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[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2016-4158; Notice No. 25-16-06-SC]

Special Conditions: Bombardier Inc. Model BD-700-2A12 and BD-700-2A13 airplanes; Fuselage In-Flight Fire Safety and Flammability Resistance of Aluminum-Lithium Material.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Bombardier Inc. (Bombardier) Model BD-700-2A12 and BD-700-2A13 airplanes. These airplanes 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 a fuselage fabricated using aluminum-lithium materials instead of conventional aluminum. The applicable airworthiness regulations do not contain adequate or appropriate fire-safety standards for this design feature. These proposed special conditions contain the additional fire-safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Send your comments on or before **[INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Send comments identified by docket number FAA-2016-4158 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), 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 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 Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601

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SUPPLEMENTARY INFORMATION:

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 May 30, 2012, Bombardier applied for an amendment to type certificate no. T00003NY to include the new Model BD-700-2A12 and BD-700-2A13 airplanes. These airplanes are derivatives of the Model BD-700 series of airplanes and are marketed as the Bombardier Global 7000 (Model BD-700-2A12) and Global 8000 (Model BD-700-2A13). These airplanes are twin-engine, transport-category, executive-interior business jets. The maximum passenger capacity is 19 and the maximum takeoff weights are 106,250 lb. (Model BD-700-2A12) and 104,800 lb. (Model BD-700-2A13).

Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.101, Bombardier must show that the Model BD-700-2A12 and BD-700-2A13 airplanes meet the applicable provisions of the regulations listed in Type Certificate no. T00003NY, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

In addition, the certification basis includes other regulations, special conditions, and exemptions that are not relevant to these proposed special conditions. Type Certificate no. T00003NY will be updated to include a complete description of the certification basis for these airplane models.

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 Model BD-700-2A12 and BD-700-2A13 airplanes 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, or should any other model already included on the same type certificate be modified to incorporate 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 BD-700-2A12 and BD-700-2A13 airplanes 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

Bombardier Inc. Model BD-700-2A12 and BD-700-2A13 airplanes will incorporate the following novel or unusual design feature: The fuselage will be fabricated using aluminum-lithium materials instead of conventional aluminum.

Discussion

The Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes will be fabricated using aluminum-lithium materials. The performance of airplanes consisting of a conventional aluminum fuselage, in an in-flight, inaccessible-fire scenario, is understood based on service history, and extensive intermediate- and large-scale fire testing. Experience has shown that eliminating fire propagation of the interior and insulation materials tends to increase survivability because other aspects of in-flight fire safety (e.g., toxic-gas emission and smoke obscuration) are typically byproducts of the propagating fire. The fuselage itself does not contribute to in-flight fire propagation. This may not be the case for a fuselage fabricated from aluminum-lithium materials. Therefore, a special condition is necessary so that the Model BD-700-2A12 and BD-700-2A13 airplanes provide protection against in-flight fires propagating along the surface of the fuselage.

In the past, fatal in-flight fires have originated in inaccessible areas of airplanes where thermal or acoustic insulation was located adjacent to the airplane's aluminum fuselage skin. Research revealed that this area has been the path for flame propagation and fire growth. The FAA determined, in five incidents in the 1990s, that unexpected flame spread along thermal and acoustic insulation-film covering material, raising concerns about the fire performance of this material. In all cases, the ignition source was relatively modest and, in most cases, was electrical in origin (e.g., electrical short circuit, arcing caused by chafed wiring, ruptured ballast case, etc.).

In 1996, the FAA Technical Center began a program to develop new fire-test criteria for insulation films directly relating to in-flight fire resistance. This development program resulted in a new test method—the radiant-panel test—and also resulted in test criteria specifically

established for improving the in-flight fire ignition and flame propagation of thermal and acoustic insulation materials based on actual, on-board fire scenarios.

The FAA determined that a test similar to the test for the measurement of insulation burnthrough resistance (14 CFR part 25, Appendix F, Part VII, “Test Method to Determine the Burnthrough Resistance of Thermal/Acoustic Insulation Materials”) could be used to assess the flammability characteristics of the proposed fuselage aluminum-lithium material. The only change to the test is the size of the sample and the sample holder, to accommodate panels of the fuselage material.

Bombardier must use the test method contained in Part VII of Appendix F, Test Method, to determine the burnthrough resistance of thermal-acoustic insulation materials, with the slight changes to the sample size and sample holder, as described in these special conditions, to show compliance with applicable requirements.

These proposed 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 Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes. Should Bombardier 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 the other model as well.

Conclusion

This action affects only certain novel or unusual design features on Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes. 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 Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes.

1. Bombardier Inc. must demonstrate that the aluminum-lithium material has equal or better flammability-resistance characteristics than the aluminum-alloy sheet material typically used as skin material on similar airplanes.
2. The test set-up and methodology must be in accordance with the tests described in 14 CFR part 25, Appendix F, Part VII, except for the following.
 - a. Each test sample must consist of a flat test specimen. A set of three samples of aluminum-lithium sheet material must be tested. The size of each sample must be 16 inches wide by 24 inches long by 0.063 inch thick.
 - b. The test samples must be installed into a steel-sheet subframe with outside dimensions of 18 inches by 32 inches. The subframe must have a 14.5-inch by 22.5-inch opening cut into it. The tests samples must be mounted onto the subframe using 0.250-20 UNC threaded bolts.
 - c. Test specimens must be conditioned at $70^{\circ}\text{F} \pm 5^{\circ}\text{F}$, and $55\% \pm 5\%$ humidity, for at least 24 hours before testing.
- 3.

The aluminum-lithium material must not ignite during any of the tests.

Issued in Renton, Washington, on October 14, 2016.

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Aircraft Certification Service

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