

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2021-0544; Project Identifier AD-2021-00642-E; Amendment 39-21646; AD 2021-14-19]**

**RIN 2120-AA64**

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

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain International Aero Engines AG (IAE) V2500 model turbofan engines. This AD was prompted by a review of investigative findings from an event involving an uncontained failure of a high-pressure turbine (HPT) 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. This AD requires performance of an ultrasonic inspection (USI) of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk with a part eligible for installation. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 5, 2021.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of August 5, 2021.

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of July 13, 2021 (86 FR 30380, June 8, 2021).

The FAA must receive comments on this AD by September 7, 2021.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

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](mailto:help24@pw.utc.com); website: <http://fleetcare.pw.utc.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety 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 at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0544.

## **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0544; 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, any comments received, and other information. The street address for the Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7329; fax: (781) 238-7199; email: [Alberto.J.Hernandez@faa.gov](mailto:Alberto.J.Hernandez@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Background**

On March 18, 2020, an Airbus Model A321-231 airplane, powered by IAE V2533-A5 model turbofan engines, experienced an uncontained HPT 1st-stage disk failure that resulted in an aborted takeoff. The uncontained failure of the HPT 1st-stage disk resulted in high-energy debris penetrating the engine cowling. The FAA published Emergency AD 2020-07-51 on March 21, 2020 (followed by publication in the Federal Register on April 13, 2020, as a Final Rule, Request for Comments (85 FR 20402)) and AD 2021-01-03 on January 6, 2021 (86 FR 458) to remove from service HPT 1st-stage and HPT 2nd-stage disks identified as having the highest risk of failure.

Based on the root cause analysis performed since that event, the manufacturer identified a population of HPT 1st-stage disks and HPT 2nd-stage disks that require inspection and possible removal from service. In response, the FAA published AD 2021-11-15 on June 8, 2021 (86 FR 30380) to require performance of a USI on affected HPT 1st-stage disks and HPT 2nd-stage disks and, depending on the results of the USI, removal of the affected HPT disks from service. Compliance time for performance of the USI in AD 2021-11-15 is based on the specific IAE V2500 model turbofan engine on which the HPT 1st-stage or 2nd-stage disk is installed and is required to be performed at the next engine shop visit or between 3,200-6,700 flight cycles (FCs), depending on the model turbofan engine, after the effective date of the AD, whichever occurs first.

Based on the review of investigative findings from this March 2020 event, the manufacturer identified a high-risk subpopulation of parts that require urgent inspection. The FAA, therefore, published Emergency AD 2021-11-51 on May 21, 2021 (followed by publication in the Federal Register on July 2, 2021, as a Final Rule, Request for Comments (86 FR 35217)) requiring performance of a USI within 10 FCs on the highest-risk HPT 1st-stage disks and HPT 2nd-stage disks and, depending on the results of the USI, removal of the affected HPT disks from service. The FAA is now publishing this AD to require performance of a USI on the remaining high-risk subpopulation of affected HPT 1st-stage disks and HPT 2nd-stage disks and, depending on the results of the USI, removal of the affected HPT disks from service. Compliance time is between 100 and 620 FCs after the effective date of this AD and is based on the specific V2500 IAE turbofan engine model on which the affected disks are, or have been, installed.

This condition, if not addressed, could result in uncontained HPT disk failure, damage to the engine, damage to the airplane, and loss of the airplane. The FAA is issuing this AD to address the unsafe condition on these products.

## **FAA's Determination**

The FAA is issuing this AD because the agency has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

## **Related Service Information Under 1 CFR Part 51**

The FAA reviewed Pratt & Whitney (P&W) Special Instruction (SI) No. 112F-21, dated May 24, 2021. The SI identifies the affected HPT 1st-stage disks and HPT 2nd-stage disks installed on IAE V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines.

The FAA reviewed P&W SI No. 114F-21, dated May 24, 2021. The SI identifies the affected HPT 2nd-stage disks installed on IAE V2531-E5 model turbofan engines.

The FAA reviewed IAE NMSB No. V2500-ENG-72-0713, Revision 1, dated January 26, 2021. The NMSB specifies procedures for a USI of the HPT 1st-stage disk and HPT 2nd-stage disk.

The FAA reviewed IAE NMSB No. V2500-E5-72-0015, dated December 15, 2020. The NMSB specifies procedures for a USI of the HPT 1st-stage disk and HPT 2nd-stage disk.

The Director of the Federal Register approved IAE NMSB V2500-ENG-72-0713, Revision 1, dated January 26, 2021 and IAE NMSB V2500-E5-72-0015, dated December 15, 2020, for incorporation by reference as of July 13, 2021 (86 FR 30380, June 8, 2021). 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 ADDRESSES.

## **AD Requirements**

This AD requires the performance of a USI of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk with a part eligible for installation.

## **Justification for Immediate Adoption and Determination of the Effective Date**

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 et seq.) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for "good cause," finds that those procedures are "impracticable, unnecessary, or contrary to the public interest." Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies foregoing notice and comment prior to adoption of this rule.

On March 18, 2020, an Airbus Model A321-231 airplane, powered by IAE V2533-A5 model turbofan engines, experienced an uncontained HPT 1st-stage disk failure that resulted in an aborted takeoff. The uncontained failure of the HPT 1st-stage disk resulted in high-energy debris penetrating the engine cowling. Based on a review of investigative findings performed since that event, the manufacturer has identified a high-risk population of affected HPT 1st-stage and HPT 2nd-stage disks that are affected by the same unsafe condition and require USI and, depending on the results of the USI, removal from service.

The FAA considers the risk of an uncontained HPT disk failure to be an urgent safety issue. USI of the HPT 1st-stage and 2nd-stage disks must be accomplished between 100 FCs and 620 FCs after the effective date of this AD to prevent additional HPT disk failures and maintain an acceptable level of safety. This unsafe condition, caused by an uncontained HPT 1st-stage disk and HPT 2nd-stage disk failure, may result in damage to the engine, damage to the airplane, and loss of the airplane. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B). In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forego notice and comment.

## **Comments Invited**

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0544 and Project Identifier AD-2021-00642-E” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

## **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

## **Regulatory Flexibility Act**

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

## **Costs of Compliance**

The FAA estimates that this AD affects 112 engines installed on airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

### Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Ultrasonic inspection (includes actions necessary to disassemble the engine)	204 work-hours × \$85 per hour = \$17,340	\$0	\$17,340	\$1,942,080

The FAA estimates the following costs to do any necessary replacement that would be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need this replacement:

### On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Replace the HPT 1st-stage disk or HPT 2nd-stage disk	0 work-hours × \$85 per hour = \$0	\$300,000	\$300,000

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

### 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.

The FAA is 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, and
- (2) Will not affect intrastate aviation in Alaska.

### List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **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:



**FAA**  
**Aviation Safety**

## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

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**2021-14-19 International Aero Engines AG:** Amendment 39-21646; Docket No. FAA-2021-0544; Project Identifier AD-2021-00642-E.

### **(a) Effective Date**

This airworthiness directive (AD) is effective August 5, 2021.

### **(b) Affected ADs**

None.

### **(c) Applicability**

This AD applies to International Aero Engines AG (IAE) V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, V2531-E5, and V2533-A5 model turbofan engines with an installed:

(1) High-pressure turbine (HPT) 1st-stage disk, part number (P/N) 2A5001, with a serial number (S/N) listed in Accomplishment Instructions, Table 1, of Pratt & Whitney (P&W) Special Instruction (SI) No. 112F-21, dated May 24, 2021 (P&W SI No. 112F-21); or

(2) HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Accomplishment Instructions, Table 2, of P&W SI No. 112F-21, or S/N listed in Accomplishment Instructions, Table 1, P&W SI No. 114F-21, dated May 24, 2021 (P&W SI No. 114F-21).

### **(d) Subject**

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

### **(e) Unsafe Condition**

This AD was prompted by a review of investigative findings from an event involving an uncontained failure of a HPT 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. The FAA is issuing this AD to prevent failure of the HPT 1st-stage disk and HPT 2nd-stage disk. The unsafe condition, if not addressed, could result in uncontained HPT disk failure, damage to the engine, damage to the airplane, and loss of the airplane.

### **(f) Compliance**

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

### **(g) Required Actions**

(1) For an HPT 1st-stage disk, P/N 2A5001, with an S/N listed in Accomplishment Instructions, Table 1, of P&W SI No. 112F-21, that has been installed at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine during operation, within

100 flight cycles (FCs) after the effective date of this AD, perform an ultrasonic inspection (USI) of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 6, of IAE NMSB V2500-ENG-72-0713, Revision 1.

(2) For an HPT 1st-stage disk, P/N 2A5001, with an S/N listed in Accomplishment Instructions, Table 1, of P&W SI No. 112F-21, that has only been installed in an IAE V2522-A5, V2524-A5, V2525-D5, or V2527-A5 model turbofan engine during operation, within 220 FCs after the effective date of this AD, perform a USI of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 6, of IAE NMSB V2500-ENG-72-0713, Revision 1.

(3) For an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Accomplishment Instructions, Table 2, of P&W SI No. 112F-21, that has been installed at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine during operation, within 385 FCs after the effective date of this AD, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-ENG-72-0713, Revision 1.

(4) For an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Accomplishment Instructions, Table 2, of P&W SI No. 112F-21, that has only been installed in an IAE V2522-A5, V2524-A5, V2525-D5, or V2527-A5 model turbofan engine during operation, within 620 FCs after the effective date of this AD, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-ENG-72-0713, Revision 1.

(5) For an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Accomplishment Instructions, Table 1, of P&W SI No. 114F-21, that has only been installed in an IAE V2531-E5 model turbofan engine during operation, within 385 FCs after the effective date of this AD, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-E5-72-0015.

(6) If, during the USI required by paragraphs (g)(1) through (5) of this AD, a HPT 1st-stage disk or HPT 2nd-stage disk does not pass the inspection as specified in the Accomplishment Instructions, paragraph 8, of IAE NMSB V2500-ENG-72-0713, Revision 1, or IAE NMSB V2500-E5-72-0015, as applicable, before further flight, remove the HPT 1st-stage disk or 2nd-stage disk, as applicable, from service and replace with a part eligible for installation.

#### **(h) Definition**

For the purpose for this AD, a “part eligible for installation” is:

(1) An HPT 1st-stage disk or HPT 2nd-stage disk listed in Appendix A, Tables 1 and 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, or Appendix A, Tables 1 and 2, of IAE NMSB V2500-E5-72-0015, that passed the USI required by paragraphs (g)(1) through (5) of this AD; or

(2) An HPT 1st-stage disk or HPT 2nd-stage disk that is not listed in Appendix A, Tables 1 and 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, or Appendix A, Tables 1 and 2, of IAE NMSB V2500-E5-72-0015.

#### **(i) 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 Related Information. 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.



## **(j) Related Information**

For more information about this AD, contact Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7329; fax: (781) 238-7199; email: Alberto.J.Hernandez@faa.gov.

## **(k) 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.

(3) The following service information was approved for IBR on August 5, 2021.

(i) Pratt & Whitney (P&W) Special Instruction (SI) No. 112F-21, dated May 24, 2021.

(ii) P&W SI No. 114F-21, dated May 24, 2021.

(4) The following service information was approved for IBR on July 13, 2021 (86 FR 30380, June 8, 2021).

(i) International Aero Engines (IAE) Non-Modification Service Bulletin (NMSB) No. V2500-ENG-72-0713, Revision 1, dated January 26, 2021.

(ii) IAE NMSB No. V2500-E5-72-0015, dated December 15, 2020.

(5) For 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; website: <http://fleetcare.pw.utc.com>.

(6) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

(7) 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, email: [fedreg.legal@nara.gov](mailto:fedreg.legal@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on July 15, 2021.

Lance T. Gant,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2021-15486 Filed 7-16-21; 4:15 pm]