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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. CE253, Special Conditions No. 23–193–SC]

Special Conditions; Cessna Aircraft Company Model 510 Airplane; Turbofan Engines and Engine Location

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Cessna Aircraft Company, Model 510 airplane. This new airplane will have novel and unusual design features not typically associated with normal, utility, acrobatic, and commuter category airplanes. These design features include turbofan engines and engine location, for which the applicable regulations do not contain adequate or appropriate airworthiness standards. These special conditions contain the additional airworthiness standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: *Effective Date:* July 27, 2006.

FOR FURTHER INFORMATION CONTACT: Peter L. Rouse, Federal Aviation Administration, Aircraft Certification Service, Small Airplane Directorate, ACE–111, 901 Locust, Room 301, Kansas City, Missouri 64106; 816–329–4135, fax 816–329–4090.

SUPPLEMENTARY INFORMATION:

Background

On August 30, 2003, Cessna Aircraft Company; One Cessna Boulevard; Post Office Box 7704; Wichita, KS 67277, made an application to the FAA for a new Type Certificate for the Cessna Model 510 Mustang. The Cessna Model 510 Mustang is an all new, high performance, low wing, aft fuselage mounted twin turbofan engine powered aircraft in the Normal Category including flight into known icing conditions and single pilot operations. The Model 510 is to use existing Cessna Citation construction materials and methods. The design criteria includes: 8,480 pounds maximum ramp weight, 8,395 pounds maximum takeoff weight, 250 KCAS/0.63 Mach V_{MO}/M_{MO}, and a 41,000 foot maximum altitude.

Type Certification Basis

Under the provisions of 14 CFR, part 21, § 21.17, Cessna Aircraft Company must show that the Cessna Model 510 Mustang meets the applicable provisions of 14 CFR, part 23, effective February 1, 1965, as amended by Amendments 23–1 through Amendment 23–54, effective September 14, 2000; exemptions, if any; and the special conditions adopted by this rulemaking action.

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 Cessna Model 510 Mustang 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 Cessna Model 510 Mustang 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, and the FAA must issue a finding of regulatory adequacy pursuant to § 611 of Public Law 92–574, the ''Noise Control Act of 1972.''

Discussion

Special conditions, as appropriate, as defined in 11.19, are issued in accordance with § 11.38, and become part of the type certification basis in accordance with § 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 under the provisions of § 21.101.

Novel or Unusual Design Features

The Cessna Model 510 Mustang will incorporate the following novel or unusual design features:

The Model 510 design includes engines mounted aft on the fuselage; therefore, early visual detection of engine fires is precluded. The applicable existing regulations do not require fire extinguishing systems for engines. Aft mounted engine installations were not envisaged in the development of part 23; therefore, special conditions for a fire extinguishing system with the applicable agents, containers, and materials for the engines of the Model 510 are appropriate.

Discussion of Comments

A notice of proposed special conditions No. 23–06–05–SC for the Cessna Model 510 Mustang was published in the **Federal Register** on June 23, 2006 (71 FR 36040). No comments were received, and the special conditions are adopted as proposed.

Applicability

As discussed above, these special conditions are applicable to the Cessna Model 510 Mustang. Should Cessna 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 under the provisions of § 21.101.

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 it affects only the applicant who applied to the FAA for approval of these features on the airplane.

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 the Cessna Aircraft Model 510 airplane:

SC23.1195 Engine Fire Extinguishing System

(a) Fire extinguishing systems must be installed and compliance must be 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.

(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) Fire extinguishing agents must meet the following requirements:

(1) Be capable of extinguishing flames emanating from any burning 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.

(3) 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:

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

(ii) Protective breathing equipment is available for each flight crewmember on flight deck duty.

(c) Fire extinguishing agent containers must meet the following requirements:

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

(2) 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.

(3) 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.

(4) The temperature of each container must be maintained, under intended operating conditions, to prevent the pressure in the container from falling below that necessary to provide an adequate rate of discharge, or rising high enough to cause premature discharge.

(5) 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.

(d) Fire extinguisher system materials must meet the following requirements:

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

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

Issued in Kansas City, Missouri on July 27, 2006.

James E. Jackson,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. CE245; Special Condition No. 23–185–SC]

Special Conditions: Aero Propulsion, Inc., Piper Model PA28–236; Diesel Cycle Engine Using Turbine (Jet) Fuel

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued to Aero Propulsion, Inc., for the Piper Model PA28–236 airplanes with a Societe de Motorisation Aeronautiques (SMA) Model SR305–230 Aircraft Diesel Engine (ADE). This airplane will have a novel or unusual design feature(s) associated with the installation of a diesel cycle engine utilizing turbine (jet) fuel. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for installation of this new technology engine. 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 Date:* July 27, 2006.

FOR FURTHER INFORMATION CONTACT: Peter L. Rouse, Federal Aviation Administration, Aircraft Certification Service, Small Airplane Directorate, ACE–111, 901 Locust, Kansas City, Missouri, 816–329–4135, fax 816–329–4090.

SUPPLEMENTARY INFORMATION:

Background

On August 20, 2003, Aero Propulsion, Inc., applied for a supplemental type certificate for the installation of an SMA Model SR305–230 ADE (type certificated in the United States, type certificate number E00067EN) in Piper Model PA28–236 airplanes. Piper Model PA28–236 airplanes, approved under Type Certificate No. 2A13, are four place, single engine airplanes.

In anticipation of the reintroduction of diesel engine technology into the small airplane fleet, the FAA issued Policy Statement PS–ACE100–2002–004 on May 15, 2004, which identified areas of technological concern involving introduction of new technology diesel engines into small airplanes. For a more detailed summary of the FAA's development of diesel engine requirements, refer to this policy.

The general areas of concern involved the power characteristics of the diesel engines, the use of turbine fuel in an airplane class that has typically been powered by gasoline fueled engines, and the vibration characteristics and failure modes of diesel engines. These concerns were identified after review of the historical record of diesel engine used in aircraft and a review of the 14 CFR part 23 regulations, which identified specific regulatory areas that needed to be evaluated for applicability to diesel engine installations. These concerns are not considered universally applicable to all types of possible diesel engines and diesel engine installations. However, after review of the Aero Propulsion installation, and after applying the provisions of the diesel policy, the FAA proposed these fuel system and engine related special conditions. Other special conditions issued in a separate notice include special conditions for HIRF and application of § 23.1309 provisions to