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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]

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