

[4910-13-U]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [65 FR 63793 10/25/2000]

[Docket No. 2000-NE-47-AD; Amendment 39-11947; AD 2000-22-01]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney PW4000 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to certain Pratt & Whitney (PW) PW4000 series turbofan engines that are equipped with the high pressure compressor (HPC) cutback stator (CBS) configuration and that are used on Boeing 747, Boeing 767, and McDonnell Douglas MD-11 series airplanes. This action requires Operators to limit the number of engines with the HPC CBS configuration to one per airplane, and prohibits installation of engines with HPC modules modified after the effective date of this AD to incorporate the HPC CBS configuration. This amendment is prompted by reports of HPC surges in engines that have the HPC CBS configuration. The actions specified in this AD are intended to prevent a multiple-engine power loss due to HPC surges, which could result in engine power loss at a critical phase of flight such as takeoff or climb.

DATES: Effective November 9, 2000.

Comments for inclusion in the Rules Docket must be received on or before December 26, 2000.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-NE-47-AD, 12 New England Executive Park, Burlington, MA 01803-5299. Comments may also be sent via the Internet using the following address: "9-ane-adcomment@faa.gov." Comments sent via the Internet must contain the docket number in the subject line.

The docket file for this AD may be examined at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Peter White, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7128, fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: The FAA has been informed of nine surge events on PW4000 series engines that incorporate the HPC CBS configuration and that are used on Boeing 747, Boeing 767, and McDonnell Douglas MD-11 series airplanes. The surges were as follows:

- two occurred during takeoff,
- two occurred during climb,
- four occurred during ground testing,
- one occurred in a test cell shortly after selecting takeoff power.

The FAA issued AD 99-17-16, Amendment 39-11263 on August 12, 1999 (64 FR 45426, August 20, 1999). That AD requires short-term criteria for limiting the number of engines with potentially reduced stability on each airplane to no more than one engine, requires initial and repetitive on-wing or test cell cold-engine HPC stability tests, requires removal of engines from service that fail on-wing test acceptance criteria, and allows a follow-on test cell stability test. AD 99-17-16 also establishes required intervals for stability testing of the remaining engine with potentially reduced stability on the airplane and

requirements for reporting test data. That amendment was prompted by a report of a dual-engine HPC surge event and reports of single-engine HPC surge events during the takeoff and climb phases of flight.

Subsequent to that AD, PW introduced a new design and full authority digital electronic control (FADEC) logic changes to address the problem of HPC rear stage surges. After the two latest surge events that occurred during takeoff, PW's preliminary analysis indicates that these events originated in the front stages of the HPC. A Weibull analysis conducted by PW revealed that the takeoff surge rate on engines with the HPC CBS configuration is about 11 times higher than the historical takeoff surge of the HPC non-CBS configuration. This condition, if not corrected, could result in a multiple-engine power loss due to HPC surges, which could result in engine power loss at a critical phase of flight such as takeoff or climb. The investigation is on-going and we may take further rulemaking action. We have coordinated with the Transport Airplane Directorate, the office responsible for certificating the airplanes on which the engines are installed.

Applicability of AD 99-17-16 to HPC CBS engines

The stability testing defined in AD 99-17-16 is ineffective in evaluating the stability of the HPC CBS configuration, because those tests assess rear stage HPC stability and not front stage HPC stability, which is limiting for the HPC CBS configuration engines. The FAA has issued alternative methods of compliance (AMOC's) to PW intended for use by all operators for certain HPC CBS configuration engines exempting them from the initial and repetitive testing requirements of AD 99-17-16. These AMOC's are not affected by this AD.

Requirements of This AD

Since an unsafe condition has been identified that is likely to exist or develop on other PW4000 series turbofan engines of the same type design, this AD is being issued to prevent a multiple-engine power loss due to HPC surges, which could result in engine power loss at a critical phase of flight, such as takeoff or climb. This AD requires limiting the number of engines with the HPC CBS configuration installed, and that are used on Boeing 747, Boeing 767, and McDonnell Douglas MD-11 series airplanes, to one on each airplane according to the cyclic limits specified in this AD. This AD also prohibits using engines with HPC modules that incorporated PW service bulletin (SB) PW4ENG 72-706, Revision No. 3, dated July 17, 2000, or earlier revision, or SB PW4ENG 72-711, dated June 13, 2000, after the effective date of this AD.

Immediate Adoption of This AD

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified under the caption "ADDRESSES." All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 2000-NE-47-AD." The postcard will be date stamped and returned to the commenter.

Regulatory Impact

This proposed rule does not have federalism implications, as defined in Executive Order No. 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this proposed rule.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and is not a “significant regulatory action” under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, may be obtained from the Rules Docket at the location provided under the caption "ADDRESSES."

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "av-info.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2000-22-01 Pratt & Whitney: Amendment 39-11947. Docket 2000-NE-47-AD.

Applicability

This airworthiness directive (AD) is applicable to PW4050, PW4052, PW4056, PW4060, PW4060A, PW4060C, PW4062, PW4460, and PW4462 turbofan engines that have high pressure compressor (HPC) modules that have incorporated Pratt & Whitney (PW) cutback stator (CBS) configuration service bulletin (SB) PW4ENG 72-706, Revision 3, dated July 17, 2000, or earlier Revision, or SB PW4ENG 72-711, dated June 13, 2000. These engines are used on, but not limited to, Boeing 747, Boeing 767, and McDonnell Douglas MD-11 series airplanes. An HPC module that has incorporated PW SB PW4ENG 72-706, Revision 3, dated July 17, 2000, or earlier Revision, or PW4ENG 72-711, dated June 13, 2000, will have the letters "CB" after the HPC module serial number on the HPC module data plate.

Note 1: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance

Compliance with this AD is required as indicated, unless already done.

To prevent a multiple-engine power loss due to HPC surges, which could result in engine power loss at a critical phase of flight such as takeoff or climb, do the following:

Number of Cycles until Number of Engines Must Be Limited

(a) Limit the number of engines with the HPC CBS configuration to one on each airplane within 100 cycles-in-service (CIS) of the effective date of this AD, or before the cyclic limits defined in the table below, whichever occurs later:

Type of airplane	Comply by
(1) Two-engine.	Before 390 cycles-since-new (CSN) or cycles-since-HPC module overhaul (CSO).
(2) Three-engine.	Before 340 CSN or CSO.
(3) Four-engine.	Before 305 CSN or CSO.

Special Conditions for Installing More Than One HPC CBS Engine on an Airplane

(b) Two HPC CBS configuration engines may be used on an airplane only under the following conditions:

- (1) One engine with an HPC CBS configuration has fewer than 25 CSN or CSO, and
- (2) The remaining engine has fewer than 615 CSN or CSO, and
- (3) The airplane is operated for fewer than 25 CIS in this configuration.

HPC Modules at HPC Module Overhaul

(c) Engines with HPC modules that have been modified to incorporate PW SB PW4ENG 72-706, Revision 3 dated July 17, 2000, or earlier Revision, or SB PW4ENG 72-711, dated June 13, 2000, after the effective date of this AD, are not eligible for installation on an airplane.

Definitions

(d) For the purposes of this AD, an HPC module overhaul is defined as whenever the HPC stage 12 through 15 blade tip clearances are restored to the clearances specified in the applicable fits and clearances section of the engine manual during the shop visit.

Alternative Methods of Compliance

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Engine Certification Office (ECO). Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, ECO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

Effective Date of This AD

(f) This amendment becomes effective on November 9, 2000.

FOR FURTHER INFORMATION CONTACT: Peter White, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7128, fax (781) 238-7199.

Issued in Burlington, Massachusetts, on October 19, 2000.

Thomas A. Boudreau, Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.