Transport Canada Transports Canada

TP 7245E

No. CF-2013-14 1/3
Issue Date 04 June 2013

AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to ***Canadian Aviation Regulation*** **(CAR) 521 Division X**. Pursuant to **CAR 605.84** and the further details of **CAR Standard 625, Appendix H**, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with **CAR 605.84** and the above-referenced **Standard**.

This AD has been issued by the Continuing Airworthiness Division (AARDG), National Aircraft Certification Branch, Transport Canada, Ottawa, telephone 613 952-4357.

Number: **CF-2013-14**

Subject: **Horizontal Stab Trim Actuator (HSTA) – Loose Bolts on the Spur Gear**

Effective: **18 June 2013**

Applicability: **Bombardier Inc. model CL-600-2B19 aeroplanes, serial number 7003 and subsequent equipped with HSTA part numbers (P/N) 601 R92305-1 (vendor P/N 8396-2), 601R92305-3 (vendor P/N 8396-3) and 601R92305-5 (vendor P/N 8396-4)**

Compliance: **As indicated below, unless already accomplished.**

Background: 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 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 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).

Corrective Actions: **Part I – Airplane Flight Manual Change**

A. Within 30 days from the effective date of this AD, amend the Airplane Flight Manual (AFM) by incorporating the procedure - Horizontal Stabilizer Trim Check as detailed in Supplement 23, in the AFM Revision 61, dated April 02, 2013, or later revisions of this procedure approved by Transport Canada.

B. Following incorporation of Part I, A, advise all flight crews of the changes detailed in Supplement 23 in the AFM Revision 61, dated April 02, 2013.

Part II – Maintenance Requirement Manual Change

A. Within 30 days from the effective date of this AD, amend the Transport Canada approved Maintenance Requirements Manual by incorporating task C27-40-103-04-Operational Check (ground maintenance test) of the horizontal stabilizer trim control unit, as introduced by the Temporary Revision (TR) 2A-56 of the Canadair Regional Jet Maintenance Requirement Manual, dated 04 June 2012.

B. Phase – in: within 500 hours air time from the effective date of this AD, perform task C27-40-103-04-Operational Check (ground maintenance test) of the horizontal stabilizer trim control unit, and thereafter at intervals not to exceed 1200 hours air time, as specified in the TR 2A-56 of the Canadair Regional Jet Maintenance Requirement Manual, dated 04 June 2012.

Part III – HSTA Replacement

A. For aeroplanes equipped with HSTA P/N 601R92305-1 (vendor P/N 8396-2) or P/N 601R92305-3 (vendor P/N 8396-3), within 3700 hours air time from the effective date of this AD or before 01 November 2015, whichever occurs first, remove and replace HSTA with P/N 601R92305-7 (vendor P/N 8396-5) in accordance with the accomplishment instructions of BA Service Bulletin (SB) 601R-27-161, Initial Issue dated 31 May 2012, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

The above removal schedule does not alleviate any existing life limit requirements.

As of the effective date of this AD, it is prohibited for anyone to install HSTA P/N 601R92305-1 (vendor P/N 8396-2) or P/N 601R92305-3 (vendor P/N 8396-3) on the CL-600-2B19 aeroplanes.

B. For aeroplanes equipped with HSTA P/N 601R92305-5 (vendor P/N 8396-4), within 4400 hours air time from the effective date of this AD, or before 04 March 2016, or before the HSTA accumulates 10 000 hours air time configured as P/N 601R92305-5 (vendor P/N 8396-4), whichever occurs first, remove and replace the HSTA with P/N 601R92305-7 (vendor P/N 8396-5) in accordance with the accomplishment instructions of BA SB 601R-27-161, Initial Issue, dated 31 May 2012 or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

The above removal schedule does not alleviate any existing life limit requirements.

Part IV – Special Conditions for Spares and Replacements

It is acceptable to replace the HSTA P/N 601R92305-1 (vendor P/N 8396-2) or P/N 601R92305-3 (vendor P/N 8396-3), or P/N 601R92305-5 (vendor P/N 8396-4) with P/N 601R92305-5 (vendor P/N 8396-4) after the effective date of this AD. The installed unit is subject to all requirements of Part III, Paragraph B. of this AD.

It is prohibited for anyone to install HSTA P/N 601R92305-5 (vendor P/N 8396-4) with serial numbers listed in AD CF-2012-18, dated 29 May 2012, on any Bombardier CL-600-2B19 aeroplanes.

Authorization: For the Minister of Transport, Infrastructure and Communities,

ORIGINAL SIGNED BY

Derek Ferguson
Chief, Continuing Airworthiness

Contact: Gordanko Jeremic, Continuing Airworthiness, Ottawa, telephone 613-952-4357, facsimile 613-996-9178 or e-mail AD-CN@tc.gc.ca or any Transport Canada Centre.