

Federal Aviation Administration  
Aviation Rulemaking Advisory Committee

Transport Airplane and Engine Issue Area  
General Structures Harmonization Working Group

**Task 7 – Fuselage Doors**

# **Task Assignment**

[Federal Register: May 24, 1996 (Volume 61, Number 102)]  
[Notices]  
[Page 26247]  
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DEPARTMENT OF TRANSPORTATION

Aviation Rulemaking Advisory Committee; Transport Airplane and  
Engine Issues--New Task

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of a new task assignment for the Aviation Rulemaking  
Advisory Committee (ARAC).

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SUMMARY: Notice is given of a new task assigned to and accepted by the  
Aviation Rulemaking Advisory Committee (ARAC). This notice informs the  
public of the activities of ARAC.

FOR FURTHER INFORMATION CONTACT:

Stewart R. Miller, Manager, Transport Standards Staff, ANM-110, **FAA**,  
Transport Airplane Directorate, Aircraft Certification Service, 1601  
Lind Ave. SW., Renton, WA 98055-4056, telephone (206) 227-2190, fax  
(206) 226-1320.

SUPPLEMENTARY INFORMATION:

Background

The **FAA** has established an Aviation Rulemaking Advisory Committee  
to provide advice and recommendations to the **FAA** Administrator, through  
the Associate Administrator for Regulation and Certification, on the  
full range of the **FAA**'s rulemaking activities with respect to aviation-  
related issues. This includes obtaining advice and recommendations on  
the **FAA**'s commitment to harmonize its Federal Aviation Regulations  
(FAR) and practices with its trading partners in Europe and Canada.

One area ARAC deals with is Transport Airplane and Engine issues.  
These issues involve the airworthiness standards for transport category  
airplanes in 14 CFR parts 25, 33, and 35 of the FAR and parallel  
provisions in 14 CFR parts 121 and 135 of the FAR. The corresponding  
European airworthiness standards for transport category airplanes are  
contained in Joint Aviation Requirements (JAR)-25, JAR-E and JAR-P,  
respectively. The corresponding Canadian Standards are contained in  
Chapters 525, 533 and 535 respectively.

The Task

This notice is to inform the public that the **FAA** has asked ARAC to  
provide advice and recommendation on the following harmonization task:

Fuselage Doors. Review the current standards of Sec. 25.783 and corresponding JAR-25.783 concerning doors and any related advisory material. Review also any relevant service experience, National Transportation Safety Board recommendations A-89-092, A-89-093, A-89-094 and A-92-21, and recommendations made by the Air Transport Association door review team. In light of this review, recommend changes to harmonize Sec. 25.783 and JAR-25.783, recommend new harmonized standards, and develop related advisory material as necessary.

The **FAA** has also asked that ARAC determine if rulemaking action (e.g., NPRM, supplemental NPRM, final rule, withdrawal) should be taken, or advisory material should be issued or revised. If so, ARAC has been asked to prepare the necessary documents, including economic analysis, to justify and carry out its recommendation(s).

#### ARAC Acceptance of Task

ARAC has accepted this task and has chosen to assign it to the existing General Structures Harmonization Working Group. The working group will serve as staff to ARAC to assist ARAC in the analysis of the assigned task. Working group recommendations must be reviewed and approved by ARAC. If ARAC accepts the working group's recommendations, it forwards them to the **FAA** as ARAC recommendations.

#### Working Group Activity

The General Structures Harmonization Working Group is expected to comply with the procedures adopted by ARAC. As part of the procedures, the working group is expected to:

1. Recommend a work plan for completion of the tasks, including the rationale supporting such a plan, for consideration at the meeting of ARAC to consider Transport Airplane and Engine Issues held following publication of this notice.

2. Give a detailed conceptual presentation of the proposed recommendations, prior to proceeding with the work stated in item 3 below.

3. For each task, draft appropriate regulatory documents with supporting economic and other required analyses, and/or any other related guidance material or collateral documents the working group determines to be appropriate; or, if new or revised requirements or compliance methods are not recommended, a draft report stating the rationale for not making such recommendations.

4. Provide a status report at each meeting of ARAC held to consider Transport Airplane and Engine Issues.

#### Participation in the Working Group

The General Structures Harmonization Working Group is composed of experts having an interest in the assigned task. A working group member need not be a representative of a member of the full committee.

An individual who has expertise in the subject matter with wishes to become a member of the working group should write to the person listed under the caption FOR FURTHER INFORMATION CONTACT expressing that desire, describing his or her interest in the tasks, and stating the expertise he or she would bring to the working group. The request will be reviewed by the assistant chair, the assistant executive

director, and the working group chair, and the individual will be advised whether or not the request can be accommodated.

The Secretary of Transportation has determined that the formation and use of ARAC are necessary and in the public interest in connection with the performance of duties imposed on the **FAA** by law.

Meetings of ARAC will be open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the General Structures Harmonization Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on May 14, 1996.

Chris Christie,

Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 96-13159 Filed 5-23-96; 8:45 am]

BILLING CODE 4910-13-M

## **Recommendation Letter**



April 4, 2000

Federal Aviation Administration  
800 Independence Avenue, SW  
Washington, DC 20591

Attention: Mr. Thomas McSweeney, Associate Administrator for Regulation and Certification

Subject: ARAC Recommendation

Reference: ARAC Tasking, Federal Register, November 19, 1999

Dear Tom,

The Transport Airplane and Engine Issues Group is pleased to submit the following "Fast Track" reports as recommendations to the FAA in accordance with the reference tasking. These reports have been prepared by the General Structures Harmonization Working Group.

- Task 7
- 25.783 Doors (Note that the report addresses safety issues raised by the NTSB but the proposal is considered non controversial and appropriate for the Fast Track process.) ANM-96-398-A
  - 25.683 Operational Tests ANM-00-083-A
  - Task 9 • 25.963 Fuel Tank Access Cover ANM-98-466-A

Sincerely yours,

*Craig R. Bolt*  
Craig R. Bolt  
Assistant Chair, TAEIG

Attachments

Copy: Kris Carpenter - FAA-NWR  
\*Amos Hoggard - Boeing  
\*Effie Upshaw - FAA Washington, DC

\*letter only

## **Recommendation**

**ARAC WG Report**  
**Fuselage Doors**  
**FAR/JAR 25.783**

*Category 3*

1 - What is underlying safety issue to be addressed by the FAR/JAR?

To protect the airplane and passengers from hazards from the inadvertent opening of doors.

2 - What are the current FAR and JAR standards relative to this subject?

Current FAR text: See FAR 25.783 "Doors", Amdt 25-38 +

Current JAR text: See JAR 25.783 "Doors", Change 14 +

2a - If no FAR or JAR standard exists, what means have been used to ensure this safety issue is addressed?

The existing standard is applied. In addition, some of the recent ATA task force recommendations have been applied with Airworthiness Directives to several fleets and have been imposed on new designs under "unsafe feature" provision of 21.21(b)(2).

3 - What are the differences in the FAA and JAA standards or policy and what do these differences result in?:

None. The main objective of the proposed rule is NOT the harmonization of differences

4 - What, if any, are the differences in the current means of compliance?

None. The main objective of the proposed rule is NOT the harmonization of differences.

5 - What is the proposed action?

This proposal replaces the current door standard with a new improved door standard. This new standard would set forth, as a regulatory requirement, some of the existing technical guidance criteria which have been determined to be necessary for safety. In addition, the proposal addresses recommendations from the NTSB and from the FAA chartered ATA task force on doors. NTSB (A-89-92, A-89-93, A-89-94, A-92-21) and ATA recommendations are addressed with specific provisions.

**For each proposed change from the existing standard, answer the following questions:**

6 - What should the harmonized standard be?

See the draft notice for text. Section 25.783 is completely rewritten and reorganized in order to:

- Separate the cabin safety and airworthiness issues so that section § 25.783 now treats only airworthiness.

- Classify doors based on hazard rather than relying entirely on the inward/outward opening movement.
- Clarify the requirement concerning inadvertent and deliberate opening by persons.
- Clarify the fail safe and reliability provision for the pressurization prevention system.
- Add specific criteria for doors that need no pressurization prevention system.
- Add detail design and fail-safe features of latching and locking mechanisms (from existing advisory).
- Add a requirement to remove all power from the door during flight (NTSB A-92-21)
- Add specific requirement for a latch retention system in addition to locks.
- Add a new fail-safe criterion for the locking system for outward opening doors under pressure.
- Add a new requirement for an aural warning before takeoff for certain doors.
- Add door operator station requirements for advisory and warnings (NTSB A-89-093).
- Provide relief for certain access panels, maintenance doors, and removable emergency exits.
- Amend several cabin safety rules to accept provisions moved from section § 25.783.

7 – How does this proposed standard address the underlying safety issue (identified under #1)?

The rule is set forth with multiple independent layers of safety intended to account for failures, adverse conditions of operation and, in accordance with NTSB recommendation (A-89-94), human error and abuse.

8 – Relative to the current FAR, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.

Overall increase with some relief for specific kinds of doors. See the NPRM discussion section.

9 – Relative to current industry practice, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.

Same or slight increase. See the NPRM discussion section

10 – What other options have been considered and why were they not selected?:

The HWG has no idea how to answer this question. The only option has been to accomplish the task in a harmonized fashion with full consensus if possible. In doing so, dozens of drafts and thousands of words were considered. The final proposal is the result.

11 - Who would be affected by the proposed change?

The revised rule would be applicable to new airplanes for which the application for type certificate is received after the effective date.

12 - To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) needs to be included in the rule text or preamble?

The existing advisory material are redrafted. Some specific design criteria (i.e. latching and locking criteria) from the existing AC 25.783-1 are proposed to be included in the rule text. See NPRM.

13 - Is existing FAA advisory material adequate? If not, what advisory material should be adopted?

No, see the proposed Advisory Circular 25.783-1A

14 - How does the proposed standard compare to the current ICAO standard?

The current ICAO standard has no specific criteria for the airworthiness of doors.

15 - Does the proposed standard affect other HWG's?

Yes, the reorganization aspect of separating cabin safety and airworthiness criteria affects the cabin safety working group. These items have been coordinated with cabin safety specialists and have been structured according to their request.

16 - What is the cost impact of complying with the proposed standard

Economic analysis still to be done but it is expected to be small in comparison to standard industry practice.

17. - If advisory or interpretive material is to be submitted, document the advisory or interpretive guidelines. If disagreement exists, document the disagreement.

Advisory Circular AC 25.783-1A is submitted with full consensus of the working group

18.- -Does the HWG wish to answer any supplementary questions specific to this project?

Not at this time.

19. - Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?

Yes

20. - In light of the information provided in this report, does the HWG consider that the "Fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the Fast Track Process? Explain.

No, these changes are too extensive, complex and potentially controversial for the Fast Track Process.

**Enclosure (1)**  
**Revision 6**  
**Feb 1, 2000**

**[4910-13]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 25**

**[Docket No. ; Notice No. ]**

**RIN: 2120-**

**Fuselage Doors**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** This notice proposes to amend the design standards for fuselage doors, hatches, and exits on transport category airplanes. This action would improve door integrity by providing design criteria that would ensure that doors will remain secure under all circumstances that service experience has shown can happen. This proposal would adopt several recommendations from the NTSB (National Transportation Safety Board) and from an FAA chartered ATA (Air Transport Association) task force on doors. NTSB safety recommendations, A-89-92, A-89-93, A-89-94, A-92-21, would be addressed with specific provisions. This action also would relieve a certification burden on industry by eliminating differences between the Federal Aviation Regulations (FAR) and European Joint Airworthiness Regulations (JAR) and related certification guidance material.

**DATES:** Comments must be received on or before [Insert date 90 days after date of publication in the Federal Register].

**ADDRESSES:** Comments on this document should be mailed or delivered, in duplicate, to: U.S. Department of Transportation Dockets, Docket No. \_\_\_\_\_, 400 Seventh Street SW., Room Plaza 401, Washington, DC 20590. ” Comments also may be sent electronically to the following Internet address: 9-NPRM-CMTS@faa.dot.gov. Comments may be filed and examined in Room Plaza 401 between 10:00 a.m. and 5:00 p.m. weekdays, except Federal holidays.

In addition, the FAA is maintaining an information docket of comments in the FAA, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue S.W., Renton, Washington 98055-4056. Comments in the information docket may be inspected between 7:30 a.m. and 4:00 p.m. weekdays, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** James R. Haynes, Federal Aviation Administration, Airframe/Cabin Safety Branch (ANM-115), Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-2131; facsimile (425) 227-1320.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

Interested persons are invited to participate in the making of the proposed action by submitting such written data, views, or arguments as they may desire. Comments relating to the environmental, energy, federalism, or economic impact that might result from adopting the proposals in this document are also invited. Substantive comments should be accompanied by cost estimates. Comments must

identify the regulatory docket or notice number and be submitted in duplicate to the DOT Rules Docket address specified above.

All comments received, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking, will be filed in the docket. The docket is available for public inspection before and after the comment closing date.

All comments received on or before the closing date will be considered by the Administrator before taking action on this proposed rulemaking. Comments filed late will be considered as far as possible without incurring expense or delay. The proposals in this document may be changed in light of the comments received.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this document must include a pre-addressed, stamped postcard with those comments on which the following statement is made:

"Comments to Docket No. \_\_\_\_\_." The postcard will be date stamped and mailed to the commenter.

#### **Availability of NPRM**

An electronic copy of this document may be downloaded using a modem and suitable communications software from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: 703-321-3339), the Government Printing Office's (GPO) electronic bulletin board service (telephone: 202-512-1661), or, if applicable, the FAA's Aviation Rulemaking Advisory Committee bulletin board service telephone: 800-322-2722 or 202-267-5948).

Internet users may reach the FAA's web page at <http://www.faa.gov/avr/arm/nprm/nprm.htm> or the GPO's webpage at

<http://www.access.gpo.gov/nara> for access to recently published rulemaking documents.

Any person may obtain a copy of this document by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue, SW., Washington, DC 20591; or by calling (202) 267-9680. Communications must identify the notice number or docket number of this NPRM.

Persons interested in being placed on the mailing list for future rulemaking documents should request from the above office a copy of Advisory Circular No. 11-2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

### **Background**

Following a major accident in 1974, which involved the opening of a fuselage door on a transport category airplane during flight, the FAA amended the applicable safety standards to provide a higher level of safety for fuselage doors. The FAA issued Amendment 25-54 to 14 CFR part 25 (45 FR 60172, September 11, 1980), the objective of which was to provide a level of safety in doors consistent with the level of safety required for other critical systems on the airplane, such as primary flight controls. This was achieved by requiring redundancy and fail-safe features in the door operating systems, and by providing protection from anticipated human errors.

In 1989, another wide-body transport category airplane lost a lower lobe cargo door, along with a portion of fuselage structure above the door, during flight. Because of this accident and other similar accidents, the FAA requested the Air Transport Association (ATA) to form an industry task force to review door designs

on transport category airplanes. This group was chartered to review the design and operation of doors on the current fleet of transport airplanes, and to recommend actions that would prevent any further inadvertent opening of outward opening doors. The group also was requested to review pertinent current regulations and advisory material, and to provide recommendations for necessary rule changes. The ATA provided its recommendations to the FAA in report entitled, "ATA Cargo Door Task Force Final Report," dated May 15, 1991.

As a result of its investigation of the airplane accident(s) associated with fuselage doors opening during flight, the National Transportation Safety Board (NTSB) also issued the following Safety Recommendations relating to doors on transport category airplanes, for consideration by the FAA:

Safety Recommendation A-89-092: Issue an airworthiness directive (AD) to require that the manual drive units and electrical actuators for Boeing 747 cargo doors have torque-limiting devices to ensure that the lock sectors, modified in accordance with the requirements of AD-88-12-04 [amendment 39-5934 (53 FR 18079, May 20, 1988)], cannot be overridden during mechanical or electrical operation of the latch cams.

Safety Recommendation A-89-093: Issue an airworthiness directive for non-plug cargo doors on all transport category airplanes requiring the installation of positive indicators to ground personnel and flightcrews confirming the actual position of both the latch cams and locks, independently.

Safety Recommendation A-89-094: Require that fail-safe design considerations for non-plug cargo doors on present and future transport category

airplanes account for conceivable human errors in addition to electrical and mechanical malfunctions.

Safety Recommendation A-92-21: Require that the electrical actuating systems for non-plug cargo doors on transport category aircraft provide for the removal of all electrical power from circuits on the door after closure (except for any indicating circuit power necessary to provide positive indication that the door is properly latched and locked) to eliminate the possibility of uncommanded actuator movements caused by wiring short circuits.

The FAA has responded to these safety recommendations by issuing various airworthiness directives, applicable to the current fleet of transport category airplanes, and requiring relevant modifications and inspections of the fuselage doors.

### **Harmonization of Regulations**

The airworthiness standards for transport category airplanes are contained in 14 CFR part 25 [commonly referred to as the Federal Aviation Regulations (FAR), part 25]. Manufacturers of transport category airplanes must show that each airplane they produce of a different type design complies with the relevant standards of part 25. These standards apply to airplanes manufactured within the U.S. for use by U.S.-registered operators, and to airplanes manufactured in other countries and imported to the U.S. under a bilateral airworthiness agreement.

In Europe, the Joint Aviation Requirements (JAR) were developed by the Joint Aviation Authorities (JAA) to provide a common set of airworthiness standards for use within the European aviation community. The airworthiness standards for European type certification of transport category airplanes are contained in JAR-25, and are based on part 25. Airplanes certificated to the JAR-25

standards, including airplanes manufactured in the U.S. for export to Europe, receive type certificates that are accepted by the aircraft certification authorities of 26 European member countries.

Although part 25 and JAR-25 are very similar, they are not identical in every respect. Differences between the FAR and the JAR can result in substantial additional costs when airplanes are type certificated to both standards. These additional costs, however, frequently do not bring about an increase in safety. For example, part 25 and JAR-25 may use different means to accomplish the same safety intent. In this case, the manufacturer is usually burdened with meeting both requirements, although the level of safety is not increased correspondingly. Recognizing that a common set of standards would not only economically benefit the aviation industry, but also would maintain the necessary high level of safety, the FAA and JAA consider "harmonization" of the two sets of standards to be a high priority.

In 1988, the FAA, in cooperation with the JAA and other organizations representing the American and European aerospace industries, began a process to "harmonize" the airworthiness requirements of the United States and the airworthiness requirements of Europe.

In 1991, the FAA harmonization effort was undertaken by the Aviation Rulemaking Advisory Committee (ARAC).

#### **The Aviation Rulemaking Advisory Committee**

The ARAC was formally established by the FAA on January 22, 1991, and announced to the public on that same day in the Federal Register (56 FR 2190). The task of ARAC is to provide advice and recommendations concerning the full range

of the FAA's safety-related rulemaking activity. This advice is sought to develop better rules in less overall time using fewer FAA resources than are currently needed. The committee provides the opportunity for the FAA to obtain firsthand information and insight from interested parties regarding proposed new rules or revisions of existing rules.

There are 64 member organizations on the committee, representing a wide range of interests within the aviation community. Meetings of the committee are open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act.

The ARAC establishes separate individual working groups to develop proposals to recommend to the FAA for resolving specific issues. Tasks assigned to working groups are published in the Federal Register. Although working group meetings are not generally open to the public, all interested parties are invited to participate as working group members. Working groups report directly to the ARAC, and the ARAC must accept a working group proposal before that proposal can be presented to the FAA as an advisory committee recommendation for rulemaking. (The activities of the ARAC will not, however, circumvent the public rulemaking procedures. After an ARAC recommendation is received and found acceptable by the FAA, the agency proceeds with the normal public rulemaking procedures. Any ARAC participation in a rulemaking package will be fully disclosed in the public docket.)

In 1996, the harmonization effort was undertaken by the ARAC to harmonize the airworthiness standards related to fuselage doors. A working group of industry and government structures specialists from Europe, the United States,

and Canada was established under the aegis of ARAC and chartered by notice in the Federal Register (61FR26247, May 24, 1996). The working group was tasked to develop recommendations concerning new or revised requirements for installation of fuselage doors on transport category airplanes. The JAA is to develop a similar proposal to amend JAR-25, as necessary, to achieve harmonization.

The harmonization effort has now progressed to a point where a specific proposal has been developed by the working group and has been recommended to the FAA by ARAC for consideration as possible rulemaking. The rulemaking proposal contained in this notice is based on those recommendations developed by the working group.

#### **Discussion**

The scope of this proposal is to revise and reorganize the existing rules in 14 CFR part 25 to provide the following:

1. Clarification of the existing design requirements for doors.
2. Definitive criteria for the door design requirements that are currently covered in the existing rules by general text.
3. Additional fail-safe requirements and detailed door design requirements, based on the recommendations of the NTSB and the ATA, and on current industry practice.

#### **Definitions**

For the purpose of understanding the remainder of this proposal, the following definitions are provided.

A latch is a movable mechanical element that, when engaged, prevents the door from opening.

A lock is a mechanical element that monitors the latch position, and when engaged, prevents the latch from becoming disengaged.

Latched means the latches are fully engaged with their structural counterparts and held in position by the latch operating mechanism.

Locked means the locks are fully engaged.

Latching mechanism includes the latch operating mechanism and the latches.

Locking mechanism includes the lock operating mechanism and the locks.

Closed means that the door has been placed within the doorframe in such a position that the latches can be operated to the “latched” condition.

Fully closed means that the door is placed within the doorframe in the position it will occupy when the latches are in the latched condition.

#### **Discussion of Proposed Changes**

This action proposes changes mainly to § 25.783, “Doors.” First, the title of § 25.783 would be changed from the current “Doors” to “Fuselage doors” in order to more accurately reflect the applicability of this revised section. The term “doors,” as used in the proposed revision of § 25.783, would also include hatches, openable windows, access panels, covers, etc., on the exterior of the fuselage that do not require the use of tools to open or close. This also would include each door or hatch through a pressure bulkhead, including any bulkhead that is specifically designed to function as a secondary pressure bulkhead under the prescribed failure conditions of 14 CFR part 25.

Other specific changes to § 25.783 are as follows:

### **Proposed Changes to § 25.783(a)**

The formatting and portions of the text of proposed § 25.783(a) would be totally revised. The proposed text would describe the types of doors to which this section of the regulations is applicable, and would clarify the fact that the requirements are intended to apply to the unpressurized portions of flight as well as to pressurized flight.

Proposed § 25.783(a) also would provide the general design requirements for doors. These general design requirements are not substantively different from the requirements contained in the existing § 25.783. A reference to the locking requirements contained in § 25.607 ("Fasteners") would be included in paragraph § 25.783(a), since experience has shown that it is advisable to add this reference to ensure that these requirements are not overlooked during the door design process.

### **Proposed Changes to § 25.783(b)**

Paragraph 25.783(b) would be revised to require safeguards against both inadvertent and deliberate opening of doors during flight. It would clarify the existing requirement that doors must be prevented from opening inadvertently (that is, not deliberately, and without forethought, consideration, or consultation) by persons on board the airplane during flight. The intent of this requirement is to protect both the passenger and the airplane from hazards resulting from the unintentional actions by persons on board.

In addition, the proposal would make it clear that the door must be safeguarded against the deliberate opening during flight by persons on board. The proposed text makes it clear that, for doors in pressurized compartments, it should not be possible to open the doors after takeoff, when the compartment is pressurized

to a significant level. (During approach, takeoff, and landing when compartment differential pressure is lower, it is recognized that intentional opening may be possible; however, during these short phases of the flight, all passengers are expected to be seated with seat belts fastened.)

Further, for doors that can be opened under significant cabin pressure, or for doors in non-pressurized airplanes, the use of an auxiliary securing means, such as speed- or barometrically-activated devices, may be necessary. Past interpretations of the existing § 25.783(f) have resulted in this type of design requirement being applied to type certification projects. In addition, the proposed § 25.783(b) would require that, if auxiliary devices are used, they be designed so that no single failure or malfunction could prevent more than one exit from opening.

#### **Proposed Changes to 25.783(c)**

Proposed § 25.783(c) would restate the existing requirements of § 25.783(f) for a provision to prevent the airplane from becoming pressurized if the door is not fully closed, latched, and locked. The current requirement states:

“External doors must have provisions to prevent the initiation of pressurization of the airplane to an unsafe level if the door is not fully closed and locked. . . .”

However, this proposal would remove the phrase, “. . . the initiation of . . .” from this text because it is inconsistent and confusing with regard to a common method of preventing pressurization that employs vent doors. Mechanical vent doors allow the pressurization system to initiate and a small amount of pressure may exist as the air flows through the vents. The revised text would correct this inconsistency. It also would allow for certain types of doors that can safely and reliably act as their own

venting mechanism when not fully closed and latched, or that would automatically close and latch, as appropriate to the door design, before an unsafe level of pressure is reached. For these doors without an independent means, the assessment for a safe and reliable closing would include consideration of single failures and adverse conditions, such as debris in the doorway.

Proposed 25.783(c) also would provide a definitive criterion for the reliability level of the pressurization prevention system that is consistent with the interpretation of the general text of the existing rule, and that also is consistent with current industry practice for new designs. This proposed criterion is not intended to impose a new level of reliability for mechanical vent systems that is more stringent than that established by typical fail-safe designs. However, it would provide a definitive criterion for use in evaluating these vent systems or other systems that may interconnect with the airplane's pressurization system. A pressurization prevention means that would function with a high degree of reliability in spite of operator and flight crew errors, would be consistent with NTSB Safety Recommendation A-89-094, described previously, which recommends fail-safe features that account for conceivable human errors.

**Proposed Changes to § 25.783(d)**

Proposed § 25.783(d) would provide requirements for the detail design and fail-safe features of latching and locking mechanisms. Some of these design features are currently recommended in the existing FAA Advisory Circular (AC) 25.783-1 "Fuselage Doors, Hatches, and Exits," dated December 10, 1986; the proposed rule would make these features mandatory. One provision of this proposed requirement, which would require the removal of all power that could initiate the unlatching and

unlocking of the door during flight, is based on NTSB Safety Recommendation A-92-21, discussed previously.

For the most part, the detail design requirements for latches and locks contained in this proposed section are consistent with current industry practice, as applied to doors whose initial movement is not inward. However, the applicability of the proposed requirement would be extended to any door, unless it can be shown that unlatching would not be a hazard.

Proposed § 25.783(d) also would require that the latching mechanism be designed to eliminate forces that would tend to drive the latches to the open position. However, it is recognized that there may still be ratcheting forces that could progressively move the latches to the unlatched position. Therefore, the rule also would require that the latching system be designed such that the latches are positively secured without regard to the position of the locks.

A new provision in this proposed paragraph is the requirement for a fail-safe criterion for the locking system that would apply only to outward opening doors while under pressure. Since all the locks are usually designed as a single locking system, it is possible that single failures in the locking system could result in the unlocking of several or all the latches. Although the latches would continue to be held in the latched position by the latch system securing means, the FAA has determined that, for these more critical designs, during pressurized flight, single failures in the locking system should not unlock more latches than are needed to restrain the door.

### **Proposed Changes to § 25.783(e)**

Proposed § 25.783(e) would require warning, caution, and advisory indications for doors. These requirements for indication are similar to the current provisions for indication of door status in this section, but provide additional features consistent with NTSB and ATA recommendations. The prescribed “improbable” level for an erroneous indication that the door is fully closed, latched, and locked is proposed to be the same as the requirement of the existing § 25.783(e), except that the applicability would be extended to each door, if unlatching of the door in flight could be a hazard.

Proposed § 25.783(e) also would require an aural warning before takeoff for each door, if opening of the door would not allow safe flight. The FAA has determined that this requirement is necessary, based on service history. It is intended that this system should function in a manner similar to the takeoff configuration warning systems required by § 25.703 (“Takeoff warning system”).

Proposed § 25.783(e) also would require that there be a positive means to display indications and signals to the door operator. This proposed requirement is consistent with NTSB Safety Recommendation A-89-093, discussed previously.

### **Proposed Changes to § 25.783(f)**

This proposal would revise § 25.783(f) to require a provision for direct visual inspections to determine that the door is fully closed, latched, and locked. This requirement is similar to that of the current § 25.783(b), which requires a means for direct visual inspection of the locking mechanism. However, this proposal would extend the requirements to apply to any door, irrespective of the direction of initial movement, if the unlatched door could be a hazard.

### **Proposed Changes to § 25.783(g)**

This proposal would revise § 25.783(g) to provide relief from certain requirements of the current rule that are applicable to access panels not subject to pressurization and for which unlatching would not have a detrimental effect on safety. In addition, the proposal would provide relief from certain of the current requirements applicable to:

- maintenance doors that are not a hazard if unlatched; and
- removable emergency exits, because they are not used in normal operation and therefore not subjected to the same level of human error, abuse, and damage as other doors and hatches.

### **Proposed Changes to § 25.783(h)**

Proposed § 25.783(h) would prescribe detail design features that a door would need to have if it were to be considered as a door that is “not a hazard” when this phrase is used in other paragraphs of § 25.783.

### **Proposed Changes to § 25.783(i)**

The current requirements of § 25.783(i) that apply to the design of air stairs (integral stair installed in a passenger entry door that is qualified as a passenger emergency exit) would be removed from § 25.783 and placed in § 25.810 (“Emergency egress assist means and escape routes”) as paragraph § 25.810(e), without change in text. The FAA considers that manufacturers, applicants, and others seeking compliance with rules would be better served by having these requirements located in the same section of the rules where other related requirements are found.

### **Proposed Changes to § 25.783(j)**

The special requirement for lavatory doors contained in the current § 25.783(j) would be removed and set forth in a new § 25.820 (“Lavatory doors”), without change in text. The FAA considers that less confusion will be caused, and the regulated public will be better served, if all requirements pertaining to this particular subject are located in one separate place.

### **Other Proposed Changes**

Several other provisions currently in § 25.783 would be deleted, since they duplicate the requirements applicable to emergency exit design that are contained in, or would be moved without substantive change to, other sections of part 25. The FAA considers that less confusion would be caused, and that the regulated public would be better served, if all requirements pertaining to a particular subject are located in one place. In this regard, the FAA is proposing the following specific changes:

**§ 25.809(b) (“Emergency exit arrangement”):** This paragraph would be revised by adding a new § 25.809(b)(3) to require that each emergency exit must be capable of being opened, when there is no fuselage deformation, “even though persons may be crowded against the door on the inside of the airplane.” This specific requirement is currently a part of § 25.783(b), but is more appropriate as part of the emergency exit arrangement requirements of § 25.809.

**§ 25.809(c):** This paragraph would be revised to include the requirement that the means of opening emergency exits also must be marked so that it can be readily located and operated, even in darkness. This requirement is currently located

in § 25.783(b), but is more appropriate as part of the emergency exit arrangement requirements of § 25.809.

§ 25.809(f): This new paragraph would be added to require that the external door be located where persons using it will not be endangered by the propellers when appropriate operating procedures are used. This requirement currently is found in § 25.783(d), but is more applicable to the emergency exit arrangement requirements of § 25.809.

In addition, the following changes are proposed:

§ 25.807 (“Emergency exits”): The existing § 25.783 requires that passenger entry doors also meet the airworthiness standards required for emergency exits. In addition, the current Joint Airworthiness Requirement (JAR) 25.807, issued by the European JAA, requires that certain other fuselage doors, in addition to passenger entry doors, meet the same standards as emergency exits. Prior to the adoption of amendment 25-88 (61 FR 57956, November 8, 1996), 14 CFR part 25 also contained a requirement similar to that of JAR 25.807; however, that requirement was inadvertently omitted in the adoption of amendment 25-88. This proposed rule would correct this discrepancy by setting forth this requirement in a revised § 25.807(h), and by revising § 25.783 to refer to that section.

Specifically, the proposed § 25.807(h) would be revised to refer to “other exits” that must meet the applicable emergency exit requirements of §§ 25.809 through 25.813. Those exits include:

- each emergency exit in the passenger compartment in excess of the minimum number of required emergency exits;

- floor-level doors or exits that are accessible from the passenger compartment and larger than a Type II exit, but less than 46 inches wide; and
- ventral or tail cone passenger exits.

#### **Related Advisory Material**

The FAA also is proposing to issue a revised Advisory Circular 25-783-1A, “Fuselage Doors,” which would set forth an acceptable means, but not the only means, for complying with the proposed revised regulations described in this notice. The document would provide guidance for showing compliance with structural and functional safety standards for doors and their operating systems. The availability of this proposed guidance information is announced elsewhere in this Federal Register.

#### **Paperwork Reduction Act**

In accordance with the Paperwork Reduction Act of 1995 [44 U.S.C. 3507(d)], the FAA had determined there are no requirements for information collection associated with this proposed rule.

#### **Compatibility with ICAO Standards**

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA determined that there are no ICAO Standards and Recommended Practices that correspond to this proposed regulation.

## **Regulatory Evaluation Summary**

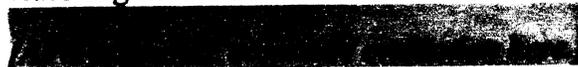
Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. And fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of \$100 million or more annually (adjusted for inflation). In conducting these analyses, the FAA has determined that this proposed rule: (1) would generate benefits that justify its costs and would not be “a significant regulatory action” as defined in section 3(f) of Executive Order 12866 and, therefore, is not subject to review by the Office of Management and Budget; (2) would not have a significant impact on a substantial number of small entities; (3) would not constitute a barrier to international trade; and (4) would not contain a significant intergovernmental or private sector mandate. These analyses, available in the docket, are summarized below. The FAA invites the public to provide comments and supporting data on the assumptions made in this evaluation. All comments received will be considered in the final regulatory evaluation.

### **Initial Regulatory Flexibility Determination**

The Regulatory Flexibility Act of 1980 (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the Act.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 Act provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.



### **International Trade Impact Assessment**

The provisions of this proposed rule would have little or no impact on trade for U.S. firms doing business in foreign countries and foreign firms doing business in the United States.

### **Federalism Implications**

The regulation proposed herein would not have a substantial direct effect on the States, on the relationship between the national Government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant the preparation of a federalism assessment.

### **Unfunded Mandates Reform Act**

Title II of the Unfunded Mandates Reform Act of 1995 (the Act), codified in 2 U.S.C. 1501-1571, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more (adjusted annually for inflation) in any one year. Section 204(a) of the Act, 2 U.S.C. 1534(a), requires the Federal agency to develop an effective process to permit timely input by elected officers (or their designees) of State, local, and tribal governments on a proposed "significant intergovernmental mandate." A "significant intergovernmental mandate" under the Act is any provision in a Federal agency regulation that will impose an enforceable duty upon State, local, and tribal governments, in the aggregate, of \$100 million (adjusted annually for inflation) in any one year. Section 203 of the Act, 2 U.S.C. 1533, which supplements section 204(a), provides that before establishing any regulatory requirements that might significantly or uniquely affect small governments, the agency shall have developed a plan that, among other things, provides for notice to potentially affected small

governments, if any, and for a meaningful and timely opportunity to provide input in the development of regulatory proposals.

This proposed rule does not contain a Federal intergovernmental or private sector mandate that exceeds \$100 million in any one year.

#### **Environmental Analysis**

FAA Order 1050.1D defines FAA actions that may be categorically excluded from preparation of a National Environmental Policy Act (NEPA) environmental assessment or environmental impact statement. In accordance with FAA Order 1050.1D, appendix 4, paragraph 4(j), this rulemaking qualifies for a categorical exclusion.

## **Energy Impact**

The energy impact of the proposed rule has been assessed in accordance with the Energy Policy and Conservation Act (EPCA) and Public Law 94-163, as amended (42 U.S.C. 6362). It has been determined that it is not a major regulatory action under the provisions of the EPCA.

## **Regulations Affecting Intrastate Aviation in Alaska**

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the Administrator, when modifying regulations in Title 14 of the CFR in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish such regulatory distinctions as he or she considers appropriate. Because this proposed rule would apply to the certification of future designs of transport category airplanes and their subsequent operation, it could, if adopted, affect intrastate aviation in Alaska. The FAA therefore specifically requests comments on whether there is justification for applying the proposed rule differently to intrastate operations in Alaska.

## **List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Recording and Recordkeeping Requirements.

## **The Proposed Amendment**

In consideration of the foregoing, the Federal Aviation Administration proposes to amend part 25 of Title 14, Code of Federal Regulations, as follows:

### **PART 25--AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES**

1. The authority citation for part 25 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701-44702, and 44704.

2. Amend § 25.783 by revising the title and text to read as follows:

**§ 25.783 Fuselage doors.**

(a) General. This section applies to fuselage doors, which includes all doors, hatches, openable windows, access panels, covers, etc., on the exterior of the fuselage that do not require the use of tools to open or close. This also applies to each door or hatch through a pressure bulkhead, including any bulkhead that is specifically designed to function as a secondary bulkhead under the prescribed failure conditions of part 25. These doors must meet the requirements of this section, taking into account both pressurized and unpressurized flight, and must be designed as follows:

(1) Each door must have means to safeguard against opening in flight as a result of mechanical failure, or failure of each single structural element.

(2) Each door that could be a hazard if it unlatches must be designed so that unlatching during pressurized and unpressurized flight from the fully closed, latched, and locked condition is extremely improbable. This must be shown by safety analysis.

(3) Each element of each door operating system must be designed or, where impracticable, distinctively and permanently marked, to minimize the probability of incorrect assembly and adjustment that could result in a malfunction.

(4) All sources of power that could initiate unlocking or unlatching of each door must be automatically isolated from the latching and locking systems prior to flight and it must not be possible to restore power to the door during flight.

(5) Each removable bolt, screw, nut, pin, or other removable fastener must meet the locking requirements of § 25.607.

(6) Certain doors, as specified by § 25.807(h), must also meet the applicable requirements of §§ 25.809 through 25.813 for emergency exits.

(b) Opening by persons. There must be a means to safeguard each door against opening during flight due to inadvertent action by persons. In addition, design precautions must be taken to minimize the possibility for a person to open a door intentionally during flight. If these precautions include the use of auxiliary devices, those devices and their controlling systems must be designed so that:

(i) no single failure will prevent more than one exit from being opened, and  
(ii) failures that would prevent opening of the exit after landing are improbable.

(c) Pressurization prevention means. There must be a provision to prevent pressurization of the airplane to an unsafe level if any door subject to pressurization is not fully closed, latched, and locked.

(1) The provision must be designed to function after any single failure, or after any combination of failures not shown to be extremely improbable.

(2) Doors that meet the conditions described in § 25.783(h) are not required to have a dedicated pressurization prevention means if, from every possible position of the door, it will remain open to the extent that it prevents pressurization, or safely close and latch as pressurization takes place. This must also be shown with each single failure and malfunction except that:

(i) with failures or malfunctions in the latching mechanism, it need not latch after closing, and

(ii) with jamming as a result of mechanical failure or blocking debris, the door need not close and latch if it can be shown that the pressurization loads on the jammed door or mechanism would not result in an unsafe condition.

(d) Latching and locking. The latching and locking mechanisms must be designed as follows:

(1) There must be a provision to latch each door.

(2) The latches and their operating mechanism must be designed so that, under all airplane flight and ground loading conditions, with the door latched, there is no force or torque tending to unlatch the latches. In addition, the latching system must include a means to secure the latches in the latched position. This means must be independent of the locking system.

(3) Each door subject to pressurization, and for which the initial opening movement is not inward, must --

(i) have an individual lock for each latch,

(ii) have the lock located as close as practicable to the latch, and

(iii) be designed so that, during pressurized flight, no single failure in the locking system would prevent the locks from restraining the latches as necessary to secure the door.

(4) Each door for which the initial opening movement is inward, and unlatching of the door could result in a hazard, must have a locking means to prevent the latches from becoming disengaged. The locking means must ensure sufficient latching to prevent opening of the door even with a single failure of the latching mechanism.

(5) Each door for which unlatching would not result in a hazard is not required to have a locking mechanism.

(6) It must not be possible to position the lock in the locked position if the latch and the latching mechanism are not in the latched position.

(7) It must not be possible to unlatch the latches with the locks in the locked position. Locks must be designed to withstand the limit loads resulting from --

(i) the maximum operator effort when the latches are operated manually;

(ii) the powered latch actuators, if installed; and

(iii) the relative motion between the latch and the structural counterpart.

(e) Warning, caution, and advisory indications. Doors must be provided with the following indications:

(1) There must be a positive means to indicate at the door operator's station for each door that all required operations to close, latch, and lock the door have been completed.

(2) There must be a positive means clearly visible from the operator station for each door to indicate if the door is not fully closed, latched, and locked for each door that could be a hazard if unlatched.

(3) There must be a visual means on the flight deck to signal the pilots if any door is not fully closed, latched, and locked. The means must be designed such that any failure or combination of failures that would result in an erroneous closed, latched, and locked indication is improbable for --

(i) each door that is subject to pressurization and for which the initial opening movement is not inward, or

(ii) each door that could be a hazard if unlatched.

(4) There must be an aural warning to the pilots prior to or during the initial portion of takeoff roll if any door is not fully closed, latched, and locked, and its opening would prevent a safe takeoff and return to landing.

(f) Visual inspection provision. Each door for which unlatching could be a hazard must have a provision for direct visual inspection to determine, without ambiguity, if the door is fully closed, latched, and locked. The provision must be permanent and discernible under operational lighting conditions, or by means of a flashlight or equivalent light source.

(g) Certain maintenance doors, removable emergency exits, and access panels. Some doors not normally opened except for maintenance purposes or emergency evacuation and some access panels need not comply with certain paragraphs of this section as follows:

(1) Access panels that are not subject to cabin pressurization and would not be a hazard if unlatched during flight need not comply with paragraphs (a) through (f) of this section, but must have a means to prevent inadvertent opening during flight.

(2) Inward-opening removable emergency exits that are not normally removed, except for maintenance purposes or emergency evacuation, and flight deck-openable windows need not comply with paragraphs (c) and (f) of this section.

(3) Maintenance doors that meet the conditions of § 25.783(h), and for which a placard is provided limiting use to maintenance access, need not comply with paragraphs (c) and (f) of this section.

(h) Doors that are not a hazard. For the purposes of this section, a door is considered not to be a hazard in the unlatched condition during flight, provided it can be shown to meet all of the following conditions:

(1) Doors in pressurized compartments would remain in the fully closed position if not restrained by the latches when subject to a pressure greater than ½ psi. Opening by persons, either inadvertently or intentionally, need not be considered in making this determination.

(2) The door would remain inside the airplane or remain attached to the airplane if it opens either in pressurized or unpressurized portions of the flight. This determination must include the consideration of inadvertent and intentional opening by persons during either pressurized or unpressurized portions of the flight.

(3) The disengagement of the latches during flight would not allow depressurization of the cabin to an unsafe level. This safety assessment must include the physiological effects on the occupants.

(4) The open door during flight would not create aerodynamic interference that could preclude safe flight and landing.

(5) The airplane would meet the structural design requirements with the door open. This assessment must include the aeroelastic stability requirements of § 25.629, as well as the strength requirements of this subpart.

(6) The unlatching or opening of the door must not preclude safe flight and landing as a result of interaction with other systems or structures.

3. Amend §25.807 by revising paragraph (h) to read as follows:

**§ 25.807 Emergency exits.**

\* \* \* \* \*

(h) Other exits. The following exits also must meet the applicable emergency exit requirements of §§ 25.809 through 25.813:

(1) Each emergency exit in the passenger compartment in excess of the minimum number of required emergency exits.

(2) Any other floor-level door or exit that is accessible from the passenger compartment and is as large or larger than a Type II exit, but less than 46 inches wide.

(3) Any other ventral or tail cone passenger exit.

4. Amend § 25.809 by adding a new paragraph (b)(3), and by revising paragraphs (c) and (f) to read as follows:

**§ 25.809 Emergency exit arrangement.**

\* \* \* \* \*

(b) \* \* \* \* \*

(3) Even though persons may be crowded against the door on the inside of the airplane.

(c) The means of opening emergency exits must be simple and obvious; may not require exceptional effort; and must be arranged and marked so that it can be readily located and operated, even in darkness. Internal exit-opening means involving sequence operations (such as operation of two handles or latches, or the release of safety catches) may be used for flight crew emergency exits if it can be

reasonably established that these means are simple and obvious to crewmembers trained in their use.

\* \* \* \* \*

(f) Each door must be located where persons using them will not be endangered by the propellers when appropriate operating procedures are used.

\* \* \* \* \*

5. Amend § 25.810 by adding a new paragraph (e), as follows:

**§ 25.810 Emergency egress assist means and escape routes.**

\* \* \* \* \*

(e) If an integral stair is installed in a passenger entry door that is qualified as a passenger emergency exit, the stair must be designed so that, under the following conditions, the effectiveness of passenger emergency egress will not be impaired:

(1) The door, integral stair, and operating mechanism have been subjected to the inertia forces specified in § 25.561(b)(3), acting separately relative to the surrounding structure.

(2) The airplane is in the normal ground attitude and in each of the attitudes corresponding to collapse of one or more legs of the landing gear.

6. Add a new § 25.820 to read as follows:

**§ 25.820 Lavatory doors.**

All lavatory doors must be designed to preclude anyone from becoming trapped inside the lavatory. If a locking mechanism is installed, it must be capable of being unlocked from the outside without the aid of special tools.

Issued in Washington, D.C., on

**Aircraft Certification Service**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*Enclosure 2*

# Advisory Circular

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**Subject:** FUSELAGE DOORS

**Date:** DRAFT Feb 1,2000  
Revision 6

**AC No:** 25.783-1A

**Change:**

**Initiated By:** ANM-110

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## **WORKING DRAFT -- NOT FOR PUBLIC RELEASE.**

1. **PURPOSE.** This Advisory Circular (AC) describes an acceptable means for showing compliance with the requirements of § 25.783, "Fuselage doors," and other applicable sections of Title 14, Code of Federal Regulations (CFR), part 25, commonly referred to as Part 25 of the Federal Aviation Regulations (FAR). Part 25 contains the airworthiness standards applicable to transport category airplanes. The means of compliance described in this document is intended to provide guidance to supplement the engineering and operational judgment that must form the basis of any compliance findings relative to the structural and functional safety standards for doors and their operating systems.

The guidance provided in this document is directed to airplane manufacturers, modifiers, foreign regulatory authorities, and Federal Aviation Administration transport airplane type certification engineers and their designees.

Like all advisory circular material, this AC is not, in itself, mandatory, and does not constitute a regulation. It is issued to describe an acceptable means, but not the only means, for demonstrating compliance with the requirements for transport category airplanes. Terms such as "shall" and "must" are used only in the sense of ensuring applicability of this particular method of compliance when the acceptable method of compliance described in this document is used.

2. **CANCELLATION.** Advisory Circular 25.783-1, "Fuselage Doors, Hatches, and Exits," dated 12/10/86, is canceled.

3. **RELATED SECTIONS OF FEDERAL AVIATION REGULATIONS.**

§ 25.571, "Damage-tolerance and fatigue evaluation of structure"

§ 25.607, "Fasteners"

§ 25.703, "Takeoff warning system"

§ 25.783, "Fuselage doors"

§ 25.809, "Emergency exit arrangement"

§ 25.813, "Emergency exit access"

4. **DEFINITIONS.** Inconsistent or inaccurate use of terms may lead to the installation of doors and hatches that do not fully meet the safety objectives of the regulations. To ensure that such installations fully comply with the regulations, the following definitions should be used when showing compliance with § 25.783:

a. **Door** includes all doors, hatches, openable windows, access panels, covers, etc., on the exterior of the fuselage that do not require the use of tools to open or close. This also includes each door or hatch through a pressure bulkhead, including any bulkhead that is specifically designed to function as a secondary bulkhead under the prescribed failure conditions of Part 25 of the regulations.

b. **Initial opening movement** refers to that door movement, caused by operation of a handle or other door control mechanism, which is required to place the door in a position free of structure that would interfere with continued opening of the door.

c. **Inward** means having a directional component of movement that is inward with respect to the mean (pressure) plane of the body cutout.

d. **Closed** means that the door has been placed within the doorframe in such a position that the latches can be operated to the "latched" condition. **Fully closed** means that the door is placed within the doorframe in the position it will occupy when the latches are in the latched condition.

- e. Latches are movable mechanical elements that, when engaged, prevent the door from opening.
- f. Latched means that the latches are engaged with their structural counterparts and held in position by the latch operating mechanism.
- g. Latching system means the latch operating system and the latches.
- h. Locks are mechanical elements, in addition to the latch operating mechanism, that monitor the latch positions and, when engaged, prevent latches from becoming disengaged.
- i. Locked means that the locks are engaged.
- j. Locking system means the lock operating system and the locks.
- k. Stops are fixed structural elements on the door and doorframe that, when in contact, limit the directions in which the door is free to move.
- l. Exit is a door designed to allow egress from the airplane.
- m. Emergency exit is an exit designated for use in an emergency evacuation.
- n. Flight refers to that period of time from the start of takeoff roll until the airplane comes to rest after landing.
- o. Door operator's station is the location(s) where the door closing, latching, and locking operations are performed. {note: we need to make it clear that these are locations for an individual door, not an operator station for multiple or all doors. Suggestions?}
- p. Inadvertent action by persons means an act committed without forethought, consideration, or consultation.

## 5. BACKGROUND.

- a. There is a history of incidents and accidents in which doors, fitted in pressurized airplanes, have opened inadvertently during pressurized and

unpressurized flight. Some of these inadvertent openings have consequently resulted in fatal accidents. After one fatal accident that occurred in 1974, the FAA and industry representatives formed a design review team to examine the current regulatory requirements for doors to determine if those regulations were adequate to ensure safety. The team's review and eventual recommendations led to the FAA issuing Amendment 25-54 to 14 CFR part 25 in 1980, which significantly improved the safety standards for doors installed on transport category airplanes. Included as part of Amendment 25-54 was § 25.783, "Doors," which provides the airworthiness standards for doors installed on transport category airplanes. Although there have been additional minor revisions to § 25.783 subsequent to the issuance of amendment 25-54, the safety standards for doors have remained essentially the same since 1980.

b. In spite of the improved standards brought about in 1980, there have continued to be safety problems, especially with regard to cargo doors. Cargo doors are often operated by persons having little formal instruction in their operation. Sometimes the operator is required to carry out several actions in sequence to complete the door opening and closing operations. Failure to complete all sequences during closure can have serious consequences. Service history shows that several incidents of doors opening during flight have been attributed to the failure of the operator to complete the door closure and locking sequence. Other incidents have been attributable to incorrect adjustment of the door mechanism, or failure of a vital part.

c. Experience also has shown that, in some cases, the flight deck indication system has not been reliable. In other instances, the door indication system was verified to be indicating correctly, but the flight crew, for unknown reasons, was not alerted to the unsafe condition. A reliable indication of door status on the flight deck is particularly important on airplanes used in operations where the flight crew does not have an independent means readily available to verify that the doors are properly secured.

d. On some airplanes, large cargo doors form part of the basic fuselage structure, so that, unless the door is properly closed and latched, the basic airframe structure is unable to carry the design aerodynamic and inertial loads. Large cargo doors also have the potential for creating control problems when an open door acts as an aerodynamic surface. In such cases, failure to secure the door properly could have catastrophic results, even when the airplane is unpressurized.

e. After two accidents occurred in 1989 that were related to the failure of cargo doors on transport category airplanes, the FAA chartered the Air Transport Association (ATA) of America to study the door design and operational issues again for the purpose of recommending improvements. The ATA concluded its study in 1991 and made recommendations to the FAA for improving the design standards of doors. Those recommendations and additional recommendations from the National Transportation Safety Board were considered in the development of improved standards for doors adopted by Amendment 25-XXX.

6. **DISCUSSION OF THE CURRENT REQUIREMENTS.** Service history has shown that, to prevent doors from becoming a hazard by opening during flight, it is necessary to provide multiple layers of protection against failures, malfunctions, and human error. Section 25.783 addresses these multiple layers of protection by requiring:

- a latching system,
- a locking system,
- indication systems, and
- a pressure prevention means.

These features provide a high degree of tolerance to failures, malfunctions, and human error. Section 25.783 intends that the latching system be designed so that it is inherently or specifically restrained from being back-driven from the latches; but even so, the latches are designed to eliminate, as much as possible, all forces from the latch side that would tend to unlatch the latches. In addition to these features that prevent the latches from inadvertently opening, a separate locking system is required for doors that could be a hazard if they become unlatched.

Notwithstanding these safety features, it could still be possible for the door operator to make errors in closing the door, or for mechanical failures to occur during or after closing; therefore, an indicating system is required that will signal to the flight crew if the door is not fully closed, latched, and locked. However, since it is still possible for the indication to be missed or unheeded, a separate system is required that prevents pressurization of the airplane to an unsafe level if the door is not fully closed, latched, and locked.

The following material restates the requirements of § 25.783 in italicized text and, immediately following, provides a discussion of acceptable compliance criteria.

a. **General Design Considerations.**

(1) ***Each door must have means to safeguard against opening in flight as a result of mechanical failure, or failure of each single structural element.***

Failures that should be considered when safeguarding the door against opening as a result of mechanical failure or failure of a single structural element, include those caused by:

- wear;
- excessive backlash;
- excessive friction;
- jamming;
- incorrect assembly;
- incorrect adjustment;
- parts becoming loose, disconnected, or unfastened; and
- parts breaking, fracturing, bending, or flexing beyond the extent intended.

(2) ***Each door that could be a hazard if unlatched must be designed so that unlatching during pressurized and unpressurized flight from the fully closed, latched, and locked condition is extremely improbable. This must be shown by safety analysis.***

All doors should incorporate features in the latching mechanism that provide a positive means to prevent the door from opening as a result of:

- vibrations,
- structural loads and deflections,
- positive and negative pressure loads, positive and negative “g” loads,
- aerodynamic loads, etc.

The means should be effective throughout the approved operating envelope of the airplane, including the unpressurized portions of flight.

The safety assessment required by this regulation may be a qualitative or quantitative analysis, or a combination, as appropriate to the design. In evaluating a failure condition that results in total failure or inadvertent opening of the door, all contributing events should be considered, including:

- failure of the door and door supporting structure,
- flexibility in structures and linkages,
- failure of the operating system,
- erroneous signals from the door indication systems, and
- likely errors in operating and maintaining the door.

**(3) Each element of each door operating system must be designed or, where impracticable, distinctively and permanently marked, to minimize the probability of incorrect assembly and adjustment that could result in a malfunction.**

Experience has shown that the level of protection against mechanical failure can be significantly improved by careful attention to detail design. Therefore, the following points should be taken into account:

(a) To minimize the risk of incorrect assembly and adjustment, parts should be designed to prevent incorrect assembly if, as a result of such incorrect assembly, door functioning would be adversely affected. "Adverse effects" could be such things as preventing or impeding the opening of the door during an emergency, or reducing the capability of the door to remain closed. If such designs are impracticable and marking is used instead, the marking should remain clearly identifiable during service. In this respect, markings could be made using material such as permanent ink, provided it is resistant to typical solvents, lubricants, and other materials used in normal maintenance operations.

(b) To minimize the risk of the door operating mechanism being incorrectly adjusted in service, adjustment points that are intended for "in-service" use only should be clearly identified, and limited to a minimum number consistent with adequate adjustment capability. Any points provided solely to facilitate adjustment at the initial build and not intended for subsequent use, should be made non-adjustable after initial build, or should be highlighted in the maintenance manual as a part of the door mechanism that is not intended to be adjusted.

**(4) All sources of power that could initiate unlocking or unlatching of each door must be automatically isolated from the latching and locking systems prior to flight and it must not be possible to restore power to them during flight.**

For doors that use electrical, hydraulic, or pneumatic power to initiate unlocking or unlatching, those power sources must be automatically isolated from the latching and locking systems before flight, and it should not be possible to restore power to them during flight. It is particularly important for doors with powered latches or locks to have all power removed that could power these systems or that could energize control circuits to these systems in the event of electrical short circuits. This does not include power to the door indicating system, auxiliary securing devices if

installed, or other systems not related to door operation. Power to those systems should not be sufficient to cause unlocking or unlatching unless each failure condition that could result in energizing the latching and locking systems is extremely improbable.

(5) *Each removable bolt, screw, nut, pin, or other removable fastener must meet the locking requirements of § 25.607 ["Fasteners"].*

Refer to FAA Advisory Circular 20-71, "Dual Locking Devices on Fasteners," dated 12/8/70, for guidance on complying with § 25.607.

(6) *Certain fuselage doors, as specified by § 25.807(h), must also meet the applicable requirements of §§ 25.809 through 25.813 for emergency exits.*

Refer to FAA Advisory Circular 25.XXX, "\_\_\_\_\_", dated \_\_\_\_\_, for guidance pertaining to emergency exits.

b. Opening by persons.

(1) *There must be a means to safeguard each door against opening during flight due to inadvertent action by persons.*

The door should have inherent design features that achieve this objective. It is not considered acceptable to rely solely on cabin pressure to prevent inadvertent opening of doors during flight, because there have been instances where doors have opened during unpressurized flight, such as during landing. Therefore, all doors should incorporate features to prevent the door from being opened inadvertently by persons on board.

(2) *In addition, precautions must be taken to minimize the possibility for a person to open a door intentionally during flight. If these precautions include the use of auxiliary devices, those devices must be designed so that a single failure will not prevent more than one exit from being opened.*

The intentional opening of a door by persons on board while the airplane is in flight should be considered. This rule is intended to protect the aircraft and passengers, but not necessarily the person who intentionally tries to open the door. Suitable design precautions should therefore be taken; however, the precautions should not compromise the ability to open an emergency exit in an emergency evacuation. The following precautions should be considered:

(a) For doors in pressurized compartments: It should not normally be possible to open the door when the compartment differential pressure is above 2 psi. The ability to open the door will depend on the door operating mechanism and the handle design, location, and operating force. Operating forces in excess of 300 pounds should be considered sufficient to prevent the door from being opened. During approach, takeoff, and landing, when compartment differential pressure is lower, it is recognized that intentional opening may be possible; however, these phases are brief and all passengers are expected to be seated with seat belts fastened.

(b) For doors that cannot meet the guidance of paragraph 6.b.(2)(a), above, and for doors in non-pressurized airplanes: The use of auxiliary devices (for example, a speed-activated or barometrically-activated means) to safeguard the door from opening should be considered. The need for such auxiliary devices should depend upon the consequences to the airplane and other occupants if the door is opened in flight.

(c) If auxiliary devices are installed on emergency exits: The failure of an auxiliary device should normally result in an unsecured position of the device. Failures of the device that would prevent opening of the exit after landing should be improbable. Where auxiliary devices are controlled by a central system or other more complex systems, a single failure criterion for opening may not be sufficient. The criteria for failure of the auxiliary devices to open after landing should include consideration of single failures and all failure conditions that they are not improbable.

c. Pressurization prevention means.

(1) ***There must be a provision to prevent pressurization of the airplane to an unsafe level if any door subject to pressurization is not fully closed, latched, and locked. The provision must be designed to function after any single failure, or after any combination of failures not shown to be extremely improbable.***

(a) The provisions for preventing pressurization must monitor the closed, latched, and locked condition of the door. If more than one lock system is used, each lock system must be monitored. Examples of such provisions are vent panels and pressurization inhibiting circuits. Pressurization to an unsafe level is considered to be prevented when the compartment differential pressure is kept below 1/2 psi. These systems are not intended to function to depressurize the

airplane once the fully closed, latched, and locked condition is established and pressurization is initiated.

(b) If a vent panel is used, it should be designed so that, in normal operation or with a single failure in the operating linkage, the vent panel cannot be closed until the door is latched and locked. The vent panel linkage should monitor the position of each door lock.

(c) If automatic control of the cabin pressurization system is used as a means to prevent pressurization, the control system should monitor each lock. Because inadvertent depressurization at altitude can be hazardous to the occupants, this control system should be considered in showing compliance with the applicable pressurization system reliability requirements. Normally, such systems should be automatically disconnected from the airplane's pressurization system after the airplane is airborne, provided no prior unsafe condition was detected.

(d) It should not be possible to override the pressurization prevention system unless a procedure is defined in the Master Minimum Equipment List (MMEL) that confirms a fully closed, latched, and locked condition. In order to prevent the override procedure from becoming routine, the override condition should not be achievable by actions solely on the flight deck, and should be automatically reset at each door operational cycle.

***(2) Doors that meet the conditions described in § 25.783(h) are not required to have a dedicated pressurization prevention means if, from every possible position of the door, it will remain open to the extent that it prevents pressurization, or close and latch as pressurization takes place. This must also be shown with each single failure or malfunction except that:***

***(i) ) with failures or malfunctions in the latching mechanism, it need not latch after closing, and***

***(ii) jamming as a result of mechanical failure or blocking debris, the door need not close and latch if it can be shown that the pressurization loads on the jammed door or mechanism would not result in an unsafe condition.***

(a) As specified in § 25.783(d)(5), each door for which unlatching would not result in a hazard is not required to have a locking mechanism; those doors also may not be required to have a dedicated pressurization prevention means. However, this should be determined by demonstrating that an unsafe level of pressurization cannot be achieved for each position that the door may take during closure, including those positions that may result from single failures or jams.

- Excluding jamming and excluding failures and malfunctions in the latching system, for every possible position of the door, it must either remain open to the extent that it prevents pressurization, or safely close and latch as pressurization takes place.
- With single failures of the latching system or malfunctions in the latching system the door may not necessarily be capable of latching, but it should either remain open to the extent that it prevents pressurization, or safely move to the closed position as pressurization takes place; and
- With jamming as a result of mechanical failure in the latching system or blocking debris, the pressurization loads on the jammed door or mechanism may not result in damage to the door or airframe that could be detrimental to safe flight (both the immediate flight or future flights). In this regard, consideration should be given to jams or non-frangible debris that could hold the door open just enough to still allow pressurization, and then break loose in flight after full pressurization is reached.

d. Latching and locking

(1) *There must be a provision to latch each door.* Latches are movable mechanical elements that, when engaged, prevent the door from opening.

(a) The definitions of latches and locks are redefined as of amendment 25-xxx, particularly with regard to mechanical and structural elements of inward-opening plug doors. In this regard, fixed stops are not considered latches. The movable elements that hold the door in position relative to the fixed stops are considered latches. These movable elements prevent the door from opening and will support some loads in certain flight conditions, particularly when the airplane is unpressurized.

(b) For all doors, § 25.783(d)(2) requires that the latching system employ a securing means other than the locking system. The separate locking system may not be necessary for certain inward-opening plug doors [see § 25.783(d)(5)].

**(2) *The latches and their operating mechanism must be designed so that, under all airplane flight and ground loading conditions, with the door latched, there is no force or torque tending to unlatch the latches. In addition, the latching system must include a means to secure the latches in the latched position. This means must be independent of the locking system.***

The latches of doors for which the initial opening movement is outward are typically subject to vibrations; structural loads and deflections; positive and negative pressure loads; positive and negative "g" loads; aerodynamic loads; etc. The latches of doors for which the initial opening movement is inward typically share some of these same types of loads with fixed stops. Doors for which the initial opening movement is inward tend to be resistant to opening when the aircraft is pressurized since a component of the pressure load tends to hold the door closed. In order for a design to be classified as having an inward initial opening movement, it should be shown that the provisions provided to guide the door inward have sufficient rigidity and strength to fulfil their function with a pressure of at least 2 psi applied to the door.

**(a)** The design of the latch should be such that, with the latch disconnected from its operating mechanism, the net reaction forces on the latch should not tend to unlatch the latch during both pressurized and unpressurized flight throughout the approved flight envelope. The effects of possible friction in resisting the forces on the latch should be ignored when considering reaction forces tending to unlatch the door. The effects of distortion of the latch and corresponding structural attachments should be taken into account in this determination. Any latch element for which "g" loads could result in an unlatching force should be designed to minimize such forces.

**(b)** Even though the principal back-driving forces should be eliminated by design, it is recognized that there may still be ratcheting forces that could progressively move the latches to the unlatched position. Therefore, each latch should be positively secured in the latched position by its operating mechanism, which should be effective throughout the approved flight envelope. The location of the operating system securing means will depend on the rigidity of the system and the tendency for any forces (such as ratcheting) at one latch to unlatch other latches.

**(c)** Overcenter features in the latching mechanism are considered to be an acceptable securing means, provided that an effective retaining feature that functions automatically to prevent back-driving is incorporated. If the

design of the latch is such that it could be subject to ratcheting loads that might tend to unlatch it, the securing means should be adequate to resist such loads.

(d) In those designs that use the latch to operate an electrical switch, a back-driving effect of the switch on the latch is permissible, provided that the extent of any possible movement of the switch:

- is insufficient to unlatch it, and
- will not result in the latch being subjected to any other force or torque tending to unlatch it.

(e) The latch securing means must be independent of the locking means. However, the latching and locking functions may be fulfilled by a single operating means, provided that it is not possible to back-drive the locks via the latch mechanism when the door is locked.

**(3) *Each door subject to pressurization, and for which the initial opening movement is not inward, must have an individual lock for each latch. The lock must be located as close as practicable to the latch. The door must be designed so that, in pressurized flight, no single failure in the locking system would prevent the locks from restraining the latches as necessary to secure the door.***

(a) To safeguard doors subject to pressurization and for which the initial opening movement is not inward, each latch must have an individual lock. The lock should directly lock the latch. In this regard, the lock should be located directly at the latch to ensure that, in the event of a single failure in the latch operating mechanism, the lock would continue to restrain the latch in the latched position. Even in those cases where the lock cannot be located directly at the latch, the same objective should be achieved. In some cases, a pair of integrally-connected latches may be treated as a single latch with respect to the requirement for a lock, provided that:

1 the lock reliably monitors the position of at least one of the load-carrying elements of the latch; and

2 with any one latch element missing, the airplane can meet the full requirements of Part 25 as they apply to the unfailed airplane; and

3 with the pair disengaged, the airplane can achieve safe flight and landing, and meet the damage tolerance requirements of § 25.571 (“Damage-tolerance and fatigue evaluation of structure”).

(b) In some designs, more latches are provided than necessary to meet the minimum design requirements. The single failure requirement for the locking system is intended to ensure that the number and combination of latches necessary to secure the door will remain restrained by the locking mechanism. Only those latches needed to meet the minimum design requirements need to remain restrained after the single failure.

(c) In meeting this requirement, the indirect locking provided through the latch system by the locks at other latches may be considered. In this case, the locking system and the latching system between the locked latch and the unlocked latch should be designed to withstand the maximum design loads discussed below in paragraph 6.d.(7) of this AC, below, as appropriate to pressurized flight.

***(4) Each door for which the initial opening movement is inward and unlatching of the door could result in a hazard, must have a locking means to prevent the latches from becoming disengaged. The locking means must ensure sufficient latching to prevent opening of the door even with a single failure in the latching mechanism.***

On these doors, the locking means should monitor the latch securing means, but need not directly monitor and lock each latch. Additionally, the locking means could be located such that all latches are locked by locking the latching mechanism. With any single failure in the latching mechanism, the means must still lock a sufficient number of latches to ensure that the door remains safely latched.

***(5) Each door for which unlatching would not result in a hazard is not required to have a locking mechanism.***

See paragraph 6.h. of this AC, below, for a description of the kinds of doors for which unlatching is considered not to result in a safety hazard.

***(6) It must not be possible to position the lock in the locked position if the latch and the latching mechanism are not in the latched position.***

The lock should be an effective monitor of the position of the latch such that, if any latch is unlatched, the complete locking system cannot be moved to the locked position. Although an overcenter feature may be an adequate means of securing the latching mechanism, it is not considered to be the locking means for the latches.

(7) ***It must not be possible to unlatch the latches with the locks in the locked position. Locks must be designed to withstand the limit loads imposed by the maximum forces that can be developed when the latches are operated manually; by the powered latch actuators, if installed; and by any loads developed by relative motion between the latch and the structural counterpart.***

Although the locks are not the primary means of keeping the latches engaged, they must have sufficient strength to withstand any loads likely to be imposed during all approved modes of door operation. The operating handle loads on manually-operated doors should be based on a rational human factors evaluation. However, handle forces in excess of 300 pounds need not be considered. The loads imposed by the normal powered latch actuators are generally predictable; however, loads imposed by alternate drive systems are not. For this reason, the locks should have sufficient strength to react to the stall forces of the latch drive system. Load-limiting devices should be installed in any alternative drive system for the latches in order to protect the latches and the locks from overload conditions. If the design of the latch is such that it could be subject to ratcheting loads that might tend to unlatch it, the locks should be adequate to resist such loads with the latch operating system disconnected from the latch.

e. Warning, caution, and advisory indications.

(1) ***There must be a positive means to indicate at the operator's station for each door that all required operations to close, latch, and lock the door have been completed.***

In order to minimize the probability of incomplete door operations, it should be possible to perform all operations for each door at one station. If there is more than one operator's station for a single door, appropriate indications should be provided at each station. The positive means to indicate at the door operator's station that all required operations have been completed are such things as final handle positions or indicating lights. This requirement is not intended to preclude or require a single station for multiple doors.

**(2) *There must be a positive means visible from the door operator's station for each door to indicate if the door is not fully closed, latched, and locked for each door that could be a hazard if unlatched.***

A single indication that directly monitors the door in the closed, latched, and locked conditions should be provided, unless the door operator has a visual indication that the door is fully closed, latched, and locked. This indication should be obvious to the door operator. For example, a vent door or indicator light that monitors the door locks and is located at the door operator's station may be sufficient.

**(3) *There must be a visual means on the flight deck to signal the pilots if any door is not fully closed, latched, and locked. The means must be designed such that any failure or combination of failures that would result in an erroneous closed, latched, and locked indication is improbable for each door that is subject to pressurization and for which the initial opening movement is not inward; or for each door that could be a hazard if unlatched.***

The visual means may be a simple amber light or it may need to be a red warning light tied to the master warning system, depending on the criticality of the door. The door closed, latched, and locked functions must be monitored, but only one indicator is needed to signal that the door is in the closed, latched, and locked condition. Indications should be reliable to ensure that they remain credible. The probability of erroneous closed, latched, and locked indication should be no greater than 0.00001.

- for each door subject to pressurization and for which the initial opening movement is not inward; and
- for each door that could be a hazard if unlatched.

**(4) *There must be an aural warning to the pilots prior to or during the initial portion of takeoff roll if any door is not fully closed, latched, and locked, and its opening would prevent safe takeoff and return to landing.***

Where an unlatched door could open and prevent a safe takeoff and return to landing, a more conspicuous aural warning is needed in addition to the visual indication. It is intended that this system should function in a manner similar to the takeoff configuration warning systems required by § 25.703 ("Takeoff warning system"). The visual display for these doors may be either a red light or a display on the master warning system. Examples of doors requiring these aural warnings are:

- doors for which the structural integrity of the fuselage would be compromised if the door is not fully closed, latched, and locked; or
- doors that, if open, would prevent rotation or interfere with controllability to an unacceptable level.

f. Visual inspection provision.

**(1) *Each door for which unlatching could be a hazard, must have a provision for direct visual inspection to determine, without ambiguity, if the door is fully closed, latched, and locked. The provision must be permanent and discernible under operational lighting conditions, or by means of a flashlight or equivalent light source.***

A provision is necessary for direct visual inspection of the closed position of the door and the status of each of the latches and locks, because dispatch of an airplane may be permitted in some circumstances when a flight deck or other remote indication of an unsafe door remains after all door closing, latching, and locking operations have been completed. Because the visual indication is used in these circumstances to determine whether to permit flight with a remote indication of an unsafe door, the visual indication should have a higher level of integrity than, and be independent of, the remote indication.

(a) The provisions should:

1 allow direct viewing of the position of the locks to show, without ambiguity, whether or not each latch is latched and each lock is in the locked position. For doors that do not have a lock for each latch, direct viewing of the position of the latches and restraining mechanism may be necessary for determining that all the latches are latched. Indirect viewing, such as by optical devices or indicator flags, may be acceptable, provided that there is no failure mode that could allow a false latched or locked indication.

2 preclude false indication of the status of the latches and locks as a result of changes in the viewing angle. The status should be obvious without the need for any deductive processes by the person making the assessment.

3 be of a robust design so that, following correct rigging, no unscheduled adjustment is required. Furthermore, the design should be resistant to unauthorized adjustment.

4 preclude mis-assembly that could result in a false latched and locked indication.

(b) If markings are used to assist the identification of the status of the latches and locks, such markings must include permanent physical features to ensure that the markings will remain accurately positioned.

(c) Although the visual means should be unambiguous in itself, placards and instructions may be necessary to interpret the status of the latches and locks.

(d) If optical devices or windows are used to view the latches and locks, it should be demonstrated that they provide a clear view and are not subject to fogging, being obstructed from dislodged material, or giving a false indication of the position of each latch and lock. Such optical devices and window materials should be resistant to scratching, crazing, and any other damage from all materials and fluids commonly used in the operation and cleaning of airplanes.

g. Certain maintenance doors, removable emergency exits, and access panels.

(1) Some doors not normally opened except for maintenance purposes or emergency evacuation and some access panels need not comply with certain paragraphs of this section as follows:

(a) Access panels that are not subject to cabin pressurization and would not be a hazard if unlatched during flight need not comply with paragraphs 25.783(a) through 25.783(f), but must have a means to prevent inadvertent opening during flight.

(b) Inward-opening removable emergency exits that are not normally removed, except for maintenance purposes or emergency evacuation, and

flight deck-openable windows need not comply with paragraphs 25.783(c) and 25.783(f).

*(c) Maintenance doors that meet the conditions of § 25.783(h), and for which a placard is provided limiting use to maintenance access, need not comply with paragraphs 25.783(c) and 25.783(f).*

*h. Doors that are not a hazard.*

Section 25.783 recognizes four categories of doors:

- Doors for which the initial opening is not inward, and are presumed to be hazardous if they become unlatched.
- Doors for which the initial opening is inward, and could be a hazard if they become unlatched.
- Doors for which the initial opening is inward, and would not be a hazard if they become unlatched.
- Small access panels outside pressurized compartments for which opening is of little or no consequence to safety.

Section 25.783(h) describes those attributes that are essential before a door in the normal (unfailed) condition can be considered not to be a hazard during flight.

7. **STRUCTURAL REQUIREMENTS.** The door structure, including its mechanical features (such as hinges, stops, and latches) that can be subjected to airframe loading conditions, must be designed either to the damage-tolerance requirements of § 25.571 (amendment 25-45 or later), or to the earlier fail-safe requirements, depending on the certification basis of the airplane. In assessing the extent of damage under § 25.571 and § 25.783, consideration must be given to single element failures in the primary door structure such as:

- frames,
- stringers,
- intercostals,
- latches,
- hinges,
- stops, and
- stop supports.

The skin panels on doors that must comply with § 25.571, amendment 25-45 or later, should be designed to be damage-tolerant, with a high probability of detecting any crack before the crack causes door failure or cabin depressurization. The obvious partial failure criteria or the damage-tolerance criteria may be used for the design of skin panels on doors with an earlier certification basis.

John J. Hickey  
Manager, Transport Airplane Directorate  
Aircraft Certification Service, ANM-100

## FAA Action

FAA Action: Design Standards for Fuselage doors on Transport Category Airplanes,  
Final rule -- [FAA-2003-14193](#)

August 2002, as amended by 67 FR 63608, 15 October 2002);

- The imposition of anti-dumping duties on Ball Bearings and Parts Thereof from Japan (69 FR 55574, 15 September 2004);
  - The Final Results of the USDOC in the Expedited Sunset Review of Antifriction Bearings from Japan (64 FR 60275, 4 November 1999), and the Determination of the USITC in Certain Bearings from China, France, Germany, Hungary, Italy, Japan, Romania, Singapore, Sweden, and the United Kingdom, Investigations Nos. AA-1921-143, 731-TA-341, 731-TA-343-345, 731-TA-391-397, and 731-TA-399 (Review);
  - Final Results of the USDOC in the Full Sunset Review of Corrosion-Resistant Carbon Steel Flat Products from Japan (65 FR 47380, 2 August 2000), and the Determination of the USITC in Certain Carbon Steel Products from Australia, Belgium, Brazil, Canada, Finland, France, Germany, Japan, Korea, Mexico, Netherlands, Poland, Romania, Spain, Sweden, Taiwan, and United Kingdom, Investigations Nos. AA-1921-197, 701-TA-231, 319-320, 322, 325-328, 340, 342, and 348-350, and 731-TA-573-576, 578, 582-587, 604, 607-608, 612, and 614-618 (Review).
  - The Tariff Act of 1930, as amended, in particular, sections 731, 751, 752, 771(7), 771(35)(A), 771(35)(B) and 777A(d);
  - The Statement of Administrative Action that accompanied the Uruguay Round Agreements Act, H.R. Doc. No. 103-316, vol. 1 (1994);
  - The implementing regulations of the USDOC, 19 CFR section 351;
  - The USDOC Import Administration's Antidumping Manual (1997 edition), including the AD Margin Calculation computer program(s) to which it refers.
- With respect to the claims of WTO-inconsistency, Japan's panel request refers to the following:
- In original investigations, periodic reviews, new shipper reviews, sunset reviews and changed circumstances reviews where the redetermination of margins of dumping occurs, USDOC artificially inflates the dumping margins by "zeroing";
  - In injury investigations, USITC determinations based on "zeroing" are WTO-inconsistent;
  - In sunset reviews, USDOC and USITC determinations based on "zeroing" are WTO-inconsistent;
  - In changed circumstances reviews, determinations based on "zeroing" are WTO-inconsistent.

### Requirements for Submissions

Interested persons are invited to submit written comments concerning the issues raised in this dispute. Persons submitting comments may either send one copy by fax to Sandy McKinzy at (202) 395-3640, or transmit a copy electronically to [FR0520@ustr.gov](mailto:FR0520@ustr.gov), with "Japan Sunset & Zeroing" in the subject line. For documents sent by fax, USTR requests that the submitter provide a confirmation copy electronically, to the electronic mail address listed above. USTR encourages the submission of documents in Adobe PDF format, as attachments to an electronic mail. Interested persons who make submissions by electronic mail should not provide separate cover letters; information that might appear in a cover letter should be included in the submission itself. Similarly, to the extent possible, any attachments to the submission should be included in the same file as the submission itself, and not as separate files.

Comments must be in English. A person requesting that information contained in a comment submitted by that person be treated as confidential business information must certify that such information is business confidential and would not customarily be released to the public by the submitter. Confidential business information must be clearly designated as such and the submission must be marked "BUSINESS CONFIDENTIAL" at the top and bottom of the cover page and each succeeding page of the submission.

Information or advice contained in a comment submitted, other than business confidential information, may be determined by USTR to be confidential in accordance with section 135(g)(2) of the Trade Act of 1974 (19 U.S.C. 2155(g)(2)). If the submitting person believes that information or advice may qualify as such, the submitting person—

- (1) Must clearly so designate the information or advice;
- (2) Must clearly mark the material as "SUBMITTED IN CONFIDENCE" at the top and bottom of each page of the cover page and each succeeding page; and
- (3) Is encouraged to provide a non-confidential summary of the information or advice.

Pursuant to section 127(e) of the URAA (19 U.S.C. 3537(e)), USTR will maintain a file on this dispute settlement proceeding, accessible to the public, in the USTR Reading Room, which is located at 1724 F Street, NW., Washington, DC 20508. The public file will include non-confidential comments received by USTR from the public with

respect to the dispute; if a dispute settlement panel is convened, the U.S. submissions to that panel, the submissions, or non-confidential summaries of submissions, to the panel received from other participants in the dispute, as well as the report of the panel; and, if applicable, the report of the Appellate Body. An appointment to review the public file (Docket No. WT/DS-322, Japan Sunset & Zeroing Dispute) may be made by calling the USTR Reading Room at (202) 395-6186. The USTR Reading Room is open to the public from 9:30 a.m. to 12 noon and 1 p.m. to 4 p.m., Monday through Friday.

**Daniel E. Brinza,**

*Assistant United States Trade Representative for Monitoring and Enforcement.*

[FR Doc. 05-11372 Filed 6-7-05; 8:45 am]

**BILLING CODE 3110-W5-P**

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### Advisory Circular 25.783-1A, Fuselage Doors and Hatches

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Notice of issuance of advisory circular.

**SUMMARY:** This notice announces the issuance of Advisory Circular 25.783-1A, "Fuselage Doors and Hatches." The advisory circular provides guidance for showing compliance with revisions to the design standards for fuselage doors and hatches recently adopted by Amendment 25-114 on May 3, 2004 (69 FR 24496).

**DATES:** AC 25.783-1A was issued by the FAA Transport Airplane Directorate in Renton, Washington, on April 25, 2005.

*How to Obtain Copies:* You can download a copy of Advisory Circular 25.783-1A from the Internet at <http://www.airweb.faa.gov/rgl>. A paper copy will be available in approximately 6-8 weeks from the U.S. Department of Transportation, Subsequent Distribution Office, M-30, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20795.

**FOR FURTHER INFORMATION CONTACT:** Jan Thor, FAA Standardization Branch, ANM-113, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-2127; e-mail [jan.thor@faa.gov](mailto:jan.thor@faa.gov)

Issued in Renton, Washington, on April 25, 2005.

Ali Bahrami,

Manager, Transport Airplane Directorate,  
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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### Availability of Record of Decision for the Environmental Impact Statement, Los Angeles International Airport, Los Angeles, Los Angeles County, CA

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Notice of availability for record of decision.

**SUMMARY:** The Federal Aviation Administration (FAA) is issuing this notice to advise the public that it has published a Record of Decision (ROD) for the Environmental Impact Statement (EIS) that evaluated proposed Master Plan improvements at Los Angeles International Airport (LAX), Los Angeles, Los Angeles County, California.

**FOR FURTHER INFORMATION CONTACT:**

David B. Kessler, AICP, Regional Environmental Protection Specialist, AWP-611, Airports Division, Federal Aviation Administration, Western-Pacific Region, P.O. Box 92007, Los Angeles, California 90009-2007, Telephone: (310) 725-3615.

**SUPPLEMENTARY INFORMATION:** The Federal Aviation Administration (FAA) has completed and is publishing its Record of Decision for improvements identified in the Master Plan for Los Angeles International Airport (LAX). FAA had published its Final Environmental Impact Statement (EIS) for these Master Plan improvements and a Final General Conformity Determination on January 13, 2005. The Final EIS was prepared by the FAA pursuant to the National Environmental Policy Act of 1969 and assessed the potential impact of the Master Plan's four development alternatives (Alternatives A, B, C, and D), as well as the No Action Alternative where no improvements at the airport would be made. The FAA accepted comments on the Final EIS and these comments along with FAA responses are included in Appendix B to the ROD.

In the Final EIS, the FAA identified Alternative D as the preferred alternative in meeting the purpose and need for improvements at the airport. Under Alternative D, the two of the four

runways would be shifted to improve runway and taxiway separation. The terminal complex will be reconfigured to enhance safety and security, and accommodate the future mix of forecast aircraft. Extensive changes will be made to the existing Central Terminal Area including relocation of the existing passenger curb front to a new Ground Transportation Center, to be developed east of the airport. Alternative D also includes construction of a new Intermodal Transportation Center, consolidated rental car facility and an automated people mover system connecting the airport's main facilities. Alternative D, as approved, includes all of the aviation and airport support improvements described in the Final EIS, including, but not limited to those identified above. However, FAA has taken no action on a non-aviation related collateral development project proposed under Alternative D known as LAX Northside.

Copies of the ROD are available for public review at the following locations during normal business hours:

U.S. Department of Transportation,  
Federal Aviation Administration,  
Western-Pacific Region, Office of the  
Airports Division, 15000 Aviation  
Boulevard, Hawthorne, California  
90261

U.S. Department of Transportation,  
Federal Aviation Administration,  
National Headquarters, Community  
and Environmental Needs Division,  
800 Independence Avenue, SW.,  
Washington, DC 20591.  
Administrative Offices of Los Angeles  
World Airports, One World Way, Los  
Angeles, California.

Copies of the ROD is also available at the following libraries:

County of Orange Public Library Admin.  
Headquarters, 1501 E. Saint Andrew  
Place, Santa Ana, CA 92701

County of Riverside Public Library,  
3581 Mission Inn Avenue, Riverside,  
CA 92501

County of San Bernardino, 104 W.  
Fourth Street, San Bernardino, CA  
92415

County of Ventura Public Library, 651  
East Main Street, Ventura, CA 93001

City of Los Angeles Central Library, 630  
W. Fifth Street, Los Angeles, CA  
90071

Arroyo Seco Regional Branch Library,  
6145 N. Figueroa Street, Los Angeles,  
CA 90042

Eagle Rock Library, 5027 Caspar  
Avenue, Los Angeles, CA 90041

Exposition Park Library, 3665 S.  
Vermont Avenue, Los Angeles, CA  
90007

Frances Howard Goldwyn Library, 1623  
N. Ivar Avenue, Hollywood, CA 90028

San Pedro Regional Branch Library, 931  
S. Gaffey Street, San Pedro, CA 90731  
Mar Vista Branch Library, 12006 Venice  
Blvd., Los Angeles, CA 90066

Mid-Valley Regional Branch Library,  
16244 Nordhoff Street, North Hills,  
CA 91343

North Hollywood Regional Library,  
5211 Tujunga Avenue, North  
Hollywood, CA 91601

Venice Abbott Kinney Library, 501  
South Venice Blvd. Venice, CA 90291  
Westchester Branch Library, 7114 W.  
Manchester Avenue, Los Angeles, CA  
90045

West L.A. Regional Branch Library,  
11360 Santa Monica Blvd., Los  
Angeles, CA 90025

West Valley Regional Branch Library,  
19036 Vanowen Street, Reseda, CA  
91335

Compton Library, 240 W. Compton  
Blvd., Compton, CA 90220

Carson Regional Library, 151 E. Carson  
Street, Carson, CA 90745

Claremont Library, 208 N. Harvard  
Avenue, Claremont, CA 91711

Culver City Library, 4975 Overland  
Avenue, Culver City, CA 90230

El Monte Library, 3224 Tyler Avenue, El  
Monte, CA 91731

El Segundo Public Library, 111 W.  
Mariposa Avenue, El Segundo, CA  
90245

Hacienda Heights Library, 16010 La  
Monde Street, Hacienda Heights, CA  
91745

Hawthorne Library, 12700 Grevillea  
Avenue, Hawthorne, CA 90250

Hermosa Beach Library, 550 Pier  
Avenue, Hermosa Beach, CA 90254

Inglewood Library, 101 W. Manchester  
Blvd., Inglewood, CA 90301

Lancaster Library, 601 West Lancaster  
Blvd., Lancaster, CA 93534

Lennox Library, 4359 Lennox Blvd.,  
Lennox, CA 90304

Lomita Library, 24200 Narbonne  
Avenue, Lomita, CA 90717

Beverly Hills Library, Reference Desk,  
444 N. Rexford Drive, Beverly Hills,  
CA 90210

Helen Miller Bailey Library, 1301  
Avenida Cesar Chavez, Monterey  
Park, CA 91754

Gardena Main Library, 1731 W. Gardena  
Blvd., Gardena, CA 90247

Huntington Park Library, 6518 Miles  
Avenue, Huntington Park, CA 90255

Lawndale Library, 14615 Burin Avenue,  
Lawndale, CA 90260

Malibu Library, 23519 West Civic  
Center Way, Malibu, CA 90265

Manhattan Beach Library, 1320  
Highland Avenue, Manhattan Beach,  
CA 90266

Lloyd Taber Marina Del Rey Library,  
4533 Admiralty Way, Marina Del Rey,  
CA 90292



# Federal Register

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**Monday,  
May 3, 2004**

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## **Part III**

# **Department of Transportation**

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**Federal Aviation Administration**

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**14 CFR Part 25**

**Design Standards for Fuselage Doors on  
Transport Category Airplanes; Final Rule**

**DEPARTMENT OF TRANSPORTATION****Federal Aviation Administration****14 CFR Part 25**

[Docket No. FAA-2003-14193; Amdt. No. 25-114]

RIN 2120-AH34

**Design Standards for Fuselage Doors on Transport Category Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The Federal Aviation Administration (FAA) amends the design standards for fuselage doors, hatches, and exits on transport category airplanes. This action improves door integrity by providing design criteria that ensure doors remain secure under all circumstances that service experience has shown can happen. Adopting this amendment also relieves a certification burden on industry by removing regulatory differences between the airworthiness standards and related guidance material of the United States and Europe.

**DATES:** This amendment becomes effective June 2, 2004.

**FOR FURTHER INFORMATION CONTACT:** Jeff Gardlin, Federal Aviation Administration, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-2136; fax 425-227-1320; e-mail [jeff.gardlin@faa.gov](mailto:jeff.gardlin@faa.gov).

**SUPPLEMENTARY INFORMATION:****Availability of Rulemaking Documents**

You can get an electronic copy using the Internet by:

- (1) Searching the Department of Transportation's electronic Docket Management System (DMS) Web page (<http://dms.dot.gov/search>);
- (2) Visiting the Office of Rulemaking's Web page at <http://www.faa.gov/avr/arm/index.cfm>; or
- (3) Accessing the Government Printing Office's Web page at [http://www.access.gpo.gov/su\\_docs/aces/aces140.html](http://www.access.gpo.gov/su_docs/aces/aces140.html).

You can also get a copy from the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267-9680. Be sure to identify the amendment number or docket number of this rulemaking.

You can search the electronic form of all comments in any of our dockets by

the individual filing the comment (or signing the comment, if filed for an association, business, labor union, for example). You may review DOT's complete Privacy Act statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit <http://dms.dot.gov>.

**Small Business Regulatory Enforcement Fairness Act**

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. If you are a small entity and you have a question about this document, you may contact your local FAA official, or the person listed under **FOR FURTHER INFORMATION CONTACT**. You can find out more about SBREFA on the Internet at <http://www.faa.gov/avr/arm/sbrefa.htm>, or by e-mailing us at 9-AWA-SBREFA@faa.gov.

**Background**

This final rule responds to notice of proposed rulemaking (NPRM) No. 03-01, published in the **Federal Register** on January 14, 2003 (68 FR 1932).

In NPRM No. 03-01, the FAA proposed to revise and reorganize the existing rules in Title 14, Code of Federal Regulations (CFR), part 25, to provide:

- Clarification of the existing design requirements for doors.
- Definitive criteria for door design requirements covered in the existing rules by general text.
- Additional fail-safe requirements and detailed door design requirements, based on the recommendations of the National Transportation Safety Board (NTSB) and the Air Transport Association (ATA), and on current industry practice.

In the NPRM you will find a history of the problems and discussions of the safety considerations supporting our course of action. You will also find a discussion of the current requirements and why they do not adequately address the problem. We also refer to the recommendations of the Aviation Rulemaking Advisory Committee (ARAC) that we relied on in developing the proposed rule. The NPRM also discusses alternatives we considered and the reasons for rejecting the ones we did not adopt.

The background material in the NPRM also contains the basis and rationale for these requirements and, except where we have specifically

expanded on the background elsewhere in this preamble, supports this final rule as if contained here. That is, any future discussions on the intent of the requirements may refer to the background in the NPRM as though it was in the final rule itself. It is therefore not necessary to repeat the background in this document.

**Definitions**

The following definitions will aid the reader in understanding the final rule:

- A *latch* is a movable mechanical element that, when engaged, prevents the door from opening.
- A *lock* is a mechanical element that monitors the latch position and, when engaged, prevents the latch from becoming disengaged.
- *Latched* means the latches are fully engaged with their structural counterparts and held in position by the latch operating mechanism.
- *Locked* means the locks are fully engaged.
- *Latching mechanism* includes the latch operating mechanism and the latches.
- *Locking mechanism* includes the lock operating mechanism and the locks.
- *Closed* means the door has been placed within the doorframe in such a position that the latches can be operated to the "latched" condition.
- *Fully closed* means the door is placed within the doorframe in the position that it will occupy when the latches are in the latched condition.

**NTSB Safety Recommendations**

After its investigation of airplane accidents associated with fuselage doors opening during flight, the NTSB issued several safety recommendations concerning doors on transport category airplanes. In the NPRM, we discuss those recommendations and the FAA's response.

After the conclusion of the harmonization activity that led to this final rule, the FAA received another safety recommendation, A-02-020, from the NTSB. The NTSB recommended the FAA, "Require all newly certificated transport category airplanes [to] have a system for each emergency exit door to relieve pressure so that they can only be opened on the ground after a safe differential pressure level is attained." In the NPRM, we specifically sought comments on this recommendation. Although no one commented on this issue, we believe there should be some means to address the potential for unsafe opening of a door on the ground. The specific action proposed in the safety recommendation is not

necessarily the only approach to this concern. We have not yet determined whether a regulatory action is appropriate, or what form that regulatory action might take. Because the issue is important, we will add discussion to Advisory Circular (AC) 25.783-1, "Fuselage Doors, Hatches, and Exits," addressing the need to consider safety of occupants opening exits when there is differential pressure remaining on the airplane. This will identify the issue and permit manufacturers to address it in the most effective manner for their specific design.

#### History

In the United States, 14 CFR part 25 contains the airworthiness standards for type certification of transport category airplanes. Manufacturers of transport category airplanes must show that each airplane they produce of a different type design complies with the appropriate part 25 standards.

In Europe, Joint Aviation Requirements (JAR)-25 contains the airworthiness standards for type certification of transport category airplanes. The Joint Aviation Authorities (JAA) of Europe developed these standards, which are based on part 25, to provide a common set of airworthiness standards within the European aviation community. Thirty-seven European countries accept airplanes type certificated to the JAR-25 standards, including airplanes manufactured in the U.S. type certificated to JAR-25 standards for export to Europe.

Although part 25 and JAR-25 are similar, they are not identical in every respect. When airplanes are type certificated to both sets of standards, the differences between part 25 and JAR-25 can result in substantial added costs to manufacturers and operators. These additional costs, however, often do not bring about an increase in safety.

Recognizing that a common set of standards would not only benefit the aviation industry economically, but also preserve the necessary high level of safety, the FAA and the JAA began an effort in 1988 to "harmonize" their respective aviation standards.

After beginning the first steps towards harmonization, the FAA and JAA soon realized that traditional methods of rulemaking and accommodating different administrative procedures was neither sufficient nor adequate to make noticeable progress towards fulfilling the harmonization goal. The FAA identified the ARAC as an ideal vehicle for helping to resolve harmonization issues, and in 1992 the FAA tasked

ARAC to undertake the entire harmonization effort.

Despite the work that ARAC has undertaken to address harmonization, there remain many regulatory differences between part 25 and JAR-25. The current harmonization process is costly and time-consuming for industry, the FAA, and the JAA. Industry has expressed a strong need to finish the harmonization program as quickly as possible to relieve the drain on their resources and finally to establish one acceptable set of standards.

Representatives of the FAA and JAA proposed an accelerated process to reach harmonization, the "Fast Track Harmonization Program." The FAA introduced the Fast Track Harmonization Program on November 26, 1999 (64 FR 66522). This rulemaking is a "fast-track" project.

You can find further details on ARAC, its role in harmonization rulemaking activity, and the Fast Track Harmonization Program in the tasking statement (64 FR 66522, November 26, 1999) and the first NPRM published under this program, Fire Protection Requirements for Powerplant Installations on Transport Category Airplanes (65 FR 36978, June 12, 2000).

#### Related Activity

The new European Aviation Safety Authority (EASA) was established and formally came into being on September 28, 2003. The JAA worked with the European Commission (EC) to develop a plan to ensure a smooth transition from the JAA to the EASA. As part of the transition, the EASA will absorb all functions and activities of the JAA, including its efforts to harmonize the JAA regulations with those of the U.S. These JAR standards have already been incorporated into the EASA "Certification Specifications for Large Aeroplanes" (CS-25) in similar, if not identical, language. The EASA CS-25 became effective October 17, 2003.

#### Related Advisory Circular

The FAA plans to revise AC 25.783-1 to provide guidance for showing compliance with structural and functional safety standards for doors and their operating systems. When we issue the AC, we will publish a notice in the **Federal Register**.

#### Discussion of Comments

Eight commenters responded to the NPRM. The commenters include three private citizens, two foreign airworthiness authorities, an industry association representing the interests of several groups in the aviation industry, an association representing the interests

of pilots in the U.S and Canada, and an airplane manufacturer. All commenters generally support the proposed rule. Comments, including suggested changes, are discussed below.

*Comment:* An individual with cabin door design experience suggests that limiting the requirement to address intentional opening to airplanes with more than 19 passenger seats would improve safety. The commenter bases his position on the premise that airplanes with 19 or fewer passenger seats are a small percentage of the commercial fleet, the operator typically knows the passengers, and it is unlikely a person would intentionally open the exit. The commenter states that such a requirement could become a hazard to emergency evacuation of these airplanes because the rules only require a single pair of exits. If the means to prevent intentional opening were to fail and the exit could not be opened, a higher percentage of exits would become unavailable than for larger airplanes.

*FAA reply:* While the commenter's points have some merit, the requirement is not related to how the airplane is operated. The intent of the requirement is to safeguard against an event of intentional opening, regardless of whether the operator knows the passengers. The commenter's statement therefore is not relevant that the number of passengers carried in commercial service on airplanes with 19 or fewer passenger seats is a small percentage of the total. Consideration of exit availability is more significant.

In a review of airplanes of this size as part of the FAA's response to NTSB safety recommendation A-02-020, it does appear that many current designs could be affected by this requirement. On some airplanes, the main entry door is openable at relatively high differential pressures. Whether this would constitute a hazard to the airplane would have to be investigated. The entry door is typically the largest exit on the airplane. Although the loss of this exit would represent more than 50 percent of the evacuation capability of the airplane, the remaining exit would still be adequate for the number of people on board. The intentional opening of the exit is an immediate hazard to the airplane. This concern outweighs the potential decrease in evacuation capability that could occur if the exit were unavailable because of a system failure, and if there were an emergency evacuation at the same time. While the evacuation capability would be significantly reduced, it would still satisfy the regulatory requirements and be acceptable for the number of people on board.

No changes were made to the final rule.

*Comment:* One commenter recommends adding the following requirements:

- Ability to close the doors after being opened in an emergency.
- Reliability tests.
- Function with minor fuselage deformation.
- Display of slide arming status on the fuselage exterior

*FAA reply:* The commenter's recommendations relate to emergency evacuation, which was not the focus of the NPRM. Although the NPRM had some ancillary impact on evacuation requirements, it focused on the airworthiness of fuselage doors. The commenter's proposed requirements for reliability tests and door opening with minor deformation are effectively already part of the regulations. Section 25.809(g) requires provisions to minimize the probability of jamming of the emergency exits resulting from fuselage deformation that might occur in a minor crash landing. In addition, regulations governing escape slide performance result in extensive tests of exit system reliability. These recommendations are beyond the scope of the NPRM as they relate primarily to emergency evacuation.

No changes were made to the final rule.

*Comment:* The Civil Aviation Authority of the United Kingdom (CAA-UK) recommends adoption of the proposed requirements and a clarifying change to the intent of § 25.783(a)(2). The CAA-UK states that since the hazardous condition identified in § 25.783(a)(2) is unlatching, then the event to be prevented should also be unlatching.

*FAA reply:* The rule, as proposed, would require that inadvertent opening of the door be extremely improbable, but does not specifically address the unlatching event. Section 25.783 has historically categorized the opening of a door as the safety threat and has not addressed intermediate steps in the sequence of that opening. This rule is more specific regarding the reason that a door can become a hazard. The purpose of paragraph (a)(2) is to prevent the hazardous condition. It therefore makes sense that the requirement address unlatching as extremely improbable, rather than simply door opening. In this case, the FAA assumes that if the door unlatches, it will open.

The Joint Aviation Authorities (JAA) submitted the final version of their Notice of Proposed Amendment, NPA, 25D-301, to the docket for NPRM No.

03-01 and recommends the FAA adopt the language of the NPA, which they revised to address comments, including those of the CAA-UK. As our NPRM was the result of harmonization efforts with the JAA and Transport Canada, we consider the content of the JAA NPA important in maintaining harmonization.

As the result of the CAA-UK comment and in order to maintain harmonization, § 25.783(a)(2) is changed.

*Comment:* The JAA proposes adding the following new requirement to the final rule to address an issue not specifically covered in NPRM No. 03-01: "Each door that could result in a hazard if not closed, must have means to prevent the latches from being moved to the latched position unless the door is closed."

*FAA reply:* The proposed requirements contain provisions to prevent the out-of-sequence actuation of certain elements of the door mechanism. This approach is a basic philosophy to ensure that false or misleading indications are not created by out-of-sequence operation. For example, proposed § 25.783(d)(5) states: "It must not be possible to position the lock in the locked position if the latch and the latching mechanism are not in the latched position." In this case, the JAA has adopted a new requirement to address latch movement prior to closing. Many current designs already incorporate such means.

While not directly covered in the NPRM, this requirement is clearly in keeping with the overall approach to fuselage door safety expressed in the NPRM and could be seen as a logical outgrowth of the proposed requirements. We have determined, however, that there may be instances where such a provision would not be necessary, and so adopting the requirement for all designs would impose an unnecessary burden. For example, a manually-operated passenger entry door could have latches that, when in the latched position, would inhibit movement of the door to the closed position. That is, the door is obviously standing open and would be obvious to the person operating the door. In that case, the design of the door fulfills the objective of preventing door closure with the latches in the latched position.

Conversely, for some designs, such a provision would clearly be necessary to meet the requirements of this rule as written. An example would be a cargo door that is operated remotely and could be positioned such that the operator would not be able to visually

determine whether it was properly closed. If the latches were in the latched position, this would add to the potential confusion. Paragraph (e)(2), as adopted, requires positive means, clearly visible from the operator's station, to indicate that each door that could be a hazard is not properly closed, latched, and locked. For the remotely operated cargo door, satisfying the requirement would likely require a means to prevent the door from being closed with the latches in the latched position. While this rule will not maintain strict harmonization with the JAA, we believe the intent of the requirement as adopted by the JAA is still satisfied. Designs found acceptable by the FAA can also be found acceptable by the JAA.

No changes were made as the result of this comment.

The CAA-UK and one individual also had several editorial suggestions for clarity on the use of terms, which we accepted where appropriate. These suggestions are purely editorial and do not change the substance of the requirements.

#### **Paperwork Reduction Act**

There are no current or new requirements for information collection associated with this final rule.

#### **International Compatibility**

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has determined that there are no ICAO Standards and Recommended Practices that correspond to this final rule.

#### **Executive Order 12866 and DOT Regulatory Polices and Procedures**

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Trade Agreements Act (19 U.S.C. 2531-2533) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act also requires the consideration of international standards and, where appropriate, that they be the basis of U.S. standards. And fourth, the Unfunded Mandates Reform

Act of 1995 requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector of \$100 million or more annually (adjusted for inflation).

The FAA has determined that this final rule has minimal costs, and that it is neither "a significant regulatory action" as defined in Executive Order 12866, nor "significant" as defined in DOT's Regulatory Policies and Procedures. Further, this rule will not have a significant economic impact on a substantial number of small entities, will reduce barriers to international trade, and will not impose an Unfunded Mandate on State, local, or tribal governments, or on the private sector.

The DOT Order 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If it is determined that the expected impact is so minimal that the rule does not warrant a full evaluation, a statement to that effect and the basis for it is included in the regulation. Accordingly, the FAA has determined the expected impact of this rule is so minimal the rule does not warrant a full evaluation. We provide the basis for this determination as follows.

Currently, airplane manufacturers must satisfy both part 25 and the European standards to certificate transport category aircraft in both the United States and Europe. Meeting two sets of certification requirements raises the cost of developing a new transport category airplane often with no increase in safety. In the interest of fostering international trade, lowering the cost of aircraft development, and making the certification process more efficient, the FAA, European Authorities, Transport Canada, and aircraft manufacturers have been working to create, to the maximum possible extent, a single set of certification requirements accepted in the United States, Europe, and Canada. As explained in detail previously, these efforts are referred to as "harmonization."

This final rule amends the current fuselage door standard contained in 14 CFR part 25 with a new improved door standard. This new standard will set forth, as a regulatory requirement, some of the existing technical guidance criteria that have been determined to be necessary for safety but which, up to this point, have not been included in the regulations. In addition, this rule addresses recommendations from the NTSB and the ATA task force on doors.

With the one exception noted, this rule harmonizes the FAA and European requirements for fuselage doors. The rule will relieve a certification burden on industry by eliminating regulatory differences between the airworthiness standards and related guidance material of the United States and Europe.

#### *Costs and Benefits of the Final Rule*

In the NPRM, the FAA identified only one section, 25.783(b), where manufacturers would incur a measurable cost. For the other changes, the FAA has not made quantitative cost estimates but has provided qualitative cost estimates. There were no comments to the docket contesting these estimates.

1. *Paragraph 25.783(a)* is descriptive and has no expected cost.

2. *Paragraph 25.783(b)* relates to opening by persons. The requirement is new to have design precautions taken to minimize the possibility for a person to open a door intentionally during flight, but is expected to be accommodated in existing design practices for all but one United States manufacturer. (Requirements regarding inadvertent opening are not new.) One manufacturer expects to incur an estimated cost of \$0.75 million, which will include the requirements for the prevention of intentional opening of the doors.

3. *Paragraph 25.783(c)* covers means to prevent pressurization. The requirement to consider single failures in the pressurization-inhibit system is new, but is believed to be industry practice. Thus, the cost, if any, is expected to be very little for a new design. The provision to permit certain doors to forego this system is actually cost relieving and could result in a minor cost reduction in some cases.

4. *Paragraph 25.783(d)* covers latching and locking. Most of these changes incorporate recommendations currently contained in an advisory circular. The vast majority of airplanes already comply, and basic design practice is to comply with these requirements. Therefore, these requirements, while new, have minimal cost impact. The requirement for each latch to have a lock that monitors the latch position formalizes existing practice. The requirement to eliminate forces in the latching mechanism that could load the locks is new and may not be complied with in all cases currently. The FAA believes that these costs are minimal.

5. *Paragraph 25.783(e)* covers warning, caution, and advisory indications. The reliability of the door indication system will be required to be higher for all doors. This is expected to have only a small cost impact, as will

the requirement for an aural warning for certain doors, and the requirement to provide an indication to the door operator.

6. *Paragraph 25.783(f)* contains the visual inspection provision requirement. The requirement for direct visual inspection is extended to more door types, and may add costs in some cases.

7. *Paragraph 25.783(g)* deals with certain maintenance doors, removable emergency exits, and access panels. This provision may reduce costs in some cases as indicated in the AC.

8. *Paragraph 25.783(h)* covers doors that are not a hazard and is intended to provide relief for certain doors, so it could reduce costs.

9. Paragraphs 25.783(i), 25.783(j), 25.809(b), 25.809(c), and 25.809(f) move text to other sections, improve clarity, and have no impact on cost. These changes, as summarized in the NPRM, are repeated here for the reader's understanding of the changes.

- The changes to § 25.783(i) are removed from existing § 25.783 and added in § 25.810 ("Emergency egress assist means and escape routes") as a new paragraph (e).

- The changes to § 25.783(j) move the special requirement for lavatory doors from the current paragraph (j) to the new § 25.820 ("Lavatory doors").

- Section 25.809(b) ("Emergency exit arrangement") is revised by adding a new paragraph (b)(3) to require that each emergency exit must be capable of being opened, when there is no fuselage deformation, "even though persons may be crowded against the door on the inside of the airplane." This specific requirement is currently a part of § 25.783(b), but is more appropriate as part of the emergency exit arrangement requirements of § 25.809.

- The changes to § 25.809(c) include the requirement that the means of opening emergency exits also must be marked so it can be readily located and operated, even in darkness. This requirement is currently located in § 25.783(b), but is more appropriate as part of the emergency exit arrangement requirements of § 25.809.

- Section 25.809(f) is revised to require that the external door be located where persons using it will not be endangered by the propellers when appropriate operating procedures are used. This requirement currently is found in § 25.783(d), but is more applicable to the emergency exit arrangement requirements of § 25.809.

10. *Paragraph 25.807* corrects an unintended deletion.

### Summary of Costs and Benefits

This final rule is expected to—

- Maintain or provide an increase in the level of safety;
- Have only a relatively small effect on costs when compared to current industry practice; and
- Provide some cost savings to manufacturers by avoiding duplicative testing and reporting that could result from the existence of differing requirements under the current standards.

This rule will codify existing guidance, standard industry practice, and industry recommendations for the design standards for fuselage doors. The FAA believes the cost savings from a single certification requirement exceed the minimal additional compliance cost. The FAA therefore considers the final rule will be cost-beneficial. This conclusion is reinforced by industry's support for the proposal and the absence of comments to the docket regarding the economic analyses.

### Final Regulatory Flexibility Determination

The Regulatory Flexibility Act (RFA) of 1980, 50 U.S.C. 601–612, as amended, establishes “as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation.” To achieve that principle, the RFA requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide range of small entities, including businesses and governments.

Agencies must perform a review to determine whether a final rule will have a significant impact on a substantial number of small entities. If the determination is that the final rule will, the Agency must prepare a regulatory flexibility analysis as described in the RFA.

If, however, an agency determines that the rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

As stated in the initial regulatory flexibility determination, the FAA certifies that this final rule will not have

a significant economic impact on a substantial number of small entities for two reasons:

First, the rule is expected to provide relief from some regulatory costs. The final rule will require that manufacturers of transport category aircraft meet a single certification requirement, rather than different standards for the United States and Europe. Manufacturers of the affected airplanes are believed to already meet, or expect to meet most standards that will be required by this final rule.

Second, all affected U.S. transport-aircraft category manufacturers exceed the Small Business Administration small-entity criterion of 1,500 employees for aircraft manufacturers, as published by the Small Business Administration in 13 CFR part 121, Small Business Size Regulations; Size Standards (65 FR 53533, September 5, 2000). The current U.S. part 25 airplane manufacturers include: Boeing, Cessna Aircraft, Gulfstream Aerospace, Learjet (owned by Bombardier), Lockheed Martin, McDonnell Douglas (a wholly-owned subsidiary of The Boeing Company), Raytheon Aircraft, and Sabreliner Corporation. All of these manufacturers have more than 1,500 employees and therefore do not qualify as small entities.

The FAA certified in the NPRM that the proposal would not have a significant impact on a substantial number of small entities. There were no comments to the docket contesting this FAA certification. Consequently, as the rule is expected to provide cost relief, there are no small entities affected, and the comments received did not dispute the initial economic analysis, the FAA certifies that this final rule will not have a significant economic impact on a substantial number of small entities.

### Trade Impact Assessment

The Trade Agreement Act of 1979 prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

The FAA has assessed the potential effect of this final rule and has determined that it will reduce trade barriers by narrowing the differences between U.S. standards and European international standards.

### Unfunded Mandates Assessment

The Unfunded Mandates Reform Act of 1995 (the Act) is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure of \$100 million or more (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector. Such a mandate is deemed to be a “significant regulatory action.”

This final rule does not contain such a mandate. The requirements of Title II of the Act therefore do not apply.

### Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect on the States, or the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government, and therefore does not have federalism implications.

### Plain English

Executive Order 12866 (58 FR 51735, October 4, 1993) requires each agency to write regulations that are simple and easy to understand. We invite your comments on how to make these regulations easier to understand, including answers to questions such as the following:

- Are the requirements clearly stated?
- Do the regulations contain unnecessary technical language or jargon that interferes with their clarity?
- Would the regulations be easier to understand if they were divided into more (but shorter) sections?
- Is the description in the preamble helpful in understanding the final rule?

Please send your comments to the address specified in the **FOR FURTHER INFORMATION CONTACT** section.

### Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the FAA, when modifying its regulations in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish such regulatory distinctions. In the NPRM, we requested comments on

whether the proposed rule should apply differently to intrastate operations in Alaska. We did not receive any comments, and we have determined, based on the administrative record of this rulemaking, that there is no need to make any regulatory distinctions applicable to intrastate aviation in Alaska.

#### Environmental Analysis

FAA Order 1050.1D defines FAA actions that may be categorically excluded from preparation of a National Environmental Policy Act (NEPA) environmental impact statement. In accordance with FAA Order 1050.1D, appendix 4, paragraph 4(j), this final rule qualifies for a categorical exclusion.

#### Regulations that Significantly Affect Energy Supply, Distribution, or Use.

The FAA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a "significant energy action" under the executive order because it is not a "significant regulatory action" under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

#### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Recording and recordkeeping requirements.

#### The Amendment

■ In consideration of the foregoing, the Federal Aviation Administration amends part 25 of Title 14, Code of Federal Regulations, as follows:

#### PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

■ 1. The authority citation for part 25 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701–44702, and 44704.

■ 2. Section 25.783 is revised to read as follows:

##### § 25.783 Fuselage doors.

(a) *General.* This section applies to fuselage doors, which includes all doors, hatches, openable windows, access panels, covers, etc., on the exterior of the fuselage that do not require the use of tools to open or close. This also applies to each door or hatch through a pressure bulkhead, including any bulkhead that is specifically designed to function as a secondary bulkhead under the prescribed failure

conditions of part 25. These doors must meet the requirements of this section, taking into account both pressurized and unpressurized flight, and must be designed as follows:

(1) Each door must have means to safeguard against opening in flight as a result of mechanical failure, or failure of any single structural element.

(2) Each door that could be a hazard if it unlatches must be designed so that unlatching during pressurized and unpressurized flight from the fully closed, latched, and locked condition is extremely improbable. This must be shown by safety analysis.

(3) Each element of each door operating system must be designed or, where impracticable, distinctively and permanently marked, to minimize the probability of incorrect assembly and adjustment that could result in a malfunction.

(4) All sources of power that could initiate unlocking or unlatching of any door must be automatically isolated from the latching and locking systems prior to flight and it must not be possible to restore power to the door during flight.

(5) Each removable bolt, screw, nut, pin, or other removable fastener must meet the locking requirements of § 25.607.

(6) Certain doors, as specified by § 25.807(h), must also meet the applicable requirements of §§ 25.809 through 25.812 for emergency exits.

(b) *Opening by persons.* There must be a means to safeguard each door against opening during flight due to inadvertent action by persons. In addition, design precautions must be taken to minimize the possibility for a person to open a door intentionally during flight. If these precautions include the use of auxiliary devices, those devices and their controlling systems must be designed so that—

(1) No single failure will prevent more than one exit from being opened; and

(2) Failures that would prevent opening of the exit after landing are improbable.

(c) *Pressurization prevention means.* There must be a provision to prevent pressurization of the airplane to an unsafe level if any door subject to pressurization is not fully closed, latched, and locked.

(1) The provision must be designed to function after any single failure, or after any combination of failures not shown to be extremely improbable.

(2) Doors that meet the conditions described in paragraph (h) of this section are not required to have a dedicated pressurization prevention means if, from every possible position of

the door, it will remain open to the extent that it prevents pressurization or safely close and latch as pressurization takes place. This must also be shown with any single failure and malfunction, except that—

(i) With failures or malfunctions in the latching mechanism, it need not latch after closing; and

(ii) With jamming as a result of mechanical failure or blocking debris, the door need not close and latch if it can be shown that the pressurization loads on the jammed door or mechanism would not result in an unsafe condition.

(d) *Latching and locking.* The latching and locking mechanisms must be designed as follows:

(1) There must be a provision to latch each door.

(2) The latches and their operating mechanism must be designed so that, under all airplane flight and ground loading conditions, with the door latched, there is no force or torque tending to unlatch the latches. In addition, the latching system must include a means to secure the latches in the latched position. This means must be independent of the locking system.

(3) Each door subject to pressurization, and for which the initial opening movement is not inward, must—

(i) Have an individual lock for each latch;

(ii) Have the lock located as close as practicable to the latch; and

(iii) Be designed so that, during pressurized flight, no single failure in the locking system would prevent the locks from restraining the latches necessary to secure the door.

(4) Each door for which the initial opening movement is inward, and unlatching of the door could result in a hazard, must have a locking means to prevent the latches from becoming disengaged. The locking means must ensure sufficient latching to prevent opening of the door even with a single failure of the latching mechanism.

(5) It must not be possible to position the lock in the locked position if the latch and the latching mechanism are not in the latched position.

(6) It must not be possible to unlatch the latches with the locks in the locked position. Locks must be designed to withstand the limit loads resulting from—

(i) The maximum operator effort when the latches are operated manually;

(ii) The powered latch actuators, if installed; and

(iii) The relative motion between the latch and the structural counterpart.

(7) Each door for which unlatching would not result in a hazard is not required to have a locking mechanism meeting the requirements of paragraphs (d)(3) through (d)(6) of this section.

(e) *Warning, caution, and advisory indications.* Doors must be provided with the following indications:

(1) There must be a positive means to indicate at each door operator's station that all required operations to close, latch, and lock the door(s) have been completed.

(2) There must be a positive means clearly visible from each operator station for any door that could be a hazard if unlatched to indicate if the door is not fully closed, latched, and locked.

(3) There must be a visual means on the flight deck to signal the pilots if any door is not fully closed, latched, and locked. The means must be designed such that any failure or combination of failures that would result in an erroneous closed, latched, and locked indication is improbable—

(i) Each door that is subject to pressurization and for which the initial opening movement is not inward; or

(ii) Each door that could be a hazard if unlatched.

(4) There must be an aural warning to the pilots prior to or during the initial portion of takeoff roll if any door is not fully closed, latched, and locked, and its opening would prevent a safe takeoff and return to landing.

(f) *Visual inspection provision.* Each door for which unlatching of the door could be a hazard must have a provision for direct visual inspection to determine, without ambiguity, if the door is fully closed, latched, and locked. The provision must be permanent and discernible under operational lighting conditions, or by means of a flashlight or equivalent light source.

(g) *Certain maintenance doors, removable emergency exits, and access panels.* Some doors not normally opened except for maintenance purposes or emergency evacuation and some access panels need not comply with certain paragraphs of this section as follows:

(1) Access panels that are not subject to cabin pressurization and would not be a hazard if open during flight need not comply with paragraphs (a) through (f) of this section, but must have a means to prevent inadvertent opening during flight.

(2) Inward-opening removable emergency exits that are not normally removed, except for maintenance purposes or emergency evacuation, and flight deck-openable windows need not

comply with paragraphs (c) and (f) of this section.

(3) Maintenance doors that meet the conditions of paragraph (h) of this section, and for which a placard is provided limiting use to maintenance access, need not comply with paragraphs (c) and (f) of this section.

(h) *Doors that are not a hazard.* For the purposes of this section, a door is considered not to be a hazard in the unlatched condition during flight, provided it can be shown to meet all of the following conditions:

(1) Doors in pressurized compartments would remain in the fully closed position if not restrained by the latches when subject to a pressure greater than 1/2 psi. Opening by persons, either inadvertently or intentionally, need not be considered in making this determination.

(2) The door would remain inside the airplane or remain attached to the airplane if it opens either in pressurized or unpressurized portions of the flight. This determination must include the consideration of inadvertent and intentional opening by persons during either pressurized or unpressurized portions of the flight.

(3) The disengagement of the latches during flight would not allow depressurization of the cabin to an unsafe level. This safety assessment must include the physiological effects on the occupants.

(4) The open door during flight would not create aerodynamic interference that could preclude safe flight and landing.

(5) The airplane would meet the structural design requirements with the door open. This assessment must include the aeroelastic stability requirements of § 25.629, as well as the strength requirements of subpart C of this part.

(6) The unlatching or opening of the door must not preclude safe flight and landing as a result of interaction with other systems or structures.

■ 3. Amend § 25.807 by revising paragraph (h) to read as follows:

**§ 25.807 Emergency exits.**

\* \* \* \* \*

(h) *Other exits.* The following exits also must meet the applicable emergency exit requirements of §§ 25.809 through 25.812, and must be readily accessible:

(1) Each emergency exit in the passenger compartment in excess of the minimum number of required emergency exits.

(2) Any other floor-level door or exit that is accessible from the passenger compartment and is as large or larger

than a Type II exit, but less than 46 inches wide.

(3) Any other ventral or tail cone passenger exit.

\* \* \* \* \*

■ 4. Amend § 25.809 by adding a new paragraph (b)(3), and by revising paragraphs (c) and (f) to read as follows:

**§ 25.809 Emergency exit arrangement.**

\* \* \* \* \*

(b) \* \* \*

(3) Even though persons may be crowded against the door on the inside of the airplane.

(c) The means of opening emergency exits must be simple and obvious; may not require exceptional effort; and must be arranged and marked so that it can be readily located and operated, even in darkness. Internal exit-opening means involving sequence operations (such as operation of two handles or latches, or the release of safety catches) may be used for flightcrew emergency exits if it can be reasonably established that these means are simple and obvious to crewmembers trained in their use.

\* \* \* \* \*

(f) Each door must be located where persons using them will not be endangered by the propellers when appropriate operating procedures are used.

\* \* \* \* \*

■ 5. Amend § 25.810 by adding a new paragraph (e) to read as follows:

**§ 25.810 Emergency egress assist means and escape routes.**

\* \* \* \* \*

(e) If an integral stair is installed in a passenger entry door that is qualified as a passenger emergency exit, the stair must be designed so that, under the following conditions, the effectiveness of passenger emergency egress will not be impaired:

(1) The door, integral stair, and operating mechanism have been subjected to the inertia forces specified in § 25.561(b)(3), acting separately relative to the surrounding structure.

(2) The airplane is in the normal ground attitude and in each of the attitudes corresponding to collapse of one or more legs of the landing gear.

\* \* \* \* \*

■ 6. Add a new § 25.820 to read as follows:

**§ 25.820 Lavatory doors.**

All lavatory doors must be designed to preclude anyone from becoming trapped inside the lavatory. If a locking mechanism is installed, it must be capable of being unlocked from the outside without the aid of special tools.

Issued in Renton, Washington, on April 20, 2004.

**Ali Bahrami,**

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*Directorate, Aircraft Certification Service.*

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