

**DEPARTMENT OF TRANSPORTATION****Federal Aviation Administration****14 CFR Part 39**

[Docket No. FAA-2009-0082; Directorate Identifier 2008-NE-42-AD; Amendment 39-15914; AD 2009-11-04]

RIN 2120-AA64

**Airworthiness Directives; Rolls-Royce Corporation AE 2100D2, AE 2100D2A, AE 2100D3, and AE 2100J Turboprop Engines**

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

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

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for Rolls-Royce Corporation (RRC) AE 2100D2, AE 2100D2A, AE 2100D3, and AE 2100J turboprop engines with certain propeller gearbox (PGB) shaft-and-carrier assemblies installed. These engines are U.S. type-certificated but as of the effective date of this AD are only installed on military airplanes. This AD requires monitoring a certain population of PGB shaft-and-carrier assemblies for vibration during flight, and borescope-inspecting the PGB shaft for cracks if vibration is experienced. This AD would also require removing the affected population of PGB shaft-and-carrier assemblies from service and installing serviceable PGB shaft-and-carrier assemblies. This AD results from a report of a crack found in the forward cone of a PGB shaft in an RRC AE 2100D3 turboprop engine that was removed from service due to high vibration. We are issuing this AD to prevent separation of the propeller from the airplane, which could result in injury, and damage to the airplane.

**DATES:** This AD becomes effective June 26, 2009. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of June 26, 2009.

We must receive any comments on this AD by August 10, 2009.

**ADDRESSES:** Use one of the following addresses to comment on this AD:

- *Federal eRulemaking Portal:* Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.

- *Mail:* U.S. Docket Management Facility, Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5

p.m., Monday through Friday, except Federal holidays.

- *Fax:* (202) 493-2251.

**FOR FURTHER INFORMATION CONTACT:**

Michael Downs, Aerospace Engineer, Chicago Aircraft Certification Office, FAA, Small Airplane Directorate, 2300 E. Devon Ave., Des Plaines, IL 60018; *e-mail:* [michael.downs@faa.gov](mailto:michael.downs@faa.gov); telephone (847) 294-7870; fax (847) 294-7834.

Contact Rolls-Royce Corporation, P.O. Box 420, Indianapolis, IN 46206; telephone (317) 230-3774; fax (317) 230-6084; *e-mail:*

[indy.pubs.services@rolls-royce.com](mailto:indy.pubs.services@rolls-royce.com) for the service information identified in this AD.

**SUPPLEMENTARY INFORMATION:** In March of 2007, the Chicago Aircraft Certification Office received a report of a crack found in the forward cone of a PGB shaft. The PGB shaft was installed in an RRC AE 2100D3 turboprop engine that was removed from service due to high vibration. RRC investigated and determined that a certain population of PGB shaft-and-carrier assemblies could fail due to cracks developing in the forward shaft cone. The affected population, manufactured before June 2005, could have a high stress concentration in the bottom of a certain drilled hole, due to improper surface finish. RRC issued alert service bulletins to borescope-inspect the affected population of PGB shafts for cracks. Based on the inspection results, we determined that AD action is necessary. These engines are U.S. type-certificated, but as of the effective date of this AD are only installed on military airplanes. Failure to inspect the PGB shaft forward cone for cracks could result in separation of the propeller from the airplane, which could result in injury, and damage to the airplane.

**Relevant Service Information**

We have reviewed and approved the technical contents of RRC Service Bulletin (SB) No. AE 2100D2-A-72-073, Revision 1, dated February 18, 2008, RRC SB No. AE 2100D3-A-72-256, Revision 1, dated February 18, 2008, and RRC SB No. AE 2100J-A-72-071, Revision 1, dated February 18, 2008. Those SBs list the affected population of PGB shaft-and-carrier assemblies by serial number (SN).

**FAA's Determination and Requirements of This AD**

Although no airplanes that are registered in the United States use these turboprop engines, the possibility exists that the engines could be used on airplanes that are registered in the

United States in the future. The unsafe condition described previously is likely to exist or develop on other engines of the same type design. We are issuing this AD to prevent separation of the propeller from the airplane, which could result in injury, and damage to the airplane. This AD requires:

- Monitoring the affected population of PGB shaft-and-carrier assemblies for vibration during flight;

- Borescope-inspecting the forward cone of the PGB shaft for cracking if vibration is experienced; and

- Removing the affected PGB shaft-and-carrier assembly at the next shop visit for PGB inspection or repair. Replacing the affected PGB shaft-and-carrier assembly with a shaft and carrier assembly that is eligible for installation, is terminating action for the vibration monitoring required by this AD.

You must use the service information described previously to determine SN applicability of PGB shaft-and-carrier assemblies.

**FAA's Determination of the Effective Date**

Since there are no domestic operators of these RRC AE 2100D2, AE 2100D2A, AE 2100D3, and AE 2100J turboprop engines as of the effective date of this AD, notice and opportunity for public comment before issuing this AD are unnecessary. A situation exists that allows the immediate adoption of this regulation.

**Comments Invited**

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment; however, we invite you to send us any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under **ADDRESSES**. Include "AD Docket No. FAA-2009-0082; Directorate Identifier 2008-NE-42-AD" in the subject line of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify it.

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 with FAA personnel concerning this AD. Using the search function of the Web site, anyone can find and read the comments in any of our dockets, including, if provided, the name of the individual who sent the comment (or signed the comment on behalf of an association, business, labor

union, etc.). You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78).

**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 the same as the Mail address provided in the **ADDRESSES** section. Comments will be available in the AD docket shortly after receipt.

**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 the 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**

- Under the authority delegated to me by the Administrator, the Federal

Aviation Administration amends part 39 of the Federal Aviation Regulations (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:

**2009-11-04 Rolls-Royce Corporation (formerly Allison Engine Company):** Amendment 39-15914. Docket No. FAA-2009-0082; Directorate Identifier 2008-NE-42-AD.

**Effective Date**

- (a) This airworthiness directive (AD) becomes effective June 26, 2009.

**Affected ADs**

- (b) None.

**Applicability**

(c) This AD applies to Rolls-Royce Corporation (RRC) AE 2100D2, AE 2100D2A, AE 2100D3, and AE 2100J turboprop engines with certain serial number (SN) propeller gearbox (PGB) shaft-and-carrier assemblies installed. These engines are U.S. type-certificated but as of the effective date of this AD are only installed on military airplanes. For the SNs affected, see the Effectivity section of the applicable service bulletin in Table 1 of this AD.

**TABLE 1—APPLICABLE LISTS OF AFFECTED PGB SHAFT-AND-CARRIER ASSEMBLIES**

For engine model:	Reference service bulletin:
AE 2100D2, AE 2100D2A .....	AE 2100D2-A-72-073, Revision 1, dated February 18, 2008.
AE 2100D3 .....	AE 2100D3-A-72-256, Revision 1, dated February 18, 2008.
AE 2100J .....	AE 2100J-A-72-071, Revision 1, dated February 18, 2008.

These engines are U.S. type-certificated and are installed on, but not limited to, Lockheed Martin C130-J and Lockheed/Alenia C-27J military airplanes.

**Unsafe Condition**

(d) This AD results from a report of a crack found in the forward cone of a PGB shaft in an RRC AE 2100D3 turboprop engine that was removed from service due to high vibration. We are issuing this AD to prevent separation of the propeller from the airplane,

which could result in injury, 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.

**Monitoring for PGB Vibration During Flight**

(f) During flight, monitor affected engines for vibration in the PGB shaft and carrier

assemblies, using the vibration monitoring system in the cockpit.

(g) Whenever a vibration message is displayed on the airplane's Advisory Caution and Warning System, borescope-inspect the PGB shaft-and-carrier assembly for cracks, before any additional flights.

(h) If any crack is found, remove the engine from service.

(i) Guidance on borescope-inspecting, vibration monitoring, and fault isolation procedures can be found in the applicable service bulletin listed in Table 2 of this AD.

**TABLE 2—INFORMATION ON BORESCOPE-INSPECTING, VIBRATION MONITORING, AND FAULT ISOLATION PROCEDURES**

For engine model:	Reference service bulletin:
AE 2100D2, AE 2100D2A .....	AE 2100D2-A-72-074, dated April 7, 2008.
AE 2100D3 .....	AE 2100D3-A-72-258, dated April 7, 2008.

TABLE 2—INFORMATION ON BORESCOPE-INSPECTING, VIBRATION MONITORING, AND FAULT ISOLATION PROCEDURES—Continued

For engine model:	Reference service bulletin:
AE 2100J .....	AE 2100J-A-72-070, dated September 17, 2007. AE 2100J-A-72-073, dated October 11, 2007.

**Terminating Action—Removal of Affected PGB Shaft-and-Carrier Assemblies**

(j) At the next shop visit for PGB inspection or repair after the effective date of this AD, remove the affected PGB shaft-and-carrier assembly from service and install an eligible PGB shaft-and-carrier assembly.

(k) After the effective date of this AD, do not install any PGB shaft and carrier assembly in any aircraft if it was removed for cracks.

**Definition**

(l) For the purpose of this AD, a PGB shaft-and-carrier assembly is eligible for installation if it was manufactured after June 2005, or if it is P/N 23087076 or P/N 23087077.

**Alternative Methods of Compliance**

(m) 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.

**Related Information**

(n) Contact Rolls-Royce Corporation, P.O. Box 420, Indianapolis, IN 46206; telephone: (317) 230-3774; fax (317) 230-6084; e-mail: *indy.pubs.services@rolls-royce.com*, for the service information identified in this AD.

(o) Contact Michael Downs, Aerospace Engineer, Chicago Aircraft Certification Office, FAA, Small Airplane Directorate, 2300 E. Devon Ave., Des Plaines, IL 60018; e-mail: *michael.downs@faa.gov*; telephone (847) 294-7870, fax (847) 294-7834, for more information about this AD.

(p) You must use the service information specified in Table 3 of this AD to determine the SNs of PGB shaft-and-carrier assemblies affected by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in Table 3 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) 230-6084; 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 3—INCORPORATION BY REFERENCE

Service bulletin no.	Page	Revision	Date
AE 2100D2-A-72-073, Total Pages: 5 .....	All .....	1	February 18, 2008.
AE 2100D3-A-72-256, Total Pages: 16 .....	All .....	1	February 18, 2008.
AE 2100J-A-72-071, Total Pages: 4 .....	All .....	1	February 18, 2008.

Issued in Burlington, Massachusetts, on May 14, 2009.

**Peter A. White,**

*Assistant Manager, Engine and Propeller Directorate, Aircraft Certification Service.*

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**BILLING CODE 4910-13-P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

[Docket No. FAA-2009-0530; Directorate Identifier 2009-NM-079-AD; Amendment 39-15936; AD 2009-12-13]

**RIN 2120-AA64**

**Airworthiness Directives; Bombardier Model DHC-8-400 Series Airplanes**

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

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

**SUMMARY:** We are adopting a new airworthiness directive (AD) for the products listed above. This AD results

from mandatory continuing airworthiness information (MCAI) originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

There has been one case reported of failure of a shaft (tailstock) on an elevator Power Control Unit (PCU), Part Number (P/N) 390600-1007. Continued actuation of the affected PCU caused damage to the surrounding structure. \* \* \*

Each elevator surface has three PCUs, powered by separate independent hydraulic systems, and a single elevator PCU shaft failure may remain dormant. Such a dormant loss of redundancy, coupled with the potential for a failed shaft to produce collateral damage, including damage to hydraulic lines, could possibly affect the controllability of the aircraft.  
\* \* \* \* \*

This AD requires actions that are intended to address the unsafe condition described in the MCAI.  
**DATES:** This AD becomes effective June 26, 2009.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of June 26, 2009.

We must receive comments on this AD by July 13, 2009.

**ADDRESSES:** You may send comments 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:* U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**Examining the AD Docket**

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