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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2014-1049; Directorate Identifier 2013-NM-110-AD; Amendment 39-18361; AD 2016-01-02]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Bombardier, Inc. Airplanes**

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Bombardier, Inc. Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes. This AD was prompted by reports that the horizontal stabilizer trim actuator (HSTA) spur gear bolts inside the gearbox were found loose, broken, or backed out due to incorrect bending of the anti-rotation tab washer and the improper application of Loctite glue during installation. This AD requires replacing certain HSTAs with a new HSTA. This AD also requires revising the airplane flight manual (AFM) and the maintenance or inspection program, as applicable. We are issuing this AD to prevent failure of the HSTA and subsequent loss of control of the airplane.

**DATES:** This AD becomes effective February 17, 2016.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of February 17, 2016.

**ADDRESSES:** You may examine the AD docket on the Internet at <http://www.regulations.gov/#!docketDetail;D=FAA-2014-1049>; or in person at the Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC.

For service information identified in this final rule, contact Bombardier, Inc., 400 Côte Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514-855-5000; fax 514-855-7401; email [thd.crj@aero.bombardier.com](mailto:thd.crj@aero.bombardier.com); Internet <http://www.bombardier.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-1049.

**FOR FURTHER INFORMATION CONTACT:** Luke Walker, Aerospace Engineer, Airframe and Propulsion Branch, ANE-171, FAA, New York Aircraft Certification Office, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7363; fax 516-794-5531.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain Bombardier, Inc. Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes. The NPRM published in the Federal Register on January 23, 2015 (80 FR 3522).

Transport Canada Civil Aviation (TCCA), which is the aviation authority for Canada, has issued Canadian Airworthiness Directive CF-2013-14, dated June 4, 2013 (referred to after this as the Mandatory Continuing Airworthiness Information, or "the MCAI"), to correct an unsafe condition for certain Bombardier, Inc. Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes. The MCAI states:

There have been a number of reports where the HSTA spur gear bolts inside the gearbox were found loose, broken or backed out. Investigation revealed that the root cause is incorrect bending of the anti-rotation tab washer and the improper application of Loctite glue during installation.

The function of these bolts is to generate sufficient preload between the two spur gears such that the full torque is transferred by friction between the two spur gears. Loosening of the bolts would reduce the pre-load between two spur gears and decrease the torque transfer. Partial or full torque would be re-distributed to the secondary load path (Tie-Rod) in torsion. The Tie-Rod is designed to withstand axial load only in case of failure of the primary load path (ACME screw), and not torsional load. The secondary load path (Tie-Rod) is therefore considered ineffective and no longer provides protection as a failsafe design of the system. Loose bolt(s) on the HSTA spur gear combined with the failure of the primary load path, could lead to failure of the HSTA and subsequent loss of the aeroplane.

In addition, Bombardier Aerospace (BA) has introduced a modified HSTA [part number] P/N 601R92305-5 (vendor P/N 8396-4) to rectify the loose bolt problem. However, this modified HSTA, has several quality control problems which could affect safety.

This [Canadian] AD is issued to mandate the replacement of the affected HSTA(s) with the new HSTA P/N 601R92305-7 (vendor P/N 8396-5).

This AD also requires revising the AFM and maintenance or inspection program, as applicable. You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov/#!documentDetail;D=FAA-2014-1049-0002>.

### **Comments**

We gave the public the opportunity to participate in developing this AD. We have considered the comments received. The following presents the comments received on the NPRM (80 FR 3522, January 23, 2015) and the FAA's response to each comment.

## **Request To Extend the Compliance Time in Paragraph (j)(2)(iii) of the NPRM (80 FR 3522, January 23, 2015)**

SkyWest Airlines (SWA) requested that the compliance time in paragraph (j)(2)(iii) of the proposed AD (80 FR 3522, January 23, 2015) be extended to alleviate the impact on its fleet. SWA stated that currently HSTAs are replaced prior to the accumulation of 19,200 total flight hours, and in paragraph (j)(2)(iii) of the proposed AD, the replacement time is reduced to 10,000 total flight hours. SWA stated that it has 86 airplanes with HSTAs that are approaching 10,000 total flight hours. SWA is concerned that replacement HSTAs might not be available in time to comply with the requirements proposed in the NPRM.

We do not agree that the compliance time in paragraph (j)(2)(iii) of this AD should be extended. In developing an appropriate compliance time for this action, we considered not only the degree of urgency associated with addressing the subject unsafe condition, but the manufacturer's recommendation for an appropriate compliance time, and the availability of required parts. Under the provisions of paragraph (m)(1) of this AD, however, we may consider requests for adjustments to the compliance time if data are submitted to substantiate that such an adjustment would provide an acceptable level of safety. We have not changed this AD regarding this issue.

## **Request To Reduce the Compliance Time for HSTA Replacement**

Air Line Pilots Association International (ALPA) requested that the compliance time for replacement of the HSTAs be reduced to ensure that the identified safety issue is corrected within the Bombardier, Inc. CRJ fleet as soon as possible.

We do not agree with the commenter's request to reduce the compliance time. In developing an appropriate compliance time, we considered the safety implications, parts availability, and normal maintenance schedules for timely replacement of the HSTAs. In consideration of all of these factors, we determined that the compliance time, as proposed, represents an appropriate interval in which the HSTAs can be replaced in a timely manner within the fleet, while still maintaining an adequate level of safety. Most ADs, including this one, permit operators to accomplish the requirements of an AD at a time earlier than the specified compliance time; therefore, an operator may choose to replace the HSTAs before the applicable compliance times specified in paragraph (j) of this AD. If additional data are presented that would justify a shorter compliance time, we may consider further rulemaking on this issue. We have not changed this AD regarding this issue.

## **Request To Remove the Airplane Flight Manual (AFM) Revision Requirement**

ALPA also requested that once the HSTAs have been replaced the FAA re-evaluate the need for the revision to the AFM to include a first flight check of the horizontal stabilizer trim. No justification was provided for the request to omit the AFM revision.

We do not agree with the commenter's request to remove the requirement to revise the AFM. We have determined that the first flight check of the horizontal stabilizer trim is still necessary after the HSTAs have been replaced to ensure the safety of the Bombardier, Inc. Model CL-600-2B19 (Regional Jet Series 100 & 440) airplane fleet. Also, this AFM revision requirement is included in Canadian AD CF-2013-14, dated June 4, 2013, which corresponds to this final rule. We have not changed this AD regarding this issue.

## **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (80 FR 3522, January 23, 2015) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (80 FR 3522, January 23, 2015). We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

### **Related Service Information Under 1 CFR Part 51**

Bombardier has issued the following service information.

- Supplement 23, "Horizontal Stabilizer Trim Check," of Chapter 7 "Supplements," of Bombardier CL -600-2B19 Airplane Flight Manual CSP A-012, Volume 3, Revision 61, dated April 2, 2013. This service information includes procedures for revising the AFM.
- Bombardier Service Bulletin 601R-27-161, Revision A, dated January 30, 2014. This service information describes procedures for installing a HSTA.
- Bombardier CL-600-2B19, Temporary Revision 2A-56, dated June 4, 2012, to Appendix A, Certification Maintenance Requirements (CMR), of Part 2, Airworthiness Requirements, of the Bombardier CL-600-2B19 Maintenance Requirements Manual (MRM). This service information adds new CMR tasks to the Airworthiness Requirements of the MRM. These CMR tasks include an inspection, functional check, and operational check.

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.

### **Costs of Compliance**

We estimate that this AD affects 85 airplanes of U.S. registry.

We also estimate that it will take about 10 work-hours per product to comply with the basic requirements of this AD. The average labor rate is \$85 per work-hour. Required parts will cost about \$38,569 per product. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$3,350,615, or \$39,419 per product.

### **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 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);
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.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov/#!docketDetail;D=FAA-2014-1049>; 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 AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone 800-647-5527) is in the ADDRESSES section.

### **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 adding the following new airworthiness directive (AD):



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**2016-01-02 Bombardier, Inc.:** Amendment 39-18361. Docket No. FAA-2014-1049; Directorate Identifier 2013-NM-110-AD.

**(a) Effective Date**

This AD becomes effective February 17, 2016.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Bombardier, Inc. Model CL-600-2B19 (Regional Jet Series 100 & 440) airplanes, certificated in any category, serial numbers 7003 and subsequent, equipped with horizontal stabilizer trim actuator (HSTA) part numbers (P/N) 601R92305-1 (vendor P/N 8396-2), 601R92305-3 (vendor P/N 8396-3), or 601R92305-5 (vendor P/N 8396-4).

**(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight Controls.

**(e) Reason**

This AD was prompted by reports that the horizontal stabilizer trim actuator (HSTA) spur gear bolts inside the gearbox were found loose, broken, or backed out due to incorrect bending of the anti-rotation tab washer and the improper application of Loctite glue during installation. We are issuing this AD to prevent failure of the HSTA and subsequent loss of control of the airplane.

**(f) Compliance**

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

**(g) Airplane Flight Manual (AFM) Revision**

Within 30 days after the effective date of this AD, revise the Limitations section and Normal Procedures section of the AFM to include the information in Supplement 23, "Horizontal Stabilizer Trim Check," of Chapter 7 "Supplements," of Bombardier CL-600-2B19 Airplane Flight Manual CSP A-012, Volume 3, Revision 61, dated April 2, 2013.

**(h) Revision of Maintenance or Inspection Program**

Within 30 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to incorporate Task C27-40-103-04, "Operational Check (ground maintenance test) of the horizontal stabilizer trim control unit," specified in Bombardier CL-600-2B19 Temporary

Revision 2A-56, dated June 4, 2012, to Appendix A, Certification Maintenance Requirements, of Part 2, Airworthiness Requirements, of the Bombardier CL-600-2B19 Maintenance Requirements Manual (MRM). The compliance time for the initial operational check is within 500 flight hours after the effective date of this AD.

**(i) No Alternative Actions or Intervals**

After accomplishing the revision required by paragraph (h) of this AD, no alternative actions (e.g., inspections) and/or intervals may be used unless the actions and/or intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (m)(1) of this AD.

**(j) HSTA Replacement**

(1) For airplanes equipped with an HSTA having P/N 601R92305-1 (vendor P/N 8396-2) or P/N 601R92305-3 (vendor P/N 8396-3): At the earlier of the times specified in paragraphs (j)(1)(i) and (j)(1)(ii) of this AD, replace the HSTA with a new HSTA having P/N 601R92305-7 (vendor P/N 8396-5), in accordance with the Accomplishment Instructions of Bombardier Service Bulletin 601R-27-161, Revision A, dated January 30, 2014. The compliance times specified in paragraphs (j)(1)(i) and (j)(1)(ii) of this AD do not alleviate any existing life limit requirements.

(i) Within 3,700 flight hours after the effective date of this AD.

(ii) Within 27 months after the effective date of this AD.

(2) For airplanes equipped with an HSTA having P/N 601R92305-5 (vendor P/N 8396-4): At the earlier of the times specified in paragraphs (j)(2)(i), (j)(2)(ii), and (j)(2)(iii) of this AD, replace the HSTA with a new HSTA having P/N 601R92305-7 (vendor P/N 8396-5), in accordance with the Accomplishment Instructions of Bombardier Service Bulletin 601R-27-161, Revision A, dated January 30, 2014. The compliance times specified in paragraphs (j)(2)(i), (j)(2)(ii), and (j)(2)(iii) of this AD do not alleviate any existing life limit requirements.

(i) Within 4,400 flight hours after the effective date of this AD.

(ii) Within 32 months after the effective date of this AD.

(iii) Before the accumulation of 10,000 total flight hours on HSTA P/N 601R92305-5 (vendor P/N 8396-4).

**(k) Credit for Previous Actions**

This paragraph provides credit for the actions required by paragraph (j) of this AD, if those actions were performed before the effective date of this AD using Bombardier Service Bulletin 601R-27-161, dated May 31, 2012, which is not incorporated by reference in this AD.

**(l) Parts Installation Limitations**

(1) As of the effective date of this AD, no person may install an HSTA, P/N 601R92305-1 (vendor P/N 8396-2) or P/N 601R92305-3 (vendor P/N 8396-3) on any Model CL-600-2B19 airplane.

(2) As of the effective date of this AD, no person may install an HSTA, P/N 601R92305-5 (vendor P/N 8396-4) having S/N 287, 724, 813, 841, 998, 1031, 1035, 1049, 1053, 1067, 1068, 1136, 1252, 1268, 1303, 1319, 1338, 1354, 1374, 1378, 1445, 1470, 1498, 1513, 1546, 1632, 1736, 1766, 1846, 1849, 2002 through 2009 inclusive, 2011, 2013 through 2016 inclusive, 2019, 2020, or 2022, on any Model CL-600-2B19 airplane.

(3) As of the effective date of this AD: It is acceptable to replace an HSTA P/N 601R92305-1 (vendor P/N 8396-2), P/N 601R92305-3 (vendor P/N 8396-3), or P/N 601R92305-5 (vendor P/N 8396-4) with an HSTA having P/N 601R92305-5 (vendor P/N 8396-4) that is not identified in

paragraph (l)(2) of this AD, provided the actions required by paragraph (j)(2) of this AD are accomplished within the compliance time specified in that paragraph.

#### **(m) Other FAA AD Provisions**

The following provisions also apply to this AD:

(1) Alternative Methods of Compliance (AMOCs): The Manager, New York Aircraft Certification Office (ACO), ANE-170, 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 ACO, send it to ATTN: Program Manager, Continuing Operational Safety, FAA, New York ACO, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7300; fax 516-794-5531. 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. The AMOC approval letter must specifically reference this AD.

(2) Contacting the Manufacturer: For any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, New York ACO, ANE-170, FAA; or Transport Canada Civil Aviation (TCCA); or Bombardier, Inc.'s TCCA Design Approval Organization (DAO). If approved by the DAO, the approval must include the DAO-authorized signature.

#### **(n) Related Information**

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) Canadian Airworthiness Directive CF-2013-14, dated June 4, 2013, for related information. This MCAI may be found in the AD docket on the Internet at <http://www.regulations.gov/#!documentDetail;D=FAA-2014-1049-0002>.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (o)(3) and (o)(4) of this AD.

#### **(o) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) Bombardier Service Bulletin 601R-27-161, Revision A, dated January 30, 2014.

(ii) Supplement 23, "Horizontal Stabilizer Trim Check," of Chapter 7 "Supplements," of Bombardier CL-600-2B19 Airplane Flight Manual CSP A-012, Volume 3, Revision 61, dated April 2, 2013.

(iii) Task C27-40-103-04, "Operational Check (ground maintenance test) of the horizontal stabilizer trim control unit," in Bombardier CL-600-2B19 Temporary Revision 2A-56, dated June 4, 2012, to Appendix A, Certification Maintenance Requirements, of Part 2, Airworthiness Requirements, of the Bombardier CL-600-2B19 Maintenance Requirements Manual.

(3) For service information identified in this AD, contact Bombardier, Inc., 400 Côte-Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514-855-5000; fax 514-855-7401; email [thd.crj@aero.bombardier.com](mailto:thd.crj@aero.bombardier.com); Internet <http://www.bombardier.com>.

(4) You may view this service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(5) You may view this service information that is incorporated by reference 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>.

Issued in Renton, Washington, on December 23, 2015.

John P. Piccola, Jr.,  
Acting Manager, Transport Airplane Directorate,  
Aircraft Certification Service.