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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2008-0589; Directorate Identifier 2008-NE-17-AD; Amendment 39-15757; AD 2008-24-13]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Pratt & Whitney PW4000 Series 94-Inch Fan Turbofan Engines**

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

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for Pratt & Whitney (P&W) PW4052, PW4056, PW4060, PW4062, PW4152, PW4156A, PW4158, PW4460, and PW4462 turbofan engines. This AD requires a onetime visual inspection of all EEC-131 model electronic engine controls (EECs). This AD also requires the EECs to be identified, categorized by group number, marked, and replaced using a fleet management plan. This AD results from a report of an uncommanded engine in-flight shutdown due to defective EEC pulse width modulator (PWM) microcircuits. We are issuing this AD to prevent uncommanded in-flight engine shutdowns which could result in loss of thrust and prevent continued safe flight or landing.

**DATES:** This AD becomes effective January 8, 2009. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of January 8, 2009.

**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.

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:** Kevin Dickert, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: kevin.dickert@faa.gov; telephone (781) 238-7117; fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to P&W PW4052, PW4056, PW4060, PW4062, PW4152,

PW4156A, PW4158, PW4460, and PW4462 turbofan engines. We published the proposed AD in the Federal Register on August 14, 2008 (73 FR 47561). That action proposed to require a onetime visual inspection of all EEC-131 model EECs. That action also proposed to require the EECs to be identified, categorized by group number, marked, and replaced using a fleet management plan.

### **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.

### **Request To Change Compliance From Cycles In Service Since New**

Pratt & Whitney, Airbus S.A.S., Boeing, the Air Transport Association (ATA), and 10 carriers request that we change cycles in service "since new" to cycles in service "from the effective date of this AD". They state that cycles in service since new was probably selected in error by the FAA, as the age of the fleet would require most of the EECs to be removed immediately.

We agree. We changed the AD to reflect "cycles in service from the effective date of this AD".

### **Request for Clarification on Group 4 EEC Classification**

Pratt & Whitney and Northwest Airlines request clarification on the classification of Group 4 EECs, and on what action is required for group 4 EECs. They express confusion on how Group 4 EECs are handled in the proposed AD.

We provide clarification as follows:

Group 4 is a category of EECs that have been identified as having non-defective PWMs, either by the serial numbers published in P&W Service Bulletin (SB) No. PW4ENG A73-214, or through the completion of the repair described in Hamilton Sunstrand SB No. EEC131-1-73-59. We changed the AD by adding compliance paragraph (h)(3) as follows:

"(3) There are no scheduled replacement requirements for Group 4 EECs."

We also changed compliance paragraph (i) to read: "A serviceable EEC is an EEC that does not violate the EEC installation procedure as provided by paragraphs (k), (l), and (m) of this AD, or a Group 4 EEC."

### **Request To Re-Evaluate EEC Marking**

FedEx and Lufthansa Technik AG request that the EEC marking requirements be re-evaluated so that the operators who have a means of verifying and tracking units can be exempted from the physical marking of the EEC. They state that the physical marking adds an unnecessary burden on their maintenance system.

We partially agree. While some operators may have the capability of reliably tracking EECs in their fleet without physically remarking them, we determined that not all operators share this capability. In the absence of an alternate method of categorizing EECs into the appropriate group, the AD requires physical remarking of the EECs. This is done to prevent Group 1 EECs from being

inadvertently moved from one engine or airplane to another, and to aid in the prioritization of EEC returns to Hamilton Sundstrand. Operators who believe they have sufficient means of categorizing EECs without physically remarking the parts, should request an Alternative Method of Compliance in accordance with compliance paragraph (o) of the AD. We did not change the AD.

### **Request To Increase the Costs of Compliance Estimate**

FedEx, United Airlines, and the ATA, request that we increase the costs of compliance estimate in the AD. The commenters state that it takes 2 hours to remove the old EEC and install its replacement. They state that a post installation Required Inspection Item and engine idle test, must be performed for each EEC replacement.

We partially agree. Although the proposed AD states that 1 work-hour per engine was considered in the estimate for replacing the EEC, the estimate of \$467,200 includes 3 work-hours (1 hour for inspecting, categorizing, and marking the EEC and 2 hours for removing and replacing the EEC) and \$400 for replacement parts for each EEC. The three-hour estimate, therefore, is accurate. However, to properly reflect that estimate, we changed the costs of compliance to read:

"We also estimate that it will take about 1 work-hour per engine to inspect, categorize, and mark each of the 730 EECs, and 2 work-hours per engine to remove and replace up to 730 EECs."

### **Suggestion for More Consistency With the SBs**

Pratt & Whitney Cheshire Engine Center and Airbus S.A.S., suggest changes to the Discussion section of the proposed AD, so there would be more consistency between the AD and P&W Alert SB No. PW4ENG A73-214 and P&W SB No. PW4ENG 73-216.

We disagree. While the description of the issue in the SBs is more detailed, the intent of the Discussion section in the proposed AD is to provide a summary of the unsafe condition, rather than an in-depth technical discussion. The final rule AD does not repeat the information from the proposed AD Discussion section, therefore, we did not change the AD.

### **Request for Aircraft Maintenance Manuals To Be Updated**

Lufthansa Technik AG and Royal Dutch Airlines request that we arrange for the Aircraft Maintenance Manuals (AMM) to be updated to reflect the requirements set forth in this AD.

We disagree. While changes to the AMM may be warranted, the requirements set forth in this AD are sufficient to address the unsafe condition addressed by the AD. We suggest that the commenters request changes to the AMM directly to the airframer. We did not change the AD.

### **Request To Add Provisions to the AD To Accept Work Done Previously Using the Original Issue or Revision 1 of P&W ASB No. PW4ENG A73-214**

One commenter, United Parcel Service, requests that we add provisions to the AD to accept work done previously using the original issue or Revision 1 of P&W ASB No. PW4ENG A73-214. The commenter states that accomplishment of original issue or Revision 1, satisfies the requirements in Revision 2 of ASB No. PW4ENG A73-214.

We agree. Rework done using the original issue and Revision 1 of P&W ASB No. PW4ENG A73-214 satisfies the ASB Revision 2 requirements for Groups 1, 2, and 3 EECs. We added a Previous Credit paragraph as follows:

"(n) Inspecting, categorizing, and marking of EECs before the effective date of this AD performed using the Accomplishment Instructions of P&W Alert SB No. PW4ENG A73-214 original issue or Revision 1, satisfy the requirements of paragraph (f)(1) of this AD."

## **Claim That SBs Are Incorrectly Labeled**

United Airlines and the ATA claim that in two locations of the proposed AD, P&W SBs are incorrectly labeled, either as Alert SBs or as non-Alert SBs.

We agree. However, one of the locations is in the proposed AD Discussion section, which we do not repeat in the AD, and the other location is already corrected due to a previous comment response.

## **Question on Whether Omission of SB References Was Intentional**

One commenter, Airbus S.A.S., questions whether the omission of any reference of P&W SB No. PW4ENG 73-215 was intentional. The commenter states that SBs No. PW4ENG A73-214, No. PW4ENG 73-215, and No. PW4ENG 73-216, were issued by P&W as a group, to address the unsafe condition addressed by this AD.

We intentionally omitted that SB reference. P&W SB No. PW4ENG 73-215 limits the installation of Group 1 EECs to one per airplane within one year from the SB issue date. Because the recommended compliance end-date for P&W SB No. PW4ENG 73-215 action coincides with the compliance time to remove all Group 1 EECs as required by this AD, we determined that it was only necessary to mandate the removal of all Group 1 EECs. Operators are encouraged to evaluate all the recommended maintenance actions provided by the manufacturer to accomplish smooth fleet-wide compliance with the requirements of this AD. We did not change the AD.

## **Suggestion To Change the Part Number on EECs**

Northwest Airlines suggests that the part number be changed on the EEC, as opposed to categorizing and marking Group numbers, as discussed in the proposed AD. The commenter states that doing this would allow ease of tracking parts and ease of showing compliance to the AD.

We disagree. We consider the addition of a Group number to the part marking to be sufficient means for identification of EECs. The method of tracking compliance to the AD is left up to each operator. We did not change the AD.

## **Request To Change the Compliance Times**

Northwest Airlines and P&W request that we change the proposed AD compliance times to make them consistent with the SBs.

We partially agree. The compliance times in the proposed AD were compressed from those in the SBs, due to the cycle time associated with issuing an AD. The intent was for the end-date of the proposed AD compliance times to roughly agree with those in the referenced SBs. To better achieve this intent, we updated the compliance times in the AD. We changed compliance paragraphs (h)(1) and (h)(2) from:

"(1) Group 2 EECs, before reaching 4,000 CIS since new, but not later than 2 years after the effective date of this AD.

(2) Group 3 EECs, before reaching 14,000 CIS since new, but not later than 6 years after the effective date of this AD."

To:

"(1) Group 2 EECs, before reaching 5,000 CIS after the effective date of this AD, but not later than 21/2 years after the effective date of this AD.

(2) Group 3 EECs, before reaching 13,000 CIS after the effective date of this AD, but not later than 61/2 years after the effective date of this AD."

We also changed prohibition paragraphs (k), (l), and (m) from:

"(k) Do not install any Group 1 EEC after 1 year from the effective date of this AD or any Group 1 EEC that has reached 2,000 CIS since new.

(l) Do not install any Group 2 EEC after 2 years from the effective date of this AD or any Group 2 EEC that has reached 4,000 CIS since new.

(m) Do not install any Group 3 EEC after 6 years from the effective date of this AD or any Group 3 EEC that has reached 14,000 CIS since new."

To:

"(k) Do not install any Group 1 EEC after 1 year from the effective date of this AD or any Group 1 EEC that has accumulated an additional 2,000 CIS from the effective date of this AD.

(l) Do not install any Group 2 EEC after 21/2 years from the effective date of this AD or any Group 2 EEC that has accumulated an additional 5,000 CIS from the effective date of this AD.

(m) Do not install any Group 3 EEC after 61/2 years from the effective date of this AD or any Group 3 EEC that has accumulated an additional 13,000 CIS from the effective date of this 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 730 P&W PW4000 series 94-inch fan turbofan engines installed on airplanes of U.S. registry. We also estimate that it will take about 1 work-hour per engine to inspect, categorize, and mark each of the 730 EECs, and 2 work-hours per engine to remove and replace up to 730 EECs. The average labor rate is \$80 per work-hour. Required replacement parts will cost about \$400 per engine. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$467,200. This Costs of Compliance reflects only the requirements set forth by the AD, which is the removal and replacement of the EEC.

## **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, 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 adding the following new airworthiness directive:



**2008-24-13 Pratt & Whitney:** Amendment 39-15757. Docket No. FAA-2008-0589; Directorate Identifier 2008-NE-17-AD.

**Effective Date**

- (a) This airworthiness directive (AD) becomes effective January 8, 2009.

**Affected ADs**

- (b) None.

**Applicability**

(c) This AD applies to Pratt & Whitney (P&W) PW4052, PW4056, PW4060, PW4062, PW4152, PW4156A, PW4158, PW4460, and PW4462 turbofan engines. These engines are installed on, but not limited to, Airbus A300-600 and A310-300, and Boeing 747-400, Boeing 767-200, 767-300, and MD-11 series airplanes.

**Unsafe Condition**

(d) This AD results from a report of an uncommanded engine in-flight shutdown due to defective electronic engine control (EEC) pulse width modulator (PWM) microcircuits. We are issuing this AD to prevent uncommanded in-flight engine shutdowns which could result in loss of thrust and prevent continued safe flight or landing.

**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.

**Onetime Visual Inspection and Reporting Requirements**

(f) Within 600 operating hours after the effective date of this AD:

(1) Perform a onetime visual inspection of the EEC-131 model EECs to identify, categorize, and mark them as a Group 1, Group 2, Group 3, or Group 4 EEC.

(2) Use paragraphs 1 through 7 in the Accomplishment Instructions of P&W Alert Service Bulletin No. PW4ENG A73-214, Revision 2, dated May 23, 2008, to inspect, categorize, and mark the EECs.

(3) Within 30 calendar days of completing paragraph (f)(1) of this AD, report all inspection findings to Kevin Dickert, Engine Certification Office, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803.

(4) The Office of Management and Budget (OMB) has approved the reporting requirements and assigned OMB control number 2120-0056.

## **Replacement of Group 1 EECs**

(g) Replace Group 1 EECs with a serviceable EEC before reaching 2,000 cycles-in-service (CIS) after the effective date of this AD, but not later than one year from the effective date of this AD.

## **Replacement of Groups 2, 3, and 4 EECs**

(h) Replace the following groups of EECs with a serviceable EEC, or any EEC that does not violate the EEC installation procedure as provided by paragraphs (k), (l), and (m) of this AD, as follows:

(1) Group 2 EECs, before reaching 5,000 CIS after the effective date of this AD, but not later than 21/2 years after the effective date of this AD.

(2) Group 3 EECs, before reaching 13,000 CIS after the effective date of this AD, but not later than 61/2 years after the effective date of this AD.

(3) There are no scheduled replacement requirements for Group 4 EECs.

## **Definition of Serviceable EECs**

(i) A serviceable EEC is an EEC that does not violate the EEC installation procedure as provided by paragraphs (k), (l), and (m) of this AD, or a Group 4 EEC.

(j) Information on obtaining a serviceable EEC can be found in P&W SB No. PW4ENG 73-216, dated April 8, 2008. To obtain this SB, see paragraph (q) of this AD for P&W contact information.

## **EEC Installation Prohibition**

(k) Do not install any Group 1 EEC after 1 year from the effective date of this AD or any Group 1 EEC that has accumulated an additional 2,000 CIS from the effective date of this AD.

(l) Do not install any Group 2 EEC after 21/2 years from the effective date of this AD or any Group 2 EEC that has accumulated an additional 5,000 CIS from the effective date of this AD.

(m) Do not install any Group 3 EEC after 61/2 years from the effective date of this AD or any Group 3 EEC that has accumulated an additional 13,000 CIS from the effective date of this AD.

## **Previous Credit**

(n) Inspecting, categorizing, and marking of EECs before the effective date of this AD performed using the Accomplishment Instructions of P&W Alert SB No. PW4ENG A73-214 original issue or Revision 1, satisfy the requirements of paragraph (f)(1) of this AD.

## **Alternative Methods of Compliance**

(o) 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**

(p) Contact Kevin Dickert, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: kevin.dickert@faa.gov; telephone (781) 238-7117; fax (781) 238-7199, for more information about this AD.

## **Material Incorporated by Reference**

(q) You must use the service information specified in Pratt & Whitney Alert Service Bulletin No. PW4ENG A73-214, Revision 2, dated May 23, 2008, to inspect, categorize, and mark the EECs. 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. Contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-8770; fax (860) 565-4503, for a copy of this service information. You may review copies at the FAA, New England Region, 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/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on November 21, 2008.  
Peter A. White,  
Assistant Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.