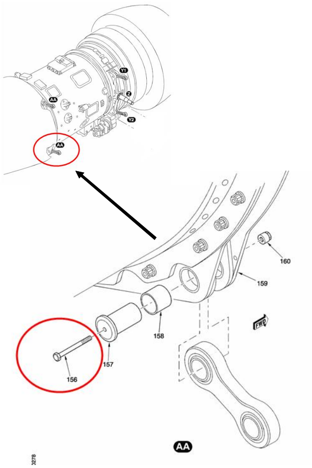
ENGINE MOUNT BOLT

During unscheduled inspection of the L/H engine, the Aft Lower Mount bolt was found broken and the pin backed out.

The investigation has not shown any evidence that the root cause is linked to any non-conformity in hardware or normal maintenance practices as published in the Aircraft Maintenance Manual (AMM) or production practices.

The bolt failed under static tension loading. No evidence of fatigue.



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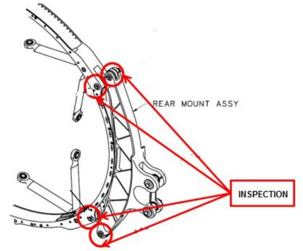
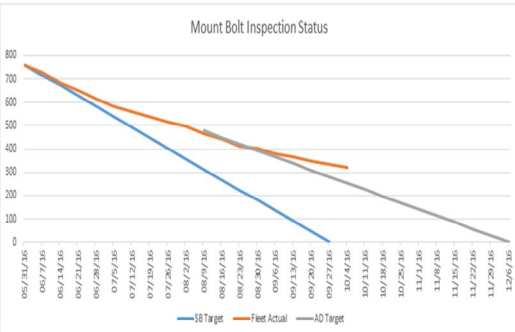
ENGINE MOUNT BOLT

Mitigation

Fleet Inspection of existing Aft mount bolts

- Visual inspection of torque stripe
- Torque check of fastener torque of 150 in/lbs
- Gap check under head of engine mount pin.





✓ BBA Service Bulletin:
- SB700-71-002; SB700-71-1A11-002; SB700-71-5002; SB700-71-6002
  - Rev 1, released : June 30th 2016

✓ TCCA AD CF-2016-23
- Released July 28th , 2016

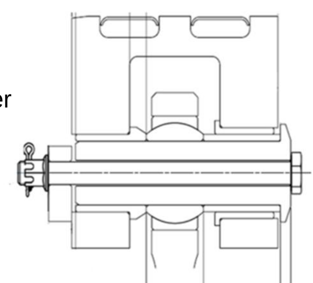
✓ Advisory Wire AW700-71-0557
- Rev 2, released August 23rd, 2016

ENGINE MOUNT BOLT

Solution

Corrective Action - Mount bolt installation redesign

- The new bolts remains a 0.3125in bolt at either end of the dogbone links
- Bolts also made from Inco718 material but without an impedance ring
- New castellated nut made from A286 silver coated material, self-locking feature
- Secondary locking feature provided by cotter pin.



Fleet corrective action will be carried out via Service Bulletin ECD Q4/2016

ADVISORY WIRE

You. First.

REFERENCE NO:	AW700-71-0557 Rev 5	INFORMATION TYPE:	Maintenance
ATA:	71-22	EFFECTIVITY:	Global Express / XRS (9002 - 9312, 9314 - 9380, 9384 - 9429) Global 5000 (9127 to 9383, 9389 to 9400, 9404 to 9431 and 9998) Global 5000 feat. Vision Flight Deck (9386, 9401, 9445 - 9997) Global 6000 (9313, 9381, 9432 -9997)
SUBJECT:	**Fractured Engine Mount Bolt**		

1. REFERENCE:

1.1. SPECIAL CHECK/REWORK - REAR MOUNT - INSPECT THE RETAINING BOLT AND NUT ON THE LOWER/UPPER ENGINE REAR MOUNT ASSEMBLY – Service Bulletin 700-71-6002, 700-71-5002, 700-1A11-71-002, 700-71-002 Rev 1 Released June 30, 2016.

1.2. TCCA AD CF-2016-23 - Engine - Rear Mount Retaining Bolt, issued by Transport Canada Civil Aviation (TCCA) Issued July 28, 2016.

1.3. MODIFICATION - REAR MOUNT - REPLACEMENT OF RETAINING BOLT AND NUT ON THE LOWER/UPPER ENGINE REAR MOUNT ASSEMBLY - Service Bulletin 700-71-6003, 700-71-5003, 700-1A11-71-003, 700-71-003 Released December 05, 2016.

1.4. Engine Maintenance Manual (EMM) Task 70-10-02-910-803 - Installation of a Split Cotter Pin.

1.5. FAA AD 2016-25-18. Issued by Federal Aviation Administration (FAA) Posted Dec 16, 2016.

1.6. TCCA AD CF-2016-23R1 - Engine - Rear Mount Retaining Bolt, issued by Transport Canada Civil Aviation (TCCA) Issued February 21, 2017

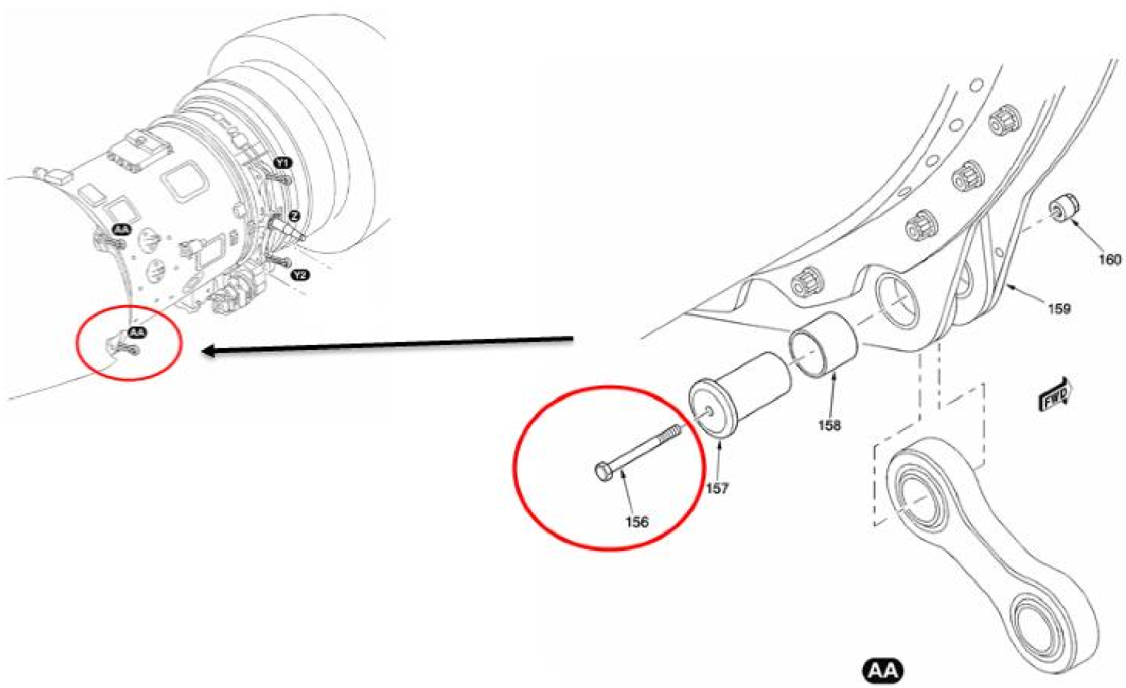
2. INTRODUCTION:

This Advisory Wire revision will provide notification of the release of Transport Canada Civil Aviation (TCCA) Airworthiness Directive CF-2016-23R1.

3. DESCRIPTION:

During unscheduled engine maintenance, an Operator reported finding a nut and the threaded portion of a bolt in the LH lower Cowl. Subsequently, it was discovered that the hardware was from the aft lower mount link connection to the engine rear mount ring. While the broken bolt had allowed the mount pin to migrate partially out of its normal position, the pin maintained its load path capability.

The fractured hardware was returned to Bombardier and a joint investigation was undertaken with Rolls-Royce. The laboratory analysis revealed that the bolt failed under static tension loading with no evidence of fatigue. The current design of the bolt locking mechanism includes a self-locking nut and an impedance ring. The bolt's fracture point of the reported event is at the impedance ring location where the diameter is reduced to accommodate this locking feature.



The investigation was inconclusive at determining a cause for the static tension loading. However, there was no evidence that the root cause is linked to any non-conformity in hardware, normal maintenance practices as published in the Aircraft Maintenance Manual (AMM) or production practices.

As a mitigating action, Bombardier has released Ref. 1.1 Service Bulletin (SB) with the following actions:

- Inspect the integrity of the torque strip
- Torque check of the fastener
- Gap check between the mount pin and structure

The rear mount beam utilizes two links to connect to the engine rear mount ring. These links utilize bolts of a similar design at both ends, as such; there are four bolts on each engine that will be inspected by this SB (Ref. 1.1).

The compliance time for this SB (Ref. 1.1) is 4 months or 500 Flight Hours whichever comes first following the Service Bulletin initial release of May 31st. Bombardier does not anticipate a requirement to replace many bolts in-service as a result of this inspection, but provisions of bolts have been ordered for this purpose. With this in mind, Operators are requested to order replacement hardware only if the inspection determines that parts need to be replaced.

One (1) hour is planned for the inspection portion of the SB (Ref. 1.1) and 0.25 hour to replace a bolt if required. It is not required to sling the engine to accomplish the inspection, nor to replace a bolt, provided the gap check is within specifications.

Moreover, to address this potentially unsafe condition, TCCA has released a TCCA Airworthiness Directive (Ref. 1.2) ,mandating the incorporation of the above Bombardier SBs (Ref. 1.1) to inspect and maintain the integrity of the affected engine rear mount assembly.

On Dec 16th, 2016, the FAA has issued an Airworthiness Directive (Ref. 1.5) which also mandates the incorporation of the Bombardier SBs (Ref 1.1) to inspect and maintain the integrity of the affected engine rear mount assembly.

Operators are encouraged to report to Bombardier any discrepancies found during the incorporation of this SB (Ref. 1.1) and are requested to email a copy of the SB (Ref. 1.1) Appendix A to tech.services.global.series@aero.bombardier.com.

As a corrective action for the broken mount bolt issue, Bombardier has released a second Service Bulletin (Ref. 1.3), to replace the existing bolts with bolts of a different design. The installation of the new hardware will feature a self-locking castellated nut and a cotter pin. The removal of the self-retention feature will eliminate any stress concentrators.

This SB (Ref.1.3) is divided into two (2) parts. Part A, provides instruction to measure gaps on existing hardware installation and is applicable for aircraft that have not complied with the mitigating inspection SB. (Ref. 1.1) Part B provides the instructions to replace the hardware on the left and right engine mount assemblies and to measure the gaps after the new hardware installation. 1 hour is planned for Part A and 2.5 hours for Part B.

The hardware installation involves torqueing the new nut within a specific range while aligning the hole for a cotter pin. In the event that the cotter pin does not align within the torque range, the nut should be replaced as recommended in the EMM task (Ref. 1.4). The SB hardware kit are provisioned with four (4) additional nuts for this eventuality. In order to avoid unnecessary part shortage, please note that undamaged washers do not need to be replaced at any time during the completion of the SB. (Ref. 1.3)

On February 21, 2017, TCCA AD (Ref 1.2) was revised (Ref 1.6) to mandate incorporation of the Bombardier SBs (Ref 1.3) to replace the existing bolts and self-locking nuts with new bolts and nuts, as a final corrective action.

4. ACTION:

Operators are encouraged to review the ADs (Ref. 1.5 and 1.6) and to comply with the instructions given. Should you have any questions or require more information, please contact your FSR or the CRC.