane models, were certified after Amendment 25-88. Based on the historical performance of the Type A exit slide/rafts on the baseline airplane models, Boeing believed the Type A slide/rafts on the derivative airplane models may not meet the more stringent six second time for deployment and inflation adopted in § 25.810(a)(1)(ii) at Amendment 25-88. As a result, Boeing requested an ELOS finding for the Model 767-400ER so the same Type A slide/rafts could be

used on the derivative airplane models. The FAA granted an ELOS finding for the requirements of § 25.810(a)(1)(ii) at Amendment 25-88 allowing the escape slide/raft deployment time to be greater than six seconds for Model 767-400ER airplanes. This ELOS finding was documented in Model 767-400ER project issue paper C-2. Model 767-2C project issue paper G-6 documents Boeing's subsequent request to apply the same ELOS finding to Model 767-2C airplanes.

### **Applicable regulation(s)**

14 CFR 21.21(b)(1) and 25.810(a)(1)(ii)

### **Regulation(s) requiring an ELOS finding**

14 CFR 25.810(a)(1)(ii), Amendments 25-88 and 25-114

### **Description of compensating design features or alternative Methods of Compliance (MoC) which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)**

The FAA determined that the Model 767-400ER and 767-2C Type A emergency exit escape slide/raft deployment time can be greater than six seconds provided that the slide/rafts become usable within 10 seconds of activating the exit door opening means. While this perspective is reflected in § 25.810(a)(1)(ii) in that the assist means for Type C exits are required to be erected within 10 seconds of actuating the exit opening means, this ELOS is not intended to increase the level of certification of the Type A doors on Model 767-400ER and 767-2C airplanes to the more rigorous requirements of Type C doors.

An ELOS for § 25.810(a)(1)(ii) at Amendments 25-88 and 25-114 is provided if the type design includes a compensating feature that the Type A exit doors and escape slide/rafts are ready for use within 10 seconds of actuating the exit opening means as demonstrated during certification repeatability testing.

### **Explanation of how design features or alternative Methods of Compliance (MoC) provide an equivalent level of safety to the level of safety intended by the regulation**

Granting an ELOS finding based on a 10 second overall system performance standard is justifiable for two reasons. Meeting the 10 second overall performance standard aligns Model 767-400ER and 767-2C Type A exit and assist means requirements with the more rigorous requirements applicable to Type C exit assist means. This means of compliance can also be thought of as requiring the Type A exit and assist means be ready for use within the 10 second time frame allowed by Amendments 25-88 and 25-114 for just opening the Type A exit doors.

### **FAA approval and documentation of the ELOS finding**

The FAA has approved the aforementioned ELOS finding in Model 767-400ER project issue paper C-2 and Model 767-2C project issue paper G-6. 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 must 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):

14 CFR 25.810(a)(1)(ii) Emergency egress assist means and escape routes

(documented in TAD ELOS Memorandum AT2251SE-T-C-2)

  
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Transport Airplane Directorate,  
Aircraft Certification Service

  
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Date

ELOS Originated by the Boeing Aviation Safety Oversight Office	Jim Cashdollar	ANM-100B
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