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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2017-1206; Product Identifier 2017-NE-42-AD; Amendment 39-19479; AD 2018-22-06]

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) PW2037, PW2037M, and PW2040 turbofan engines. This AD was prompted by an uncommanded high thrust event that occurred during approach on January 16, 2016, and during landing on April 6, 2016. This AD requires removal of the metering valve pilot valve (MVPV) within certain fuel control units (FCUs) and the MVPV's replacement with a part eligible for installation. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective December 3, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of December 3, 2018.

ADDRESSES: For service information identified in this final rule, contact Pratt & Whitney Division, 400 Main St., East Hartford, CT 06118; phone: 800-565-0140; fax: 860-565-5442. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-1206.

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-2017-1206; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is 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: Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: Kevin.M.Clark@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 PW2037, PW2037M, and PW2040 turbofan engines. The NPRM published in the Federal Register on April 11, 2018 (83 FR 15519). The NPRM was prompted by reports of an uncommanded high thrust event that occurred during approach on January 16, 2016, and during landing on April 6, 2016, due to loosening of the MVPV end cap. These uncommanded events were associated with improper maintenance on the MVPV within certain FCUs. The NPRM proposed to require removal of the MVPV for certain FCUs. We are issuing this AD to address the unsafe condition on these products.

Comments

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

Request To Disallow Repairs

PW and the Boeing Company (Boeing) requested that we remove the allowance in this AD for the repair of the MVPV. The commenters noted that repairs cannot preclude damage to the valve, which could lead to future Loss of Thrust Control (LOTC) events.

We disagree because the repairs allowed by this AD will have a tamper proof feature to secure the end plugs. This feature will preclude the end plug from loosening in service. We did not change this AD.

Request To Increase Number of Affected Engines

PW requested that we revise the number of affected engines in costs of compliance section of this AD from 212 to 253. PW noted that there are 253 FCU serial numbers listed in Table 1 of PW Alert Service Bulletin (ASB) PW2000 A73-172, dated October 16, 2017.

We disagree. Although Table 1 lists 253 affected engines, our cost estimate refers to engines installed on U.S. registered airplanes. Our estimate of this number is 212 engines. We did not change this AD.

Request To Increase Cost Estimate for Parts

PW and Delta Air Lines (Delta) requested that we change the estimated parts cost to \$25,482 per engine. The commenters indicated that \$25,482 is the cost of a new MVPV.

We partially agree. We revised the Costs of Compliance section of this AD to estimate \$25,482 as the cost of a new MVPV. We expect, however, that certain operators will have the MVPV repaired, so we are also including an estimate for the cost of a repaired part.

Request To Allow Any Repair to MVPV

Delta requested that we allow any FAA-approved repair to the MVPV for compliance with this AD. Delta explained that the PW MVPV does not have a tamper proof feature so the repair should not require it.

We disagree. The tamper proof feature on the end plugs ensures that the repair includes tightened end plugs and prevents future tampering or loosening during regular maintenance. The manufacturer's design does not have this tamper proof feature because no loose end plugs were found on original manufacturer parts. We did not change this AD.

Request To Explain Tamper Proof Feature on MVPV

Delta, United Airlines, and MTU Maintenance Hannover GmbH (MTU) requested that we explain the “tamper proof feature” on the end plug or reference a specific repair. The commenters explained that this feature can be confusing to operators who are not familiar with the history of repairs on this part. For example, Delta commented that this language could be understood to refer to valves repaired per a process that retains the end plugs using epoxy alone as being sufficient.

We partially agree. We agree that operators without experience with this feature may be confused. We expanded the definition of a part eligible for installation to clarify the meaning of a “tamper proof feature.” We disagree with referencing a specific repair because we don't want to preclude future repairs that may be developed.

Request To Reference UTC Aerospace Systems Service Bulletin (SB)

Delta requested that we reference the UTC Aerospace Systems SB JFC104-1-73-58 in addition to PW ASB PW2000 A73-172, dated October 16, 2017, in this AD. Delta noted that additional instructions for replacement of the MVPV are in the UTC Aerospace Systems SB.

We disagree because the reference in this AD to the PW ASB PW2000 A73-172, dated October 16, 2017, is only to include the FCU Serial Number List. We did not change this AD.

Request To Revise Table Reference

Delta and MTU requested that we change a reference to “Table 1” in this AD. The commenters noted that PW ASB PW2000 A73-172, dated October 16, 2017, does not refer to the list of FCU serial numbers as “Table 1.”

We agree. Although the PW ASB references “Table 1” in several places, the list of FCU serial numbers is not clearly labeled in the ASB as “Table 1.” We revised the reference to “Table 1” in the Applicability section of this AD to “FCU Serial Number List” to better match the service information.”

Request To Revise Reference to “Overhaul”

Delta and MTU requested that we change the reference in this AD to “FCU overhaul.” The commenters indicated that this term is not standard wording.

We agree because the term “overhaul” can be confused with other types of maintenance. We changed the reference in this AD from “FCU Overhaul” to “FCU shop visit” to better match standard wording used in ADs.

Request To Revise Part Eligible for Installation

Delta and Fedex Express requested that we clarify the definition of a part eligible for installation from a “zero time MVPV.” Delta noted that there is no specification whether this refers to total time

since manufacture or total time since completion of a certain level of maintenance. Fedex Express suggested we use the term “zero time from new MVPV.”

We agree. We revised this AD to clarify that the definition of a part eligible for installation refers to a “zero time since new MVPV” to add clarity.

Request To Add Marking Requirement

Delta and MTU requested that we add a requirement in this AD to mark the data plate of any FCU to show it has complied with this AD. The commenters indicated that this would assist with tracking because there is no physical way to tell if operators have complied with the AD.

We disagree. It is up to the operators how to record compliance with this AD. We do not want to dictate only one method of recording compliance.

Request To Revise Installation Prohibition

PW requested that we revise the installation prohibition in this AD to allow any MVPV that is eligible for installation to be installed. PW indicated that the language in the NPRM implies that only repaired MVPVs can be installed.

We disagree because if the MVPV is one of the suspect units being removed from the FCU by the AD, then it is not a zero time since new MVPV. An MVPV that is removed per the requirements of this AD must be repaired with a tamper proof feature on the end plugs before it can be reinstalled. The installation prohibition paragraph does not prevent operators from installing a zero time since new MVPV.

Request To Clarify Compliance Time

MTU requested that we clarify the compliance time in this AD as no compliance time is stated.

We disagree because the compliance time is at the next FCU shop visit after the effective date of this AD, which is stated in the required action paragraph. We did not change this AD.

Request To Reinstall a Part After Inspection

MTU asked to be allowed to reinstall a part after it has been inspected but not repaired.

We disagree because the FCU's listed in the applicability cannot be inspected for a loose end plug without damaging the epoxy or end plugs. Once the end plug or epoxy is damaged, it must be replaced with a new MVPV or repaired properly with a tamper proof feature on the end plugs. We did not change this AD.

Support for This AD

The Air Line Pilots Association expressed support for this AD as written.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information Under 1 CFR Part 51

We reviewed PW ASB PW2000 A73-172, dated October 16, 2017. The ASB provides a list of affected FCUs. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

We estimate that this AD affects 212 engines installed on airplanes of U.S. registry. We are estimating that the MVPV will be replaced with a new part on 106 engines and replaced with a repaired part on the remaining 106 engines. We estimate the following costs to comply with this AD:

Estimated Costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replace MVPV with repaired part	\$0	\$6,490	\$6,490	\$687,940
Replace MVPV with new part	0	25,482	25,482	2,701,092

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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

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, 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):



2018-22-06 Pratt & Whitney: Amendment 39-19479; Docket No. FAA-2017-1206; Product Identifier 2017-NE-42-AD.

(a) Effective Date

This AD is effective December 3, 2018.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Pratt & Whitney (PW) PW2037, PW2037M, and PW2040 turbofan engines with JFC104-1 fuel control units (FCUs) with serial numbers listed in the Accomplishment Instructions, FCU Serial Number List, of PW Alert Service Bulletin PW2000 A73-172, dated October 16, 2017.

(d) Subject

Joint Aircraft System Component (JASC) Code 7321, Fuel Control/Turbine Engines.

(e) Unsafe Condition

This AD was prompted by an uncommanded high thrust event that occurred during approach on January 16, 2016, and during landing on April 6, 2016. We are issuing this AD to prevent failure of the metering valve pilot valve (MVPV) end cap to remain taut, causing uncommanded higher fuel flow to the engine. The unsafe condition, if not addressed, could result in failure of the FCU, loss of engine thrust control and reduced control of the airplane.

(f) Compliance

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

(g) Required Actions

Remove from service the MVPV from the FCU at the next FCU shop visit after the effective date of the AD and replace the MVPV with a part eligible for installation.

(h) Definitions

(1) For the purpose of this AD, an FCU shop visit is defined as the removal of the FCU from the engine and induction of the FCU into a FCU shop that can perform these procedures regardless of the scheduled maintenance action or the reason for the FCU removal.

(2) For the purpose of this AD, a part eligible for installation is one of the following:

(i) A zero time since new MVPV, or

(ii) An MVPV repaired by a method approved by FAA that includes an end plug with tamper proof features. A tamper proof feature is a feature that goes beyond the original equipment manufacturer design of only using epoxy retention and threads to prevent end cap maintenance tampering and loosening.

(i) Installation Prohibition

After the effective date of this AD, do not install any MVPV removed in accordance with paragraph (g) unless it meets the definition of a part eligible for installation per paragraph (h)(2) of this AD.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

For more information about this AD, contact Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: Kevin.M.Clark@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.

(i) Pratt & Whitney (PW) Alert Service Bulletin PW2000 A73-172, dated October 16, 2017.

(ii) [Reserved]

(3) For PW service information identified in this AD, contact Pratt & Whitney Division, 400 Main St., East Hartford, CT 06118; phone: 800-565-0140; fax: 860-565-5442.

(4) You may view this service information at FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7759.

(5) You may view this service information that is incorporated by reference 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 October 23, 2018.

Robert J. Ganley,
Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.