DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 25, 121 and 135

[Docket No. 28937, Notice No. 97–10]

RIN 2120–AG42

Revised Standards for Cargo or Baggage Compartments in Transport Category Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This notice of proposed rulemaking proposes to upgrade the fire safety standards for cargo or baggage compartments in certain transport category airplanes by eliminating Class D compartments as an option for future type certification. Compartments that could no longer be designated as Class D would have to meet the standards for Class C or Class E compartments, as applicable. The Class D compartments in certain transport category airplanes manufactured under existing type certificates and used in passenger service would have to meet the fire detection and suppression standards for Class C Compartments by early 2001 for use in air carrier, commuter, on-demand, or most other commercial service. The Class D compartments in certain transport category airplanes manufactured under existing type certificates and used only for the carriage of cargo would also have to meet such standards or the detection standards for Class E compartments by that date for such service. These improved standards are needed to increase protection from possible in-flight fires.

DATE: Comments must be received on or before September 11, 1997.

ADDRESSES: Comments on this proposal may be mailed in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC–200), Docket No. 28937, 800 Independence Avenue SW, Washington, DC 20591, or delivered in person to Room 915G at the same address. Comments delivered must be marked: Docket 28937. Comments may also be submitted electronically to 9-n prm-cmts@faa.dot.gov. Comments may be inspected in Room 915G weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m. In addition, the FAA is maintaining an information docket of comments in the Transport Airplane Directorate (ANM–100), Federal Aviation Administration, 1601 Lind Avenue SW, Renton, Washington 98055–4056. Comments in the information docket may be inspected in the Transport Airplane Directorate weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

FOR FURTHER INFORMATION CONTACT: Gary L. Killion, Manager, Regulations Branch, ANM–114, Transport Airplane Directorate, Aircraft Certification Service, FAA, 1601 Lind Ave. S.W., Renton, Washington 98055–4056; telephone (425) 227–2114.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the proposed rulemaking by submitting such written data. views, or arguments as they may desire. Comments relating to any environmental, energy, federalism, or economic impacts that might result from adoption of the proposals contained in this notice are also invited. Substantive comments should be accompanied by cost estimates. Commenters should identify the regulatory docket or notice number and submit comments, in triplicate, to the Rules Docket address specified above. All comments will be considered by the Administrator before action on the proposed rulemaking is taken. The proposals contained in this notice may be changed in light of the comments received. All comments will be available in the Rules Docket, both before and after the closing date for comments, for examinations by interested persons. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Commenters wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No.'' The postcard will be dated and time stamped and returned to the commenter.

Availability of NPRM

An electronic copy of this document may be downloaded using a modern an suitable communications software from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: 703–321–3339), the **Federal Register**'s electronic bulletin board service (202–512–1661), or the FAA's Aviation Rulemaking Advisory Committee Bulletin Board service (telephone 202–267–5948).

Internet users may reach the FAA's web page at http://www.faa.gov or the Federal Register's web page at http://www.access.gpo.gov/su__docs for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW, Washington, DC 20591; or by calling (202) 267–9680. Communications must identify the notice number of this NPRM. Persons interested in placing on a mailing list for future NPRM's should also request a copy of Advisory Circular No. 11–2A, Notice of Proposed Rulemaking Distribution system, which describes the application procedures.

Background

There have been a number of fires in the cargo or baggage compartments of transport category airplanes in recent years, some of which have resulted in accidents and loss of life. Although the FAA has already taken action to improve the safety of these compartments by improving the fire-resistance of liners, the continuing occurrence of fires and the seriousness of the consequences of an uncontrolled fire have resulted in a review of the entire cargo compartment classification system.

During the early post-World War II period, it was recognized that timely detection of a fire by a crewmember of the airplane while at his or her station and prompt control of the fire when detected were necessary for protection of the airplane from a fire originating in a cargo or baggage compartment. Because the requirements for detection and extinguishment varied depending on the type and location of the compartment, a classification system was established. Three classes of cargo or baggage compartments were initially established and defined in 1946 (Amendment 04–1 to part 04 of the Civil Air Regulations (CAR) effective November 1, 1946) as follows:

Class A—A compartment in which the presence of a fire would be easily discovered by a crewmember while at his or her station, and of which all parts are easily accessible in flight. This is typically a small compartment used for crew luggage, and located in the cockpit where a fire would be readily detected and extinguished by a crewmember. Due to the small size and location of the compartment, and the relatively brief time needed to detect and extinguish a fire, a liner is not required to prevent the fire from spreading to other parts of the airplane or protect adjacent structure.

Class B—A compartment with a separate, approved smoke or fire detection system to give warning at the pilot or flight engineer station and with sufficient access in flight to enable a crewmember to effectively reach any part of the compartment with a hand fire extinguisher. Smoke or fire detection systems must provide indication of a fire to the flightcrew. Because it has a smoke or fire detection system, a Class B compartment may be located in an area remote from any crewmember's station. Due to the potentially larger size of the compartment and the greater time interval likely to occur before a fire would be extinguished, a liner meeting the flame penetration standards of § 25.855 and Part I of Appendix F of part 25 must be provided to prevent the fire from spreading to other areas of the airplane and to protect adjacent structure. As originally defined in 1946, there was also to be sufficient access to enable the crewmember to move all contents of a Class B compartment by hand; however, that requirement was subsequently deleted. Although Class B compartments are typically the large cargo portions of the cabins of airplanes carrying a combination of passengers and cargo (frequently referred to as ''combi'' airplanes), there are also Class B compartments that are relatively small baggage compartments located within the pressurized portions of airplanes designed for executive transportation.

Class C—As defined at the time of initial classification in 1946, any compartment that did not fall into either Class A or B was a Class C compartment. Class C compartments differ from Class B compartments primarily in that built-in extinguishing systems are required for control of fires in lieu of crewmember accessibility. As with Class B compartments, smoke or fire detection systems must be provided. Due to the use of a built-in extinguishing system and closer control of ventilating airflow, the distribution of extinguishing agent in a Class C compartment is considerably more uniform than in a Class B compartment. The volumes of Class C compartments in transport category airplanes currently used in domestic service range from approximately 700 to 3,000 cubic feet.

Later, two additional classes of cargo or baggage compartments were established and defined as follows (Amendment 4b–6 to part 4b of the CAR effective March 5, 1952):

Class D—A compartment in which a fire would be completely contained without endangering the safety of the airplane or the occupants. A Class D compartment is similar to a Class C compartment in that both may be located in areas that are not readily accessible to a crewmember. As originally defined in 1952, Class D compartments were required to have smoke or fire detection systems; however, that requirement was deleted shortly thereafter. In lieu of providing smoke or fire detection and extinguishment, Class D compartments are designed to control a fire by severely restricting the supply of available oxygen. Because an oxygen-deprived fire might continue to smolder for the duration of a flight, the capability of the liner to resist flame penetration is especially important. A note following the definition of a Class D compartment stated, ''For compartments having a volume not in excess of 500 cubic feet, an airflow of not more than 1,500 cubic feet per hour is considered acceptable. For larger compartments, lesser airflow may be applicable.'' That note was interpreted to mean that a Class D compartment could not exceed 2,000 cubic feet in volume even if the leakage of air into the compartment was zero. The standards for Class D compartments were later amended (Amendment 25–60, 51 FR 18236, May 16, 1986) to specifically limit the volume of those compartments to 1,000 cubic feet; however, some previously-approved airplanes in air carrier service have Class D compartments as large as 1,630 cubic feet. Other airplanes designed for executive transportation, and also used in on-demand service, have relatively small (15–25 cubic feet) Class D compartments located outside the pressurized portions of the cabin.

Class E—A cargo compartment of an airplane used only for the carriage of cargo (Amendment 4b–10 to part 4b of the CAR, adopted in 1959). A smoke or fire detection system is required. In lieu of providing extinguishment, means must be provided to shut off the flow of ventilating air to or within a class E compartment. In addition, procedures, such as depressurizing a pressurized airplane, are stipulated to minimize the amount of oxygen available in the event a fire occurs in a Class E compartment. Typically, a Class E compartment is the entire cabin of an all-cargo airplane; however, Class E compartments may be located in other portions of the airplane. This, of course, does not preclude the installation of Class A, B, C or D compartments in all-cargo airplanes.

Prior to the adoption of § 25.858 in 1980, fire or smoke detection systems that provided indication within five minutes were considered acceptable. In order to ensure that a fire would be detected in time to permit effective use of the means provided to control it, § 25.858 was adopted at that time (Amendment 25–54, 45 FR 60173, September 11, 1980) to require the detection systems of Class B, C and E compartments to provide visual indication to the flight crew within one minute of the start of the fire.

It should be noted that the overhead storage areas and certain other areas in the cabins of passenger-carrying airplanes are considered ''stowage'' compartments rather than cargo or baggage compartments. They are therefore not required to meet these standards.

Although the standards for Class A, B, C or D compartments make no distinction between compartments used for the carriage of passengers' baggage and those used for cargo, most of the industry experience at the time they were classified was limited to the carriage of passengers' baggage. Furthermore, compartments seldom, if ever, exceeded 200 cubic feet in volume at that time.

When first defined, Class D. compartments were envisioned to be small compartments, although not as small as Class A compartments, and were to suppress a fire by severely restricting the amount of available oxygen. Later, however, larger Class D compartments were installed in transport category airplanes, increasing both the amount of potentially combustible material and the available oxygen. Although there is little or no flow of air into a Class D compartment at the time a fire occurs, there is oxygen available from the air already contained in the compartment. In some instances, particularly when the compartment is larger or only partially filled, the oxygen already present in the compartment may be sufficient to support an intense fire long enough for it to penetrate the liner. Once the integrity of the liner is compromised, there is an unlimited flow of air into the compartment, resulting in an uncontrollable fire that can quickly spread throughout the rest of the airplane.

An uncontrollable fire of this nature did occur in 1980 when a Saudi Arabian Airlines Lockheed L–1011 was destroyed shortly after landing. The fire, which resulted in a loss of 301 lives, was reported to have started in a Class D compartment. (The compartment in that airplane is sometimes described erroneously as a Class C compartment because it has smoke detection. During normal operation, the compartment has ventilating airflow greater than that normally acceptable for a Class D compartment in order to facilitate the carriage of live animals. When a fire is detected, the ventilating airflow is shut off to restrict the supply of oxygen. That compartment, therefore, functioned as a

Class D compartment insofar as that fire is concerned.) The growing concern over this and other reports of cargo or baggage compartment fires led to the adoption of Amendment 25–60. In addition to establishing a maximum volume of 1,000 cubic feet for Class D compartments, Amendment 25–60 also established new standards for liners with greater resistance to flame penetration for use in Class C and D compartments. That amendment applied to transport category airplanes for which an application for type certificate is made on or after June 16, 1985. Similar, but not identical, standards were also established for the liners of other transport category airplanes operated under the provisions of parts 121 or 135 (Amendments 121–202 and 135–31, 54 FR 7384, February 17, 1989). Operators of those airplanes were required to install liners that meet the new standards by March 20, 1991. Unlike Amendment 25–60, Amendments 121–202 and 135–31 do not establish a maximum volume for Class D compartments.

A Boeing 737 operated by Gulf Air was destroyed in September 1983 as a result of an inflight fire in a Class D compartment. The fire, which resulted in 112 casualties, was attributed to an incendiary device.

In February 1988, a fire occurred in the Class D compartment of an American Airlines McDonnell Douglas MD–83. Although there was no loss of life, the fire severely damaged the cabin floor above the compartment. As a result, the FAA initiated a review of service experience and existing regulations, policies and procedures pertaining to the certification of airplanes with Class D compartments. From this review, it was determined that a dozen fires had occurred in Class D Compartments over the past two decades. The consequences of those fires ranged from no airplane damage and no occupant injury to complete destruction of the Saudi Arabian Airlines Lockheed L–1011, as discussed above.

Since the time the review of Class D compartments was completed there have also been seven additional known instances of fires occurring in those compartments. Most resulted in no injuries and little or no damage to the airplane. The exception, insofar as injuries and damage are concerned, was the fire that occurred in May of 1996 in the Class D compartment of a McDonnell Douglas DC–9 operated by Valujet Airlines. Like the American Airlines MD–83 fire noted above, that fire involved the carriage of undeclared hazardous materials; however, unlike the MD–83 fire, it resulted in the destruction of the airplane with a loss of 110 lives. It must be noted that this undeclared shipment occurred in spite of existing prohibitions concerning such shipments.

In the meantime, an additional potential hazard in the cargo or baggage compartments of passenger-carrying airplanes has been brought to light. Due to environmental concerns, the aerosol cans now manufactured for consumer use utilize a mixture of propane, butane and isobutane for propellants in lieu of the non-flammable gases previously used. Passengers are not prohibited from transporting such aerosol cans by the applicable hazardous materials rules, and they have become so widely used by the general public that a high percentage of the pieces of checked baggage contain at least one aerosol can. Tests conducted by the FAA Technical Center show that they can burst if they are in a burning suitcase for little more than two minutes. The tests further show that if the burst occurs in a non-inert atmosphere, such as that of a Class D compartment, there is immediate auto-ignition of the propellant. The accompanying explosion is of such force and intensity that the liner could be rendered ineffective in limiting the supply of oxygen to the fire. Because the liner would be damaged by the explosion rather than by flame penetration, the use of a liner meeting the newer standards of Amendment 25–60 would not provide protection from this hazard. With an unlimited supply of oxygen and the integrity of the liner compromised, there is no longer any effective means to prevent an uncontrollable fire from spreading to other parts of the airplane. If, on the other hand, the burst occurs in an inert atmosphere, such as that of a Class C compartment in which the extinguishing agent has been discharged, the propellant does not ignite and poses no further hazard. (As noted above, smoke or fire detectors are required to provide indication to the flightcrew within one minute after the start of a fire, allowing sufficient time in which to inert the compartment before aerosol cans would burst.) The results of these tests are contained in Report No. DOT/FAA/CT–89/32 entitled ''Fire Hazards of Aerosol Cans in Aircraft Cargo Compartments.'' A copy of that report has been placed in the docket for examination by interested persons.

In at least one instance, a cargo or baggage compartment fire resulted in the plastic cap being melted from an aerosol can. Fortuitously, however, none of the fires experienced since aerosol cans with flammable propellants were introduced were of such intensity or proximity to result in an aerosol can being ruptured.

It must be noted that the probability that an ignition will occur is primarily a function of the flammability of the material being carried in the compartment and the sources of ignition; however, the consequences of a fire, once ignition has occurred, depend greatly on the fire-protection features of the compartment in which it occurs. The FAA is aware of at least four fires that have occurred in Class C compartment during the past decade—a rate of occurrence somewhat commensurate with that of fires occurring in Class D compartments. (Three of those fires involved U.S. air carriers.) In marked contrast to the fatalities that have occurred as a result of fires originating in Class D compartments, the FAA is not aware of any fatality that has occurred as a result of a fire originating in a Class C compartment.

On December 12, 1996, the Air Transport Association of America (ATA), jointed by Vice President Gore, formally announced that its membership would voluntarily install fire or smoke detection systems in Class D compartments. The ATA is a trade organization that represents the major US airlines. Details of the ATA plan—including an implementation schedule—were presented to FAA officials on January 31, 1997. The announcement, which affects approximately 2,700 airplanes operated by 21 ATA members, might appear to make the detection portion of this rulemaking moot; however, the FAA considers the installation of both detection and suppression systems in these compartments to be essential. In any event, a number of airplanes in service with Class D compartments are operated by non-ATA member airlines and would not be subject to voluntary ATA ban.

On May 14, 1997, the ATA announced its commitment to go forward with fire suppression systems as well as detection systems. At this time, however, the airlines have not committed to a time frame for the installation of such systems.

Discussion

As noted above, some Class D compartments are much larger than envisioned at the time they were originally defined. As a result, they typically contain considerably more combustible material than anticipated. Although there is little or no airflow into a Class D compartment at the time a fire occurs, there is oxygen available from the air already contained in the compartment. In some instances, particularly in the larger compartments or those that are only partially filled, this quantity of oxygen may be sufficient to support an intense fire long enough for it to burn through the liner. If the integrity of the liner is compromised, there is an unlimited flow of oxygen into the compartment. With the liner no longer intact and an unlimited flow of oxygen supporting the fire, there is no means to prevent it from spreading rapidly throughout the airplane. Due to the widespread use of aerosol cans with highly flammable propellants, there is now a possibility that an explosion will destroy the liner integrity. A fire originating in even the smallest Class D compartments could, therefore, become uncontrollable. In view of these possibly catastrophic results, part 25 would be amended to eliminate Class D compartments altogether. Compartments in passenger-carrying airplanes that could no longer be approved as Class D compartments would have to meet the standards of Class C compartments.

Due to the uncertainties of the availabilities of suitable suppression agents, as discussed in greater detail under Halon Considerations below, the FAA considered the possibility of requiring only the installation of detection systems. Having a detection system would enable the flight crew to abort a takeoff if an ignition occurred during the brief period before the airplane became airborne. If, on the other hand, the fire occurred after the airplane became airborne, which is more likely, the fire could burn out of control before a safe landing could be made. In that regard, it should be noted that 301 lives were lost in the Saudi Arabian Lockheed L–1011 fire described above even though the compartment did, in fact, have a detection system. Since the installation of detection systems alone would provide only a small incremental increase in safety, it is essential that both detection and suppression systems be provided for these compartments.

As discussed above, Class E compartments may be installed in airplanes used only for the carriage of cargo. As in the case of a Class C compartment, a smoke or fire detection system is required for a Class E compartment. In lieu of providing extinguishment, as required for a Class C compartment, means must be provided to shut off the flow of ventilating air to or within a Class E compartment. In addition, procedures, such as depressurizing the airplane, are stipulated to further minimize the amount of oxygen available in the event a fire occurs in a Class E compartment. Compartments in all-cargo airplanes that could no longer be approved as Class D compartments could be shown to meet the standards of Class E compartments in lieu of those for Class C compartments. The installation of smoke or fire detection systems and the means provided to minimize the amount of oxygen in Class E compartments would provide an improvement in safety for compartments presently designated as Class D and installed in all-cargo airplanes. The benefit from that improvement in the safety of operation of all-cargo airplanes would be commensurate with the cost of converting Class D compartments to Class E compartments.

Part 25 presently contains an inconsistency between the terminology used in § 25.857 and that of § 25.858. The former refers to a ''smoke detector or fire detector system'' for Class B, C or E compartments while the latter refers to compartments with ''fire detection provisions.'' Smoke detectors are, of course, a form of fire detectors since the purpose of installing a smoke detection system is to detect a fire. Nevertheless, the use of different terminology in the two sections may cause confusion. For consistency with § 25.857, § 25.858 would be amended to refer to ''smoke or fire detection provisions.'' This change would place no additional burden on any person since the intent of § 25.858 would remain unchanged.

It is also noted that the term ''fire extinguishing system'' appearing in § 25.857(c) in regard to Class C compartments is actually a misnomer in that the system is not required to extinguish a fire in its entirety, but rather to suppress it until it can be completely extinguished by ground personnel following a safe landing. Although the intent of the term is well-understood, consideration was given to replacing it with ''fire suppression system'' for technical accuracy. While the latter would be more accurate, it appears that changing the terminology at this time could actually create confusion and, therefore, be counter-productive. The term ''fire extinguishing system'' is, therefore, retained in § 25.857(c).

Although the proposed amendment to part 25 would provide new standards for future transport category airplanes, it would not affect airplanes currently in service nor the airplanes that will be produced under type certificates for which application was made prior to the effective date of the amendment. Parts 121 and 135 would, therefore, be amended as well to require the Class D compartments of transport category airplanes type-certificated after January 1, 1958, to meet the standards for Class C or Class E compartments, as applicable, when they are used in air carrier or commercial operations. Although those compartments would not be reidentified as such, they would become the equivalent of Class C (in regard to detection and suppression) or Class E compartments (in regard to detection and means to limit ventilating air flow).

The date January 1, 1958, was chosen so that all turbine-powered transport category airplanes, except for a few 1947 vintage Grumman Mallard amphibians and 1953–1958 vintage Convair 340s and 440s converted from reciprocating power, would be included. No reciprocating-powered transport category airplanes are known to be used currently in passenger service, and the few reciprocating-powered transport category airplanes remaining in cargo service would be excluded. Compliance is not proposed for those older airplanes because their advanced age and small numbers would make compliance impractical from an economic standpoint. This is consistent with the similar exclusions made for those airplanes from other retroactive requirements adopted for flammability of seat cushions (49 FR 43188, October 24, 1984), flammability of cabin interior components (51 FR 26206, July 21, 1986), cargo compartment liners (54 FR 7384, February 17, 1989) and access to passenger emergency exits (57 FR 19244, May 4, 1992). Nevertheless, the FAA specifically requests comments as to the feasibility of requiring those older airplanes to comply and the safety benefits likely to be realized. In the event comments indicate that a significant safety benefit could be realized, the FAA retains the option of including applicability to transport category airplanes type-certificated prior to January 1, 1958, in the final rule.

These proposed changes to parts 121 and 135 would pertain only to operators of transport category airplanes. In Notice 95–5 (60 FR 16230, March 29, 1995), the FAA proposed to adopt improved safety standards for the cargo or baggage compartments in non-transport category (e.g. normal and commuter category) airplanes used in scheduled passenger service. As noted in the preamble to the final rule (60 FR 65832, December 20, 1995), the FAA concurred with commenters that the present requirements for transport category airplanes were not entirely suitable for those smaller airplanes. The

FAA also noted that a rulemaking project to develop cargo or baggage compartment standards suitable for those airplanes has been initiated and that the changes proposed in Notice 95–5 in that regard would be deferred for future rulemaking. The possible need for installing detection and suppression systems in the cargo or baggage compartments of those airplanes will be addressed in conjunction with that rulemaking project.

The proposed changes to parts 121 and 135 concerning Class D compartments would require compliance within three years after the effective date of the amendment. It should be noted that, with the possible exception of those in all-cargo airplanes, Class D compartments would be required to comply with existing standards for Class C compartments. Since this rulemaking would not involve any new technology and installation components are readily available, compliance within three years is feasible. A three-year compliance period would also allow sufficient time for the necessary modifications to be performed while each airplane is out of service for scheduled maintenance activity. Based on information currently available, the FAA, therefore, considers that a three-year compliance period would not impose an unreasonable burden on any operator. Nevertheless, the FAA is specifically requesting comments as to whether a longer compliance period is needed for particular operators (for example, small carriers) due to their particular circumstances, and retains the option of adopting a longer compliance period in the final rule based on such comments. Unless commenters submit specific information justifying a compliance period longer than three years, a three-year compliance period will be adopted as proposed.

As noted above, the compartments in all-cargo airplanes could be shown to meet the standards of Class E compartments in lieu of those for Class C compartments. The proposed three-year compliance period is also considered appropriate for operators that elect to meet the standards for Class E compartments. As in the case of Class C compartment standards, the standards for Class E compartments do not involve any new technology and installation components are readily available.

Assuming that the final rule is adopted as proposed, the FAA also intends to monitor operators' compliance. Such monitoring would serve two purposes. First, it would help to ensure that the carriers are converting affected compartments on a regular basis, so as to avoid disruptions in service, and to avoid requests for extensions near the end of the compliance period. Second, the FAA could inform the public of the operators' progress in achieving compliance.

Therefore, this Notice proposes specific reporting requirements for affected operators under parts 121 and 135. A new paragraph would be added to §§ 121.314 and 135.169 to require each certificate holder to report, on a quarterly basis, the serial numbers of the airplanes in that holder's fleet in which all Class D compartments have been retrofitted to meet Class C or E requirements, and the serial numbers of airplanes that have Class D compartments yet to be retrofitted. (Note that the proposed amendments to §§ 121.314 and 135.169 refer to an initial reporting date of July 1, 1998. The FAA intends to require the initial reports at the beginning of the second quarter after the effective date of the rule; e.g., if the effective date is January 15, 1998, the initial reports will be required by July 1, 1998.)

The FAA intends to make the reported information publicly available, thus allowing the public to monitor the carriers' compliance progress. These proposed reporting requirements are subject to OMB approval, as required by the Paperwork Reduction Act. An information collection control number will be assigned for them if and when OMB approval is given; that number would be listed in part 11, subpart F, of Title 14.

The FAA also seeks comments on what effects, if any, mandatory public disclosure requirements would have on the behavior of operators and others, given that the FAA intends to collect and make the information publicly available. For example would disclosure of the reported information result in compliance with retrofit requirements sooner than would otherwise be the case? If so, what effect would this have on the total amount and timing of benefits and costs of the rule? Also, what would be the best way to collect and make the information available, in order to enhance its usefulness to the public?

As noted above, the new standards adopted in parts 121 and 135 for liners in Class C and D compartments are similar, but not identical, to those adopted for part 25. Section 25.855(c), as amended by Amendment 25–60, states that ceiling and sidewall liner panels in such compartments must meet the test requirements of Part III of Appendix F of part 25. At the time the corresponding standards of parts 121 and 135 were adopted, it was found that panels of glass fiber reinforced resin consistently meet or come very close to meeting the test requirements of Part III of Appendix F. As a result, the cost of replacing them with panels meeting Part III of Appendix F would not have been commensurate with the negligible improvement in safety that could be realized. Section 121.314(a) therefore permits the ceiling and sidewall panels to be constructed of materials that meet the test requirements of Part III of Appendix F or, alternatively, of glass fiber reinforced resin. Similarly, it was also found that panels of aluminum construction came close to meeting the test requirements of Part III of Appendix F, although not as close as those constructed of glass fiber reinforced resin. Section 121.314(a) therefore permits continued use of ceiling and sidewall panels constructed of aluminum provided they were approved prior to March 20, 1989. Since the FAA has not proposed any change in this regard, Class D compartments that are reconfigured to the equivalent of Class C compartments could continue to utilize glass fiber reinforced resin panels or, if they were approved prior to March 230, 1989, aluminum panels in lieu of those meeting the test requirements of Part III of Appendix F.

Due to the recent adoption of part 119 and related amendments to part 121 (60 FR 65832, December 29, 1995), scheduled operations of transport category airplanes with ten to thirty passengers seats must be conducted under the provisions of part 121 rather than part 135. Nevertheless, the proposed changes to part 135 are needed because non-scheduled operations of transport category airplanes with ten to thirty passenger seats may still be conducted under part 135. Scheduled, as well as non-scheduled, operations of transport category airplanes with fewer than ten passenger seats may also remain under part 135.

The comment period for this Notice ends ninety (90) days from today's publication in the **Federal Register**. The FAA has determined that all of the affected Class D compartments could be retrofitted to meet the detection and suppression requirements for Class C or Class E compartments using existing technology; therefore, the FAA anticipates that the proposal to require Class D compartments to meet these requirements will not change significantly, if at all, if a final rule is adopted from this proposal.

Furthermore, the FAA anticipates that, if a final rule is adopted from this proposal, it will be published no later than December of 1997, with an effective date in January of 1998. Assuming, also, that the final rule is adopted with the proposed three-year compliance period, all affected airplanes will be in compliance no later than January of 2001.

Halon Considerations

As proposed in this notice, most Class D compartments would, in essence, become Class C compartments. Operators of all-cargo airplanes would have the option of converting their Class D compartments to Class E compartments; however, operators of passenger airplanes would have to convert their Class D compartments to meet the requirements of Class C. Although they were not previously required to have any means of fire extinguishment, the Class D compartments in passenger airplanes would have to have approved built-in fire extinguishing systems installed as required by § 25.857(c)(2). Currently the most effective and most commonly used extinguishing agent is a halogenated hydrocarbon known as halon.

Although reserve supplies of halon are currently available, the manufacture of additional halon is restricted under the Montreal Protocol, an international agreement to phase out production of ozone-depleting substances, including halon. The Montreal Protocol, in existence since 1987, prohibits the manufacture or import of new halon in all developed countries (including the United States) as of January 1, 1994, and will extend this prohibition to developing countries in the future. At this time, there is no restriction on the use of existing supplies of halon manufactured prior to 1994.

Some operators have expressed concern that they would be required to install suppression systems which would, as a matter of practicality, utilize halon, then be required by the FAA or another government agency to replace those suppression systems with systems that do not utilize halon. The FAA would not do so for two reasons. First, halon has been shown to be an effective suppression agent. The FAA would, therefore, not require its replacement due to safety considerations. Second, the FAA would not require its replacement due to environmental considerations because the FAA lacks the statutory authority to do so in any event. The federal agency that would have that authority is the Environmental Protection Agency (EPA).

The EPA is responsible for the regulation of halons in accordance with the Montreal Protocol and the requirements and authority of Sections 602 and 604 of Title VI of the Clean Air Act. The EPA has advised in its letter of May 8, 1997, that it does not intend to ban the use of halon in installed fire suppression systems for the life of the airplanes, that it can support the use of stockpiled halons to retrofit aircraft holds, and that it can support these policies in international negotiations related to aircraft or environmental matters. A copy of this letter has been placed in the docket for examination by interested persons. Nevertheless, the EPA support for this proposed rulemaking is conditional on airline and aircraft industry support of on-going efforts to develop suitable alternatives for use in future aircraft, and on FAA's accelerated efforts to develop criteria for certification of alternatives, as described more fully below.

In this regard, the FAA has participated in an extensive program to develop criteria on which to evaluate possible alternatives. Although initially proposed by the FAA, this is an international program with active participation by the aviation industry and the regulatory authorities in Europe and Canada. It must be emphasized that the work of this group, which is known as the International Halon Replacement Working Group, is to participate in the research and development of alternative agents and systems—not to select specific agents to replace halons. The FAA has accelerated development of criteria for certification of alternatives and is committed to expeditious review and certification of alternatives as they are developed.

The objective of this program is to develop certification criteria for approval of alternative agents and systems. Such alternatives must, of course, have satisfactory environmental characteristics, such as reduced ozone depletion potential, global warming potential and atmospheric lifetime. In order to maintain the excellent record of in-flight fire safety that exists today, new agents and systems must provide extinguishing and suppression performance equal to or better than the halons. In this regard, the development of minimum performance standards for alternative agents and systems in cargo or baggage compartments has focused on four critical threats—cargo container fires, bulk-loaded luggage fires, surface-burning fires and fires in luggage containing aerosol cans.

In addition to performing their intended function of suppressing or extinguishing fires and having satisfactory environmental characteristics, alternative agents and systems used in airplanes must have certain other characteristics that may not be significant for non-aircraft usage. They, of course, must not present a health hazard during normal operations to persons working within the compartments or animals being shipped in the compartments. Due to the proximity of the occupants of airplanes to the cargo or baggage compartments, the cumulative toxicology effect of the agents, their pyrolytic breakdown products and the by-products of combustion must not pose an unacceptable health hazard when a fire does occur. They must be non-corrosive and otherwise compatible with aircraft materials. Discharge of the agent must leave a minimum of residue that can be safely cleaned up. Finally, such alternative agents and systems must be relatively low in weight for economical use in airplanes.

One very promising alternative is the use of a waterspray system. The FAA has conducted a very comprehensive program to develop cabin waterspray systems as a means of affording occupants more time to escape a post-crash cabin fire. Although the cost of a waterspray system serving only the cabin presently outweighs the likely benefits, it appears that benefits of a waterspray system that could serve as the extinguishing agent in either a cargo or baggage compartment fire, or in a cabin fire, would outweigh the costs of the system.

Since the future availability of halon is uncertain, the FAA specifically invites comments concerning the following:

1. The cost, feasibility and availability of halon for use as the extinguishing agent in former Class D compartments that would be reconfigured to meet the requirements of Class C as a result of this proposed rulemaking;
2. The cost, feasibility and availability of waterspray systems that could provide protection from fires occurring in cargo or baggage compartments as well as in the cabin; and
3. The cost, feasibility and availability of other possible alternative agents.

Regulatory Evaluation

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Would generate benefits that justify its costs and is a ''significant regulatory action'' as defined by Executive Order 12866; and (2) would have a significant impact on a substantial number of small entities; and (3) would not constitute a barrier to international trade. The FAA has also determined that this rule is ''significant'' according to DOT Regulatory Polices and Procedures (44 FR 11034; February 26, 1979) because there has been considerable public interest in this subject. These analyses, available in the docket, are summarized below.

Regulatory Evaluation Summary

This analysis separately considers newly-manufactured airplanes and in-service airplanes. There are 20 transport-category airplane models operating under 14 CFR parts 121 or 135 that have Class D compartments. It is assumed that a requirement to retroactively install detection and suppression systems in Class D compartments would become effective on January 1, 1998. The rule would allow three years for compliance; therefore, airplanes that are expected to be permanently retired from service on or before December 31, 2001, are omitted from the analysis. FAA estimates that 2,994 passenger airplanes and 321 all-cargo airplanes would be affected by the proposed rule. These estimates are based on an inventory compiled by the FAA's National Aviation Safety Data Analysis Center (NASDAC) from airplane-specific registry and insurance records.

On December 12, 1996, the Air Transport Association (ATA), joined by Vice President Gore, formally announced that its membership would voluntarily install fire detection systems in Class D cargo or baggage compartments. (The ATA is a trade organization representing the major airlines in the U.S.) ATA's announcement raised an important question—would this voluntary action render part of the proposed rule moot? That is, are the incremental benefits of installing fire-suppression systems in airplanes in which detection systems have already been installed on a voluntary basis sufficient to justify the additional cost of such suppression systems? The FAA finds that, in fact, the benefits of the rule exceed its costs *even after taking into account the effects of ATA's initiative.* Some or all of the important public interests underpinning the FAA's proposal may have motivated the ATA to announce on May 14, 1997, the commitment of its membership to install both detection and suppression systems in passenger-carrying airplanes.

Cost Estimates

Cost estimates consider: (1) the costs associated with submitting compliance reports, (2) certification expenses including one-time equipment and tooling costs, (3) fire detection and suppression equipment and installation costs, and (4) variable operating costs (fuel costs, maintenance and inspection costs, weight off-load costs, and the costs associated with unnecessary diversions initiated because of false alarms). In addition, it is assumed that Class D compartments in all-cargo airplanes would be converted to E compartments which do not require the installation of active suppression systems.

The proposal would require each affected operator to submit a quarterly report listing the serial numbers of those airplanes in its fleet that are in compliance with the provisions of the rule and those that are not in compliance. One major carrier stated that, since records of modifications of this scale are computerized, the reporting requirement would involve less than one-half of one work hour. Initially, however, reports may take additional time to generate as carriers establish procedures, forms, etc. Also, records may not be computerized for smaller carriers. Thus, FAA conservatively estimates that, on average, the rule would require two additional work hours per quarter for each of the approximately 130 affected carriers. Assuming that each carrier will file 11 reports during the three year compliance period and that the fully burdened hourly compensation rate is $65, the estimated nominal cost of this provision to the entire industry is approximately $186,000 or $151,000 at present value (printing, postage, and other miscellaneous costs are assumed negligible).

The FAA would also incur additional costs as a result of this reporting requirement. This analysis conservatively assumes that each of approximately 90 Flight Standards District Offices (FSDO) would, on average, spend approximately one-half of one work hour per quarter processing air carrier reports (some would spend no time, some considerably more than one-half hour). Also, approximately 20 hours per quarter would be required at FAA headquarters to tabulate these reports. Assuming the fully burdened hourly compensation rate is $38, the estimated nominal cost of this provision to FAA is approximately $27,000 or $22,000 at present value (data transmission costs between FAA headquarters and each of the FSDO's is assumed negligible).

Type design approval of the detection and suppression systems would be required for all airplane models affected by the proposal. Type design approval would be in the form of a supplemental type certificate (STC) issued to an applicant other than the manufacturer; or, in the case of the manufacturer, either an STC or an FAA-approved type-design change. (The requirements for obtaining FAA approval are the same in either case.) The FAA assumes that type-design approval would be required for all airplane models affected by the proposed rule. Certain models would require a separate type-certification program for each different variant, while in other cases, all variants would be sufficiently similar that type-design approval could be granted for all variants following only one type-certification program. In some instances, an alternate Class C compartment configuration has already been FAA-approved. For those models or variants, no further type-certification effort would be required.

The cost of a type-certification program of this nature costs ranges from $315,000 to $1.8 million depending on the airplane model. In principle, no more than one type-certification program would be needed per model or variant; since operators could elect to utilize the same detection and suppression system installations on all affected airplanes of that particular type. If additional entities obtain separate type-design approval for a given model or variant, they would do so for economic gain, not as a result of an FAA requirement to do so. Therefore, the analysis assumes the minimum number of type-certification programs theoretically necessary to accomplish the conversions.

Detection-suppression system and installation cost estimates postulate that compartments would be fitted with a system of optical smoke detectors (configured to give indication of a fire within one minute) and a halon suppression system. The analysis further assumes a quantity of halon that would provide: (1) an initial ''knockdown'' discharge, and (2) the capability subsequently to maintain a 3 percent halon concentration for one hour. This is consistent with the standards currently in effect for Class C compartments.

Although the U.S. bans the import of newly-produced halon, sufficient quantities of recycled halon are assumed to be available to meet an initial demand to retrofit the affected fleet. The cost of halon has risen from approximately $2 per pound before production was banned to $20 per pound currently. This analysis assumes that halon used in a retrofit would be available at $20 per pound. Nominal equipment and installation unit (i.e. each airplane) costs range from $13,000 to $101,000 depending on the airplane model.

Although the time to retrofit could be substantial, especially for airplanes with three Class D compartments, industry representatives state that conversions could be accomplished during a C-check, a scheduled maintenance check that occurs about once a year. C-checks are typically accomplished over a four- to five-day period. Conversions conducted concurrent with a C-check could reduce labor hours by as much as 30 percent, because many areas of the airplane are easily accessible. Because most operators would likely perform retrofits during C-checks, this analysis attributes no foregone revenues due to downtime (i.e., time out-of-service) associated with these conversions. Nevertheless, the FAA seeks comments as to whether there are circumstances under which the necessary retrofits could not, or would not, be performed concurrently with a C-check. If so, how long would the airplane in question need to be out of service? Are there circumstances under which these installations would necessitate extending the normal duration of a C-check? If so, how many additional hours or days would this take?

Depending on the airplane model and its configuration, installing fire suppression and detection systems would add between 7 and 300 pounds to the empty weight of an airplane. This weight, in turn, would affect fuel consumption. Incremental fuel consumption costs were estimated for each airplane model based on the weight of additional equipment and suppression agent required, statistical estimates of the change in fuel consumption as a function of incremental weight by airplane type, and estimates of annual flight hours by airplane model.Annual per-airplane incremental fuel consumption estimates range from $50 to $4,900 depending on the airplane model.

Inspection and maintenance of fire detection and suppression systems would include: (1) a leak check; (2) a visual inspection of the system; (3) a sensor test; and (4) a hydrostatic check of the fire bottles. The first three checks could be accomplished at each C-check, i.e., about once per year. A hydrostatic check would involve removing and replacing the fire bottle and would occur once every five years. The bottle would be returned to the halon provider where it would be recharged and checked for leaks.

Six work-hours at a burdened hourly rate of $60 would be required to conduct a leak check of the system of each compartment. A visual inspection of the system would require 1.5 hours per compartment at $60 per hour. Checking the sensors would require about one hour per compartment. It would take two mechanics one hour at a burdened hourly rate of $60 to remove and replace a fire bottle. Fire-bottle vendors typically charge between $600 and $1,000, including shipping, to perform a hydrostatic test and recharge the bottles, irrespective of the size of the bottle. Annual unit maintenance and inspection costs, therefore, range from $700 to $2,100 depending on the airplane model.

Under certain combinations of conditions, some departures might be weight-constrained. In those cases, the additional weight of the fire detection and suppression systems would require an operator to off-load passengers or cargo. The cost of this off-load penalty is measured by estimating the number of displaced passengers or the amount of displaced cargo that could not be accommodated on another flight by the same or competing airline. (On the basis of a statistical analysis of load factors and unaccommodated demand, the FAA estimates that 5 percent of the departures would be fully booked. Generally, most of these flights would not be weight constrained, but this figure is a conservative assumption.) Specifically, this analysis assumes that: (1) On average, approximately 5 percent of the departures would be affected; and (2) 88% of the displaced load would be placed on another flight of the same carrier or on a competing carrier. The cost of unaccommodated off-load—approximately $0.30 per pound—is a weighted average of passenger and cargo revenue derived from revenue, enplanement, and freight data collected by the Department of Transportation's Office of Airline Statistics. Annual unit off-load penalties range from $30 to $800 depending on the airplane model.

Operators would also incur costs associated with flight diversions caused by false fire warnings. Since the probability of a fire is smaller than the reliability level of fire or smoke detectors, most alarms will be false. Costs include incremental airplane operating costs incurred during the diversion and passenger costs. Based on a recent FAA study of Service Difficulty Reports (SDR), proprietary aircraft operating data, and information from airborne fire detection equipment manufactures, the FAA estimates that the frequency of false alarms is approximately 44 per million departures. In the absence of more detailed information, this analysis makes the conservative assumption that all false alarms result in a diversion. Annual diversion costs per airplane range from $60 to $2,800 depending on airplane type.

Based on the above, the FAA estimates total life-cycle costs for the retrofitted fleet in nominal terms are approximately $296 million, or $194 million at present value. For a newly-manufactured airplane delivered to an ATA carrier, the rule would increase life-cycle costs for an average affected airplane by approximately $110,000 in nominal terms, or $60,000 at present value. Unit lifecycle costs for a newly-manufactured airplane delivered to a non-ATA carrier would increase by approximately $179,000, or $100,000 at present value.

Based on these estimates, the FAA does not consider the effects of this rule sufficient to trigger the requirements of the Unfunded Mandates Reform Act or to be a ''major'' rulemaking for the purposes of the Congressional review requirements under the Small Business Regulatory Enforcement Fairness Act. The FAA requests comments on its cost estimates with respect to those statutes.

Benefits Estimates

The benefits of detection and suppression systems depend on the degree to which the systems enable an airplane to avert a catastrophic accident in the event a fire occurs in a cargo or baggage compartment. Measuring this benefit, however, is problematic since it is determined not only by the relative fire-protection capabilities of Class C and Class D compartments, but on the probability that a fire will occur. Amendments to regulations—e.g. restrictions on the transportation of hazardous materials and more stringent burn-through requirements for compartment liners—would also impinge on this analysis. (It should be noted, however, that the improved standards for liners apply equally to both Class C and Class D compartments.)

The expected (future) rate of fires occurring in cargo or baggage compartments is estimated using historical accident and incident data from the National Transportation Safety Board (NTSB), FAA, insurance underwriters, and foreign aviation authorities. These records show that during the 20-year period between 1977 and 1996, there were 19 fires reported as having occurred worldwide in Class D and Class C compartments involving transport category airplanes while used in commercial service. During this period, air-carriers worldwide (excluding domestic operations within the former Soviet Union, the Russian Federation, and the Commonwealth of Independent States) accumulated approximately 224.5 million departures in transport category airplanes having Class C or Class D compartments. The event rate for fires occurring in Class D and Class C compartments is, therefore, approximately 0.085 per million departures.

It must be noted that the event rate of 0.085 per million departures is based, for the most part, on service experience that occurred when consumer aerosol cans contained inert propellants. As described above under **Background**, the current use of highly-flammable propellants in consumer aerosol cans presents an additional hazard.

The available evidence shows that in the majority of incidents, Class D compartments successfully contain fires. Of the inflight fires occurring in Class D compartments, only four were reported to have resulted in casualties or substantial damage to the airplane. A precise estimate of the likelihood of injury or airplane damage in the event a fire occurs in a Class D compartment is difficult to compute, however, owing to the limitations of accident and incident information. In many cases, necessary details had to be estimated. Where the post-event condition of the airplane is unknown, it is assumed that there was no damage. Where fatalities and injuries are unreported, it is assumed that there were no casualties. Where necessary, the number of occupants is estimated by applying the average load factor for that year by the average passenger capacity for a given airplane model.

The expected reduction in the proportion of occupants fatally injured in an accident resulting from a fire occurring in a Class D compartment is estimated as the ratio of fatalities to total occupants. Of the 1,411 individuals involved in the accidents cited above, 523 were fatally injured, representing approximately 37% of occupants. In the case of all-cargo airplanes, the expected life-saving benefit is assumed to be zero.

Applying the risk reduction estimate above to airplane-specific departure, capacity, and load factor information (and using the Department of Transportation's official value of a fatality averted—$2.7 million), FAA estimates that the rule would yield benefits of approximately $458 million over the life of the affected in-service fleet (or approximately $228 million at present value).

For a representative newly-manufactured airplane delivered to an ATA carrier, the FAA estimates that the rule would yield a life-cycle benefit of $280,000 (or $94,000 at present value). For a newly-manufactured airplane delivered to a non-ATA carrier, FAA estimates that the rule would yield a life-cycle benefit of $340,000 (or $115,000 at present value).

In view of the above, the FAA finds that the benefits of the rule would outweigh its costs. Specifically, for the affected in-service fleet, discounted benefits would exceed costs by a factor of approximately 1.18. For affected newly-manufactured airplanes delivered to ATA carriers, discounted benefits would exceed costs by a factor of 1.57. For newly-manufactured airplanes delivered to non-ATA carriers, discounted benefits would exceed costs by a factor of 1.15.

This regulatory evaluation is based on a number of assumptions involving past operational experience. The public is, therefore, specifically invited to comment on the validity of those assumptions. In particular, the benefits are estimated using a worldwide accident rate including the Saudi Arabian Lockheed L–1011 and Gulf Air Boeing 737 accidents noted above. Do those accidents involve any factors not considered by the FAA that would warrant an alternative analysis based only on operational experience involving U.S. air carriers?

Apart from past occurrences and the likelihood of their recurrence, the FAA believes that changing circumstances may introduce new hazards that would not be predicted by previous service experience. For example, as discussed above, there is now a high percentage of checked luggage containing aerosol cans with flammable propellants. Although no fatalities are known to have occurred as a result of an aerosol can exploding in a Class D compartment, it is apparent from tests that such items do pose risks that did not exist when aerosol cans contained only nonflammable propellants. Are there alternative approaches the FAA should consider in risk assessment for this and future rulemaking?

The Department of Transportation is also preparing rulemaking that would place additional restrictions on the transport of hazardous materials (oxygen generators including empty canisters and oxidizers) by air carriers (61 FR 68955, December 30, 1996). The benefits of these restrictions would overlap part of the benefits associated with this rulemaking, i.e. the elimination of Class D cargo compartments and their conversion to the equivalent of Class C or Class E compartments. As a result of a comprehensive review of cargo fire safety options, however, the FAA determines that both initiatives would yield benefits that justify their costs. Considering both initiatives together, total combined discounted costs are approximately equal to the combined benefits for airplanes in service (assuming conservatively that benefits are only associated with prevented inflight fires).

The FAA believes there are also non-quantifiable benefits contained in this proposal, including increased consumer confidence in the aviation industry due to the installation of detection and suppression systems. The White House Commission on Aviation Safety and Security recommended that the FAA include these non-quantifiable benefits in evaluating safety proposals. The FAA took these non-quantifiable benefits into consideration while formulating the proposal.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires agencies to review rules which may have ''a significant economic impact on a substantial number of small entities.'' FAA Order 2100.14A, *Regulatory Flexibility Criteria and Guidance*, specifies small entity size and cost thresholds by Standard Industrial Classification (SIC). Entities potentially affected by the rule include manufacturers of transport category airplanes (SIC 3721), and operators of airplanes for hire (SIC 4511).

There are no manufacturers of transport category airplanes that meet the SIC 3721 size threshold for small entities. On the basis of Aircraft Registry data, however, FAA estimates that 49 air carriers meet the size criterion for SIC 4511.

The definition of ''significant economic impact'' varies by operator type. For ''type 1'' scheduled carriers, whose fleets consist of airplanes having a seating capacity of more than 60 passengers, the threshold is $123,000. For ''type 2'' carriers—which include scheduled carriers operating airplanes seating 60 or fewer passengers (e.g., commuter airlines)—the threshold is $69,000. For ''type 3'' carriers —including charter airlines and other passenger and cargo carriers providing unscheduled service—the threshold is $5,000. Annualized costs per airplane (in 1996 dollars) are computed by amortizing the total discounted costs for each airplane over its expected remaining service life. Annualized costs per air carrier—obtained by summing the per airplane annualized estimates—are then compared to the thresholds above.

FAA Order 2100.14A defines a ''substantial number of small entities'' as ''a number which is not less than eleven and which is more than one-third of the small entities subject to a proposed or existing rule * * *.'' This analysis finds that the proposed rulemaking would significantly affect 31 of the 49 small entities identified above—clearly, 31 is both greater than 11 and greater than one-third of the affected small entities. The FAA, therefore, determines that the proposed rule would have a significant economic impact on a substantial number of small entities.

In light of the economic impact of the proposal, FAA convened a panel of experts—including representatives from FAA and the Department of Transportation's Research and Special Programs Administration (RSPA)—to evaluate the relative advantages and disadvantages of various fire prevention and protection options. These options ranged from relatively low-cost, purely preventative approaches (e.g. banning certain types of material from air transport) to mitigative approaches (e.g. fire detection and suppression systems). Panel participants specifically considered the degree to which one approach would dilute the benefits of other approaches.

At the request of the FAA Administrator, consideration was also given to alternative fire detection and suppression system installation options (and various logical permutations of these options) including: (1) retrofit of detection systems only, (2) a requirement for detection systems on newly manufactured airplanes only, (3) a requirement for detection and suppression systems for extended overwater operations only, (4) retrofit of detection and suppression systems, (5) a requirement for detection and suppression systems on newly manufactured airplanes only.

On the basis of this comprehensive analysis of policy options, the FAA concludes that no alternative to full detection and, for passenger-carrying airplanes, suppression system would achieve equivalent safety benefits while at the same time reducing the cost impact on small entities.

It is possible, however, that extending the deadline by which small entities must complete these retrofits could provide some cost relief. The FAA's preliminary analysis suggests that extending the compliance period is not justified for several reasons. First, the requirement as proposed is modest. A small operator would be required to convert up to nine airplanes (the small-entity threshold) within three years. Second, the FAA expects that the potential costs reduction would be very small. It is true that extending the deadline could permit a small operator to retire some airplanes without conversion; however, assuming the operator maintains the same capacity, the retired airplanes would have to be replaced either through purchase or lease. The replacement airplanes would have to incorporate detection and, in the case of passenger-carrying airplanes, suppression. Theoretically, then, the cost savings would equal the return on capital (required to finance the retrofits) that would accrue during the short time that operators could delay conversions. Finally, this small savings must be weighed against the increased length of time that airplane occupants would be exposed to greater fire hazards. For example, when a fire occurs in a Class D compartment, it is irrelevant, insofar as the potential safety hazards are concerned, whether the airplane is operated by a ''small entity'' or any other entity that is not ''small.''

Nevertheless, the FAA invites comments on the impacts of cost and benefits associated with extending the compliance time for small entities.

International Trade Impact Assessment

Recognizing the regulations that are nominally domestic in nature often affect international trade, the Office of Management and Budget directs Federal Agencies to assess whether or not a rule or regulation would affect any trade-sensitive activity.

The proposed rule could potentially affect international trade by burdening domestic manufacturers and air carriers with requirements that are not applicable to their foreign competitors, and thereby increase the relative price of domestically-produced goods and air travel provided by domestic operators.

The FAA holds, however, that the proposed rule would have a negligible impact on international trade. First, the rule would not establish either a competitive advantage or disadvantage for domestic airframe manufacturers—both domestic and foreign firms would be unable to sell newly-manufactured transport category airplanes with Class D cargo or baggage compartments in the U.S. since they would be ineligible for air carrier service in this country after December 31, 2000. Second, as noted above, several major U.S. air carriers have already voluntarily installed detection or detection-suppression systems in airplanes for which there is no existing requirements to do so. This is also true for at least one major foreign airline. Third, the proposed rule would primarily affect smaller narrow-body airplanes that are used on domestic routes. Foreign carriers, of course, are not permitted to compete on domestic routes. Most airplanes used in international service are larger models which are already equipped with cargo or baggage compartment fire-detection and suppression systems. Finally, foreign civil aviation authorities have indicated to the FAA that they expect to adopt similar fire-detection and suppression requirements.

Federalism Implications

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

International Compatibility

The FAA has reviewed the corresponding International Civil Aviation Organization regulations, where they exist, and has identified no differences in these proposed amendments and the foreign regulations. The FAA has also reviewed the Joint Airworthiness Authority Regulations and has discussed similarities and differences in these proposed amendments and the foreign regulations.

Paperwork Reduction Act

This Notice proposes reporting requirements, which are subject to OMB approval, as required by the Paperwork Reduction Act of 1995. An information collection control number will be assigned for them if and when OMB approval is given. The costs and benefits of these proposed collection requirements are set forth in the section entitled ''Cost Estimates,'' above.

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 a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish such regulatory distinctions as he or she considers appropriate. Because this proposed rule would apply to the operation of most transport-category airplanes under parts 121 and 135 of Title 14, it could, if adopted, affect intrastate aviation in Alaska. The FAA, therefore, specifically requests comments on whether there is justification for applying the proposed rule differently to intrastate operations in Alaska.

Conclusion

Because the proposed changes to upgrade the fire safety standards for cargo or baggage compartments are not expected to result in a substantial economic cost, the FAA has determined that this proposed legislation would not be major under Executive Order 12866. Because this is an issue which has prompted a great deal of public concern, the FAA has determined that this action is significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the regulatory evaluation prepared for this project may be examined in the Rules Docket or obtained from the person identified under the caption **FOR FURTHER INFORMATION CONTACT.**

List of Subjects

14 CFR Part 25

Aircraft, Aviation safety.

14 CFR Part 121

Aviation safety, Air carriers, Air transportation, Aircraft, Airplanes, Transportation.

14 CFR Part 135

Aviation safety, Aircraft, Airplanes.

The Proposed Amendments

Accordingly, the FAA proposes to amend the Federal Aviation Regulations (FAR) 14 CFR parts 25, 121, and 135 as follows:

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

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

Authority: 49 USC 106(g) 40113, 44701, 44702 and 44704.

2. Section 25.855(c) is revised to read as follows:

§ 25.855 Cargo or baggage compartments.

* * * * *

(c) Ceiling and sidewall liner panels of Class C compartments must meet the test requirements of part III or appendix F of this part or other approved equivalent methods.

* * * * *

§ 25.857 [Amended]

3. Section 25.857 is amended by removing and reserving paragraph (d).

4. Section 25.858 is amended by revising the section heading and the introductory paragraph to read as follows:

§ 25.858 Cargo or baggage compartment smoke or fire detection systems.

If certification with cargo or baggage compartment smoke or fire detection provisions is requested, the following must be met for each cargo or baggage compartment with those provisions:

* * * * *

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

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

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

6. Section 121.314 is revised to read as follows:

§ 121.314 Cargo and baggage compartments.

For each transport category airplane type certificated after January 1, 1958:

(a) Each Class C or Class D compartment, as defined in § 25.857 of this Chapter in effect on June 16, 1986 (see Appendix L to this part), that is greater than 200 cubic feet in volume must have ceiling and sidewall liner panels which are constructed of:

(1) Glass fiber reinforced resin;

(2) Materials which meet the test requirements of part 25, appendix F part III of this chapter; or

(3) In the case of liner installations approved prior to March 20, 1989, aluminum.

(b) For compliance with paragraph (a) of this section, the term ''liner'' includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.

(c) After [insert date three years after the effective date of the final rule], each Class D compartment, regardless of volume, must meet the standards of §§ 25.857(c) and 25.858 of this Chapter for a Class C compartment unless the operation is an all-cargo operation in which case each Class D compartment may meet the standards in § 25.857(e) for a Class E compartment.

(d) Reports of compliance with paragraph (c) of this section. Each certificate holder must submit written reports to the FAA that contain information about the airplanes being operated by that certificate holder and the holder's compliance with paragraph (c) of this section. A written report must be submitted to the Certificate-holding District Office by July 1, 1998, and at each three-month interval thereafter, that contains:

(1) The serial number of each airplane in which all Class D compartments have been retrofitted to meet the fire detection and suppression requirements for Class C or the fire detection requirements for Class E; and

(2) The serial number of each airplane that has at least one Class D compartment that has not been retrofitted.

7. Appendix L to part 121 is amended by adding to the table an entry for § 121.314(a) to read as follows:

Appendix L to Part 121—Type Certification Regulations Made Previously Effective

* * * * *

Part 121 section	Applicable aircraft	Provisions: CFR/FR references
*	* *	* *
§ 121.314 (a).	Transport category airplanes type certificated after January 1, 1958.	Class C or D cargo or baggage compartment definition, 14 CFR 25.857 in effect on June 16, 1986, 14 CFR parts 1 to 59, revised as of Jan. 1, 1997, and amended by Amendment 25–60, 51 FR 18243, May 16, 1986.

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON-DEMAND OPERATIONS

8. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 106(g) 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722.

9. Section 135.169 is amended by revising paragraph (d) introductory text and paragraph (d)(1); and adding new paragraphs (d)(3) and (e) to read as follows:

§ 135.169 Additional airworthiness requirements.

* * * * *

(d) Cargo or baggage compartments installed in each transport category airplane type certificated after January 1, 1958:

(1) Each Class C or D compartment, as defined in § 25.857 of part 25 of this chapter in effect on June 16, 1986 (see appendix F to this part), greater than 200 cubic feet in volume, must have ceiling and sidewall panels which are constructed of:

* * * * *

(3) After [insert a date three years after the effective date of the final rule], each Class D compartment, regardless of volume, must meet the standards of §§ 25.857(c) and 25.858 of this chapter for a Class C compartment unless the operation is an all-cargo operation in which case each Class D compartment may meet the standards in § 25.857(e) for a Class E compartment.

(e) Reports of compliance with paragraph (d)(3) of this section. Each certificate holder must submit written reports to the FAA that contain information about the airplanes being operated by that certificate holder and the holder's compliance with paragraph (d)(3) of this section. A written report must be submitted to the Certificate-holding District Office by July 1, 1998, and at each three-month interval thereafter, that contains:

(1) The serial number of each airplane in which all Class D compartments have been retrofitted to meet the fire detection and suppression requirements for Class C or the fire detection requirements for Class E; and

(2) The serial number of each airplane that has at least one Class D compartments that has not been retrofitted.

10. A new Appendix F is added to part 135 to read as follows:

Appendix F to Part 135—Type Certification Regulations Made Previously Effective

Appendix F lists regulations in this part that require compliance with standards contained in superseded type certification regulations that continue to apply to certain transport category airplanes. The tables set out citations to current CFR section, applicable aircraft, superseded type certification regulation and applicable time periods, and the CFR edition and **Federal Register** documents where the regulation having prior effect is found. Copies of all superseded regulations may be obtained at the Federal Aviation Administration Law Library, Room 924, 800 Independence Avenue SW, Washington, DC.

Part 135 section	Applicable aircraft	Provisions: CFR/FR references
§ 135.169 (d).	Transport category airplanes type-certified after January 1, 1958.	Class C or D cargo or baggage compartment definition. 14 CFR 25.857 in effect on June 16, 1986, 14 CFR parts 1 to 59, revised as of Jan. 1, 1997, and amended by Amendment 25–60, 51 FR 18243, May 16, 1986.

Issued in Washington, D.C. on June 9, 1997.

James C. Jones,

Acting Director, Aircraft Certification Service.

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