



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2016-9450; Product Identifier 2016-NE-25-AD]

RIN 2120-AA64

Airworthiness Directives; Honeywell International Inc. Turboprop and Turboshaft Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for certain Honeywell International Inc. TPE331 turboprop and TSE331 turboshaft engines. This proposed AD was prompted by recent reports of failures of the direct drive fuel control gears and bearings in the hydraulic torque sensor gear assembly, part number (P/N) 3101726-3. This proposed AD would require initial and repetitive engine oil filter sampling and analysis of the affected engines. This proposed AD would also require inspection of hydraulic torque sensor gear assemblies that do not meet oil filter inspection requirements. This proposed AD would further require improved component overhaul procedures that would remove from service, by attrition, certain P/N hydraulic torque sensor gear assemblies. We are proposing this AD to correct the unsafe condition on these products.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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 <http://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 NPRM, 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, Policy and Innovation Division, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

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-2016-9450; 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 proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Joseph Costa, Aerospace Engineer, FAA, Los Angeles ACO Branch, Compliance and Airworthiness Division, 3960 Paramount Blvd., Lakewood, CA 90712-4137; phone: 562-627-5246; fax: 562-627-5210; email: joseph.costa@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this NPRM. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2016-9450; Directorate Identifier 2016-NE-25-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. We will consider all comments received by the closing date and may amend this NPRM because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this NPRM.

Discussion

We received reports of failures of the direct drive fuel control gears and bearings in the hydraulic torque sensor gear assembly, P/N 3101726-3. These failures are similar to previous failures in hydraulic torque sensor gear assemblies, P/Ns 3101726-1 and 3101726-2, that resulted in in-flight shutdowns and accidents in single and twin-engine airplanes.

After recent failures of the hydraulic torque sensor gear assembly, P/N 3101726-3, installed in six engines, we re-performed oil filter analyses on samples taken prior to these failures. We found the wear metals, including, but not limited to, M50 steel platelets, in the engine oil filter samples. The FAA has found that the oil filter analysis for wear metals provides an effective means of identifying premature wear of the components in the hydraulic torque sensor gear assembly.

This proposed AD would require initial and repetitive oil filter analysis for wear metals from the hydraulic torque sensor gear assembly. This AD also requires the use of later revisions of the hydraulic torque sensor gear assembly component overhaul manuals that provide improved maintenance instructions and removes from service, by attrition, hydraulic torque sensor gear assemblies, P/N 3101726-1 and certain P/N 3101726-2 of a pre-Series 9 configuration. This condition, if not corrected, could result in failure of the hydraulic torque sensor gear assembly, in-flight shutdown, and reduced control of the airplane.

Related Service Information under 1 CFR Part 51

Honeywell has issued Honeywell Service Information Letter (SIL) P331-97, Revision 11, dated July 23, 2008. The SIL describes procedures for conducting the spectrometric oil and filter analysis program to sample and analyze metal particles in the engine lubricating system. 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.

Other Related Service Information

We reviewed the improved procedures and limitations in the Honeywell Torque Sensor Gear Assembly Overhaul Manual with Illustrated Parts List, 72-00-17, Revision 10, dated October 31, 2013, for the TPE331 and TSE331 torque sensor gear assemblies. We also reviewed Honeywell's TPE331 Line Maintenance Training Manual which provides guidance for obtaining oil filter samples. In addition, we reviewed Honeywell Service Bulletins (SBs) TPE331-72-0402, Revision 6, dated November 26, 1997; TPE331-72-0403, Revision 5, dated January 20, 1989; TPE331-72-0404, Revision 8, dated September 13, 2016; TPE331-72-0823, Revision 3, dated September 13, 1996; TSE331-72-5003, Revision 3, dated January 20, 1989; and TPE331-72-0180, Revision

36, dated April 7, 2016. The SBs address the inspection intervals for the oil and filter analysis for the affected TPE331 and TSE331 engines.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD requires initial and repetitive engine oil filter analysis of the affected TPE331 and TSE331 engines. This proposed AD also requires inspection of affected hydraulic torque sensor gear assemblies, and replacement or overhaul of those torque sensor gear assemblies that do not meet inspection requirements. This proposed AD restricts the use of earlier versions of the hydraulic sensor gear component overhaul manual.

Differences Between this Proposed AD and the Service Information

Honeywell service information does not recommend oil filter sampling and analysis and hydraulic torque sensor gear assembly inspection within specified times for applicable engines. Because of recent failures, this proposed AD defines specific time requirements for performing engine oil filter sampling and analysis for all applicable TPE331 and TSE331 engines and, if necessary, hydraulic torque sensor gear assembly inspections. This proposed AD would require the oil filter sample analysis, which is only part of Honeywell's recommended spectrometric oil and oil filter analysis program.

Costs of Compliance

We estimate that this proposed AD affects 3,831 engines installed on airplanes of U.S. registry. We estimate the following costs to comply with this proposed AD:

We estimate that 3,831 engines will require a records review to determine if they have an affected hydraulic torque sensor gear assembly installed.

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Records review	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$325,635

We estimate that 2,542 engines operating under Parts 121 or 135 and 544 engines operating under Part 91 will be required to perform oil filter sampling and analysis.

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Oil filter sampling and analysis: Part 91 operators	4 work-hours X \$85 per hour = \$340	\$844	\$1184	\$644,096 per year
Oil filter sampling and analysis: Part 121 and 135 operators	1 work-hour X \$85 per hour = \$85	\$211	\$296	\$752,432 per year

We estimate that 242 engines will require that the hydraulic torque sensor gear assembly be overhauled during the first year of inspection.

Estimated Overhaul costs

Action	Labor cost	Parts cost	Cost per product
Replace or overhaul hydraulic torque sensor gear assembly	10 work-hours X \$85 per hour = \$850	\$10,000	\$10,850

We estimate that 217 engines will require hydraulic torque sensor gear assembly inspection after an unacceptable oil filter analysis during the first year of inspection.

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Inspect and reassemble hydraulic torque sensor gear assembly	5 work-hours X \$85 per hour = \$425	\$3,000	\$3,425

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 appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the 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.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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):

Honeywell International Inc. (Type Certificate previously held by AlliedSignal, Garrett Engine Division; Garrett Turbine Engine Company; and AiResearch Manufacturing Company of Arizona): Docket No. FAA-2016-9450; Product Identifier 2016-NE-25-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Honeywell International Inc. (Honeywell) TPE331-1, -2, -2UA, -3U, -3UW, -5, -5B, -6, -6A, -8, -10, -10AV, -10N, -10P, -10R, -10T, -10U, -10UA, -10UF, -10UR model turboprop and TSE331-3U turboshaft engines with hydraulic torque sensor gear assemblies, part numbers (P/Ns) 3101726-1, -2, or -3, installed.

(d) Subject

Joint Aircraft System Component (JASC) Code 7210, Turbine Engine Reduction Gear.

(e) Unsafe Condition

This AD was prompted by recent reports of failures of the direct drive fuel control gears and bearings in the hydraulic torque sensor gear assembly, P/N 3101726-3. We are issuing this AD to prevent failure of the hydraulic torque sensor gear assembly, in-flight shutdown, and reduced control of the airplane.

(f) Compliance

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

(g) Oil Filter Sampling and Analysis

(1) Obtain an initial engine oil filter sample of the affected engines within 150 hours time in service after the effective date of this AD. Guidance for obtaining oil filter samples can be found in Honeywell's engine training manuals; for example, see the TPE331 Line Maintenance Training Manual.

(2) Submit engine oil filter sample within 3 days of sampling to an ISO/IEC 17025-accredited laboratory capable of performing analysis using ASTM D5185, Standard Test Method for Multielement Determination of Used and Unused Lubricating Oils and Base Oils by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). A list of Honeywell-authorized laboratories capable of performing this analysis can be found in paragraph 1.D.(10) of Honeywell Service Information Letter (SIL) P331-97, Revision 11, dated July 23, 2008.

(3) Perform an oil filter analysis for wear metals and evaluate filter contents using paragraphs 1.D.(4) and (5) of Honeywell SIL P331-97, Revision 11, dated July 23, 2008. Guidelines for interpreting analysis results can be found in paragraph (8) of Honeywell SIL P331-97.

(4) For those engines where the oil filter analysis indicates the need for an inspection or resample, as specified in Figures 1, 2 or 3 of the Honeywell SIL P331-97, Revision 11, dated July 23, 2008, accomplish the following:

(i) If Figures 1, 2, or 3 indicate an inspection is required, within 5 days, inspect the torque sensor gear assembly using paragraph (g)(5) of this AD.

(ii) If Figures 1, 2, or 3 indicate a resample is required, perform a repeat oil filter sample and analysis, within 25 hours time in service from the previous sample, to evaluate for wear metals in accordance with paragraphs (g)(1), (2) and (3) of this AD.

(A) If the resample indicates a second resample or inspection is required, within 5 days, inspect the hydraulic torque sensor gear assembly using paragraph (g)(5) of this AD.

(B) Reserved.

(5) Inspect the hydraulic torque sensor gear assembly using the following steps:

(i) Remove bearings, P/Ns 358893-1, 3103035-1, 3103585-1 or 70100168-1, from the assembled spur gear and fuel control drive gearshaft and inspect or replace. Guidance

for performing the inspection can be found in Section 70-00-00, Standard Practices of the applicable TPE331 engine maintenance manual. For example, see paragraph 5., “Bearing Inspection,” on pages 11-12 of Honeywell Maintenance Manual 70-00-00, TPE331-10 (Report No. 72-00-27), dated February 29, 2000.

(ii) Visually inspect the gearshaft teeth for scoring, pitting, chipping, metal deposits or corner breakage. Visual defects on gear teeth are acceptable if defects cannot be felt using a 0.031 inch diameter stylus. No corner breakage is allowed.

(iii) For any hydraulic torque sensor gear assembly that fails the inspection required by paragraph (g)(5) of this AD, remove the affected hydraulic torque sensor gear assembly and, before further flight, replace with a part eligible for installation.

(6) Thereafter, repeat the steps identified in paragraphs (g)(1) through (5) of this AD every additional 150 hours time in service after last oil filter sampling.

(h) Hydraulic Torque Sensor Gear Assembly Overhaul

After the effective date of this AD, do not use the Honeywell Torque Sensor Gear Assembly Overhaul Manual with Illustrated Parts List, 72-00-17, Revision No. 9, dated, July 20, 1992, or earlier versions, to overhaul TPE331 or TSE331 hydraulic torque sensor gear assemblies, P/Ns 3101726-1, -2, or -3.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, FAA, Los Angeles ACO Branch, Compliance and Airworthiness Division, 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 Los Angeles ACO Branch, send it to the attention of the person identified in paragraph (j)(1) of this AD.

(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

(1) For more information about this AD, contact Joseph Costa, Aerospace Engineer, FAA, Los Angeles ACO Branch, Compliance and Airworthiness Division, 3960 Paramount Blvd., Lakewood, CA 90712-4137; phone: 562-627-5246; fax: 562-627-5210; email: joseph.costa@faa.gov.

(2) For service information identified in this proposed AD, contact Honeywell International Inc., 111 S 34th Street, Phoenix, AZ 85034-2802; phone: 800-601-3099; Internet: <https://myaerospace.honeywell.com/wps/portal>.

(3) You may view this service information at the FAA, Engine and Propeller Standards Branch, Policy and Innovation Division, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Issued in Burlington, Massachusetts, on September 7, 2017.

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

[FR Doc. 2017-19314 Filed: 9/12/2017 8:45 am; Publication Date: 9/13/2017]