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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-26966; Directorate Identifier 99-NE-01-AD; Amendment 39-15271; AD 2007-24-05]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce Corporation AE 3007A and AE 3007C Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is superseding an existing airworthiness directive (AD) for Rolls-Royce Corporation (RRC) AE 3007A and AE 3007C series turbofan engines. That AD currently prohibits any flight following a ground engine start where the engine oil temperature is below 32 °F (0 °C), unless certain preflight operational procedures are followed. This AD also requires those actions and would also require a terminating action. This AD results from design improvements to components in the accessory gearbox air turbine starter mounting pad. We are issuing this AD to prevent an in-flight engine shutdown due to loss of engine oil from the engine accessory gearbox starter pad shaft seal drain and possible loss of the airplane.

DATES: This AD becomes effective January 2, 2008. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of January 2, 2008.

ADDRESSES: You can get the service information identified in this AD from Rolls-Royce Corporation, P.O. Box 420, Indianapolis, IN 46206; telephone (317) 230-3774; fax (317) 230-8084; e-mail: indy.pubs.services@rolls-royce.com.

The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

FOR FURTHER INFORMATION CONTACT: Kyri Zaroyiannis, Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 E. Devon Ave., Des Plaines, IL 60018; telephone (847) 294-7836; fax (847) 294-7834.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 by superseding AD 99-02-51, Amendment 39-11108 (64 FR 16339, April 5, 1999), with a proposed AD. The proposed AD applies to RRC AE 3007A and AE 3007C series turbofan engines. We published the proposed AD in the Federal Register on March 29, 2007 (72 FR 14724). That action proposed to:

- Prohibit before further flight, any flight following a ground engine start where the engine oil temperature is below 32 °F (0 °C), unless certain preflight operational procedures are followed to ensure that there is no excessive loss of oil from leakage at the air turbine starter shaft; and
- Require terminating action to the prohibition requirements of the existing AD, by removing from service certain seal P/Ns from the accessory gearbox air turbine starter mounting pad and installing an improved seal; and
- Require removing certain P/N drain caps, drain adapters, and orifice inserts, and installing an open adapter on the starter pad drain.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office 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 street address for the Docket Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Continue To Allow Existing Approved AMOCs

Four commenters, ExpressJet Inc., RRC, Embraer, and Cessna Aircraft Company state that alternative methods of compliance (AMOCs) currently approved for AD 99-02-51 should be allowed while this AD is not incorporated or until September 30, 2009. Paragraph (l) of the proposed rule states that AMOCs approved for AD 99-02-51 are not approved for the new rule. Until all engines are modified as required by paragraph (g) of the proposed rule, an aircraft may encounter 32 °F temperature or lower and it seems arbitrary to disallow the use of data that has already been approved and in use for over two years. Operators would have the burden of requesting the same AMOC for the superseding AD. Allowing the currently approved AMOCs would bridge the time gap to the Terminating Action compliance date.

We agree. We changed Alternative Methods of Compliance (AMOC), paragraph (l) from "AMOCs approved for AD 99-02-51 are not approved as AMOCs for this AD." to "AMOCs currently approved for AD 99-02-51 will remain in effect until the terminating action date for this AD, September 30, 2009. After that date, these AMOCs will expire and not be approved as AMOCs for this AD." This change will avoid confusion in the field and the AMOCs are still appropriate for the period before the mandatory terminating action date. These AMOCs will expire permanently on September 30, 2009, after which the only allowable configuration option is the new seal, a compatible starter and an open seal drain.

Request To Provide a More Accurate Description of the Original Problem

Two commenters, RRC and Embraer, ask us to include a more accurate description of the original problem. They state that the nomenclature "Starter shaft seal" may cause confusion with the seal of the pneumatic Air Turbine Starter (ATS). We agree. We changed Unsafe Condition, paragraph (d) from "* * * due to loss of engine oil from the starter shaft seal" to "* * * due to loss of engine oil from the engine accessory gearbox starter pad shaft seal drain and possible loss of the airplane."

Request To Clarify the Regulatory Text

Rolls-Royce Corporation asks us to make the following changes for clarity:

- Prohibited Flights, paragraph (f)(2): Change "Oil consumption greater than 0.32 quart per hour (303 cc per hour) * * *" to "Oil consumption greater than 0.32 quart per hour, or 300 cc per hour, * * *" Although it may not be a completely accurate quart-to-cc conversion, 300 cc is the value listed in all RRC manuals.
- Terminating Action, paragraph (g): Change "* * * do the following, as applicable to your engine model and configuration." to "* * * do the following, as applicable to your configuration." Engine model applicability is already established so it can be deleted here to make a simpler statement.
- Terminating Action, paragraph (g)(1): Change "Remove seal part number (P/N) * * *" to "Remove seal and related component part numbers (P/Ns) * * *" The P/Ns listed are not only currently approved seals but also adjacent hardware including a wave spring and spacer used in one of the approved configurations. This change accounts for all current hardware, not just the seals.
- Terminating Action, paragraph (g)(2): Change "Install a new seal, P/N AS3209-026 * * *" to "Install a new O-ring, P/N AS3209-026 or M83248/1-026* * *" RRC lists both of these P/Ns as acceptable alternatives in the engine parts list. Also, the correct nomenclature is O-ring, not seal.
- Prohibition of Seals, paragraph (i): Change "Once the terminating action in this AD is performed on an engine, seal P/Ns * * *" to "Once the terminating action in this AD is performed on an engine, seal and related component P/Ns * * *" This change accounts for all current hardware, not just the seals.

We agree with the suggestions and incorporated them into the applicable regulatory text of the AD.

Request to Not Implement the AD

Rolls-Royce North America, Inc., c/o American Eagle Airlines, asks us to not implement the AD, or at least extend the required completion date for the terminating action by at least 6-12 months. They believe that many AE3007A and AE3007C engines are not yet compliant with RRC Service Bulletin AE 3007A-72-321 and or SB AE 3007A-72-330. They state that it would be too much of a burden to modify all of the engines currently out in the field to be compliant with the proposed AD by September 30, 2009. A drastic maintenance campaign such as this would adversely affect the AE3007A and C fleet both in terms of costs and operations to drastic proportions.

We don't agree. We have determined that we can better assure long-term continued operational safety by design changes that remove the source of the problem, rather than by repetitive inspections or other special procedures. Based on the availability of the required parts and the support from the vast majority of operators and their ability to comply within the original specified date, we believe this is a reasonable time period and will maintain the final compliance date of September 30, 2009.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 1,868 RRC AE 3007A and AE 3007C series turbofan engines installed on aircraft of U.S. registry. We also estimate that it will take about 4 work-hours per engine to perform the proposed terminating action, and that the average labor rate is \$80 per work-hour. Required parts will cost about \$2,917 per engine. Based on these figures, if all engines incorporated the terminating action, we estimate the total cost of this AD to U.S. operators to be \$6,046,100.

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

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); and
- (3) 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.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

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 Federal Aviation Administration 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 Amendment 39-11108 64 FR 16339 April 5, 1999, and by adding a new airworthiness directive, Amendment 39-15271, to read as follows:



2007-24-05 Rolls-Royce Corporation (Formerly Allison Engine Company, Inc.): Amendment 39-15271. Docket No. FAA-2007-26966; Directorate Identifier 99-NE-01-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective January 2, 2008.

Affected ADs

(b) This AD supersedes AD 99-02-51, Amendment 39-11108.

Applicability

(c) This AD applies to Rolls-Royce Corporation (RRC) (formerly Allison Engine Company, Inc.) AE 3007A and AE 3007C series turbofan engines. These engines are installed on, but not limited to, Cessna Aircraft Company 750 series, and Empresa Brasileira de Aeronautica S. A. (EMBRAER) EMB-135 and EMB-145 series airplanes.

Unsafe Condition

(d) This AD results from design improvements to components in the accessory gearbox air turbine starter mounting pad. We are issuing this AD to prevent an in-flight engine shutdown due to loss of engine oil from the starter shaft seal and possible loss of 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.

Prohibited Flights

(f) All flights after ground engine starts at engine oil temperatures below 32 °F (0 °C), are prohibited except as follows:

(1) If the engine oil temperature has dropped below 32 °F (0 °C), before flight, perform a high-power leak check on each engine (at least three minutes at takeoff power).

(2) Oil consumption greater than 0.32 quart per hour, or 300 cc per hour, is not permitted.

Instructions for performing the high-power leak check for the AE 3007A series engines can be found in the Rolls-Royce AE 3007A Series Maintenance Manual, TASK 72-00-00-700-801, SUBTASK 72-00-00-790-002. Leak check limits for the AE 3007A series engines can be found in the Rolls-Royce AE 3007A Series Maintenance Manual, TASK 71-00-00-200-801.

(3) Instructions for performing the high-power leak check for the AE 3007C series engines (including leak check limits) can be found in the Rolls-Royce AE 3007C Series Maintenance Manual, TASK 72-00-00-700-801, SUBTASK 72-00-00-790-002.

Terminating Action

(g) No later than September 30, 2009, as terminating action to the requirements in paragraph (f) through (f)(3) of this AD, do the following, as applicable to your engine configuration:

(1) Remove seal and related component, part numbers (P/Ns) 42520-71, 42520-196-X, 99004-1-6, 42520-75, or 42520-167, from the accessory gearbox (AGB) air turbine starter mounting pad.

(2) Install a new O-ring, P/N AS3209-026, M83248/1-026 or other serviceable part, to the shaft of the starter mounting pad.

(3) Install a new bearing locknut, P/N 42520-170, or other serviceable part, and an AGB air turbine starter mounting pad mechanical seal, P/N 42520-192, or other serviceable part.

(4) Use paragraphs 2. through 2.G. of the Accomplishment Instructions of RRC Service Bulletin (SB) No. AE 3007A-72-321/AE 3007C-72-250, Revision 2, dated November 12, 2007, to do the removals and installations.

(5) For AE 3007A series engines, remove the drain cap or starter drain adapter. Use paragraphs 2. through 2.C.(4)(c) of the Accomplishment Instructions of RRC SB No. AE 3007A-72-274, Revision 1, dated November 12, 2007 to do the removal.

(6) For AE 3007A series engines, install an open starter drain adapter. Use paragraphs 2. through 2.C.(2) of the Accomplishment Instructions of RRC SB No. AE 3007A-72-330, Revision 1, dated November 12, 2007 to do the installation.

(7) For AE 3007C series engines, install an open starter drain adapter. Use paragraphs 2. through 2.E.(2) of the Accomplishment Instructions of RRC SB No. AE 3007C-72-223, Revision 1, dated November 12, 2007 to do the installation.

Definition

(h) A serviceable part is any FAA-approved part not being removed from service, or not otherwise specifically addressed by this AD action.

Prohibition of Seals

(i) Do not install seal and related component P/Ns 42520-71, 42520-196-X, 99004-1-6, 42520-75, and 42520-167, on the air starter mounting pad after the terminating action in this AD is performed.

Previous Credit

(j) Previous credit is allowed for the terminating action in paragraphs (g)(1) through (g)(7) of this AD, that was done before the effective date of this AD using the Accomplishment Instructions of the SBs listed in the following Table 1:

Table 1 – SBs Allowing Previous Credit

For AE 3007A Series Engines:
(1) Engine - Accessory Drive Gearbox Assembly - New Starter Shaft Seal; RRC SB No. AE 3007A-72-321 / AE 3007C-72-250, Revision 1, dated November 7, 2005; and
(2) Engine - Accessory Gearbox Starter Pad Drain - Remove The Drain Cap or Starter Drain Adapter; RRC SB No. AE 3007A-72-274, dated January 19, 2006; and

(3) Engine - Accessory Gearbox Starter Pad Drain - Install the Open Starter Drain Adapter (23083402 or 23077526); RRC SB No. AE 3007A-72-330, dated January 19, 2006.

For AE 3007C Series Engines:

(4) Engine - Accessory Drive Gearbox Assembly - New Starter Shaft Seal; RRC SB No. AE 3007A-72-321 / AE 3007C-72-250, Revision 1, dated November 7, 2005; and

(5) Engine - Accessory Gearbox Starter Pad Drain - Install the Open Starter Drain Adapter (23077526 or 23083403); RRC SB No. AE 3007C-72-223, dated January 19, 2006.

Alternative Methods of Compliance (AMOC)

(k) The Manager, Chicago Aircraft Certification Office, has the authority to approve AMOCs for this AD if requested using the procedures found in 14 CFR 39.19.

(l) AMOCs currently approved for AD 99-02-51 will remain in effect until the terminating action date for this AD, September 30, 2009. After that date, these AMOCs will expire and will not be approved as AMOCs for this AD.

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.

Material Incorporated by Reference

(n) You must use the service information specified in Table 2 to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in Table 2 of this AD in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Rolls-Royce Corporation, P.O. Box 420, Indianapolis, IN 46206; telephone (317) 230-3774; fax (317) 230-8084; e-mail: indy.pubs.services@rolls-royce.com, for a copy of this service information. You may review copies at the FAA, New England Region, 12 New England Executive Park, Burlington, MA; or 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>.

Table 2 – Incorporation by Reference

Service Bulletin No.	Page	Revision	Date
AE 3007A-72-274	ALL	1	November 12, 2007
Total Pages – 6			
AE 3007A-72-321 AE 3007C-72-250	ALL	2	November 12, 2007
Total Pages – 13			

AE 3007A-72-330	ALL	1	November 12, 2007
Total Pages - 6			

AE 3007C-72-223	ALL	1	November 12, 2007
Total Pages - 7			

Issued in Burlington, Massachusetts, on November 14, 2007.

Peter A. White,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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