



Federal Aviation Administration

Memorandum

Date: May 2, 2012

To: Manager, Gulfstream Aviation Safety Oversight Office, ACE-100G

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Carla Wendler, ACE-100G

Subject: INFORMATION: Equivalent Level of Safety Finding for Lavatory Door Installation on Gulfstream Model G150, Project Nos. GACD-05-11-DAS-C-2

Memo No.: GACD-05-11-DAS-C-2

Reg. Ref.: §§ 21.21(b)(1), 25.561 at Amendment 25-91, 25.813(e) at Amendment 25-88 and 25.1557(d) at Amendment 25-72

The purpose of this memorandum is to inform the Gulfstream Aviation Safety Oversight Office of an evaluation made by the Transport Airplane Directorate (TAD) on the establishment of an equivalent level of safety (ELOS) finding for the Gulfstream Aerospace LP (GALP) model Gulfstream G150 airplane.

Background

Gulfstream Aerospace Corporation, Dallas facility, requested approval of an optional configuration in the Gulfstream G150 airplane that adds a belted lavatory toilet seat that is occupiable during taxi, takeoff and landing. This executive interior configuration effectively creates an additional passenger compartment for a person seated in the lavatory. The installation of the lavatory door is not in direct compliance with § 25.813(e) since it is installed between two passenger compartments. The intent of this rule is to allow rapid occupant egress and movement of emergency equipment throughout the cabin

Applicable regulation(s)

Section 25.813(e) states the following: “No door may be installed in any partition between passenger compartments.”

Regulation(s) requiring an ELOS

Section 25.813(e)

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 determined that an ELOS finding per § 21.21(b)(1) may be granted for the requirements of § 25.813(e) provided the following conditions are met:

1. The lavatory door must have provisions to be secured in the open position for taxi, takeoff and landing.
2. The airplane flight manual (AFM) limitations must be established to require the lavatory door to be secured in the open position for taxi, takeoff and landing.
3. The door must have an emergency passage feature (EPF) to allow for passage of the lavatory occupant in the event the door becomes jammed in flight. This EPF may be through frangibility and/or a removable emergency panel, or equivalent. The EPF must be easily broken/removed by the occupant of the lavatory when the door is jammed. Trapping of an occupant is not allowed, and in no case shall the occupant using the EPF feature have to rely on another occupant to assist in passage.
4. The lavatory door must be placarded:
 - a. To be secured in the open position for taxi, takeoff and landing, and
 - b. To instruct the occupant how to break through the EPF.
5. A demonstration must be satisfactorily conducted to show that a 5th percentile female subject (approximately 60 inches tall and weighing 102 pounds) can break through the door or remove the EPF from the lavatory side of the door. The 5th percentile female test subject may only use the information on the placard for determining how to break through the door or operate the EPF. Additionally, the applicant must show that a 95th percentile male subject (approximately 74 inches tall and weighing 223 pounds) can exit through the EPF opening and gain access to the aisleway.

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

Advisory Circular (AC) 25-17, Paragraph 412(b), dated July 15, 1991, provides guidance for a belted lavatory seat configuration. It states the following:

Arrangements have been found acceptable for a lavatory door where the lavatory would be occupied by one passenger during taxi, takeoff and landing. This arrangement would require an equivalent level of safety finding. The door should be secured open for taxi, takeoff and landing and be provided with an emergency egress panel. An emergency egress panel is a panel that can be broken through by a passenger who may be inadvertently trapped behind the door. A demonstration should be accomplished using a fifth percentile female subject (approximately 60 inches tall and weighing approximately 102 pounds).

This ELOS finding is consistent with this guidance. The design features and alternative standards of this ELOS provide adequate means to ensure that an occupant seated in the lavatory will be able to egress to the main aisle during an emergency evacuation. Another contributing factor is that the lavatory door only affects egress of the lavatory occupant and does not adversely affect flow in the main passenger aisle.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned ELOS finding in Issue Paper C-2. This memorandum provides standardized documentation of the ELOS 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 limitations and conditions section of the supplemental type certificate (STC) certificate. An example of an appropriate statement is provided below.

Equivalent Safety Findings have been made for the following regulation(s): § 25.813(e), “Lavatory Door Installation,” (documented in TAD ELOS Memo GACD-05-11-DAS-C2)

Original Signed by

Franklin Tiangsing

Transport Airplane Directorate
Aircraft Certification Service

May 7, 2012

Date

ELOS Originated by: Fort Worth Special Certification Office	Name: Bill Vickers	Routing Symbol: ASW-190
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