



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2014-0668; Special Conditions No. 25-572-SC]

Special Conditions: AAR Engineering Services, Boeing 757-200 series airplane; Seats with non-traditional, large, non-metallic panels.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special condition; request for comments.

SUMMARY: These special conditions are issued for the Boeing 757-200 series airplane. This airplane, as modified by AAR Engineering Services, will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature includes seats with non-traditional, large, non-metallic panels on Boeing 757-200 series airplanes. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on AAR Engineering Services on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. We must receive your comments by **[INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Send comments identified by docket number FAA-2014-0668 using any of the following methods:

- Federal eRegulations Portal: Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 8 a.m. and 5 p.m., Monday through Friday, except federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

FOR FURTHER INFORMATION CONTACT: John Sheldon, FAA, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2785; facsimile 425-227-1320.

SUPPLEMENTARY INFORMATION:

The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions are impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected aircraft. In addition, the substance of these special conditions has been subject to the public-comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon publication in the *Federal Register*.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive on or before the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On May 28, 2014, AAR Engineering Services applied for a supplemental type certificate for an interior reconfiguration that includes seats containing non-traditional, large, non-metallic panels on Boeing 757-200 series airplanes. The Boeing Model 757-200 series airplane, currently approved under Type Certificate No. A2NM, is a swept-wing, conventional-tail, twin-engine,

turbofan-powered, single-aisle, medium-sized transport-category airplane.

The applicable regulations to airplanes currently approved under Type Certificate No. A2NM do not require seats to meet the more-stringent flammability standards required of large, non-metallic panels in the cabin interior. At the time the applicable rules were written, seats were designed with a metal frame covered by fabric, not with large, non-metallic panels. Seats also met the then-recently adopted standards for flammability of seat cushions. With the seat design being mostly fabric and metal, their contribution to a fire in the cabin had been minimized and was not considered a threat. For these reasons, seats did not need to be tested to heat-release and smoke-emission requirements.

Seat designs have now evolved to occasionally include large, non-traditional, non-metallic panels. Taken in total, the surface area of these panels is on the same order as the sidewall and overhead-stowage-bin interior panels. To provide the level of passenger protection established by the airworthiness standards, these large, non-traditional, non-metallic panels in the cabin must meet the standards of Title 14, Code of Federal Regulations (CFR) part 25, Appendix F, parts IV and V, heat-release and smoke-emission requirements.

Type Certification Basis

Under the provisions of § 21.101, AAR Engineering Services must show that the Boeing Model 757-200, as changed, continues to meet the applicable provisions of the regulations listed in Type Certificate No. A2NM, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

The regulations incorporated by reference in the type certificate are commonly referred to as the “original type-certification basis.” The regulations incorporated by reference in A2NM are

as follows:

Part 25, as amended by Amendment 25-1 through Amendment 25-45. In addition, an equivalent safety finding exists with respect to § 25.853(c), Compartment interiors.

In addition, the certification basis includes certain special conditions, exemptions, or later amended sections of the applicable part that are not relevant to these special conditions.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Boeing 757-200 series airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same or similar novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Boeing 757-200 series airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.101.

Novel or Unusual Design Features

The Boeing 757-200 series airplane will incorporate the following novel or unusual design feature:

These models offer interior arrangements that include passenger seats that incorporate

large, non-traditional, non-metallic panels in lieu of the traditional metal frame covered by fabric. The flammability properties of these panels have been shown to significantly affect the survivability of cabin occupants in the event of fire. These seats are considered a novel design for transport-category airplanes that include Amendment 25-61 and Amendment 25-66 in the certification basis, and were not considered when those airworthiness standards were established.

The existing regulations do not provide adequate or appropriate safety standards for seat designs that incorporate large, non-traditional, non-metallic panels in their designs. To provide a level of safety that is equivalent to that afforded to the balance of the cabin, additional airworthiness standards, in the form of special conditions, are necessary. These special conditions supplement § 25.853. The requirements contained in these special conditions consist of applying the identical test conditions, required of all other large panels in the cabin, to seats with large, non-traditional, non-metallic panels.

Discussion

In the early 1980s, the Federal Aviation Administration (FAA) conducted extensive research on the effects of post-crash flammability in the passenger cabin. As a result of this research and service experience, the FAA adopted new standards for interior surfaces associated with larger surface-area parts. Specifically, the rules require measurement of heat release and smoke emission (part 25, Appendix F, parts IV and V) for the affected parts. Heat release has been shown to have a direct correlation to post-crash fire-survival time. The materials that comply with the standards (e.g., § 25.853, “Compartment Interiors,” as amended by Amendments 25-61 and 25-66) were found to extend survival time by approximately two minutes over materials that do not comply.

At the time Amendment 25-61 was written, the potential application of the requirement to seats was explored. The seat frame itself was not a concern because it was primarily made of aluminum and incorporated only small amounts of non-metallic materials (for example, a food-tray table and armrest closeout). The FAA determined that the overall effect on survivability was negligible, whether or not these panels met the heat-release and smoke-emission requirements. The requirements therefore did not address seats, and the preambles to both Notice of Proposed Rule Making (NPRM) 85-10 and the final rule (Amendment 25-61) specifically note that they were excluded "... because the recently adopted standards for flammability of seat cushions will greatly inhibit involvement of the seats" in their post-crash fire.

In the late 1990s, when it became clear that seat designs were evolving to include large non-metallic panels with surface area that would impact survivability during a cabin-fire event compared to partitions or galleys, the FAA issued Policy Memorandum 97-112-39. This memo noted that large surface-area panels must comply with heat-release and smoke-emission requirements, even if they were attached to a seat. If the FAA had not issued such policy, seat designs would have been an exception to the airworthiness standards, which could result in an unacceptable decrease in survivability during a cabin-fire event.

Definition of "large, non-traditional, non-metallic panel"

A large, non-traditional panel, in this case, is defined as a panel with exposed-surface areas greater than 1.5 square feet installed per seat place. The panel may consist of either a single component or multiple components in a concentrated area. Examples of non-traditional areas include, but are not limited to, seat backs, bottoms and leg/foot rests, kick panels, back shells, and associated furniture. Examples of traditional, exempted areas include, but are not limited to,

arm caps, armrest close-outs, and items such as end-bays and center consoles, food trays, video monitors, and shrouds.

Clarification of “exposed”

“Exposed” is considered to include those panels directly exposed to the passenger cabin in the traditional sense, plus those panels enveloped, such as by a dress cover. Traditional fabrics or leathers currently used on seats are excluded from the special conditions. These materials must still comply with § 25.853(a) and (c) if used as a covering for a seat cushion, or § 25.853(a) if installed elsewhere on the seat. Large, non-metallic panels covered with traditional fabrics or leathers will be tested without their coverings or covering attachments.

Due to the way the aircraft industry manufactures seats and airplanes, the FAA recognizes that seat procurement is a long lead-time process. The FAA also recognizes that airplane operators value fleet commonality when buying airplane seats. However, special conditions, by definition, apply to the novel product and become effective on or shortly after their **Federal Register** publication date. The FAA has determined the applicability of these special conditions to be focused on new-seat certification programs. Because of the unique nature of the seats with non-traditional, large, non-metallic panels, the FAA has developed a unique definition of “new-seat certification program” and of “previously certified.” This latter definition is unique because it has to be made at the seat type-design level, not at the aircraft type-design level.

In the context of this special condition only, not to be extended to other areas of aircraft certification for the reasons stated above, the FAA defines “new seat certification program” and “previously certified” as follows:

New-seat certification program

Seats presented for new-installation certification, and that are newly designed and manufactured, must comply with the special conditions. Any modification (change) to an existing or new non-traditional large non-metallic panel on a seat would be considered a new program, and all non-traditional panels on the seat would need to comply with the special conditions.

Previously certified

Seats that have previously been designed, manufactured, and are in service or presented to go into service would not have to comply with this special condition, unless the large panels were being modified.

Applicability

As discussed above, these special conditions are applicable to the Boeing 757-200 series airplane as modified by AAR Aircraft Services. Should AAR Aircraft Services apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A2NM to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those

previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, because a delay would significantly affect the certification of the airplane, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon publication in the *Federal Register*. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type-certification basis for Boeing Model 757-200 airplanes modified by AAR Engineering Services:

1. Compliance with 14 CFR part 25, Appendix F, parts IV and V, heat release and smoke emission, is required for seats that incorporate large, non-traditional, non-metallic panels that may either be a single component or multiple components in a concentrated area in their design.
2. The applicant may designate up to and including 1.5 square feet of non-traditional, non-metallic panel material per seat place that does not have to comply with No. 1. A triple seat

assembly may have a total of 4.5 square feet excluded on any portion of the assembly (e.g., outboard seat place 1 sq. ft., middle 1 sq. ft., and inboard 2.5 sq. ft.)

3. Seats need not meet the test requirements of part 25 Appendix F, parts IV and V when installed in compartments that are not otherwise required to meet these requirements.

Examples include:

- a. Airplanes with passenger capacities of 19 or fewer.
 - b. Airplanes that do not have smoke emission and heat release in their certification basis and do not need to comply with the requirements of 14 CFR 121.312.
 - c. Airplanes exempted from heat-release and smoke-emission requirements.
4. Only airplanes associated with new-seat certification programs approved after the effective date of these special conditions will be affected by the requirements in these special conditions. Previously certificated interiors on the existing airplane fleet and follow-on deliveries of airplanes with previously certificated interiors are not affected.

Issued in Renton, Washington, on November 13, 2014.

Jeffrey E. Duven
Manager, Transport Airplane Directorate
Aircraft Certification Service

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