



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2016-5392; Directorate Identifier 2016-NE-10-AD; Amendment 39-18654; AD 2016-19-05]**

**RIN 2120-AA64**

**Airworthiness Directives; International Aero Engines AG Turbofan Engines**

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

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain International Aero Engines AG (IAE) V2500-A1 turbofan engines. This AD was prompted by a report of an uncontainment caused by a high-pressure turbine (HPT) seal release. This AD requires removing the HPT No. 4 bearing front seal seat, part numbers (P/Ns) 2A0066, 2A1998, and 2A3432, and the HPT No. 4 bearing rear seal seat, P/Ns 2A0067, 2A1999, and 2A3433, and replacing them with parts eligible for installation. This AD also requires inspecting the HPT rotor and stator assembly, and, if necessary, their replacement with parts that are eligible for installation. We are issuing this AD to prevent failure of the HPT stage 2 seals, uncontained HPT seal release, damage to the engine, and damage to the airplane.

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

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact International Aero Engines AG, 400 Main Street, East Hartford, CT 06118; phone: 800-565-0140; email: help24@pw.utc.com; Internet: <http://fleetcare.pw.utc.com>. You may view this service information at the FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-5392.

### **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-2016-5392; 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:** Brian Kierstead, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7772; fax: 781-238-7199; email: [brian.kierstead@faa.gov](mailto:brian.kierstead@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 certain IAE V2500-A1 turbofan engines. The NPRM published in the Federal Register on April 13, 2016 (81 FR 21768). The NPRM was prompted by a report of an uncontainment caused by a HPT seal release. The NPRM

proposed to require removing from service the HPT No. 4 bearing front seal seat, P/Ns 2A0066, 2A1998, and 2A3432, and the HPT No. 4 bearing rear seal seat, P/Ns 2A0067, 2A1999, and 2A3433, and replacement with parts eligible for installation. This AD would also require inspecting the HPT rotor and stator assembly, and, if necessary, their replacement with parts that are eligible for installation. We are issuing this AD to correct the unsafe condition on these products.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM (81 FR 21768, April 13, 2016) and the FAA's response to each comment.

### **Request to Allow Monitoring of Oil Consumption and Monitoring Analysis**

Air India Ltd. (AIL) commented that the fracture of the HPT stage 2 seal is a known problem with the type design. AIL does not agree that the root cause of the failure is clogged No. 4 bearing seal seats. AIL finds that increases in oil consumption and/or vibration signature are precursors to failure of the HPT stage 2 seal. We interpret AIL's comment as a request to allow monitoring of oil consumption rate and vibration signature analysis instead of the requirements of this AD.

We disagree. We disagree with AIL's analysis of the unsafe condition because although other failure modes leading to fracture of the HPT stage 2 seal exist, the uncontained part release noted in the NPRM (81 FR 21768, April 13, 2016) was caused by blockage of the No. 4 bearing seal seat's anti-weep circuit. We disagree with allowing oil consumption monitoring and vibration signature analysis because they do not provide an acceptable level of safety for engines with seal seats processed using methods susceptible to oil blockage. We did not change this AD.

### **Request to Delay Compliance**

AIL commented that we should delay compliance to this AD until December 31, 2017. This additional time to comply with this AD would allow for minimal disruption to its fleet operations. AIL indicated that fleet safety would be maintained through engine oil consumption monitoring and vibration signature analysis.

We disagree. As noted in our previous comment response, oil consumption monitoring and vibration signature analysis do not provide an acceptable level of safety for engines with seal seats processed using methods susceptible to oil blockage. We did not change this AD.

### **Request to Revise Applicability**

AIL commented that the applicability of this AD should not be limited to the IAE V2500-A1 fleet.

We disagree. The applicability of this AD is limited to the IAE V2500-A1 engines with affected serial numbers because this population of engines has been identified as having been processed using methods that could lead to failure of the HPT stage 2 seals. We did not change this AD.

### **Request to Include End Date for Compliance**

IAE and Airbus commented that we should include an end date of December 31, 2016, for compliance with this AD.

We disagree. Our analysis of the unsafe condition determined that blockage of the No. 4 bearing seal seat anti-weep grooves is a function of engine cycles rather than time in service. We therefore did not base compliance on a calendar date. We did not change this AD.

### **Request to Require Oil Monitoring and Turbine Case Inspection**

IAE and Airbus commented that not mandating oil monitoring and inspection of the turbine case weep-hole may increase risk to operators if they follow only the

requirements of this AD. IAE indicated that this AD should match the compliance requirements of IAE SB V2500-ENG-72-0670, dated March 14, 2016.

We disagree. We find that the actions required by this AD adequately address the unsafe condition represented by the possibility of failure of the HPT stage 2 seals while not imposing unnecessary burdens on operators. We did not change this AD.

### **Revision to Compliance**

We revised the compliance section to allow installed No. 4 bearing front and rear seal seats to be returned to service following removal and refurbishment.

### **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 except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (81 FR 21768, April 13, 2016) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (81 FR 21768, April 13, 2016).

### **Related Service Information under 1 CFR part 51**

We reviewed IAE Non-Modification Service Bulletin (NMSB) V2500-ENG-72-0670, dated March 14, 2016. The NMSB identifies affected engines and provides guidance for replacing the No. 4 bearing front and rear seal seats and for inspecting the HPT rotor and stator assembly. 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 0 engines installed on airplanes of U.S. registry. We estimate that it will take about 10 hours to perform the seal seat replacement. The

average labor rate is \$85 per hour. We also estimate the cost of No. 4 bearing front and rear seal seats to be \$13,562. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$0.

### **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):

2016-19-05 **International Aero Engines AG**: Amendment 39-18654; Docket No. FAA-2016-5392; Directorate Identifier 2016-NE-10-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 International Aero Engines AG (IAE) V2500-A1 turbofan engines with serial numbers listed under Planning Information, Effectivity Data in IAE Non-Modification Service Bulletin (NMSB) V2500-ENG-72-0670, dated March 14, 2016.

**(d) Unsafe Condition**

This AD was prompted by a report of an uncontainment caused by a high-pressure turbine (HPT) seal release. We are issuing this AD to prevent failure of the HPT stage 2 seal, uncontained HPT seal release, damage to the engine, and damage to the airplane.

**(e) Compliance**

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

(1) Prior to accumulating 500 cycles in service after the effective date of this AD,

(i) Remove the No. 4 bearing front seal seat, part numbers (P/Ns) 2A0066, 2A1998, 2A3432; and the No. 4 bearing rear seal seat, P/Ns 2A0067, 2A1999, 2A3433, and replace with parts eligible for installation.

(ii) Inspect the HPT rotor and stator assembly. Use the Accomplishment Instructions, Part C, paragraph 1.B. of IAE NMSB V2500-ENG-72-0670, dated March 14, 2016 to perform the inspection.

(2) For any parts that fail the inspection required by paragraph (e)(1)(ii) of this AD, before further flight, remove and replace with parts eligible for installation.

**(f) 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.

**(g) Related Information**

For more information about this AD, contact Brian Kierstead, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7772; fax: 781-238-7199; email: brian.kierstead@faa.gov.

**(h) 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) International Aero Engines AG (IAE) Non-Modification Service Bulletin V2500-ENG-72-0670, dated March 14, 2016.

(ii) Reserved.

(3) For IAE service information identified in this AD, contact International Aero Engines AG, 400 Main Street, East Hartford, CT 06118; phone: 800-565-0140; email: help24@pw.utc.com; Internet: <http://fleetcare.pw.utc.com>.

(4) You may view this service information at the FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(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 September 15, 2016.

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

[FR Doc. 2016-22703 Filed: 9/21/2016 8:45 am; Publication Date: 9/22/2016]