TOP ISSUES

TOP 17 ISSUES

- NO BIOCIDE AVAILABLE FOR FUEL TANK IN EU
- WHEEL SPEED TRANSDUCER HARNESS TWISTING
- PRESSURE REGULATING VALVE RELIABILITY
- PACK INLET TEMPERATURE SENSOR RELIABILITY
- PACK DISCHARGE TEMP SENSOR RELIABILITY
- NOSE WHEEL STEERING ACTUATOR RELIABILITY
- BCU & BCV RELIABILITY
- BRAKE REPAIR
- PASSENGER DOOR
- TRU CORROSION IN-SERVICE SUPPORT
- INBOARD FLAP CORROSION
- WINDSHIELD FAILURE
- PAINTING
- CHAPTER 6 USABILITY
- APU EGT PROBES
- FUTURE ON-BOARD DIAGNOSTICS
- DCU CARD FAILURE

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Top Issue 28-33-M-973

NO BIOCIDE AVAILABLE FOR FUEL TANK IN EU

Biobor JF, Biocide additive to be used for Biocidal treatment of the fuel tanks (AMM tasks 12-11-01-620-801 and 28-10-00-620-801) Bombardier consumable reference 11-001 is not available for sale within the EU as per the Biocidal products regulation.

Investigation Status of Kathon FP 1.5 approval:

- Alternate biocide used in the industry which is on the EU Biocidal registry.
  - ✓ Rolls Royce and Honeywell (APU) have Kathon FP 1.5 as an approved additive
  - Parker-Fuel System:
    - Study has shown that a concentration of 100 ppm of Kathon FP 1.5 has no detrimental effect on components such as elastomer, plastics and metals used in the fuel system.
      - ✓ Certification report submission to Transport Canada. ECD: October 30, 2017
- Bombardier supports the use of Kathon FP 1.5 for contaminated fuel AOG events via FOC SRPSA
- Publications to be amended:
  - AMM 28-10-00-620-801 Biocide Treatment of the Fuel Tanks
  - AFM 02-05-Power Plant Fuels and Fuel Additives

DATE RAISED	→	RAISED BY	→	ACTION BY
APR 16		A. WALKER		J. SCHICK

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Top Issue 32-34-M-989

WHEEL SPEED TRANSDUCER HARNESS TWISTING

Outboard Brake Fail CAS message posted after landing due to the WST harness shear.

Background:

- 7 in-service reports of WST back-end assembly rotation resulting in MLG harness shearing. (from Jan/2016 to May/2017)
  - All failures occurred on outboard positions
- AW700-32-0581 – Wheel Speed Transducer (WST): Released Dec/2016
- Water ingress in the axle suspected to be a major contributor to this failure mode

Advisory Committee action in monitoring: 32-27-M-878 – Trailing Arm Water Ingress

Initiatives to prevent water ingress in axle:

- SB700-32-028; SB700-1A11-32-015 Rev1 & SB700-32-5010/SB700-32-6010
  - Released: April/2015: Addition of a heat shrink tubing on the WST harness and improve sealant application, using suction
- SB 700-32-5015/6015
  - Released: June 16, 2017: Non-compliant sealant application during the production cycle (effectivity 9705 – 9790)

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OCT 16		P. STADLER		J. SCHICK

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Top Issue 32-34-M-989

WHEEL SPEED TRANSDUCER HARNESS TWISTING

Request for feedback:

- AW700-32-0573 - Main Landing Gear Trailing Arm Water Ingress Survey (released Sep/2016)
- Survey form available in SmartFix™ Plus since Jan/2017 for the following tasks:
  - NORM BRAKE FAIL
  - BRAKE FAULT
  - BRAKE 50% DEGRADED
  - L/R INBD/OUTBD BRAKE FAIL
- Limited feedback received so far.

Sealant application Post 9790

Next Steps:

Additional test to be performed on the WST harness and the hub cap to better understand water ingress paths.

- Testing at vendor facility to start : December 2017.

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OCT 16	P. STADLER	J. SCHICK

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PRESSURE REGULATING VALVE RELIABILITY

PRSOV - P/N GG436-1055-1 Amdt A

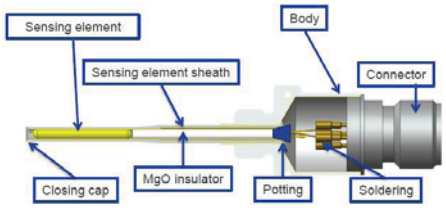
- ✓ Root causes identified since Sept/2016.
- ✓ Design changes identified since Dec/2016.
- ✓ Terminating check procedure change implemented in AFM/FCOM/QRH.
- ✓ 2 x Prototypes of PRSOV available featuring:
  - Improved microswitch installation.
  - Design change mitigating pollution ingress.
  - Parts material upgrade for corrosion robustness.
  - Alternative Solenoid S/A with pollution mitigation.
  - Bearings change for Alacrite (cobalt-based alloy).
- ○ Design Certification:
  - P/N GG436-1055-3 certification phase completion: ECD: Dec/2017
  - Qualification and design proof test program underway.
- ○ Solution Implementation:
  - In-Service implementation policy under definition.
    - ➢ In-service availability: ECD: Q1/2018

LIEBHERR

PACK INLET TEMPERATURE SENSOR RELIABILITY

PITS - P/N GG436-2005-3
Common P/N to PITS / CDTS / Humidifier Boiler Temp Sensor.

- ✓ Root causes identification phase completed since Sept/2016.
- ✓ Solutions addressing PITS root causes identified since Dec/2016.
- ✓ 10 x Prototypes of PITS available featuring:
  - Reinforced probe over sheath with new probe assembly.
  - Reinforced sensing element wiring.
  - Design free of RTV potting.



- ○ Design Certification:
  - P/N GG436-2005-5 certification phase completion: ECD: Dec/2017
  - Qualification and design proof test program underway.
- ○ Solution Implementation:
  - In-service implementation policy under definition.
    - ➢ In-service availability: ECD: Q1/2018

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PACK DISCHARGE TEMPERATURE SENSOR RELIABILITY

PDTS - No change to P/N GG436-2015-3.
ACSC - P/N GG546-2040*

- ✓ ACSC software change addressing the following:
  - Optimization of RS422 transmission to smoothen CPU workload.
    Known as the PACK FAULT/PDTS Out Of Range in CAIMS/OMS mode active (Ref: AW700-21-0160)
  - Default active channel implementation at start up.
    Known as the Trim Air issue unavailable (Ref: AW700-21-0389)
  - Spurious cockpit AV FAN FAIL and HCU FAIL.
- ✓ Software Certification:
  - ACSC software fix successfully tested on aircraft in Jul/2017.
  - P/N GG546-2040-15 certification completed.
- ○ Solution Implementation:
  - In-service implementation policy under definition.
    - ➢ In-service availability ECD: Q1/2018

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Top Issue 32-30-M-938

NOSE WHEEL STEERING ACTUATOR RELIABILITY

Reliability of Steering Actuators P/N 1287A0000-02 (LH) and P/N 1288A0000-02 (RH).

NOSE STEER FAIL CAS message and LVDT feedback fail OMS/CAIMS caused by moisture ingress resulting in corrosion

Short Term solution:

- Application of sealant on LVDT crimped area of the conduit to prevent moisture ingress
- BBA Service Bulletin;
  SB700-32-038; SB700-32-1A11-025; SB700-32-6014; SB700-32-5014
  - ✓ Released: Mar/2016

Long Term solution:

- New conduit qualification testing completed with success
  - ✓ Mar/2017
- LVDT assembly design improvement (conduit & new LVDT) in-service availability:
  - Dec/2017

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OCT 14		M. STENGL		J. SCHICK

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Top Issue 32-30-M-938

NOSE WHEEL STEERING ACTUATOR RELIABILITY

LEAKAGE – Cylinder gland nut seal leakage

- 7 different design samples were tested at vendor's facility
  - ✓Completed: Dec/2016
- New designed retained: "one bushing – single seal"
  - Passed the development testing campaign
    - ✓ Completed Jan/2017

Next Step:

- Qualification testing of the newly selected design:
  - Will include 17 weeks of testing under different load conditions to reflect aircraft operation
    - Start Q2/2018 due to rig availability

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Top Issue 32-28-M-903

BCU & BCV RELIABILITY

Need to investigate the reliability of the Brake Control Unit (BCU) and the Brake Control Valve (BCV).

Main BCU/BCV removal reasons:

- « 50% BRAKE DEGRADED » & « BRAKE FAULT » CAS messages

Root Cause:

Sudden pressure variation in the brake system degrades the BCV and results in fault annunciation.

Solution testing:

3 Shut-off Valve (SOV) design configurations under testing

✓ Testing of the power-up sequence (phase 1) to identify valves behavior: Jul/2017

✓ 2 of the 3 SOV design configurations tested at the vendors facility showed significant reduction in transient pressure spike.

Next Steps:

- Simulation of full aircraft braking application sequence required to ensure A/C braking performance is not affected. Oct/2017

DATE RAISED	→	RAISED BY	→	ACTION BY
SEP 13		BOMBARDIER		J. SCHICK

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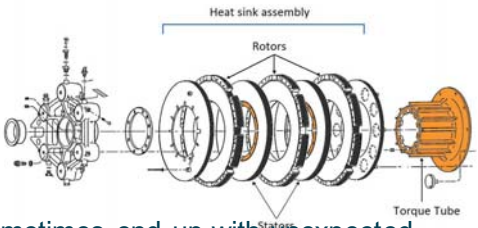
Top Issue 32-35-M-1002

BRAKE REPAIR



Action Definition:

Brake units sent for repair instead exchange can sometimes end up with unexpected costs.

Vendor shop finding reports are often unclear and should include:

1. Clear inspection results with justifications
2. Carbon heat sink reason for rejection
3. Torque plate dimensions following grit blast
4. The quantity of stator slots exceeding the wear limits when a stator is rejected by the vendor.

Investigation Status:

Non-Standard repair disposition report which includes damage details with pictures and dimensions is provided to BBA for exchange and customer owned repair.

This report is not consistently sent to Operators.

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APR 17		W. WICHTERMAN		J. SCHICK

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Top Issue 32-35-M-1002

BRAKE REPAIR

Next Steps:

- Part Services is currently evaluating a process change to systematically send an evaluation and findings report with details explaining the justification for rejection.
  - The detailed evaluation report will include:
    - Measurements of stator slot enlargement
    - Thickness of the rejected torque tube
    - Pictures of the contaminated heat sink

DEFECT TYPE :	Corrosion					
INSPECTION METHOD :	Visual					
CMM,SB,SL,PDA(if other list):	32-48-21	Page	602	Section/Figure	FIG 601	
CMM ALLOWABLE LIMITS:	.240"	WIDTH by		LENGTH by		DEPTH
MEASUREMENTS NOTED:	.232"	WIDTH by		LENGTH by		DEPTH
OTHER DEFECT INFORMATION:						

DATE RAISED APR 17 → RAISED BY W. WICHTERMAN → ACTION BY J. SCHICK

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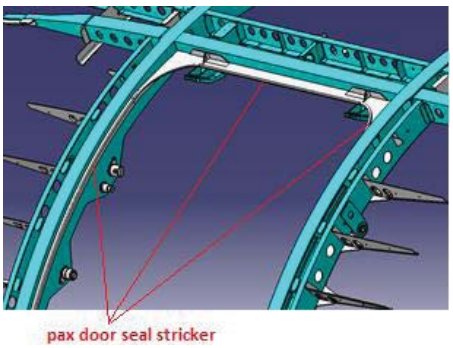
Top Issue 52-35-M-992

PASSENGER DOOR

During delivery of an aircraft at GCC the passenger door was found with a series of paint damages at the door surround seal striker and cable tension out of limits.

7 occurrences of damage found on strikers at GCC since January 2016
- Mainly at FWD and AFT upper sections



DATE RAISED APR 17 → RAISED BY M. SPIEGL → ACTION BY J. SCHICK

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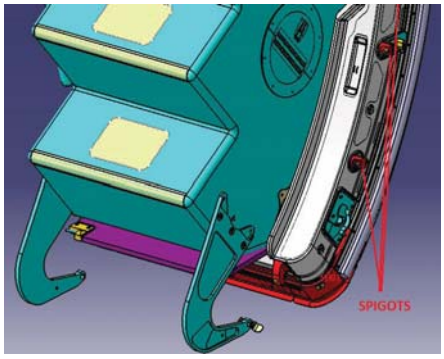
Top Issue 52-35-M-992

PASSENGER DOOR

Causes:

- Misalignment during door closure.
  - Induced when door is manually closed
  - Due to improper installation of shims at FWD goose neck
- Limited clearance between the door spigots and door seal striker.



DATE RAISED	→	RAISED BY	→	ACTION BY
APR 17		M. SPIEGL		J. SCHICK

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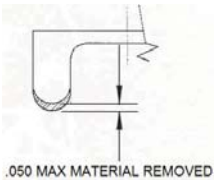
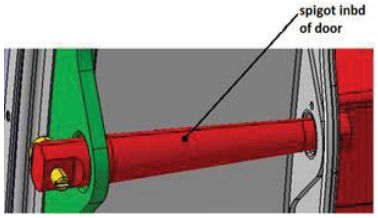
Top Issue 52-35-M-992

PASSENGER DOOR



Mitigation:

- Generic repair REO 700-53-20-356 to allow repair. (up to 0.050in deep)
  - Released Jan/2009
- Modification to allow installation of shims to retract spigots and provide additional clearance.
  - Available via SRPSA
  - Integration as design change is being evaluated.



Solutions:

- Door installation & operation process at GCC reviewed
  - Manual door closure procedure for aircraft position move will be performed by 3 technicians: to guide the door.
    - Technician trained effective: Jul/2017.
  - Tensions of FWD and AFT cables verified and recorded during door installation.
    - Effective: Jul/2017
- Rigging check task introduction in AMM for situation where original door is re-installed
  - Under evaluation

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APR 17		M. SPIEGL		J. SCHICK

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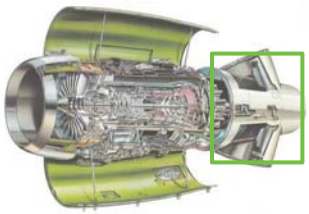
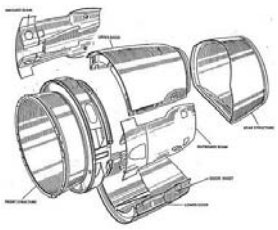
BR710 TRU Corrosion In Service Support



Top Issue 78-34-M-990

Date raised Oct 2016 by COMMITTEE



Problem Definition

- Corrosion repair on TRU flange has been lengthy and the required material was not available in the field

Root Cause Identification

- Safran 24/7 support not adequate
- Material for TRU front flange repair not available

Problem Containment

- Increased TRU damage acceptance limits via RTV - end March 2017
- Lessons learnt discussions between RR OSD and Safran 24/7 helpdesk in place
- Manual update to underline importance of TRU flange protection at TRU removal/storage and inspection/repair before re-installation – 18 Aug 17

Solution

- Establish 24/7 support from Safran – 04 Sep 17
- Publish standard TV's to cover corrosion on the TRU
- Make available material required to perform repair - done

Problem Defined	Problem Contained	Root Cause Identified	Solution Agreed	Solution Deployed
16-Dec-16	*18-Aug-17*	*16-Dec-16*	*26-Apr-17*	*04-Sep-2017*

Completed | On-Plan | Hazard to Plan | Significant Hazard

Dates shown are actual completion dates in the past or forecast dates in the future

Rolls-Royce

Top Issue 57-33-M-975

INBOARD FLAP CORROSION

L/H & R/H inboard flaps outboard castings found corroded (...) Due to the fact that there is zero tolerance we have been forced to replace all parts. Parts availability is a concern.

Root cause

- Water ingress
- Insufficient water drainage
- Material protection at the electrical bonding surface area

Solution

- Corrosion resistance and drainage improvement per IS ModSum IS700-57-0009

Next steps

- Production implementation
  - Production cut-in 9785
  - Release of SBs November 2017

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APR 16	P. STADLER	J. SCHICK

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Top Issue 57-33-M-975

INBOARD FLAP CORROSION (bushing migration)

Service Bulletins for Bushing Migration are temporarily on hold due to tooling availability.

- SB700-57-048; SB700-1A11-57-014; SB700-57-6003; SB700-57-5003

Tooling deployment at BAS Centers is ongoing

- Tools will be located at eight (8) different BAS Centers (5 sets in USA,1 set in Europe,2 sets in Asia)
- Contacting BAS Centers for tooling availability and scheduling is recommended.

Recommendation for SB Planning / Implementation

- Should be part of 60 or 120 months inspection package from now on.
- Compliance time of 60 months starting from upcoming release date
- Sufficient downtime (60 months check) should be considered in case corrosion is found
- Confirm GSE availability

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APR 16		P. STADLER		J. SCHICK

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Top Issue 56-34-M-985

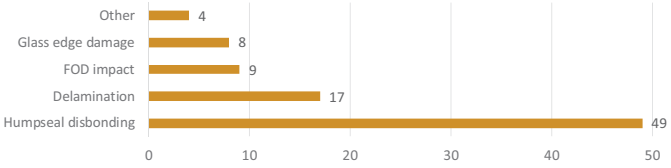
WINDSHEILD FAILURE

Please advise if there is an ongoing issue with the new supposed fix GC331-0001-13 that was closed on 7 Oct 2014.

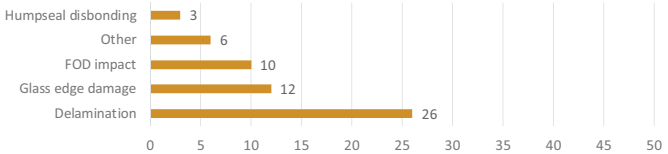
As of February 2017

- About 30% of the Global A/C fleet is now fitted with ‘‘NEW’’ Windshield (-13, -14)
- New parts MTBR = 7 209 hrs.

All parts 2016



New parts 2016-2017



- New occurrences of humpseal disbonding to be investigated
- Delamination is the primary failure mode
- Impact due to FOD remains stable

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OCT 16		J. BUMGARDNER		J. SCHICK

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Top Issue 56-34-M-985

WINDSHEILD FAILURE (investigation)

FOD resistance:

- Glass surface compression
  - Tested successfully on a part that failed from FOD impact.

Delamination:

- Quality investigation on main plies delamination (ECD Jan/2018)
- Redefining the allowable delamination to match pilot viewing area (ECD Jun/2018)
- Defining a maximum delamination growth rate (ECD Mar/2018)

Edge damage:

- Data collection (ECD Dec/2017)
- Quality investigation

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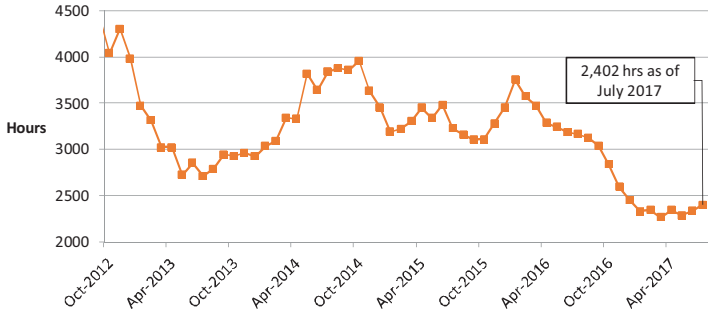
Top Issue 56-34-M-985

SIDE WINDOW

A redesign proposal of this part has been submitted by PPG to improve the resistance to delamination

- Improved interlayer material.
- Improved heater coating application method.
- Improved heater coating uniformity.
- Elimination of the 3rd sensor set.

Improvement implementation planned for Q2/2018.



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OCT 16	→	J. BUMGARDNER	→	J. SCHICK

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Top Issue

11-35-M-996

PAINTING

Painting Task 11-10-00-370-801 (…) During the process of re-painting, the original paint now stripped shows a few areas that did not follow this process or these guidelines.

Action Definition:

- Create a complete "user friendly" generic paint process that can be adapted by each paint shop.
- Segregate painting and re-painting processes
- Ensure alignment of all Bombardier publications

Status

- RIL GX-0051 (PreKote NTO) revision A (ECD Dec/2017)
- Revision of AMM Task 11-10-00-370-801 (Exterior Painting of the Aircraft)
  - ✓ Collect in-service paint process data from several partners
  - Analysis of the different painting process (ECD Dec/2017)
  - Publication of the revised AMM TASK (ECD Q3/2018)
  - Communicate the revised AMM TASK for entry in logbook (ECD Q3/2018)

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APR 17		C. UNRUH		J. SCHICK

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Top Issue

00-35-F-1007

CHAPTER 6 USABILITY

Development of a performance application for mobile devices allowing pilots to optimize flight performance, including last minute changes in itinerary

Our data is delivered in a method that would benefit from further optimization to align with our Business Aircraft Pilots' operations – as the owners of the performance data, Bombardier is in the best position to support our pilots by understanding their needs and by providing an OEM-developed performance software.

The app is to be powered by the SCAP and W&B data to calculate and provide accurate operational data to support Pilots' flights and operations planning.

- Launch Program: Global

Activities in progress

- User interviews and observations – discovery phase completed
- Market research and competition analysis - completed
- Design thinking workshops – October 2nd 2017
- Partnership selection – November 2017
- Implementation plan – December 2017

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APR 17		J. KASPRZAK		R. JACQUES

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Top Issue 49-28-M-908

APU EGT Probes

Topic

- EGT Probes having short to ground failures

Root Cause Analysis

- Excessive moisture can create a short to ground (STG) where the ECU will annunciate a fault

Accomplishments Since April Advisory

- Honeywell released updated VSB 49-8169 (rev 3) – June 29, 2017
  - Added primer to improve RTV adhesion
  - Clarified application and coverage requirements
- Bombardier SB's released June 29, 2017
  - 700-1A11-49-004 & 700-49-016, - 5003 & -6003
- 20 Honeywell Authorized Service Centers identified with oven capability
  - 11 Americas, 6 EMEA and 3 APAC
  - Additional BAS facilities being reviewed
- Coordinating with Bombardier ISIT to track fleet incorporation
  - ***As of September 28th, 2017:***
    - 56 A/C have incorporated the BBA SB
    - 70 A/C tentatively scheduled through December 2017

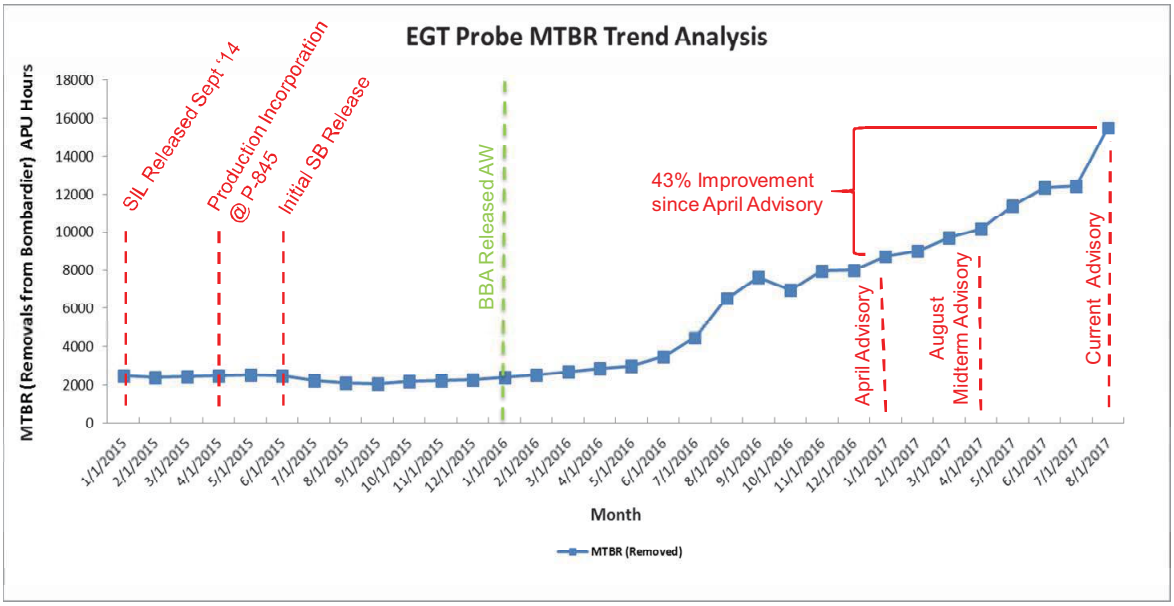
Honeywell

Top Issue 49-28-M-908

APU EGT Probe Reliability

Continued improvement of EGT Probe Reliability

- Improvement incorporated in production
- Fleet penetration



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Top Issue 49-28-M-908

APU EGT Probes

Bombardier SB's 700-1A11-49-004 & 700-49-016, - 5003 and -6003

- and -

Honeywell SB RE220-49-8169 Rev 3

- Recommended SB
  - Incorporated at any HON Authorized Service Center or BAS facility
- Covered for all Operators
  - Up to 4 hours of labor & $75 USD in material

EGT Probe Failure Event Process

- Probe replacement covered via normal OEM warranty & MSP process
- Special probe pricing available for Aircraft not under warranty
  - Specific to Global platform, contact Bombardier for ordering
- Recommend implementation of RE220-49-8169 Rev 3

Action Recommendation

- Monitor to verify MTBR improvement

Honeywell

Top Issue 45-21-M-707

FUTURE ON-BOARD DIAGNOSTICS

Bombardier BD700 Green Aircraft Publications in DVD format. This function of the PMAT is now useless. The maintenance and troubleshooting tool provided with the aircraft does not operate as advertised nor does it perform to the expectations of the operator

Mitigation:

Smart Pubs removed the hyperlink to publication and Fault Isolation Manual (FIM) and as a workaround solution

- The CAIMS faults code can be noted and then simply entered in SmartFix™ Plus for further troubleshooting
  Note: FIM is no longer updated and all faults isolation / troubleshooting migrated to SmartFix™ Plus, which contain all required links to Aircraft Manuals
- BA & HW reached consensus in Jan/2016, that the current RMA project is not commercially viable

Honeywell new proposed solution see next slide for details:

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APR 10	B. GULLINGSRUD	J. SCHICK

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Top Issue 45-21-M-707

FUTURE ON-BOARD DIAGNOSTICS

- **Topic**
  - Restoring the original hyperlinks to FIM as links to SmartFix™ Plus
  - Status to support of PMAT I and II repair capabilities and future support plan
    - PMAT I - P/N 7023300-913, PMAT II - P/N 7023300-801
- **Activities Since April Advisory**
  - Focused near term activities to continue support of existing PMAT I / II
    - Addressing obsolescence through design revision of PMAT II
    - Completed Statement of Work for design revision linked to obsolescence
  - Received from BA
    - SmartPubs & SmartFix™ Plus Install data for Honeywell Engineering Analysis
    - Standalone Installation CD for SmartPubs & SmartFix™ Plus
    - Fault Code redirect/interface application software
- **Next Steps**
  - Obsolescence analysis for definition of design revision – Nov/2017
  - SmartPubs & SmartFix™ Plus installation requirements evaluation – Nov/2017

Honeywell

Top Issue 45-21-M-707

FUTURE ON-BOARD DIAGNOSTICS

- **Repair Support Status**
  - Ability to support repairs for PMAT II is 36 months Q2 2020
    - Support timing based on expected repair rates
      - Recurring review of usage being accomplished by Honeywell
- **Exchange Support**
  - Honeywell continuing to maintain Exchange Stock for PMAT I and II

Honeywell

Top Issue 31-35-M-1004

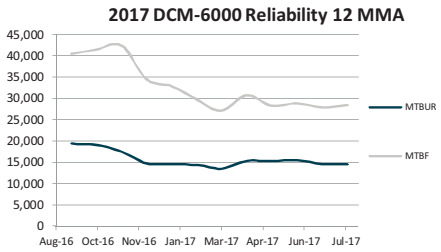
DCU CARD FAILURE

This is now the 3rd DCU card failure for our Global aircraft. We would like to know if there is a trending failure rate with these cards and is there any research underway for correcting the discrepancy when it occurs? Because when it occurs, several systems post faults which will ground the aircraft.

Focus on Data Concentrator Module (DCM)

Status:

- Current DCM MTBF 28,462 hrs. and MTBUR 14,616 hrs
- ✓ Improvement on troubleshooting procedures in SmartFix™ Plus released May/17
- ✓ Successfully removed STIM harness GSE from AMM



Next Steps:

- Evaluate Return to Service (RTS) task(s) to reduce down time
- Investigating MMEL dispatch relief for partial DMC outages
- Recent trend identified A1 circuit board affecting MTBF, root cause under investigation
- Review DCM supplier Acceptance Test Procedure (ATP)
- Investigate if module Insertion induces failures

DATE RAISED	→	RAISED BY	→	ACTION BY
APR 17		R. FRONCZEK		J. SCHICK

BOMBARDIER