

EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

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DATE: APRIL 10, 2009

AD #: 2009-08-51

This emergency airworthiness directive (AD) 2009-08-51 is sent to all owners and operators of Rolls-Royce Corporation (RRC) AE 3007A series turbofan engines.

Background

On September 8, 2008, we issued emergency AD 2008-19-51, that applied to RRC AE 3007A series turbofan engines. That AD required performing initial and repetitive eddy current inspections (ECIs) on high-pressure turbine (HPT) stage 2 wheels. That AD resulted from reports of HPT stage 2 wheels that had cracks in the bores of the wheels.

We superseded AD 2008-19-51 with AD 2008-26-06 (73 FR 78927, December 24, 2008), which revises the compliance schedule for the initial inspection and clarifies the applicability.

This emergency AD results from additional reports of cracks in the HPT stage 2 wheels identified from the required inspections. A revised risk assessment that includes these additional reports indicates we need to require a higher inspection rate. This emergency AD also addresses a group of low utilization engines above 16,350 CSN that might not yet have been inspected. This condition, if not corrected, could result in a possible uncontained failure of the HPT stage 2 wheel and damage to the airplane.

Explanation of Relevant Service Information

We have reviewed RRC Alert Service Bulletin (ASB) AE 3007A-A-72-367, Revision 1, dated April 7, 2009, that describes procedures for ECI of the HPT stage 2 wheel on AE 3007A series turbofan engines and RRC SB AE 3007A-72-368, Revision 1, dated April 6, 2009 that describes the procedures for surface wave ultrasonic test (SWUT) inspection of the HPT stage 2 wheel on AE 3007A series turbofan engines.

FAA's Determination and Requirements of the Rule

We have identified an unsafe condition that is likely to exist or develop on other AE 3007A series turbofan engines. This AD requires performing an ECI or SWUT inspection on the HPT stage 2 wheels for cracks. You must use the service information described previously to perform these actions.

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.

Determination of Rule's Effective Date

We are issuing this AD under 49 U.S.C. Section 44701 according to the authority delegated to me by the Administrator, and it is effective immediately upon receipt.

2009-08-51 **Rolls-Royce Corporation (RRC) (Formerly Allison Engine Company):** Directorate Identifier 2008-NE-29-AD.

Effective Date

(a) Emergency Airworthiness Directive (AD) 2009-08-51, issued on April 10, 2009, is effective upon receipt.

Affected ADs

(b) This AD supersedes AD 2008-26-06.

Applicability

(c) This AD applies to RRC AE 3007A series turbofan engines with HPT stage 2 wheels, part number (P/N) 23065892, 23069116, 23069438, 23069592, 23074462, 23074644, 23075345, 23084520, or 23084781, installed. These engines are installed on, but not limited to, Empresa Brasileira de Aeronautica S. A. (EMBRAER) EMB-135 and EMB-145 airplanes.

Unsafe Condition

(d) This AD results from additional reports of cracks in the HPT stage 2 wheels identified from the required inspections. A revised risk assessment that includes these additional reports indicates we need to require a higher inspection rate. This condition, if not corrected, could result in a possible uncontained failure of the HPT stage 2 wheel, and damage to the airplane.

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.

Corrective Action

Eddy Current Inspection or Surface Wave Ultrasonic Test Inspection

(f) Perform an eddy current inspection (ECI) or surface wave ultrasonic test (SWUT) inspection on each affected wheel by the cycle limit specified in Table 1 of this AD. Use paragraphs 2.A. through 2.C.(4) of RRC Alert Service Bulletin (ASB) AE 3007A-A-72-367, Revision 1, dated April 7, 2009, or use paragraphs 2.A through 2.M.(8) of RRC Service Bulletin (SB) AE 3007A-72-368, Revision 1, dated April 6, 2009, to perform the inspections.

Table 1 – Compliance Times for ECI or SWUT Inspection of the HPT Stage 2 Wheels by Cycles-Since-New (CSN)

For HPT stage 2 wheels with CSN on the effective date of this AD:	Remove or inspect:
17,500 or more	Before the next flight.
15,560 to 17,499	Within 75 cycles-in-service (CIS).
15,000 to 15,559	Within 150 CIS.
14,700 to 14,999	Within 200 CIS.
14,000 to 14,699	Within 250 CIS.

13,580 to 13,999	Within 450 CIS.
12,460 to 13,579	Within 600 CIS.

Installation Prohibition

(g) After the effective date of this AD, don't return to service, any HPT stage 2 wheel that was installed in any RRC AE 3007A series turbofan engine removed from service as a result of paragraph (f) unless the HPT stage 2 wheel has passed an inspection specified in RRC ASB AE 3007A-A-72-367, Revision 1, dated April 7, 2009 or RRC SB AE 3007A-72-368, Revision 1, dated April 6, 2009.

Removal from Service

(h) After the effective date of this AD, remove from service any HPT stage 2 wheel covered by this AD that has accumulated 22,500 CSN.

Installation Prohibition

(i) After the effective date of this AD, don't install any HPT stage 2 wheel that has 22,500 or more CSN.

Credit for Previous Inspections

(j) HPT stage 2 wheels already inspected and passed using RRC ASB AE 3007A-A-72-367, Revision 1, dated April 7, 2009, or earlier issue; or RRC SB AE 3007A-72-368, Revision 1, dated April 6, 2009, or earlier issue, meet the requirements for the initial inspections specified in paragraph (f) of this AD.

Alternative Methods of Compliance

(k) The Manager, Chicago Aircraft 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.

Special Flight Permits

(l) Under 14 CFR part 39.23, we are limiting the special flight permits for this AD by restricting the flight to essential flight crew only.

Related Information

(m) Contact Kyri Zaroyiannis, Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 E. Devon Ave., Des Plaines, IL 60018; e-mail: kyri.zaroyiannis@faa.gov; telephone (847) 294-7836; fax (847) 294-7834, for more information about this AD.

Issued in Burlington, Massachusetts, on April 10, 2009.

Peter A. White,
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Aircraft Certification Service.