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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-29110; Directorate Identifier 2007-NE-35-AD; Amendment 39-15808; AD 2009-04-02]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney PW4090 and PW4090-3 Turbofan Engines

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

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for Pratt & Whitney (PW) PW4090 and PW4090-3 turbofan engines with front turbine hub, part number (P/N) 53L601, installed. This AD reduces the published life limit of those front turbine hubs, from 12,000 cycles-since-new (CSN) to 9,370 CSN. This AD also removes from service those front turbine hubs using a drawdown schedule. This AD results from PW updating the low-cycle-fatigue (LCF) life analysis for front turbine hubs, P/N 53L601. We are issuing this AD to prevent an uncontained failure of the front turbine hub, resulting in an in-flight engine shutdown and possible damage to the airplane.

DATES: This AD becomes effective March 24, 2009.

ADDRESSES: The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

FOR FURTHER INFORMATION CONTACT: Mark Riley, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: mark.riley@faa.gov; telephone (781) 238-7758; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to PW4090 and PW4090-3 turbofan engines with front turbine hub, P/N 53L601, installed. We published the proposed AD in the Federal Register on October 10, 2007 (72 FR 57502). That action proposed to reduce the published life limit of those front turbine hubs, from 12,000 CSN to 9,370 CSN. That action also proposed to remove from service those front turbine hubs using a drawdown schedule.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov; or in person at the Docket Operations office 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 street address for the Docket Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

Comments

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

Front Turbine Support P/N 53L601 Not Procurable

United Airlines and the Air Transport Association state that the front turbine hub, P/N 53L601, has a P/N that is only an internal Pratt & Whitney P/N, and the part is not procurable. The procurable part is the next higher assembly, P/N 53L121. They suggest that both the detail and the assembly part numbers be listed in the applicability section to cover both identification methods.

We do not agree. The PW4000 engine manual does not specify a life limit for the front turbine hub assembly, P/N 53L121. However, in order to provide additional clarification, we will add a reference to the front turbine hub assembly, P/N 53L121, similar to what is shown in the PW4000 engine manual.

Request To Clarify the Compliance

Japan Air Lines requests that we clarify that "last-high-pressure-turbine overhaul" in paragraph (f)(2)(ii) of the proposed AD, would also include the last-fluorescent-penetrant inspection of the front turbine hub, P/N 53L601, which would be a more accurate reference point for them to count compliance cycles. The commenter believes this is what we intended to state.

We agree. We changed paragraph (f)(2)(ii) to state that operators are to remove the front turbine hub from service at the next engine shop visit (ESV), or before the hub accumulates an additional 6,000 cycles-since-last-fluorescent-penetrant inspection of the front turbine hub, whichever occurs first, but not to exceed 12,000 CSN.

Request To Remove 3,370 CSN References From Paragraphs (f)(1) and (f)(2)

One commenter, Pratt & Whitney, requests that we remove the references to front turbine hubs with fewer than 3,370 CSN, and hubs with 3,370 CSN or more, from compliance paragraphs (f)(1) and (f)(2), as they are not needed. The commenter states that there is no need to drive removal of parts before they have reached the new published life limit of 9,370 CSN.

We partially agree. We agree there is no need to remove front turbine hubs from service before they reached the new published life limit of 9,370 CSN. However, the purpose of the 3,370 CSN threshold is to identify those parts that can be removed per the specified drawdown schedule. We did not change the AD.

Request To Revise Definition of Engine Shop Visit

Pratt & Whitney, the ATA, and United Airlines request that we revise the definition of "engine shop visit." Pratt & Whitney recommends compliance during shop visit at front turbine hub exposure, and states that their analysis supports this. The ATA and United Airlines recommend compliance

during shop visit when either the "E" or "N" flange of the engine is separated. They state that compliance at all shop visits will cause unnecessary engine teardowns for "quick change" engines (fan case module refurbishments) and will result in a significant cost impact.

We partially agree. We reviewed Pratt & Whitney's risk analysis and agree that we can manage the risk within acceptable levels if we change the definition of shop visit to "The induction of an engine into the shop for maintenance involving the separation of any major mating engine flange aft of the "B" flange, except that the separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance does not constitute an engine shop visit". We changed the shop visit definition in paragraph (h) of 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

We estimate that this AD will affect 94 engines installed on airplanes of U.S. registry. We also estimate that it will take about 101 work-hours per engine to perform the actions, and that the average labor rate is $80 per work-hour. The prorated cost due to a life reduction from 12,000 CSN to 9,370 CSN for the front turbine hub is about $66,460 per engine. Based on these figures, we estimate the cost of the AD on U.S. operators to be $6,247,240.

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 at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, 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 adding the following new airworthiness directive:

2009-04-02 Pratt & Whitney: Amendment 39-15808. Docket No. FAA-2007-29110; Directorate Identifier 2007-NE-35-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective March 24, 2009.

Affected ADs

(b) None.

Applicability

(c) This AD applies to Pratt & Whitney (PW) PW4090 and PW4090-3 turbofan engines with front turbine hub part number (P/N) 53L601, (part of assembly P/N 53L121), installed. These engines are installed on, but not limited to, Boeing 777-200 series and 777-300 series airplanes.

Unsafe Condition

(d) This AD results from PW updating the low-cycle-fatigue (LCF) life analysis for front turbine hub, P/N 53L601. We are issuing this AD to prevent an uncontained failure of the front turbine hub, resulting in an in-flight engine shutdown and possible 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.

(f) Remove front turbine hub, P/N 53L601 (part of assembly P/N 53L121), from service and install a serviceable front turbine hub, as follows:

(1) For front turbine hubs that have accumulated fewer than 3,370 cycles-since-new (CSN) on the effective date of this AD, remove from service before the hub accumulates 9,370 CSN.

(2) For front turbine hubs that have accumulated 3,370 or more CSN, but fewer than 9,370 CSN on the effective date of this AD, do the following:

(i) For engines that have an engine shop visit (ESV) after the effective date of this AD before the front turbine hub accumulates 9,370 CSN, remove the front turbine hub from service before the front turbine hub accumulates 9,370 CSN.

(ii) For engines that do not have an ESV after the effective date of this AD before the front turbine hub accumulates 9,370 CSN, remove the front turbine hub from service at the next ESV, or before the hub accumulates an additional 6,000 cycles-since-last-fluorescent-penetrant inspection of the front turbine hub, whichever occurs first, but not to exceed 12,000 CSN.

(3) For front turbine hubs that have accumulated 9,370 or more CSN on the effective date of this AD, remove the front turbine hub from service at the next ESV, or before the hub accumulates 12,000 CSN, whichever occurs first.

(g) This AD establishes a new reduced published life limit for the PW4090 turbine front hub, P/N 53L601, of 9,370 CSN. The following conditions also apply:

(1) Except as provided in paragraphs (f)(2)(ii) and (f)(3) of this AD, no alternative retirement lives may be approved for the PW4090 front turbine hub, P/N 53L601.

(2) After the effective date of this AD, do not install or reinstall any PW4090 front turbine hub, P/N 53L601, on any engine if the hub has accumulated 9,370 CSN or more than 9,370 CSN. Any PW4090 front turbine hub, P/N 53L601, that is installed or re-installed in any engine after the effective date of this AD must be removed from service before the hub accumulates 9,370 CSN.

Definition

(h) For the purposes of this AD, an "engine shop visit" is the induction of an engine into the shop for maintenance involving the separation of any major mating engine flange aft of the "B" flange, except that the separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance does not constitute an engine shop visit.

Alternative Methods of Compliance

(i) 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.

Related Information

(j) Information on an approved front turbine hub rework procedure for increased life is available from the manufacturer. See Pratt & Whitney Service Bulletin PW4G-112-72-290, dated July 2, 2007. The reworked front turbine hub, P/N 53L601-001, (part of assembly 53L121-001) is not affected by this AD. Contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-7700; fax (860) 565-1605, for the service information identified in this AD.

(k) Contact Mark Riley, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: mark.riley@faa.gov; telephone (781) 238-7758; fax (781) 238-7199, for more information about this AD.

Issued in Burlington, Massachusetts, on February 2, 2009.
Peter A. White,
Assistant Manager, Engine and Propeller Directorate,
Aircraft Certification Service.