



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2014-1127; Directorate Identifier 2014-NE-16-AD; Amendment 39-18203; AD 2015-14-05]**

**RIN 2120-AA64**

**Airworthiness Directives; Pratt & Whitney Turbofan Engines**

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

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for all Pratt & Whitney (PW) JT8D-217C and JT8D-219 turbofan engines. This AD was prompted by reports of cracking in the low-pressure turbine (LPT) shaft. This AD requires removing affected LPT shafts from service using a drawdown plan. We are issuing this AD to prevent failure of the LPT shaft, which could lead to an uncontained engine failure and damage to the airplane.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-8770; fax: 860-565-4503. 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> by searching for and locating Docket No. FAA-2014-1127; 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:** Jo-Ann Theriault, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7105; fax: 781-238-7199; email: [jo-ann.theriault@faa.gov](mailto:jo-ann.theriault@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all PW JT8D-217C and JT8D-219 turbofan engines. The NPRM published in the Federal Register on March 2, 2015 (80 FR 11140). The NPRM was prompted by in-shop findings of fatigue cracks on the No. 4.5 bearing thread undercut adjacent to the oil feed holes. The cracks were discovered during routine fluorescent penetrant inspections (FPIs). Both shafts had oil feed hole enlargement rework accomplished. The root cause is increased stress on the fillet of the thread undercut region in front of the oil feed holes caused by oil feed hole rework. The increased stress reduces the low cycle fatigue life of the shaft. The NPRM proposed to require removing affected LPT shafts from service using a drawdown plan. We are issuing this AD to prevent failure of the LPT shaft, which could lead to an uncontained engine failure and damage to the airplane.

### **Related Service Information**

We reviewed PW Service Bulletin (SB) No. JT8D 6504, dated November 5, 2014. The SB contains additional information regarding removal of the LPT shaft.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM (80 FR 11140, March 2, 2015) and the FAA's response to each comment.

### **Request to Withdraw the NPRM**

Delta Air Lines (DAL) and Allegiant Air requested that the current LPT shaft life limit of 25,000 cycles-since-new (CSN) be retained rather than removing the LPT shaft from service at 20,000 CSN as proposed in the NPRM. The commenters stated that reducing the life limit is unjustified because there has not been an in-service LPT shaft failure of the type addressed.

We do not agree. We determined that an acceptable level of safety would not be maintained if LPT shafts are allowed to remain in service until accumulating 25,000 CSN. We reduced the life of the LPT shaft to 20,000 CSN to minimize the risk of LPT shaft failure. We did not change this AD.

### **Proposal to Increase Repetitive Inspections**

DAL and Allegiant Air proposed increasing the occurrence of FPIs to increase the opportunity of identifying LPT shaft cracks. The commenters stated that routine FPIs have been successful in detecting LPT shaft cracks in the past.

We do not agree. Recurring inspections are not adequate as a final corrective action. Relying on recurring FPIs to detect cracks, rather than shaft removal at 20,000 CSN, would likely result in an increased number of LPT shafts cracking in service, a greater risk of undetected cracked shafts being returned to service, and an unacceptable risk of shaft failure. We determined that long-term continued operational safety is

enhanced by a terminating action that removes affected shafts from service rather than by increasing the occurrence of repetitive inspections. We did not change this AD.

### **Request to Reduce Costs**

DAL and Allegiant Air requested retaining the existing life limit or increasing the occurrence of inspections. The commenters stated that the life reduction in the NPRM places an undue economic burden on the U.S. fleet by forcing early engine removals.

We do not agree. We mitigated the operational and financial impacts by providing a drawdown plan rather than requiring removal before further flight, while providing an acceptable level of safety. We did not change this AD.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed.

### **Costs of Compliance**

We estimate that this AD will affect about 744 engines installed on airplanes of U.S. registry. The average labor rate is \$85 per hour. We estimate the pro-rated replacement cost would be \$28,230. We also estimate that shaft replacement would be accomplished during an engine shop visit at no additional labor cost. Based on these figures, we estimate the cost of the proposed AD on U.S. operators to be \$21,003,120.

### **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**

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 to the extent that it justifies making a regulatory distinction, 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 adding the following new airworthiness directive (AD):

**2015-14-05 Pratt & Whitney:** Amendment 39-18203; Docket No. FAA-2014-1127; Directorate Identifier 2014-NE-16-AD.

**(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all Pratt & Whitney (PW) JT8D-217C and JT8D-219 turbofan engines with low-pressure turbine (LPT) shaft part numbers 783319, 783319-001, 783319-003, 783319-004, 783320, 783320-001, 783320-003, 783320-004, 820514-001, 820514-003, 820514-004, or 820514-005, installed.

**(d) Unsafe Condition**

This AD was prompted by reports of cracking in the LPT shaft. We are issuing this AD to prevent failure of the LPT shaft, 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.

(1) If the LPT shaft has 15,000 or fewer cycles-since-new (CSN) on the effective date of this AD, remove it from service before it accumulates 20,000 CSN.

(2) If the LPT shaft has more than 15,000 CSN on the effective date of this AD, remove it from service before it accumulates 5,000 additional cycles in service, or at the next piece-part exposure after accumulating 20,000 CSN, whichever occurs first.

(3) After the effective date of this AD, do not install any LPT shaft listed in paragraph (c) of this AD that is at piece-part exposure and exceeds the new life limit of 20,000 CSN, into any engine.

**(f) Definition**

For the purpose of this AD, piece-part exposure is when the LPT shaft is completely disassembled from the engine.

**(g) Alternative Methods of Compliance (AMOCs)**

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures found in 14 CFR 39.19 to make your request. You may email your request to: ANE-AD-AMOC@faa.gov.

**(h) Related Information**

(1) For more information about this AD, contact Jo-Ann Theriault, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7105; fax: 781-238-7199; email: jo-ann.theriault@faa.gov.

(2) PW Service Bulletin No. JT8D 6504, dated November 5, 2014, which is not incorporated by reference in this AD, can be obtained from PW using the contact information in paragraph (h)(3) of this AD.

(3) For service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-8770; fax: 860-565-4503.

(4) 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.

**(i) Material Incorporated by Reference**

None.

Issued in Burlington, Massachusetts, on June 26, 2015.

Ann C. Mollica,  
Acting Directorate Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.

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