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.

[FR Doc. E6–12660 Filed 8–3–06; 8:45 am]

BILLING CODE 4910–13–P

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

the Full Authority Digital Engine Control (FADEC).

Type Certification Basis

Under the provisions of § 21.101, Aero Propulsion, Inc., must show that the Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE, continue to meet the applicable provisions of 14 CFR part 23 and CAR 3 thereto. In addition, the certification basis includes special conditions and equivalent levels of safety for the following:

Special Conditions:

- Engine torque (Provisions similar to § 23.361, paragraphs (b)(1) and (c)(3))
- Flutter (Compliance with § 23.629, paragraphs (e)(1) and (2))
- Powerplant—Installation (Provisions similar to § 23.901(d)(1) for turbine engines)
- Powerplant—Fuel System—Fuel system with water saturated fuel (Compliance with § 23.951 requirements)
- Powerplant—Fuel System—Fuel system hot weather operation (Compliance with § 23.961 requirements)
- Powerplant—Fuel system—Fuel tank filler connection (Compliance with § 23.973(f) requirements)
- Powerplant—Fuel system—Fuel tank outlet (Compliance with § 23.977 requirements)
- Equipment—General—Powerplant Instruments (Compliance with § 23.1305 requirements)
- Operating Limitations and Information—Powerplant limitations—Fuel grade or designation (Compliance with § 23.1521(d) requirements)
- Markings and Placards—Miscellaneous markings and placards—Fuel, oil, and coolant filler openings (Compliance with § 23.1557(c)(1) requirements)
- Powerplant—Fuel system—Fuel Freezing
- Powerplant Installation—Vibration levels
- Powerplant Installation—One cylinder inoperative
- Powerplant Installation—High Energy Engine Fragments

Equivalent levels of safety for:

- Cockpit controls—23.777(d)
- Motion and effect of cockpit controls—23.779(b)
- Ignition switches—23.1145

The type certification basis includes exemptions, if any; equivalent level of safety findings, if any; and the special conditions adopted by this rulemaking action.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 23) do not contain adequate or appropriate safety standards for the Piper Model PA28–236 airplanes with the installation of an SMA Model SR305–230 ADE 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 Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE, must comply with 14 CFR 21.115 noise certification requirements of 14 CFR part 36.

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 § 21.101.

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, the special conditions would also apply to the other model under the provisions of § 21.101.

Novel or Unusual Design Features

The Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE, will incorporate the following novel or unusual design features: The Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230, will incorporate an aircraft diesel engine utilizing turbine (jet) fuel.

Discussion of Comments

A notice of proposed special conditions No. 23–06–03-SC for Aero Propulsion, Inc., for the Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE, was published on June 14, 2006 (71FR 34292). No comments were received, and the special conditions are adopted as proposed.

Applicability

As discussed above, these special conditions are applicable to the Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE. Should Aero Propulsion, Inc., apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No.2A13 to incorporate 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 the Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE. 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 21.101; 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 to Aero Propulsion, Inc., as part of the type certification basis for the Piper Model PA28–236 airplanes, with the installation of an SMA Model SR305–230 ADE.

1. *Engine torque (Provisions similar to § 23.361, paragraphs (b)(1) and (c)(3)):*

(a) For diesel engine installations, the engine mounts and supporting structure must be designed to withstand the following:

(1) A limit engine torque load imposed by sudden engine stoppage due to malfunction or structural failure.

The effects of sudden engine stoppage may alternately be mitigated to an acceptable level by utilization of isolators, dampers, clutches and similar provisions, so that unacceptable load levels are not imposed on the previously certificated structure.

(b) The limit engine torque obtained in CAR 3.195(a)(1) and (a)(2) or 14 CFR 23.361(a)(1) and (a)(2) must be obtained by multiplying the mean torque by a factor of four in lieu of the factor of two required by CAR 3.195(b) and 14 CFR 23.361(c)(3).

2. *Flutter—(Compliance with the requirements of § 23.629 (e)(1) and (e)(2) requirements):* The flutter evaluation of the airplane done in accordance with 14 CFR 23.629 must include—

(a) Whirl mode degree of freedom which takes into account the stability of the plane of rotation of the propeller and significant elastic, inertial, and aerodynamic forces, and

(b) Propeller, engine, engine mount and airplane structure stiffness and damping variations appropriate to the particular configuration, and

(c) The flutter investigation will include showing the airplane is free from flutter with one cylinder inoperative.

3. *Powerplant—Installation (Provisions similar to § 23.901(d)(1) for turbine engines):* Considering the vibration characteristics of diesel engines, the applicant must comply with the following:

(a) Each diesel engine installation must be constructed and arranged to result in vibration characteristics that—

(1) Do not exceed those established during the type certification of the engine; and

(2) Do not exceed vibration characteristics that a previously certificated airframe structure has been approved for—

(i) Unless such vibration characteristics are shown to have no effect on safety or continued airworthiness, or

(ii) Unless mitigated to an acceptable level by utilization of isolators, dampers, clutches and similar provisions, so that unacceptable vibration levels are not imposed on the previously certificated structure.

4. *Powerplant—Fuel System—Fuel system with water saturated fuel (Compliance with § 23.951 requirements):* Considering the fuel types used by diesel engines, the applicant must comply with the following:

Each fuel system for a diesel engine must be capable of sustained operation throughout its flow and pressure range with fuel initially saturated with water at 80 °F and having 0.75cc of free water per gallon added and cooled to the most critical condition for icing likely to be encountered in operation.

Methods of compliance that are acceptable for turbine engine fuel systems requirements of § 23.951(c) are also considered acceptable for this requirement.

5. *Powerplant—Fuel System—Fuel flow (Compliance with § 23.955(c) requirements):* In lieu of 14 CFR 23.955(c), engine fuel system must provide at least 100 percent of the fuel flow required by the engine, or the fuel flow required to prevent engine damage, if that flow is greater than 100 percent. The fuel flow rate must be available to the engine under each intended operating condition and maneuver. The conditions may be simulated in a suitable mockup. This flow must be shown in the most adverse fuel feed condition with respect to altitudes, attitudes, and any other condition that is expected in operation.

6. *Powerplant—Fuel System—Fuel system hot weather operation (Compliance with § 23.961 requirements):* In place of compliance with § 23.961, the applicant must comply with the following:

Each fuel system must be free from vapor lock when using fuel at its critical temperature, with respect to vapor formation, when operating the airplane in all critical operating and environmental conditions for which approval is requested. For turbine fuel, or for aircraft equipped with diesel cycle engines that use turbine or diesel type fuels, the initial temperature must be 110 °F, −0°, +5° or the maximum outside air temperature for which approval is requested, whichever is more critical.

The fuel system must be in an operational configuration that will yield the most adverse, that is, conservative results.

To comply with this requirement, the applicant must use the turbine fuel requirements and must substantiate these by flight-testing, as described in Advisory Circular AC 23–8B, Flight Test Guide for Certification of Part 23 Airplanes.

7. *Powerplant—Fuel system—Fuel tank filler connection (Compliance with § 23.973(f) requirements):* In place of compliance with § 23.973(e) and (f), the applicant must comply with the following:

For airplanes that operate on turbine or diesel type fuels, the inside diameter of the fuel filler opening must be no smaller than 2.95 inches.

8. *Powerplant—Fuel system—Fuel tank outlet (Compliance with § 23.977 requirements):* In place of compliance with § 23.977(a)(1) and (a)(2), the applicant will comply with the following:

There must be a fuel strainer for the fuel tank outlet or for the booster pump. This strainer must, for diesel engine powered airplanes, prevent the passage of any object that could restrict fuel flow or damage any fuel system component.

9. *Equipment—General—Powerplant Instruments (Compliance with § 23.1305):* In addition to compliance with § 23.1305, the applicant will comply with the following:

The following are required in addition to the powerplant instruments required in § 23.1305:

(a) A fuel temperature indicator.

(b) An outside air temperature (OAT) indicator.

(c) An indicating means for the fuel strainer or filter required by § 23.997 to indicate the occurrence of contamination of the strainer or filter before it reaches the capacity established in accordance with § 23.997(d).

Alternately, no indicator is required if certain requirements are met. First, the engine can operate normally for a specified period with the fuel strainer exposed to the maximum fuel contamination as specified in MIL–5007D. Second, provisions for replacing the fuel filter at this specified period (or a shorter period) are included in the maintenance schedule for the engine installation.

10. *Operating Limitations and Information—Powerplant limitations—Fuel grade or designation (Compliance with § 23.1521 requirements):* All engine parameters that have limits specified by the engine manufacturer for takeoff or continuous operation must be investigated to ensure they remain within those limits throughout the expected flight and ground envelopes (*e.g.*, maximum and minimum fuel temperatures, ambient temperatures, as applicable, etc.). This is in addition to the existing requirements specified by 14 CFR 23.1521 (b) and (c). If any of those limits can be exceeded, there must be continuous indication to the flight crew of the status of that parameter with appropriate limitation markings.

Instead of compliance with § 23.1521(d), the applicant must comply with the following:

The minimum fuel designation (for diesel engines) must be established so that it is not less than that required for the operation of the engines within the limitations in paragraphs (b) and (c) of § 23.1521.

11. *Markings and Placards—Miscellaneous markings and placards—Fuel, oil, and coolant filler openings (Compliance with § 23.1557(c)(1) requirements):* Instead of compliance with § 23.1557(c)(1), the applicant must comply with the following:

Fuel filler openings must be marked at or near the filler cover with—

For diesel engine-powered airplanes—

(a) The words ''Jet Fuel''; and

(b) The permissible fuel designations, or references to the Airplane Flight Manual (AFM) for permissible fuel designations.

(c) A warning placard or note that states the following or similar:

''Warning—this airplane equipped with an aircraft diesel engine, service with approved fuels only.''

The colors of this warning placard should be black and white.

12. *Powerplant—Fuel system—Fuel-Freezing:* If the fuel in the tanks cannot be shown to flow suitably under all possible temperature conditions, then fuel temperature limitations are required. These will be considered as part of the essential operating

parameters for the aircraft and must be limitations.

A minimum takeoff temperature limitation will be determined by testing to establish the minimum cold-soaked temperature at which the airplane can operate. The minimum operating temperature will be determined by testing to establish the minimum operating temperature acceptable after takeoff from the minimum takeoff temperature. If low temperature limits are not established by testing, then a minimum takeoff and operating fuel temperature limit of 5 °F above the gelling temperature of Jet A will be imposed along with a display in the cockpit of the fuel temperature. Fuel temperature sensors will be located in the coldest part of the tank if applicable.

13. *Powerplant Installation—Vibration levels:* Vibration levels throughout the engine operating range must be evaluated and:

(1) Vibration levels *imposed on the airframe* must be less than or equivalent to those of the gasoline engine; or

(2) Any vibration level that is higher than that imposed on the airframe by the replaced gasoline engine must be considered in the modification and the effects on the technical areas covered by the following paragraphs must be investigated:

14 CFR part 23, §§ 23.251; 23.613; 23.627; 23.629 (or CAR 3.159, as applicable to various models); 23.572; 23.573; 23.574 and 23.901.

Vibration levels imposed on the airframe can be mitigated to an acceptable level by utilization of isolators, dampers, clutches and similar provisions, so that unacceptable vibration levels are not imposed on the previously certificated structure.

14. *Powerplant Installation—One cylinder inoperative:* It must be shown by test or analysis, or by a combination of methods, that the airframe can withstand the shaking or vibratory forces imposed by the engine if a cylinder becomes inoperative. Diesel engines of conventional design typically have extremely high levels of vibration when a cylinder becomes inoperative.

No unsafe condition will exist in the case of an inoperative cylinder before the engine can be shut down. The resistance of the airframe structure, propeller, and engine mount to shaking moment and vibration damage must be investigated. It must be shown by test or analysis, or by a combination of methods, that shaking and vibration damage from the engine with an inoperative cylinder will not cause a catastrophic airframe, propeller, or engine mount failure.

15. *Powerplant Installation—High Energy Engine Fragments:* It may be possible for diesel engine cylinders (or portions thereof) to fail and physically separate from the engine at high velocity (due to the high internal pressures). This failure mode will be considered possible in engine designs with removable cylinders or other non-integral block designs. The following is required:

(1) It must be shown by the design of the engine, that engine cylinders, other engine components or portions thereof (fragments) cannot be shed or blown off of the engine in the event of a catastrophic engine failure; or

(2) It must be shown that all possible liberated engine parts or components do not have adequate energy to penetrate engine cowlings; or

(3) Assuming infinite fragment energy, and analyzing the trajectory of the probable fragments and components, any hazard due to liberated engine parts or components will be minimized and the possibility of crew injury is eliminated. Minimization must be considered during initial design and not presented as an analysis after design completion.

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

James E. Jackson,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. E6–12663 Filed 8–3–06; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 97–ANE–44–AD; Amendment 39–14705; AD 2006–16–05]

RIN 2120–AA64

Airworthiness Directives; Pratt & Whitney PW4164, PW4168, and PW4168A Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding an existing airworthiness directive (AD) for Pratt & Whitney PW4164, PW4168, and PW4168A series turbofan engines. That AD currently requires initial and repetitive torque checks for loose or broken front pylon mount bolts made from INCO 718 material and MP159 material, and initial and repetitive visual inspections of the primary mount thrust load path. This AD requires the same actions, but at reduced intervals for front pylon mount bolts made from MP159 material. This AD results from analysis by the manufacturer that the MP159 material pylon bolts do not meet the full life cycle torque check interval requirement, in a bolt-out condition. We are issuing this AD to prevent front pylon mount bolt and primary mount thrust load path failure, which could result in an engine separating from the airplane.

DATES: This AD becomes effective September 8, 2006. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of September 8, 2006. The Director of the Federal Register previously approved the incorporation by reference of certain publications listed in the regulations as of February 6, 2003 (68 FR 28, January 2, 2003).

ADDRESSES: Contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565–7700, fax (860) 565–1605 for the service information identified in this AD.

You may examine the AD docket at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA. You may examine the service information, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Barbara Caufield, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; telephone (781) 238–7146, fax (781) 238–7199.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to Pratt & Whitney PW4164, PW4168, and PW4168A series turbofan engines. We published the proposed AD in the **Federal Register** on December 29, 2005 (70 FR 77075). That action proposed to require initial and repetitive torque checks for loose or broken front pylon mount bolts made from INCO 718 material and MP159 material. That action also proposed to require initial and repetitive visual inspections of the primary mount thrust load path, but at reduced intervals from AD 2000–16–02R1 for front pylon mount bolts made from MP159 material.

Examining the AD Docket

You may examine the AD Docket (including any comments and service information), by appointment, between 8 a.m. and 4:30 p.m., Monday through