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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2001-NE-27-AD; Amendment 39-14002; AD 2005-05-13]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney JT9D-59A, -70A, -7Q, and -7Q3 Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding an existing airworthiness directive (AD) for Pratt & Whitney (PW) JT9D-59A, -70A, -7Q, and -7Q3 turbofan engines. That AD currently requires fluorescent penetrant inspection (FPI) of high pressure turbine (HPT) second stage airseals, part numbers (P/Ns) 5002537-01, 788945, 753187, and 807410, knife-edges for cracks, each time the engine's HPT second stage airseal is accessible. This AD requires replacing each existing HPT second stage airseal with an improved design HPT second stage airseal and modifying the 2nd stage HPT vane cluster assembly and 1st stage retaining blade HPT plate assembly at next piece-part exposure, but no later than five years after the effective date of this AD. These actions are considered terminating action to the repetitive inspections required by AD 2002-10-07. This AD results from the manufacturer introducing an improved design HPT second stage airseal and modifications to increase cooling. We are issuing this AD to prevent failure of the HPT second stage airseal due to cracks in the knife-edges, which if not detected, could result in uncontained engine failure and damage to the airplane.

DATES: This AD becomes effective April 14, 2005. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of April 14, 2005.

ADDRESSES: You can get the service information identified in this AD from Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-8770; fax (860) 565-4503.

You may examine the AD docket and 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: Kevin Donovan, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01887-5299; telephone (781) 238-7743; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR Part 39 with a proposed AD. The proposed AD applies to PW JT9D-59A, -70A, -7Q, and -7Q3 turbofan engines. We published the proposed AD in the Federal Register on July 7, 2004 (69 FR 40819). That action proposed to require replacing each existing HPT second stage airseal with an improved design HPT second stage airseal and modifying the 2nd stage HPT vane cluster assembly and 1st stage retaining blade HPT plate assembly at next piece-part exposure, but no later than five years after the effective date of the proposed AD. These actions would be considered terminating action to the repetitive inspections required by AD 2002-10-07.

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 Friday, except Federal holidays. See ADDRESSES for the location.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Keep AD 2002-10-07 as an Alternative Means of Compliance

One commenter requests that the existing AD, which is AD 2002-10-07, be kept as an alternative means of compliance. The commenter states that the compliance of the proposed AD, as per the Accomplishment Instructions of PW Service Bulletin (SB) No. JT9D 6454, Revision 1, not only requires replacement of the HPT second stage turbine airseal, but also requires replacement and modification of many other parts. Since all of the parts of the HPT module are required to be exposed to piece-parts during overhaul, and not at any other time, the compliance statement which states "At the next piece-part exposure" should be amended to "At the next HPT Module overhaul", as also stated in SB No. JT9D 6454, Revision 1.

We do not agree. AD 2002-10-07 was introduced solely as an interim action, with the intent of the redesign being the final solution. We are issuing this AD to prevent failure of the HPT second stage airseal due to cracks in the knife-edges, which if not detected, could result in uncontained engine failure and damage to the airplane. Therefore we do not feel that the AD 2002-10-07 interim action provides an equivalent level of safety. In addition, there are times such as an unscheduled maintenance event, in which the HPT module hardware will be exposed. It is our intention to incorporate this AD at the next piece-part exposure.

Proposal for an Alternative Management Plan

One commenter proposes an alternative management plan to the compliance section in the proposed AD, subject to the provisions in the proposed AD. The commenter provided the details of the proposed management plan to us in a separate document. The background to the proposed plan is as follows:

HPT second stage airseals, P/Ns 5002537-01, 788945, 753187, and 807410, have very high scrap rates. About 75% of airseals are scrapped after fluorescent penetrant inspection (FPI). Only those airseals passing FPI which are reinstalled, will continue to have a risk of knife-edge cracking. Limiting those airseals to 2,000 cycles-in-service, maximum, before a repeat FPI is required, will increase the detection rate when compared to AD 2002-10-07.

We do not agree. The purpose of AD 2002-10-07 was to serve as an interim action until PW provided a new design part. Since the new design part is available, we feel it is in the interest of

public safety to replace the part at the earliest opportunity and prevent any failure of the HPT second stage airseal, which if not detected, could result in uncontained engine failure and damage to the airplane.

Request To Clarify Piece-Part Exposure

One commenter requests clarification of the term "piece-part exposure" and suggests changing the term to "piece-part level".

We agree to clarify the term "piece-part exposure". We have added a definition that states that for the purposes of this AD, piece-part exposure means the HPT second stage airseal disk is considered completely disassembled, when done in accordance with the disassembly instructions in the engine manufacturer's, or other FAA-approved engine manual.

Request for AD To Reflect the Latest Service Bulletin Compliance, and To Clarify That New Parts Can Also Be Installed

One commenter, PW, states the following:

"The compliance requirements specified in the proposed AD are more stringent than what is recommended in the compliance section of SB No. JT9D 6454. Compliance with the proposed AD would require operators to incorporate the SB coincidental with module repair (piece-part exposure), which could occur well in advance of HPT module overhaul as defined in the SB. Although the proposed AD compliance requirement may seem prudent with regards to added conservatism, the SB recommendation is based on an industry-accepted methodology for the assessment of risk for future uncontained failures. A key variable in performing the risk analysis is the incorporation rate. The rate applied that satisfies PW's risk criteria, was in fact based on a typical HPT overhaul interval range. No consideration was given for piece-part exposure during a premature module repair or a specific "hard-time" incorporation date. Recognizing the FAA's desire to mandate a compliance date, PW reviewed the incorporation rate as it relates to a five-year compliance period and estimates 95% incorporation based on a typical overhaul interval, while incorporation at a six-year threshold captures 98.4% of the population.

In summary:

The AD should reflect compliance as defined in PW SB No. 6454, having a compliance date of 6 years as imposed by the FAA.

Service Bulletin No. JT9D -6454 has been revised since the proposed AD was issued, adding additional airflow data to the turbine rotor nozzle and ring assembly airflow test procedure. The AD should reflect SB No. JT9D 6454, Revision 2.

Wording throughout the proposed AD implies that compliance can only be achieved through modification of existing second stage vane clusters, and first stage blade retaining plates. The proposed AD should recognize that all parts required to accomplish the intent of SB No. JT9D 6454 are also available as new, from PW and modification of serviceable parts may be optional as specified in the SB."

We summarize the comment as follows:

It is PW's technical opinion that the incorporation of SB No. JT9D 6454 before HPT module overhaul, would create an unnecessary burden on operators. It is also PW's technical opinion that the compliance period should be extended to six years to capture a greater percentage of the population so not to create unnecessary financial burden on lower utilization operators.

We partially agree. The purpose of AD 2002-10-07 was to serve as an interim action until PW provided a new design part. Since the new design for this part is now available, we feel it is an item of public safety to replace the part as a closing action for this AD and prevent an uncontained engine failure and damage to the airplane. We are referencing the latest revision of the SB, which is Revision 3, in the AD.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

There are about 564 PW JT9D-59A, -70A, -7Q, and -7Q3 turbofan engines of the affected design in the worldwide fleet. We estimate that 176 engines installed on airplanes of U.S. registry will be affected by this AD. We also estimate that it will take approximately 210 work hours per engine to perform the actions, and that the average labor rate is \$65 per work hour. Required parts will cost approximately \$117,696 per engine. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$23,116,896.

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); and
- (3) 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.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2001-NE-17-AD" in your request.

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 Federal Aviation Administration 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 Amendment 39-12753 (67 FR 12753, May 23, 2002) and by adding a new airworthiness directive, Amendment 39-14002, to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

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

We post ADs on the internet at "www.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).

2005-05-13 Pratt & Whitney: Amendment 39-14002. Docket No. 2001-NE-27-AD.

Effective Date

- (a) This AD becomes effective April 14, 2005.

Affected ADs

- (b) This AD supersedes AD 2002-10-07, Amendment 39-12753.

Applicability

(c) This AD applies to Pratt & Whitney (PW) JT9D-59A, -70A, -7Q, and -7Q3 turbofan engines with high pressure turbine (HPT) second stage airseal, part number (P/N) 5002537-01, 788945, 753187, or 807410, installed. These engines are installed on, but not limited to, Airbus Industrie A300 series, Boeing 747 series, and McDonnell Douglas DC-10 series airplanes.

Unsafe Condition

(d) This AD results from the manufacturer introducing an improved design HPT second stage airseal and modifications to increase cooling. We are issuing this AD to prevent failure of the HPT second stage airseal due to cracks in the knife-edges, which if not detected, could result in uncontained engine failure and damage to the airplane.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Replacement of HPT Second Stage Airseal

(f) At the next piece-part exposure, but no later than five years after the effective date of this AD, replace the HPT second stage airseal with a P/N HPT second stage airseal that is not listed in this AD, and modify the 2nd stage HPT vane cluster assembly and 1st stage retaining blade HPT plate assembly. Use the Accomplishment Instructions of PW Service Bulletin No. JT9D 6454, Revision 3, dated November 9, 2004, to do this.

Definition

(g) For the purposes of this AD, piece-part exposure means the HPT second stage airseal disk is considered completely disassembled, when done in accordance with the disassembly instructions in the engine manufacturer's, or other FAA-approved engine manual.

Alternative Methods of Compliance

(h) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Material Incorporated by Reference

(i) You must use Pratt & Whitney Service Bulletin No. JT9D 6454, Revision 3, dated November 9, 2004, to perform the replacement and modification required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You can get a copy from Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-8770; fax (860) 565-4503. You can review copies at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or 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/code_of_federal_regulations/ibr_locations.html.

Related Information

(j) None.

Issued in Burlington, Massachusetts, on March 2, 2005.

Jay J. Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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