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**Department of
Transportation**

Federal Aviation Administration

14 CFR Part 121

**Mandatory Reporting for Emergency
Evacuation Systems and Components;
Final Rule**

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
14 CFR Part 121

[Docket No. 25289; Amdt. 121-195]

Mandatory Reporting for Emergency Evacuation Systems and Components

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The purpose of this amendment is to revise the mechanical reliability reporting requirement contained in Part 121 of the Federal Aviation Regulations to require certificate holders to report each failure, malfunction, or defect of emergency evacuation systems and components. This amendment is necessary to collect, record, analyze, and disseminate data concerning those failures, malfunctions, or defects that occur during training, testing, or actual emergency conditions to improve the levels of emergency evacuation system reliability and safety.

EFFECTIVE DATE: April 15, 1988.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

Background

On May 22, 1987, the Federal Aviation Administration (FAA) issued Notice of Proposed Rulemaking (NPRM) No. 87-5 (52 FR 20982; June 3, 1987). The notice proposed to amend the mechanical reliability reporting requirement contained in Part 121 of the Federal Aviation Regulations (FAR) to require certificate holders to report each failure, malfunction, or defect of emergency evacuation systems and components. Section 121.703(a) of the FAR requires each certificate holder to report the occurrence or detection of failures, malfunctions, or defects of 16 specified categories. Section 121.703(c) requires the certificate holder to report any other failure, malfunction or defect in an aircraft that occurs, or is detected at any time if, in its opinion, that failure, malfunction or defect has endangered, or may endanger, the safe operation of an aircraft used by the certificate holder.

The ability to evacuate an airplane safely and quickly during an emergency is a major concern to the FAA, the aviation industry and the public. As part of an effort to collect information about and address these concerns, the FAA

sponsored a technical conference in Seattle, Washington, from September 3-6, 1985, related to emergency evacuation of transport category airplanes.

Discussions covered the number, capacity, distribution and marking of emergency exits, full-scale evacuation demonstrations, the validity of the data derived from full-scale evacuation tests versus that data obtained from mathematical analysis. Also discussed were the criteria to be used to decide when the mathematical analysis method (used because of full-scale demonstration cost, impracticality, or other reasons) would be acceptable in lieu of a full-scale demonstration. The discussions also covered escape slides and the design standards and certification testing requirements for these slides, slide maintenance failure reporting, and other related topics. Working groups were established to review and discuss existing regulations in Parts 25 and 121 of the FAR and recommended regulatory and non-regulatory changes.

During the conference, a representative from a leading manufacturer stated that its testing of transport category airplane cabin evacuation slides resulted in a 90 percent success rate. Airline pilots, cabin crewmembers and maintenance personnel presented different opinions, expressing their views about the general unreliability of evacuation slides.

Several comments were made about the lack of, or inadequacy of, reporting of failures, malfunctions, and defects of emergency evacuation systems and components (such as evacuation slides, gas bottles, cables, door indicators, motors, clips, girth bar attachments, etc.). Discussion focused on the present Service Difficulty Report System, the collection and disposition of those reports, the malfunctions and defects that are not presently reported, and potential solutions to the problems discussed. Members of groups representing flight attendants, the National Transportation Safety Board and the National Transportation Safety Association stated their concerns that failures, malfunctions or defects of evacuation systems or components are not being reported to the FAA, thus creating a vacuum of knowledge. The process by which failures, malfunctions, or defects are presently reported was criticized for excluding a large number of events, such as the inadvertent deployment of evacuation slides during cabin safety demonstrations or maintenance checks and overhauls. Representatives from the FAA and other organizations expressed concern that regulatory authorities were unaware of

emergency evacuation system incidents taking place in the field and that some of this information could be significant to safety.

There has also been legislative concern regarding the safe evacuation of aircraft. A congressional hearing on this matter was held by the Subcommittee on Investigations and Oversight of the House Committee of Public Works and Transportation on June 24 to 26, 1985. Mechanical Reliability Reports (MRR) and Service Difficulty Reports (SDR) are utilized by the FAA primarily as a maintenance and continued airworthiness surveillance tool and are published in the Aviation Standards Service Difficulty Report Summary by FAA's Aviation Standard National Field Office at Oklahoma City, Oklahoma. This summary consists of air carrier MRR's and is available to FAA personnel, industry affiliates and others with a need for access to this information. This information provides the FAA with reliability and airworthiness statistical data necessary for planning, directing, controlling, and evaluating certain aircraft products, such as emergency evacuation systems and components. These reports also provide a means for measuring the effectiveness of the self-evaluation techniques being employed by certain segments of the civil aviation industry.

Discussion of Comments

The FAA received six comments in response to Notice 87-5 from organizations or associations with an interest in aircraft safety. Two commenters, the National Transportation Safety Board (NTSB) and the Syndicate National De Personnel Navigant Commercial (SNPNC), of France, were in agreement with the proposal as written, and support this regulatory action. The Association of Flight Attendants (AFA) and the National Transportation Safety Association, Inc. also support the amendment, but both suggest it be expanded to include life preservers and life rafts. The Airline Pilots Association (ALPA) suggests adding life rafts, slides and personal flotation devices in their supportive comment.

Although life preservers, life rafts, and personal flotation devices are primarily intended for use during an emergency evacuation of an aircraft, this survival equipment is not considered to be part of the emergency evacuation system, or components thereof, and therefore, is beyond the scope of this amendment. Regarding the suggestion to include slides in the amendment, the evacuation slides and slide/rafts are considered to

be an integral part of the emergency evacuation system and are covered under the provisions of this amendment. However, in response to both a prior NTSB safety recommendation, and an ALPA petition for rulemaking, the FAA is currently developing a regulatory project that will address the continuing airworthiness of emergency water survival equipment that is installed as part of the required safety equipment of aircraft operating under the provisions of FAR Parts 121, 125 and certain portions of Part 135. This project is intended to include the reliability of life preservers.

The Air Transport Association of America (ATA) submitted comments that were essentially in disagreement with the proposal. ATA points out that two of its members do not oppose the proposal, with one of the two already reporting emergency evacuation system failures and malfunctions through the MRR system. ATA also states that two other members would not oppose the proposal if the reporting provisions were narrowed to those defects that would or could actually prevent the systems from performing their intended functions. The thrust of ATA's objection is that emergency evacuation systems may not be appropriate to the SDR system, and that the MRR system, as currently operating, is ineffective. The ATA also contends that the FAA's cost and benefit estimates to support the amendment were derived arbitrarily and lacked sufficient documentation.

The decision to include the mandatory reporting of defects and malfunctions of emergency evacuation systems and components in the MRR system was based on the recommendations of the Maintenance and Reliability Working Group that was part of the emergency evacuation task formed following the September 1986 Public Technical Conference in Seattle. This group reported that the lack of mandatory reporting of emergency evacuation system defects and malfunctions impaired the monitoring of evacuation equipment in service. As a result, the group reported that the FAA does not have a sufficient data base to evaluate door failures which occur in the automatic mode, and the repairs or modifications required to insure a reliable evacuation system. The group recommended that a system of comprehensive mandatory reporting be established to provide for equipment reliability monitoring. The MRR system provides the ideal vehicle for this reporting.

Regarding ATA's comment on the ineffectiveness of the MRR system, it is

beyond the scope of this amendment to attempt to address any problem areas that may exist in the reporting system. However, the FAA recognizes that there are faults with the system and a program has been initiated to attempt to remedy these faults.

ATA also commented that the wording of the amendment could result in the submission of useless data that would waste the time of both the operator and FAA personnel analyzing the data. As an example, a scratch in the paint on an emergency exit door could be construed as a "defect" and, as such, would require reporting. The FAA does not agree. It is the responsibility of the operator to evaluate the significance of the defects with a view to the effect that defect would have on the reliability of the affected system or component. The FAA acknowledges operators' ability to recognize safety-significant occurrences and findings, and does not anticipate an overabundance of useless information in response to this amendment. With respect to ATA's critical comments concerning the cost and benefit estimates of Notice 87-5, the FAA disagrees that its cost and benefit estimates were derived arbitrarily and lack sufficient documentation. While the cost and benefit estimates reflect some uncertainty, primarily related to the number of accidents and the magnitude of their respective casualty losses due to defective or inoperative emergency evacuation systems and components, they are considered to be reasonably reliable. These estimates are based on factual data and the informed judgement of FAA personnel, and they have been thoroughly documented in the detailed regulatory evacuation contained in the docket. Since the commenter does not provide any additional, more illuminating, cost and benefit estimates, the FAA will continue to use those benefit and cost estimates contained in Notice 87-5.

Economic Summary

Benefit-Cost Analysis

This regulatory evaluation examines the benefit and cost elements of a Final Rule to establish mandatory reporting for each failure, malfunction, or defect of emergency evacuation systems and components. The rule amends Part 121 of the Federal Aviation Regulations (FAR), and it will require each certificate holder to report all failures, malfunctions, or defects of emergency evacuation systems and components. This action is necessary to collect, record, analyze, and disseminate data concerning those failures, malfunctions, or defects that occur during training,

testing, or actual emergency conditions, so as to improve the reliability and safety of those systems and components. At present, air carriers and airmen report these malfunctions on a voluntary basis. There have been 106 voluntary reports submitted to the FAA between 1980 and 1985.

The rule was prompted largely as a result of concerns expressed by members of groups representing flight attendants, the National Transportation Safety Board, and the National Transportation Safety Association. These organizations stated that failures, malfunctions, or defects of evacuation systems and components are not being adequately reported to the FAA.

Benefits

The FAA states that potential benefits in the form of enhanced safety expected to accrue from implementation of the rule range between \$2,600 and \$131,000 annually. Such enhanced safety will result in reduced injuries or fatalities during emergency evacuation of air carriers because the improved data provided to FAA as a result of this rule will enable the agency to take timely action to correct deficiencies in emergency evacuation equipment. This timely corrective action would not be possible if the information were not available.

Costs

The FAA estimates that the total cost of compliance expected to accrue from implementation of the rule, dispersed among all air carriers, will range between \$25 and \$90 annually (in 1985 dollars). This assessment is based largely on information received from personnel at the FAA's Aviation Standards National Field Office in Oklahoma City, Oklahoma.

The FAA believes this rule is clearly cost-beneficial. The Regulatory Evaluation that has been placed in the docket contains additional information related to the costs and benefits expected to accrue from the implementation of this rule.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted 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."

Virtually all of the small entities potentially impacted by the rule are operators of scheduled aircraft for hire

who own nine or fewer aircraft, but not necessarily operated. After comparing the upper range of the total annual incremental cost of compliance (\$90) to the annualized threshold of significant impact (\$51,000), the FAA concludes that a substantial number of small entities would not be significantly impacted by the rule. In order for a small entity to be significantly impacted by the rule, it will have to submit more than an estimated 1,100 service difficulty reports annually to the FAA. This number is approximately 61 times more than the annual average of 18 for all air carriers presently submitting such reports to the FAA. The FAA believes that it is very unlikely this number of reports will be prepared and submitted annually by any one of the subject small entities. Therefore, the FAA believes the rule to require mandatory reporting of deficiencies in emergency evacuation systems and components will not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

The rule is expected to have neither an adverse impact on the trade opportunities for U.S. firms doing business abroad nor on foreign firms doing business in the United States. The rule will primarily have a cost impact on scheduled operators of U.S. registered air carriers such as turbojet and turboprop aircraft who report deficiencies in their emergency evacuation systems and components to the FAA. The size of this cost impact is expected to be small for those reasons previously noted in Section III of the detailed regulatory evaluation.

Conclusion

This amendment will enable the FAA to achieve prompt and appropriate corrections of conditions adversely affecting continued airworthiness of emergency evacuations systems and components. This will be achieved through the collection of service

difficulty reports, their consolidation and collation in a common data bank, analysis of that data, and the rapid dissemination of trends, problems, and alert information to the appropriate segments of the aviation community and the FAA.

The amendment provides benefits, with negligible costs to the aviation public, by establishing mandatory reporting requirements which enhance the reliability of the data base for emergency evacuation systems and components.

Because this amendment is not likely to result in an annual effect on the economy of \$100 million or more, or a major increase in costs for consumers, industry, or Federal, State, or local government agencies, it has been determined that it is not a major proposal under Executive Order 12291. In addition, this amendment will have little or no impact on trade opportunities for U.S. firms doing business overseas or for foreign firms doing business in the United States. The FAA has determined that this action is not significant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, as noted above, the FAA certifies that under the criteria of the Regulatory Flexibility Act, this regulation will not have a significant economic impact on a substantial number of small entities. A copy of the final evaluation prepared for this action, including a Regulatory Flexibility determination and Trade Impact Assessment, has been placed in the regulatory docket. A copy may be obtained by contacting the person identified under "For Further Information Contact."

Paperwork Reduction Act

Information collection requirements in § 121.703(a) have been approved previously by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (Pub.

L. 96-511) and have been assigned OMB control number 2120-0008.

List of Subjects in 14 CFR Part 121

Aviation safety, Safety, Air carrier, Air transportation, Common carriers.

The Rule

Accordingly, the Federal Aviation Administration amends Part 121 of the Federal Aviation Regulations [14 CFR Part 121] as follows:

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

1. The authority citation for Part 121 is revised to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1356, 1357, 1401, 1421-1430, 1472, 1485, and 1502; 49 U.S.C. 106(g) (Revised, Pub. L. 87-449, January 12, 1983).

2. By amending § 121.703 by removing the word "and" at the end of paragraph (a)(15); by removing the period at the end of paragraph (a)(16) and inserting "; and" in its place; and by adding a new paragraph (a)(17) to read as follows:

§ 121.703 Mechanical reliability reports.

(a) * * *

(17) Emergency evacuation systems or components including all exit doors, passenger emergency evacuation lighting systems, or evacuation equipment that are found defective, or that fail to perform the intended functions during an actual emergency or during training, testing, maintenance, demonstrations, or inadvertent deployments.

* * * * *

Issued in Washington, DC, on March 10, 1988.

T. Allan McArthur,
Administrator.

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