Task Assignment

[Federal Register: October 27, 1999 (Volume 64, Number 207)]
[Notices]
[Page 57921-57922]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

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

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

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

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: Dorenda Baker, Transport Airplane Directorate, Aircraft Certification Service (ANM-110), 1601 Lind Avenue, SW., Renton, WA 98055; phone (425) 227-2109; fax (425) 227-1320.

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 and engines in 14 CFR parts 25, 33, and 35 and parallel provisions in 14 CFR parts 121 and 135.

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:

Task: Implementation of International Civil Aviation Organization (ICAO) Rules From Amendment 97 to Annex 8 Concerning Design for Security

ICAO provisions for annex 8 ``Airworthiness of Aircraft'' concerning design for security were submitted to states for comment in 1994. The following were adopted by the ICAO Air Navigation Council by Amendment 97 on March 12, 1997 and will be effective on March 12, 2000.

<bullet> Survivability of systems

[[Page 57922]]

<bullet> Fire suppression
<bullet> Cabin smoke extraction
<bullet> Direction of smoke from the cockpit
<bullet> Least risk bomb location (identification)
<bullet> Least risk bomb location (design)
<bullet> Pilot compartment (penetration resistance)
<bullet> Interior design to facilitate searches

Review the adopted rules and recommend changes to the JAR and FAR and develop associated advisory material. Phase I of the task should define the scope and extent to which the ICAO Amendment 97 rules should be implemented and a strategy for implementation. Phase II should develop recommendations for practical airworthiness requirements for specific FAR paragraphs and prepare any associated advisory material. The recommended design criteria should be consistent with the security threat taking into account the operation and function of the airplane and the current and future aviation security systems.

For Phase I, the **FAA** requests that ARAC provide a report detailing the implementation strategy. The **FAA** expects ARAC to submit this report by February 1, 2000.

For Phase II, the **FAA** requests that ARAC draft appropriate regulatory documents with supporting economic and other required analyses, and any other related guidance material or collateral documents to support its recommendations. If the resulting recommendation is one or more notices of proposed rulemaking (NPRM) published by the **FAA**, the **FAA** may ask ARAC to recommend disposition of any substantive comments the **FAA** receives. The **FAA** expects ARAC to submit its recommendation(s) under Phase II to the **FAA** within 26 months of tasking.

ARAC Acceptance of Task

ARAC has accepted the task and has chosen to establish a new Design for Security 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 Design for Security Harmonization Work 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. 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 Design for Security Harmonization Working Group will be composed of technical 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 and 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. All requests to participate must be reviewed by the assistant chair, the assistant executive director, and the working group co-chairs, and the individuals will be advised whether or not the request can be accommodated.

Individuals chosen for membership on the working group will be expected to represent their aviation community segment and participate actively in the working group (e.g., attend all meetings, provide written comments when requested to do so, etc.). They also will be expected to devote the resources necessary to ensure the ability of the working group to meet any assigned deadline(s). Members are expected to keep their management chain advised of working group activities and decisions to ensure that the agreed technical solutions do not conflict with their sponsoring organization's position when the subject being negotiated is presented to ARAC for a vote.

Once the working group has begun deliberations, members will not be added or substituted without the approval of the assistant chair, the assistant executive director, and the working group chair.

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. Meetings of the Design for Security 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 October 20, 1999.

Anthony F. Fazio,
Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 99-28011 Filed 10-26-99; 8:45 am]
BILLING CODE 4910-13-M

[Federal Register: June 11, 2001 (Volume 66, Number 112)]
[Notices]
[Page 31273-31274]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

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

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

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

SUMMARY: The **FAA** assigned the Aviation Rulemaking Advisory Committee a new task to develop recommendations harmonizing changes to the airworthiness standards for pilot compartment doors to include resistant to intrusion. This notice is to inform the public of this ARAC activity.

FOR FURTHER INFORMATION CONTACT: John McGraw, Federal Aviation Administration, Northwest Mountain Region Headquarters, 1601 Lind Avenue, SW., Renton Washington 98055 (425) 227-2111, john.mcgraw@**faa**.gov.

SUPPLEMENTARY INFORMATION:

Background

The **FAA** established the Aviation Rulemaking Advisory Committee to provide advice and recommendations to the **FAA** Administrator on the **FAA**'s rulemaking activities with respect to aviation-related issues. This includes obtaining advice and recommendations on the **FAA**'s commitments to harmonize Title 14 of the Code of Federal Regulations (14 CFR) with its partners in Europe and Canada.

The Task

As part of a current task assigned to the Design for Security Harmonization Working Group (64 FR 57921, 10/27/99), ARAC should recommend harmonized changes to the airworthiness standards for pilot compartment doors to include resistance to intrusion.

Schedule: This new task is to be completed along with the original task and is due no later than December 31, 2001.

ARAC Acceptance of Task

ARAC accepted the task and assigned the task to the existing Design for Security Harmonization Working Group, Transport Airplane and Engines Issues. The working group serves as staff to ARAC and assists in the analysis of assigned tasks. ARAC must review and approve the working group's recommendations. If ARAC accepts the working group's recommendations, it will forward them to the **FAA**. Recommendations that are received from ARAC will be submitted to the agency's Rulemaking Management Council to address the availability of resources and prioritization.

Working Group Activity

The Design for Security 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 task, including the rationale supporting such a plan for consideration at the next meeting of the ARAC on transport airplane and engines 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. Draft the appropriate documents and required analyses and/or any other related materials or documents.
4. Provide a status report at each meeting of the ARAC held to consider transport airplane and engine issues.

Participation in the Working Group

The Design for Security Harmonization Working Group is composed of technical experts having an interest in the assigned task. A working group member need not be a representative or a member of the full committee.

An individual who has expertise in the subject matter and 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 task, and stating the expertise he or she would bring to the working group. All requests to participate must be received no later than June 29, 2001. The requests will be reviewed by the assistant chair, the assistant executive director, and the working group co-chairs. Individuals will be advised whether or not their request can be accommodated.

Individuals chosen for membership on the working group will be expected to represent their aviation community segment and actively participate in the working group (e.g., attend all meetings, provide written comments when requested to do so, etc.). They also will be expected to devote the resources necessary to support the working group in meeting any assigned deadlines. Members are expected to keep their management chain and those they may represent advised of working group

activities and decisions to ensure that the proposed technical solutions do not conflict with their sponsoring organization's position when the subject being negotiated is presented to ARAC for approval.

Once the working group has begun deliberations, members will not be added or substituted without the approval of the assistant chair, the assistant executive director, and the working group co-chairs.

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

Meetings of the ARAC will be open to the public. Meetings of the Design for Security 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. The **FAA** will make no public announcement of working group meetings.

Issued in Washington, DC, on June 5, 2001.

Brenda D. Courtney,
Acting Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 01-14658 Filed 6-8-01; 8:45 am]
BILLING CODE 4910-13-M

Recommendation Letter

Pratt & Whitney
400 Main Street
East Hartford, CT 06108

Pratt & Whitney
A United Technologies Company

September 17, 2002

Federal Aviation Administration
800 Independence Avenue, SW
Washington, D.C. 20591

Attention: Mr. Nicholas Sabatini, Associate Administrator for Regulation and Certification

Subject: ARAC Recommendation, Design for Security

Reference: ARAC Tasking, Federal Register, Vol. 64, No. 707, October 27, 1999, page 57921

Dear Nick,

The Transport Airplane and Engine Issues Group is pleased to submit the following as a recommendation to the FAA in accordance with the reference tasking. This information has been prepared by the Design for Security Working Group.

- Draft Advisory Circular 25.795(d) – Survivability of Systems
- Draft Advisory Circular 25.795(c) – Least Risk Bomb Location
- Draft Advisory Circular 25.795(b)(3) – Cargo Compartment Fire Suppression
- Draft Advisory Circular 25.795(b)(i) – Protection of Flight Crew Compartment

Sincerely yours,

C. R. Bolt
Assistant Chair, TAEIG

Copy: Dionne Krebs – FAA-NWR
Mike Kaszycki – FAA-NWR
Effie Upshaw – FAA-Washington, D.C.
Mark Allen - Boeing

Acknowledgement Letter

APR 11 2003

Mr. Craig R. Bolt
Assistant Chair, Aviation Rulemaking
Advisory Committee
Pratt & Whitney
400 Main Street, Mail Stop 162-14
East Hartford, CT 06108

Dear Mr. Bolt:

This letter acknowledges the following recommendation packages that were received in the agency in response to tasks that were assigned to the Transport Airplane and Engines issues area of the Aviation Rulemaking Advisory Committee.

Date of Letter	**Description of Recommendation**	**Working Group Name**
4/29/02	Fast track report that proposes new harmonized advisory material that provides a methodology for establishing a fireproof material structural standard/ rating. The rating threshold would allow acceptance of load carrying materials capable of withstanding the effects of fire at least as well as a reference steel classification in dimensions appropriate for the purpose for which they are to be used without fire tests and/or analysis (§ 25.865)	Loads & Dynamics Harmonization Working Group (HWG)*
9/17/02	Final report and proposed rulemaking and advisory material addressing continued safe flight and landing following failures or jamming in flight control system and surfaces (§ 25.671)	Flight Control HWG*
9/17/02	Proposed advisory material for addressing compliance methods for aircraft design requirements for (1) survivability of systems and least risk bomb location for all new passenger aircraft with 60 or more seats or a weight of 100,000 pounds or more; (2) cargo compartment fire suppression systems and suppressing agents designed to consider a sudden and extensive fire that could be caused by an explosive or incendiary device; and (3)	Design for Security HWG

	minimizing entry into the flight crew compartment of smoke, fumes, and noxious vapors generated by a fire from an explosion occurring outside the flightdeck	
9/18/02	Final report with proposed advisory material for complying with regulations related to validation methods used to determine flight load intensities and distributions in transport category airplanes (§ 25.301(b))	Loads & Dynamics HWG
9/19/02	Final report, proposed rulemaking and advisory material for applicants who elect to install an engine control system that automatically increases thrust or power on operating engines if an engine fails during takeoff (§ 25.904)	Powerplant Installation HWG*

**Working group requested that FAA proposal be returned to the working group for phase 4 review.*

I wish to thank the Aviation Rulemaking Advisory Committee (ARAC) and the working groups for the resources that industry gave to develop these recommendations. Since we consider submittal of the recommendations as completion of the tasks, we have "closed" the tasks, placed the recommendations on the ARAC website at **http://www1.faa.gov/avr/arm/aractasks.cfm?nav=6**, and forwarded them to the Transport Airplane Directorate for review and decision.

As you are aware, the offices and services within the Regulation and Certification organization—Office of Aerospace Medicine, Flight Standards Service, Aircraft Certification Service, and Office of Rulemaking—are working on a project to prioritize all the rulemakings and related documents within the organization and in ARAC. Although not yet completed, we expect to have our prioritization completed soon. Meanwhile, we will continue to keep you apprised of our efforts on both the ARAC recommendations and the rulemaking prioritization at the regular ARAC meetings.

Sincerely,

Original Signed By
Margaret Gilligan

Nicholas A. Sabatini
Associate Administrator for Regulation
and Certification

ARM-209: EUpshaw:1/27/03;PC DOCS #18439
cc: ARM-1/20/200/209;
File # ANM-98-430-A; ANM-98-428-A; ANM-99-370; ANM-00-679-A;
ANM-00-089-A
Control Nos. 20021650-0; 20022743-0; 20022744-0; 20022741-0; 20022742-0

Recommendation

May 2002

Advisory Circular (Working Draft – Not For Public Release)
AC No: 25-795(d)

Subject: Survivability of Systems

1. Purpose: This Advisory Circular provides a means, but not the only means, of compliance with § 25.795(d) , and discusses the rulemaking which implements ICAO Annex 8, Appendix 97 Standards, pertaining to an aircraft design requirement for Survivability of Systems for all new (passenger) aircraft with greater than 60 seats or a 100,000 Pounds MTOW.

2. Related FAR Sections: Title 14, Code of Federal Regulations (14 CFR) Parts 25 and 14 CFR §§ 25.365; 25.795; 25.1309

3. Discussion: The International Civil Aviation Organization adopted certain requirements related to security aspects of airplane design in amendment 97 to Annex 8. Included is a requirement that flight-critical systems should be designed and separated such that airplane survival is maximized for any event (e.g., damage due to an explosive device) that causes airplane system damage. For the purpose of addressing this requirement, any structural damage that might result from these events is not considered. This requirement only addresses damage to systems and their effect on safe flight and landing. Flight-critical systems shall be specified by the manufacturer. Section 25.795(d) does not introduce reliability requirements for systems and does not mandate redundancy for systems that are not required to be redundant.

4. Compliance: There are at least two approaches that will satisfy the systems survivability requirement. These are achieved through systems separation or systems protection. Systems separation is based on the idea that any critical system having a redundant or backup system can be separated sufficiently to ensure a high probability that both systems will not be damaged from any single event. Systems protection is attained by shielding critical systems against any harmful event. Designing for systems protection, instead of separation, should only be relied upon if separation is impractical.

   Although airplane fuselage diameters vary widely, the percentage of space devoted to systems installations in general decreases with larger airplanes. This is partly because the size of systems are driven more by their function than by the size of the airplane. That is, space allocation for individual systems does not vary significantly with airplane size. This affords the opportunity of larger airplanes to separate systems to a greater extent than smaller ones. Even if systems were scaled with airplane size, the allowable separation distances would naturally increase with airplane size. The separation requirement provided below recognizes this physical relationship.

In order to provide a reasonable and practical method for establishing a minimum separation between redundant systems, the following formula, derived from § 25.365(e), is defined in the rule:

$$D = 2\sqrt{(PA_S / \pi)}$$

Where:

D = minimum separation distance between redundant systems, in feet.

$$P = \frac{A_S}{6240} + 0.024$$

A_s = maximum cross-sectional area of pressurized shell normal to the longitudinal axis, in square feet

The separation distance, D, need not exceed 5.05 feet. This formula would be used anywhere within the pressurized fuselage. The requirement to maintain systems separation distances, based on this formula, is not intended to be applied to areas outside of the fuselage inner mold line (IML) e.g., wing root or empennage.

Certain areas within the fuselage may be excluded from strict application of the separation criteria but are nevertheless expected to achieve the best separation distances possible. Specific areas that meet this limited exclusion include:

a. Fuel tanks - not considered to be a system that can be separated.
b. Flight deck - aircraft geometry and convergence of systems in this area precludes full system separation.
c. Areas where physical separation is impractical due to airplane geometry or other constraints (e.g., the aft fuselage area where the fuselage diameter tapers, preventing full separation).
d. Electronic & Equipment Bays - concentration of numerous systems in a confined area prevents full separation. These areas should receive special consideration since they contain a large number of flight-critical systems. In this case, redundant systems should be separated within the compartment to maximize the potential for continued function after an event. This could be achieved, for example, by locating flight-critical systems in areas of the E&E bay furthest from the passenger or cargo compartments. Blast shielding is not a substitute for system separation but may be a useful approach for the E&E bay.

Figure 1 illustrates the regions that critical systems must be separated. Except for the items specifically excluded, if redundant systems separation is unattainable in a specific area, then one of the redundant systems and its vital components must be protected in that area. Protection should only be pursued if separation is not an available option. Acceptable systems shielding and/or inherent protection should be able to withstand fragment impacts from 0.5-inch diameter 2024-T3 aluminum spheres traveling 430 feet per second without disabling the system. The ballistic resistance of 0.09-inch thick 2024-T3 aluminum plate offers an equivalent level of protection. Credit may be taken for any permanent barriers between the system and a potential explosive device location that can be shown to offer fragment protection. In addition, the system design must incorporate features that minimize the risk of its failure due to large displacement of the structure to which it is attached. This may include flexibility in both the system and/or its mountings. In the absence of test evidence, alleviating rationale or special circumstances, provisions should allow for a minimum 6-inch displacement in any direction from a single point force applied anywhere within the protected region. Frangible attachments or other features that would preclude system failure may also be incorporated.

The use of shielding should only be provided to protect the systems against ballistic threats and not against blast pressures. Several explosive tests conducted by the FAA have shown that systems are unaffected by blast pressures and efforts to defend the system against blast will likely increase damage rather than mitigate it. Therefore, ballistic shielding should be no larger than absolutely necessary to allow the blast pressures to pass without resistance.

Compliance shall be shown by design and analysis for each affected zone and flight-critical system.

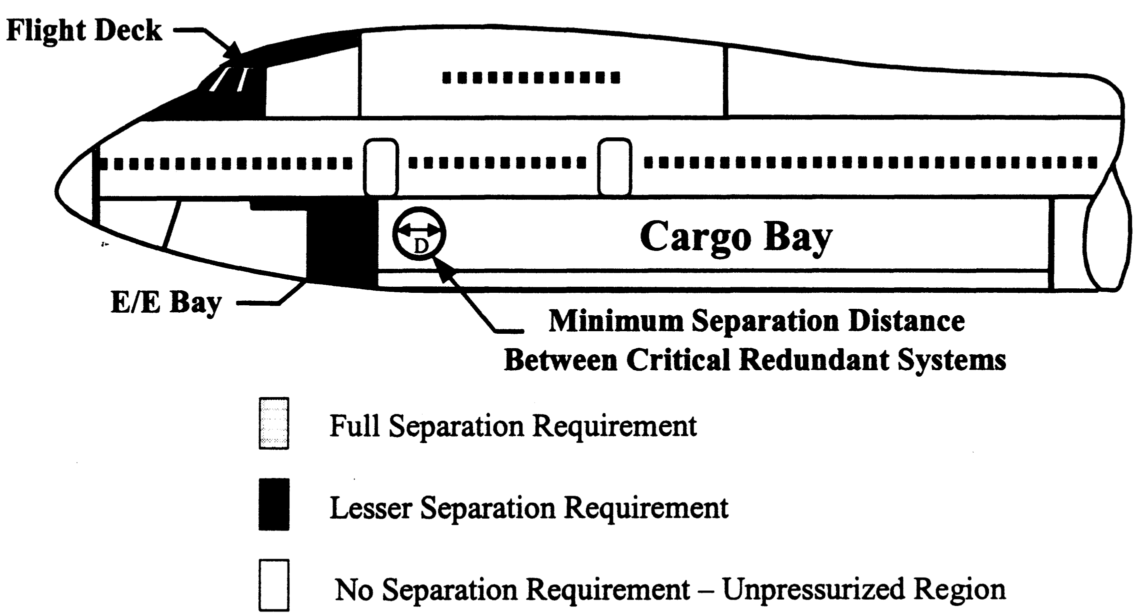

Figure 1. Regions Requiring Separation of Critical Redundant Systems

Subject: Least Risk Bomb Location (LRBL)	**Date:** DRAFT 5/15/02 **Initiated By:** ANM-115	**AC No:** 25.795(c) **Change:**

WORKING DRAFT -- NOT FOR PUBLIC RELEASE.

TABLE OF CONTENTS

Paragraph **Page**

1. **PURPOSE:** This Advisory Circular discusses the rulemaking action which implements ICAO Annex 8, Appendix 97 Standards, pertaining to an airplane design requirement for a Least Risk Bomb Location (LRBL) for all new passenger airplanes with greater than 60 seats or a 100,000 Pounds MTOW and the requirement that those LRBL procedures be made available to the flight crew during flight.

   a. 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 certification requirements.

   b. 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.

   This advisory circular does not change, create any additional, authorize changes in, or permit deviations from, regulatory requirements.

2. **RELATED FAR SECTIONS:** Title 14, Code of Federal Regulations (14 CFR) Parts 25 and 121:

§ 14 CFR 25.795	Security Considerations
§ 14 CFR 25.1585	Operating Procedures
§ 25 CFR 121.135	Contents

3. **FORMS AND REPORTS:**

"FAA Recommended In-Flight-Emergency Safety Procedures for Suspect Device ("Bomb") On Board (Least Risk Bomb Location {LRBL} Procedures)", Sensitive Security Information (Limited Distribution)

- Available upon request to those with a certified "need to know" from:

TSA Explosives Unit, ACS-50
800 Independence Avenue, SW
Washington, DC 20591
FAX: 202-493-4263

Requests should be in writing on official letterhead stating a need for the information. Include an e-mail address for a prompt reply. These procedures are exempted from general public disclosure under 5 USC 552.

4. **DEFINITIONS:**

Least Risk Bomb Location (LRBL): The location on the airplane where a bomb or other explosive device should be placed to minimize the effects to the airplane in case of detonation.

5. **GENERAL GUIDANCE FOR ESTABLISHING AN LRBL**

a. Historical Practice. The FAA recommended Least Risk Bomb Location procedures (LRBL), which have evolved since 1972 with voluntary participation by the airplane manufacturers, have been demonstrated to significantly reduce the effects of an explosion in the passenger cabins of large commercial airplanes using only readily available materials.

The ICAO Security Manual also provides guidance to operators on the procedures to invoke once a suspect item is found onboard an airplane. Information is also provided on the location of the LRBL.

b. Purpose. The purpose of this guidance material is to establish those areas of concern that need to be addressed when finding compliance with the rule. These include the amplifying effects of the pressure differential between the cabin and the outside air. These can be significant and maximum damage is sustained when an explosion occurs in a fully pressurized airplane.

When a suspect item is encountered in the cabin of an airplane in-flight, measures to minimize its effect include a partial reduction in the cabin pressure, with full depressurization preferred, to reduce the damage caused by an explosion. Other possible countermeasures may include procedures to minimize the loss of the integrity of the structure or systems, the use of explosive containment devices, and operational procedures established in consideration of the airplane performance.

c. Design Considerations. The previous voluntary approach to LRBL, that is, identification of the safest location after the basic design was completed, would not necessarily provide the enhancements to safety that would be possible if the LRBL were included in the initial design process. Therefore, additional features may need to be explored to improve safety. Design considerations may include specially sized areas or pressure relief panels in the cabin structure where a suspect device should be placed by crewmembers. On airplanes with more than one passenger deck, more than one LRBL may be desirable.

6. LRBL IDENTIFICATION AND DESIGN

a. When determining the Least Risk Bomb Location (LRBL), the following operational and design issues should be addressed:

(1) If a site adjacent to the fuselage skin is chosen, a portion of the structure should be assumed to be lost. The structural capability of the airplane in the presence of the resulting opening should be determined. For example, if the LRBL is a door, the entire door should be assumed to be lost. An area that is not a door should consider the following:

i. The LRBL fuselage-skin blowout area must be discontinuous from the surrounding structure so cracks developed in the blowout section cannot propagate into the surrounding structure.
ii. The dimensions of the LRBL blowout region should be no smaller than a 30-inch diameter circle. However, those dimensions may be reduced to no less than a 20-inch diameter circle on airplanes with a maximum type certificated passenger capacity of less than 90, if standard arrangements and other considerations prevent a larger diameter.
iii. Adequate space must be available to place the attenuating materials required by the operational procedures.
iv. Assure that provisions allow for the placement of the suspect device as close

to the fuselage skin as possible. That is, interior features (galleys, closets, seats etc.) should not obstruct access to, or the space available for, the LRBL.

(2) The location of the LRBL should be based on considerations of the secondary effects from structural losses to other parts of the airplane (e.g. ingestion of debris into engine, large mass strikes on tailplane, smoke, fire etc) or passenger hazard.

(3) System integrity should be evaluated in the area likely to be affected around the LRBL. Wherever practicable, flight critical systems should be kept 18 inches away from the established LRBL contours, as shown in Figure 1. In addition, flight critical systems should also be kept out of the area under the floor at the LRBL, for a distance of 30 inches inboard, over the width of the LRBL cutout, also shown in Figure 1). This applies to systems that are attached to the floor beams, or mounted above the bottom of the floor beams. This guidance is separate from the requirement of 25.795(d).

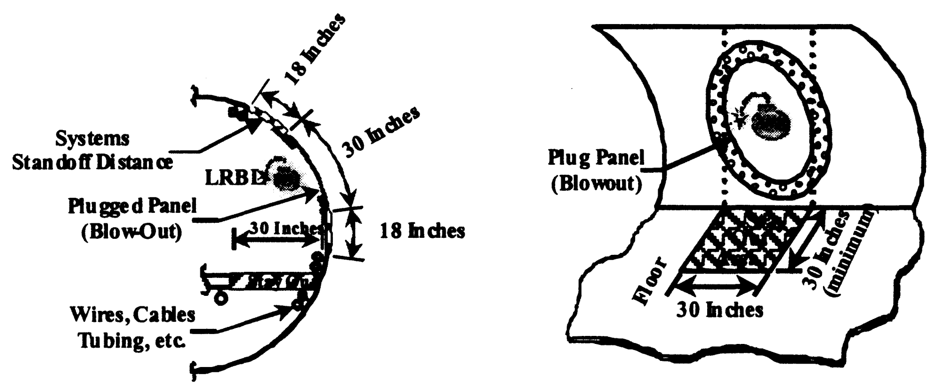

Figure 1. LRBL Design Dimensions

(4) Where the criteria provided in paragraph 6.a.(3) would conflict with the requirements of 25.795(d), maximizing system separation takes precedence. However, in this case, consideration should be given to adding fragment and large structural deformation protection to systems that must be run in proximity to the LRBL.

Systems shielding and/ or inherent protection must be able to withstand fragment impacts from 0.5-inch diameter 2024-T3 aluminum spheres traveling 430 feet per second. The ballistic resistance of 0.09-inch thick 2024-T3 aluminum offers an equivalent level of protection. System designs must incorporate features that minimize the risk of their failure due to large displacements of the structure to which they are attached. This may include flexibility in both the systems and/or their mountings. In the absence of test evidence or alleviating rationale, provisions should allow for a minimum 6-inch displacement in any direction from a single point force applied anywhere within the protected region. Frangible attachments or other features that would preclude system failure may also be incorporated.

b. Traditionally, the LRBL has been chosen to be at a location where there is intrinsic structural reinforcement. However, other measures may be taken to meet the intent of the rule. An example would be a containment system. Such an approach would require concurrence of the Administrator to establish the appropriate criteria.
c. In most circumstances, it is preferable to reduce the cabin pressure differential to zero. Reductions of fuselage pressure are known to be an extremely effective measure in ensuring structural integrity in the event of a detonation.
d. The operational requirements of 121.135(b)(24) require that information on the LRBL be available to the flight crew during flight. The LRBL is required to be identified in the flight manual, and should be presented concisely and in a form that is easily understood.
e. Destructive testing is not required.

Cargo Compartment Fire Suppression Advisory Circular

Final Revision – 25.795 (b)(3)

1. Purpose: This advisory circular provides a means, but not the only means of compliance with § 25.795 (b)(3) and discusses the rulemaking action that implements the intent of ICAO Annex 8, Amendment 97 Standards, pertaining to airplane cargo-compartment design requirements. An applicant may propose an alternate means of compliance to the Administrator. This rule requires that the cargo compartment fire suppression systems, including their suppressing agents, must be designed so as to take into consideration a sudden and extensive fire, such as could be caused by an explosive or incendiary device. Based on the assumptions given in paragraph 5 of this AC, the only components of the system requiring special attention are the storage/activation/distribution components that are not installed in an area considered remote to the cargo compartment, due to their vulnerability to fragments and/or large deformations of supporting structure resulting from an explosive event.

2. Related FAR Sections: § 25.851(b), 25.855, 25.857, 25.858

3. Background: Existing cargo-compartment fire-protection systems are capable of several functions. The initial function is to detect a fire within a cargo compartment. Once a fire is detected, the system provides a warning to the flight crew compartment. The flight crew then activates the fire suppression system to discharge suppression agent to subdue the fire in the affected cargo compartment.

   Past regulations required that the cargo fire-protection systems be capable of suppressing any fire likely to occur in a cargo compartment. However, the regulations did not require the cargo fire-protection systems to be capable of withstanding the effects of an explosive or incendiary device. This additional requirement is now included in §25.795 (b)(3) and requires that the cargo fire-protection system design consider those effects. Notwithstanding the basic assumptions, the follow-on discharge must be equally protected. The intent of this requirement is to protect the airplane from a fire resulting from the event (as defined in paragraph 4.a).

4. Definitions: For the purposes of this AC, the following are applicable:
   a) Event. The activation of an explosive or incendiary device.
   b) Suppression Agent. The substance, usually fluid or gas, discharged into the cargo compartment to suppress a fire.
   c) Knockdown Discharge. The initial sudden application of suppression agent into the cargo compartment with the intent of extinguishing a fire in a cargo compartment.
   d) Follow-on Discharge. Subsequent application of suppression agent into the cargo compartment with the intent of preventing the fire from rekindling if not extinguished after the knockdown discharge application of suppression agent.

e) Storage Vessel. Component containing the suppression agent.
f) Remote Installation. Isolation of a component from exposure to fragments and large deformations resulting from an event in the cargo compartment.

5. Assumptions: The following assumptions are included:
   a) Explosive and incendiary devices produce similar consequences.
   b) Activation of explosive and incendiary devices produce only surface fires. Based on several explosive tests conducted in luggage compartments by the FAA, deep-seated fires are extremely rare in explosive events.
   c) Existing cargo compartment liner requirements are assumed to be adequate. The reasons for this are:
      1) In the case of an event, the resultant fire is assumed to be a surface fire and the knockdown discharge system will extinguish such a fire even if the liner is breached.
      2) Cargo compartment liners are flame-penetration resistant per § 25.855(c).
   d) The cargo compartment fire detection system does not require explosive protection. The reasons for this are:
      1) If the event is small, there will be no effect on the fire detection system;
      2) If the event is large enough to affect the integrity of the fire detection system, the passengers or crew will notice the event. Then, if smoke or odors are present, the crew will know to discharge suppression agent to the affected area. In addition, the failure of the affected fire detection system must be annunciated to the crew for the specific compartment. As a result, no changes are required to make the fire detection systems resistant to one of these events.
   e) No additional suppression agent is required. Existing suppression agent requirements are sufficient per paragraph 5.c.1.
   f) Acceptable suppression agent. The ICAO standard recognizes that Halon suppression agents satisfy the intent of this requirement from the standpoint of suppression. However, Halon production has been banned because of environmental concerns as a chemical that contributes to depletion of the ozone layer. Although there are stores of Halon and its supply is not immediately a concern, Halon will not be available indefinitely. The FAA has been working with the International Halon Replacement Working Group (now the International Aircraft Systems Fire Protection Working Group) to establish minimum performance standards for new suppression agents that will provide capability "equivalent" to the existing Halon agents. These minimum performance standards will be published and adopted by the FAA as guidance for future agent approvals. Therefore, it is expected that this requirement will have no effect on the type of agents that will be used in the future.
   g) The pressure hull is not breached. This advisory circular assumes that the airplane pressure shell remains intact during one of these events even though some structural components within the airplane may fail or be damaged.
   h) Most components of the suppression system do not require protection against a pressure wave resulting from an event. The pressure wave from an event is assumed to act uniformly around the components, as observed from several experimental trials, and would not normally cause pressure damage to these components. However, any component that projects a surface area greater than four square feet (any single dimension greater than four

feet may be assumed to be only four feet in length) will require structural reinforcement to counter the inability of the pressure wave to uniformly propagate around large objects.

i) The mechanisms that produce threatening damage are from large-scale deformations and fragmentation. An event can induce sizeable loads on large surfaces, causing components of the suppression system attached to these surfaces to deflect beyond safe limits and high-energy fragments can puncture distribution lines and storage devices.

6. Discussion: Cargo-compartment fire-protection systems generally contain a fire detection and fire suppression system. The normal system operation entails the fire detection system activating an alarm in the flight-crew compartment when fire is detected in a cargo compartment. The flight crew then activates the suppression system to discharge the suppression agent into the applicable cargo compartment.

The fire-detection system generally consists of fire detectors that sample air from a cargo compartment. When sufficient quantities of combustion byproducts enter a fire detector, the detector activates an alarm.

The cargo fire suppression systems generally consist of storage devices containing suppression agent, distribution tubing or piping, and associated hardware. When the suppression system is activated, an initial knockdown discharge of suppression agent is distributed to the cargo compartment. After the initial knockdown discharge, follow-on suppression agent is then distributed to the compartment either at a metered rate or as a discrete discharge.

When taking into consideration the effects of an explosive device on the cargo fire protection system, the assumptions in section 5 of this AC must be considered. As a result, the only part of the cargo fire protection system deemed necessary to be modified is the storage/activation/distribution system. Therefore, the proposed compliance methods will only address the storage/activation/distribution system and the types of damage that must be addressed are from fragmentation and large deformation of supporting structure.

Due to the damage that may result from an event, quantities of suppression agent, which may be considered toxic, may enter into compartments occupied by crew or passengers. However, the agent is considered to present less potential hazard than products of the fire itself.

7. Compliance: Compliance may be demonstrated by analysis and/or design review. An assessment of vulnerability for the storage/activation/distribution systems must be made.

   a) Storage Devices and Activation. Storage devices and any electrical or mechanical devices that are attached to the storage devices for activation purposes would require protection. A general assessment of component vulnerability should include consideration of their location relative to a potential event, the arrangement of any feature (e.g., cargo compartment liner) between them and the event and their potential displacement from the features own displacement or deformation. There are at least three separate approaches that will satisfy compliance for the storage devices and their associated activation system.

1) Component Protection. Protect those components that are not installed in an area remote to a cargo compartment. Storage/activation devices or protective barriers that will withstand fragment impacts from 0.5-inch diameter 2024-T3 aluminum spheres traveling 430 feet per second are acceptable. The ballistic resistance of 0.09-inch thick 2024-T3 aluminum offers an equivalent level of protection. Barriers with dimensions beyond those described in paragraph 5.h and their supporting structures designed to protect components must be able to tolerate a 15-psi static pressure load without deformation that would compromise the function of the system.

2) Remote installation. Install storage devices and/or their associated activation devices in an area that is remote from the cargo compartment. Items that are remote from the cargo compartment are considered acceptable without protection. Credit may be taken for any permanent barriers between the cargo compartment and the component that can be shown to offer fragment and or large deformation protection, as applicable. Barriers with dimensions beyond those of paragraph 5.h, and their supporting structures designed to isolate components and meet the remote criteria must be able to tolerate a 15-psi static pressure load in combination with any other loads applicable with their design without deformation that would compromise the function of the system. The fragment penetration requirements must also be meet.

3) Provide redundancy. Redundant storage devices and their associated activation system components that are separated in accordance with §25.795(d) would be sufficient.

b) Distribution System. Any of the following approaches separately or in combination are acceptable methods of compliance:

1) Utilize redundant tubing. Redundant tubing systems that are separated in accordance with §25.795(d) would be sufficient. No additional measures would be necessary.

2) Utilize tubing protection:

(i) Shielding. Shielding and or inherent protection of the tubing must be able to withstand fragment impacts from 0.5-inch diameter 2024-T3 aluminum spheres traveling 430 feet per second, and;

(ii) Tubing and Tubing Supports. The tubing system design must incorporate features that minimize the risk of tubing rupture or failure due to displacement of the structure to which it is attached. This may include flexibility in both the tubing and/or its mountings. In the absence of test evidence or alleviating rationale, provisions should allow for a minimum 6-inch displacement in any direction from a single point force applied anywhere along the tubing due to support structure (e.g., floor beam or other equivalent structure) displacements or adjacent materials, such as cargo liners or cargo substances, displacing against the tubing from the event in the cargo compartment. Frangible attachments or other features that would preclude tube rupture or failure may also be incorporated.

Subject: Protection of flight crew compartment (Smoke and fumes)	Date: DRAFT Initiated By: ANM-115	AC No: 25.795(b)(1) Change:

WORKING DRAFT -- NOT FOR PUBLIC RELEASE.

TABLE OF CONTENTS

1. PURPOSE:

This Advisory Circular provides a means, but not the only means, of demonstrating compliance with § 25.795(b)(1) and discusses the rulemaking action which implements ICAO Annex 8, Appendix 97 Standards, pertaining to an aircraft design requirement that there be means to minimize entry into the flight crew compartment of smoke, fumes and noxious vapors generated by a fire from an explosion, which occurs outside of the flight deck in the airplane.

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 certification requirements.

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

As with all advisory circular materials, 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.

This advisory circular does not change, create any additional, authorize changes in, or permit deviations from, regulatory requirements.

2. RELATED FAR SECTIONS:

Title 14, Code of Federal Regulations (14 CFR) Parts 25:

§ 14 CFR 25.795
§ 14 CFR 25.831
§ 14 CFR 25.855
§ 14 CFR 25.857

3. BACKGROUND:

Prior to the adoption of Amendment 25-XX, the regulations did not specifically address the penetration of smoke into the flight deck except from a cargo compartment fire as required by 25.855(h)(2) and 25.857(c)(3). The regulation FAR 25.831(d) deals with smoke clearance from the flight deck. Specific guidelines are given in AC 25-9A for smoke penetration, smoke detection and smoke clearance. It describes the method of testing, including equipment requirements, test procedures and pass/fail criteria. This AC does not change any of those guidelines.

Current test procedures in AC25-9A do not allow for any smoke penetration into the flight deck from a cargo compartment. This AC recognizes and permits that some smoke may initially permeate the flight deck after an explosion or fire occurs anywhere else on the airplane. This is consistent with smoke test procedures used in the E/E bay.

4. DISCUSSION:

It is intended that the flight deck be protected from excessive penetration of smoke, fumes, and noxious vapors generated by explosions or fires anywhere on the airplane other than the flight deck.

As noted above, the current test procedures in AC25-9A do not allow any smoke penetration into the cabin and flight deck emanating from a fire in the baggage compartment. Section 25.795(b)(1) assumes that smoke, fumes, and noxious vapors resulting from the detonation of an explosive device may initially enter the flight deck until procedures are initiated to prevent smoke entry.

Flight deck ventilation systems are designed to supply relatively large quantities of air to meet the ventilation and temperature requirements. It has been shown in airplanes {Technical Note DOT/FAA XXX) that sufficient airflow rates can prevent smoke and gases from entering the flight deck by creating a small differential air pressure between the flight deck and the cabin and/or adjacent compartments. With the flight deck door closed, a pressure boundary can be developed, driving air from the flight deck into the compartments adjacent to the flight deck through the gaps and openings with a velocity related to the gap size and pressure differential. The minimum pressure differential needed to prevent smoke entry has been found to be too small to accurately measure directly with instrumentation. However, covering the flight deck door opening with a thin sheet of plastic provides a flexible barrier that will noticeably deform when a light pressure differential exists. Anytime the plastic deflected towards the passenger cabin, smoke was prevented from entering the flight deck. This provides a visual method that can be used to demonstrate compliance. A good design practice would include minimizing possible routes of smoke entry (e.g. electronic equipment cooling systems, doors and floor gaps, clearances between the bulkhead and supporting structure, etc.).

5. SPECIAL CONSIDERATIONS:

The following special considerations shall be observed:

a. The flight deck door is assumed to be closed. The flight crew would be expected to assure that the flight deck door is closed to block smoke entry.

b. *No structural or systems damage need be considered.* The airplane structure and the systems are assumed to be functional for the purpose of demonstrating compliance. No reduction in performance is assumed in systems operations or airplane capabilities.

c. *The airplane must be assumed to be operating under any phase of flight.* The applicant shall provide protection from excessive smoke penetration into the flight deck, regardless of the location and origin of the fire and during any flight phase, except as follows. This does not apply to short duration air conditioning "packs off" operations during take-off and initial climb, "packs off" operations during a "go-around", landing procedures requiring a "hold" in the descent phase, or during idle descent operations. The ventilation system settings and distribution configuration should also be considered so that the design goal of providing protection from excessive smoke, fumes and noxious vapor penetrations into the flight deck is not compromised by other settings/procedures.

d. *The flow behavior of smoke, fumes and noxious vapors is assumed to be identical to visible smoke.* The detection and removal of smoke is assumed to equally remove any fumes and noxious vapors that are present.

e. *Fresh air must be used to achieve the required airflow to the flight deck* in the presence of smoke.

6. COMPLIANCE:

A positive pressure differential between the flight deck and any adjacent compartments, taking into consideration temperature, buoyancy, and altitude effects, must be attainable in all certificated configurations.

Compliance may be shown by analysis and/or flight testing.

a. Analysis – Analysis may be used to verify that a positive pressure differential between the flight deck and any adjacent compartment is met for the required airplane flight conditions. The applicant needs to be able to verify that the analysis accurately represents actual flight conditions.
b. Test Demonstration - A 0.005-inch thick, or thinner, sheet of polyethylene may be attached to the top, sides and bottom of the door opening with the flight deck door fully opened or removed. The plastic should be sealed so that no air gaps exist around the entire perimeter of the door opening. Sufficient polyethylene should be used so that it can deflect at least 6 inches when light pressure is applied. With the airflow settings properly selected, the polyethylene sheet must deflect away from the flight deck. The center of the sheet will then be forced toward the flight deck past its neutral position and then released. If the sheet again deflects away from the flight deck past its neutral position within 10 seconds, a sufficient pressure differential has been demonstrated to meet this requirement. All flight conditions, except as noted in paragraph 5(c), must be demonstrated.
c. Smoke tests may also be conducted using the guidance provided in AC 25-9A Prior to generating any smoke, select the airflow settings designed to protect the flight deck from excessive penetration of smoke, fumes and noxious vapors. Wisps of smoke that enter and immediately exit at the occupied compartment boundaries are acceptable as long as a light haze or stratified haze does not form.

Recommendation Letter

Action. ARM

Pratt & Whitney
400 Main Street
East Hartford, CT 06108

Pratt & Whitney
A United Technologies Company

June 2, 2003

task #1
phase 2

Federal Aviation Administration
800 Independence Avenue, SW
Washington, D.C. 20591

Attention: Mr. Nicholas Sabatini, Associate Administrator for Regulation and Certification

Subject: ARAC Recommendations, Design for Security

Reference: ARAC Tasking, Federal Register, dated October 27, 1999

Dear Nick,

The Transport Airplane and Engine Issues Group is pleased to submit the following as a recommendation to the FAA in accordance with the reference tasking. This information has been prepared by the Design for Security Working Group.

- DFSWG Report – Design for Security
- Proposed Advisory Circular – AC 25.795 – (b)(2) Passenger Cabin Smoke Evacuation
- Proposed NPRM – Security related considerations in the design and operation of transport category airplanes.

The FAA is asked to note that the Working Group has not yet reached agreement on the Interior Security aspects of the proposed rule and associated Advisory material for "Ease of Search". Therefore, this ARAC recommendation does not include the 25.795(e) section of the NPRM. TAEIG and the Design for Security Working Group will have additional discussions on this section during our June 16 and 17, 2003 meeting. The remaining items are being submitted so that these important proposals may progress while we continue to evaluate the "East of Search" issues.

Sincerely yours,

Craig R. Bolt

C. R. Bolt
Assistant Chair, TAEIG

Copy: Dionne Krebs – FAA-NWR
Mike Kaszycki – FAA-NWR
Effie Upshaw – FAA-Washington, D.C.
Mark Allen - Boeing

Recommendation

Transport Airplane Directorate
WG Report Format
Harmonization and New Projects

1 - BACKGROUND:

- ***This section "tells the story."***
- ***It should include all the information necessary to provide context for the planned action. Only include information that is helpful in understanding the proposal -- no extraneous information (e.g., no "day-by-day" description of Working Group's activities).***
- ***It should provide an answer for all of the following questions:***

The Design for Security Harmonization Working Group (DFSHWG) was formed to implement the provisions of Amendment 97 to Annex 8 of the Convention on International Civil Aviation. Under this amendment, eight new security rules were added to protect transport airplanes against intentional acts of destruction. These rules became effective in March 2000 for all International Civil Aviation Organization (ICAO) member states. It is the requirement of each member state to either incorporate these rules into their national regulatory codes or file for differences. The objective of the DFSHWG was to develop harmonized regulatory codes between FAA and JAA that also satisfied the ICAO regulatory intent.

After this working group was formed, FAA determined that air rage had become more prevalent and hazardous, demanding additional protections be offered to the flight crews against passengers storming the flight deck. An additional task was consequently added to the DFSHWG's role to provide requirements for intruder resistance to flight deck doors.

The resulting tasks addressed the following flight-security enhancements to airplanes:

- Systems survivability against explosive threats
- Cargo compartment fire suppression system protection against explosive and shrapnel damage
- Passenger protection against smoke, fumes and noxious vapors
- Inhibiting smoke from penetrating the flight deck from any adjacent compartments
- Identifying the location on the airplane that offers the least-risk from a suspect device
- Designing a least risk location that provides special protection against suspect devices
- Flight deck protection against small-arms fire and shrapnel
- Interior cabin designs that deter hiding and aid in finding dangerous objects
- Flight deck intrusion resistance

a. Safety Issue Addressed/Statement of the Problem

(1) What prompted this rulemaking activity (e.g., accident, accident investigation, NTSB recommendation, new technology, service history, etc.)? What focused our attention on the issue?

These proposals were prompted by international requirements in Annex 8 of the Convention on International Aviation, which were brought about in part as a result of the destruction of a Boeing Model 747 airplane near Lockerbie, Scotland on December 21, 1988, by a terrorist bomb. At the time of the Lockerbie accident, ICAO was already considering several proposals related to the incorporation of security into the design of airplanes, which had been submitted by the International Federation of Airline Pilots Association (IFALPA) to ICAO. When the Lockerbie accident occurred, ICAO was in the process of soliciting comments from certain member countries and organizations. On September 11, 2001, the United States experienced terrorist attacks when airplanes were commandeered and used as weapons. These actions further demonstrated the need to address security issues during the airplane design phase. On January 10, 2002, the FAA issued Amendment 25-106 to require that the flight-deck doors on transport category airplanes be resistant to forcible intrusion, including ballistic penetration (67 FR 2117, January 15, 2002). The amendment was issued in accordance with the requirements of Public Law 107-71, the Aviation and Transportation Security Act (the Act).

(2) What is the underlying safety issue to be addressed in this proposal?

Numerous attempts have been made to interfere and/or destroy transport airplanes through the use of weapons, a number of which were improvised explosive devices. Many of these have been successful despite the security measures taken to prevent these occurrences. Even though the goal and emphasis is to prevent dangerous objects from being place onboard transport airplanes and renewed vigor has been placed on ground detection, it is recognized that these efforts can never be fully effective. Since attempts are always taken to circumvent security inspections and are occasionally successful, these attacks must be countered with airplane designs that will both prevent concealment of weapons and ensure damage tolerance to their effects if activated before enhanced security and safety can be achieved.

(3) What is the underlying safety rationale for the requirements?

Loss of the airplane from system failures destroyed or disrupted by weapon discharges or injury to passengers is a concern. Historical evidence and several experimental trials have shown that airplanes, passengers and their crew are vulnerable to even small-sized threats, which are the most commonly exploited to escape detection. Since there is no indication that these threats will ever subside, it is prudent to bolster airplane tolerances and passenger protections with modest improvements to diminish further losses. To be effective, weapons will then have to be more substantial, thereby increasing their chances for detection.

(4) Why should the requirements exist?

These enhancements will add an additional layer of defense against direct attacks on airplanes, not only fortifying their resistance but also making them less desirable as targets.

b. CURRENT STANDARDS/MEANS TO ADDRESS

(1) If regulations currently exist:

(a) What are the current regulations relative to this subject? (Include both the FAR's and JAR's.)

Other than the aforementioned amendment 25-106, there are no current regulations that relate to these proposed new rules

(b) How have the regulations been applied? (What are the current means of compliance?) If there are differences between the FAR and JAR, what are they and how has each been applied? (Include a discussion of any advisory material that currently exists.)

There are two Advisory Circulars addressing resistance to ballistic penetration and forcible intrusion. The JAA has also adopted these advisory circulars although the JAA has only recently adopted requirements similar to amendment 25-106.

(c) What has occurred since those regulations were adopted that has caused us to conclude that additional or revised regulations are necessary? Why are those regulations now inadequate?

N/A

2. If no regulations currently exist:

(a) What means, if any, have been used in the past to ensure that this safety issue is addressed? Has the FAA relied on issue papers? Special Conditions? Policy statements? Certification action items? Has the JAA relied on Certification Review Items? Interim Policy? If so, reproduce the applicable text from these items that is relative to this issue.

These safety issues were previously addressed through the voluntary participation of manufacturers identifying a location on the airplane that would provide the least risk if an improvised explosive device (IED) were found and placed at this site before it exploded while in flight.

(b) Why are those means inadequate? Why is rulemaking considered necessary (i.e., do we need a general standard instead of addressing the issue on a case-by-case basis?)?

The above approach assumed that an IED would be found before it detonated. As historical evidence has shown, this has never happened. Therefore, that approach has proven to be ineffectual and with these new rules, weapons will more likely be found or, if not found, will at least provide a lower associated risk if activated.

Since large air carrier airplanes are most often targeted on a seemingly random basis, these airplanes should comply with this protection requirement, and not left to a special condition or individual basis.

2. DISCUSSION of PROPOSAL

- *This section explains:*
  - → *what the proposal would require,*
  - → *what effect we intend the requirement to have, and*
  - → *how the proposal addresses the problems identified in Background.*
- *Discuss each requirement separately. Where two or more requirements are very closely related, discuss them together.*
- *This section also should discuss alternatives considered and why each was rejected.*

a. SECTION-BY-SECTION DESCRIPTION OF PROPOSED ACTION

(1) What is the proposed action? Is the proposed action to introduce a new regulation, revise the existing regulation, or to take some other action?

To satisfy the ICAO requirement for implementation of their new rules into national regulatory codes, the working group is submitting complementary rules and accompanying advisory circular materials to be introduced into the FAR as new regulations.

(2) If regulatory action is proposed, what is the text of the proposed regulation?

§ 25.795 Security considerations.

Except as noted in paragraphs (a) and (f) of this section, airplanes with a passenger seating capacity of more than 60 or a maximum certificated takeoff gross weight of over 100,000 pounds, must comply with the following:

* * * * *

(b) Fire and smoke protection. The airplane must be designed to limit the effects of an explosive or incendiary device, as follows:

(1) *Flight deck protection.* Means, such as would be provided by a positive pressure differential between the flight deck and surrounding areas, must be provided to limit entry of smoke, fumes and noxious vapors into the flight deck.

(2) *Cabin smoke protection.* Means must be provided to prevent passenger cabin occupant incapacitation resulting from smoke, fumes and noxious vapors as represented by the combined volumetric concentrations of 0.59% carbon monoxide and 1.23% carbon dioxide.

(3) *Cargo compartment fire suppression.* The extinguishing agent must be capable of suppressing such a fire and all cargo-compartment fire suppression-system components must be designed to withstand the following effects unless they are redundant and separated per paragraph (d) of this section or are installed remotely from the cargo compartment:

i. A 0.5-inch diameter aluminum sphere traveling at 430 ft/sec;

ii. A 15-psi pressure load if the projected surface area of the component is greater than four square feet. Any single dimension greater than four feet may be assumed to be four feet in length, and;

iii. A 6 inch displacement in any direction from a single point force applied anywhere along the distribution system due to support structure displacements or adjacent materials displacing against the distribution system.

(c) Least risk bomb location. A location on the airplane must be designed where a bomb or other explosive device may be placed to protect flight-critical structure and systems from damage in the case of detonation.

(d) Survivability of systems. Redundant airplane systems, necessary for continued safe flight and landing, must be physically separated as a minimum, except where impracticable, by an amount equal to a sphere of diameter $D = 2\sqrt{(H_0 / \pi)}$ {where H_0 is defined in § 25.365(e)(2), and D need not exceed 5.05 feet). The sphere is applied everywhere within the fuselage, limited by the forward and aft bulkheads of the passenger cabin or cargo compartments, beyond which only ½ the sphere is applied.

(e) Interior design to facilitate searches. Design features must be incorporated that will deter concealment or promote discovery of weapons, explosives or other objects from a simple inspection in any area accessible within the airplane cabin. The following areas must be addressed:

(1) Crew compartments must be placarded to be secured when not in use or must be designed so that objects can be readily detected, either through simple search or through tamper-evident designs.

(2) Stowage areas, including galleys, closets, overhead bins and miscellaneous compartments must be designed so that objects can be readily detected, either through simple search or tamper-evident designs. Contents of overhead stowage compartments must be visible to a 50th percentile male, as defined by Drefus, standing in the aisle.

(3) Stowage locations for removable or portable non-emergency equipment must be designed to near net-fit dimensions, where practicable, or the equipment must lock in place with a specialty fastener.

(4) Areas above the overhead bins must be designed to prevent placed objects from being hidden from view in a simple search from the aisle.

(5) Locks, specialty fasteners or tamper-evident seals must be provided for access doors or panels that are not intended for flight personnel or passenger use.

(6) Joints between interior panels must be designed to either preclude the introduction of objects between them or show evidence of tampering.

(7) Toilets must be designed to prevent the passage of solid objects greater than 2.0 inches in diameter.

(8) Life preservers or their storage locations must be designed in a manner such that tampering is evident.

(9) Literature pockets and magazine racks must be designed so that only one hand is needed to reveal the contents for a visual inspection.

(10) Removable cushions, without tamper evidence or the need for a specialty tool must be capable of being easily removed and visually inspected.

(f) Exceptions. Airplanes used for the carriage of cargo only, need only meet the requirements of paragraphs (b)(1), (b)(3) and (d) of this section.

(3) If this text changes current regulations, what change does it make? For each change:

- **What is the reason for the change?**
- **What is the effect of the change?**

None of these rules change any existing rules.

(4) If not answered already, how will the proposed action address (i.e., correct, eliminate) the underlying safety issue (identified previously)?

These have been previously addressed in 1.b.(2) above

(5) Why is the proposed action superior to the current regulations?

Previously discussed above

b. ALTERNATIVES CONSIDERED

(1) What actions did the working group consider other than the action proposed? Explain alternative ideas and dissenting opinions.

ICAO identified the basic framework from which we had to base our proposed actions. This mostly eliminated alternative proposals or dissenting positions. Disagreements were limited to the degree of action believed necessary to fulfill the ICAO intent. Along this line, the most significant dissent came from outside of our working group on the applicability of theses rules. Some believed that these rules should apply to all airplanes weighing over 12,500 pounds while our working group believed that they should only apply to passenger transports with more than 60 passengers or weighing at least 100,000 pounds.

(2) Why was each action rejected (e.g., cost/benefit? unacceptable decrease in the level of safety? lack of consensus? etc.)? Include the pros and cons associated with <u>each</u> alternative.

The working group and other international authorities agreed that there was no significant improvement in safety and substantial cost would be incurred by mandating these rules to passenger airplanes with fewer than 61 passengers or weighing less than 100,000 pounds. This is based in part on the lower probability of smaller airplanes being targeted and the reduced threat they pose to third parties. The smaller sized airplanes cannot be protected against the same sized threats as the larger airplanes without considerably greater costs because of size effects. This was accounted for by reducing the threat size based on the airplane size but eventually the threat size becomes so small as to be meaningless as a serious threat and protection is not warranted.

c. HARMONIZATION STATUS

(1) Is the proposed action the same for the FAA and the JAA?

Yes

(2) If the proposed action differs for the JAA, explain the proposed JAA action.

JAA is expected to produce identical requirements

(3) If the proposed action differs for the JAA, explain why there is a difference between FAA and JAA proposed action (e.g., administrative differences in applicability between authorities).

N/A

3. COSTS AND OTHER ISSUES THAT MUST BE CONSIDERED

The Working Group should answer these questions to the greatest extent possible. What information is supplied can be used in the economic evaluation that the FAA must accomplish for each regulation. The more quality information that is supplied, the quicker the evaluation can be completed.

a. Costs Associated with the Proposal

(1) Who would be affected by the proposed change? How? (Identify the parties that would be materially affected by the rule change – airplane manufacturers, airplane operators, etc.)

Airplane manufacturers, airplane operators, parts suppliers, airplane maintenance organizations, operator suppliers and security personnel will be affected by these changes. The design, installation, documentation, operation and maintenance of the airplane will all be impacted.

(2) What is the cost impact of complying with the proposed regulation? Provide any information that will assist in estimating the costs (either positive or negative) of the proposed rule.

(For example:

- *What are the differences (in general terms) between current practice and the actions required by the new rule?*
- *If new tests or designs are required, how much time and costs would be associated with them?*
- *If new equipment is required, what can be reported relative to purchase, installation, and maintenance costs?*
- *In contrast, if the proposed rule relieves industry of testing or other costs, please provide any known estimate of costs.*
- *What more-- or what less -- will affected parties have to do if this rule is issued?*

NOTE: *"Cost" does not have to be stated in terms of dollars; it can be stated in terms of work-hours, downtime, etc. Include as much detail as possible.)*

This working group has made no effort to estimate the associated costs with implementing these new rules. In many cases, designs from previous arrangements will no longer be valid and design efforts will undoubtedly be extensive to find means to conform to the new requirements. However, since these requirements only apply to new type designs, the impact of design changes is minimized. Each manufacturer's organization that is responsible for each of the changes will need to estimate the cost to design, test, demonstrate compliance and build. The operators will have to estimate the in-service effects and cost associated with these changes.

b. OTH[redacted]

(1) Will small businesses be affected? ***(In general terms, "small businesses" are those employing 1,500 people or less. This question relates to the Regulatory Flexibility Act of 1980 and the Small Business Regulatory Enforcement Fairness Act of 1996.]***

Suppliers are often used in the design, fabrication, and delivery of various components for final assembly. Often these suppliers are small businesses and could be indirectly affected by these changes. These same suppliers could be used by the air carriers for maintenance or parts suppliers.

(2) Will the proposed rule require affected parties to do any new or additional recordkeeping? If so, explain. ***[This question relates to the Paperwork Reduction Act of 1995.]***

Additional record keeping would be expected, depending on requirements assessed for the certification and maintenance efforts.

(3) Will the proposed rule create any unnecessary obstacles to the foreign commerce of the United States -- i.e., create barriers to international trade? ***[This question relates to the Trade Agreement Act of 1979.]***

There is no known unnecessary obstacle created to foreign commerce by these rules

(4) Will the proposed rule result in spending by State, local, or tribal governments, or by the private sector, that will be $100 million or more in one year? ***[This question relates to the Unfunded Mandates Reform Act of 1995.]***

The total cost to implement all of these rules by all manufacturers and air carriers is unknown at this time. The rules have been structured to enable compliance with straightforward design approaches that should keeps costs significantly below $100M.

4. ADVISORY MATERIAL

a. Is existing FAA or JAA advisory material adequate? Is the existing FAA and JAA advisory material harmonized?

There are no existing advisory materials that relate to these new rules and are therefore inadequate.

b. If not, what advisory material should be adopted? Should the existing material be revised, or should new material be provided?

As part of the working group's efforts, advisory material was developed for each of the new rules. These advisory materials are independent of existing advisory circulars and neither negate, modify nor compromise the intent of any rule or advisory circular. However, existing AC 25-9A may need to be expanded to include a test method that can be used to demonstrate compliance for one of the new requirements.

c. Insert the text of the proposed advisory material here (or attach), or summarize the information it will contain, and indicate what form it will be in (e.g., Advisory Circular, Advisory Circular – Joint, policy statement, FAA Order, etc.)

See advisory materials drafted for each rule in the attachment. These materials were harmonized so will become ACs and ACJs.

Ease of Search: FAR Part 25 .795(e)

Summary of Proposed Industry Position:

Boeing strongly supports efforts to improve the security of airplanes but the proposed FAA design regulation is not an acceptable solution.

1. The proposed FAA regulation exceeds the ICAO language and will be highly burdensome to the industry and airlines.

2. ARPs and Inspection guidelines in conjunction with minimal FAR Part 25 regulations are the appropriate response to ICAO and would result in a higher level of security.

3. Only key aspects of the proposed regulation should be adopted – All other aspects should be reconsidered in other forums.

Proposed Industry Position:

1) FAR Part 25.795(e) oversteps the ICAO recommendation which defined that "consideration" should be given to ease of search. This is in stark contrast to the ICAO flight deck statement that defined that "this door and the flight crew compartment bulkhead shall be designed..."

   The proposed rule is projected to be the most burdensome regulation since 16g seats. Furthermore, while there is a concerted desire by the airlines and industry to improve security considerations, this proposed regulation has not given due consideration to the financial factors nor evaluated the options for addressing the ICAO recommendations through other means.

   Additionally, it is projected that this regulation will also have a long-term cost impact to the airlines due to the efforts associated with maintaining the airplane in this regulated condition. None of these increased costs have been addressed with a commensurate increase in safety. Furthermore, the rule was drafted without the participation of the AEA or the ATA thus missing a key element of the airlines' input.

2) Aerospace Recommended Practices (ARPs) and operational Inspection Guidelines should be created to reduce the time associated with the inspection of interiors. Elimination of certain design features has not been justified – An inspector utilizing readily available tools such as mirrors would result in the same level of safety.

   The long-term cost of the ICAO recommendation could be significantly reduced if inspection guidelines and tools would be adopted in lieu of design constraints. For example, a mirror attached to a stick could be used much more effectively to inspect the stowage bins in lieu of regulating that stowage bins shall be visible to a 50% person from the aisle. (Note that no current Boeing airplane complies with the proposed regulation.)

   As written the proposed rule is highly subjective and it is projected that it will be very difficult to find compliance to the regulation. A companion Advisory Circular must be available in conjunction any proposed rule but most of all clear standards of compliance must be established to resolve the subjectivity of the proposed regulation.

3) The new regulation for ease of search should be limited to key features integral to the design of the airplane. For example, non-standard fasteners could be readily incorporated on access panels to reduce the potential for hiding dangerous objects.

It is Boeing's position, that by adopting this above described approach all of the ease of search recommendations of ICAO could be realized without further burdening the industry and airlines with costly design and maintenance constraints.

U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Passenger Cabin Smoke Evacuation	**Date:** DRAFT 8/9/02 **Initiated By:** ANM-115	**AC No:** 25.795-(b)(2) **Change:**

WORKING DRAFT -- NOT FOR PUBLIC RELEASE.

1. **PURPOSE**: This Advisory Circular provides a means, but not the only means, of compliance with § 25.795(b)(2), and discusses the rulemaking action which implements ICAO Annex 8, Appendix 97 Standards, pertaining to an aircraft design requirement that there be means to remove smoke, fumes and noxious vapors, such as might be produced by an explosive or incendiary device, from the passenger cabin in flight. It is the intent of this requirement that, after such means are implemented, the cabin environment does not reach smoke, fume or noxious vapor concentration levels that are incapacitating.

2. **RELATED FAR SECTIONS**: Title 14, Code of Federal Regulations (14 CFR) Parts 25 and 14 CFR §§ 25.795. 25.831, 25.857

3. **DISCUSSION**. The International Civil Aviation Organization adopted certain requirements related to security aspects of airplane design in amendment 97 to Annex 8. Included is a requirement that the airplane have the capability to evacuate smoke, fumes and noxious vapors from the passenger cabin, such as might be produced by an explosive or incendiary device. This requirement is adopted into the Federal Aviation Regulations as new section 25.795(b)(2)

   a. Smoke removal, general. Prior to adoption of Amendment 25.XX there were no requirements related to removing smoke from the passenger cabin, although most manufacturers provided procedures to their customers. These were based on best practices for their system, regardless of the smoke source or intensity. There are effectively no bounds on the amount of smoke that could be generated but there are clearly bounds on airplane systems capabilities in removing smoke. A smoke removal requirement must set the boundaries based on rational premises. In that light, a general smoke removal procedure must assume that the source of the smoke is extinguished. Once extinguished, there is a finite quantity of smoke that must be removed from the occupied area within a certain amount of time to provide for acceptable environmental conditions. Aside from the reason mentioned, general smoke removal procedures are not believed suitable if the source of the smoke, presumably a fire, is still producing smoke, as discussed below.

b. Smoke removal, specific. In those cases where the fire is not extinguished, there may well be acceptable procedures for removing smoke. However, due to the unknowns present with a fire, there is the potential that the smoke removal procedures will worsen the situation. That is, an acceptable procedure in one situation may be detrimental in another. There are several reasons for this. First, the location of the fire could be such that the means used to evacuate the smoke serves to provide ventilation to the fire, thereby intensifying it. Second, the dynamics of the fire itself can dramatically change the ventilation patterns from their normal flow. Third, removing the smoke may only convey the sense that the fire is out (i.e., the evidence is gone), even though it could be continuing to burn. Of course, there are situations where the procedure should be used regardless, when it is deemed necessary by the crew.

c. Fire Characterization. For the purposes of this requirement, the ignition source of the fire is considered to be an explosive or incendiary device. Data from tests with these types of devices indicate that the fire that results from such a device is mostly dictated by its location in the airplane and materials present, rather than the device itself. The fire is a function of the geometry and quantity of material available. This leads to two important conclusions/assumptions regarding demonstrating compliance:

   (1) The fire is a surface burning fire and can therefore be reasonably expected to be extinguished by personnel or a built-in system. This is important because, as noted above, smoke removal procedures can only be assumed to be effective, and in many cases advisable, once the fire is out.

   (2) The amount of material available to a fire can be expected to increase with the size (cabin volume) of the airplane, which in turn will increase the amount of smoke and gases generated. This relationship ties smoke quantity to cabin volume, the ratio of which is assumed constant for any airplane size for the purposes of this guidance. For airplanes with more than one passenger deck, each deck should be addressed independently.

4. **SPECIAL CONSIDERATIONS**: The following special considerations shall be observed:

   a. No structural or systems damage need be considered. The airplane structure and the systems are assumed to be functional after the detonation of an explosive device. No reduction in performance is assumed in systems operations or airplane capabilities.

b. The airplane must be assumed to be operating under any phase of flight. The applicant shall provide cabin smoke, fumes and noxious vapor removal, regardless of the location and origin of the fire and during any flight phase, except for the following. This does not apply to short duration air conditioning "packs off" operations during take-off and initial climb, "packs off" operations during a "go-around", landing procedures requiring a "hold" in the descent phase, or during idle descent operations.
c. The flow behavior of toxic gases is assumed to be identical to visible smoke. The detection and removal of smoke is assumed to equally remove any toxic gases that are present. No other design requirements or analysis will be required other than specified.
d. Fresh air must be used to clear the smoke from the passenger cabin. Fresh air must be used for analysis or testing for the purposes of showing compliance.
e. If a smoke demonstration clearance procedure is used to show compliance, smoke may migrate to any part of the airplane, except the flight deck, before vented overboard.

5. **COMPLIANCE**: Requirements related to smoke protection of the flight deck continue to apply and actions taken to address compliance with § 25.795(b)(2) should have no adverse effect on the flight deck smoke penetration minimization or smoke removal.

   a. Cabin Airflow Performance. Based on a review of full-scale fire test data, the FAA has established relationships of the hazard level within a certain volume of the passenger cabin over time. Examples are given in Appendix 1. One means for compliance is to remove smoke from the passenger cabin through uninterrupted changes of cabin air with fresh air. FAA has determined that an air change rate of once every five minutes for at least a 30 minute continuous period meets the compliance requirement and is sufficient to prevent smoke hazardous levels from becoming incapacitating. It is noted that this is considered an emergency procedure and not necessarily the normal operating regime of the ventilation system. It is expected that the system provide sufficient capacity for the duration of time necessary to evacuate the smoke and then could be restored to normal operation. Alternatively, special valves might be installed to effect evacuation, although the effect on cabin pressurization would have to be considered so that no other hazard to occupants is created. This would include both the rate of pressure loss as well as the absolute cabin pressure. Demonstration of compliance for this requirement would be through analyses or tests.
      (1) Analyses. For the analyses, the applicant would need to show that the required fresh air can be provided for all flight conditions except as noted in section 4.(b), taking into consideration variations in the capability of the air source.

I. When performing these analyses, the applicant may account for the following:
   i. Take credit for all fresh air entering the passenger cabin volume that will aid in removing contaminants;
   ii. Compute the passenger-cabin volume from those compartments that would be expected to contain passengers and crew, excluding the flight deck and crew rest within the flight deck and isolated crew rests (remote crew rests not located on the passenger deck), during the smoke evacuation. The passenger floor, sidewall and ceiling liners, and overhead stowage bins define the perimeter boundaries to the passenger-cabin volume, as illustrated in Figure 1. The fore and aft limits are defined by the flight deck bulkhead and aft passenger-cabin boundaries.

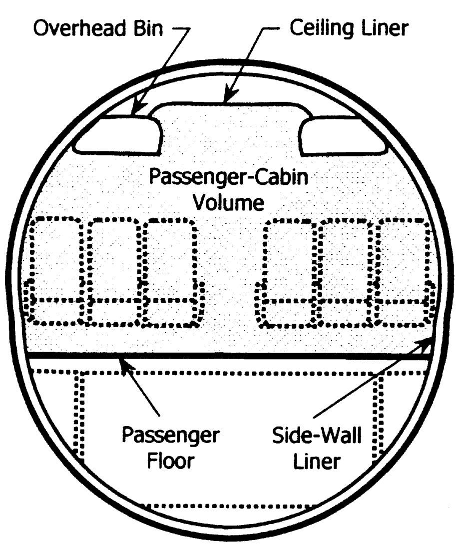

Figure 1. Region within Fuselage Cross Section That Defines the Outer Boundaries of the Passenger Cabin Volume

II. The air change rate is defined as:

$$Air\ Change\ Rate = \frac{Passenger\ Cabin\ Volume\ (ft^3)}{Fresh\ Airflow\ (ft^3/min)}$$

It is not necessary to consider individual cabin zones when computing air change rates.

(2) Tests. If a test is chosen to demonstrate compliance, the cabin smoke removal procedures in AC 25-9A will be followed. Small amounts of smoke are allowed to remain in parts of the passenger cabin since complete homogeneous mixing of fresh air with smoke would not be expected.

b. Protective Breathing. An applicant would have to define to the satisfaction of the administrator how he would accomplish either b.(1) or b.(2) of this section. The objective of any alternative approach should be to keep the fractional effective dose below 1, as per Appendix 1. To that end, initial conditions need to be defined that are consistent among models. Appendix 2 provides data from testing and the resulting initial conditions that should be used if alternative methods of compliance are utilized.

(1) The approach described above is aimed at direct evacuation of smoke from the passenger cabin. An alternative procedure might be to provide cabin occupants with protective equipment that would be a means of avoiding the hazard, rather than eliminating it. In that case, the equipment would need to provide protection for the duration of the flight, assuming worst-case diversion times. Note that any protective devices for inflight use should not compromise evacuation. Generally, this would mean that the devices would be accessible only when necessary in-flight. Various studies have shown that protective breathing devices can degrade evacuation times because passengers devote considerable time in donning the equipment rather than exiting the airplane.

(2) A combination of smoke evacuation and protective equipment for the occupants might also be an option. In this case, procedures would need to be developed to account for various scenarios, such that the combination would be effective. Appendix 1 shows a typical FED curve for passengers using oxygen masks.

c. Additional Alternatives. If another method of compliance is used for any airplane configuration, the applicant must show that his method will prevent the FED (as explained in Appendix 1) value from reaching 1.0 with an initial combined volumetric concentration of 0.59% carbon monoxide and 1.23% carbon dioxide in the passenger cabin. The value provided in Appendix 2 may be used in supporting the applicant's method.

d. Combination Passenger/Cargo Arrangements. It should be noted that the basic assumptions used to establish smoke quantity and air change rates were based on typical passenger carrying arrangements. For combination passenger/cargo ("combi") arrangements, the same approach would tend to yield higher initial concentration values and therefore a higher rate of air change required to maintain an FED below 1. This is because the volume of the cargo compartment is large with respect to the volume of the passenger compartment. For the purposes of this requirement however, the assumptions made to arrive at the required air change rate for passenger airplanes are considered acceptable for combi airplanes and the methods of (a) and (b) of this section would be acceptable for those airplanes as well.

Appendix 1

1. **BASIC PRINCIPLES**: Determining an acceptable means of compliance requires knowledge of several parameters, as well as establishing suitable success criteria. The following discusses each of the relevant parameters and the means of establishing environmental conditions that will prevent incapacitation, defined by an FED of 1, as explained below.

   a. Hazard parameters. The hazards to passengers from cabin smoke can be characterized by the toxic gases and the time variation of their concentrations. If it is assumed that the airflow patterns within the passenger cabin maintain a steady outflow with uniform mixing of fresh air, then the variation of smoke concentration over time will be in the form of an exponential decay, as shown in chart 1 of this Appendix, and is described by the equation:

   $$C(t) = C_o e^{-(t/\tau)}$$

   Where,
   C(t) is percentage concentration of smoke, by volume, as a function of time
   C_0 is the initial percentage concentration of smoke, by volume
   t is passenger smoke exposure time (minutes)
   τ is the time for one cabin air change (minutes)

   A number of simplifying assumptions have been made in defining the relationship as noted above. For example, the effects of diffusion within a space are not considered, as these will vary from airplane to airplane and significantly complicate the calculation. However, preliminary analyses, considering diffusion, indicate that the simplified approach correlates sufficiently well to define a compliance approach.

   Assuming the passenger-cabin air change rate, τ, is known, the initial concentration will establish the concentration reductions for all other times. This concentration model describes the time relationship for a specific gas in a given volume. Each gas that is considered hazardous is assumed to behave in the same manner. Carbon monoxide and carbon dioxide are two consistently common byproducts of combustion and are used to characterize all hazardous byproducts from a fire. The time variation in concentrations of each is modeled separately to assess their combined effect on human tolerance. Establishing the basis for this initial concentration level is pivotal to the basic problem of smoke evacuation and the following provides the rationale used:

      (1) A review of available test data reveals that the most relevant data relates to cargo-compartment fires. The FAA has data available to characterize the concentrations of smoke and gases produced by such a

fire at the time it was extinguished. The cargo-compartment fire is considered a good basis for assessing hazards since it can be readily detected and extinguished, if a surface fire. In addition, the cargo compartment is considered a possible location for a device of this type, so it is appropriate to use data that is derived from cargo-compartment fires.

(2) In order to quantify the initial smoke density in passenger cabins from test results, it is necessary to equate the smoke data from cargo compartments to passenger cabins. This can be accomplished by compensating for the volume differences between the two. For example, if the initial concentration for a particular gas were 2% by volume in a 100-ft^3 cargo compartment, this would translate to a concentration of 0.2% in a 1000-ft^3 passenger compartment. However, because the explosive device is a localized event, it is likely that the smoke and gases would initially be restricted to a confined area of the cabin before they had time to disperse. While the resultant distribution of smoke and gases over time would likely involve the entire cabin, by treating the local area as an independent volume from which the smoke and gases must be evacuated, a conservative assessment of the hazard can be made. It is therefore assumed that the smoke and toxic gases are confined to $1/4^{th}$ of the cabin volume. So, in the example above, the initial concentration used for the hazard assessment would be 4 times 0.2%, or 0.8% by volume. This initial smoke concentration value, C_0, would then be used to calculate the concentration decay over time.

(3) Based on the test data and this volumetric relationship between cargo compartments and passenger-cabin size, FAA has determined that the initial combined volumetric concentrations of 0.59% carbon monoxide and 1.23% carbon dioxide be assumed in the passenger cabin when determining occupant protection against smoke incapacitation. These initial conditions are also contained in Appendix 2.

(4) There is no distinction between smoke, its constituents, and other potentially hazardous products of combustion in terms of their dissipation rates over time. That is, all particulates and gases are assumed to maintain their relative percentages within the smoke, even though their absolute percentages relative to the cabin air diminishes with time.

b. Passenger Hazard Characterization. There are numerous methods available to assess hazard and numerous variations on each of them. One generally accepted method is a "Fractional Effective Dose" (FED) hazard model. FED considers the cumulative effects of varying exposures over time to various contaminants. There are several variations of FED that may include temperature, smoke density and various gases. However, these parameters largely depend on, among other elements, the associated products of combustion for any particular fire. Since there is no way to predict the fuel for the fire, it is necessary to use representative data to establish a standard. The FED is described in the general form:

$$FED = \Sigma_1^n FED_i$$

Where FED_i is the fractional effective dose for a given hazard, with *n* representing the total number of hazards considered. Each constituent product of combustion has its own relationship to toxicity over time. An FED value of 1 or greater would indicate, for these assessments, passenger incapacitation. Using data from the FAA's fire testing program, carbon monoxide has the greatest contribution to FED. Carbon dioxide causes increased respiration rates, which magnifies the effect of carbon monoxide. These two parameters tend to dominate the FED calculation for the data used by the FAA in developing this guidance. See chart 2 in this Appendix for graphical examples of FED calculations. Further information on the concept of FED can be found in the Society of Fire Protection Engineers "Handbook of Fire Protection Engineering" and in FAA report DOT/FAA/AR-95/5, "Toxicity Assessment of Combustion Gases and Development of A Survival Model", dated July 1995.

Example Curves:
Chart 1 shows an example of an exponential decay of hazardous gases over time and the change in oxygen concentration that results.

Chart 2 shows an example of both an acceptable and an unacceptable FED profile while using the same baseline data. Note that a small increase in time for an air change is sufficient to drive FED above 1. Also included is an FED curve showing the effect of two minutes of protective breathing equipment used by passengers before exposure to the cabin air.

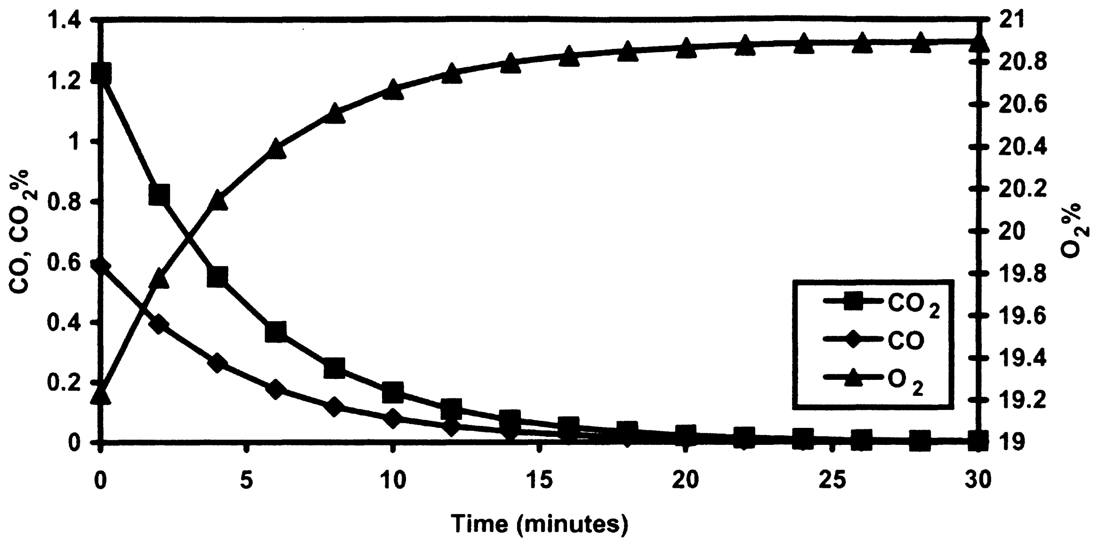

Chart 1. Decay of Toxic Gas Concentrations with an Associated Increase in Oxygen Concentrations Over Time From a Smoke Evacuation With a Five-Minute air Change Rate.

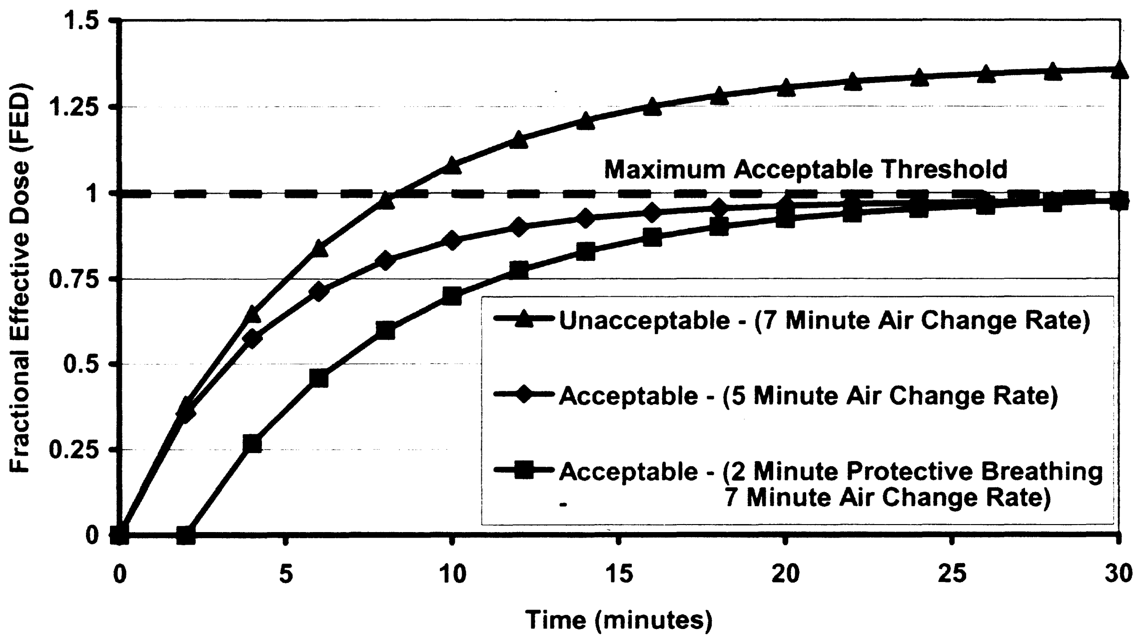

Chart 2. FED Accumulation Curves for a Smoke Evacuation With a 7 Minute Air Change Rate (Unacceptable), a 5 Minute Air Change Rate (Acceptable), and a 7 Minute Air Change Rate Using Protective Breathing Equipment for the First 2 Minutes (Acceptable).

Appendix 2
Initial Concentration Data

The FED curves in Appendix 1 are based on empirical data from full-scale fire tests. In the absence of other rationally generated data, the initial concentrations that should be used in assessing alternative methods of compliance are shown in the right-most column (Initial Concentration in Cabin Area)

Constituent	Initial Concentration From Tests (% Volume)	Initial Concentration in Cabin Area (% Volume)
CO	1.20	0.59
CO_2	2.50	1.23
O_2	17.50	19.23

The data for initial concentrations in the cabin area are based on the volumetric relationship between passenger compartments and cargo compartments. While this relationship is not a constant among all airplanes, there is a range of values and the FAA has selected an acceptable value within this range on which to base these concentrations.

[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 25, 121, and

[Docket No. FAA-2001- ; Notice No.]

RIN 2120-AG91

TITLE: Security related considerations in the design and operation of transport category airplanes.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This notice proposes to amend the regulations governing transport category airplane design to implement certain requirements related to security, many of them recently adopted by the International Civil Aviation Organization (ICAO). These include improved design features and protections for the cabin, flight deck, and cargo compartments from the effects of an explosive device, including fire, smoke, and noxious vapors. The operating requirements would also be amended to require that operators establish a "least risk bomb location" on all airplanes affected and to ensure incorporation of certain information into the operators' relevant manuals.

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

ADDRESSES: Address your comments to the Docket Management System, U.S. Department of Transportation, Room Plaza 401, 400 Seventh Street, SW., Washington, DC 20590-0001. You must identify the docket number FAA-2003-XXXX at the

[4910-13]

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ADDRESSES: Address your comments to the Docket Management System, U.S. Department of Transportation, Room Plaza 401, 400 Seventh Street, SW., Washington, DC 20590-0001. You must identify the docket number FAA-2003-XXXX at the beginning of your comments, and you should submit two copies of your comments. If you wish to receive confirmation that FAA received your comments, include a self-addressed, stamped postcard.

You may also submit comments through the Internet to http://dms.dot.gov. You may review the public docket containing comments to these proposed regulations in person in the Dockets Office between 9:00 a.m. and 5:00 p.m., Monday through Friday, except Federal holidays. The Dockets Office is on the plaza level of the NASSIF Building at the Department of Transportation at the above address. Also, you may review public dockets on the Internet at http://dms.dot.gov.

FOR FURTHER INFORMATION CONTACT: Jeff Gardlin, FAA 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, facsimile (425) 227-1149, e-mail: jeff.gardlin@faa.gov.

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 also are 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. FAA-2001-XXXX." The postcard will be date stamped and mailed to the commenter

Availability of Rulemaking Documents

You can get an electronic copy using the Internet by taking the following steps:

(1) Go to the search function of the Department of Transportation's electronic Docket Management System (DMS) web page (http://dms.dot.gov/search).

(2) On the search page type in the last four digits of the Docket number shown at the beginning of this notice. Click on "search."

(3) On the next page, which contains the Docket summary information for the Docket you selected, click on the document number of the item you wish to view.

You can also get an electronic copy using the Internet through FAA's web page at http://www.faa.gov/avr/arm/nprm/nprm.htm or the Federal Register's web page at http://www.access.gpo.gov/su_docs/aces/aces140.html.

You can also get a copy 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. Make sure to identify the docket number and notice number of this rulemaking.

Background

In the past 30 years, more than 60 explosive devices have detonated onboard airplanes worldwide, causing the loss of a substantial number of lives. These proposals were prompted by international requirements in Annex 8 of the Convention on International Aviation, which gained considerable impetus from the destruction of a Boeing Model 747 airplane near Lockerbie, Scotland on December 21, 1988, by a terrorist bomb. At the time of the Lockerbie accident, ICAO was already considering several proposals related to the incorporation of security into the design of airplanes. The proposals had been submitted to ICAO by the International Federation of Airline Pilots

Association (IFALPA). When the Lockerbie accident occurred, ICAO was in the process of soliciting comments from certain member countries and organizations. On September 11, 2001, the United States experienced terrorist attacks when airplanes were commandeered and used as weapons. These actions further demonstrated the need to address security issues during the airplane design phase. On January 10, 2002, the FAA issued Amendment 25-106 to require that the flight-deck doors on transport category airplanes be resistant to forcible intrusion, including ballistic penetration (67 FR 2117, January 15, 2002). The amendment was issued in accordance with the requirements of Public Law 107-71, the Aviation and Transportation Security Act (the Act). The FAA subsequently extended those same requirements to any barrier between the flight deck and occupied areas by amendment 25-XX on xxxxxx.

Airworthiness Requirements

Annex 8 of the Convention on International Civil Aviation, entitled "Airworthiness of Aircraft," contains airworthiness requirements for airplanes over 12,500 pounds in certificated takeoff weight. It is applicable to airplanes intended for the carriage of passengers, cargo, or mail in international air navigation. The Annex 8 provisions may be applied to an operator of a transport category airplane by a national authority in order to obtain landing rights at international airports. Typically, Annex 8 standards are not applied directly to the design of an airplane, but are intended to be implemented into the airworthiness codes of ICAO member countries. Once implemented, airplane certification by a member country implies compliance with Annex 8.

The U.S. airworthiness standards for transport category airplanes are contained in 14 CFR part 25 (commonly referred to as part 25 of the Federal Aviation Regulations (FAR)). Manufacturers of transport category airplanes must show that each airplane type design complies with the relevant standards of part 25. These standards apply to airplanes for which a U.S. type certificate is sought, whether manufactured within the U.S. or manufactured in other countries and imported to the U.S. under a bilateral airworthiness agreement.

The requirements that apply to air carriers and commercial operators of transport airplanes are contained in 14 CFR part 121 (commonly referred to as part 121 of the FAR). When a new rule pertains to the stipulation of information, procedures, or equipment for use by flight crews, it is normally set forth as an operational requirement in part 121 and made effective within 30 days of adoption. The United States, as well as the European countries, are signatories to the Convention on International Civil Aviation and are obligated to implement the Annex 8 rules into their national airworthiness codes to the extent practicable. At the same time, FAA and JAA consider harmonized standards between the United States and Europe to be a high priority. Harmonization is achieved through a joint FAA and JAA activity using the Aviation Rulemaking Advisory Committee (ARAC).

The Aviation Rulemaking Advisory Committee

FAA formally established ARAC on January 22, 1991 (56 FR 2190), to provide advice and recommendations concerning the full range of FAA's safety-related rulemaking activities. This advice was sought to develop better rules in less overall time using fewer FAA resources than were previously needed. The committee provides the opportunity for the FAA to obtain firsthand information and insight from interested and affected parties regarding proposed rules or revisions to existing rules.

In 1999, ARAC established a Working Group of airplane design specialists and aviation security specialists from the aviation industry and the governments of Europe, the United States, Brazil and Canada. The Working Group was tasked to develop harmonized security related design provisions based on Amendment 97 to Annex 8 of the Convention on International Civil Aviation.

The task included establishing the overall scope and applicability of the proposed national requirements according to the practicability of implementing each individual requirement and also considered the security risk associated with the airplane type and operation. The Working Group developed specific recommendations for implementing security provisions into the design of transport category airplanes. The ARAC approved those recommendations and proposed them for FAA rulemaking. The FAA has accepted ARAC's recommendations and the proposed rulemaking contained in this notice follows from those recommendations and the activity of the Working Group.

Development of This Proposal

With the impetus of the Pan American Lockerbie accident, ICAO formed a new study group on February 16, 1989, known as "Incorporation of Security into Aircraft Design" (ISAD). The study group was tasked to consider existing proposals and recommend standards related to incorporation of security in design for Annex 8.

The ISAD study group was made up of representatives from the airworthiness authorities of the United States, United Kingdom, France, Germany, and Russia as well as representatives from the IFALPA, the International Coordinating Council of

Aerospace Industries Associations (ICCAIA) and the International Air Transport Association (IATA). Recommendations of the study group resulted in standards on the following subjects in Annex 8:

(1) Survivability of systems,

(2) Cargo compartment fire suppression,

(3) Smoke and fumes protection (cabin and flight deck),

(4) Least risk bomb location and design,

(5) Pilot compartment small arms and shrapnel penetration protection, and;

(6) Interior design to deter hiding of dangerous articles and enhance searching.

The proposals were submitted to all ICAO member countries for comment, and with a few minor suggestions and changes, were accepted. The new rules were ultimately adopted in Amendment 97 to Annex 8 on March 12, 1997 and member states subsequently indicated their approval. Changes to Annex 8 became effective three years after adoption. The rule mandating identification of a least risk bomb location was made effective immediately since it was a standard practice for many years and has been applied more as an operational rather than a design provision.

Subsequent to the issuance of the initial task for the ARAC Working Group to implement the new ICAO requirements, but prior to September 11, 2001, there were several incidents of flight deck intrusion by aggressive passengers attempting to interfere with the flight crew in performing their duties. Based on these incidents, the FAA further tasked the Working Group **(66 FR 31273, June 11, 2001)** to propose additional requirements that would improve intrusion resistance of the flight deck without interfering with other requirements. The results of this effort facilitated the rapid adoption of amendment 25-106.

Discussion of the Proposal

Applicability

The applicability of this proposal is intended to achieve the most effective safety improvement with regard to security threats while also achieving an equivalent level of safety across different classes of transport airplanes, taking into account the threat, the practicability of implementation, and additional mitigating factors. The application of the security design requirements to specific classes of airplanes (in terms of both size and operation) would result in a significant safety improvement, while, for other classes, no appreciable safety improvement would be achieved, even with considerable effort and expense.

In establishing applicability, FAA recognizes that differences exist in airplane operations between commercial (passenger and cargo) and private use. FAA has determined that these new requirements should be applicable to transport category airplanes.

Airplane operations

There are three types of transport category airplane operations to be considered: commercial passenger, commercial cargo, and private use.

Commercial passenger. Significant measures are currently in place to limit the risks associated with boarding passengers. However, even the best screening systems and procedures are not perfect and without additional precautions, the possibility of a device being placed on board an airplane increases with the number of passengers. Furthermore, historical evidence has shown that larger airplanes are more attractive targets. It is therefore appropriate to focus on larger passenger airplanes when considering additional security in airplane designs.

Commercial cargo. Commercially operated cargo airplanes provide a means for indiscriminate public access to airplane cargo compartments and present different risks than those associated with commercial passenger airplanes. Furthermore, cargo airplanes are more difficult to target than passenger airplanes. Cargo loadings, distributions and placements are mostly random and not under control of the person intending interference. Smaller cargo airplanes are unlikely to be specifically targeted. However, the same cannot be said for the larger cargo airplanes and the probability of a dangerous object being loaded on a larger capacity cargo airplane is inherently greater. If effective, these dangerous objects could create considerable third party damage.

Private use. Private-use airplanes vary from very small to very large and are used in the transport of heads of state, business leaders, or ordinary citizens. Private use airplanes do not provide commercial access by passengers or cargo and are not typical targets of terrorist acts. Access to these airplanes is limited to specific individuals as permitted by the owner/operator. Due to this inherently higher level of safety in regard to the exposure to a threat, the class of private-use airplanes (both small and large) would not gain a significant safety improvement with respect to the security concerns by implementing the proposals. Therefore, the private-use airplanes will not be considered further and the security proposals would be applied only to airplanes designed for use in commercial operations involving cargo or passengers.

The FAA is in the process of developing rulemaking to address private-use transport-category airplanes. It is the intent of that rulemaking activity to consider the differences between commercial and private use and propose standards related to occupant protection that are specific to private-use airplanes. Those standards would not include the majority of the newly proposed §25.795 requirements for the reasons discussed above, although it is likely that many of the affected airplane types would incorporate these provisions, since they would be operated both commercially and privately. Since the two rulemaking projects are separate, it is highly likely that they will not be completed at the same time. Therefore, if the final rule that results from this proposal is issued first, the regulations on private use will be issued with the above noted exclusion. However, if the regulations on private use are issued first, the final rule that results from this proposal will include an amendment to the private use requirements to add the exclusion.

Airplane size

Each of the airplane operations can be divided into small and large airplane types. The main issues to be considered in the applicability determination are the operations to be included and a definition for "small" and "large" airplanes. A measure, such as passenger seating and/or weight, is needed to provide a dividing line between large and small transport category airplanes, according to the security risks associated with size.

The smaller airplanes (both cargo and passenger) are subjected to a much lower threat for two reasons. First, based on accident/incident reports covering the last 30 years, the smaller airplanes are considerably less likely to be a target of terrorist activity. Second, from a simple probability point of view, there is less risk of a device getting on board when the total number of boarding passengers is smaller and the same degree of screening is applied to each passenger. This risk rationale is also valid for smaller cargo carriers since they carry a smaller amount of cargo.

There is already a regulatory precedence in applying security measures to transport airplane operations. Chapter XII of CFR 49 provides thresholds for implementation of additional security measures associated with an approved security program, such as passenger screening.

For the identification of a least risk bomb location (LRBL), manufacturers have previously established this information and provided it to operators for many years. With one exception, this voluntary compliance has been for airplanes with 61 seats or more and consequently most transport category airplanes in this category have a least risk bomb location identified. Performing the LRBL procedures in flight necessarily takes time. But the route structure for smaller sized airplanes normally allows an emergency landing at airports within 30 minutes or less. The time involved in performing the LRBL procedures can easily exceed this time and it adds additional risks to implement. Therefore, an immediate landing without accomplishing the LRBL procedure is the safer practice when a landing can be accomplished quickly. This contrasts with the route structures of larger airplanes that can find themselves hours away from a suitable airport. Due to this operational difference between the smaller and larger airplanes, it is believed that there would be little, if any, safety improvement derived from attempting to carry out LRBL procedures in flight for airplanes with 60 seats or less.

The FAA has reviewed passenger capacity and airplane gross weights as distinguishing parameters in assessing, applicability of these proposals and has concluded that both need to be addressed separately when defining an adequate and practical standard. Based on the historical record, and based on existing practice, the FAA has concluded that these proposals should apply to airplanes that are type certificated with a maximum passenger capacity of greater than 60, or a gross weight of greater than 100,000 pounds. An airplane with a maximum gross weight of 100,000 pounds would be comparable to the 60-passenger level for a passenger airplane and is chosen to include the larger cargo airplanes because of their significant third party hazard (ground victim and property damage potential). This also addresses airplanes of significant size that carry both passengers and cargo ("combi" airplanes) since the passenger capacity alone may not impose these requirements. ICAO has also recently amended the applicability of its standards to address airplanes of greater than 60 passengers and 45,500 kg (100,000 lbs.) based on the inputs of member states.

Based on this review, there is sufficient basis in past practice and regulatory precedence to consider airplanes with more than 60 passengers to be at a risk sufficient to propose additional security standards. The potential of a significant threat to smaller airplanes is sufficiently low to justify not applying the new proposals to them. Nonetheless, FAA has considered whether application of these proposals to smaller airplanes would improve safety and concluded that the benefits that might be derived are questionable and would require high costs to implement.

Accordingly, this proposal would add a new § 25.795 (b)-(f) addressing additional measures for the incorporation of security into transport airplane designs. Because of the relatively lower security risk for smaller transport category airplanes, the security design rules would be limited to transport airplanes in commercial operations (passenger or cargo) with a passenger seating capacity over 60 or a maximum gross takeoff weight over 100,000 pounds.

FAA has already adopted other security requirements related to the flight deck in Amendments 25-106 and 25-xxx and are published in § 25.795 (a).

Smoke / Fire Safety

Flight deck

Section 25.795(b)(1) would require that the flight deck design limit penetration of smoke, fumes, and noxious vapors generated by explosives, incendiary, or fires anywhere on the airplane other than the flight deck. An effective approach that would satisfy the intent of this proposal is to provide for ventilation and pressurization systems that would direct smoke and gases away from the flight deck. Crew rest and other areas that are only accessible from the flight deck would be considered part of the flight deck.

The regulations currently address the removal of smoke from the flight deck but do not specifically address the penetration of smoke into the flight deck, except as originating in a cargo compartment. This proposal would add the additional requirement to include smoke generated anywhere in the fuselage, such as in equipment or passenger compartments. It is expected that the most viable means of compliance will be to maintain controlled airflow into and out of the flight deck while at the same time providing a slight positive pressure differential between the flight deck and surrounding areas. Means of demonstrating this are discussed in draft AC 25.795-XX. In addition, Advisory Circular 25-9A, "Smoke Detection, Penetration and Evacuation Tests, and Related Flight Manual Procedures," would be revised to reflect means of compliance with this requirement if smoke testing is elected.

Passenger cabin

Section 25.795(b)(2) would require that there be means to remove smoke, fumes and noxious vapors, from the passenger cabin, such as might be produced by an explosive or incendiary device. It is the intent of this requirement that, after such a device is activated, smoke within the passenger cabin does not reach a level that is incapacitating. There are currently no requirements relating to evacuation of cabin smoke or toxic gases, regardless of their source. Obviously, the levels that could produce incapacitation are dependent on the specific gases that are present, their concentrations, as well as the duration of exposure. In order to standardize the application of this requirement, FAA has taken these variables into account and arrived at an approach that does not require detailed knowledge of a specific device.

FAA has determined that the fire that results from an explosive or incendiary device has more influence on the levels and types of gases present in the cabin than does the device itself. Using available data from various full-scale fire tests to determine the quantity of smoke and gases present, the FAA has taken a cargo compartment fire and subsequent quantity of smoke as the "standard." The quantity of smoke and gases present is a function of the volume of the compartment and the amount of material present in the compartment. If this quantity of smoke and gas is then assumed to be dispersed (discussed below) in the passenger cabin, it is possible to calculate the frequency of air changes necessary to prevent the fire byproducts in the cabin environment from reaching incapacitating levels. In this case, incapacitation is calculated using a Fractional Effective Dose (FED) model, which considers the types of gases and duration of exposure in order to determine whether a given atmosphere will produce incapacitation. Using this approach, FAA has determined that passenger-cabin occupants must be protected from incapacitation from the combined volumetric concentration of 0.59% carbon monoxide and 1.23% carbon dioxide. The combined effect of CO and CO_2 on passenger cabin occupants is meant to signify the short-term threat represented from all hazardous fire products generated when an explosive or incendiary device is discharged. As a result, the combined concentrations of CO and CO_2 specified in 25.795(b2) cannot be compared with the individual concentrations of CO or CO_2 specified in FAR 25.831(b).

For the purposes of this requirement, the passenger cabin begins at the flight deck bulkhead and ends at the aft passenger bulkhead (or other bulkhead separating the passenger cabin from another definable volume, such as a cargo compartment), bounded at the top and bottom by the cabin floor and ceiling/stowage-bin contour. Crew rest and other areas that are only accessible from the flight deck would be considered part of the flight deck. Isolated areas not occupied for takeoff and landing, on other than the passenger deck, such as overhead cabin crew rests, would not be included in the passenger cabin. This method is explained more fully in proposed AC 25.795-XX and permits a compliance finding on the basis of the ability of the airplane to rapidly change the cabin air and is valid regardless of the size or configuration of the airplane.

While it cannot be assumed that the smoke and gases that would be produced as a result of an explosive device would be uniformly dispersed throughout the passenger cabin, it is also unreasonable to assume that the smoke does not disperse before the fire is extinguished. As an approximation for the expected variability in smoke dispersion, it is assumed that the smoke and gases are initially concentrated in any 1/4 portion of the total cabin volume. The other regions of the cabin would necessarily be and remain less hazardous than the area of initial concentration and therefore it is sufficient to ignore those areas for further calculations. Since the rate of air change is applied to the entire passenger cabin, this is considered a conservative approach.

If it is assumed that the airflow patterns within a passenger cabin will create a constant mixing, as well as an evacuation of the air, then removal of these smoke products will follow an exponential decay pattern. The initial evacuation of the smoke will thus be rapid and the FED will quickly reach a maximum value and not increase appreciably after approximately two air changes. Proposed AC 25.795-XX provides a more detailed discussion of the method used to determine the air change necessary to keep the FED below the incapacitation threshold of 1 and the rationale for the initial conditions.

While the relationship of cargo volume to passenger compartment volume is not the same for all airplanes that would be affected by this proposal, the FAA has assessed this relationship before establishing these guidelines so that the approach will provide valuable protection for all airplanes. However, it would also be possible to address this proposal using other means, for example, a protective device for each passenger, if an applicant chose to take that approach. A combination of smoke evacuation and protective devices could also be utilized to achieve the same level of safety.

Least risk bomb location

Section 25.795(c) would require that a "least risk bomb location (LRBL)" be established as part of the airplane design. The LRBL has historically only been considered after the design was completed. This proposal would make the LRBL become a part of the design process in order to improve the level of safety.

The LRBL usually carries with it operational procedures to improve the overall effectiveness in reducing the threat. For example, reducing or eliminating cabin differential pressure greatly reduces the explosive effects on airplane structures. It is expected that these mitigating procedures will continue to be part of and complementary to the LRBL design.

Design features should provide a location within the cabin structure where a suspect explosive device could be placed by crewmembers to significantly reduce the threat from explosion. On airplanes with more than one passenger deck, more than one LRBL may be desirable. In addition to the physical location and design of the LRBL itself, consideration of systems in the vicinity of the LRBL is part of this assessment so that critical systems are either kept out of the immediate vicinity of the LRBL or are protected. An acceptable separation distance or types of protection are provided in draft AC 25.795(c). It is also recognized that there may be instances a suspect item cannot be moved to an LRBL and information related to this situation and all other anticipated conditions would be included in the information supplied to operators, as required by § 25.1585 for emergency procedures. Section 121.135(b)(24) would require that information regarding the location and use of the least risk bomb location be contained in the appropriate manual and be readily available for the crew. This is an important provision since the LRBL will not be effective unless the crew have the necessary information on where it is and how to use it. Such information should have restricted access, however.

Draft Advisory Circular 25.795-xx addresses the LRBL considerations in more detail and describes acceptable means of compliance.

Cargo compartment fire suppression

Section 25.795(b)(3) would require that cargo-fire suppression systems be designed to take into account a sudden and extensive fire, such as might result from an incendiary or explosive device. Aside from the basic survival of the suppression system from such an event, the extinguishing agent must also retain its capability for suppressing fires from these threats.

The ICAO standard recognizes that Halon 1301 extinguishing agents satisfy the intent of this requirement from the standpoint of suppression. However, Halon 1301 production has been banned because of environmental concerns as a chemical that contributes to depletion of the ozone layer. Although there are existing stores of Halon 1301 and its supply is not immediately a concern, Halon 1301 will not be available indefinitely. The FAA has been working with the International Halon Replacement Working Group to establish minimum performance standards for new suppression agents that will provide capability "equivalent" to the existing Halon agents. These minimum performance standards will be published and adopted by the FAA as guidance for future agent approvals. Therefore, it is expected that this proposal will have no effect on the type of agents that will be used in the future.

In order for the suppression agent to be effective, the system must remain fully capable of discharging its agent following an explosive event. The FAA has reviewed previous test data in order to make an assessment of the vulnerability of suppression systems to damage from such devices. These data indicate that the systems are basically unaffected by the over-pressure produced by an explosive device. The data do show, however, that the systems may have a vulnerability to secondary loading by panels and supporting structure that are affected by over-pressure and direct impact damage from the device fragments or cargo compartment contents. Since storage vessels for the suppression agent are usually outside the compartment, it is the distribution lines and nozzles that may be more vulnerable.

There may be several ways to address this concern. Providing a distribution system that has redundancy and adequate separation would be an acceptable approach to compliance with this requirement. That is, separate storage vessels for the suppression agent with an independent distribution system and sufficient separation could be an acceptable approach. Alternatively, shrouding or otherwise hardening the lines could be acceptable, assuming the mounting scheme could accommodate secondary loading as mentioned above. Based on review of test data, the shielding would have to protect against fragments of 0.5-inch diameter traveling 430 feet per second.

With respect to secondary loading, the threat to the system is from large displacements that might occur on panels or structure to which the systems are attached. In reviewing test data, local structural displacements up to 6 inches are possible within an airplane for a survivable event. Therefore, system attachment arrangements would also have to tolerate 6-inch local displacements and each system component must still function.

Proposed AC 25.795-XX provides additional guidance on the level of protection needed. Only components within the cargo compartment or separated from the cargo compartment only by the cargo compartment liner, would have to be addressed. The suppression-agent storage vessel is not required to have additional protection if it is remote from the compartment. The storage vessel is considered remote if it is outside the compartment and protected by barriers that meet the above criteria. This is explained further in draft AC 25.795-XX

The cargo compartment fire detection system will not require explosive protection. FAA has determined that if the event is small, there will be no effect on the fire detection system. If the event is large enough to affect the integrity of the fire detection system, the passengers or crew will notice the event. Then, if smoke or odors are present, the crew will know to discharge suppression agent to the affected area. In addition, the failure of an affected fire detection system must be annunciated to the crew for the specific compartment. As a result, sufficient warning is available to the flight crew to preclude the hardening of the fire detection systems.

It should be noted that this requirement would effectively prohibit the Class B cargo compartment, as currently embodied in the regulations for the airplanes affected by this proposal. Entry into the compartment to fight a fire after an explosive event would not be considered practical. The FAA is also considering other rulemaking to directly modify the requirements for a class B cargo compartment that would essentially permit only very small compartments. This type of compartment is unlikely to exist on the airplanes that would be affected by this proposal.

System safety

Section 25.795(d) would require that flight-critical systems be designed and separated such that airplane survival is maximized after any event that causes airplane system damage. This proposal includes, but is not limited to damage due to an explosive device. The intent of the proposal is to maximize the ability of critical systems to survive any event through design means that will shield, separate or provide redundancy to the extent practicable in the design. In order to provide a reasonable means of achieving this, a "damage based" approach was taken. In this approach, the systems contained within a certain volume are considered to be destroyed and the ability of the airplane to continue safe flight and landing is assessed. It is important to note that this approach is for the systems' functionality and is not related to any structural damage. For the purposes of addressing this requirement, any structural damage that might result from the "event," whatever it might be, is not relevant. This requirement only addresses damage to systems and their effect on safe flight and landing.

A similar proposal related to *structural capability* was introduced by NPRM 75-31, but was modified in § 25.365, Amendment 25-54. Nonetheless, that NPRM does illustrate that the issues have been considered before and that a damage based approach is reasonable. In this case, the formula used in § 25.365 would be used to derive a sphere, which would be used to establish the volume within which loss of system function must be considered. The spherical volume would be applied within the fuselage as follows: anywhere within cargo-compartment volumes plus one half of the spherical volume extending beyond the cargo-compartment liners, and from the bulkhead(s) separating the passenger cabin from the flight deck to the aft cabin bulkhead, with half of the diameter penetrating into those bulkheads. The sphere is not applied into areas outside the fuselage.

The regulation also proposes an upper limit on the sphere size. This is for practical reasons. While it is theoretically possible to continually increase separation of systems the larger the fuselage diameter, there comes a point of no benefit. That is, the type of event necessary to produce that amount of damage would necessarily have other consequences that would be catastrophic in their own right. Such a standard would not be cost effective and could lead to complications in system design that were actually a greater safety risk than the risk of the event. For example, separations that would result in acute changes in direction of control cables could complicate their function and could result in additional failure or jamming modes.

Conversely, the equation permits successively smaller considerations of separation as the fuselage diameter decreases. At some point, the volume is so small that there is no practical value to the requirement. However, in consideration of the proposed airplane applicability for this regulation, the FAA is not proposing that there be a lower limit on the sphere. The smallest currently manufactured airplane that would be affected by the regulation results in a sphere of about 20 inches in diameter. This airplane has a fuselage diameter in excess of eight feet, so it would generally be possible to separate systems by more than 20 inches. Yet, because of the confined spaces on an airplane of this size, it might not be possible to apply a larger sphere to all parts of the airplane. It should be noted that use of the sphere is a tool to measure the effectiveness of the separation but is not intended to limit separation to the size of the sphere. The proposal is intended to *maximize* separation in order to improve survivability of systems in the aftermath of some event. Conversely, airplanes in general have confined areas, where it might not always be possible to apply the sphere. This is accounted for in the proposal by providing an exception for areas where it is impracticable to apply the sphere. Generally, this will be at the extreme ends of the fuselage, or where there are concentrations of systems that are essentially unavoidable, such as electronic equipment bays or portions of the flight deck. In those instances, other design measures, such as shielding may be appropriate for regions where the sphere or half sphere is to be applied. It should also be noted that this proposal does not introduce any new requirements for system redundancies. Systems, for which redundancy is not currently required, would not have to be made redundant on account of this requirement.

Interior security

Section 25.795(e) would require that the design of the interior deter the easy concealment of weapons, explosives or other objects and lessen the likelihood for oversight during a search. Under current ICAO and FAA requirements, it is necessary to search the airplane interior under certain operational conditions. In order to improve the reliability of such searches, Amendment 97 to ICAO Annex 8 requires that the need to search the interior be considered during the design phase. Transport category airplanes contain many areas that are not readily visible, but are accessible with relative ease. For example, under-seat areas, armrest tray storage areas, video cavities, in-flight entertainment boxes, telephone cavities and seat cushions may be areas of the airplane that are not practically accessible for a search but could provide an opportunity to secrete a device. Other such areas could include the areas above the ceiling or behind sidewall panels. It is the intent of this requirement that there either be no access to such areas by persons using standard tools or, if access is possible, that it be obvious.

An approach in eliminating hidden devices would be to reduce the number of areas where a device could be hidden. This might be accomplished through the use of locks or specialty tools for access, or by simply eliminating these areas from the design. This would effectively reduce the scope of the search since these areas would no longer need to be considered. A second approach would be to improve the ease for searching. That is, provide design features that allow a search to be carried out faster and easier, such as bare and open surface areas or mirrors that make compartments more visible. A potential drawback of the first approach is that compartments or areas made more difficult to access then become less likely to be searched. While this approach may be the best one in some cases (for example, making fastener removal on compartment panels more difficult than with standard fasteners), the FAA has chosen to focus on ease of searching as the most generally applicable means of compliance. By ensuring that the search operation is easier for those areas where opportunity is greatest, then more time will be available to search those areas that are more difficult to breach and consequently more difficult to inspect. In this way, the overall search will be more effective. Because of the difficulty in quantifying a search in terms of its effectiveness, the FAA has had to take a more prescriptive regulatory approach for this requirement. While a performance-based standard would be optimal, the variation in airplane interiors from one type to another and from one customer to another within types is so significant as to make a single performance standard impractical. Guidance on compliance with each specific provision is given in proposed AC 25.795-XX, however, the following is a brief description of the intent for each item.

For life preservers, it is intended that the stowage pouch or its location be easily inspected for evidence of tampering. Life preserver accessibility requirements will, of course, have to be met. For literature pockets (commonly in seatbacks), it should be possible to rapidly inspect the pocket visually by a person using only one hand. This could be enhanced by making the pocket out of netting or other material that can be seen through. At some locations in the airplane, it may not be practical to inspect the literature pocket with one hand. This is discussed further in draft AC 25.795-XX.

Seat cushions should be made to be quickly removed or displaced with one hand so they and the area beneath them can be inspected for any tampering. For galley and lavatory access doors, the intent is to provide a lock that prevents access or a seal that will positively indicate if tampering has occurred. Either approach would be acceptable.

The intent for overhead stowage compartments is to make them easy to inspect and avoid interior spaces that are hidden from view and prevent gaps between the compartments and cabin interior panels. A person standing in an aisle should be able to determine whether an object is in the compartment without resorting to a ladder or other such means. This may require a mirror or reflective surface within the stowage compartment to facilitate viewing.

As with the rest of the airplane, crew areas, including crew rests, if not placarded and secured when not in use on the ground, should incorporate features that make searching simple and easy. For example, stowage compartments should be limited or eliminated altogether, if feasible. Gaps surrounding bunks, seats and fixtures (including sidewalls, bulkheads etc.) should be avoided.

It is recognized that certain removable panels are necessary for maintenance access. However, particularly inside lavatories, these panels should be fitted with fasteners that require tools that are not readily available to the public for removal or other fixing means that will prevent access to the areas behind such panels, except to authorized personnel. Tamper evident devices may also be used. Note that replacement of amenities is not considered "maintenance access" for the purposes of this proposal and do not need access limiting or tamper evident devices. However, the number of convenience compartments should be minimized to provide for ease of inspection.

In addition, the toilet can be an easy place to dispose of and thus conceal a device. In some cases, toilet designs already incorporate features that minimize the size of a device that can be introduced and flushed into concealment. The vacuum-waste system is one example. The proposal would make this, or other such means mandatory.

Finally, it is the intent of this proposal that stowage compartments, including those in galleys, lavatories and closets, be easily inspectable. That is, such compartments should not require excessive effort to search. This could be achieved by a regular shaped compartment (no hidden areas), compartments located at or below eye level, clearly marking compartments as to their usage or any combination of the above. Compartments where removable items, such as carts, meal boxes or coffee makers are stowed, should be designed to prevent items from being placed undetected within the compartments while sharing the same space with these removable items. This would be achieved with closefitting designs (spaces only large enough to allow the removable items to be inserted, stored and removed easily).

Proposed Operational Requirements

Section 121.135(b)(24) would require that information regarding the location and use of the least risk bomb location be contained in the appropriate manual and be readily available for the crew. This is an important provision since the LRBL will not be effective unless the crew have the necessary information on where it is and how to use it. Such information should have restricted access, however.

Section 121.295 would make the requirement for an LRBL procedure effective for the existing fleet. As noted previously, it has been common practice for airplane manufacturers to designate a location on the airplane as "the least risk" bomb location. There has been no requirement for this however and there are a small number of airplane types with no such designation. This proposal would require that a location be identified for all airplanes in the fleet that are greater than 60 passengers or 100,000 lbs. Note that this proposal does not require that a location be designed into existing airplanes. Rather, it requires that on existing airplanes, the least risk location be identified and communicated to the operators.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has determined that there are no requirements for information collection associated with this proposed 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 determined that there are no ICAO Standards and Recommended Practices that correspond to these proposed regulations.

Economic Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

(to be provided by APO)

Regulations Affecting Interstate 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 manner affecting interstate 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 interstate aviation in Alaska. The FAA therefore specifically requests comments on whether there is justification for applying the proposed rule differently in interstate operations in Alaska.

Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action 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, we determined that this notice of proposed rulemaking would not have federalism implications.

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 proposed rulemaking action qualifies for a categorical exclusion.

Energy Impact

The energy impact of the notice has been assessed in accordance with the Energy Policy and Conservation Act (EPCA) Pub. L. 94-163, as amended (42 U.S.C. 6362) and FAA Order 1053.1. It has been determined that the notice is not a major regulatory action under the provisions of the EPCA.

List of Subjects

14 CFR Part 25

Aircraft, Aviation safety, Federal Aviation Administration, Reporting and record keeping requirements

14 CFR Part 121

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend parts 25, 121, and 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, 4794.

2. Part 25 is amended by revising a new § 25.795 to read as follows:

§ 25.795 Security Considerations

Except as noted in paragraphs (a) and (f) of this section, airplanes with a passenger seating capacity of more than 60 or a maximum certificated takeoff gross weight of over 100,000 pounds, must comply with the following:

*   *   *   *   *

(b) Fire and smoke protection. The airplane must be designed to limit the effects of an explosive or incendiary device, as follows:

(1) *Flight deck protection.* Means, such as would be provided by a positive pressure differential between the flight deck and surrounding areas, must be provided to limit entry of smoke, fumes and noxious vapors into the flight deck.

(2) *Cabin smoke protection.* Means must be provided to prevent passenger cabin occupant incapacitation resulting from smoke, fumes and noxious vapors as represented by the combined volumetric concentrations of 0.59% carbon monoxide and 1.23% carbon dioxide.

(3) *Cargo compartment fire suppression.* The extinguishing agent must be capable of suppressing such a fire and all cargo-compartment fire suppression-system components must be designed to withstand the following effects unless they are redundant and separated per paragraph (d) of this section or are installed remotely from the cargo compartment:

i. A 0.5-inch diameter aluminum sphere traveling at 430 ft/sec;

ii. A 15-psi pressure load if the projected surface area of the component is greater than four square feet. Any single dimension greater than four feet may be assumed to be four feet in length, and;

iii. A 6 inch displacement in any direction from a single point force applied anywhere along the distribution system due to support structure displacements or adjacent materials displacing against the distribution system.

(c) Least risk bomb location. A location on the airplane must be designed where a bomb or other explosive device may be placed to protect flight-critical structure and systems from damage in the case of detonation.

(d) Survivability of systems. Redundant airplane systems, necessary for continued safe flight and landing, must be physically separated as a minimum, except where impracticable, by an amount equal to a sphere of diameter $D = 2\sqrt{(H_0 / \pi)}$ {where H_0 is defined in § 25.365(e)(2), and D need not exceed 5.05 feet). The sphere is applied everywhere within the fuselage, limited by the forward and aft bulkheads of the passenger cabin or cargo compartments, beyond which only ½ the sphere is applied.

(e) Interior design to facilitate searches. Design features must be incorporated that will deter concealment or promote discovery of weapons, explosives or other objects from a simple inspection in any area accessible within the airplane cabin. The following areas must be addressed:

1. Crew compartments must be placarded to be secured when not in use or must be designed so that objects can be readily detected, either through simple search or through tamper-evident designs.

2. Stowage areas, including galleys, closets, overhead bins and miscellaneous compartments must be designed so that objects can be readily detected, either through simple search or tamper-evident designs.

Contents of overhead stowage compartments must be visible to a 50th percentile male, as defined by Drefus, standing in the aisle.

3. Stowage locations for removable or portable non-emergency equipment must be designed to near net-fit dimensions, where practicable, or the equipment must lock in place with a specialty fastener.

4. Areas above the overhead bins must be designed to prevent placed objects from being hidden from view in a simple search from the aisle.

5. Locks, specialty fasteners or tamper-evident designs must be provided for access doors or panels that are not intended for flight personnel or passenger use.

6. Joints between interior panels must be designed to either preclude the introduction of objects between them or show evidence of tampering.

7. Toilets must be designed to prevent the passage of solid objects greater than 2.0 inches in diameter.

8. Life preservers or their storage locations must be designed in a manner such that tampering is evident.

9. Literature pockets and magazine racks must be designed so that only one hand is needed to reveal the contents for a visual inspection.

10. Removable cushions, without tamper evidence or the need for a specialty tool must be capable of being easily removed and visually inspected.

(f) Exceptions. Airplanes used for the carriage of cargo only, need only meet the requirements of paragraphs (b)(1), (b)(3) and (d) of this section.

* * * * * * * * * * * * * * * * * * * *

PART 121 – OPERATING REQUIRMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

3. The authority citation for part 121 continues to read as follows:

Authority:

4. § 121.135 is amended by revising paragraph (b)(24) to read as follows:

* * *

(b) * * *

(24) After [insert a date X years after the effective date of this Amendment] information concerning the in-flight emergency safety procedures for a suspect device found onboard, including the location, as required by §121.295, where such a device can be placed in flight to minimize the risk to the airplane.

* * *

5. Part 121 is amended by adding a new § 121.295 to read as follows:

§ 121.295 Location for a suspect device

For airplanes with a seating capacity of more than 60 passengers, after (insert a date X years after the effective date of this amendment) there must be a location where a suspect device found onboard can be placed in flight to minimize the risk to the airplane.

* * * * *

(revised 8-24-01)

and pollution compliance status on engine identification plates. It is intended to minimize the effort in determining whether a turbojet engine may legally be installed and operated on an aircraft in the United States.

ADDRESSES: Interested persons are invited to submit written comments on the proposed information collection to the Office of Information and Regulatory Affairs, Office of Management and Budget. Comments should be addressed to Nathan Lesser, Desk Officer, Department of Transportation/FAA, and sent via electronic mail to *oira_submission@omb.eop.gov* or faxed to (202) 395–6974.

Comments are invited on: Whether the proposed collection of information is necessary for the proper performance of the functions of the Department, including whether the information will have practical utility; the accuracy of the Department's estimates of the burden of the proposed information collection; ways to enhance the quality, utility, and clarity of the information to be collected; and ways to minimize the burden of the collection of information on respondents, including the use of automated collection techniques or other forms of information technology.

Issued in Washington, DC, on June 8, 2007.

Carla Mauney,

FAA Information Collection Clearance Officer, Strategy and Investment Analysis Division, AIO–20.

[FR Doc. 07–2947 Filed 6–14–07; 8:45 am]

BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Transport Airplane and Engine Issues—Implementation of Previously Assigned Task Item

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of implementation of previously assigned task item for the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: The FAA has assigned the Aviation Rulemaking Advisory Committee (ARAC) to disposition certain technical comments through the Transport Airplane and Engine Issues Group (TAEIG) and its Design for Security Harmonization Working Group (DSHWG). This notice is to inform the public of this ARAC activity.

FOR FURTHER INFORMATION CONTACT: Jeff Gardlin, Federal Aviation Administration, Transport Airplane Directorate (ANM–115), Northwest Mountain Region Headquarters, 1601 Lind Ave., SW., Renton, WA 98055–4056; telephone: (425) 227–2136; fax: 425–227–1320 e-mail: *jeff.gardlin@faa.gov.*

SUPPLEMENTARY INFORMATION:

Background

The FAA established the Aviation Rulemaking Advisory Committee to provide advice and recommendations to the FAA Administrator on the FAA's rulemaking activities for aviation-related issues. This includes obtaining advice and recommendations on the FAA's commitments to harmonize Title 14 of the Code of Federal Regulations (14 CFR) with its partners in Europe and Canada.

The Task

In a tasking issued on October 20, 1999, (64 FR 57921, Oct. 27, 1999), the FAA assigned ARAC to provide advice and recommendations relative to the following issue:

Implementation of International Civil Aviation Organization (ICAO), Rules from Amendment 97 to Annex 8, Concerning Design for Security.

ARAC Acceptance of Task

ARAC accepted the task, and the TAEIG chose to establish the Design for Security Harmonization Working Group. As a part of that task, ARAC agreed that ''If the resulting recommendation is one or more notices of proposed rulemaking (NPRM) published by the FAA, the FAA may ask ARAC to recommend disposition of any substantive comments the FAA receives.''

This notice is to inform the public that the following specific technical comments are assigned to the DSHWG:

- Consideration of structural deflections for system integrity
- Flight/dispatch regimes under which smoke protection capability is required
- System separation requirements in relation to other regulations (*i.e.*, Sections 25.729(f) and 25.903(d))
- Definition of the system separation distance measurement
- Definition of object size for interior search

Issued in Washington, DC, on June 6, 2007.

Eve Taylor Adams,

Acting Director, Office of Rulemaking.

[FR Doc. E7–11606 Filed 6–14–07; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Summary Notice No. PE–2007–22]

Petitions for Exemption; Summary of Petitions Received

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of petitions for exemption received.

SUMMARY: This notice contains a summary of certain petitions seeking relief from specified requirements of 14 CFR. The purpose of this notice is to improve the public's awareness of, and participation in, this aspect of FAA's regulatory activities. Neither publication of this notice nor the inclusion or omission of information in the summary is intended to affect the legal status of any petition or its final disposition.

DATES: Comments on petitions received must identify the petition docket number involved and must be received on or before July 5, 2007.

ADDRESSES: You may send comments identified by Docket Number FAA–2007–28111 using any of the following methods:

- DOT Docket Web site: Go to *http://dms.dot.gov* and follow the instructions for sending your comments electronically.
- Government-wide rulemaking Web site: Go to *http://www.regulations.gov* and follow the instructions for sending your comments electronically.
- Mail: Send comments to the Docket Management Facility; U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12–140, Washington, DC 20590.
- Fax: Fax comments to the Docket Management Facility at 202–493–2251.
- Hand Delivery: Bring comments to the Docket Management Facility in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Docket: To read background documents or comments received, go to *http://dms.dot.gov* at any time or to the Docket Management Facility in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION: We will post all comments we receive, without change, to *http://dms.dot.gov,* including any personal information you provide.

Federal Register

Friday,

January 5, 2007

Part II

Department of Transportation

Federal Aviation Administration

14 CFR Parts 25 and 121

Security Related Considerations in the Design and Operation of Transport Category Airplanes; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 25 and 121

[Docket No. FAA–2006–26722; Notice No. 06–19]

RIN 2120–AI66

Security Related Considerations in the Design and Operation of Transport Category Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: Under this notice, the FAA proposes to implement certain security related requirements governing the design of transport category airplanes. The requirements would provide improved airplane design features and greater protection of the cabin, flightdeck, and cargo compartments from the detonation of explosive or incendiary devices, penetration by projectiles, and intrusion by unauthorized persons. The FAA also proposes to require operators to establish a ''least risk bomb location'' on all affected airplanes. These proposed changes would adopt several International Civil Aviation Organization (ICAO) standards. Also, this notice discusses six proposed advisory circulars (ACs) and proposed changes to two existing ACs.

DATES: Send your comments on or before April 5, 2007.

ADDRESSES: You may send comments identified by Docket Number FAA–2006–26722 using any of the following methods:

- Submit your comments electronically to (1) the Department of Transportation (DOT) Docket Management System Web site at *http://dms.dot.gov* or (2) the government-wide rulemaking Web site at *http://www.regulations.gov*
- Mail your comments to Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–0001.
- Fax your comments to the Docket Management System at 1–202–493–2251.
- Hand deliver your comments to Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For more information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

Privacy: We will post all comments we receive, without change, to *http://dms.dot.gov,* including any personal information you provide. For more information, see the Privacy Act discussion in the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: To read background documents or comments received, go to *http://dms.dot.gov* at any time or to Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: *For technical issues:* Jeff Gardlin, FAA Airframe and Cabin Safety Branch, ANM–115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington 98055; telephone (425) 227–2136, facsimile (425) 227–1149, e-mail: *jeff.gardlin@faa.gov. For legal issues:* Komal Jain, Regulations Division, AGC–200, FAA Office of the Chief Counsel, 800 Independence Avenue, SW., Washington DC, 20591; telephone (202) 267–3073, e-mail: *komal.jain@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. The docket is available for public inspection before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also review the docket using the Internet at the Web address in the **ADDRESSES** section.

Privacy Act: Using the search function of our docket Web site, anyone can find and read the comments received into any of our dockets, including the name of the individual sending the comment (or signing the comment on behalf of an association, business, labor union, or other group). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78) or you may visit *http://dms.dot.gov.*

Before acting on this proposal, we will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change this proposal in light of the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, include with your comments a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it to you.

Proprietary or Confidential Business Information

You should not file in the docket any information that you consider to be proprietary or confidential business information. Instead, you should send or deliver that information directly to the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this document. You must mark the information that you consider proprietary or confidential. If you send the information on a disk or CD–ROM, mark the outside of the disk or CD–ROM and also identify electronically within the disk or CD–ROM the specific information that is proprietary or confidential.

Under 14 CFR 11.35(b), when we are aware of proprietary information filed with a comment, we do not place it in the docket. We hold it in a separate file to which the public does not have access and place a note in the docket that we have received it. If we receive a request to examine or copy this information, we treat it as any other request under the Freedom of Information Act (5 U.S.C. 552). We process such a request under the DOT procedures found in 49 CFR part 7.

Availability of Rulemaking Documents

You can access an electronic copy of this proposal at any of the following Web sites:

- The Department of Transportation's electronic Docket Management System (DMS) Web site at *http://dms.dot.gov/search.*
- Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies*; or
- The Government Printing Office's Web site at *http://www.access.gpo.gov/su_docs/aces/aces140.html.*

You can also receive a hard copy by mailing a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or calling (202) 267–9680. Please identify the docket number, notice number, or amendment number of this rulemaking.

Authority for This Rulemaking

The FAA's authority to issue rules regarding aviation safety is found under Title 49 of the United States Code. Subtitle I, section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority.

This rulemaking is promulgated under the authority described in subtitle VII, part A, subpart III, section 44701, ''General requirements.'' Under that section, the FAA is charged with promoting safe flight of civil aircraft in air commerce by prescribing minimum standards required in the interest of safety for the design and performance of aircraft. This regulation is within the scope of that authority because it prescribes new safety standards for the design of transport category airplanes.

Background

Since the mid 1970s, terrorist acts—including hijackings and detonation of explosive devices—have targeted airplanes.

Design Standards by ICAO

Because of the number of airplane bombings and hijackings that occurred in the 1960s, 1970s, and early 1980s, the International Civil Aviation Organization (ICAO) [1] considered several proposals to incorporate security safeguards into the design of new airplanes. ICAO has adopted in Annex 8 airworthiness standards for airplanes that carry passengers, cargo, or mail in international air navigation. In the 1980s, the International Federation of Airline Pilots Association (IFALPA) submitted proposals regarding design standards for security in airplanes. ICAO, in turn, solicited comments on the proposals from organizations and member countries.

On December 21, 1988, a terrorist bomb in a Boeing Model 747 airplane exploded over Lockerbie, Scotland, killing all 259 people onboard and 11 people on the ground. [2] The terrorist bomb exploded in the forward cargo hold on Pan American World Airways Flight 103 from London to New York City. As a result, the effort initiated by IFALPA to establish security design standards gained impetus. Within several months, ICAO formed the ''Incorporation of Security into Aircraft Design'' (ISAD) study group with representatives of the airworthiness authorities of the United States, the United Kingdom, France, Germany, Brazil, and Russia to consider the existing proposals and to recommend standards for security in design to be incorporated into Annex 8. ISAD also included representatives from IFALPA, the International Coordinating Council of Aerospace Industries Associations (ICCAIA), and the International Air Transport Association (IATA).

The study group developed proposals pertaining to the following subjects:

(1) Survivability of systems,

(2) Cargo compartment fire suppression,

(3) Smoke and fumes protection (in the cabin and flightdeck),

(4) Least risk bomb location and design,

(5) Protection of pilot compartment from penetration by small arms fire or shrapnel, and

(6) Interior design to deter hiding of dangerous articles and improve searching.

These proposals were submitted to all ICAO member countries for comment.

On March 12, 1997, new standards were adopted as Amendment 97 to Annex 8. The member countries subsequently approved them. All but one of the standards became effective 3 years after their adoption. The standard requiring identification of a ''least risk bomb location'' became effective immediately because it was already common practice in the aviation industry. It had been applied as an operational standard rather than as a design standard.

While Annex 8 provisions may be applied to an operator of a transport category airplane by a national authority in order to obtain landing rights at international airports, this does not generally occur, in part, because this would assume that operators could pass through the design specifications to the aircraft manufacturers. Typically, Annex 8 standards do not apply *directly* to the design of an airplane but are implemented by adoption into the airworthiness codes of ICAO's member countries. Once implemented, airplane certification by a member country implies compliance with Annex 8. As a signatory to the Convention, the United States must implement the Annex 8 rules into our national airworthiness codes to the extent practicable. It is possible, however, for a signatory to file differences with ICAO if it is unable to implement the ICAO standards. The FAA does not believe permanent differences are warranted in this situation. However, because we have not yet promulgated these ICAO standards into our regulations, the United States (like all other states of manufacture) has filed differences with ICAO regarding the design for security provisions of Annex 8. Adoption of these proposals would remove the current difference with the ICAO standards.

Activity by the Aviation Rulemaking Advisory Committee [3] (ARAC)

In addition to participating in the development of international standards through the ICAO, the FAA considers maintaining harmonized standards between the United States and Europe to be a high priority. The FAA found that carrying out this harmonization task was best achieved through ARAC. The ARAC is composed of 76 member organizations with a wide range of interests in the aviation community and provides the FAA with firsthand information and insight regarding proposed new or revised rules.

In October 1999, the FAA tasked the Transport Aircraft Engine Issues area of ARAC to propose harmonized regulations incorporating security measures into airplane design (64 FR 57921, October 27, 1999). The proposed regulations were to be based on Amendment 97 to Annex 8. The task was assigned to the Design for Security Harmonization Working Group (DSHWG), with members from the aviation industry and the governments of Europe, the United States, Brazil, and Canada.

In April 2001, after several airlines reported incidents of flightdeck intrusion by aggressive passengers, the FAA tasked the DSHWG through ARAC to propose harmonized regulations to improve the intrusion resistance of the flightdeck (66 FR 31273, June 11, 2001).

The DSHWG developed and proposed harmonized regulations for implementing security provisions into the design of transport category airplanes, and the ARAC approved those recommendations and forwarded them to the FAA. We accepted the ARAC recommendations. With one exception that is discussed below, the

[1] A specialized agency of the United Nations with 189 member countries (known in ICAO as contracting states). The agency is charged with development of international standards for safety and security of civil aviation.

[2] The terrorist bomb exploded in the forward cargo hold on Pan American World Airways Flight 103 from London to New York City.

[3] The FAA formally established ARAC on January 22, 1991, to provide advice and recommendations about FAA's safety-related rulemaking (56 FR 2190).

proposals in this document are based on those recommendations.

Other FAA Rulemaking Activity

Following the September 11, 2001, terrorist acts, Congress passed the Aviation and Transportation Security Act (the Act) on November 19, 2001. Section 104(a) of the Act, Improved Flightdeck Integrity Measures, required that aircraft engaged in passenger air transportation or intrastate air transportation have a door between the passenger and pilot compartments. The Administrator of the FAA issued a final rule with the following provisions:

(A) Access to the flightdeck was prohibited,

(B) The flightdeck door was to be strengthened,

(C) Flightdeck doors were to remain locked during flight, and

(D) Possession of a key to any flightdeck door by a member of the flightcrew not assigned to the flightdeck was prohibited.

The FAA published Amendment No. 25–106 in the **Federal Register** on January 15, 2002 (67 FR 2118). Amendment No. 25–106 added new § 25.795, Security considerations, requiring strengthening the flightdeck door to resist forcible intrusion by unauthorized persons or penetration by small arms fire and fragmentation devices. The amendment addressed only the ICAO requirements regarding protection of the pilot compartment. At the same time, the FAA published a notice of issuance of Advisory Circular (AC) 25.795–1, Flightdeck Intrusion Resistance, and AC 25.795–2, Flightdeck Penetration Resistance.

Proposed Changes to Part 25

This proposal has two goals: (1) To improve the safety of transport category airplanes, and (2) To provide an equivalent level of safety for different classes of transport category airplanes.

Accordingly, the proposal considers the following factors:

- The security threat;
- Practicability of compliance;
- Benefits of compliance; and
- Any mitigating factors.

For certain classes of airplanes, applying the proposed security design requirements would improve safety significantly. For others, applying them would not improve safety appreciably and would require great effort and expense.

Applicability of Proposed Rules

1. Flightdeck Security

The January 15, 2002, final rule added the requirement for transport category airplanes with flightdeck doors to strengthen the flightdeck door installation. Under this proposal, we would extend those requirements to all barriers—such as bulkheads, ceilings, and floors—between the flightdeck and other occupied areas. Since strengthening these barriers would serve no purpose unless there also was a door separating the passenger cabin and the flightdeck, the proposed amendments to § 25.795(a) would be applicable only to airplanes required to have a flightdeck door.

2. Other Security Considerations

a. *Commercial and private use operations.* Significant security risks are associated with boarding passengers on commercial airplanes. Even with the best screening and other layered security measures, there is the possibility that a person could carry or place an explosive or incendiary device onboard an airplane. Likewise, there is the possibility that an explosive or incendiary device could be placed aboard a commercial airplane in cargo operations.

Generally, airplanes in private use carry heads of state, business leaders, and ordinary citizens. In contrast to commercial passenger airplanes, access to airplanes in private use is limited to specific individuals, namely, the owner and guests. For this reason, these airplanes typically are not targets of onboard terrorists. We believe that applying the proposed requirements to airplanes in private use would not provide significant improvement in security.

Therefore, the FAA proposes to apply the security requirements under this rule only to airplanes designed for commercial operations involving cargo or passengers. We welcome comments regarding applicability of the proposed rule.

b. *Airplane Size.* Both small and large airplanes transport passengers and cargo. Our review of security-related events over the last 30 years indicates that smaller airplanes (whether carrying passengers or cargo) are less likely to be the target of terrorists. Operators of smaller airplanes have fewer people to screen and/or less cargo to inspect; thus, the probability of detecting an explosive device is greater should a terrorist attempt to carry or place one onboard.

The FAA reviewed passenger capacity and airplane gross weight as distinguishing parameters in assessing applicability of these proposals. We concluded both parameters need to be addressed when defining a satisfactory and practical standard. Specifically, we propose that—with the exception of § 25.795(a)(1), (2), and (3), Protection of Flightcrew Compartment, which is discussed below—the rule applies to airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated gross takeoff weight of over 100,000 pounds.[4] This approach addresses airplanes of significant size that carry both passengers and cargo—called ''combi'' airplanes—because the passenger capacity alone may not trigger the proposed requirements. We welcome comments regarding the applicability of this proposed rule to airplanes of different seating capacity or gross takeoff weight.

Provisions of Proposed Rules

1. Protection of Flightcrew Compartment

This section would apply to airplanes required by operating rules to have a flightdeck door.

a. *Intrusion by unauthorized persons.* The proposed change to § 25.795(a)(1) and (a)(2) would extend the requirement for the design of the strengthened flightdeck door to the bulkhead and other accessible barriers (those barriers that are susceptible to forcible intrusion by a person as distinguished from barriers such as floors or ceilings) separating occupied areas from the flightdeck. The flightdeck and any other accessible areas would need to resist forcible intrusion by an unauthorized person and withstand impacts of 300 joules (221.3 foot-pounds). The FAA believes the flightdeck door is the most critical feature in providing resistance to intrusion. However, there could be other access points through the bulkhead from occupied areas. Therefore, the FAA proposes that these barriers be designed to the same security standards as the flightdeck door.

To demonstrate compliance, a manufacturer would generally be able to rely on the test conducted on the flightdeck door. Critical locations (*i.e.*, those requiring tests) are expected to be the door latch and hinge as well as the panel itself but will depend on the design. If there is a more critical part of the bulkhead, the FAA would require testing, either in addition to testing the door or instead of it.

b. *Penetration by projectiles.* Proposed § 25.795(a)(3) would extend security design precautions to any barrier, not just accessible barriers, between the flightdeck and occupied areas to

[4] Based on the input of its member states, ICAO recently amended its standards to apply to airplanes with a maximum passenger capacity greater than 60 persons, or a gross takeoff weight greater than 100,000 pounds.

minimize the penetration of shrapnel from a fragmentation device or projectiles from small arms. Although protection of the flightdeck door provides a high level of safety, the flightdeck itself remains susceptible to damage from discharge of weapons. For example, in a multi-deck airplane, the ceiling and floor around the flightdeck may be vulnerable, and ballistic penetration of the flightdeck can injure the pilots. Such penetration also could disable critical flight instrumentation because the system controls are concentrated in a small area of the flightdeck.

Under this proposal, protection would be required for all barriers between the flightdeck and occupied areas to the extent necessary to resist penetration of projectiles, because they could interfere with safe flight and landing. Areas of concern include grills, closeouts, and latches, if their failure could compromise continued safe flight and landing. For a multi-deck airplane, these barriers could include the floor and ceiling in addition to the bulkhead and door. Protection equivalent to level IIIA of the National Institute of Justice (NIJ) Standard 0101.04 is considered sufficient to protect against small arms or fragmentation devices.

2. Smoke and Fire Safety

The proposed requirements described in paragraphs a. and b. below would apply to airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds.

a. *Flightdeck.* Currently, § 25.831 addresses removal of smoke from the flightdeck. However, the rule does not directly address penetration of smoke into the flightdeck, other than smoke originating in a cargo compartment. Advisory Circular 25–9A, Smoke Detection, Penetration, and Evacuation Tests and Related Flight Manual Emergency Procedures, discusses smoke penetration testing and does consider smoke originating in other areas. However, these discussions are in the context of more general fire safety practices rather than an explicit requirement to prevent smoke penetration. Proposed § 25.795(b)(1) would require the design of the flightdeck to limit penetration of smoke, fumes, or noxious gases generated by explosives, incendiary devices, or fires elsewhere on the airplane.

The FAA expects the most practicable means of compliance will be to control airflow into and out of the flightdeck, which would include crew rest and other areas accessible only from the flightdeck. Maintaining a slight positive pressure differential between the flightdeck and surrounding areas would direct smoke, fumes, and noxious gases to those surrounding areas.

b. *Passenger cabin.* Proposed § 25.795(b)(2) would require the ability to remove smoke, fumes, and noxious gases—such as might be produced by an explosive or incendiary device—from the passenger cabin. The goal is to prevent smoke, fumes, and noxious gases from reaching incapacitating levels if an explosive or incendiary device is activated. Currently, there are no requirements for evacuation of cabin smoke, fumes, or noxious gases. The levels of smoke, fumes, or noxious gases that could incapacitate passengers depend on at least the following variables:

- The specific gases present;
- Concentrations of those gases; and
- The duration of exposure.

The FAA considered these variables and arrived at an approach that does not require detailed knowledge of the explosive or incendiary device.

We determined a fire resulting from an explosive or incendiary device affects the levels and types of gases in the cabin more than does the type of device. Using data from full-scale tests conducted on fires in the cargo compartment, the FAA developed a ''standard'' for the quantity of smoke, fumes, and noxious gases produced. The quantity is a function of the volume of the compartment and the amount of material in it.

We assume the passenger cabin begins at the flightdeck bulkhead and ends at the aft pressure bulkhead (or other bulkhead separating the passenger cabin from another definable space, such as a cargo compartment). The passenger cabin is bound at the top by the ceiling and stowage-bin contour and at the bottom by the cabin floor. We consider the crew rest and other locations that are accessible only from the flightdeck to be part of the flightdeck. However, isolated areas above or below the passenger cabin that are not occupied for takeoff and landing are included in the cabin. An example of such an isolated area is an overhead crew rest that is only occupied in flight.

If the smoke, fumes, and noxious gases resulting from a fire are dispersed in the passenger cabin, it is possible to calculate the frequency of fresh air changes necessary to prevent fire by-products in the cabin from incapacitating the passengers. Time to incapacitation can be calculated by using a Fractional Effective Dose (FED) model. This model considers the types of gases and the duration of exposure to them to determine whether certain conditions will produce incapacitation. Using this approach, the FAA determined occupants of the passenger cabin must be protected against incapacitation when there is a combined volumetric concentration of 0.59% carbon monoxide and 1.23% carbon dioxide.

The combined effect of the two gases on occupants of the passenger cabin, as predicted by the FED, represents the short-term threat posed by all hazardous fire products generated when an explosive or incendiary device is discharged. As a result, we cannot compare the combined concentrations of carbon monoxide and carbon dioxide specified under proposed § 25.795(b)(2) with the individual concentrations of the two gases specified in the existing ventilation requirements under § 25.831(b).

The FAA cannot assume the smoke, fumes, and noxious gases produced by an explosive device would be uniformly dispersed throughout the passenger cabin. It also is unreasonable to assume the smoke, fumes, and noxious gases would not be dispersed at all before the fire is extinguished. To estimate the expected variability in smoke dispersion, we assume the smoke, fumes, and noxious gases are initially concentrated in any one-quarter portion of the total cabin volume. The other portions of the cabin remain less hazardous than the area of initial concentration and can be removed from the FED calculations. Since the rate of air change applies to the entire passenger cabin, this is a conservative approach.

If we assume airflow patterns within a passenger cabin will create a constant mixing as well as an evacuation of the air, removal of the smoke, fumes, and noxious gases will reduce their concentrations in an exponential decay pattern. Therefore, the initial evacuation of the smoke, fumes, and noxious gases will be rapid, and the FED will quickly reach a maximum value. That value will not increase much after approximately two air changes.

As noted above, we determined the quantity of smoke, fumes, and noxious gases and their resulting concentrations using data from a fire in a cargo compartment. The relationship of cargo compartment volume to passenger compartment volume is not the same for all airplanes that would be affected by this proposal. Therefore, the FAA assessed this relationship before establishing these guidelines. We recognize that it would be equally acceptable to address the proposed requirements under § 25.795(b)(2) by other means, including providing a protective device for each passenger or using a combination of smoke evacuation and protective devices.

3. Fire Suppression in Cargo Compartments

Proposed § 25.795(b)(3) would require fire suppression systems in cargo compartments to be designed to suppress a sudden and extensive fire, such as might result from an explosive or incendiary device. The principal concerns are that the fire suppression system is able to survive such an event and the extinguishing agent retains its ability to suppress such a fire. These requirements would apply to airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds.

The ICAO standard recognizes that Halon 1301 extinguishing agents satisfy this requirement from the standpoint of suppression. However, the U.S. Environmental Protection Agency banned production of Halon 1301 because it contributes to depletion of the ozone layer. Although existing stores of Halon 1301 may still be used, the product will not be available indefinitely. The FAA worked with the International Systems Fire Protection Working Group (formerly the Halon Replacement Working Group) to establish minimum performance standards for new fire suppression agents that are ''equivalent'' to the Halon 1301 extinguishing agents.

For the fire suppression agent to be effective, the fire suppression system must be able to discharge the agent immediately following an explosion. The FAA reviewed test data to assess the vulnerability of fire suppression systems to damage from explosive devices. These data indicate the fire suppression systems currently in use are not affected by the over-pressure produced by an explosive device. However, the fire suppression systems may be vulnerable to secondary loading by panels and supporting structures that are affected by over-pressure. The fire suppression systems also may be vulnerable to damage from fragments of the explosive device or from contents of the cargo compartment. Storage vessels for the fire suppression agent are usually outside the cargo compartment. Therefore, the distribution lines and nozzles may be vulnerable.

There may be several ways to address this concern. Providing a distribution system that has redundancy and adequate separation would be an acceptable way to comply with the proposed requirement. That is, separate storage vessels for the fire suppression agent with an independent distribution system and adequate separation, could be an acceptable approach. Alternatively, shrouding or otherwise hardening the lines could be acceptable, if the mounting scheme could accommodate the secondary loading mentioned above. Based on a review of test data, the shielding would have to protect against fragments of 0.5-inch diameter traveling at a rate of 430 feet a second.

With respect to secondary loading, the threat to the system is from large displacements that might occur on panels or structure to which the systems are attached. In reviewing test data, local structural displacements up to 6 inches are possible within an airplane in a survivable event. Therefore, system attachment arrangements also would have to tolerate 6-inch local displacements, and each system component would still need to function.

Manufacturers need to address only those components in the cargo compartment or separated from it only by the cargo compartment liner. Manufacturers do not need to provide added protection for the fire suppression agent's storage vessel if it is remote from the compartment. We consider the storage vessel remote if it is outside the compartment and is protected by barriers that meet the criteria discussed above.

The fire detection system in the cargo compartment will not require explosion protection. The FAA determined that, if the event were small, there would be no effect on the fire detection system. If the event is large enough to affect the integrity of the fire detection system, the passengers or crew will notice the event. If smoke, fumes, or noxious gases are present, the crew will know they should discharge the suppression agent to the affected area. In addition, the specific compartment where the affected fire detection system is located must be indicated to the crew. As a result, sufficient warning would be given to the flightcrew to preclude hardening of the fire detection systems.

For affected airplanes, a significant consequence of this proposal would be to effectively prohibit the Class B cargo compartment currently permitted by § 25.857. A Class B cargo compartment incorporates a fire detection system, but relies on a crewmember to manually fight the fire. Entry into the cargo compartment to fight a fire after an explosion would not be practicable.

4. Least Risk Bomb Location

Proposed § 25.795(c)(1) would require the manufacturer to establish a ''least risk bomb location'' (LRBL) as part of the design of airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds.

The LRBL is a location in the cabin where crewmembers can put a suspected explosive device that will do the least amount of damage to the airplane in the event of an explosion. Presently, an airplane manufacturer considers the LRBL only after completion of the design. This proposal would require manufacturers to identify the LRBL during the airplane design process. We expect this will improve the level of safety, since the LRBL will be a design consideration and manufacturers can incorporate provisions to enhance its effectiveness. For example, when considering the physical location and design of the LRBL, the manufacturer must consider systems near the LRBL. The goal is to ensure the manufacturer locates critical systems out of the immediate vicinity of the LRBL or protects those systems from explosive devices. On airplanes with more than one passenger deck, more than one LRBL may be desirable.

Operational procedures also can improve the effectiveness of the LRBL in reducing a threat. For example, reducing or eliminating differential cabin pressure markedly reduces the damage explosive devices could cause to airplane structures.

5. System Safety

Proposed § 25.795(c)(2) would require the manufacturer to separate redundant flight critical systems to maximize the ability to continue safe flight and landing of the airplane if there is an event that damages one of those systems. This requirement would apply to airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds.

The goal of the proposal is to maximize the ability of flight critical systems to survive damage caused by an explosive device or other event through a design that will separate, shield, or provide redundancy to the critical systems. To achieve this purpose, the FAA used a ''damage based'' approach. The FAA had previously proposed a similar requirement related to structural capability of the airplane and concluded that a damage based approach is reasonable.[5]

Under this approach, the FAA assumes an explosive device destroys the flight critical systems contained within a certain volume. We then assess the ability of the airplane to continue safe flight and landing based on the *functionality* of flight critical systems after an explosion and the effect of any resultant loss of functionality. Under this proposal, the manufacturer would use the formula derived from the requirements of § 25.365 to generate a sphere and use the sphere to determine the volume of the airplane within which one must assess loss of system function. Any associated structural damage that might result from the explosion is not relevant to this assessment.

In practice, the manufacturer may assess the effect of separating each flight critical system from other flight critical systems as a design specification, rather than using the proposed formula throughout the fuselage. However, the manufacturer also should consider the combination of systems made inoperative when determining the effect on continued safe flight and landing. This approach might mean considering whether one should separate primary or backup controls for a particular system from both the primary and backup controls for certain other critical systems.

The manufacturer would apply the spherical volume *within the fuselage:*

• Anywhere within the passenger cabin from the bulkhead (or bulkheads) separating the passenger cabin from the flightdeck to the aft cabin bulkhead, with half of the diameter penetrating those bulkheads, and

• Anywhere within the volumes of the cargo compartments, except that only one-half of the spherical volume need extend beyond the liners of the cargo-compartments.

For practical reasons, we propose an upper limit on the size of the sphere. While it is theoretically possible to increase the distance between systems as the diameter of the fuselage increases, there comes a point of no benefit. That is, the event necessary to render systems inoperative in a larger volume than proposed would have other catastrophic results. A standard with no limit on the volume of the sphere would not be cost-effective and could lead to complications in system design. Those complications could present a safety risk at least as great as the risk of an explosion. For example, separations resulting in acute changes in direction of control cables could complicate the function of the cables and cause additional failure or jamming modes.

Conversely, the formula permits successively smaller considerations of separation as the fuselage diameter decreases. At some point, the volume is so small there is no practical value to the requirement. Because the proposed regulation would apply to airplanes with a gross takeoff weight greater than 100,000 pounds or a passenger capacity greater than 60 persons, the FAA is not proposing a lower limit on the size of the sphere.

Use of the sphere is a tool to measure the effectiveness of separating flight critical systems. The FAA's intention is not to limit separation of such systems to the size of the sphere. Rather, we hope to *maximize* separation to improve survivability of the function of flight critical systems in the aftermath of some event. Conversely, airplanes in general have confined areas where it might not always be possible to apply the sphere.

Therefore, the FAA is proposing an exception for areas where it is impracticable to apply the sphere. Generally, these areas will be at the extreme ends of the fuselage or where concentrations of systems are essentially unavoidable, such as in electronic equipment bays or portions of the flightdeck. In those instances, other design measures, such as shielding, may be appropriate for regions where the sphere or half sphere is to be applied.

6. Interior Security

Proposed § 25.795(c)(3) would require that the interior design of the airplane deter the easy concealment of weapons, explosives, or other objects and lessen the likelihood of overlooking such items during a search. This requirement would apply to airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds.

Under ICAO and TSA requirements, it is necessary to search an airplane interior under certain conditions. To improve reliability of such searches, Amendment 97 to ICAO Annex 8 requires that—during the design phase—manufacturers consider the need to search the interior of the airplane.

Transport category airplanes contain many areas that are not readily visible but are relatively accessible. For example, under-seat areas, areas above stowage bins, and toilet bowl drains may not be easily visible when conducting a search but could be accessible places to hide an explosive device. This proposal would require that during the design phase of the interior, the manufacturer consider the need to search airplanes regularly and, therefore, avoid designs that make it difficult to search an area.

The FAA did not receive a recommendation from ARAC on this subject. While the working group tried to arrive at a recommendation, it did not achieve consensus. Certain members of the working group felt the proposals under consideration were ambiguous and open to different interpretation. In addition, no agreement was reached on the best approach—design changes or better techniques and training for searching the airplane. Therefore, the FAA independently developed the proposal described below.

One approach to eliminating hidden devices is to reduce the number of areas where a device can be hidden. For example, the manufacturer could use locks (or other specialty tools) to limit access to certain areas or could remove certain areas from the design altogether. The result would be to reduce the scope of the search. Another approach is to design features that facilitate a simple inspection, i.e., features that can be searched quickly and easily. Examples include bare and open surfaces or use of mirrors that make compartments more visible.

Both approaches have benefits. Making areas more difficult to access may be preferable in some cases; an example is making fasteners on compartment panels more difficult to remove than standard fasteners. A potential drawback, however, is an area that is less accessible may also become less likely to be searched. Therefore, the FAA proposes to focus on requiring design features that lead to quick and easy searches. By ensuring it is easy to search those areas where the opportunity to hide an explosive device is greatest, we make more time available to search areas that are more difficult to access and inspect. In this way, the overall search of the airplane will be more effective.

The following is a brief description of our proposed requirement for each item.

a. *Area above stowage bins.* The area above stowage bins is difficult to search. Light fixtures often inhibit both visual and physical inspection. Proposed § 25.795(c)(3)(i) would require the area above overhead bins to be designed to prevent hiding objects from view. This objective can be accomplished either by preventing a person from placing an object in the area above stowage bins or by designing a feature that makes it obvious someone has tampered with the area. An example of the first approach is screening off the area above the stowage bins. An example of the second

[5] Notice No. 75–31 (40 FR 29410; July 11, 1975).

is designing the area above the stowage bin so that if anything is placed there, the stowage bin could not be opened properly.

b. *Toilet.* A toilet can be an easy place to hide a device. Some toilets are designed to restrict the size of a device that can be flushed down it. The vacuum-waste system is one example. Proposed § 25.795(c)(3)(ii) would deter hiding a device in a toilet by restricting the diameter of the passage pipes prevent passage of objects greater than or equal to 2 inches.

c. *Life preservers.* Under proposed § 25.795(c)(3)(iii), life preservers or their storage location would be designed so any tampering is evident. One way to meet this requirement would be to make an inspection easier. For example, life preservers are typically installed under seats but alternatively may be installed in the passenger service unit on the underside of stowage bins.

Note that manufacturers have to meet the requirements of § 25.1415, Ditching equipment, for accessibility to life preservers. The FAA, however, does not believe § 25.1415 and proposed § 25.795(c)(3)(iii) conflict.

d. *Other areas.* Designers can consider several other areas of an airplane to promote ease of search. There are no specific requirements to consider these areas under this proposal.

Proposed Advisory Circulars (ACs)

In conjunction with issuance of this NPRM, the FAA is issuing six proposed ACs and proposing changes to two existing ACs. Each AC describes an acceptable means of complying with a specific provision of the proposed amendments to 14 CFR 25.795. These proposed ACs are available for comment at: *http://www.faa.gov/aircraft/draft%5Fdocs/display_docs/index.cfm?Doc_Type=AC.*

○ Proposed AC 25.795–1X, Flightdeck Intrusion Resistance, would revise AC 25.795–1 to provide guidance on designing flightdeck barriers to resist intrusion by unauthorized persons during flight.

○ Proposed AC 25.795–2X, Flightdeck Penetration Resistance, would revise AC 25.795–2 to provide guidance on designing flightdeck barriers to prevent penetration by small arms and fragmentation devices.

○ Proposed AC 25.795–3X, Flightdeck Protection (Smoke and Fumes), would provide guidance on designing an airplane to limit entry of smoke, fumes, and noxious gases into the flightdeck in the event of detonation of an explosive or incendiary device on the airplane.

○ Proposed AC 25.795–4X, Passenger Cabin Smoke Evacuation, would provide guidance on designing an airplane with means to prevent passengers from being incapacitated by smoke, fumes, or noxious gases, resulting from detonation of an explosive or incendiary device during flight.

○ Proposed AC 25.795–5X, Compartment Fire Suppression, would provide guidance on designing the fire suppression system of the cargo compartment to withstand a sudden and extensive fire, such as could be caused by an explosive or incendiary device in the cargo compartment.

○ Proposed AC 25.795–6X, Least Risk Bomb Location (LRBL), would provide guidance on designing a location where an explosive or incendiary device discovered on-board an airplane may be placed to protect flight critical structures and systems from damage in case of detonation.

○ Proposed AC 25.795–7X, Survivability of Systems, would provide guidance on designing redundant systems necessary for continued safe flight and landing of the airplane so that they are physically separated by certain minimum distances.

○ Proposed AC 25.795–8X, Design for Ease of Search, would provide guidance on designing specified areas in the interior of an airplane to make it more difficult to hide dangerous objects or make it easier to find such objects if they have been brought onboard.

Proposed Change to Part 121

Under proposed § 25.795(c)(1), manufacturers would be required to designate a ''least risk bomb location'' (LRBL) in designing new airplanes which have a maximum passenger capacity greater than 60 persons or a gross weight greater than 100,000 pounds. Under proposed § 121.295, within one year of the effective date of this amendment an LRBL would need to be identified on existing airplanes with a passenger seating capacity of more than 60 persons within one year of the amendment. As noted previously, it has been common practice for airplane manufacturers to designate such a location on existing airplanes, but it is not a requirement to do so. Therefore, some airplane types have no LRBL identified. Because designation of the LRBL is already common practice, we propose one year for compliance.

Other procedures regarding use of the LRBL are currently regulated by the Transportation Security Administration.

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. We have determined no new information collection requirements are associated with this proposed rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with ICAO Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and proposes these regulations to harmonize with the standards.

Economic Assessment

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 impact 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 requires agencies to consider international standards and, where appropriate, to be the basis of U.S. standards. 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 this proposal: (1) Has benefits that justify its costs, is not an economically ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866, and is ''significant'' as defined in DOT's Regulatory Policies and Procedures; (2) would not have a significant economic impact on a substantial number of small entities; (3) would be in agreement with the Trade Agreement Act; and (4) would not impose an unfunded mandate on state, local, or tribal governments, or on the private sector.

Total Costs and Benefits of This Rulemaking

The cost of a fatal aircraft accident involving terrorist bombing and hijacking can exceed one billion dollars. In addition to the quantitative measures, the psychological impact, investigative costs, bankruptcy proceedings, and other litigation that follows such accidents further emphasizes the importance of the proposed measures as a means of cost avoidance, and the future health of the civil aviation industry in the world marketplace.

The total estimated costs of this proposal are $453.9 million ($197.3 million present value). The total includes the costs of certification, manufacturing, and the incremental fuel consumption cost. We estimate larger transport category aircraft costs at $395.1 million ($167.6 million present value) and smaller transport category aircraft costs are $58.8 million ($29.7 million present value).

We estimate the total benefits of this proposal at $1.2 billion ($328.8 million present value). The total benefits are comprised of operational benefits of $391 million ($119.4 million present value) and safety benefits of $763.5 million ($204.4 million present value).

This proposal is cost beneficial, because the estimated $1.2 billion ($328.8 million) in benefits outweigh the estimated costs of $453.9 million ($197.3 million present value). We estimate one event will be prevented by year 2049 creating safety benefits of $763.5 million ($204.4 present value). The one event is based upon the historical number of aircraft bombings (18), and aircraft hijackings/commandeerings (105).

Who is Potentially Affected by This Rulemaking

Manufacturers of part 25 newly designed passenger aircraft.

Assumptions and Sources of Information

- Period of analysis—2006 through 2049.
- Discount rate—7%.
- Compensation Rates, Economic Values for FAA Investment and Regulatory Decisions, a Guide, May 2005.
- Terrorist Acts, Press Release—Transportation Security Administration, September 29, 2003.
- Civil Aviation Crimes, 2000 Crime Acts Report—Federal Aviation Administration.
- Terrorist Acts, 9–11 Commission Report, July 22, 2004.
- Costs of Terrorist Acts, ''September 11, 2001: Then and Now,'' John R. Jameson.
- Costs of Terrorist Acts, ''The Economic Cost of Terrorism,'' Brian S. Wesbury. September 2002.
- $3 million Value to Avert a Fatality, Revised Departmental Guidance, Treatment of Value of Life and Injuries in Preparing Economic Evaluations, Office of the Secretary of Transportation Memorandum,'' January 29, 2002.
- Airborne Flight Hours, FAA Aerospace Forecasts Fiscal Years 2005–2016.

Alternatives We Considered

The FAA considered reducing the size of transport category airplanes that would be subject to all the requirements contained in this proposal but believed that smaller airplanes (whether carrying passengers or cargo) are less likely to be the target of terrorists. However, given the importance of maintaining cabin security, this proposal would require protection of the flightcrew compartment for all transport category airplanes required by operating rules to have a flightdeck door.

Benefits of This Rule

We estimate the total benefits of this proposal at $1.2 billion ($323.8 million). The total benefits are comprised of operational benefits of $763.5 million ($204.4 million present value) and safety benefits of $391 million ($119.4 million present value).

Currently, larger transport category aircraft have many areas that are accessible to passengers, but can only be inspected with considerable effort. This proposal would require that the interior design of an airplane incorporate features that make it more difficult to hide dangerous objects in the airplane. Improving the aircraft design by incorporating security features would reduce the time required to search an aircraft. Operational cost savings would occur due the design requirements that would reduce the time necessary to conduct aircraft searches.

Based on continued security risks and threats, the FAA believes that adopting the requirements contained in this proposal would provide an overall increase in security to commercial aviation in the United States. This proposal would decrease aircraft vulnerability and increase aircraft survivability in the event of a bombing or hijacking.

The upper bound of a hijacking or bombing could have a similar impact to that of September 11th with direct financial impacts in the billions of dollars, and an indirect financial impact in the billions of dollars.

Costs of This Rule

The total estimated costs of this proposal are $453.9 million ($197.3 million present value). The total includes the costs of certification, manufacturing, and the incremental fuel consumption cost. We estimate larger transport category aircraft costs at $395.1 million ($167.6 million present value) and smaller transport category aircraft costs are $58.8 million ($29.7 million present value).

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 or final 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 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.

Entities potentially affected by this proposal include part 25, transport category airplane manufacturers and operators of affected aircraft.

In its classification, the FAA uses the size standards from the Small Business Administration. It specifies that companies with less than 1,500 employees are small entities. All U.S. transport category airplane manufacturers have more than 1,500 employees; thus, none are considered small entities.

A substantial number of operators who purchase larger affected aircraft are small entities and would incur cost due to increased fuel consumption. Although a substantial number of small entities would be affected, operational cost savings are greater than the additional cost of fuel consumption.

In addition, a substantial number of operators who purchase smaller affected airplanes would incur additional fuel cost. The estimated number of affected smaller aircraft is 714, with an estimated present value cost of roughly $2.1 million. Thus, the total average fuel burn cost for a smaller transport category aircraft is $191. The FAA believes $191 is not a significant amount in the overall cost of purchasing and operating a new aircraft.

Therefore, the FAA certifies that this proposed rule would not have a signifficant economic impact on a substantial number of small entities.

Initial International Trade Impact Assessment

The Trade Agreements Act of 1979 prohibits Federal agencies from engaging in any standards or 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, they be the basis for U.S. standards.

The FAA has assessed the potential effect of this proposed rule and determined that it would promote international trade by standardizing security related design features of part 25 aircraft and thereby complying with ICAO's international design standards. In accordance with the above statute, the FAA has assessed the potential effect of this proposal and determined that it would impose the same costs on domestic and international entities. The FAA uses international aircraft safety standards as the basis for this proposed rule and therefore is in compliance with the International Trade Agreements Act.

Initial 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 an 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.'' The FAA currently uses an inflation-adjusted value of $120.7 million in lieu of $100 million. This proposed rule does not contain such a mandate. Therefore, the requirements of Title II of the Unfunded Mandate Reform Act of 1995 do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action 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 and therefore would not have federalism implications.

Plain English

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

- Are the requirements in the proposed regulations clearly stated?
- Do the proposed 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 proposed regulations?

Environmental Analysis

Environmental Analysis FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this proposed rulemaking action qualifies for the categorical exclusion identified in paragraph 3f and involves no extraordinary circumstances.

Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this proposed rulemaking 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

14 CFR Part 25

Aircraft, Aviation safety, Federal Aviation Administration, Reporting and recordkeeping requirements.

14 CFR Part 121

Aircraft, Aviation safety, Safety, Transportation.

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration (FAA) proposes to amend parts 25 and 121 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, 4794.

2. Revise § 25.795 to read as follows:

§ 25.795 Security considerations.

(a) *Protection of flightcrew compartment.* If a flightdeck door is required by operating rules:

(1) The bulkhead, door, and any other accessible barrier separating the flightcrew compartment from occupied areas must be designed to resist forcible intrusion by unauthorized persons and be capable of withstanding impacts of 300 joules (221.3 foot pounds).

(2) The bulkhead, door, and any other accessible barrier separating the flightcrew compartment from occupied areas must be designed to resist a constant 250 pound (1,113 Newtons) tensile load on accessible handholds, including the doorknob or handle.

(3) The bulkhead, door, and any other barrier separating the flightcrew compartment from any occupied areas must be designed to resist penetration by small arms fire and fragmentation devices to a level equivalent to level IIIa of the National Institute of Justice (NIJ) Standard 0101.04.

(b) Airplanes with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds must be designed to limit the effects of an explosive or incendiary device as follows:

(1) *Flightdeck smoke protection.* Means must be provided to limit entry of smoke, fumes, and noxious gases into the flightdeck.

(2) *Passenger cabin smoke protection.* Means must be provided to prevent passenger incapacitation in the cabin resulting from smoke, fumes, and noxious gases as represented by the combined volumetric concentrations of 0.59% carbon monoxide and 1.23% carbon dioxide.

(3) *Cargo compartment fire suppression.* An extinguishing agent must be capable of suppressing a fire. All cargo-compartment fire suppression-system components must be designed to withstand the following effects, unless they are redundant and separated in accordance with paragraph (c)(2) of this section or are installed remotely from the cargo compartment:

(i) Impact or damage from a 0.5-inch-diameter aluminum sphere traveling at 430 feet per second;

(ii) A 15-pound per square-inch pressure load if the projected surface area of the component is greater than 4 square feet. Any single dimension greater than 4 feet may be assumed to be 4 feet in length; and

(iii) A 6-inch displacement in any direction from a single point force applied anywhere along the distribution system because of support structure displacements or adjacent materials displacing against the distribution system.

(c) An airplane with a certificated passenger seating capacity of more than 60 persons or a maximum certificated takeoff gross weight of over 100,000 pounds must comply with the following:

(1) *Least risk bomb location.* An airplane must be designed with a designated location where a bomb or other explosive device could be placed to best protect flight-critical structures and systems from damage in the case of detonation.

(2) *Survivability of systems.* Redundant airplane systems necessary for continued safe flight and landing must be physically separated, or otherwise designed to maximize their survivability, at a minimum, except where impracticable, by an amount equal to a sphere of diameter

$$D = 2\sqrt{(H_0 / \pi)}$$

(where H_0 is defined under § 25.365(e)(2) of this part and D need not exceed 5.05 feet). The sphere is applied everywhere within the fuselage, limited by the forward and aft bulkheads of the passenger cabin or cargo compartments, beyond which only one-half the sphere is applied.

(3) *Interior design to facilitate searches.* Design features must be incorporated that will deter concealment or promote discovery of weapons, explosives, or other objects from a simple inspection in the following areas of the airplane cabin:

(i) Areas above the overhead bins must be designed to prevent objects from being hidden from view in a simple search from the aisle.

(ii) Toilets must be designed to prevent the passage of solid objects greater than 2.0 inches in diameter.

(iii) Life preservers or their storage locations must be designed so that tampering is evident.

(d) *Exceptions.* Airplanes used solely to transport cargo only need to meet the requirements of paragraphs (b)(1), (b)(3), and (c)(2) of this section.

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

3. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901, 44903–44904, 44912, 46105.

4. Add § 121.295 to read as follows:

§ 121.295 Location for a suspect device.

After [insert a date one year after the effective date of this amendment], all airplanes with a passenger seating capacity of more than 60 persons must have a location where a suspected explosive or incendiary device found in flight can be placed to minimize the risk to the airplane.

Issued in Washington, DC on December 21, 2006.

John J. Hickey,

Director, Aircraft Certification Service.

[FR Doc. E6–22563 Filed 1–4–07; 8:45 am]

BILLING CODE 4910–13–P

(iv) Loan losses (dollar amount and as a percentage of average portfolio balance) in the aggregate and by subportfolio, including: domestic closed-end first-lien mortgages; domestic junior lien mortgages and home equity lines of credit; commercial and industrial loans; commercial real estate loans; credit card exposures; other consumer loans; and all other loans; and

(v) Pro forma regulatory capital ratios and the tier 1 common ratio and any other capital ratios specified by the Board;

(4) An explanation of the most significant causes for the changes in regulatory capital ratios and the tier 1 common ratio; and

(5) With respect to a stress test conducted pursuant to section 165(i)(2) of the Dodd-Frank Act by an insured depository institution that is a subsidiary of the covered company and that is required to disclose a summary of its stress tests results under applicable regulations, changes in regulatory capital ratios and any other capital ratios specified by the Board of the depository institution subsidiary over the planning horizon, including an explanation of the most significant causes for the changes in regulatory capital ratios.

(c) *Content of results.* (1) The following disclosures required under paragraph (b) of this section must be on a cumulative basis over the planning horizon:

(i) Pre-provision net revenue and other revenue;

(ii) Provision for loan and lease losses, realized losses/gains on available-for-sale and held-to-maturity securities, trading and counterparty losses, and other losses or gains;

(iii) Net income before taxes; and

(iv) Loan losses in the aggregate and by subportfolio.

(2) The disclosure of pro forma regulatory capital ratios, the tier 1 common ratio, and any other capital ratios specified by the Board that is required under paragraph (b) of this section must include the beginning value, ending value, and minimum value of each ratio over the planning horizon.

■ 7. Subparts G and H are removed and reserved.

■ 8. Subparts J through U are added and reserved.

By order of the Board of Governors of the Federal Reserve System, March 4, 2014.

Robert deV. Frierson,

Secretary of the Board.

[FR Doc. 2014–05053 Filed 3–10–14; 8:45 am]

BILLING CODE 6210–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA–2012–0812; Amendment No. 25–138]

RIN 2120–AK36

Requirements for Chemical Oxygen Generators Installed on Transport Category Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This final rule amends the type certification requirements for chemical oxygen generators installed on transport category airplanes so the generators are secure and not subject to misuse. This rule increases the level of security for future transport category airplane designs but does not directly affect the existing fleet of those airplanes.

DATES: This action becomes effective *May 12, 2014.*

ADDRESSES: For information on where to obtain copies of rulemaking documents and other information related to this final rule, see ''How to Obtain Additional Information'' in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this action, contact Jeff Gardlin, Airframe and Cabin Safety Branch, ANM–115, Transport Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, Northwest Mountain Region, 1601 Lind Avenue SW., Renton, WA 98057–3356; telephone: (425) 227–2136; email: *jeff.gardlin@faa.gov.*

For legal questions concerning this action, contact Douglas Anderson, Federal Aviation Administration, Office of the Regional Counsel, ANM–7, Northwest Mountain Region, 1601 Lind Avenue SW., Renton, WA 98057–3356; telephone: (425) 227–2166; email: *douglas.anderson@faa.gov.*

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue regulations on aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority.

This final rule is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, ''General requirements.'' Under that section, the FAA is charged with promoting safe flight of civil aircraft in air commerce by prescribing minimum standards required in the interest of safety for the design and performance of aircraft; regulations and minimum standards in the interest of safety for inspecting, servicing, and overhauling aircraft; and regulations for other practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it revises the safety standards for design and operation of transport category airplanes.

List of Abbreviations and Acronyms Frequently Used in This Document

AD Airworthiness Directive
ARAC Aviation Rulemaking Advisory Committee
COG Chemical Oxygen Generator
LOARC Lavatory Oxygen Aviation Rulemaking Committee
SFAR Special Federal Aviation Regulation

I. Overview of Final Rule

This final rule adopts new standards for chemical oxygen generators (COG) installed in transport category airplanes. These new standards, based on the recommendations of the Lavatory Oxygen Aviation Rulemaking Committee (LOARC), pertain to future applications for type certificates, address potential security vulnerabilities with COG installations, and provide performance-based options for acceptable methods of compliance.

II. Background

The FAA became aware of security vulnerabilities with certain types of oxygen systems installed inside the lavatories of most transport category airplanes. To address the underlying security issues, the FAA chartered an aviation rulemaking committee (ARC) to make recommendations regarding new standards for oxygen system installations, as well as how to implement those standards. Specifically, the LOARC was tasked to:

- Establish criteria for in-service, new production and new type design airplanes, preferably in the form of performance standards, for safe and secure installation of lavatory oxygen systems;
- Determine whether the same criteria should apply to the existing fleet and to new production and type designs;
- Establish what type of safety assessment approach should be used, for example, in accordance with Society of Automotive Engineers (SAE)

International Document ARP5577 [1] or Title 14, Code of Federal Regulations (14 CFR) 25.1309, as well as define content and procedures of the safety assessment;

• Determine whether tamper resistance, active tamper evidence, or different system design characteristics are equivalent options;

• Develop guidance as necessary to satisfy the recommended criteria for each system design characteristic as appropriate; and

• Consider the advantages and disadvantages of different implementation options and recommend a schedule(s) for implementation.

The LOARC identified five key subjects to focus on to develop its recommendations and fulfill its charter. Those subjects were:

• Design considerations—identifying and characterizing the design constraints and key factors affecting an installation.

• Security standards—identifying the necessary components of a secure installation, in terms of both new designs and for retrofit.

• System performance—identifying the factors that affect system performance in general and how modifications to enhance security might affect system performance.

• Implementation considerations—identifying the major factors to implement the new requirements into the fleet as expeditiously as practicable, as well as assessing how long certain actions will take.

• Other affected areas—characterizing the parameters that resulted in the determination of a security vulnerability for lavatory COG installations and establishing criteria for evaluating other installations against those characteristics.

The ARC submitted its recommendations to the FAA. Those recommendations are the basis for these new standards. On January 9, 2013, the FAA published a notice of proposed rulemaking (NPRM), Notice No. 13–01, entitled Requirements for Chemical Oxygen Generators Installed on Transport Category Airplanes in the **Federal Register** (78 FR 1765). The comment period for the NPRM closed on March 11, 2013. Additional background and historical information is contained in the NPRM. (See the docket for this rulemaking at *www.regulations.gov.*)

[1] Aerospace Recommended Practice (ARP) 5577, *Aircraft Lightning Direct Effects Certification,* dated September 30, 2002.

III. Discussion of Public Comments and Final Rule

The FAA received comments from four commenters regarding the NPRM for this final rule. Those commenters were the Association of Flight Attendants, The Boeing Company (hereafter referred to as ''Boeing''), Bombardier, and an individual commenter.

Support for the NPRM

The Association of Flight Attendants and Bombardier concurred with the proposal without further comment.

Requests To Revise Applicability

Boeing commented that the proposed rule should be limited to lavatory installations and indicated that this would be consistent with the LOARC's recommendation. We disagree. The LOARC generalized its recommendations to apply to any COG installation. The effect of these new regulations on any given COG installation will vary. For most interior arrangements, lavatories are the only installation where design changes will be necessary. We did not change this final rule based on this comment.

Boeing proposed that we modify the applicability of the proposed rule to correspond with Airworthiness Directive (AD) 2011–04–09, Amendment 39–16630 (76 FR 12556, March 8, 2011), such that all-cargo airplanes and airplanes operating under Code of Federal Regulations (CFR) parts other than part 121 operations would not be affected. We disagree. While the final rule is intended to address the security of COGs on primarily passenger-carrying airplanes operating under part 121, all types of operations will benefit to some degree. Once installations are defined for an airplane type, the airplane could be operated under any operating regulation and would not require changes. This approach also accommodates future changes in operating requirements by making the COG standards a basic design requirement. Also, § 25.1450 contains a provision that excludes compliance with the new standards for airplanes approved using Special Federal Aviation Regulation (SFAR) 109. We did not change this final rule based on this comment.

An individual commented that the in-service fleet should be modified for any COG installation and not just lavatories. We disagree. The proposed rule did not address in-service airplanes, so adding retrofit requirements would be beyond the scope of the proposal. However, the FAA has taken action to revise COG installations that have a known unsafe condition by issuing AD 2011–04–09, Amendment 39–16630 (76 FR 12556, March 8, 2011) and AD 2012–11–09, Amendment 39–17072 (77 FR 38000, June 26, 2012). If we identify additional unsafe conditions on in-service airplanes, we will issue additional ADs. We did not change this final rule based on this comment.

The same individual also proposed that the requirements apply to newly-produced airplanes, in addition to new type certificates. We disagree. As discussed above, the FAA has already taken action on installations identified as being potentially unsafe. The referenced ADs apply to newly produced airplanes, as well as existing airplanes. This final rule raises the level of safety for future type certificates, but it is not meant to affect current airplanes in production. We did not change this final rule based on this comment.

Request To Revise Economic Analysis

Boeing commented that if the proposed rule applies to all COG installations, the economic analysis was not accurate, since it assumes there will be little cost impact. We disagree. As previously noted, all COG installations are affected by this final rule, but the vast majority of installations will not require any design changes because they are located where it would be immediately obvious if anyone attempted to access them. In those cases, the installation complies with the rule because of its location and would not require any physical changes to the generator or method of installation. In addition, because this rule applies to new applications for type certification, any design changes to existing approaches that might be needed can readily be accommodated during the design process. Therefore, the economic assessment is valid. We did not change this final rule based on this comment.

Boeing also commented that if the requirements of this rule were imposed as a result of § 21.101, the cost ramifications would be more significant and that this was not accounted for in the economic evaluation. We disagree. It is true that these requirements could be imposed on significant product-level design changes. However, as noted in the ''Benefits'' discussion of the Type Certification Procedures for Changed Products (65 FR 36244, June 7, 2000) final rule, compliance is required with all later regulations where such compliance will materially contribute to the level of safety.

The provisions of § 21.101 do not require compliance with later requirements under specified circumstances. In particular, where the costs involved would not be commensurate with the safety benefit achieved. Therefore, the incremental costs for changed products have already been justified by the benefits and are not attributable to this final rule. Accordingly, no change was made to this final rule as a result of this comment.

Comments on Design Considerations

An individual commented on the detailed technical merits any such system should have, as well as the processes necessary to ensure such systems can be maintained and produced. We agree that most of the comments are worthwhile design considerations, but they are beyond the scope of this rulemaking effort, which defines a minimum performance standard for COG installations. The commenter also addressed the economics of product development and marketing, which is also beyond the scope of the notice. We did not change this final rule based on the individual's comments.

Request To Maintain Paragraph Numbering

Boeing suggested that the current paragraph numbering be maintained in the CFR, such that § 25.795(d) is retained as ''exceptions.'' Boeing suggested this would assist future applicants administratively, since the amendment level would not affect which paragraph contained a requirement. We partially agree. While we understand the reason for the comment, an applicant must always specify the certification basis when applying for a design change, so the paragraph numbering should not be an issue. Furthermore, for consistency with existing regulations, a paragraph covering exceptions should come after the substantive requirements of the section. We did not change this final rule based on this comment.

IV. Regulatory Notices and Analyses

A. Regulatory Evaluation

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 direct 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 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, the Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. 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 with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this final rule.

Department of Transportation Order DOT 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If the expected cost impact is so minimal that a proposed or final rule does not warrant a full evaluation, this order permits that a statement to that effect and the basis for it to be included in the preamble if a full regulatory evaluation of the cost and benefits is not prepared. Such a determination has been made for this final rule. The reasoning for this determination follows:

This final rule adopts new standards for future type certificate applications pertaining to COGs installed on transport category airplanes. The new standards are intended to eliminate potential security vulnerabilities. Consequently, the primary benefit of this rule is that air carriers may continue to provide supplemental oxygen to individuals in lavatories during emergencies while ensuring that individuals in lavatories cannot tamper with the supplemental oxygen system.

The rule will affect future certifications, but as the newest certificated airplanes are in compliance with this final rule, these costs are expected to be minimal. The Boeing Model 787 and the Airbus A350 established an acceptable design, or received type certification between 3 and 5 years ago (hence predating this rule). The FAA expects that these systems can be incorporated into future type certificated airplanes at a minimal cost.

Secondly, the ''newer'' oxygen systems (such as those on the Boeing Model 787 and the Airbus A350) are cost efficient in comparison to the more traditional COGs.[2] The ''newer'' systems weigh less and deliver oxygen more effectively than the traditional COGs. The lesser weight of the materials used to construct the newer systems, combined with a reduction in the amount of oxygen required per passenger, translates into fuel cost savings over an airplane's lifespan.

The design standards for secure oxygen systems apply to future transport category airplane type certificates only. Airplanes currently in production, or already in the existing fleet, are excluded from this rule. Thus, there are no costs to the existing fleet or airplanes in production.

For these reasons this final rule is expected to have a minimal impact with positive net benefits, and a regulatory evaluation was not prepared. The FAA has therefore determined that this final rule is not a ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866, and is not ''significant'' as defined in DOT's Regulatory Policies and Procedures.

B. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation.'' To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.'' The RFA 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 rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a 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

[2] *http://www.businesswire.com/news/home/20050518005123/en/Boeing-Selects-Aerospaces-Pulse-Oxygen-System-Outfit.*

factual basis for this determination, and the reasoning should be clear.

The Small Business Administration (SBA) small-entity size standard for aircraft manufacturers is 1,500 employees or less. No U.S. manufacturers of transport category airplanes are small entities; thus, this final rule will not affect small entities, and a regulatory flexibility analysis was not prepared.

If an agency determines that a rulemaking will not result in a significant economic impact on a substantial number of small entities, the head of the agency may so certify under section 605(b) of the RFA. Therefore, as provided in section 605(b), the head of the FAA certifies that this rulemaking will not result in a significant economic impact on a substantial number of small entities.

C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. 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 determined that it would improve a safety objective and therefore is not considered an unnecessary obstacle to international trade.

D. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) 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 an expenditure of $100 million or more (in 1995 dollars) 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.'' The FAA currently uses an inflation-adjusted value of $143.1 million in lieu of $100 million. This final rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

E. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. The FAA has determined that there is no new requirement for information collection associated with this final rule.

F. International Compatibility and Cooperation

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no differences with these regulations.

Executive Order 13609, Promoting International Regulatory Cooperation, promotes international regulatory cooperation to meet shared challenges involving health, safety, labor, security, environmental, and other issues and to reduce, eliminate, or prevent unnecessary differences in regulatory requirements. The FAA has analyzed this action under the policies and agency responsibilities of Executive Order 13609, and has determined that this action would have no effect on international regulatory cooperation.

G. Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. The agency determined that this action will not have a substantial direct effect on the states, or the relationship between the federal 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.

B. Executive Order 13211, Regulations That Significantly Affect Energy Supply, Distribution, or Use

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

VI. How To Obtain Additional Information

A. Rulemaking Documents

An electronic copy of a rulemaking document may be obtained by using the Internet—

1. Search the Federal eRulemaking Portal (*http://www.regulations.gov*);
2. Visit the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/* or
3. Access the Government Printing Office's Web page at *http://www.gpo.gov/fdsys/*.

Copies may also be obtained by sending a request (identified by amendment or docket number of this rulemaking) to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–9680.

B. Comments Submitted to the Docket

Comments received may be viewed by going to *http://www.regulations.gov* and following the online instructions to search the docket number for this action. Anyone is able to search the electronic form of all comments received into any of the FAA's dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.).

C. 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. A small entity with questions regarding this document, may contact its local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. To find out more about SBREFA on the Internet, visit *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/*.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The Amendments

In consideration of the foregoing, the Federal Aviation Administration amends chapter I 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 § 25.795 by redesignating paragraphs (d) and (e) as (e) and (f) respectively, and by adding a new paragraph (d) to read as follows:

§ 25.795 Security considerations.

* * * * *

(d) Each chemical oxygen generator or its installation must be designed to be secure from deliberate manipulation by one of the following:

(1) By providing effective resistance to tampering,

(2) By providing an effective combination of resistance to tampering and active tamper-evident features,

(3) By installation in a location or manner whereby any attempt to access the generator would be immediately obvious, or

(4) By a combination of approaches specified in paragraphs (d)(1), (d)(2) and (d)(3) of this section that the Administrator finds provides a secure installation.

* * * * *

■ 3. Amend § 25.1450 by adding a new paragraph (b)(3) to read as follows:

§ 25.1450 Chemical oxygen generators.

* * * * *

(b) * * *

(3) Except as provided in SFAR 109, each chemical oxygen generator installation must meet the requirements of § 25.795(d).

* * * * *

Issued under authority provided by 49 U.S.C. 106(f), 44701(a), and 44703 in Washington, DC, on February 19, 2014.

Michael P. Huerta,

Administrator.

[FR Doc. 2014–05291 Filed 3–10–14; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2013–0872; Directorate Identifier 2013–SW–012–AD; Amendment 39–17784; AD 2014–05–11]

RIN 2120–AA64

Airworthiness Directives; Airbus Helicopters (Type Certificate Previously Held by Eurocopter France) (Airbus Helicopters)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for Airbus Helicopters Model AS332C, AS332L, AS332L1, AS332L2, EC225LP, and SA330J helicopters with a certain tail rotor control turnbuckle (turnbuckle) installed. This AD requires inspecting the turnbuckles for corrosion or a crack, and depending on the results, either replacing the turnbuckle or treating the turnbuckle for corrosion. This AD was prompted by a report that a turnbuckle had failed because of corrosion. The actions of this AD are intended to detect corrosion or a crack on a turnbuckle and prevent the failure of a turnbuckle, loss of control of the tail rotor and subsequent loss of control of the helicopter.

DATES: This AD is effective April 15, 2014.

The Director of the Federal Register approved the incorporation by reference of certain documents listed in this AD as of April 15, 2014.

ADDRESSES: For service information identified in this AD, contact Airbus Helicopters, Inc., 2701 N. Forum Drive, Grand Prairie, TX 75052; telephone (972) 641–0000 or (800) 232–0323; fax (972) 641–3775; or at *http://www.airbushelicopters.com/techpub*. You may review the referenced service information at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137.

Examining the AD Docket

You may examine the AD docket on the Internet at *http://www.regulations.gov* or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the European Aviation Safety Agency (EASA) AD, any incorporated-by-reference service information, the economic evaluation, any comments received, and other information. The street address for the Docket Operations Office (phone: 800–647–5527) is U.S. Department of Transportation, Docket Operations Office, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Robert Grant, Aviation Safety Engineer, Safety Management Group, FAA, 2601 Meacham Blvd., Fort Worth, Texas 76137; telephone (817) 222–5110; email *robert.grant@faa.gov*.

SUPPLEMENTARY INFORMATION:

Discussion

On October 24, 2013, at 78 FR 63429, the **Federal Register** published our notice of proposed rulemaking (NPRM), which proposed to amend 14 CFR part 39 by adding an AD that would apply to Eurocopter France (now Airbus Helicopters) Model AS332C, AS332L, AS332L1, AS332L2, EC225LP, and SA330J helicopters with a turnbuckle, part number (P/N) 330A27–5031–20, installed. The NPRM proposed to require inspecting the turnbuckles for corrosion or a crack, and depending on the results, either replacing the turnbuckle or treating the turnbuckle for corrosion. The proposed requirements were intended to detect corrosion or a crack on a turnbuckle and prevent the failure of a turnbuckle, loss of control of the tail rotor and subsequent loss of control of the helicopter.

The NPRM was prompted by AD No. 2013–0081, dated March 26, 2013, issued by EASA, which is the Technical Agent for the Member States of the European Union. EASA published AD No. 2013–0081 to correct an unsafe condition for Eurocopter Model SA330J, AS332C, AS332C1, AS332L, AS332L1, AS332L2, EC225LP helicopters equipped with tail rotor control turnbuckles, part number 330A27–5031–20. EASA advises that one of the two turnbuckles installed on the tail rotor's yaw flight control cables failed on a helicopter because of corrosion. The subsequent investigation revealed a lack of Mastinox sealant coating between both sides of the turnbuckle's internal tappings and the interface screws of the end-fitting components of the yaw flight control cables. To address this condition, EASA issued AD No. 2013–0081, which requires repetitive inspections of each turnbuckle and, depending on the results, either replacing the turnbuckle or treating the turnbuckle for corrosion. EASA revised its AD and issued AD No. 2013–0081R1, dated June 20, 2013, to clarify some of the requirements.