[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2016-8247; Special Conditions No. 25-652-SC]

Special Conditions: Aerocon Engineering Company, Boeing Model 777-200 Airplane; **Access Hatch Installed Between the Cabin and the Class C Cargo Compartment to Allow In-Flight Access to the Cargo Compartment**

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Boeing Model 777-200 airplane. This airplane, as modified by Aerocon Engineering Company (Aerocon), 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 an access hatch, installed between the cabin and the Class C cargo compartment, to allow in-flight access to the Class C cargo compartment. 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: Effective **[INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

FOR FURTHER INFORMATION CONTACT: John Shelden, FAA, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601

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SUPPLEMENTARY INFORMATION:

Background

On June 26, 2015, Aerocon applied for a supplemental type certificate to install an access hatch between the cabin and Class C cargo compartment in the Boeing Model 777-200 airplane. This airplane is a twin-engine, transport-category airplane with a VIP interior configuration. The Model 777-200 has a maximum passenger capacity of 440, and a maximum takeoff weight of 535,000 pounds.

Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.101, Aerocon must show that the Boeing Model 777-200 airplane, as changed, continues to meet the applicable provisions of the regulations listed in Type Certificate No. T00001SE, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

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 Boeing Model 777-200 airplane, as changed, 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 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 Model 777-200 airplane, as modified by Aerocon, 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 Model 777-200 airplane, as modified by Aerocon, will incorporate the following novel or unusual design feature: An access hatch installed between the cabin and the Class C cargo compartment, to allow in-flight access to the Class C cargo compartment.

Discussion

The VIP operator requests to have access to the aft lower-deck Class C cargo compartment on their Boeing Model 777-200 airplane to store trash during flight. The installation consists of an access hatch from the main passenger cabin, with an access ladder, and a trash container mounted on its own standard airliner pallet in the lower-deck Class C cargo compartment.

The FAA considers that the access hatch may impact the isolation of the passenger cabin from the cargo compartment. Isolation is necessary to protect the passengers, as required by § 25.857(c), from fire and smoke that may start within the cargo compartment. In addition, the in-flight access to the lower-deck Class C cargo compartment creates unique hazards resulting from passengers having access to cargo and baggage in the compartment. These hazards include the safety of the persons entering the cargo compartment, possible hazards to the airplane as a result of the access, and security concerns with access to the checked baggage and cargo. The

special conditions defined herein provide additional requirements necessary to ensure sufficient cabin isolation from fire and smoke in this unusual design configuration, and for passenger safety while occupying the Class C cargo compartment.

The current rules relating to Class C cargo compartments do not address provisions for in-flight accessibility. The intent of the Class C cargo compartment was that it be a self-contained and isolated compartment intended to carry baggage and cargo, but not intended for human habitation. The FAA gave no consideration to an in-flight-accessible Class C cargo compartment when the classification was first developed, as no manufacturer had ever incorporated such a feature into their design. Inherently, a "cargo compartment" was not intended for in-flight access, especially by the traveling public. An allowance has been made specifically for crew access into a Class B cargo compartment for the express purpose of firefighting. Access into a cargo compartment carries with it an increased level of risk to the occupant entering the compartment, and to the airplane, as baggage or cargo could shift, a decompression could occur in the compartment, or a fire could develop during flight.

The FAA has determined that the existing airworthiness standards do not contain adequate or appropriate safety standards relative to passenger access to cargo compartments. As a result, special conditions are the appropriate means to address this and all future in-flight-accessible Class C cargo compartments.

Based upon the above discussion, the cargo-compartment isolation criterion is the main concern related to the access-hatch design, which is intended to be installed between the cabin and the Class C cargo compartment.

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.

Discussion of Comments

Notice of Proposed Special Conditions No. 25-16-08-SC for the Boeing Model 777-200 airplane, as modified by Aerocon, was published in the Federal Register on October 26, 2016 (81 FR 74350). The FAA received 6 comments from two commenters.

The Boeing Company (Boeing) comment 1 states, in pertinent part, that,

> In addition to items 1 through 9, the following additional features should be considered in providing the necessary protection to passengers as required by Sec. 25.857(c):
>
> Amount of time hatch to be left in the open condition – with the hatch open it is conceivable that the smoke detection system could be disrupted due to the change in air flow.
>
> Similar access to class E compartments has required that the door/hatch remain closed while the occupant is in the compartment to minimize the time that the barrier between cargo compartment and occupied areas is compromised.

The FAA concurs that the airflow in the Class C cargo compartment would be affected during the time the access door is open. However, the intended provision of access to the lower-deck Class C cargo compartment is to enable a crewmember (in this case, a flight attendant) to place trash in a palletized container. The duration during which the access door is opened is expected to be very brief. If a fire occurs in the Class C cargo compartment during the time the crewmember is present, then the crew procedure requires vacating the compartment immediately

and informing the flight crew after closing the access door. After the door is closed, the normal ventilation flow in the compartment should be reestablished, and the built-in fire detection system should provide annunciation of a fire to the flight deck within the required time, per 14 CFR 25.858.

The FAA finds that the limited time during which a crewmember is present in the Class C cargo compartment, and the access door is open, should not result in an appreciable increase in the fire risk. The FAA made no changes to the proposed special conditions in response to this comment.

Boeing states that some certified designs with access to Class E cargo compartments have required a door or hatch to remain closed while the compartment is occupied. However, the duration of the occupancy of those configurations may have been for a long period of time for such tasks as providing care to an animal. As stated previously, these special conditions pertain to a configuration that permits a limited duration of cargo-compartment occupancy. The FAA made no changes to the proposed special conditions in response to this comment.

Boeing comment 2 states, in pertinent part, that,

> In addition to items 1 through 9, the following additional features should be considered in providing the necessary protection for occupants entering the class C cargo compartment:
>
> Required lighting for visibility of cargo compartment hazards (shifting cargo, open holes in floor, trip hazards, etc.)

The FAA concurs that the Class C cargo compartment should have lighting installed to mitigate the hazards that may be encountered. We have added this requirement to these final special conditions.

Boeing comment 3 states, in pertinent part, that,

> Means of communication from hatch to occupant needs to consider distance from opening to occupant, noise level of compartment.

The FAA concurs that adequate communication procedures must be established when the crew is accessing the Class C cargo compartment. We have added this requirement to these final special conditions.

Boeing comment 4 states, in pertinent part, that,

> [14] CFR 25.1439 requires the installation of protective breathing equipment in each isolated separate compartment in which crew member occupancy is permitted during flight for the maximum number of crew members expected to be in the area during any operation.

The FAA concurs that the crew should have protective breathing equipment available and carried into the compartment if the compartment is occupied for a significant amount of time. However, as stated previously, the intended use of the compartment is to place trash in a palletized container.

The duration of cargo-compartment access required by the applicant for these special conditions is considered minimal, and therefore the installation of protective breathing equipment is not required. The FAA made no changes to the proposed special conditions in response to this comment.

Boeing comment 5 states, in pertinent part, that,

> [14] CFR 121.309 requires at least one fire extinguisher for each class E cargo compartment that is accessible to crew members during flight. Crew

> members entering class C cargo compartments should have similar protection to occupants entering class E cargo compartments.

The FAA acknowledges the intent of Boeing's comment. The fire-safety design features in a Class C cargo compartment include a total-flooding fire suppression system that does not rely upon the presence of a crewmember to fight a fire.

The FAA has stated in different sources, and most recently in a preamble to Amendment 25-142, that the effectiveness of a crewmember fighting a fire is limited to small compartments where the crewmember must be able to reach any part of the compartment using the contents of a hand-held fire extinguisher, and that access should be a function of how the compartment is configured, rather than according to compartment volume.

Considering the volume and configuration of Class C cargo compartments, the FAA finds that the appropriate procedure for a crewmember present in a Class C cargo compartment, in the event of a fire, is to vacate the compartment immediately and inform the flight crew after closing the access door. In addition, carrying a hand-held fire extinguisher into the Class C cargo compartment may impede the crewmember's movements, such as during escape from a Class C cargo compartment in the event of a fire, and may increase the time the crewmember is accessing the compartment; both of those scenarios may increase crewmember risk in the event of a fire. The FAA made no changes to the proposed special conditions in response to this comment.

Embraer S. A. (Embraer) states, in pertinent part, that,

> The proposed special condition for access hatch installed between the cabin and the class C cargo compartment to allow in-flight access to the cargo compartment has several requirements that are different from those used in a similar past special condition (25-273-SC). The preamble of this special condition

notice does not indicate why these additional requirements are deemed necessary, so it would be helpful if some explanation was provided for why additional requirements are now being proposed for this project since we are unaware of any adverse service history or other evidence that shows that the requirements used in previous special conditions are now inadequate.

The relevant additional requirements are:

2. One cabin crewmember must be present to monitor the hatch from the main cabin when another cabin crewmember is using the access hatch to access the aft lower-deck Class C cargo compartment.

6. The airplane must be operated as private, not for hire, not for common carriage. This provision does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F, as applicable.

7. Use of the access hatch, and access to the aft Class C cargo compartment, is limited to the crew only. A placard stating, "Crew Only Access" must be located outside of, and on or near the access hatch of, the aft lower-deck Class C cargo compartment.

The FAA concurs with the Embraer comment in that there is a similar special condition with different requirements. However, Special Conditions 25-273-SC has other requirements, such as the installation of warning systems and emergency equipment, that these special conditions do not require. Instead of these systems and equipment, the applicant has proposed to limit the use of the operation to private, not for hire, not for common carriage; and to have a crewmember present at the access hatch to monitor activity in the Class C cargo compartment.

The FAA determines that Embraer's comment does not necessitate a change to the proposed special conditions.

Applicability

As discussed above, these proposed special conditions are applicable to the Boeing Model 777-200 airplane modified by Aerocon. Should Aerocon apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. T00001SE to incorporate 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 series of airplane. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of this feature on the airplane.

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 777-200 airplanes modified by Aerocon.

1. The flight deck must contain an indicator to advise the flightcrew when the access hatch for the Class C cargo compartment is opened.

2. One cabin crewmember must be present to monitor the hatch from the main cabin when another cabin crewmember is using the access hatch to access the aft lower-deck Class C cargo compartment. Adequate communication procedures must be established between the crewmembers to maintain verbal contact between the main cabin and the Class C cargo compartment. These procedures must be included in the Cabin Crew Operating Manual.
3. Means must be provided to keep the access hatch open while the aft lower-deck Class C cargo compartment is occupied during flight.
4. Means must be provided to keep the occupied area of the Class C cargo compartment illuminated during use.
5. Access to the aft lower-deck Class C cargo compartment or using the access hatch is not allowed during:
    a. taxi, takeoff, and landing,
    b. when the fasten-seat-belt sign is illuminated,
    c. in the event of emergency not limited to smoke and fire detected in the cargo compartment.
6. A placard stating, "Do Not Enter During Taxi, Takeoff, Landing, or Emergency" (or similar wording) must be located outside of, and on or near the access hatch of, the aft lower-deck Class C cargo compartment.
7. The airplane must be operated as private, not for hire, not for common carriage. This provision does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F, as applicable.

8. Use of the access hatch, and access to the aft Class C cargo compartment, is limited to the crew only.
9. A placard stating, "Crew Only Access" must be located outside of, and on or near the access hatch of, the aft lower-deck Class C cargo compartment.
10. The Airplane Flight Manual must instruct the crew to close the access hatch when crew are not accessing the aft lower-deck Class C cargo compartment.
11. Special conditions 5, 7, 8, and 10 must be documented in the Limitations section of the Airplane Flight Manual.

Note: The airplane owner or operator must contact the Transportation Security Administration (TSA) prior to operating within United States airspace to ensure that this design, and related operational procedures, comply with TSA requirements.

Issued in Renton, Washington, on March 2, 2017.

/s/

Michael Kaszycki
Assistant Manager, Transport Airplane Directorate
Aircraft Certification Service
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