[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0216; Product Identifier 1988-ANE-18-AD; Amendment 39-19474; AD 2018-22-01]

RIN 2120-AA64

Airworthiness Directives; Honeywell International Inc. Turboprop Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding Airworthiness Directive (AD) 88-12-10 for certain Honeywell International Inc. (Honeywell) TPE331 turboprop engines. AD 88-12-10 required reducing the life limit for certain second stage turbine rotors. This AD requires removing certain second stage turbine rotors from service at a reduced life limit. This AD was prompted by report that a TPE331-11U engine experienced an uncontained rotor separation. In addition, cracks were discovered through eddy current inspection (ECI) in the bore of the second stage turbine rotor assembly after publication of AD 88-12-10. We are issuing this AD to address the unsafe condition on these products.

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

ADDRESSES: For service information identified in this final rule, contact Honeywell International Inc., 111 S 34th Street, Phoenix, AZ, 85034-2802; phone: 800-601-3099; Internet: https://myaerospace.honeywell.com/wps/portal. 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-2018-0216.

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-2018-0216; 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 Document Operations, 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: Joseph Costa, Aerospace Engineer, Los Angeles ACO Branch, FAA, 3960 Paramount Blvd., Lakewood, CA, 90712-4137; phone: 562-627-5246; fax: 562-627-5210; email: joseph.costa@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 88-12-10, Amendment 39-5910 (53 FR 19766, May 31, 1988), ("AD 88-12-10"). AD 88-12-10 applied to Honeywell TPE331-10, -10R, -10U, -10UA, -10UF, -10UG, -10UGR, -10UR, and -11U turboprop engines equipped with 2nd stage turbine rotors, part numbers 3102106-1, -6, and -8, installed. The NPRM published in the Federal Register on June 20, 2018 (83 FR 28550). The NPRM was prompted by a report that a TPE331-11U engine installed on an M7 Aerospace LP SA227 airplane experienced an uncontained rotor separation. In addition, cracks were discovered through ECI in the bore of the second stage turbine rotor assembly after publication of AD 88-12-10. The NPRM proposed to remove certain second stage turbine rotors from service at a reduced life limit. 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 AD. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Revise Compliance Times

Honeywell requested that we remove from the NPRM the statement that the FAA finds that allowing an additional 100 cycles-in-service before their removal provides a sufficient level of safety for applicable second stage turbine rotors that have been in service for 30 years after the publication of AD 88-12-10. Honeywell indicated it believes that most of the IN100 rotors have been replaced at around 3,500 cycles during hot section inspection. Honeywell noted that the rotors would not make it to the next hot section inspection with a life of 4,800 cycles. Honeywell noted that there is a not a lot of field experience for IN100 rotors beyond 3,500 cycles.

Honeywell commented that the removal schedule in the Honeywell service bulletin needs to remain the same (within 100 cycles-in-service for 3,301 to 4,000 cycles since new (CSN) rotors and within 50 cycles-in-service for 4,001 to 4,800 CSN rotors) since the event rotor failed at around 4,100 cycles. Additionally, Honeywell has also found rotors through eddy current inspection that had long cracks at around 4,300 cycles.

We disagree. We would normally only require removal of parts within 50 cycles-in-service after the effective date of an AD when the risk justifies immediate action. The FAA assessed the risk of the affected rotors based on service experience and IN100 rotor propagation life of cracked and failed rotors. We found that the additional cycles in service allowed by this AD before the removal of the second stage turbine rotors provides an acceptable level of safety. We did not change this AD.

Conclusion

We reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this AD as proposed.

Related Service Information

We reviewed Honeywell Service Bulletin (SB) TPE331-72-A2319, Revision 0, dated April 25, 2018, and TPE331-72-A2310, Revision 0, dated January 26, 2018. These SBs describe procedures for replacement of the second stage turbine rotor assembly installed on TPE331-8, -10, -10N, -10R, -10U, -10UA, -10UF, -10UG, -10UGR, -10UR, and -11U model engines.

Costs of Compliance

We estimate that this AD affects 100 engines installed on airplanes of U.S. registry.

We estimate that 20 commercial engines and 80 general aviation engines will need this turbine rotor replacement to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Scheduled rotor replacement	1 work-hour x $85 per hour = $85	$7,500	$7,585	$379,250.
Unscheduled rotor replacement	41 work-hours x $85 per hour = $3,485	$7,500	$10,985	$549,250

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

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),

(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 removing Airworthiness Directive (AD) 88-12-10, Amendment 39-5910 (53 FR 19766, May 31, 1988), and adding the following new AD:

2018-22-01 **Honeywell International Inc. (Type Certificate previously held by AlliedSignal Inc., Garrett Engine Division; Garrett Turbine Engine Company; and AiResearch Manufacturing Company of Arizona)**: Amendment 39-19474; Docket No. FAA-2018-0216; Product Identifier 1988-ANE-18-AD.

(a) Effective Date

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

(b) Affected ADs

This AD replaces AD 88-12-10, Amendment 39-5910 (53 FR 19766, May 31, 1988).

(c) Applicability

This AD applies to Honeywell International Inc. (Honeywell) TPE331-8, -10, -10N, -10R, -10U, -10UA, -10UF, -10UG, -10UGR, -10UR, and -11U turboprop

engines with second stage turbine rotor assemblies, part number (P/Ns) 3102106-1, -6, and -8 or P/N 3101514-1, -10 and -12, installed.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by a report that a TPE331-11U engine installed on an M7 Aerospace LP SA227 airplane experienced an uncontained rotor separation and the discovery of cracks in the bore of the second stage turbine rotor assembly after publication of AD 88-12-10. We are issuing this AD to prevent failure of the second stage turbine rotor. The unsafe condition, if not addressed, could result in uncontained release of the second stage turbine rotor, damage to the engine, and damage to the airplane.

(f) Compliance

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

(g) Required Actions

(1) Remove from service the applicable second stage turbine rotor assembly, P/Ns 3102106-1, -6 and -8, according to the schedule in Table 1 to Paragraph (g)(1) of this AD:

Table 1 to Paragraph (g)(1) of this AD – Removal of Second Stage Rotor, P/Ns 3102106-1, -6 and -8

Second Stage Turbine Rotor Cycles Since New (CSN) on the effective date of the AD	**Removal Schedule**
0 to 2,600	Prior to 3,000 CSN
2,601 to 3,300	Within 400 cycles-in-service (CIS) after the effective date of this AD or 3,600 CSN, or at next access, whichever occurs first
3,301 to 4,000	Within 200 cycles-in-service after the effective date of this AD or 4,100 CSN, or at next access, whichever occurs first
4,001 to 4,800	Within 100 cycles-in-service after the effective date of this AD or 4,800 CSN, or at next access, whichever occurs first

(2) Remove from service the applicable second stage turbine rotor assembly, P/Ns 3101514-1, -10 and -12, per the schedule in Table 2 to Paragraph (g)(2) of this AD:

Table 2 to Paragraph (g)(2) of this AD – Removal of Second Stage Rotors, P/Ns 3101514-1, -10 and -12

Second Stage Turbine Rotor CSN on the effective date of the AD	**Removal Schedule**
0 to 2,600	Prior to 3,000 CSN
2,601 to 3,200	Within 400 CIS after the effective date of this AD or 3,600 CSN, or at next access, whichever occurs first.
3,201 to 3,800	Within 200 CIS after the effective date of this AD or 4,100 CSN, or at next access, whichever occurs first.
3,801 to 4,400	Within 100 CIS after the effective date of this AD or 4,400 CSN, or at next access, whichever occurs first.

(h) Definition

For the purpose of this AD, "next access" is defined as when the applicable second stage turbine rotor assembly is removed from the engine.

(i) Installation Prohibition

As of the effective date of this AD, do not install second stage turbine rotor assemblies, P/Ns 3102106-1, -6, and -8 and P/Ns 3101514-1, -10, and -12 on any engine.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Los Angeles ACO, 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 (k) of this AD. You may email your request to: 9-ANM-LAACO-AMOC-REQUESTS@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 Joseph Costa, Aerospace Engineer, Los Angeles ACO Branch, FAA, 3960 Paramount Blvd., Lakewood, CA 90712-4137; phone: 562-627-5246; fax: 562-627-5210; email: joseph.costa@faa.gov.

(l) Material Incorporated by Reference

None.

Issued in Burlington, Massachusetts, on October 23, 2018.

Karen M. Grant,
Acting Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.

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