FAA/AIR-92-01

TASK FORCE REPORT ON EMERGENCY EVACUATION OF TRANSPORT AIRPLANES

VOLUME III -- FINAL REPORT

Emergency Evacuation Task Force

January 23, 1992

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16. Abstract

This report presents a summary of the proposals received and the results of actions taken regarding a study of the emergency evacuation of transport airplanes that was sponsored by the Federal Aviation Administration (FAA). The study included a Public Technical Conference in September 1985 and thee public technical workshop meetings on design and certification, training and operations, and maintenance and reliability. The task force's recommendations addressed existing Federal Aviation Regulations related to emergency evacuation. There were 29 recommended actions on: evacuation demonstrations; emergency exits; evacuation slide certification, inspection, and maintenance; emergency equipment; crewmember training and duties; passenger safety information; air carrier operation; and others.

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PREFACE

This is the final summary report on the study of the emergency evacuation of transport airplanes that was sponsored by the Federal Aviation Administration (FAA). The study involved a Public Technical Conference held by the FAA in September 1985 and three public meetings of the technical working groups formed as a task force effort. The working groups were: Design and Certification, Training and Operations, and Maintenance and Reliability.

The task force program concentrated on the evaluation of existing Federal Aviation Regulations pertaining to emergency evacuation of air carrier airplanes and examined emergency evacuation concepts, problems, and experiences. Participants expressed a wide range of views on significant emergency evacuation issues.

The two previous volumes established a record of the study that generated the regulations and practices pertaining to emergency evacuation summarized in this report.

The volume I, Summary Report outlined the issues considered during the program and their resolution. The Volume II, Supporting Documentation, compiled the reports summarizing the Public Technical Conference and records of the working group meetings, formal presentation papers, and other documents on which the summary report was based.

BACKGROUND ON THE ESTABLISHMENT OF THE TASK FORCE

The Administrator of the Federal Aviation Administration (FAA) created the Emergency Evacuation Task Force in September 1985. His objective for the task force was to address safety issues of public concern and to reassess the regulations pertaining to the emergency evacuation of transport category airplanes. There were several events which preceded the Administrator's action. These events including the establishment of the task force are presented below.

During the first half of 1985, several cabin safety regulatory changes were introduced which aroused public interest in the adequacy of emergency evacuation regulations. Concerned air carrier crewmembers contended that some of the existing regulations on emergency evacuation were inadequate. They presented the FAA with design analyses, accident data, and other information to substantiate their views.

The public concern over the adequacy and safety of emergency evacuation requirements escalated when the FAA granted approval to deactivate a pair of emergency exits in a large transport category aircraft. The exit deactivation increased the distance between the remaining functional exits.

On June 24-26, 1985, the Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, House of Representatives, conducted hearings on aviation safety. Considerable testimony was given on air carrier passenger safety, emergency evacuation, and the FAA approval of the deactivation of the exits. The Administrator of the FAA testified before the Subcommittee and committed to a detailed review of the issues raised and to reexamine the approval granted for the deactivation of the exits.

The review of the issues and the approval for exit deactivation was completed soon after the Congressional hearings. The review disclosed that the deactivation of the exits complied fully with the applicable regulations and involved no exemptions, waivers, or other special considerations. Therefore, the FAA concluded that the approval was properly granted.

Subsequently, the FAA Administrator committed to have a rigorous reassessment of the regulations and to have these issues and other issues considered in a public forum. A notice inviting open participation in a Public Technical Conference on Emergency Evacuation of Transport Airplanes was published by the FAA in the Federal Register on August 8, 1985. The Federal Register notice explained that the purpose of the conference was to solicit and review information from the public on a variety of emergency

evacuation topics. Parties were invited to express their views on the existing regulations and how those regulations are applied, and to make recommendations for either regulatory or advisory changes. The notice stipulated that recommendations should include technical justification, service history, and supporting data expressing costs and benefits.

The conference was held on September 3-6, 1985, in Seattle, Washington. Participants brought many important safety issues before the conference. After the conference, it became clear that further discussions were required to assure proper consideration and resolution of the issues raised by the participants. As a result, the Administrator requested that a Emergency Evacuation Task Force be established to further pursue the issues, reassess the existing regulations on emergency evacuation, and prepare a public report of the findings and recommendations of the task force. A task force headed with FAA personnel was created and three technical working groups were formed to continue with the consideration of the issues. The working groups were: Design and Certification; Training and Operations; and Maintenance and Reliability.

The Design and Certification Working Group held meetings in November 1985 and February 1986. The Training and Operations and Maintenance and Reliability Working Groups held their meetings in December 1985. All of these meetings allowed participants to fully express their views and concerns candidly and present arguments and information to support their position. However, supporting technical information generally was not presented. Each working group prepared and submitted recommendations for FAA action.

Details of the issues presented at the public hearings and evaluated during the working group meetings are discussed in Volume I, Summary Report, Task Force Report on Emergency Evacuation of Transport Airplanes. Records of the working group meetings and the Public Technical Conference are contained in Volume II, Supporting Documentation.

EMERGENCY EVACUATION ISSUES/RECOMMENDATIONS AND REGULATORY/ADVISORY ACTION

With the publication of the summary report in July 1986, the FAA agreed to develop and issue rulemaking and/or advisory information on 29 specific proposals recommended by the three working groups. The details of these 29 proposed FAA actions and their resolution are described below under each working group heading. A summary of this information is contained in Tables I and II.

Design and Certification

1. **Exit Distance:** Prepare an Notice of Proposed Rulemaking (NPRM) to establish a maximum distance between exits.

   The FAA issued an NPRM and subsequently amended the certification procedures, airworthiness and operational rules to prohibit any passenger emergency exit from being located more than 60 feet from any adjacent passenger emergency exit. The final rule was issued on June 16, 1989 and became effective on July 24, 1989. The new rules prohibit airplane manufacturers and air carrier operators from increasing the distance between emergency exits to more than 60 feet. The new rules will ensure that passengers continue to have the opportunity to safely evacuate an airplane during an emergency.

2. **Type III Exit Access:** Prepare NPRMs for Federal Aviation Regulations (FARs) Part 25 and 121 to improve access to Type III exits.

   Proposed revisions to the airworthiness and operating rules for transport category airplanes to provide improved access to type III emergency exits in airplanes with 20 or more passenger seats are contained in NPRM 91-11. Evacuation tests performed at the FAA Civil Aeromedical Institute (CAMI) have shown that increased access to type III exits, which are typically over-wing exits, will improve occupant evacuation during an emergency. NPRM 91-11 was issued on April 4, 1991, with comments due by October 7, 1991.

   To further assure the effective use of Type III exits, the FAA also amended the operating rules to require that a person seated in an exit row would be capable of performing one or more applicable functions, such as operating the emergency exit and assuring the safe use of that exit, in an emergency. This exit row seating final rule was published on March 6, 1990.

3. **Exit Rating:** Review and prepare proposals to revise, as necessary, the FAR Part 25 exit rating criteria.

   Another proposed rule change was published to revise design standards for transport category airplanes to specify the passenger seating allowed for each exit type, and the type and number of passenger emergency exits required for various passenger seating configurations. In addition, airworthiness standards were proposed which would allow the use of two new exit types. The NPRM also proposed a reduction in the maximum inflation time for emergency escape slides to reflect the current state-of-the-art. These proposed changes are contained in NPRM 90-4 which was issued on February 13, 1990.

4. **Uniform Exit Distribution:** Prepare an Advisory Circular (AC) proposal to provide a better definition of what uniform exit distribution means.

   The FAA issued AC 25.807-1, on August 13,1990, providing more definitive information on the acceptable means of demonstrating compliance with the requirements for passenger seating and exit configurations to be uniformly distributed as practical, taking into account passenger distribution.

5. **Exit Cross-Aisles:** Prepare an AC to clarify FAR 25.807(a)(7)(v) on Type A exit cross-aisles.

   Policy and guidance material relevant to the airworthiness requirement to have unobstructed cross aisles between main aisles has been incorporated in the "Transport Airplane Crashworthiness Handbook", AC 25.17, issued on July 15, 1991.

6. **Reduced Exit Availability for Evacuation Demonstration:** Review the current criteria on how to select 50% of available exits for use in an evacuation demonstration and prepare an FAR Part 25 NPRM, if appropriate. If the FAR Part 25 rule change is promulgated, prepare an AC proposal on the means of compliance.

   The FAA concluded, after evaluating evacuation studies, that the requirement for 50 percent of the exits to be used in the emergency evacuation demonstration was conservative when compared to actual statistics. The random selection of 50 percent of the exits, as proposed, was considered to be to restrictive and could penalize some aircraft exit configurations. Furthermore, the actions taken in number 1 and 4 were deemed suitable alternative actions, in lieu of a specific rule change, and the FAA has taken no further action. This action was taken in October 1987.

7. **Flight Deck Crew and Evacuation Demonstration:** Prepare an NPRM for FAR Part 25 and 121 to prohibit assigning specific duties to the flight deck crew during evacuation demonstrations. The AC on evacuation demonstration will include a section on crew training for use in evacuation demonstrations.

   As a part of NPRM 89-23 which was issued on August 31, 1989, the FAA proposed to modify the procedures for conducting an emergency evacuation demonstration without the active involvement of the flight crew.

   An AC on evacuation demonstrations, AC 25.803-1, was issued on November 13,1989 and contains guidance information on the use of crewmembers during evacuation demonstrations.

8. **Evacuation Demonstration Age Limitations:** Prepare an FAR Part 25 NPRM to eliminate the use of persons less than 18 or more than 60 years old in evacuation demonstrations.

   Proposed rules to change the age/sex distribution requirements for emergency evacuation demonstration participants were also contained in NPRM 89-23 mentioned in number 7 above.

   AC 25.803-1 mentioned above also provides further guidance on emergency evacuation demonstrations. The AC outlines an acceptable procedure for the safe use of test subjects during a full-scale emergency evacuation demonstrations and outlines an acceptable age/sex distribution for test subjects.

9. **Analysis vs. Demonstration:** Prepare a policy letter on the use of analysis in lieu of an evacuation demonstration and an AC on substantiation necessary for analysis.

   AC 25.803-1 mentioned above also establishes policy and guidance on the use of analysis and test data for emergency evacuation demonstrations in lieu of conducting an actual full-scale demonstration.

10. **Conduct of Evacuation Demonstration:** Prepare a proposal to add to the Crashworthiness Handbook information on how to conduct an evacuation demonstration and include the following: prohibition of the use of flight deck crews; how to position flight attendants; persons prohibited from participating; random seat selection; informed consent; passenger mix criteria; definition of a regularly scheduled line crew; definition of the use of carry-on baggage, pillows, etc.

    Again, AC 25.803-1 presents guidance on a means, but not the only means, of demonstrating compliance concerning the conduct of full-scale emergency evacuation demonstrations.

11. **Latin Square Method Analysis:** Prepare a proposal to incorporate in the Crashworthiness Handbook, information on the use of the Latin Square method for analyzing non-standard exit arrangements used for evacuation demonstration.

    The previously mentioned "Transport Airplane Crashworthiness Handbook", AC 25.17, contains information relevant to the use of the Latin Square Test Method for analyzing non-standard exit arrangements.

12. **Floor Proximity Lighting:** Prepare a proposed revision to AC 25.812, within one year, to clarify the meaning of the phrase "identify the escape path and exit" and to include approved general system guidelines.

    Guidance on the use of escape path marking is contained in AC 25.812-1A, " Floor Proximity Escape Path Marking" which was issued on May 22, 1989.

13. **Revision of AC 25.785-1 for Head Strike:** Prepare a proposed revision to AC 25.785-1 to emphasize the lateral head strike safe zone for flight attendant seating. Review and revise the AC, if necessary, with respect to double occupant flight attendant seats and minimum distance between an aft facing flight attendant and a forward facing passenger.

    Ergonomic information pertinent to a seated flight attendants head strike envelope and criteria for flight attendant direct view of the cabin has been added to a proposed revision to AC 25.785-1. There have been two separate notices announcing this proposed AC revision and the public comments have been reviewed. The original proposed AC revision was issued on October 8, 1987. Based on the comments received the proposed AC was revised and re-announced on July 6, 1990. The comment period closed on November 5, 1990. The final AC 25.875-1A revision is due to be issued in late 1991.

14. **Flight Attendant Restraint Systems:** Prepare an AC to provide guidance on the proper installation of seat and shoulder belts.

    Revisions to AC 25.785-1 also will include guidance material on flight attendant restraint systems.

15. **Galley Mounted Seat Data:** Request the assistance of flight attendant associations in collecting data on galley mounted seat installations and use the data to determine what corrective action is necessary.

    The FAA is still awaiting data on galley mounted flight attendant seats. Action on this issue is dependent on the data received.

16. **Illuminated Exit Marking:** Prepare an FAR Part 25 NPRM to allow the illumination option for other than Type A and I exit handles.

    NPRM 89-23 mentioned in action item number 7 above also proposes to standardize the illumination of the various types of emergency exit operating handles and handle covers if used.

17. **PA System Deadman Switch:** Prepare an FAR Part 25 NPRM to require a deadman switch on the public address (PA) system handsets. This will parallel the independently powered PA system proposal currently being promulgated.

    An NPRM was issued and, based on the comments received, a final rule was issued on October 27, 1989 to revise the airworthiness standards and operating rules for air carrier and air taxi operators to ensure the function and availability of the PA system during an emergency. These changes require a microphone for each seated flight attendant near a required floor level exit to facilitate rapid passenger evacuation in an emergency. These changes are applicable to airplanes required to have a PA system that are manufactured on or after November 27, 1990.

    In addition to the above, the need for a "push to talk switch" for the PA system also has been proposed in NPRM 89-23 referred to in action item number 7.

18. **Quick Release Girts:** Prepare an FAR Part 25 NPRM to require quick release girts on slides.

    Partly as a result of the Airport and Airway Safety and Capacity Enhancement Act of 1987 and safety recommendations from the National Transportation Safety Board (NTSB), the FAA issued NPRM 88-11, on June 27, 1988, proposing standards for improved water survival equipment. One of the proposed operational rule changes would require evacuation slides at certain main floor level exits to be designed to function as an emergency flotation devices equipped with quick release girts and handholds. The issuance of the final rule is scheduled for early 1992.

19. **Revision of Technical Standard Order (TSO) C69a:** Prepare a proposal to revise the TSO to require quick release girts to facilitate the use of escape slides as emergency flotation devices. The proposal also would revise the TSO to reduce slide inflation time, increase tear and puncture resistance, add hydrolysis test, and revise the slide raft back support requirement. Prepare an FAR Part 25 NPRM to parallel the TSO slide inflation time revision.

    On August 17, 1988, TSO C69b was issued. This revision of the "Emergency Evacuation Slides, Ramps, and Slide/Raft Combinations" TSO incorporates all of the aforementioned proposed changes.

    In addition, the airworthiness standards were revised on July 20, 1990 to require evacuation slides to be automatically erected and self-supporting within 10 seconds after deployment is begun.

Training and Operations

20. **Crewmember Emergency Training:** Determine appropriate action.

    A notice for a proposed AC 120-XX on crewmember cabin safety training was issued on September 3, 1987. The proposed AC addresses all phases of crewmember training in cabin safety emergencies which occur inflight or on the ground. The information provided would then be incorporated in the operators approved crewmember cabin safety training program. Based on the comments received in response to the AC, the FAA is contemplating drafting an SFAR and/or an air carrier operations bulletin (ACOB) on this subject.

    In addition, AC 120-48 was issued on July 13, 1988 presenting information on common communication and coordination problems which have been experienced between flight and cabin crewmembers and how these problems might be resolved or avoided. This AC is supported by the results of FAA research. The AC stresses the need for crewmembers to perform their duties as a coordinated unit and that this is accomplished only through effective communications.

21. **Equipment Issues and Training:** Include subjects on the use of slides and slide/rafts in the FAA proposed flight attendant training advisory circular.

    Information regarding crewmember training on the use of cabin emergency equipment which is addressed in proposed AC 120-XX would also be included in the ACOB discussed in number 20.

    Another AC 121-31 dealing specifically with crewmember training on the use of protective breathing equipment (PBE) and firefighting equipment was issued on March 14, 1989. The AC discussed methods of providing the required firefighting drill using at least one type of installed hand fire extinguisher while using the installed PBE. However, this AC has been cancelled.

22. **Passenger Briefing:** Complete passenger briefing AC 121-24 revision.

    The adequacy of passenger briefings on air carrier airplanes has been addressed in AC 121-24A published on May 9, 1989. This AC revision provides information regarding the material that is required, or should be used in the oral passenger briefings and on briefing cards. Operators are encouraged to be innovative to increase passenger

motivation, by making oral briefings interesting and briefing cards attractive.

23. **Standardize Emergency Equipment:** Determine appropriate action. No regulatory action is planned.

    One action taken by the FAA deals with medical kits. Effective August 1, 1986, air carrier operators are required to carry medical kits on board their airplanes (Amendment 121-188). This equipment is primarily for the enhancement of diagnosis and initial treatment of inflight medical emergencies.

    To further assist operators in developing their first aid program, AC 120-44 was issued on April 17,1987. The AC provides information on resources, subjects, equipment and standards.

24. **Carry-on Baggage:** Proceed with regulatory project which is in progress.

    On May 29, 1987, the FAA issued operational rule changes (Amendment 121-194) to require air carrier operators to develop and use an approved carry-on baggage program. The rule stipulated that the carriers must verify that each articleof baggage is properly stowed prior to pushback or taxi. The rule will control the size and amount of carry-on baggage and ensure its proper stowage. This rule became effective on January 1, 1988.

    Additional information and guidance on what should be included in the approved carry-on baggage program is contained in AC 121-29 issued on November 2, 1987.

25. **Flight Attendant Duty Time:** Proceed with regulatory project which is in progress.

    The FAA is considering the proposals contained in the petitions for rulemaking submitted by the Air Transport Association (ATA) and the Joint Council of Flight Attendant Unions to establish flight time and duty period limitations and rest requirements for flight attendants (FAs). The FAA has decided not to pursue rulemaking and instead will issue a notice of availability for an AC on this subject by January 1992.

26. **Flight Attendants on the Aircraft:** Proceed with regulatory project which is in progress to define how many flight attendants are to be required aboard an aircraft during boarding, deplaning, and while parked.

Operational rule changes have been proposed to clarify the number of FAs required aboard airplanes when passengers are boarding and deplaning. These proposed FA requirements are contained in NPRM 89-9 which was issued on April 5, 1989. The proposed changes would stipulate the condition under which the FAA would permit a reduced number of FAs on board during specified periods. In addition, other authorized persons could be allowed to perform some functions now performed by the FAs. The proposal clarifies and specifies the training required to be completed by these other authorized persons. The proposed rule also would clarify where the required FAs or other authorized persons must be located when they are on board the airplane.

27. **Inoperative Doors/Slides and MEL Compliance:** Determine appropriate action.

    No action has been taken regarding this issue.

Maintenance and Reliability

28. **Exit/Slide Maintenance and Reliability:** Prepare an AC to address the following: improper maintenance; training and qualifications necessary for slide maintenance; reporting of malfunctions, defects and failures of evacuation equipment; required inspection items (RIIs) for packing of slides and installation on the aircraft; functional testing of evacuation systems on the aircraft; and inspection intervals.

    To address the maintenance and reliability aspects of emergency evacuation slides, the FAA has drafted an AC 43.XX to provide guidance for the maintenance of emergency evacuation slides and slide/raft combinations.

29. **Emergency Equipment Service Difficulty Reporting:** Draft an NPRM to revise FAR 121.703, Mechanical Reliability Reports, to include reporting of malfunctions, failures, and defects of emergency equipment.

    The FAA has revised the air carrier operating rules (Amendment 121-195) to require operators to report each emergency evacuation system and component failure, malfunction or defect including all exit doors and emergency lighting systems. The rules were revised on March 10, 1988 and became effective on April 15, 1988. The rule change allows the FAA to collect, record, analyze and distribute service difficulty data on this equipment which occurs during training, testing, maintenance or actual emergency use.

SUMMARY

Public support and involvement in the Emergency Evacuation Task Force program has been the catalyst for what has been a very productive regulatory program to improve occupant safety. Many top international aviation safety experts participated in the assessment of FAA's existing emergency evacuation regulations. This process created a forum for the open discussion and evaluation of many safety issues.

The FAA, in response to the findings and recommendations of the task force, initiated an active program to address the 29 recommendations of the task force. A review of Tables I and II shows that since July 1986, all but two of the recommendations have resulted in FAA action on 23 separate projects. As indicated in the tables, the FAA has issued 5 final rules , 5 NPRM's, 8 AC's, 2 AC notices of availability (NOA), and 1 TSO revision. In addition, 2 draft AC's have been prepared, two projects have yielded no action, and one project was cancelled.

The FAA's commitment to increased passenger safety has been demonstrated by the changes enacted as a result of the Emergency Evacuation Task Force. Improvements in emergency evacuation, as well as improvements in crashworthiness and fire safety have significantly increased a passenger's potential for surviving an aircraft accident. On the whole, the FAA's efforts regarding the Emergency Evacuation Task Force recommendations has produced safety benefits for the protection and survival of the traveling public. The FAA believes that future efforts also will continue to yield equally effective ways of improving safety.

TABLE I

EMERGENCY EVACUATION TASK FORCE RECOMMENDATIONS

DESIGN AND CERTIFICATION

RECOMMENDATION	FAA ACTION/ISSUE/COMPLIANCE
1. EXIT DISTANCE	FINAL RULE, 6/16/89, 7/24/89
2. TYPE III EXIT ACCESS	NPRM 91-11, 4/4/91 FINAL RULE, 3/6/91
3. EXIT RATING	NPRM 90-4, 2/13/90
4. UNIFORM EXIT DISTRIBUTION	AC 25.807-1, 8/13/90
5. EXIT CROSS-AISLES	AC 25.17, 7/15/91
6. REDUCED EXIT AVAILABLITY	CANCELLED, 10/3/87
7. FLIGHT DECK CREW AND EVACUATION DEMONSTRATION	NPRM 89-23, 8/31/89 AC 25.803-1, 11/13/89
8. EVACUATION DEMONSTRATION AGE LIMITATIONS	NPRM 89-23, 8/31/89 AC 25.803-1, 11/13/89
9. ANALYSIS VS. DEMONSTRATION	AC 25.803-1, 11/13/89
10. CONDUCT OF EVACUATION DEMONSTRATION	AC 25.803-1, 11/13/89
11. LATIN SQUARE METHOD ANALYSIS	AC 25.17, 7/15/91
12. FLOOR PROXIMITY LIGHTING	AC 25.812-1A, 5/22/89
13. REVISION OF AC 25.785-1 FOR HEAD STRIKE	NOA AC 25.785-1A, 7/6/90
14. FLIGHT ATTENDANT RESTRAINT SYSTEMS	NOA AC 25.785-1A, 7/6/90
15. GALLEY MOUNTED SEAT DATA	AWAITING DATA
16. ILLUMINATED EXIT MARKING	NPRM 89-23, 8/31/89
17. PA SYSTEM DEADMAN SWITCH	FINAL RULE, 10/27/89, 11/27/90 NPRM 89-23, 8/31/89
18. QUICK RELEASE GIRTS	NPRM 88-11, 6/27/88
19. REVISION OF TSO C69a	TSO C69b, 8/17/88

TABLE II

EMERGENCY EVACUATION TASK FORCE RECOMMENTATIONS

TRAINING AND OPERATIONS

RECOMMENDATION	FAA ACTION/ISSUE/COMPLIANCE
20. CREWMEMBER EMERGENCY TRAINING	NOA AC 120-XX 9/3/87 AC 120-48, 7/13/88
21. EQUIPMENT ISSUES AND TRAINING	NOA AC 120-XX, 9/3/87 AC 121-31, 3/14/89, CANCELLED
22. PASSENGER BRIEFING	AC 121-24A, 5/9/89
23. STANDARDIZE EMERGENCY EQUIPMENT	AC 120-44, 4/17/87
24. CARRY-ON BAGGAGE	FINAL RULE, 5/29/87, 1/1/88 AC 121-29, 11/2/87
25. FLIGHT ATTENDANT DUTY TIME	DRAFT AC 120-YY DENIED AFA PETITION, 1/23/89
26. FLIGHT ATTENDANTS ON THE AIRCRAFT	NPRM 89-9, 4/5/89
27. INOPERATIVE DOORS/SLIDES AND MEL COMPLIANCE	NO ACTION TAKEN

MAINTENANCE AND RELIABILITY

RECOMMENDATION	FAA ACTION/ISSUE/COMPLIANCE
28. EXIT/SLIDE MAINTENANCE AND RELIABILITY	DRAFT AC 43-XX
29. EMERGENCY EQUIPMENT SERVICE DIFFICULT REPORTING	FINAL RULE, 3/10/88, 4/15/88

REFERENCES

FINAL RULES

1. Federal Aviation Administration, Final Rule, "Floor Proximity Emergency Escape Path Marking", Amendment 25-58, 49FR43182, October 26, 1984.

2. Federal Aviation Administration, Final Rule, "Emergency Medical Equipment Requirement", Amendments 11-29 and 121-188, 51FR1218, January 9, 1986.

3. Federal Aviation Administration, Final Rule, "Carry-on Baggage Program", Amendment 121-194, 52FR21472, June 5, 1987.

4. Federal Aviation Administration, Final Rule, "Mandatory Reporting for Emergency Evacuation Systems and Components", Amendment 121-195, 53FR8726, March 16, 1988.

5. Federal Aviation Administration, Final Rule, "Location of Passenger Emergency Exits in Transport Category Airplanes", Amendments 21-65, 25-67 and 121-205, 54FR26688, June 23, 1989.

6. Federal Aviation Administration, Final Rule, "Independent Power Source for Public Address System", Amendments 25-70 and 121-209, 54FR43925, October 27, 1989.

7. Federal Aviation Administration, Final Rule, "Special Review; Transport Category Airplane Airworthiness Standards", Amendment 25-72, 55FR29782, July 20, 1990.

8. Federal Aviation Administration, Final Rule, "Exit Row Seating", Amendments 121-214 and 135-36, 55FR8054, March 6, 1991.

NOTICE OF PROPOSED RULEMAKING

1. Federal Aviation Administration, NPRM, "Independent Power Source for Public Address System", Notice No. 86-5, 51FR19140, May 27, 1986.

2. Federal Aviation Administration, NPRM, "Improved Survival Equipment for Inadvertent Water Landings", Notice No. 88-11, 53FR24890, June 30, 1988.

3. Federal Aviation Administration, NPRM, "Miscellaneous Changes to Emergency Evacuation Demonstration Procedures, Exit Handle Illumination Requirements, and Public Address Systems", Notice No. 89-23, 54FR37414, September 8, 1989.

4. Federal Aviation Administration, NPRM, "Type and Number of Passenger Emergency Exits Required in Transport Category Airplanes", Notice No. 90-4, 55FR6344, February 22, 1990.

5. Federal Aviation Administration, NPRM, "Improved Access to Type III Exits", Notice No. 91-11, 56FR14446, April 9, 1991.

ADVISORY CIRCULARS

1. Federal Aviation Administration, "Air Carrier First Aid Program", AC 120-44, April 17,1987.

2. Federal Aviation Administration, "Carry-on Baggage", AC 121-29, November 2, 1987.

3. Federal Aviation Administration, "Communication and Coordination between Flight Crewmembers and Flight Attendants", AC 120-48, July 13, 1988.

4. Federal Aviation Administration, " Crewmember Training on PBE", AC 121-31, March 14, 1989 (Cancelled).

5. Federal Aviation Administration, "Passenger Safety Information Briefing and Briefing Cards", AC 121-24A, May 9, 1989.

6. Federal Aviation Administration, "Floor Proximity Emergency Escape Path Marking", AC 25-812-1A, May 22, 1989.

7. Federal Aviation Administration, "Emergency Evacuation Demonstrations", AC 25.803-1, November 13, 1989.

8. Federal Aviation Administration, "Uniform Distribution of Exits", AC 25-807-1, August 13, 1990.