[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. FAA-2015-0722; Special Conditions No. 23-265-SC]

Special Conditions: Honda Aircraft Company, Model HA-420; Fire Extinguishing for Overwing Pylon Mounted Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Honda Aircraft Company model HA-420 airplane. This airplane will have a novel or unusual design feature associated with mounting the engines on the wings in close proximity to the aft fuselage. 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: The effective date of these special conditions is **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

We must receive your comments by **[INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**

ADDRESSES: Send comments identified by docket number FAA-2015-0722 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 of Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, D.C., 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://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: Jeff Pretz, Federal Aviation Administration, Aircraft Certification Service, Small Airplane Directorate, ACE-111, 901 Locust, Kansas City, Missouri 64106; 816-329-3239, fax 816-329-4090, email jeff.pretz@faa.gov.

SUPPLEMENTARY INFORMATION:

The FAA has determined, in accordance with 5 U.S.C. 553(b)(3)(B) and (d)(3), that notice and opportunity for prior public comment hereon are unnecessary because 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 issuance.

Special Condition Number	Company/Airplane Model
23-210-SC	Adam Aircraft Model A700
23-245-SC	Cirrus Design Corporation Model SF50
23-221-SC	Embraer S.A. Model EMB-500

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 ask that you send us two copies of written comments.

We will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

Background

On October 11, 2006, Honda Aircraft Company applied for a type certificate for their new model HA-420. On October 10, 2013, Honda Aircraft Company requested an extension with an effective application date of October 1, 2013. This extension changed the type certification basis to amendment 23-62.

The HA-420 is a four to five passenger (depending on configuration), two crew, lightweight business jet with a 43,000-foot service ceiling and a maximum takeoff weight of 9963 pounds. The airplane is powered by two GE-Honda Aero Engines (GHAE) HF-120 turbofan engines.

The turbofan engines are mounted on a single pylon on each wing near the aft fuselage. These types of aft mounted engine installations, along with the need to protect such installed engines from fires, were not envisioned in the development of the part 23 normal category regulations. The performance of the airplane is such that a pilot may not be able to locate a suitable landing site and safely land the airplane prior to a fire escaping the fire containment capabilities of the engine fire zone.

Type Certification Basis

Under the provisions of 14 CFR 21.17, Honda Aircraft Company must show that the model HA-420 meets the applicable provisions of part 23, as amended by Amendment 23-1 through Amendment 23-62 thereto.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 23) do not contain adequate or appropriate safety standards for the model HA-420 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the model HA-420 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. In addition, the FAA must issue a finding of regulatory adequacy under section 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in § 11.19, under § 11.38 and they become part of the type certification basis under § 21.17(a)(2).

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, the special conditions would also apply to the other model.

Novel or Unusual Design Features

The model HA-420 will incorporate the following novel or unusual design features: Turbofan engines are mounted on a single pylon on each wing near the aft fuselage not in the pilot’s line of sight.

This type of configuration was not envisioned in the development of part 23 normal category airplanes. Therefore, a special condition for the engine fire extinguishing system on the model HA-420 is required.

As the extinguishing agent is subject to change during the service life of the airplane, the certification basis must include SC 23.1195, SC 23.1197, SC 23.1199, and SC 23.1201 in their entirety.

Discussion

Part 23 has historically addressed fire protection through prevention, identification, and containment. Prevention has been accomplished by minimizing the potential for ignition of flammable fluids and vapors. Identification has traditionally been achieved by the location of the engines within the pilot's primary field of view and/or with the incorporation of fire detection systems. This philosophy has provided for both the rapid detection of a fire and confirmation when it has been extinguished. Containment has been provided through the isolation of designated fire zones through flammable fluid shutoff valves and firewalls. The containment philosophy also ensures components of the engine control system will function effectively to permit a safe shutdown of the engine. However, containment has only been required to be demonstrated for 15 minutes. In the event of a fire in a traditional part 23 airplane, the corrective action is to land as soon as possible. For a small, simple aircraft originally envisioned by part 23, it is possible to descend the aircraft to a suitable landing site within 15 minutes. Thus, if the isolation means do not extinguish the fire, the occupants can safely exit the aircraft prior to breaching the firewall. These simple and traditional aircraft normally have the engine located away from critical flight control systems and primary structure. This has ensured that throughout the fire event the pilot can maintain control and continue safe flight. It has also made predicting the effects of a fire relatively easy. Other design features of these simple and traditional aircraft, such as low stall speeds and short landing distances, ensure that even in the event of an off field

landing the potential for a catastrophic outcome has been minimized.

Amendment 23-62 applies to the model HA-420 and addresses the concerns above by requiring engine fire extinguishing for engines embedded in the fuselage or in pylons on the aft fuselage, but do not address engines mounted in pylons over the wing as used on the model HA-420. The engine fire concerns for engines mounted in overwing pylons near the aft fuselage are the same as those associated with engines mounted in pylons on the aft fuselage; therefore, the engine fire extinguishing requirements included in part 23, amendments 23-1 through 23-62 apply.

Applicability

As discussed above, these special conditions are applicable to the model HA-420. Should Honda Airplane Company apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of airplanes. 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, identified above, 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, notice and opportunity for prior public comment hereon are unnecessary and the FAA finds good cause, in accordance with

5 U.S.C. 553(b)(3)(B) and (d)(3), making these special conditions effective upon issuance. 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 23

Aircraft, Aviation safety, Signs and symbols.

Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113 and 44701; 14 CFR 21.16 and 21.17; and 14 CFR 11.38 and 11.19.

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 Honda Airplane Company model HA-420 airplanes.

1. Fire Extinguishing for Overwing Pylon Mounted Engines.

SC 23.1195 Fire extinguishing systems.

(a) Fire extinguishing systems must be installed and compliance shown with the following:

(1) Except for combustor, turbine, and tailpipe sections of turbine-engine installations that contain lines or components carrying flammable fluids or gases for which a fire originating in these sections is shown to be controllable, a fire extinguisher system must serve each engine compartment.

(2) The fire extinguishing system, the quantity of the extinguishing agent, the rate of discharge, and the discharge distribution must be adequate to extinguish fires. An individual

“one-shot” system may be used except for embedded engines where a "two shot" system must be used.

(3) The fire extinguishing system for a nacelle must be able to simultaneously protect each compartment of the nacelle for which protection is provided.

(b) If an auxiliary power unit is installed in any airplane certificated to this part, that auxiliary power unit compartment must be served by a fire extinguishing system meeting the requirements of paragraph (a)(2) of this section.

SC 23.1197 Fire extinguishing agents.

The following applies:

(a) Fire extinguishing agents must—

(1) Be capable of extinguishing flames emanating from any burning of fluids or other combustible materials in the area protected by the fire extinguishing system; and

(2) Have thermal stability over the temperature range likely to be experienced in the compartment in which they are stored.

(b) If any toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors (from leakage during normal operation of the airplane or as a result of discharging the fire extinguisher on the ground or in flight) from entering any personnel compartment, even though a defect may exist in the extinguishing system. This must be shown by test except for built-in carbon dioxide fuselage compartment fire extinguishing systems for which—

(1) Five pounds or less of carbon dioxide will be discharged, under established fire control procedures, into any fuselage compartment; or

(2) Protective breathing equipment is available for each flight member on flight deck duty.

SC 23.1199 Extinguishing agent containers.

The following applies:

(a) Each extinguishing agent container must have a pressure relief valve to prevent bursting of the container by excessive internal pressures.

(b) The discharge end of each discharge line from a pressure relief connection must be located so that discharge of the fire-extinguishing agent would not damage the airplane. The line must also be located or protected to prevent clogging caused by ice or other foreign matter.

(c) A means must be provided for each fire extinguishing agent container to indicate that the container has discharged or that the charging pressure is below the established minimum necessary for proper functioning.

(d) The temperature of each container must be maintained under intended operating conditions, to prevent the pressure in the container from—

(1) Falling below that necessary to provide an adequate rate of discharge; or

(2) Rising high enough to cause premature discharge.

(e) If a pyrotechnic capsule is used to discharge the extinguishing agent, each container must be installed so that temperature conditions will not cause hazardous deterioration of the pyrotechnic capsule.

SC 23.1201 Fire extinguishing system materials.

The following apply:

(a) No material in any fire extinguishing system may react chemically with any extinguishing agent so as to create a hazard.

(b) Each system component in an engine compartment must be fireproof.

Issued in Kansas City, Missouri on June 9, 2015.

Earl Lawrence
Small Airplane Directorate
Aircraft Certification Service
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