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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM304; Special Conditions No. 25-299-SC]

#### Special Conditions: Airbus Model A318 Airplanes Equipped With Pratt and Whitney PW6000 Engines; Sudden Engine Stoppage

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for the Airbus Model A318-121 and A318-122 airplanes equipped with Pratt and Whitney PW6000 engines. These airplanes will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes, associated with engine size and torque load, which affect sudden engine stoppage. 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.

**EFFECTIVE DATE:** October 27, 2005.

**FOR FURTHER INFORMATION CONTACT:** Tim Dulin, FAA, International Branch, ANM-116, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-2141; facsimile (425) 227-1232.

#### SUPPLEMENTARY INFORMATION:

##### Background

On December 22, 1998, Airbus submitted an application to the FAA to

amend Type Certificate No. A28NM to include the new Model A318 airplane equipped with Pratt and Whitney PW6000 engines (Model A318-121 and A318-122) or with optional CFMI CFM56 engines (Model A318-111 and A318-112). On May 14, 2002, Airbus applied for extension of the application for the Model A318 airplanes equipped with PW6000 engines and selected a new reference date of application of November 15, 2001.

The Airbus Model A318 airplane is a shortened reduced capacity version of the Model A320-200. The Model A318 will have a maximum passenger capacity of 136 versus a maximum passenger capacity of 179 for the Model A320 series airplanes and 145 for the Model A319 series airplanes. The fuselage length is reduced by four and one half frames (94 inches) compared to the Model A319 series airplanes. The maximum takeoff weight will be 59,000 kg (130,000 pounds) with growth options to 68,000 kg (150,000 pounds) versus maximum takeoff weight range of 68,000 kg to 77,000 kg for the Model A320 series airplanes and 64,000 kg to 75,500 kg for the Model A319 series airplanes. The Model A318 will be powered by all new Pratt and Whitney PW6000 engines or by CFMI CFM56-5B engines all in the 22,000 to 24,000 pound thrust range. Other changes include a new engine/nacelle and pylon adaptation for the PW6000 engine installation.

#### Type Certification Basis

Under the provisions of 14 Code of Federal Regulations (CFR) 21.101, Airbus must show that the Model A318 airplane, equipped with Pratt and Whitney PW6000 engines, meets the applicable provisions of the regulations incorporated by reference in Type Certificate No. A28NM or the applicable regulations in effect on the date of application for the change to the type certificate.

The regulations incorporated by reference in the type certificate are commonly referred to as the "original type certification basis."

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 Airbus Model A318 airplane, equipped with Pratt and Whitney PW6000 engines, 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 Airbus Model A318 airplane 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.

Special conditions, as defined in 14 CFR 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 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, the special conditions would also apply to the other novel under the provisions of § 21.101.

#### Novel or Unusual Design Features

The Airbus Model A318 airplane, equipped with Pratt and Whitney PW6000 engines, will incorporate novel or unusual design features involving engine size torque load that affect sudden engine stoppage conditions. Because of rapid improvements in airplane technology, the applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. The special conditions for the Airbus Model A318 airplane, equipped with Pratt and Whitney PW6000 engines, 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.

Since 1957, Civil Aviation Regulation 4b.216 and its successors, currently § 25.361(b), have required that engine mounts and supporting structures be designed to withstand the limit engine torque load which is posed by sudden engine stoppage due to malfunction or structural failure, such as compressor jamming. Design torque loads associated with typical failure scenarios were estimated by the engine manufacturer and provided to the airframe manufacturer as limit loads. These limit loads were considered simple, pure

static torque loads. However, the size, configuration, and failure modes of jet engines have changed considerably from those envisioned when the engine seizure requirement of § 25.361(b) was first adopted. Current engines are much larger and are now designed with large bypass fans capable of producing much larger torque, if they become jammed.

Relative to the engine configurations that existed when the rule was developed in 1957, the present generation of engines is sufficiently different and novel to justify issuance of special conditions to establish appropriate design standards. The latest generation of jet engines is capable of producing, during failure, transient loads that are significantly higher and more complex than those produced by the generation of engines in existence when the current regulation was developed.

In order to maintain the level of safety envisioned in § 25.361(b), more comprehensive criteria are needed for the new generation of high bypass engines. The proposed special condition would distinguish between the more common failure events involving transient deceleration conditions with temporary loss of thrust capability and those rare events resulting from structural failures. Associated with these events, the proposed criteria establish design limit and ultimate load conditions.

#### Discussion of Comments

Notice of proposed special conditions No. 25-05-03-SC for the Airbus Model A318 airplanes equipped with Pratt and Whitney PW6000 engines, was published in the **Federal Register** on April 11, 2005 (70 CFR 18321). No comments were received. However, the FAA has reconsidered the inclusion of auxiliary power units in these special conditions. While § 25.361(b) is interpreted to apply to auxiliary power units, the novel or unusual design features identified above do not apply to them. Therefore, auxiliary power units are excluded from those special conditions and would continue to be treated under the current § 25.361(b). Except for the removal of auxiliary power units, these special conditions are adopted as proposed.

#### Applicability

As discussed above, these special conditions are applicable to Airbus Model A318-121 and A318-122 airplanes equipped with Pratt and Whitney PW6000 engines. Should Airbus apply at a later date for a change to the type certificate to include other type designs incorporating the same

novel or unusual design feature, these special conditions would apply to that model as well under the provisions of § 21.101.

#### Condition

This action affects certain novel or unusual design features on the Airbus Model A318 airplane equipped with Pratt and Whitney PW6000 engines. 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 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 Airbus Model A318 airplane equipped with Pratt and Whitney PW6000 engines.

For turbine engine installations other than auxiliary power units, in lieu of compliance with § 25.361(b), the following special condition applies:

(a) The engine mounts, pylons and adjacent supporting airframe structure must be designed to withstand 1g level flight loads acting simultaneously with the maximum limit torque loads imposed by each of the following:

(1) Sudden engine deceleration due to a malfunction which could result in a temporary loss of power or thrust.

(2) The maximum acceleration of the engine.

(b) For engine supporting structure, an ultimate loading condition must be considered that combines 1g flight loads with the transient dynamic loads resulting from each of the following:

(1) The loss of any fan, compressor, or turbine blade.

(2) Where applicable to a specific engine design, and separately from the conditions specified in paragraph (b)(1), any other engine structural failure that results in higher loads.

(c) The ultimate loads developed from the conditions specified in paragraphs (b)(1) and (b)(2) above are to be multiplied by a factor of 1.0 when applied to engine mounts and pylons and multiplied by a factor of 1.25 when applied to adjacent supporting airframe structure.

Issued in Renton, Washington, on September 14, 2005.

**Kalene C. Yanamura,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2005-22483; Directorate Identifier 2004-NM-236-AD; Amendment 39-14292; AD 2005-19-27]

**RIN 2120-AA64**

#### Airworthiness Directives; Airbus Model A330-200 Series Airplanes

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule; request for comments.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Airbus Model A330-200 series airplanes. This AD requires inspecting to determine the serial numbers and flight cycles of the fuel jettison valves and removing certain valves as applicable. This AD also requires doing a one-time inspection for cracks of the remaining jettison valves and removing any cracked valves. This AD also requires modifying the diameters of the six attachment holes in the wing bottom skin panel before installing a new or serviceable jettison valve. This AD results from reports of fuel leaks in the fuel jettison system located on the wings. We are issuing this AD to prevent fuel leaks from the fuel jettison outlets, which could result in fuel vapors coming into contact with ignition sources, and consequent fire or explosion.

**DATES:** Effective October 12, 2005.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of October 12, 2005.

We must receive comments on this AD by November 28, 2005.

**ADDRESSES:** Use one of the following addresses to submit comments on this AD.

- DOT Docket Web site: Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.
- Government-wide rulemaking Web site: Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.