Transport Canada Transports Canada

TP 7245E

No. CF-2008-11R1 1/3

Issue Date 9 May 2008

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) 593**. 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), Aircraft Certification Branch, Transport Canada, Ottawa, telephone 613 952-4357.

Number: **CF-2008-11R1**

Subject: **Wing to Fuselage Attachment Joints - Barrel Nut Cracking**

Effective: 28 May 2008

Revision: Supersedes Airworthiness Directive (AD) CF-2008-11 dated 5 February 2008.

Applicability: Bombardier Inc. DHC-8 aircraft, Models 400, 401 and 402, serial numbers 4001, 4003 through 4176.

Compliance: As indicated, unless already accomplished.

Background: During scheduled maintenance, an operator has found cracks in the DSC228-16 barrel nut at one of the four primary front spar wing to fuselage attachment joints. The investigation determined that the cracks were due to hydrogen embrittlement and the problem is believed to be restricted to a batch of 166 barrel nuts from one supplier. The suspect barrel nuts are identified with batch marking LH7940T SPS 01.

Further inspection by a different operator revealed that cracked barrel nuts were found at three of the four wing front spar wing to fuselage joints on the same aircraft. All three barrel nuts were from the suspect batch. Failure of the barrel nuts could compromise the integrity of the wing to fuselage attachments.

This Airworthiness Directive mandates inspection of the barrel nuts to determine if any suspect nuts are installed. If so, this directive also mandates verification that all front spar attachments are properly preloaded, inspection of the barrel nuts for cracks, and removal of the suspect barrel nuts and hardware from operation in accordance with the schedule specified below.

Since the original issue of this directive, Bombardier discovered that the application of the F13 Type 2 Corrosion Inhibiting Compound (CIC) was inadvertently omitted in the accomplishment instructions during the replacement of the affected barrel nuts.

This revision mandates the removal of the affected barrel nuts and the application of the CIC in accordance with the ASB A84-57-19, Revision “B”, issued 06 March 2008.

Corrective Action:

Inspection of the Front Spar to Fuselage Attachments:

A. Within 100 hours air time after the initial effective date of this directive 5 February 2008, inspect all DSC228-16 barrel nuts in accordance with Alert Service Bulletin (ASB) A84-57-19, dated 1 February 2008, or later revisions approved by the Chief, Continuing Airworthiness. If all of the barrel nuts are not from the suspect batch (i.e. all barrel nuts are not identified with batch marking LH7940T SPS 01), no further action is required.

NOTE: Operators who have complied with the ASB A84-57-18 and have determined that the barrel nuts are not within the suspect batch do not need to do the inspection in accordance with Paragraph B of this directive. If suspect barrel nuts were found, they must be inspected in accordance with the requirements of Paragraph B of this directive within 100 hours air time after the effective date of this directive.

B. If any of the installed barrel nuts is from the suspect batch (i.e. identified with batch marking LH7940T SPS 01) inspect all the attachment hardware (bolt, barrel nut, saddle washer, retainer and PLI washer) in the affected joint location of the front spar wing to fuselage attachment in accordance with Bombardier Inc. ASB A84-57-19, dated 1 February 2008, or later revisions, approved by the Chief, Continuing Airworthiness.

i) If the bolt preload as described in the part 3.B(1) of the above-mentioned ASB is incorrect, or the barrel nut is cracked, all the attachment hardware (bolt, barrel nut, saddle washer, retainer and PLI washer) in the affected joint location must be replaced prior to further flight.

ii) If all of the bolt preloads are correct and none of the suspect barrel nuts are cracked, they may remain in service provided that the following inspection scheduled is accomplished:

1. If all four barrel nuts are from the suspect batch, they must be re-inspected in accordance with the above-mentioned ASB every 50 hours air time. The barrel nut attachment hardware at the two outboard locations (one left hand and one right hand) must be replaced within 100 hours air time. When the barrel nuts on the outboard location have been replaced, no further repetitive inspection is required. However, all hardware from the suspected batch for the remaining two locations must be replaced within next 3000 hours air time.

2. If three barrel nuts are from the suspect batch, they must be repetitively inspected in accordance with the above-mentioned ASB every 50 hours air time. The barrel nut attachment hardware at the outboard location, on the side with the two suspect barrel nuts, must be replaced within 100 hours air time. When the barrel nut on the applicable outboard location has been replaced, no further repetitive inspection is required. However, all hardware from the suspected batch for the remaining two locations must be replaced within next 3000 hours air time.

3. If two barrel nuts on one side are from the suspect batch, and two on the opposite side are not, the barrel nuts from the suspected batch must be repetitively inspected in accordance with the above-mentioned ASB every 100 hours air time, and the barrel nut attachment hardware at the outboard location on the suspect side must be replaced within 500 hours air time. When the barrel nuts on the applicable outboard location have been replaced, no further repetitive inspection is required. However, all hardware from the suspected batch on the remaining location must be replaced within next 3000 hours air time.

4. If both sides have one barrel nut from the suspected batch and one from another (non-suspected) batch, no further repetitive inspection is required. However, the hardware for the remaining two locations with the suspected batch must be replaced within 3000 hours air time.

5. If only one barrel nut is installed from the suspect batch, no further repetitive inspection is required. However, the hardware from the suspected batch must be replaced within 3000 hours air time.

iii) If a barrel nut from the suspect batch has the correct preload but there is a crack only on the barrel nut cradle, it may be left on the aircraft. However, the attachment hardware in the affected joint location shall be inspected and replaced in accordance with the inspection schedule mentioned in paragraph B.(ii) above.

C. If F13 Type 2 Corrosion Inhibiting Compound (CIC) was not applied when the ASB A84-57-19, dated 1 February 2008 or ASB A84-57-19 Revision A, dated 06 February 2008 was incorporated, apply this compound within 3000 hours air time after the initial effective date of this directive (5 February 2008) in accordance with ASB A84-57-19, Revision B, dated 6 March 2008, or later revisions approved by the Chief, Continuing Airworthiness.

D. Replacement of all hardware from the suspected batch constitutes closing action to this directive.

Authorization: For Minister of Transport, Infrastructure and Communities

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