
Thursday
August 26, 1993

Federal Register

Part IX

**Department of
Transportation**

Federal Aviation Administration

**14 CFR Parts 25 and 121
Emergency Evacuation Demonstration
Procedures, Exit Handle Illumination
Requirements, and Public Address
Systems; Final Rule**

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Parts 25 and 121**

[Docket No. 26003; Amendment Nos. 25-79 and 121-233]

RIN 2120-AC45

Miscellaneous Changes to Emergency Evacuation Demonstration Procedures, Exit Handle Illumination Requirements, and Public Address Systems

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: These amendments to the airworthiness standards for transport category airplanes and the operating rules for air carrier operators of such airplanes modify the procedures for conducting an emergency evacuation demonstration. These include a requirement that the flightcrew take no active role in the demonstration, and a change to the age/sex distribution requirement for demonstration participants. In addition, the airworthiness standards are amended to standardize the illumination requirements for the handles of the various types of passenger emergency exits, and to add a requirement to prevent the inadvertent disabling of the public address system because of an unstowed microphone. These amendments are intended to enhance the provisions for egress of occupants of transport category airplanes under emergency conditions.

EFFECTIVE DATE: September 27, 1993.

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SUPPLEMENTARY INFORMATION:**Background**

This amendment is based on Notice of Proposed Rulemaking (NPRM) No. 89-23, which was published in the *Federal Register* on September 8, 1989 (54 FR 37414). The notice proposed to modify the procedures for conducting an emergency evacuation demonstration by requiring that the flightcrew take no active role in the demonstration, and by changing the age/sex distribution requirement for demonstration participants. The notice also proposed to standardize the illumination requirements for the handles of the

various types of passenger emergency exits. Additionally, the notice proposed to add a requirement that would prevent the inadvertent disabling of the public address system because of an unstowed microphone.

As discussed in the notice, the FAA held a public technical conference in Seattle, Washington on September 3-6, 1985, to solicit and review information from the public on a variety of topics related to the emergency evacuation of transport category airplanes. The proposals in Notice 89-23 were in response to recommendations made as a result of the public conference.

Role of the Flightcrew

Section 25.803(c) of the Federal Aviation Regulations (FAR) defines the requirements for conducting an emergency evacuation demonstration for the type certification of transport category airplanes. Similar requirements for U.S. air carrier operators are defined in § 121.291 and appendix D of part 121 of the FAR. Section 121.291 requires, in part, that each holder of an air carrier operating certificate must conduct an emergency evacuation demonstration in accordance with appendix D of part 121 for each type and model of airplane to be used in passenger-carrying operations, unless compliance has been shown with § 25.803 in effect on December 1, 1978 (Amendment 25-46) during type certification, or with § 121.291(a) in effect on October 24, 1967 (Amendment 121-30). Appendix D of part 121, in turn, contains demonstration criteria which are similar to those of § 25.803. Section 25.803(c)(19) of part 25 and appendix D, paragraph (a)(19), of part 121 require the applicant's approved emergency evacuation training program procedures to be fully utilized during the demonstration.

Most operators' procedures call for one or more of the flight crewmembers to enter the cabin and assist in an evacuation. To the extent that they are available for such assistance, it is appropriate that they do so in an evacuation under actual emergency conditions. It cannot be assured, however, that the flight crewmembers will always be available to provide such assistance on a timely basis. They may have to perform other duties which would delay their entry into the cabin. Such duties may include, for example, engine shutdown or communications with persons on the ground. If the evacuation is initiated by a flight attendant, the flightcrew may not be immediately aware of the evacuation. Furthermore, they may not be available to assist in the cabin if they are

incapacitated or have already evacuated through one of the cockpit emergency exits. In this regard, some operators' procedures call for one of the flightcrew to leave the airplane immediately and assist on the ground.

Because it cannot be assured that the flightcrew would always be available to assist in an evacuation under actual emergency conditions, it was recommended that the demonstration be conducted without the assistance of the flightcrew in the cabin. In this way, the demonstration would more accurately reflect conditions that are likely to be encountered during an actual evacuation.

As proposed, the flightcrew could participate in the coordination of the demonstration by determining when the airplane is properly prepared for the demonstration, relaying information to ground personnel, or initiating the demonstration. When the demonstration starts, the flightcrew would have to be in their assigned seats. They would then leave the airplane through one of the exits close to the flight deck, after simulating the time required to complete the emergency checklist. After the flightcrew had reached the ground, they would be permitted to assist evacuees.

Section 121.291(a) would be amended to specify that any demonstration conducted on or after the effective date of the amendment would have to be conducted without the active participation of the flightcrew, regardless of whether the demonstration is conducted under the provisions of that part or during type certification under the provisions of § 25.803. After the effective dates of these amendments, where compliance with § 25.803 is to be shown by analysis rather than actual demonstration, this would not preclude an analysis that is based on the results of demonstrations conducted prior to the effective date of the amendment.

Since the role of the flightcrew in the demonstration would be minimal, there would be no need for them to be members of a regularly scheduled line crew. Section 25.803(c)(7) of part 25, and appendix D, paragraph (12) of part 121 would be revised accordingly. Additionally, the word "or" in § 25.803(c)(7)(i) would be changed to "and" in order to clarify that the requirement is for a joint part 25 and part 121 certification effort.

Age/Sex Mix

Section 25.803(c)(8), as well as appendix D to part 121, specifies, in part, that the emergency evacuation demonstration must be conducted using a representative load of persons in

normal health. Currently this load is specified as being at least 30 percent female and at least 5 percent over 60 years of age, with a proportionate number of females (i.e., 30 percent of 5 percent, or 1.5 percent of the total load must be female and over 60). In addition, at least 5 percent, but not more than 10 percent, must be children under 12 years of age.

The use of elderly persons in conducting emergency evacuation demonstrations subjects those persons to a high risk of suffering injuries, such as broken bones, etc. Furthermore, it is an unnecessary risk since compensating factors can be applied to provide the same test results. Although there is less risk of injury to children, the use of minors in conducting emergency evacuation demonstrations actually violates prevailing child labor laws in many states. Because of these unnecessary risks, the FAA has permitted emergency evacuation demonstrations to be conducted with other mixtures of age and sex under the equivalent safety provisions of § 21.21(b)(1).

In view of these unnecessary risks, it was recommended that the FAA re-evaluate the mixture of sex and age used for emergency evacuation demonstrations. In responding to the recommendations, the FAA first reviewed three sources of data to determine the average mixture of passengers being flown in air carrier operations: (1) The "Demographic Characteristics of Airline Passengers (1984)," The Airliner Cabin Environment: Air Quality and Safety, National Academy Press; (2) an age distribution survey of trans-Atlantic passengers conducted in the United Kingdom by the Civil Aviation Authority (CAA); and (3) a cursory age/sex distribution survey of airline passengers conducted by the Air Transport Association (ATA). Copies of these reports have been placed in the rules docket.

In addition to reviewing data concerning the average mixture of passengers being flown in air carrier operations, the FAA also reviewed test data concerning the relative evacuation capability of different mixtures of age and sex.

Data were available from the FAA Civil Aeromedical Institute (CAMI), which had conducted a series of tests to compare the relative evacuation rates of four different seating configurations adjacent to a Type III emergency exit (as defined in § 25.807). From those tests, the relative evacuation rates of different mixtures of age and sex were developed. In addition, the Aerospace Industries

Association of America (AIA) presented data to the FAA concerning the relative evacuation capability of different mixtures of age and sex.

The calculations performed in determining the proposed age/sex were presented in detail in Notice 89-23.

The FAA also proposed to allow the use of an alternative mixture of sex and age, provided it would produce equivalent results. Producing equivalent results means that the alternative age/sex mix would have to produce the same evacuation rates as the age/sex distribution specified in the regulation, or the 90-second time limit would have to be adjusted accordingly. Typically, the applicant would have to conduct comparative tests in order to show that the alternative age/sex distribution would produce equivalent results.

Overwing Exit Assist Means

Notice 89-23 contained a proposal to clarify the wording in § 25.803(c)(3) and paragraph (a)(3) of appendix D to part 121 to specify that stands and ramps may be used in emergency evacuation demonstrations at overwing exits only when off-wing descent devices are not installed on the airplane. This has been the practice since the inception of the rule, and the rewording obviates any future uncertainty over the requirement. Corresponding conforming changes to § 25.803(c)(18) and paragraph (a)(18) of appendix D to part 121 were also proposed.

As a further conforming change, the FAA proposed to revise § 121.291(a) to extend the exceptions of those subparagraphs to include emergency evacuation demonstrations conducted in accordance with any later amendments to that section or § 25.803.

Exit Handle Illumination

The notice also contained a proposal to revise § 25.811 to standardize the requirements for illumination of passenger emergency exit operating handles. This section specifies that each operating handle of Type I and Type A passenger emergency exits must be self-illuminated, or be conspicuously located and well-illuminated by the emergency lighting. Section 25.811 does not provide this option for Type III exits. The operating handle of a Type III passenger emergency exit has to be self-illuminated. The FAA has, however, accepted such exits with handles which are conspicuously located and well-illuminated by the cabin emergency lighting, under the equivalent level of safety provisions of § 21.21(b)(1). Further, § 25.811 does not provide criteria for illumination of the operating handles of Type II and Type IV

passenger emergency exits. The notice proposed the same alternative methods of illumination for the operating handles of all passenger emergency exits, regardless of the type.

Because no criteria are contained in § 25.811 regarding the illumination of handles of Type II and Type IV exits, there may be transport category airplanes in current air carrier, air taxi, or commercial service which have no illumination or insufficient illumination of those handles. The FAA therefore specifically invited comments concerning the models and numbers of transport category airplanes in such service with Type II or Type IV exits, the adequacy of any existing illumination of operating handles in those airplanes, the cost of providing sufficient illumination of those handles on a retrofit basis, and whether the cost of modifying airplanes in service would be commensurate with any increase in safety that would result.

Covers are sometimes provided for the operating handles of passenger exits. Section 25.811 requires the instructions for the removal of such covers from Type III exits to be self-illuminated; however, the FAA has allowed the option of locating the instructions conspicuously and providing sufficient illumination by the cabin emergency lighting in lieu of self-illumination. Although the need for such illumination of the removal instructions for handle covers at exits other than Type III exits is of equal importance, § 25.811 does not specify any requirement to illuminate the instructions for removal of the operating handle cover from any other type of passenger emergency exit. It was therefore proposed that § 25.811 be amended to specify that the instructions for removing such covers from any type exit must either be self-illuminated or conspicuously located and well-illuminated by the cabin emergency lighting.

Public Address System

It was also proposed to amend part 25 to require that a PA system, if required by the operating rules of this chapter, not be rendered inoperative by an unstowed microphone. Additionally, the equipment requirements of § 121.318 would be incorporated into part 25 so that all the design requirements for the PA system would be in one section of part 25. The FAA also requested comments as to whether the change to the system should be made retroactive to air carrier airplanes and what the cost of those changes might be.

Discussion of Comments

Six commenters, representing the views of airplane manufacturers, airlines, an airplane crew organization, and U.S. and foreign government organizations, responded to Notice 89-23. All commenters generally endorse the intent of the proposals in Notice 89-23, but each proposes some changes or expresses some reservations.

Two commenters disagree with the proposal to prohibit the flightcrew from actively assisting the flight attendants during the emergency evacuation demonstration. One of those commenters believes that either of two demonstration conditions would "more accurately reflect conditions that are likely to be encountered during an actual evacuation." The two conditions are: (1) The specification of a delay time before the flight crewmembers can assist in the cabin, and (2) the exclusion of the flightcrew from the number of occupants who must evacuate the airplane within 90 seconds through the passenger exits. The other commenter stated that the FAA had not presented evidence that the current practice has resulted in unsafe operating conditions.

The FAA concurs with the first commenter that one or more flight crewmembers have been available to assist in many actual emergency evacuations, but that the time at which they were available is not well documented or consistent. It has been documented, however, that during several evacuations flight crewmembers did not or could not assist the flight attendants in the passenger cabin. In fact, a third commenter, the National Transportation Safety Board, which supports this change, states in its comment: "The Safety Board's investigations of several survivable accident and noncrash-related evacuations have found numerous instances when flightcrews were not available to assist during the evacuations." Therefore, with respect to the commenter's first proposed condition of a specified delay time, the FAA has determined that any delay does not compensate for those occasions when no flight crewmember would be available to assist at any time. Regarding the second condition of excluding the flight crewmembers from having to evacuate the airplane through the passenger emergency exits in 90 seconds, the FAA considers that this is unacceptable. It is often extremely difficult to assess the effectiveness of the actions of the flight crewmembers in previous demonstrations in terms of seconds saved or lost. On the other hand, it is likely that flight crewmembers

would evacuate through a passenger emergency exit in an actual emergency. It is clear, in that case, that the time necessary to evacuate through that exit would be greater. In most cases, when movie or video records have been kept, this additional time can be determined. Therefore, the commenter's proposal is inappropriate.

Concerning the second commenter's contention that the FAA has not presented evidence that the current practice has resulted in unsafe operating conditions, a possible unsafe condition does not have to currently exist for rulemaking to be justified. The FAA has determined, and the NTSB agrees, that flight crewmembers are not always available to assist in emergency evacuations. Therefore, in order to take this very real possibility into account and thereby increase the level of safety, the final rule revises the test conditions as proposed.

One commenter recommends that the FAA delay this final rule until after the establishment of an emergency evacuation advisory committee. The FAA disagrees with the recommendation. There is no indication as to what recommendations for research or rulemaking, if any, may be forthcoming from the recently established aviation rulemaking advisory committee. For reasons discussed in other sections of this preamble, the FAA believes that these rule changes are necessary. To delay them for no specific reason is therefore unwarranted.

One commenter agrees with the proposal to prohibit the flightcrew's active involvement in the demonstration, but is concerned that the FAA might permit the airlines to reduce flightcrew training for emergency evacuation. The FAA intends that flightcrews will assist in actual emergency evacuations, to the maximum extent possible. It is not the FAA's intent to reduce the training of flightcrews in emergency evacuation procedures.

One commenter recommends withdrawal of the proposal contained in § 25.803(c)(8)(vi) to allow alternative passenger loads in lieu of that proposed in §§ 25.803(c)(8) (i), (ii), and (iii), including the possibility of adjusting the 90 second time criterion. The commenter observes that it would encourage the use of alternative age/sex mixes, and that an adjustment in the allowed time would be difficult to assess.

The FAA concurs with the commenter's recommendation. While the FAA does not necessarily agree with the commenter's observation, it is noted

that the age/sex mix proposed in §§ 25.803(c)(8) (i), (ii) and (iii) would allow applicants to much more easily obtain participants for the evacuation demonstrations, thus greatly lessening the need for alternative mixes. Additionally, alternative age/sex mixes would still be allowed under the existing provisions of § 21.21(b)(1). Therefore, the proposal to allow alternative passenger loads is withdrawn.

One commenter proposes that § 121.291(a) be revised to require evacuation demonstrations for airplanes with seating capacities of 30 to 44 passengers. The commenter did not provide any justification for the proposal.

The FAA does not concur and is unaware of any justification for change of this nature. Furthermore, the commenter's proposal could not be adopted at this time because the public has not been given an opportunity to comment on it.

Another commenter states that although no change was proposed to § 25.803(c)(8)(iv), the articulation and weights of the required dolls should represent the anthropomorphic populations they are intended to represent.

Advisory Circular 25.803-1, paragraph 6g, Emergency Evacuation Demonstrations, dated November 13, 1989, provides guidance relative to the dolls. The FAA is not aware of any need for rulemaking in that regard.

Subsequent to the release of Notice 89-23 for public comment, the FAA issued Amendment 25-72 (55 FR 29756, July 20, 1990), which updated part 25 for clarity and accuracy. One of the revisions promulgated by that amendment was the relocation of the evacuation demonstration test criteria from § 25.803(c) to a new appendix J to part 25. Because of this relocation, non-substantive conforming revisions have been made in the final rule.

One commenter agrees with the proposed revision to the illumination standards for exit handles and for removal instructions for covers over exit handles, but expresses concern that potential rulemaking for parts 121 and 135, discussed in the preamble section of Notice 89-23, addressed only Type II and Type IV exits. The commenter sought assurance that potential rulemaking affecting parts 121 and 135 would be compatible with the proposed amendment to § 25.811 for all exit handles and not just for Type II and Type IV exits.

In the preamble discussion referred to by the commenter, the FAA solicited information regarding the illumination

of handles for Type II and Type IV exits in airplanes in service or coming into service shortly. Information was not requested regarding the other exit types because sufficient illumination for those exit handles is already required by § 25.811(e). However, since the type certification bases for all the transport category airplanes in part 121 and part 135 operations are not the same, the type certification requirements for the illumination of handles may differ even for Type A, Type I, and Type III exits. Therefore, if the FAA were to proceed with rulemaking to amend part 121 and part 135, the agency would consider requiring the illumination to be upgraded for all exit types.

One commenter questions whether the 10-second period in proposed § 25.1423 refers to the time to activate the PA system or the time to get to and activate the system, and recommends substituting the words "starting the message" for "operation."

The words in the proposal were transferred verbatim from § 121.319 and refer to the time needed to activate the system with the flight attendant already at the PA station. The FAA does not consider that the commenter's suggested rewording would improve the understandability of the regulation. However, § 25.1423 has been revised to clarify that the reference to accessibility relates to the system rather than to its use.

The same commenter recommends substituting the word "intelligible" for "audible" in proposed § 25.1423.

The FAA concurs. The word "intelligible" is a more precise term that describes the quality of message that the PA system is required to be capable of transmitting. If the person using the PA system speaks intelligibly, the message transmitted by the system must also be intelligible. As proposed in the notice, the FAA's intent is to incorporate the equipment requirements of § 121.318 of the operating rules into § 25.1423 in order that all the design requirements for the public address system will be in one location in part 25. The word "audible" was simply part of the existing text of § 121.318(f) that was transferred to § 25.1423. Although the FAA concurs with the commenter and has revised § 25.1423 accordingly, it should be noted that this change is not intended to imply that the FAA uses one standard for the design requirements and a separate or different standard for the operating requirements.

One commenter recommends that the change to the PA system be made retroactive to in-service transport category airplanes operating under parts 121 and 135, and to newly

manufactured airplanes type certificated under part 25.

This comment was apparently in response to a request for comments on the costs of modifying existing airplanes to meet the new PA system requirement. Unfortunately, this commenter did not provide any retrofit cost estimates. Although the commenter's recommendation could not be adopted at this time, the FAA will consider it for further rulemaking.

One commenter agrees with the proposal to require that an unstowed microphone not disable the PA system, but seeks assurance that the flight deck microphone would continue to possess override capability.

Although most, if not all, current PA systems have a system override capability associated with the microphone in the flight deck, this feature is not a requirement. The FAA considers this to be a desirable feature, however, and may pursue further rulemaking on this subject.

During the comment period for Notice 89-23, the FAA adopted Amendments 25-70, 121-209 and 135-34 (54 FR 43925, October 27, 1989). As amended by Amendments 121-209 and 135-34, both parts 121 and 135 require the installation of independent power sources for the PA systems installed in transport category airplanes manufactured after November 27, 1990, having a seating capacity of more than 19 seats, and used in air carrier, air taxi or commercial service. Amendment 25-70 created a new § 25.1423 that provides standards for PA systems. Section 25.1423 does not, in itself, require the installation of a PA system, but merely contains the standards that a PA system must meet if the system is required for operation under part 121 or part 135. A number of non-substantive editing changes have been made for compatibility with the text of those amendments.

Section 25.1423 is also amended to require the installation of a PA system microphone in the flight deck if the PA system is required for operation under part 121 or part 135. It has come to the attention of the FAA that neither the proposed change to § 25.1423 nor the existing requirement of § 25.1411(a)(2) concerning accessibility of the PA system explicitly requires the installation of a microphone in the flight deck. Both existing §§ 121.318(c) and 135.150(a)(3) do, however, require that a PA system microphone must be accessible to at least two flight crewmembers, an implicit requirement for the installation of a microphone in the flight deck. Because those parts require a microphone in the flight deck

implicitly, this amendment is a non-substantive change that places no additional burden on any person. In addition, the accessibility requirement of § 25.1411(a)(2) is transferred to § 25.1423 for clarity. This too is non-substantive change that places no additional burden on any person.

With the exception of the revisions discussed above, the remaining proposals identified in Notice 89-23 are adopted as proposed.

Aviation Rulemaking Advisory Committee

The FAA recognizes that many factors must be evaluated in designing transport category airplanes for safe evacuation under emergency conditions. Cabin-safety rulemaking must consider the interaction among cabin sizes, passenger capacity, the type and number of emergency exits, exit location, distance between exits, aisle design, exit row and escape path markings and lighting, flame resistance of cabin interior materials, and other important variables. In order to develop future proposed safety standards by using a systems-analysis, the FAA chartered a committee of safety experts known as the Aviation Rulemaking Advisory Committee (ARAC), on February 5, 1991. Under the auspices of ARAC are several working groups that deal with different areas of FAA rulemaking activity. One, the Performance Standards Working Group, is reviewing emergency evacuation issues.

Members of the Performance Standards Working Group represent the interests of airplane manufacturers; airlines; an airplane equipment manufacturer; pilot, flight attendant, and machinists unions; an airline passenger association; the National Transportation Safety Board; and the airworthiness authorities of Europe, Canada, and the United States. The charter of this working group is to recommend whether new or revised standards for emergency evacuation could and should be adopted as performance-based standards. Performance-based standards state regulatory requirements in terms of objective safety performance rather than specific design requirements. To date the working group has not made any recommendations to ARAC for any new performance-based standards or for any performance-based standards to replace existing non-performance based design standards.

Performance-based standards are desirable in that they would offer the manufacturer maximum flexibility in designing equipment or systems to

comply with the regulations. They can, however, be difficult to develop, particularly when involved with human performance and behavior under stressful conditions, such as emergencies that necessitate cabin evacuation. In view of the potential increase in safety than can be realized by early adoption of this rule and the fact that the currently-specified test actually violates prevailing child-safety laws in many states, the FAA does not consider that deferring this action pending further study by ARAC is warranted. Nevertheless, it may be anticipated that other new cabin safety standards will be developed by ARAC and proposed by the FAA in future rulemaking.

Regulatory Evaluation

Three principal requirements pertain to the economic impacts of changes to Federal regulations. First, Executive Order 12291 directs Federal agencies to promulgate new regulations or modify existing regulations only if the potential benefits to society outweigh the potential costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, 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) Will generate benefits exceeding its costs and is neither major as defined in the Executive Order nor significant as defined in the Department of Transportation's Policies and Procedures; (2) will not have a significant impact on a substantial number of small entities; and (3) will not have an effect on international trade. These analyses, available in the docket, are summarized below.

For purposes of this analysis, benefits are compared with costs on a per certification basis, assuming that 20 airplanes will be produced each year between 1998 and 2007 under a representative part 25 certification. This approach results in a relevant presentation of the relationship between benefits and costs, while avoiding prediction of the types and numbers of new airplanes that will be certified in the future.

Costs

The FAA estimates that the incremental cost of compliance with the rule will be approximately \$46,000 per type certification (1992 dollars at present value). The FAA has determined that only one of the five amendments to part 25 (the push-to-talk switch

amendment) will result in additional costs to manufacturers of transport category airplanes. In addition, none of the three amendments to part 121 is expected to adversely affect air carrier operators. Each of the amendments is evaluated below for expected costs to manufacturers:

1. Role of the Flightcrew

The requirement that the evacuation demonstration be conducted without the assistance of flight crewmembers in the cabin is not expected to impose any additional costs on manufacturers because it represents only a minor procedural change.

2. Age/Sex Distribution of Passengers Used in an Emergency Evacuation Demonstration

These changes are not expected to impose additional costs on manufacturers.

3. Overwing Exit Assist Means

This requirement permits the use of stands and ramps at overwing exits in emergency evacuation demonstrations only when off-wing descent devices are not installed on the airplane. No incremental costs will be imposed on manufacturers.

4. Exit Handle Illumination

This amendment will not impose much, if any, additional cost on manufacturers because three of five types of passenger emergency exit operating handles are currently subject to illumination requirements. Type I and Type A handles are already required to be self-illuminated or conspicuously located and well-illuminated, and Type III handles must be self-illuminated (without the alternative of being conspicuously located and well-illuminated). The FAA has made findings of equivalent safety for Type III exit handles when the handle is conspicuously located and well-illuminated.

Prior to this rule, the regulations did not provide criteria for the illumination of Type II and Type IV passenger emergency exit operating handles. This rule will standardize the illumination of all passenger emergency exit operating handles (and cover removal instructions, if the operating handle is covered) to only two methods: (1) Self-illuminated, or (2) conspicuously located and well-illuminated. Neither Type II nor Type IV exit handles meet the new requirements. Nevertheless, the requirements will not impose additional costs on manufacturers, primarily because transport category airplanes seldom have such exits. For the few

airplanes that will have Type II or IV exits, the emergency lighting currently required by § 25.812 will provide sufficient lighting for the exit handles (and cover removal instructions, if the operating handle is covered) or will provide the electrical circuitry with which additional lighting could easily be provided.

5. Push-To-Talk Switch

This item is expected to cost less than \$425 per airplane. The costs for 200 airplanes produced under a representative type certification uniformly from 1998 through 2007 total approximately \$85,000 and \$46,000 in non-discounted and discounted terms, respectively.

Benefits

The rule is expected to generate safety benefits in the form of the reduced likelihood of fatal and nonfatal injuries in survivable post-crash ground fire emergency evacuations from part 25 airplanes.

Estimation of these benefits, in monetary terms, is difficult since there has not been a documented accident in which injuries have been directly attributed to the deficiencies noted. There was an incident, however, in which an emergency evacuation followed a large fuel spill from a United Airlines Boeing 747 airplane in Honolulu, Hawaii, in 1984. During that incident, the escape slides were deployed into the fuel, presenting a potential hazard. The flight attendants at the rear of the cabin could not be notified of the fuel leak due to an inoperative public address system. The system was inoperative because one cockpit microphone had not been returned to the stowed position.

As a result of that incident and in consideration of various recommendations made by the National Transportation Safety Board (NTSB), the FAA believes that injuries and/or fatalities in survivable post-crash ground fire accidents could be prevented by the provisions of this rule. The FAA postulates that without this rule at least one associated serious injury per type certification could occur from a post-crash ground fire accident on affected airplanes operating between 1999 and 2008, at costs of \$640,000 and \$288,000 in terms of non-discounted and discounted dollars, respectively.

Comparison of Costs and Benefits

In terms of 1992 dollars at present value, the minimum benefits and expected costs of the rule per representative part 25 certification are estimated to be \$288,000 and \$46,000

respectively, yielding a benefit-to-cost ratio of 6.3 to 1. The FAA therefore finds the amendments to be cost-beneficial.

Regulatory Flexibility Determination

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 that may have "a significant economic impact on a substantial number of entities." No transport category airplane manufacturer is considered to be a small entity in accordance with FAA criteria which classifies a small manufacturer as one with 75 or fewer employees (FAA Order 2100.14A). Therefore, the rule will not have "a significant economic impact on a substantial number of small entities."

International Trade Impact Assessment

The rule changes will have no effect on trade on both American firms doing business in foreign countries, and foreign firms doing business in the United States. In the U.S., foreign manufacturers must meet U.S. requirements, and thus will gain no competitive advantage. Similarly, U.S. manufacturers must meet the airworthiness requirements of foreign aviation authorities to market airplanes in those countries and, as such, will experience no change in competitive stance.

Federalism Implications

The regulations adopted herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

The FAA has determined that this document involves regulations that are not considered to be major under the procedures and criteria prescribed in Executive Order 12291. The FAA has also determined that this action is not significant as defined in Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). In addition, the FAA certifies under the criteria of the Regulatory Flexibility Act that this regulation, at promulgation, will not have a significant economic impact, positive or

negative, on a substantial number of small entities, since none are affected. A copy of the evaluation prepared for this action has been placed in the docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

List of Subjects

14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 121

Air carriers, Aircraft, Airmen, Aviation safety, Charter flights, Drug testing, Reporting and recordkeeping requirements, Safety, Transportation.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR parts 25 and 121 of the Federal Aviation Regulations (FAR) 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. app. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; 49 U.S.C. 106(g); and 49 CFR 1.47(a).

2. Section 25.811 is amended by removing paragraph (e)(3) and marking it [Reserved] and by revising the introductory text of paragraph (e)(2) to read as follows:

§ 25.811 Emergency exit marking.

* * * * *

(e) * * *

(2) Each passenger emergency exit operating handle and the cover removal instructions, if the operating handle is covered, must—

* * * * *

(3) [Reserved]

* * * * *

3. Section 25.1411 is amended by removing paragraph (a)(2) and by redesignating paragraph (a)(1) as (a) and revising newly redesignated (a) as follows:

§ 25.1411 General.

(a) **Accessibility.** Required safety equipment to be used by the crew in an emergency must be readily accessible.

* * * * *

4. Section 25.1423 is revised to read as follows:

§ 25.1423 Public address system.

A public address system required by this chapter must—

(a) Be powerable when the aircraft is in flight or stopped on the ground, after the shutdown or failure of all engines and auxiliary power units, or the disconnection or failure of all power sources dependent on their continued operation, for—

(1) A time duration of at least 10 minutes, including an aggregate time duration of at least 5 minutes of announcements made by flight and cabin crewmembers, considering all other loads which may remain powered by the same source when all other power sources are inoperative; and

(2) An additional time duration in its standby state appropriate or required for any other loads that are powered by the same source and that are essential to safety of flight or required during emergency conditions.

(b) Be capable of operation within 10 seconds by a flight attendant at those stations in the passenger compartment from which the system is accessible.

(c) Be intelligible at all passenger seats, lavatories, and flight attendant seats and work stations.

(d) Be designed so that no unused, unstowed microphone will render the system inoperative.

(e) Be capable of functioning independently of any required crewmember interphone system.

(f) Be accessible for immediate use from each of two flight crewmember stations in the pilot compartment.

(g) For each required floor-level passenger emergency exit which has an adjacent flight attendant seat, have a microphone which is readily accessible to the seated flight attendant, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated flight attendants.

5. Appendix J is amended by revising paragraphs (c), (g), (h)(1), (h)(2), (h)(3), (q), and (r) to read as follows:

Appendix J—Emergency Evacuation

* * * * *

(c) Unless the airplane is equipped with an off-wing descent means, stands or ramps may be used for descent from the wing to the ground. Safety equipment such as mats or inverted life rafts may be placed on the floor or ground to protect participants. No other equipment that is not part of the emergency evacuation equipment of the airplane may be used to aid the participants in reaching the ground.

* * * * *

(g) Each crewmember must be seated in the normally assigned seat for takeoff and must remain in the seat until receiving the signal for commencement of the demonstration. Each crewmember must be a person having knowledge of the operation of exits and

emergency equipment and, if compliance with § 121.291 is also being demonstrated, each flight attendant must be a member of a regularly scheduled line crew.

(h) * * *

(1) At least 40 percent of the passenger load must be female.

(2) At least 35 percent of the passenger load must be over 50 years of age.

(3) At least 15 percent of the passenger load must be female and over 50 years of age.

* * * * *

(g) Except as provided in paragraph (c) of this section, all evacuees must leave the airplane by a means provided as part of the airplane's equipment.

(r) The applicant's approved procedures must be fully utilized, except the flightcrew must take no active role in assisting others inside the cabin during the demonstration.

* * * * *

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

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

Authority: 49 U.S.C. app. 1354(a), 1355, 1356, 1357, 1401, 1421 through 1430, 1472, 1485, and 1502; 49 U.S.C. 106(g); and 49 CFR 1.47(a).

7. Section 121.291 is amended by revising paragraph (a) to read as follows:

§ 121.291 Demonstration of emergency evacuation procedures.

(a) Except as provided in paragraph (a)(1) of this section, each certificate holder must conduct an actual demonstration of emergency evacuation procedures in accordance with paragraph (a) of appendix D to this part

to show that each type and model of airplane with a seating capacity of more than 44 passengers to be used in its passenger-carrying operations allows the evacuation of the full capacity, including crewmembers, in 90 seconds or less.

(1) An actual demonstration need not be conducted if that airplane type and model has been shown to be in compliance with this paragraph in effect on or after October 24, 1967, or, if during type certification, with § 25.803 of this chapter in effect on or after December 1, 1978.

(2) Any actual demonstration conducted after September 27, 1993, must be in accordance with paragraph (a) of Appendix D to this part in effect on or after that date or with § 25.803 in effect on or after that date.

* * * * *

8. Appendix D to part 121 is amended by revising paragraphs (a)(3), (a)(7), (a)(12), (a)(18), and (a)(19) to read as follows:

Appendix D to Part 121—Criteria for Demonstration of Emergency Evacuation Procedures Under § 121.291

(a) * * *

(3) Unless the airplane is equipped with an off-wing descent means, stands or ramps may be used for descent from the wing to the ground. Safety equipment such as mats or inverted life rafts may be placed on the floor or ground to protect participants. No other equipment that is not part of the emergency evacuation equipment of the airplane may be used to aid the participants in reaching the ground.

* * * * *

(7) A representative passenger load of persons in normal health must be used. At

least 40 percent of the passenger load must be females. At least 35 percent of the passenger load must be over 50 years of age. At least 15 percent of the passenger load must be female and over 50 years of age. Three life-size dolls, not included as part of the total passenger load, must be carried by passengers to simulate live infants 2 years old or younger. Crewmembers, mechanics, and training personnel, who maintain or operate the airplane in the normal course of their duties, may not be used as passengers.

* * * * *

(12) Each crewmember must be a member of a regularly scheduled line crew, except that flight crewmembers need not be members of a regularly scheduled line crew, provided they have knowledge of the airplane. Each crewmember must be seated in the seat the crewmember is normally assigned for takeoff, and must remain in that seat until the signal for commencement of the demonstration is received.

* * * * *

(18) Except as provided in paragraph (a)(3) of this appendix, all evacuees must leave the airplane by a means provided as part of the airplane's equipment.

(19) The certificate holder's approved procedures and all of the emergency equipment that is normally available, including slides, ropes, lights, and megaphones, must be fully utilized during the demonstration, except that the flightcrew must take no active role in assisting others inside the cabin during the demonstration.

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Issued in Washington, DC, on August 19, 1993.

David R. Hinson,
Administrator.

[FR Doc. 93-20777 Filed 8-25-93; 8:45 am]

BILLING CODE 4910-13-M