[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2017-0637; Special Conditions No. 25-724-SC]

Special Conditions: Textron Aviation Inc. Model 700 Airplane; Occupant Protection for Side-Facing Seats Installed Forward of Aft-Facing Seats

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Textron Aviation Inc. (Textron) Model 700 airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is side-facing seats installed forward of aft-facing seats. 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 Textron on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].** Send your comments by **[INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].**

ADDRESSES: Send comments identified by docket number FAA-2017-0637 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, DC, 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, DC, between 9 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).

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 Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, FAA, Airframe and Cabin Safety Section, AIR-675, Transport Standards Branch, Policy and Innovation Division, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2195; facsimile 425-227-1320.

SUPPLEMENTARY INFORMATION:

The substance of these special conditions has been published in the **Federal Register** for public comment in several prior instances with no substantive comments received. The FAA therefore finds it unnecessary to delay the effective date and 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 by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On November 20, 2014, Textron applied for a type certificate for their new Model 700 airplane. The Model 700 airplane is a turbofan-powered executive-jet airplane with seating for two crewmembers and 12 passengers. This airplane will have a maximum takeoff weight of 38,514 pounds.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.17, Textron must show that the Model 700 airplane meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-139, 25-141, and 25-143.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Textron Model 700 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 type certificate for that model be amended later to include any other model that incorporates the same 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 Model 700 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 § 21.17(a)(2).

Novel or Unusual Design Features

The Textron Model 700 will incorporate the following novel or unusual design feature:

Side-facing seats installed forward of aft-facing seats.

Discussion

Many of the Textron Model 700 interior configurations include a multiple-place side-facing seat installed just forward of an aft-facing seat. There is the possibility of interaction between the aft-facing seat and the occupant in the aft-most seating position on the multiple-place side-facing seat. Textron is proposing to install a structural armrest aft of the multiple-place side-facing seat and forward of the aft-facing seat. See Figure 1.

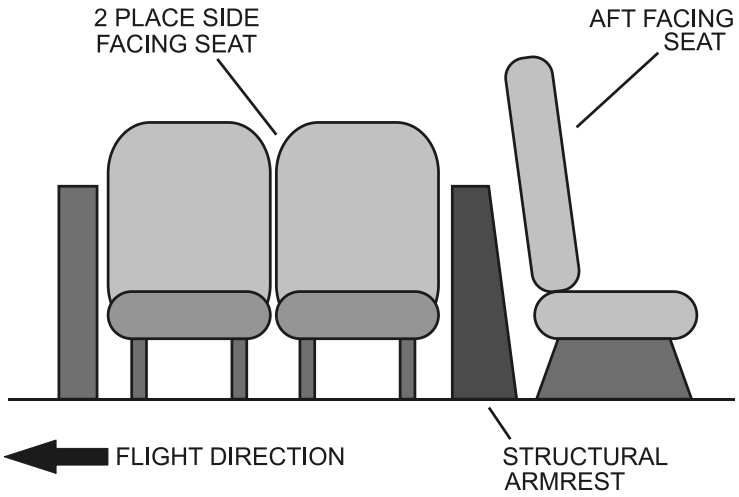

Figure 1: Seat Installation

Dynamic seat testing is required of all applicants who plan to install side-facing and oblique-angled seats in passenger airplanes. The intent of dynamic seat testing is to evaluate airplane seats, restraints, and related interior systems to demonstrate their structural strength and their ability to protect an occupant from serious injuries in a survivable crash. The current regulations in §§ 25.561, 25.562, and 25.785 address occupant injury protection for forward and aft-facing seats.

The FAA will issue special conditions separately to address the additional occupant-injury protection concerns raised for side-facing seats. However, the aft

occupant of the side-facing seat (see Figure 1 in these special conditions) may interact with the aft-facing seat, a scenario that the regulations do not specifically address.

The aft-facing seat back could deform during the dynamic-test event, and could contact the occupant in the aft side-facing seat. The point that the seat back contacts the occupant could be in an area of the body that has no defined, acceptable, injury-evaluation method, such as the shoulder. This type of contact is addressed in these side-facing-seat special conditions, which prohibit body-to-body contact.

The applicant proposed installing a structural armrest between the side-facing seat and the aft-facing seat to help prevent contact between the aft-facing seat and the aft occupant of the side-facing seat. This contact would be likely to occur if the structural armrest failed to perform as intended in an emergency landing. Therefore, the purpose of these special conditions is to define the specific structural requirements of the proposed structural armrest, and the additional requirements necessary to protect the seated occupant from both the side-facing seat and the adjacent aft-facing seat.

The applicant is likely to have to conduct two or more 16g forward structural tests with the combination of the side-facing seat, structural armrest, and aft-facing seat to account for all critical cases.

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.

Applicability

As discussed above, these special conditions are applicable to the Textron Model 700 airplane. Should Textron apply at a later date for a change to the type certificate to

include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only a certain novel or unusual design feature on one model of airplane. It is not a rule of general applicability.

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 Textron Model 700 airplanes with a structural armrest installed between a side-facing seat, located forward of aft-facing seats, and the aft-facing seats.

1. The applicant must propose a certification strategy for the structural armrest. This strategy must address the structural integrity of the structural armrest and occupant protection after a survivable crash. The strategy must define how the applicant will ensure that the installation, when permanently deformed due to the application of static, dynamic, and interaction (with aft-facing seat) loads, and while complying with the applicable §§ 25.561 and 25.562 requirements, meets the following conditions:
    a. The proposed structural armrest must not contact the occupant in the aft-most seating position of the side-facing seat, such that the armrest imparts

any load, other than incidental and non-injurious contact, with the seat occupant.

b. The backrest of the aft-facing seat must not touch the occupant in the aft-most seating position of the side-facing seat.

c. The proposed structural armrest must not impose loads to the side-facing seat structure, and;

d. The seat back of the aft-facing seat must not, as a result of contact with the structural armrest, result in damage or permanent deformation of the seat back that could be injurious to the occupant of the aft-facing seat.

2. In addition, the applicant must:

a. Test, to the emergency-landing conditions listed in § 25.562, the structural armrest and the aft-facing seat together, as a system, with pitch and roll of the seat track to ensure that the armrest continues to protect the occupant of the side-facing seat.

b. Conduct 16g forward structural tests with the combination of the side-facing seat, structural armrest, and the aft-facing seat, accounting for all critical cases. For these tests, the applicant should account for all structural requirements and post-test conditions. Anthropomorphic test dummies are required as part of § 25.562 structural testing.

c. Apply to the seat track the worst-case floor deformation that:

i. Produces the maximum load into the structural armrest for armrests that are integrally a part of any seat structure. This maximum load

includes the load caused by the floor deformation and the load from the aft-facing seat back.

ii. Allows the aft-facing seat back the most forward dynamic deformation in the area of the side-facing seat's aft occupant. No contact between the aft-facing seat and the side-facing seat aft occupant is acceptable.

Issued in Renton, Washington, on April 17, 2018.

Paul Siegmund
Acting Manager, Transport Standards Branch
Policy and Innovation Division
Aircraft Certification Service
[FR Doc. 2018-08556 Filed: 4/23/2018 8:45 am; Publication Date: 4/24/2018]