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Part III

Department of Transportation

Federal Aviation Administration

14 CFR Parts 25 and 121

Floor Proximity Emergency Escape Path Marking; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 25 and 121

[Docket No. 23792; Amdt. Nos. 25-58 and 121-183]

Floor Proximity Emergency Escape Path Marking

AGENCY: Federal Aviation Administration (FAA), DOT.
ACTION: Final rule.

SUMMARY: This amendment establishes new performance standards for floor proximity emergency escape path marking to provide visual guidance for emergency cabin evacuation when all sources of cabin lighting more than 4 feet above the aisle floor are totally obscured by smoke. This amendment makes the standards applicable to future type certification of transport category airplanes and, after November 26, 1986, to airplanes type certificated after January 1, 1958, and operating under Part 121. These standards represent a significant improvement in aircraft cabin safety and are in addition to the emergency lighting standards currently in the regulations.

EFFECTIVE DATE: November 26, 1984.

FOR FURTHER INFORMATION CONTACT: Henri Branting, Technical Analysis Branch (AWS-120), Aircraft Engineering Division, Office of Airworthiness, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; Telephone (202) 426-8382.

SUPPLEMENTARY INFORMATION:

Background

On August 23, 1983, the Federal Aviation Administration (FAA) issued Notice of Proposed Rulemaking (NPRM) No. 83-15 (48 FR 46218; October 11, 1983). This notice proposed new performance standards for floor proximity emergency escape path marking to provide visual guidance for emergency cabin evacuation when all sources of cabin lighting more than 4 feet above the aisle floor are totally obscured by smoke. The notice proposed to make the standards applicable to future type certification of transport category airplanes and to most airplanes operating under Part 121 of the Federal Aviation Regulations (FAR). These proposed standards would be in addition to the emergency lighting standards currently in the regulations.

The notice responded to certain findings of the Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and was based on the results of research, development, and testing conducted by the FAA.

The SAFER Advisory Committee was established in June 1978 by the FAA as a result of information from public hearings on aircraft fire safety. The FAA directed the Committee to "examine the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash environment and the range of solutions available." The Committee consisted of 24 representatives of a wide range of aviation and general public interests. Technical support groups included approximately 150 of the world's top experts in fire research, accident investigation, materials development, and related fields. The Committee found that accident experience indicates smoke from burning fuel and cabin material can obscure overhead emergency lighting and make cabin evacuation difficult. Therefore, the Committee recommended that consideration be given to placing additional sources of lighting at a lower level in the relatively clear air near the cabin floor. The FAA accepted the Committee recommendation and conducted the research, testing, and design studies necessary to develop this proposed floor proximity marking concept.

Current regulations require that emergency lighting provide specific illumination at seat armrest level. The sources of this emergency illumination are typically located overhead in the cabin ceiling area. Service experience shows that the current regulations effectively ensure that the airplane's main aisles, cross aisles, passageways, and emergency exits are capable of sustaining raid mass evacuation under critical conditions over a reasonably extended period of time. However, the regulations do not adequately cover the brief interval between the time buoyant hot smoke and gases might begin to fill the upper portion of the cabin and extend down to near floor level, obscuring all overhead lighting, and the time the cabin is not survivable. While this condition is extreme, it is considered desirable to address this in the aircraft design, and safety could be improved through the use of lights, lights and reflectors, or other devices to provide floor proximity emergency escape path marking.

The FAA conducted a series of laboratory tests to look into the problems of emergency lighting in conditions of dense smoke and to study practical ways of developing improved lighting systems for transport category airplane cabins. A design feasibility and cost study of floor proximity emergency escape path marking was conducted under FAA contract. The results of this study are published in FAA Report No. DOT/FAA/CT-83/31, Improved Interior Emergency Lighting Study, dated September 1983, available from the National Technical Information Service, Springfield, Virginia 22161. A copy of this report is in the docket available for inspection upon request. The economic analysis for the notice was based on data from this study. Eleven candidate systems were considered in this study; and although individual systems were found to have certain advantages compared to others, no system was so clearly superior to the others that it warranted its establishment through regulation as the single standard for floor proximity emergency escape path marking in general. Notice 83-15 pointed out that there might be any number of combinations of point lighting, flood lighting, strip lighting, markers, signs, reflective materials, and other components that could adequately serve the objective of floor proximity marking. Therefore, the notice proposed an objective performance standard rather than requiring a particular system. A performance standard in this case would allow industry the flexibility to choose among the various existing systems or to develop new systems.

The standard proposed in Notice 83-15 would require that floor proximity emergency escape path marking provide emergency evacuation guidance for passengers when all sources of illumination more than 4 feet above the cabin aisle floor are totally obscured. It proposed that in dark of the night conditions, the floor proximity emergency escape path marking must enable each passenger to: (1) Visually identify the emergency escape path along the aisle of the cabin floor after leaving a cabin seat; and (2) Readily identify each exit from the emergency escape path by reference only to markings and visual features not more than 4 feet above the cabin floor. The marking system performance would be proven under dark of the night conditions the same as those specified in the emergency evacuation demonstration requirements of § 25.803 of the Federal Aviation Regulations (FAR).

The proposal would require that airplanes type certificated after January 1, 1958, and operating under Part 121 comply with the new standard within 2 years after the standard became effective. The limited number of airplanes type certificated before January 1, 1958, operating under Part 121 were not included because the relatively advanced age and smaller sizes of these

airplanes would make compliance impractical from an economic standpoint. The 2-year period was intended to allow air carriers lead time to schedule the modifications necessary for compliance to coincide with major maintenance inspections and, therefore, avoid an undue compliance burden.

Comments and data on marking systems capable of meeting the proposed performance standard were specifically requested in the notice, with the stipulation that they would be considered in the publication of advisory material on acceptable means of compliance.

Public Participation

These amendments are based on Notice 83-15. All interested parties have been given an opportunity to participate in the making of these amendments, and due consideration has been given to all matters presented. Except for the changes discussed below, these amendments and the reasons for their adoption are the same as those stated in Notice 83-15.

Discussion of Comments

Twenty-four comments were received in response to Notice 83-15, representing the views of aircraft and equipment manufacturers, aircraft operators, aircraft crew organizations, U.S. and foreign government organizations, and consumer interests. All of the comments support the safety objective of the proposal, although various commenters disagree with certain technical aspects of the proposal.

Eight commenters disagree with the proposed applicability of the new marking requirements to airplanes certificated under FAR Part 25 and those operated under FAR Part 121. These commenters contend in general that applicability should depend on aircraft seating capacity, cabin size, type of operation, or similar factors. Four of these commenters oppose applicability to the relatively smaller airplanes with maximum seating capacities ranging from 30 to 60, depending on the view of the commenter. Three of the commenters favor extending the applicability to the type certification of rotorcraft and the operation of aircraft under regulations other than FAR Part 121, such as FAR Part 135.

Notice 83-15 did not address aircraft certificated under Parts 23, 27, or 29 or operations conducted under Part 135 because it was made in response to a recommendation by the SAFER Advisory Committee which limited its investigation to transport category airplanes. Notice 83-15 intended to establish additional requirements in Part 25 and Part 121 for the type of aircraft and operation for which emergency lighting is recognized as most critical and for which the most stringent lighting requirements have been established. Other regulations contain lighting and marking requirements considerably less stringent. The research, development, and testing and the feasibility and cost study which supported the proposal were based on the type of transport category airplane typically used in Part 121 operations. The proposal did not include rotorcraft or the types of airplanes operated under Part 135 because of their relatively smaller cabin sizes, shorter aisle lengths, and shorter seat-to-exit distances compared to transport category airplanes.

The FAA does not agree that applicability of these lighting requirements should be determined by the passenger capacity of an airplane operated under Part 121 or type certificated under Part 25. The transport category airworthiness standards require extensive emergency lighting and evacuation markings for all transport category airplanes, regardless of passenger capacity, although they do recognize that for relatively small cabins seating 9 or less passengers smaller evacuation markings provide the required level of safety and obviate the imposition of an impractical standard (since small cabins may not be able to accommodate larger exit signs). These cabins may use smaller emergency exit signs with lower illumination than the larger cabins. The objective performance standard will accommodate the "smaller" cabins by permitting the design of a marking system to suit the cabin size. Therefore, the applicability of the requirement is adopted as proposed.

Nine commenters express views on the 2-year compliance period in proposed § 121.310(c)(3). Three commenters favor increasing it to 3 years. Three favor accelerating compliance. Three concur with the 2 years. The comments favoring an increase to 3 years contend that the marking requirements are complex and that additional time should be allowed for development and approval of new designs, procurement of equipment, and the installation of systems.

The 2-year period will provide operators lead time to schedule modifications to coincide with major maintenance checks and therefore to avoid an undue compliance burden. The 2-year compliance period recognizes that the scheduling of major maintenance checks varies widely among carriers and individual airplanes depending on route structure and airplane utilization rate and in many cases exceeds 1 year. A significant reduction in the compliance period would conflict with the intent of the 2-year period and likely result in added airplane down-time for a number of carriers. The FAA anticipates that carriers operating large fleets of various types of aircraft may need more than 1 year to design, procure, and install the new lighting systems and to revise their technical manuals to include appropriate information and guidance regarding the new systems. Concerning extending the compliance period to 3 years, there is no indication in the comments that long-range modification scheduling could not begin some time during the design development and approval phase. Although the marking systems are not necessarily complex in design and construction, the 2-year period provides sufficient time for development and approval of new designs, procurement of equipment, and the installation of systems. Therefore, the 2-year compliance period is adopted as proposed.

One commenter contends the proposed standard infers that a separate floor proximity marking system is required. The standard, as adopted, does not require a separate system. A single system might meet the requirements for both general illumination and floor proximity marking.

Several commenters contend the wording of the proposed standard implies that marking/lighting is required along the aisle. One commenter says that aisle marking/lighting should not be necessary because a person leaving a seat needs no guidance to find the aisle, even in total darkness. The commenter says that with information provided by the pre-takeoff briefing and the passenger information card, the passenger will know the location of exits and, once in the aisle, can proceed to an exit, using the aisle as tactile guidance. Several commenters contend that marking/lighting should be necessary only for exits located off the main aisle.

The FAA agrees that visual guidance is not needed to enable a passenger to move from the seat to the aisle. The standard does not require this. The standard requires visual guidance for the aisle escape path and the exits. It does not require marking/lighting along the aisle, although this might be one means of complying with the standard. The standard does not preclude compliance by the use of conspicuous lighting or marking near the ends of the aisle or at other critical points along the

aisle. The FAA does not agree that passenger exits on the main aisle need no floor proximity marking since without marking there would be no means by which passengers could readily identify the exits when overhead lighting is obscured. Notice 83–15 explains that under this objective standard, there might be many different combinations of point lighting flood lighting, strip lighting, markers, signs, reflective materials, and other components that could provide adequate visual guidance. The FAA does not agree with the commenter that tactile guidance alone for the aisle is sufficient. Under § 25.811(c), tactile guidance currently may be used for locating exits in dense smoke. For typical airline passengers unfamiliar with cabin features, visual guidance is more effective than tactile.

One commenter points out that in an actual fire, smoke might occur below the 4-foot level and that visual performance requirements should be based on defined optical density for smoke.

The FAA does not agree. It is impractical to define the fire scenario to this extent for the purpose of floor proximity marking design. In an actual fire, the obscuring layer might vary along the length of the cabin well above and below 4 feet. Notice 83–15 acknowledges that when lights are totally obscured at 4 feet, the effective height of clear air would be somewhat less. Four feet is a nominal design height, and the air below this is deemed clear for the purpose of floor proximity marking design.

Two commenters point out that floor proximity marking should not indicate a particular direction in which the passenger should move in an emergency, as this would depend on the nature of the emergency.

The FAA agrees. The proposed standard was intended to provide an indication to each passenger of the nearest exits forward and aft, thus giving the passenger a choice, depending on the location of the passenger's seat. The rule has been revised to make this intent clear. The direction in which the passenger chooses to move in an actual emergency would depend on conditions in the cabin.

In response to one comment, § 25.812(e) has been clarified by using the term "cabin aisle floor" throughout.

Many commenters express views regarding the objective form of the standard. While several commenters support the objective form, others disagree, contending that the lack of specific requirements leaves much of the compliance finding to subjective judgment and that this will not permit a uniform application of the standard throughout industry. Several commenters recommend revising the standard to specify the location, illumination, and luminosity of lighting, markers, and signs, similar to current regulations on emergency lighting.

Notice 83–15 explains why the proposed standard, for practical reasons, defines objective rather than specific requirements. The notice explains that no marking system appears so superior to others that it warrants establishment as the single standard for marking in general. There is a notable difference between the general illumination, which is required in specific terms by current regulations, and floor proximity marking. General illumination is intended to enable a large number of passengers to orient themselves within the cabin, receive instructions and assistance from crewmembers, and queue up quickly at usable exits. General illumination is necessary for this. Non-illuminating markers will not suffice. Current regulations prescribe specific illumination for aisles and passageways. Floor proximity marking is intended to allow passengers who have become familiar with the cabin layout during the period of general overhead illumination prior to an accident to find their way to exits unassisted should the general overhead illumination become obscured by smoke. There are many combinations of lights, markers, and signs which might serve this objective in a cost beneficial manner, and each must be shown adequate for the particular cabin interior and exit arrangement in question. Therefore, a performance standard is used to allow design flexibility and at the same time ensure the necessary safety.

Discussion Regarding Compliance With the Objective Performance Standard

Several commenters contend that because the objective performance standard does not specifically define a means of compliance, the FAA should publish advisory material concurrently with the rule adoption to provide guidance for the application of the standard. The FAA recognizes the value of guidance material for the introduction of a new performance standard. Notice 83–15 specifically requested comments and data on marking systems capable of meeting the proposed performance standard for use in the development of advisory material on means of compliance. Although the response to this request did not provide information on marking concepts which have been evaluated or found acceptable under the standard, it did identify those aspects of the standard for which additional clarification is appropriate.

In response to the comments, the discussion below addresses all aspects of the standard necessary for the development of a means of compliance. This discussion centers on the objective of floor proximity marking and the emergency conditions the marking is intended to counter. This information in conjunction with established FAA airworthiness evaluation and approval procedures will permit the determination of means of compliance which will ensure the consistent and uniform application of the standard. With this information, publication of additional guidance material is not necessary at this time.

Notice 83–15 explains that floor proximity marking is intended to counter conditions which might occur some time after the start of the type of emergency evacuation which is simulated in the demonstration required by § 25.803. In this demonstration, test subjects representing typical airline passengers in a cabin filled to capacity must evacuate the cabin in dark of the night conditions within 90 seconds, using emergency lighting only and with one-half the number of emergency exits rendered inoperative. Typically in a mass evacuation of this type, passengers immediately leave their seats and form queues at operable exits which generally are ready for use within 15 seconds. For the next 1 to 1½ minutes, the passengers in queues await their turn to escape through emergency exits and descend to the ground by escape slides. Emergency lighting is sufficient to enable the passengers to see the features of the cabin interior.

In actual emergency evacuation involving a fuel spill fire or cabin fire, smoke might begin to fill the upper portion of the cabin and eventually obscure emergency lighting and signs. This is the condition floor proximity marking is intended to counter. By the time this condition prevails in an emergency evacuation, the evacuee flows are most likely well established or completed. The floor proximity escape path marking is intended to enable unassisted passengers who might remain in the airplane to find emergency exits when overhead lighting is obscured.

A floor proximity emergency escape path marking system might be shown to meet the objective of the standard by means of the types of demonstrations discussed below or by means of analysis based on comparison of the marking system and cabin features with a marking system and cabin features

previously approved by such types of demonstrations.

Demonstrations, if used, are a means to show that test subjects representing typical passengers can leave any passenger seat in the cabin and once in the walkway area immediately adjacent to the seat can proceed to the first exit, or pair of exits, forward and aft of the seat, and can make positive identification of the exits. A walkway area in this sense is an aisle or any other area beyond the seats which a passenger traverses to reach an exit. While demonstrations should not be necessary for each seat or seat row, they are appropriate for those walkway areas adjacent to passenger seats which are determined to be the more critical from the standpoint of visual reference and the objective of the performance standard. A sufficient number of demonstrations should be conducted to ascertain that test subjects can identify all of the passenger emergency exits in the cabin.

In a fire situation severe enough to obscure all overhead lighting, some passengers might find themselves alone or in nearly vacated sections of the cabin, without the benefit of crewmembers, queues of passengers, individual passengers, human voices, or other cues to aid them in finding and identifying exits. This would be the most adverse situation from the standpoint of orientation and sense of direction and would require the passenger, alone and unassisted, to rely solely on the visual guidance provided by the floor proximity marking system and the passenger's familiarity with the cabin exit arrangement acquired during the passenger briefing under conditions of general illumination. This situation should be accounted for in the demonstration of compliance.

Demonstrations should be conducted either during the dark of the night or during daylight with dark of the night conditions simulated. If the demonstrations are conducted during daylight hours, each window, door, emergency exit (open and closed), and other openings should have provisions to prevent daylight from entering the passenger cabin. Each internal door and curtain should be in the takeoff configuration. During the demonstrations, only the marking system subject to the show of compliance should provide light. Since the demonstrations pertain to visual reference and orientation, and not to egress performance and evacuation rate, the distribution of articles to create minor obstructions in the aisle, as mentioned in § 23.803(c)(11) for full-scale evacuation demonstrations, should not be necessary.

These demonstrations are intended to confirm the efficacy of floor proximity markings when all lighting more than 4 feet above the cabin aisle floor is totally obscured by dense smoke. Obviously, in an actual fire situation, illumination from the floor proximity system would be confined to within the 4 feet beneath the overlaying smoke and would not illuminate or reflect throughout the cabin in general. In a demonstration in which there is no overlaying smoke, illumination from the floor proximity system might reflect into the upper cabin and produce unrealistic illumination for the cabin and escape path. A single light might be sufficient to illuminate a large area of the cabin. Unrealistic reflections and illumination should be accounted for in demonstrations, either through a rational determination that they do not change the validity of the demonstration results or through the use of shielding or shrouding, if necessary, to minimize or eliminate their effects.

Persons used as subjects for the demonstrations should be ambulatory adults in normal health. Except for information obtained from the pre-takeoff briefing and passenger information card, and from the instructions given immediately prior to the demonstration, test subjects should not have practiced or rehearsed or have had the demonstration procedures described to them within the past 6 months. Crewmembers, mechanics, training personnel, and any other persons who are familiar with the interior features of the cabin through the normal course of their duties should not be used as test subjects. A test subject should not perform demonstrations for more than one walkway area.

For each critical walkway area in the cabin, demonstrations should be performed by at least the following test subjects individually: one male, one female, and one person over 60 years of age, male or female. Test subjects need not include children.

Prior to the demonstration, the test subject should be given a passenger information card and be in a seating area in a normally illuminated cabin in a position to see and hear the pre-takeoff passenger briefing required by § 121.571. One or more observers should be in the cabin. After the pre-takeoff briefing and shortly before the demonstration, the subject should be informed of the objective and procedures of the demonstration.

In each demonstration, the test subject acting alone and without assistance should be able to : (1) Leave the passenger seat or seat row and enter the walkway area immediately adjacent (Visual reference to the escape path marking need not be used to assist the test subject in locating the walkway area immediately adjacent to the seat or seat row); (2) Standing or stooping in the adjacent walkway area, identify from visual reference to the floor proximity marking system the direction(s) of the first exit or pair of exists forward and aft and indicate to the observer the means by which identification is made; (3) Traverse to those exits without significant hesitation, delay, or evidence of confusion; and (4) Make positive identification of the exits by visual reference to features not more than 4 feet above the cabin floor and indicate to the observer the means by which identification is made. The exits may be open or closed for the demonstration. Safety precautions should be taken for open exists. Identification should be made for at least one exit of each type and marking system in the cabin, in both the open and closed positions.

Economic Analysis

One commenter states that the cost of engineering design, documentation, and demonstration should be added to the estimated costs. The FAA agrees and has increased the cost estimates by about 10 percent. For the 1983 aircraft fleet, the cost to retrofit is estimated to be $22.95 million, including the cost impact of additional weight. Another commenter states that the benefits cannot be quantified with any degree of accuracy. Clearly, it is impossible to accurately determine the number of persons who would have died in accidents involving fire who will now live because of this rule. However, decisions must be made relating to safety based on the best available information. The historical fire fatalities for the period 1965 through 1983 were 712. Extrapolating this fire fatality rate over the next 10 years, the expected life of the lighting system, the FAA estimates that about 10 percent of that number will have to be saved to justify the cost. The FAA's judgment is that a sufficient number of persons will be saved to justify the cost. The Regulatory Evaluation which has been placed in the docket contains a cost benefit analysis of the rule.

Trade Impact

These rules will have little or no impact on U.S. or foreign trade. In the United States, both foreign and domestic manufacturers must meet the proposed requirements, and there will be no competitive advantage to either. In

foreign countries, there would be a minor cost advantage only if the foreign country did not require the floor proximity emergency escape path marking system. Since the cost of the marking system is negligible compared to the total costs of new aircraft, there is essentially no impact on trade.

Conclusion

Under the terms of the Regulatory Flexibility Act (the Act), the FAA has reviewed this proposal to determine what impact it might have on small entities. Since the projected cost of compliance could be between $5,500 and $17,400 for each aircraft in the Part 121 fleet, the FAA has determined that this rule, if adopted, may have a significant economic impact on a substantial number of small entities. Consequently, a regulatory flexibility analysis and regulatory evaluation has been prepared. It is contained in the docket which is open to public inspection. A copy of the evaluation may be obtained by contacting the person identified under the caption **"FOR FURTHER INFORMATION CONTACT."**

As required by the Act, various regulatory alternatives were considered, such as: Making the requirements applicable only to new airplanes, having different standards based on the size of the air carrier, letting the air carrier industry decide whether to use the new systems, and requiring all airplanes operating under Part 121 to come into compliance with the requirements within a certain time period. Safety needs are such that the FAA has selected the latter alternative set forth in these amendments. The alternative of making the requirements applicable only to new airplanes was rejected because of the delay this would cause implementing the new standards throughout the fleet. The alternative of having different standards based on the size of the air carrier was rejected because the FAA believes all members of the traveling public should be equally protected. The alternative of letting the air carrier industry decide whether to use the new systems was rejected because in the past a voluntary approach to new equipment has not resulted in fleetwide implementation of desired safety advances.

These amendments are 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. In addition, these amendments 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. Accordingly, it has been determined that this is not a major regulation under Executive Order 12291. In addition, the FAA has determined that this action is significant under Department of Transportation Regulatory Policy and Procedures (44 FR 11034; February 26, 1979).

List of Subjects

14 CFR Part 25

Air transportation, Aircraft, Aviation safety, Safety, Tires.

14 CFR Part 121

Aviation safety, Safety, Air carriers, Air transportation, Aircraft, Airplanes, Airworthiness directives and standards, Flammable materials, Transportation, Common carriers.

Adoption of the Amendment

Accordingly, Parts 25 and 121 of the Federal Aviation Regulations (14 CFR Parts 25 and 121) are amended as follows effective November 26, 1984:

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

1. By amending § 25.812(a)(1) by removing the phrase "and interior lighting in emergency exit areas" and inserting, in its place, the phrase "interior lighting in emergency exit areas, and floor proximity escape path marking".

2. By amending § 25.812 by redesignating present paragraphs (e) through (k) as paragraphs (f) through (l).

3. By amending § 25.812 by adding a new paragraph (e) as follows:

§ 25.812 Emergency lighting.

* * * * *

(e) Floor proximity emergency escape path marking must provide emergency evacuation guidance for passengers when all sources of illumination more than 4 feet above the cabin aisle floor are totally obscured. In the dark of the night, the floor proximity emergency escape path marking must enable each passenger to—

(1) After leaving the passenger seat, visually identify the emergency escape path along the cabin aisle floor to the first exits or pair of exits forward and aft of the seat; and

(2) Readily identify each exit from the emergency escape path by reference only to markings and visual features not more than 4 feet above the cabin floor.

* * * * *

4. By changing the reference in the introductory text of newly designated paragraph (f) of § 25.812 from "paragraph (g)" to "paragraph (h)".

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

5. By amending § 121.310 by revising paragraph (c) to read as follows:

§ 121.310 Additional emergency equipment.

* * * * *

(c) *Lighting for interior emergency exit markings.* Each passenger-carrying airplane must have an emergency lighting system, independent of the main lighting system. However, sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system. The emergency lighting system must—

(1) Illuminate each passenger exit marking and locating sign;

(2) Provide enough general lighting in the passenger cabin so that the average illumination when measured at 40-inch intervals at seat armrest height, on the centerline of the main passenger aisle, is at least 0.05 foot-candles; and

(3) For airplanes type certificated after January 1, 1958, after November 26, 1986, include floor proximity emergency escape path marking which meets the requirements of § 25.812(e) of this chapter in effect on November 26, 1984.

* * * * *

6. By changing the reference in the introductory text of paragraph (d) of § 121.310 from "§ 25.812(g)" to "§ 25.812(h)".

(Secs. 313(a), 314(a), 601 through 610, and 1102 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1355(a), 1421 through 1430, and 1502); 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983))

Issued in Washington, D.C., on October 22, 1984.

Donald D. Engen,

Administrator.

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