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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-0217; Directorate Identifier 2009-NE-23-AD; Amendment 39-17194; AD 2012-18-17]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Division Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding an existing airworthiness directive (AD) for all Pratt & Whitney Division (Pratt & Whitney) PW4052, PW4056, PW4060, PW4062, PW4062A, PW4074, PW4077, PW4077D, PW4084D, PW4090, PW4090-3, PW4152, PW4156A, PW4158, PW4164, PW4168, PW4168A, PW4460, and PW4462 turbofan engines. That AD currently requires initial and repetitive fluorescent penetrant inspections (FPI) for cracks in the blade loading and locking slots of the high-pressure compressor (HPC) drum rotor disk assembly rear drum. This new AD requires the same actions, requires replacement of the 13th, 14th, and 15th stage HPC seals with redesigned HPC seals as an additional action, and adds an optional terminating action to the repetitive inspection requirements by allowing replacement of the entire HPC drum rotor disk assembly with a redesigned HPC drum rotor disk assembly. This AD was prompted by Pratt & Whitney developing a redesigned HPC drum rotor disk assembly for certain affected engine models. We are issuing this AD to prevent failure of the HPC drum rotor disk assembly, which could lead to an uncontained engine failure, and damage to the airplane.

DATES: This AD is effective October 22, 2012.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of October 22, 2012.

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of October 18, 2010 (75 FR 55459, September 13, 2010).

ADDRESSES: For service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-7700; fax: 860-565-1605. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: James Gray, Aerospace Engineer, Engine & Propeller Directorate, FAA, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7742; fax: 781-238-7199; email: james.e.gray@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2010-18-13, Amendment 39-16427 (75 FR 55459, September 13, 2010). That AD applies to the specified products. The NPRM published in the Federal Register on May 24, 2012 (77 FR 30926). That NPRM proposed to retain all of the requirements of AD 2010-18-13. That NPRM also proposed to require replacement of the 13th, 14th, and 15th stage HPC seals with redesigned seals and add an optional terminating action to the repetitive inspection requirement by allowing replacement of the HPC drum rotor disk assembly with a redesigned HPC drum rotor disk assembly.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

In Agreement With the Proposed AD

The Boeing Company and FedEx Express are in agreement with the proposed AD.

Request To Allow for Previous Credit

FedEx Express requested that we allow credit for prior compliance with the AD actions.

We do not agree. The proposed AD already allows credit for prior compliance in paragraph (e), which states to comply within the compliance times specified unless already done. We did not change the AD.

Request To Reference the Latest Revisions of Two Service Bulletins (SBs)

United Airlines, Korean Air, and Atlas Air, requested that we reference the latest revisions of two SBs which were revised since the proposed AD was issued.

We agree. We now reference Pratt & Whitney SB No. PW4ENG 72-816, Revision 1, dated June 12, 2012, and Pratt & Whitney SB No. PW4G-100-72-240, Revision 1, dated June 12, 2012, in the AD.

Request To Revise Paragraph (g)

United Airlines requested that we change paragraph (g) of the proposed AD to only require use of paragraphs 1.A. through 1.C. of the Accomplishment Instructions of SB No. PW4ENG 72-816 since additional paragraphs of the SB are not needed to comply with the AD.

We agree. We changed paragraphs (g)(1) and (g)(2) to only require use of paragraphs 1.A through 1.C. of that SB to comply with the AD.

Request To Add Previously Approved Alternate Methods of Compliance (AMOCs)

Japan Airlines and Korean Air requested that we add the previously approved AMOCs to the AD. The commenters referenced two previously approved AMOCs related to taking credit for the inspections required by AD 2005-25-09 (70 FR 73358, December 12, 2005), and use of the disk replacement repair included in the PW4000 Engine Cleaning Inspection and Repair (CIR) Manual to return non-cracked stages of the drum rotor disk assembly to service.

We do not agree. We did not list the previously approved AMOCs in the proposed AD because paragraph (j) of the proposed AD already allows use of previously approved AMOCs to paragraph (f) of the existing AD. Paragraph (f) was specified because the content of this paragraph did not change in the proposed AD supersedure. We did not change the AD.

Request To Revise Paragraph (f)(2)

Atlas Air requested that we revise paragraph (f)(2) of the proposed AD to remove only the cracked disk in the HPC drum rotor disk assembly from service. The commenter stated that currently paragraph (f)(2) requires the entire drum rotor disk assembly to be removed from service if a crack is found. The commenter believes it would be acceptable to remove from service only the cracked disk in the drum rotor disk assembly and use the repair in the PW4000 Engine CIR manual to replace it with a serviceable disk.

We partially agree. We agree that an acceptable level of safety would be maintained by returning the other stages of the drum rotor disk assembly to service if they were not cracked, if the cracked stages of the HPC drum rotor disk assembly were replaced by new disks per the disk replacement repairs in the PW4000 Engine CIR manual. We do not agree with revising the proposed AD because this is already an approved global AMOC covered under paragraph (j) of the proposed AD. We did not change the AD.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously.

Costs of Compliance

We estimate that this AD will affect 911 engines installed on airplanes of U.S. registry. We also estimate that it will take about 1 work-hour per engine to perform an inspection using an average labor rate of \$85 per work-hour. We estimate that there are 770 PW4000-94" and PW4000-100" engines that will require replacement of 13th, 14th, and 15th stage HPC seals, at a parts cost of \$3,000 per engine. No additional labor is assumed when the replacement is done at piece-part exposure of the HPC drum rotor disk assembly. The replacement parts cost of the redesigned HPC drum rotor disk assembly is \$630,000. Based on these figures, we estimate that the total cost of the AD to U.S. operators will be \$2,387,435.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will 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.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 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. The FAA amends § 39.13 by removing airworthiness directive (AD) 2010-18-13, Amendment 39-16427 (75 FR 55459, September 13, 2010), and adding the following new AD:



2012-18-17 Pratt & Whitney Division: Amendment 39-17194; Docket No. FAA-2010-0217; Directorate Identifier 2009-NE-23-AD.

(a) Effective Date

This airworthiness directive (AD) is effective October 22, 2012.

(b) Affected ADs

This AD supersedes AD 2010-18-13, Amendment 39-16427 (75 FR 55459, September 13, 2010).

(c) Applicability

This AD applies to the following Pratt & Whitney Division (Pratt & Whitney) turbofan engines:
(1) PW4000-94" engine models PW4052, PW4056, PW4060, PW4062, PW4062A, PW4152, PW4156A, PW4158, PW4460, and PW4462, including those models with any dash number suffix, with a high-pressure compressor (HPC) drum rotor disk assembly listed in Table 1 to paragraph (c) of this AD installed.

(2) PW4000-100" engine models PW4164, PW4168, and PW4168A, with a HPC drum rotor disk assembly listed in Table 1 to paragraph (c) of this AD installed.

(3) PW4000-112" engine models PW4074, PW4077, PW4077D, PW4084D, PW4090, and PW4090-3, with a HPC drum rotor disk assembly listed in Table 1 to paragraph (c) of this AD installed.

Table 1 to Paragraph (c)–Affected HPC Drum Rotor Disk Assemblies

Engine models	Affected HPC drum rotor disk assembly part numbers
PW4000–94"	50H936; 50H936–002; 53H923–01; 53H923–001; 53H973–01; 53H973–001; 54H803–01; 54H803–001; 54H803–002; 56H013–01; 56H013–001; 58H236–01
PW4000–100"	53H973–01; 53H973–001; 54H803–01; 54H803–001; 54H803–002; 56H013–01; 56H013–001; 58H236–01
PW4000–112"	55H722–01; 55H410–01; 57H010–01; 57H210–01; 57H610–01; 57H910–01

(d) Unsafe Condition

This AD was prompted by Pratt & Whitney developing a redesigned HPC drum rotor disk assembly for certain affected engine models. We are issuing this AD to prevent failure of the HPC drum rotor disk assembly, which could lead to an uncontained engine failure, and damage to the airplane.

(e) Compliance

Comply with this AD within the compliance times specified, unless already done.

(f) Local Fluorescent Penetrant Inspection

(1) Perform a local fluorescent penetrant inspection for cracks in the HPC drum rotor disk assembly rear drum blade loading and locking slots of the specific stages of the HPC drum rotor disk assemblies from which any of the blades are removed as specified in Table 2 to paragraph (f) of this AD.

Table 2 to Paragraph (f)–Compliance Times and Service Bulletins by Engine Model

For engine model	Inspect whenever . . .	To inspect, use . . .
PW4074, PW4077, PW4077D, PW4084D, PW4090, and PW4090–3.	Any of the HPC 13th or 14th stage blades are removed during a shop visit.	Paragraphs 1.A. through 1.B. of the Accomplishment Instructions of PW4G–112–72–264, Revision 2, dated February 23, 2010.
PW4164, PW4168, and PW4168A	Any of the HPC 13th, 14th, or 15th stage blades are removed during a shop visit.	Paragraphs 1.A. through 1.C of the Accomplishment Instructions of PW4G–100–72–186, Revision 1, dated September 2, 2004.
PW4052, PW4056, PW4060, PW4062, PW4062A, PW4152, PW4156A, PW4158, PW4460, and PW4462.	Any of the HPC 13th, 14th, or 15th stage blades are removed during a shop visit.	Paragraphs 1.A. through 1.C. of the Accomplishment Instructions of PW4ENG 72–796, dated June 11, 2009.

(2) Remove from service any HPC drum rotor disk assembly rear drum found with a crack in any of the blade loading and locking slots.

(g) Replacement of 13th, 14th, and 15th HPC Seals

At the next piece-part exposure of the HPC drum rotor disk assembly after the effective date of this AD:

(1) Replace the 13th, 14th, and 15th stage HPC seals with redesigned HPC seals of engines listed in paragraph (c)(1) of this AD in accordance with paragraphs 1.A through 1.C of the Accomplishment Instructions of Pratt & Whitney Service Bulletin (SB) No. PW4ENG 72-816, Revision 1, dated June 12, 2012.

(2) Replace the 13th, 14th, and 15th stage HPC seals with redesigned HPC seals of engines listed in paragraph (c)(2) of this AD in accordance with paragraphs 1.A through 1.C of the Accomplishment Instructions of Pratt & Whitney SB No. PW4G-100-72-240, Revision 1, dated June 12, 2012.

(h) Optional Terminating Action

As optional terminating action to the repetitive inspection requirements of this AD:

(1) Replace the HPC drum rotor disk assembly of engines listed in paragraph (c)(1) of this AD with a redesigned HPC drum rotor disk assembly in accordance with the Accomplishment Instructions of Pratt & Whitney SB No. PW4ENG 72-817, dated December 7, 2011.

(2) Replace the HPC drum rotor disk assembly of engines listed in paragraph (c)(2) of this AD with a redesigned HPC drum rotor disk assembly in accordance with the Accomplishment Instructions of Pratt & Whitney SB No. PW4G-100-72-241, dated November 15, 2011.

(i) Definition

For the purpose of this AD, piece-part exposure means that the HPC drum rotor disk assembly is removed from the engine and completely disassembled.

(j) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, may approve AMOCs for this AD. Use the procedures found in 14 CFR 39.19 to make your request. AMOCs approved previously in accordance with AD 2010-18-13, Amendment 39-16427 (75 FR 55459, September 13, 2010) are approved as AMOCs for the corresponding requirements in paragraph (f) of this AD.

(k) Related Information

For more information about this AD, contact James Gray, Aerospace Engineer, Engine & Propeller Directorate, FAA, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7742; fax: 781-238-7199; email: james.e.gray@faa.gov.

(l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on October 22, 2012.

(i) Pratt & Whitney Service Bulletin No. PW4G-100-72-240, Revision 1, dated June 12, 2012.

(ii) Pratt & Whitney Service Bulletin No. PW4G-100-72-241, dated November 15, 2011.

(iii) Pratt & Whitney Service Bulletin No. PW4ENG 72-816, Revision 1, dated June 12, 2012.

(iv) Pratt & Whitney Service Bulletin No. PW4ENG 72-817, dated December 7, 2011.

(4) The following service information was approved for IBR on October 18, 2010 (75 FR 55459, September 13, 2010).

(i) Pratt & Whitney Service Bulletin No. PW4G-100-72-186, Revision 1, dated September 2, 2004.

(ii) Pratt & Whitney Service Bulletin No. PW4G-112-72-264, Revision 2, dated February 23, 2010.

(iii) Pratt & Whitney Service Bulletin No. PW4ENG 72-796, dated June 11, 2009.

(5) For Pratt & Whitney service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-7700; fax: 860-565-1605.

(6) You may view this service information at FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(7) You may view this service information at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on September 4, 2012.
Colleen M. D'Alessandro,
Assistant Manager, Engine & Propeller Directorate,
Aircraft Certification Service.