

Q400 *DASH 8*

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IN-SERVICE ACTIVITIES REPORT

The Bombardier Regional Aircraft Customer Support Technical Newsletter for Q400 Operators

ISAR 2007-06

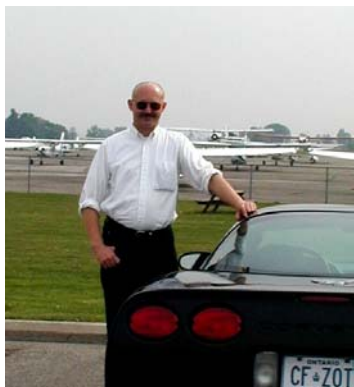
JUNE 21, 2007



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From the Editor

The **In-Service Activities Report** is a monthly technical newsletter which provides a forum for sharing in-service experiences. The document includes reports of discrepancies that have been experienced and reported by operators, and action being taken to rectify these issues, as well as other noteworthy maintenance tips and routine notification of items of interest and significance which have occurred during a specified period (i.e., since the previous edition of the ISAR). It also provides updates regarding customer support initiatives within Bombardier. The ISAR is intended to be read by all in the operator's organization who are concerned with maintenance support and operation of the aircraft.

All general questions regarding any edition of the ISAR or the Technical Contact Guide (TCG) should be addressed to the editor, *Lorne Bromley* (lorne.bromley@aero.bombardier.com).

Operators and all ISAR readers are encouraged to submit articles for future editions. The due date for draft material to be included in the next Q400 ISAR is **JULY 9**.

Important Note: Material appearing in this ISAR is to be considered valid as of the date of publication. Operators concerned with the current validity and possible implications of a specific article in the ISAR should contact the Technical Help Desk (telephone: 1-416-375-4000; e-mail: thd.qseries@aero.bombardier.com).

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An **ISAR Index** is included along with all published ISARs on the RACS website. The Index is sorted by ATA chapter and contains every article ever published in the ISAR.

Any questions should be addressed to the editor.

For additional information on any of the in-service items covered in the ISAR, please contact your local Bombardier Regional Aircraft Field Service Representative or the appropriate staff member noted below:

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Flybaboo



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Tassili Airlines

ISAR OPERATOR FEATURES

We would be delighted to feature your operation in an edition of the ISAR. Just e-mail any non-copyrighted photographs and a story to the editor (lorne.bromley@aero.bombardier.com).

Q400-ISAR-2007-06-0001

Luxair - Q400 Marks Beginning of New Era for Luxembourg Airline

contributed by Luxair Corporate Communications

Reference: Bombardier Press Release dated June 20, 2007, plus text and photographs kindly provided by Luxair



On June 20, 2006, Bombardier Aerospace announced that Luxair, the national airline of the Grand Duchy of Luxembourg, had placed a firm order for three Q400s and taken options on three additional aircraft.

Based at the Aéroport de Luxembourg, Luxair provides service to Luxembourg and its neighbouring regions in Germany, France, and Belgium, operating between Luxembourg and major European cities.

Mr. Adrien Ney, President and CEO of Luxair (pictured at right), stated: *"The opportunity to operate state-of-the-art aircraft that allow us to run a cost effective and productive business while guaranteeing passenger safety and comfort, is why Luxair chose the Q400 airliner. In our current reorganization, Luxair's aim is to be known and chosen for being a safety and quality-minded regional carrier. The decision to add the Q400 to our fleet reflects and underlies this ambition and will support us in our future commercial endeavours."*





Luxair acceptance team in Toronto prior to delivery flight on May 30: Marc Schaeffer, VP Technical Services, Christophe Henriot, Engineering, Carlo Feltz, Tech. Services, Capt. Claude Steyer & Capt. David Siebenaler, Q400 Fleet Chief.



Historical Snapshot

Luxair was established in October 1961, entering service six months later with a Fokker F27. The first holiday flights were scheduled in 1964, and a dedicated tour-operating department created in 1968. The same year, the first Cargo Center operated by Luxair was established at Luxembourg Airport. The airline acquired its first jet, a Caravelle 6R in 1970. Boeing 737-200s were added in 1977, replaced in the early 90s by B737-400s and -500s. The current Luxair Cargo Center opened in 1996. Starting in 1997, Luxair took delivery of eleven Embraer 145 regional jets. The airline's fleet today consists of one B737-500, three 737-700s, seven ERJ 145s, two ERJ 135s, and the first of the Bombardier Q400s ordered.



These photographs (ERJ 145 above in front of Luxembourg Airport Terminal B and B737-700 at right) show Luxair's traditional colour scheme. This livery will gradually be replaced for the entire fleet by the new colours proudly shown on the airline's first Bombardier Q400.



Luxair History - continued

At the end of the 1950s the Grand Duchy of Luxembourg began to diversify its economy. Steel gave way to growing financial and service sectors. And Luxembourg, as a founding member of the European Community, became the official seat of several key European institutions. These developments triggered a need for dependable, regular air links between Luxembourg and Europe's big capitals, giving birth to the Luxembourg Airlines Company. Re-christened Luxair in 1961 and donning its signature turquoise blue in 1964, the company has continuously proved a key player in the economic development of the multicultural "Grande Région" (i.e., Luxembourg and the neighbouring regions in France, Germany, and Belgium).

Luxair is much more than one of Europe's best-rated airlines. It combines activities, skills, and services that have greatly contributed to building a reputation extending beyond national boundaries. Luxair Tours, Luxair Handling Services, and Cargo Handling participate in diversifying the group to cover all areas of transportation, business, leisure, travel, and freight. And each of these service entities has clearly demonstrated its efficiency and profitability. Today, thanks to an extensive European network, Luxair provides business and pleasure travel excellence, playing a leading role in the economic development of the multicultural region. The natural territory of an authentic regional carrier: Luxair.

In 1964, aircraft were grounded at weekends and during the holidays for lack of business travelers, so Luxair decided to launch holiday flights to Nice, Palma, and Barcelona. Meeting with immediate success, the new tour operator branch, soon to be known as Luxair Tours, was born. And as Luxair's fleet expanded, new destinations were added to the operator's catalogue, culminating at nearly 40 today, with a realistic goal of transporting 400,000 passengers in 2007.

Opened in 1996, the current Luxair Cargo Center ranks Luxembourg today as one of Europe's Top Five airfreight hubs, after Frankfurt, Paris, London, and Amsterdam, with annual results well above the most optimistic forecasts. This world-class freight hub is a true success story. Initially built for 500,000 tons capacity, it today exceeds the 810,000 tons, thanks to the opening of the Logistic Center in 2001, bringing Luxair Cargo handling capacity up to 750,000 tons. This is why a new extension, bringing capacity levels up to 1,000,000 tons, is due to open by the end of 2007. Today, Luxair handles freight for nearly a dozen companies, with Cargolux and its fourteen Boeing 747-400Fs as the group's biggest customer to-date.



FORWARD INTO THE FUTURE !

The priority given to the quality of customer service is at the heart of the "building a new airline" project and drives all the Luxair group's activities. *"The underlying principle of all Luxair's activities and services is to focus on the customer and we intend to make it work,"* declares Adrien Ney, President and CEO of Luxair. *"The Q400 will help us to do this."* The qualities of the Q400 can be summed up in a few key words: greater comfort, quicker, quieter, more economical and less polluting.

One of the main criteria for quality of air travel is cabin comfort. The Q400 cabin is spacious and light and offers exceptional comfort. The two-metre high ceiling gives plenty of room to stand up and access the baggage compartments above the seats. Luxair is having their Q400s fitted with only 72 seats so that they are comfortably spaced. The ergonomic leather seats are arranged in two pairs abreast, offering plenty of space, even for long-legged passengers. With 72 seats, this aircraft will be better suited for flying to its main destinations, i.e., Frankfurt, Paris, and London, than the Boeings, which are often too big, or the Eurojets, which often are too small. The Q400 is also more economical in respect of fuel, consuming 25% less fuel per seat than a jet, a significant amount in view of increased fuel prices. The reduction in costs per seat means that although there are only 72 seats, Luxair can offer a more flexible, attractive price structure and still expect its "Airline" activity to break-even by 2008.

Also of great importance to Luxair - the Bombardier Q400 is the best choice where the environment is concerned. It uses advanced technology which means that it is less noisy, consumes less fuel and also produces less greenhouse gas, up to 62% less CO₂ and up to at least 67% NO_x. So Luxair's purchase

of the Q400 is also a way of emphasising its concern for the environment with an aircraft which is more in tune with the new rules to control global warming than with traditional aircraft.

As a practical expression of the changes and in order to revitalize its corporate culture, Luxair will also modernize its image in September 2007. As previously mentioned, the first Q400 gives a foretaste of this new identity, which will reflect the values of the new Luxair: quality, service to the community, reliability, and responsibility.

Luxair's first Q400 made its first commercial flight on June 11th on the Frankfurt route, the second aircraft will cover the Paris link from July 9th, and the third Q400, from September 17th, will link Luxembourg to the London-City Airport.

The accompanying photographs show Luxair's flight attendants in the cabin and standing in front of the airline's new Q400 with Adrien Ney, President and CEO, and flight crew at delivery celebrations on June 6, 2007.

The flight attendants are wearing Luxair uniforms representing styles worn from 1962 through to the new look, first worn with the entry into service of the Q400 on June 11, 2007.



Bombardier staff assigned to assist Luxair includes Lyndsay Lentine, Customer Support Account Manager, Doug Caldwell, on-site Field Service Representative, Jim Close, Spares Sales Manager, and John Vieira, Spares Customer Account Manager.

More information on this operator can be found on the website: www.luxair.lu

Q400-ISAR-2007-06-0002

Top In-Service Issues Update

Reference: note that this update supersedes that which was published in Q400-ISAR-2007-05.

The following is an update of the top in-service issues as prioritized by the Technical Steering Committee (TSC). The issue priority numbering is updated from the previous appearance in the ISAR. Closed issues are removed from the list in subsequent ISARs, though they continue to be monitored and may be reintroduced if the corrective action is determined to be unsatisfactory.

New material is highlighted in **blue text**. All significant changes since the last ISAR are indicated by a heavy turquoise revision bar in the right-hand margin.

A reference code (Ref.) is included at the end of the last line of every issue narrative to provide operators with additional information regarding when and where the issue was raised, and when it is expected to be closed. This reference code is to be interpreted as follows in the example:

4Q99/NA/1Q06 **4Q99** represents the quarter (Q) and year when the issue was first accepted for action in the Top In-Service Issues list.
NA represents the region in which the issue was raised (NA is North America; SA is South America and Caribbean; E is Europe; ME is Middle East and Africa; AP is Asia/Pacific; ALL is all Q400 operators).
1Q06 represents the quarter and year when the issue is expected to be closed. This is an approximate date and cannot be provided until a Modsum is approved to proceed and a schedule is developed.

SUMMARY				
ISSUE TYPE	TOTAL CLOSED SINCE MAY 2000	CLOSED IN THIS ISAR	NEW IN THIS ISAR	TOTAL STILL OPEN
IN-SERVICE	152	0	0	10
AIRWORTHINESS	26	0	0	3

IN-SERVICE ISSUES - OPEN

1. Fuselage Damage Due to Lighting Strikes - Class 3-17; ATA 5300

Operators have reported several lightning strikes causing damage to the fuselage.

This is a significant concern on Q100/200/300 aircraft, and a CSI was issued to test the effectiveness of conductive paint. The CSI results indicated some improvement.

An IS Modsum is to be issued to allow operators to use conductive paint (availability to be advised). Ref.3Q00/E/TBA.

2. Air Intake Door Linear Actuator - PCR 40444; ATA 7160

Operators have reported a relatively high replacement of intake door linear actuators.

A review of the AMM determined that there are no rigging procedures specified when the linear actuator or foreign debris door are replaced. AMM TR71-046 (Task 71-61-06-830-801) was issued to address rigging of the actuator rod end when the actuator is replaced. Ground testing of the existing unit was completed under various loads to evaluate and determine the cause of the failures. A new design specification was issued to an alternate vendor to develop a prototype unit.

A test plan and new prototype actuator is awaited for testing and evaluation. The TSC prioritized this issue as "low". Some operators have sought an alternate manufactured by Novatronics. Field results have indicated that the actuator installed under STC SA02-18 (p/n TCCA-PDA-NI-H949B) life expectancy is greater than the current ITT unit installed. Ref.4Q03/ALL/TBA.

3. FMU / Fuel Pump - ATA 7310

There is an issue with external fuel leakage from the FMU and safety wire damage to the FMU fuel pump plugs.

FMU fuel leakage is due to internal passage cavitation. This may result in a leakage path to the external housing surface. P&WC Service Bulletin 35117 was issued to add a pressure pulsation attenuator in the drain screen bore to eliminate cavitation. Units with leakage require immediate replacement. HS pool units are available. On-wing incorporation was completed. A repeat inspection was introduced for damage to the FMU fuel pump due to safety wire. A 50-hour inspection was introduced by SB 35093 (escalated to 400 hours in Sep.2003 and to 500 hours in Mar.2004). An evaluation was conducted of alternate locking methods for the FMU fuel pump; this included a polymer patch, tab washer, and alternate lockwire routing. Redesign of the plug locking feature has settled on individual lockwiring of the plugs to the housing.

P&WC issued CSU SB 35145 for evaluation of the new locking arrangement. The target for CSU completion was 1Q07. Ref.4Q03/ALL/TBA.

4. PEC Software Upgrade - PCR 40813; ATA 6120

Fault Code 84 is triggered if the unit is operated beyond 13,500 powered-up hours because the NVM becomes full due to a problem with excessive data logging.

A Temporary Revision was issued for PEC CMM 61-20-01 and for the AMM to allow preventative NVM resets to be undertaken in the field prior to 13,500 powered-up hours (ref. Dowty Service Letter E282). Training is available for this task. A reset procedure is in place and reset cables are available (operators should contact Ultra). Dowty issued Service Letter E300 recommending an NVM reset at every "C" Check.

Dowty is to revise the software to eliminate the NVM problem. The opportunity will be taken to incorporate several other product enhancements in the software to improve unit reliability. The revised software was delayed due to the increased scope being defined. The software revision is now planned to be released by Dec.2007. Ref.4Q03/ALL/TBA.

5. Fuel Filter Impending Bypass Switch Reliability - ATA 7330

There is an issue with fuel filter impending bypass switch removals due to indication unrelated to filter contamination (false impending bypass indication, Fault Code 906, and false channel mismatch, FC766).

Thirty switches were returned following the impending bypass indication from Jan.2002 to Aug.2003. Sixteen switches were confirmed for various anomalies, one pending investigation. The microswitch fails open-circuit with a high resistance / fluctuating signal. The switch manufacturing process is under review.

Returned units are being investigated. Ref.4Q03/ALL/TBA.

6. APU Generator Reliability - PCR 41439; ATA 4900

Operators are experiencing poor APU generator reliability.

Bombardier and Honeywell formed a team to determine the root cause. IS Modsum 4Q4950001 was issued to install harder engine starter generator brushes on several in-service aircraft for evaluation. The fleet trial determined that the new brushes did not improve APU reliability, therefore the evaluation was discontinued. Service Letter DH8-400-SL-49-002 was issued informing operators of a new APU garlock seal to minimize oil contamination. Older garlock seals have been known to leak oil and contaminate the APU generator, resulting in poor generator reliability.

Bombardier is working with Honeywell to optimize the design and the overall project plan; this includes the availability of parts and Service Bulletin. A more detailed update was to be provided at the Apr.2007 TSC meeting. A preliminary design concept for the series battery start (SBS) has been developed and certification requirements have been tentatively established. Systems and Design Engineering are developing a project plan. The project duration is expected to be 14 months. Ref.1Q05/ALL/TBA.

7. Nose Landing Gear Proximity Sensor Failure With New Guide Assembly - PCR 41409; ATA 3260

There is an issue with premature failure of nose landing gear sensors with the installation of the post-Modsum 4-113485 proximity sensor harness guide assembly.

Two operators reported premature failures of the nose landing gear proximity sensor harness following installation of the new post-Modsum 4-113485 proximity harness guide assembly (ref. SB 84-32-33). Two sensors were sent to Goodrich for testing; both passed the initial acceptance test, however, following additional testing in a moisture-rich environment, it was found that moisture contamination in the sensor affected functionality. Additional sensors were received by Goodrich for testing. The final report from Goodrich confirmed that moisture ingress into the sensor affects insulation resistance. Harnesses returned to Goodrich from various operators were disassembled and found to have broken wires. Goodrich visited European operators to discuss installation of the new guide and harnesses to assist in explaining the

optimum installation to ensure that the harnesses are not stressed and do not break. Service Letter DH8-400-SL-32-005 was issued to reset the insulation resistance threshold to 1 mega-ohm. RIL 84-20-012 was issued for application of silicon sealant to the sensor. Goodrich developed a new potting compound for the sensor body to reduce moisture ingress. An environmental test was completed and was successful. The new potting compound was introduced to the 40102-0101 and 40102-0201 sensor assemblies. The sensor p/n will be 40102-0301 for the nose landing gear harness redesign. The environmental test of the new proximity sensor was completed. New 40102-0101 and -0201 sensors are available to operators on an attrition basis, and will be offered free-of-charge for aircraft within the warranty period.

Sensor p/n 40102-0301 with the new potting compound is to be used in the new nose landing gear WOW/steering harnesses following satisfactory life-cycle testing. The initial fatigue test on the proposed harness redesign lasted 59,987 cycles before failure (failure occurred in the conduit jacket material, not in the wire; the existing wire remains unchanged). A second life-cycle test will have new conduit jacket material populated with the same wire. Modifications to the guide assembly are taking place to ensure a smooth bend radius with new upper and lower line blocks. The test is to last 60,000 cycles: 30,000 cycles at 18°C to 23°C, and 30,000 cycles at -35°C to -40°C, followed by another 60,000 cycles at ambient temperature. As of Dec.7, 2006, the test rig was at 28,000+ cycles with no evidence of damage to the conduit. Ongoing insulation resistance is acceptable, with no anomalies. Repeat insulation resistance testing is to be performed for degradation of the sensor wire. Ref.1Q05/ALL/TBA.

8. Nosewheel Steering Solenoid Improvement - PCR 40924; ATA 3250

Operators have reported a loss of nosewheel steering due to failures in the steering manifold solenoid valves.

Investigation determined that the failure mode of the solenoid valve is due to a shorted transorb. It is believed that the failure may be the result of aircraft level transient spikes. In cold weather, the failure rate of the transorb is more pronounced due to a reduced voltage rating. A new solenoid valve (p/n 27003-7) was developed incorporating a diode in lieu of the transorb. The diode has similar performance characteristics but is designed to handle transient electrical spikes. Six modified solenoid valves (p/n 27003-7) were made available for field trial. As an interim action, Goodrich allocated twenty additional spare solenoid valves (p/n 27003-5) to minimize aircraft out-of-service time in the event the nosewheel steering fails as a result of the solenoid. IS Modsum 4Q3200023 was released for an in-service trial for the six modified -7 solenoids. Six operators were selected to install the modified solenoids. An in-service operational update from all operators indicated that the solenoids were working well. Comparison testing of the -5 and -7 solenoid valves showed them both to be satisfactory. The current field result with the -7 solenoid was successful, with only one failure resulting from a chafed wire (no failure of the transorb).

It has been requested by Bombardier to incorporate the 27003-7 solenoid in new production aircraft. The new solenoid is to be introduced on in-service aircraft on an attrition basis. Ref.1Q05/ALL/TBA.

9. Air Ingress at Elevator PCU - PCA 40886; ATA 2910

Operators have reported problems with air in the hydraulic systems.

It is believed that air may enter the No.1 and No.2 hydraulic systems through the elevator PCU seals after shutdown. During aircraft system operation, the fluid heats up; on shutdown, the system cools. The reservoir has a certain level of friction and, as the fluid cools and contracts, there is a partial vacuum in the system. As elevator PCUs are known to have small amounts of fluid leakage past the seals, air may also be pulled in. IS Modsum 4Q2700005 was issued to introduce a check valve with a low cracking pressure (15 psid) to prevent a vacuum pulling in air at the PCU. The Modsum installs a hydraulic union incorporating a check valve at the PCU (a straight swap for the existing union). Check valves will be installed in hydraulic systems No.1 and No.2 only. The check valves are available.

Parker is investigating a seal design improvement for the elevator PCU that would eliminate the need for the check valve in the future (long-term solution). Ref.1Q05/ALL/TBA.

10. Flap Power Nuisance Caution Light - PCR 41121; ATA 2750

Repeated caution light illuminations have occurred in flight and on the ground (primarily during the startup sequence). This results in the loss of flap control when it occurs in flight, and sometimes cannot be reset by the flight crew.

The condition requires a power reset (non-latched case) or NVM reset on the ground (latched case), causing delays and occasional cancellations. This issue is under investigation. Testing isolated a design weakness in the FCU. An FCU design change was proposed to prevent the nuisance fault and prevent the fault from latching.

Operators are requested to supply data concerning fault codes and aircraft configuration at the time of failure. Bombardier and Microtecnica are moving forward with a technical solution. Availability of an in-service solution is targeted for the end of 3Q07. Ref.1Q05/ALL/TBA.

AIRWORTHINESS ISSUES - OPEN

1. **Fuel and Hydraulic Line Leakage at Fittings in Forward Nacelle Fire Zone** - PCR 40438; ATA 2900

Several reports were received of hydraulic fluid leakage from around the permaswaged bulkhead fittings in the forward nacelle fire zone.

Three hydraulic tubes and two fuel tubes are mounted to the mid-frame of the nacelle with swaged bulkhead fittings. Due to engine load and landing load, the mid-frame displacement strains the tubes and may cause them to leak around the swaged fittings. AOM 068A was issued to advise operators to inspect the affected area for leakage. Modsum 4-113443 was issued to introduce a soft-mount between the bulkhead fitting mounting plate and the mid-frame; this will allow the tubes to move independently from the mid-frame and avoid working of the swaged joint (PCI at S/N 4090).

Service Bulletin availability is to be advised. Ref.2Q01/E/TBA.

2. **Hydraulic PTU Overspeed** - PCA 40884; ATA 2910

Several incidents were reported in which the No.2 hydraulic system failed, accompanied by pressure fluctuations in the No.1 hydraulic system. This resulted in major damage to the PTU.

It is believed that the lack of a PTU advisory light, along with various caution light indications and pressure fluctuations in the No.1 hydraulic system, may have caused the flight crew to misinterpret what is occurring during these incidents and inadvertently omit one of the steps in the AFM procedure. Following a loss of No.2 hydraulic system fluid, the AFM requires PTU CNTRL to be selected to 'NORMAL'. In this position, the control logic prevents the PTU from running when the hydraulic reservoir fluid level is low. If PTU CNTRL is left in the 'ON' position, the protective logic is bypassed and the PTU will run continuously until it eventually overheats and seizes. The Aeroplane Operating Manual was revised (Rev.21) to add a note to clarify the consequences of not strictly following the AFM procedure. AOM 152 was issued to advise operators. Since issuance of AOM 152, another incident was reported in which it was confirmed that the appropriate AFM procedure had been correctly followed. In spite of this, the No.1 hydraulic system pressure fluctuations and related hydraulic system caution light indications continued. In addition, the No.1 "HYD FLUID HOT" caution light illuminated, indicating that the hydraulic fluid temperature had exceeded 225°F. If the hydraulic fluid temperature had continued to increase to 275°F, the No.1 system hydraulic firewall shutoff would have closed, leaving only the standby power unit (SPU) available. The SPU is not capable of meeting the increased flow demands of the PTU and other No.1 hydraulic system services, therefore the No.1 hydraulic system would have failed as well. AFM Temporary Amendment No.13 was issued to require the HYD PWR XFER circuit breaker to be pulled in the event of a fluid loss from the No.2 hydraulic system. AOM 165 was issued to advise operators. TC AD CF-2006-08 was issued to mandate compliance with AFM Temporary Amendment No.13. AOM 187 was issued to transmit the AD to the operators.

To prevent the PTU from remaining on in the event of a loss of fluid in the No.2 hydraulic system, Modsums 4-126354 and 4-126357 will be issued to modify the control logic. These Modsums will also introduce changes to the PTU autostart logic to ensure proper startup under all operating conditions (PCI at S/N 4150; schedule to be advised). Ref.1Q05/ALL/TBA.

3. **Roll Spoiler Panel Uncommanded Deployment** - PCR TBA; ATA 2760

Several incidents were reported in which a single roll spoiler panel partially deployed while the aircraft was on the ground. There was no takeoff configuration warning or jam indication prior to takeoff. The deployment was only noticed in flight due to the requirement for additional lateral trim to counteract the roll tendency.

By themselves, these events do not present a safety concern, as the aircraft remains fully controllable. However, if a spoiler panel deployment occurs on takeoff in combination with the failure of an engine or jam in the aileron system, aircraft controllability could be significantly affected. To address this concern, AFM Rev.148 was issued to require a check of the Powered Flight Control System (PFCS) indication, following advancement of the power levers for takeoff, to ensure that all spoiler panels are retracted. AOM 163 was issued to advise operators.

Despite numerous tests having been conducted on returned units, Parker has been unable to determine the root cause of this anomaly, due to its intermittent nature. To assist in identifying the root cause, Service Letter DH8-400-SL-27-010 has been issued to provide an inspection procedure to follow after an event. Ref.2Q05/ALL/TBA.

Q400-ISAR-2007-06-0550

Vibration Troubleshooting Tips

contributed by Rick Robertson, Technical Help Desk

Applicability: Q400

Reference: Note that this article supersedes Q400-ISAR-2003-07-0550, adding the troubleshooting questionnaire.

Operators continue to report vibrations during operations which, at times, have been difficult to isolate and rectify. The following provides general guidelines to assist in isolating the source of the vibration and items that have been previously identified as causes.

STEP 1

- ☑ Consult with reporting personnel to identify type of vibration experienced (pitch, roll, yaw / dutch roll, buzz through seats, controls, etc.).
- ☑ Does vibration vary with attitude, altitude, airspeed, torque, propeller speed, autopilot selection, landing gear selection, flap position, etc.?
- ☑ Proceed to the applicable step below depending on the type of vibration identified.

STEP 2

- ☑ If vibration/noise is reported in cabin, perform Active Noise and Vibration Suppression (ANVS) system test and rectify as necessary.

STEP 3

- ☑ Check Propeller Balance Monitor System (PBMS) readings to eliminate propeller balance weight errors. Adjust/rectify as required.
- ☑ Inspect propeller blades, spinner, backplate, and hub for damage, loose fasteners, erosion tape, loose/broken heater leads, etc.
- ☑ Inspect engine mounting system for degradation. Pay particular attention to Hydraulic Torque Compensation System (HTCS) for correct servicing.

STEP 4

- ☑ Visually inspect entire aircraft for loose or missing fairings, access panels, seals, fasteners, etc. Rectify as required.

STEP 5

Vibration felt through the control system may be the result of misrigged controls, loose control cables, worn attachment fittings/bearings/hardware, loose or missing fairings and/or seals, loose or partially detached closing panels, and sticking or chattering servos.

- ☑ Check for loose or missing fairings and/or seals (ref. Step 4) related to or in close proximity to controls that are believed to be causing vibration.
- ☑ Completely inspect control cables for suspect system for correct tensions and adjustment. Adjust as necessary.
- ☑ Inspect wing closing panel/shroud installations for security.
- ☑ Check relevant control surface installations for sloppiness of attachments and hardware.
- ☑ Check relevant autopilot servos for correct engagement/disengagement, binding, chattering, and general operation.

Operators are encouraged to review and distribute the information provided above. Any suggested additions, deletions or other comments related to this subject should be forwarded to the Technical Help Desk (e-mail: thd.qseries@aero.bombardier.com; telephone: 1-416-375-4000; fax: 1-416-375-4539).

As an additional aid, an Aircraft Vibration Troubleshooting Questionnaire is provided (see next page).

AIRCRAFT VIBRATION TROUBLESHOOTING QUESTIONNAIRE

The following questionnaire form has been generated to assist in isolating the sources of vibration that may be reported by flight crews. Answering the questions on this form, as completely as possible, should reduce the time required to identify the source of the vibration.

	QUESTION	RESPONSE
1	During which phase of flight is vibration noticed: takeoff, climb, cruise, descent, approach?	
2	What were weather conditions when vibration was noticed: clear, cloudy, rain, snow, ice, etc.?	
3	What was the airspeed when vibration was noticed?	
4	Does vibration change or stop with airspeed change? Explain.	
5	Does vibration change or stop with propeller speed? Explain.	
6	Does vibration appear to be aircraft attitude related? Provide details.	
7	Does vibration change with torque? Explain.	
8	Is vibration related to pitch, roll, yaw / dutch roll, buzzing through seats, etc.?	
9	Is vibration related to autopilot selection? Provide details.	
10	Does vibration change with landing gear position? Explain.	
11	Does flap position affect vibration? Explain.	

After this information has been gathered from the flight crew, the troubleshooting steps provided in this article should be followed to isolate and rectify the situation.

Q400-ISAR-2007-06-2700

Aileron Control Cable Wear

Applicability: Q400

Reference: AOMs 122 & 224; SB 84-27-26; RD8/4-27-010; AMM TR27-237

Editor's Note: This ISAR article reiterates the content of recently released AOM 224 to emphasize the importance of conducting control cable checks.

AOM 122 (Special Inspection of Aileron and Spoiler Control Cables) and SB 84-27-26 (Aileron System and Spoiler System - Control Cable Wear - Special Inspection/Rectification) were previously issued to address concerns regarding premature wear of the spoiler and aileron control cables on the wing rear spar. The intent was for operators to perform a one-time special inspection of these cables to remove excess grease, check for wear, and ensure the correct cable tension. A feedback form was provided to gather data in order to substantiate that the current maintenance program intervals and tasks are satisfactory. Unfortunately, very little operator feedback was received in response to SB 84-27-26.

One operator has recently reported finding a severely worn aileron control cable on one aircraft. A fleet inspection was subsequently conducted; the results indicated that 17 of the 23 aircraft inspected had at least one cable with wear beyond the limits allowed per the Aircraft Maintenance Manual (AMM). In addition to these findings, another operator has commenced a fleet inspection. The results indicate that, of the 29 aircraft inspected to-date, two aircraft had cables with broken wires within the AMM limits. However, in all cases, the cable tension was well below the limits specified in the AMM.

Cable tension is of particular concern on the wing rear spar. The long, straight cable run with minimal cable wrap around the pulleys at the wing dihedral just outboard of the nacelle, in combination with the operating environment (wing flexing and nacelle vibration), make the cables more prone to accelerated wear.

To address this concern, it is suggested that operators consider implementing a summer and winter check of the cable tensions on the wing rear spar. The AMM has recently been revised to include cold weather cable tensioning limits. In addition, if the cables have not been inspected within the last 24 months, operators should consider performing an inspection in accordance with SB 84-27-26. It is important that the results of any inspections be returned to the Technical Help Desk on the form provided in SB 84-27-26. This information will be used to evaluate the adequacy of the current maintenance practices. The current program requires a detailed visual inspection (DVI) of the flight control cables at a "2C" interval. This interval may need to be re-evaluated for the cables on the wing rear spar.

For those operators with aileron control cable wear in excess of the AMM limits, Repair Drawing RD8/4-27-010 was issued to allow continued operation with up to 12 broken strands for up to 500 flight-hours. This allowance is subject to a repeat DVI at each "L" Check.

Operators are requested to direct responses and inquiries regarding this subject to their Bombardier Regional Aircraft Field Service Representative or the Technical Help Desk in Toronto at telephone: 1-416-375-4000; fax: 1-416-375-4539; e-mail: thd.qseries@aero.bombardier.com.

Q400-ISAR-2007-06-3151

Caution Light Panel (CLP) Troubleshooting Software

contributed by Claus Kirchebner & Martin Zohrer of Infotools and Christian Geisler of Tyrolean Airways

Preface from Tyrolean Airways

The Caution Light Panel (CLP) software tool was developed by Claus Kirchebner and Martin Zohrer of Infotools in Austria. They can be contacted at: infotools@chello.at; telephone: 43-699-10742997.

The CLP software has been developed by maintenance control personnel for maintenance control personnel. The software has been produced to make it as user-friendly as possible. There are no questions to answer; there is no text or numbers that have to be entered - the tool is controlled solely by mouse. There is actually no keyboard required to work with the tool. If a pilot calls in with a problem, the maintenance controller can talk to the pilot on the telephone while simultaneously working with CLP using his mouse, without having to type input. All the user has to do is click on the affected "CL" or "WRNG" light, then go to the appropriate links and pages. CLP will not simply give a percentage number regarding the possible faults, but will directly guide the user to the solution for the problem. This system saves an enormous amount of time during troubleshooting, and has had a remarkable effect on aircraft reliability at Tyrolean.

CLP - Caution Light Panel

Q400 Link and Troubleshooting Software

The CLP software is a tool to dispatch the Q400 aircraft fast and more efficiently. Aircraft reliability and consequent profit will increase. Tyrolean Airways have used this software for three years. During this time, the airline has experienced an increase in dispatch reliability.

The CLP program is split into one main part (animated and linked caution light panel) and four side parts (manuals / show / readout / links).

All caution lights are active. Clicking the related caution or warning light button leads straight to the FIM / AMM / AIPC tasks and gives a short overview as to why the light comes on. Selecting the MORE side key (on top of the page) leads to animated systems, wiring, parts, and other troubleshooting information.

C.L.P. (CAUTION LIGHT PANEL) ■ ■ ■ ■ ■
Q400 LINK & TROUBLESHOOTING SOFTWARE.

THE "CLP" Q400 SOFTWARE IS A TOOL TO DISPATCH THE AIRCRAFT FAST AND MORE EFFICIENTLY. YOUR AIRCRAFT RELIABILITY WILL GO UP AND THE PROFIT INCREASES.

TYROLEAN AIRWAYS HAVE USED THIS SOFTWARE FOR 3 YEARS. DURING THIS TIME THEY HAVE EXPERIENCED AN INCREASE IN THEIR DISPATCH RELIABILITY.

THE PROGRAM IS SPLIT INTO ONE MAIN PART (ANIMATED & LINKED CAUTION LIGHT PANEL) AND FOUR SIDE PARTS (MANUALS / SHOW / READOUT / LINKS).

ALL CAUTION LIGHTS ARE ACTIVE. CLICKING THE RELATED CAUTION OR WARNING LIGHT BUTTON THE PROGRAM LEADS STRAIGHT TO THE FIM / AMM / IPC TASK'S AND GIVES A SHORT OVERVIEW WHY THE LIGHT COMES ON. WHEN SELECTING "MORE" SIDE KEY (ON TOP OF THE PAGE) IT WILL LEAD TO ANIMATED SYSTEMS, WIRING, PARTS AND OTHER TROUBLESHOOTING INFORMATION.

ALL SIDE LINKS ARE SPLIT AS FOLLOWS

MANUALS	-RACS MANUALS ONLINE / FAULT ISOLATION MANUAL ONLINE /
	-IPC ONLINE / RACS ONLINE
SHOW	-UNIT LOCATION WITH ACCESS PANELS / CIRCUIT BREAKER PANEL /
	-CALCULATOR / MAINTENANCE PANELS / TELEPHONE NUMBERS
READOUT	-ARCDU / PSEU
LINKS	-BLEED

ON THE NEXT PAGES THE MAIN FUNCTIONS OF THE SOFTWARE ARE ILLUSTRATED.

IF YOU NEED ANY FURTHER INFORMATION FEEL FREE TO CONTACT US.

infotools
custom software solutions OG ■ ■ ■ ■ ■

E MAIL: infotools@chello.at
Phone: +43/(0)699/10742997

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All side links are split as follows:

MANUALS - includes manuals carried online by RACS (FIM, AIPC, etc.)

SHOW - unit location with access panels / circuit breaker panel / calculator / maintenance panels / telephone numbers

READOUT - ARCDU / PSEU

LINKS - bleed

The following illustrations show the main functions of the CLP software.

Q400

INFO C-L-P TRAIL VERSION

ON THE START PAGE OF THE "CLP" Q400 SOFTWARE MOVE MOUSE (FOR EXAMPLE) OVER THE "DEICE PRESS" C/L AND **CLICK** THE LH MOUSE BUTTON.

ALL CAUTION LIGHTS ARE ACTIVE, CLICKING THE RELATED CAUTION OR WARNING LIGHT BUTTON THE PROGRAM LEADS STRAIGHT TO THE FIM /AMM / IPC TASK 'S AND GIVES A SHORT OVERVIEW WHY THE LIGHT COMES ON.

FOR EXAMPLE PILOT COMPLAINT, "DEICE PRESS" C/L ON AND ALSO LH WING (#4) ADVISORY LIGHT ON ICE PROTECTION PANEL WILL NOT COME ON.

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2/11 infotool@chello.at

BACK TO CLP DEICE PRESS (FIM TASK 30-10-00-810-801) MEL ITEM 9.30.10.4 Low Pressure Switches 9.30.10.2 DEICE PRESS Caution Light INFO C-L-P TRAIL VERSION

The CAVP DEICE PRESS caution light comes on for the conditions that follow:
 <One or more boost inflation or dwell pressure is not sensed by the inner and monitor unit (TMU) in four seconds
 <Left or right deice manifold pressure less than 12.5 psig is sensed by the left or right low pressure warning switch.

FAULT CONFIRMATION
 FIM & AMM TASK 'S
 (ALL LINKS ACTIVE TO ONLINE MANUALS)

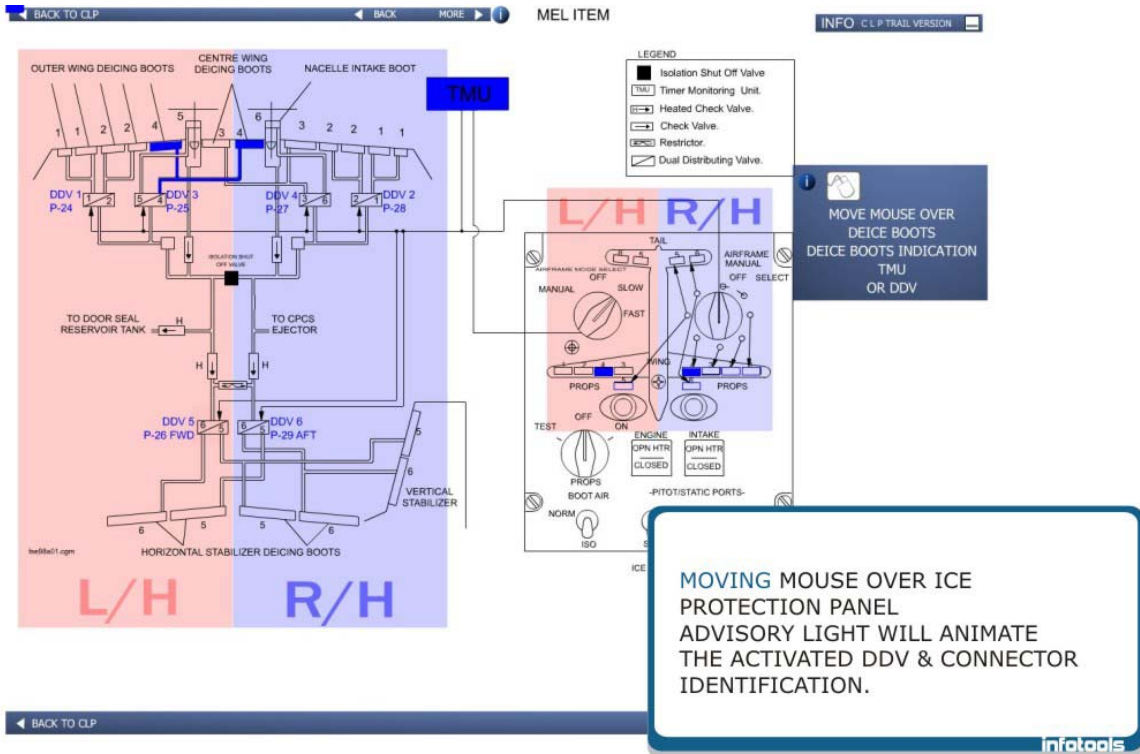
ADDITIONAL INFORMATION
 LIKE CIRCUIT BRAKER LOCATION .

SELECTING THE "MORE" SIDE KEY ON TOP OF THIS WINDOW => NEXT WINDOW WILL BE DISPLAYED.

infotools

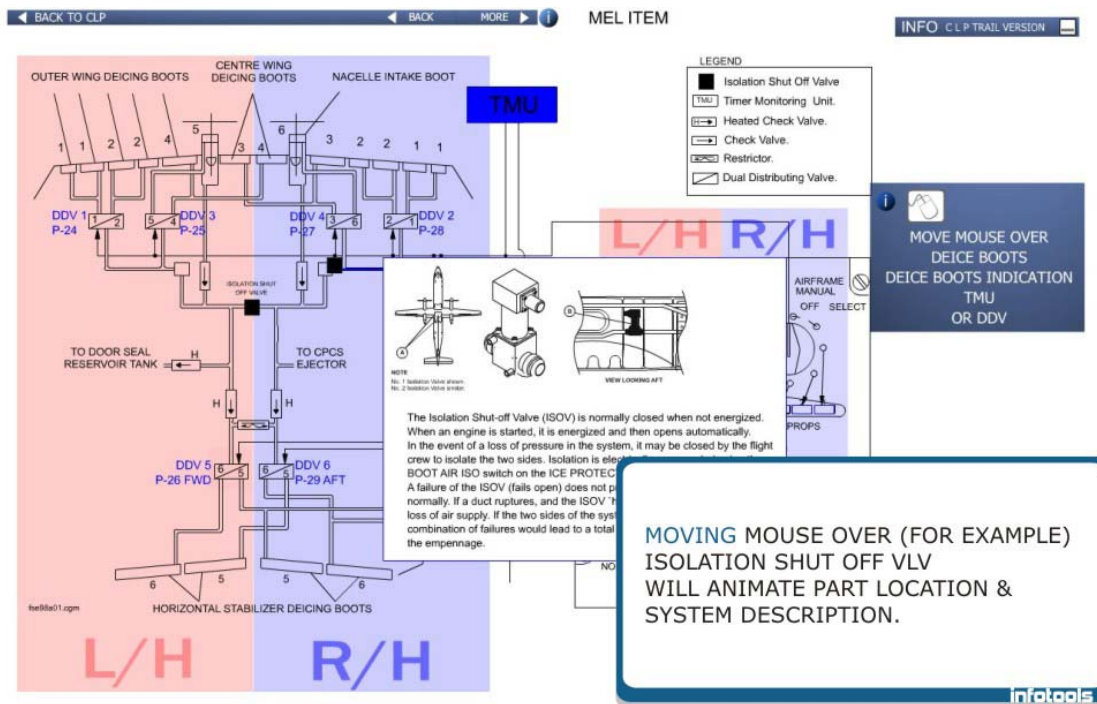
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← BACK TO CLP ← BACK MORE → MEL ITEM INFO ELP TRAIL VERSION

FOR INFORMATION PURPOSES ONLY !!

Additional Info:
Valves, Dual Distributing
PIN 4100S005-02
or 4100S005-03

R/H O/B 85517023-006
R/H I/B 85517022-006
VERTICAL 85537093-007
or 85537093-001
L/H O/B 85517023-005
L/H I/B 85517022-005

85720306-004
85720305-004
85720304-004
85720313-004
85720302-004
85720220-004
85720220-003
85720302-003
85720313-003
85720304-003
85720305-003
85720306-003

IB WING SCREWS PIN NAST5
O/B WING SCREWS PIN

**SHOW ALL ACTIVE IPC LINKS
FOR LEADING EDGES / SCREWS / DDV**

Additional Info:
HORIZONTAL STABILIZER FOR PARTS SEE AMM 55-13-00 Page 0
VERTICAL STABILIZER FOR PARTS SEE AMM 55-33-00 Page 0
IB WING FOR PARTS SEE AMM 57-13-00 Page 0
O/B WING FOR PARTS SEE AMM 57-23-00 Page 0

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← BACK TO CLP ← BACK MORE → WC BAGG COMP EXIT

RELAY JUNCTION BOX 3

ACCESS PANEL # 1

Illustrated Parts Catalog

REM: 24-50-60-000-801

INST: 24-50-60-400-801

RELAY JUNCTION Box 2
RELAY JUNCTION Box 1
RELAY JUNCTION Box 3

1
2
3
4
5
6
7
8
9
10
11
12

1
2
3
4
5
6
7
8
9
10
11
12

WRB DIGITAL PASSENGER ANNOUNCEMENT SYSTEM
WRB DATA TRANSFER UNIT (DTU)
WRB PASSENGER ADDRESS AMPLIFIER (PAA)
WRB GROUND PROXIMITY WARNING COMPUTER (GPWC)
WRB REMOTE CONTROL AUDIO UNIT (RCAU)

1 RELAY JUNCTION BOX 3
2 RELAY JUNCTION BOX 2
2 RELAY JUNCTION BOX 1
2 TCAS-COMPUTER
2 ATC-TRANSPONDER 1 OR 2
3 VDL 4000 DATA LINK
3 HGS COMPUTER
4 FLAP CONTROL UNIT
4 ELECTRONIC CONTROL FLUSH UNIT
4 FLAP POSITION INDICATION UNIT
4 ELECTRONIC CONTROL ENVIRONMENT UNIT
5 G-SWITCH
5 RADIO ALTIMETER 1 OR 2
6 CP-BOX FOR NVS
6 NVS-COMPUTER
6 APU G/C GENERATOR CONTROL UNIT
6 A/C
7 ANT
7 HGS
7 FUEL
8 TIME
8 PRO
8 AHS
9 IRS
9 VHF

UNIT LOCATIONS

MOVING MOUSE OVER RELAY JUNCTION BOX (EXAMPLE) BY CLICKING THE LH MOUSE BUTTON YOU WILL BE DIRECTED TO IPC / REMOVAL & INST. ONLINE LINKS.

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◀ BACK TO CLP C/B LOCATION QUICK FINDER ▶ BACK MORE ▶

CHAPTER 22 AUTOFLIGHT

CHAPTER 23 AUDIO
CVR
FLT ATT
VHF COM
NVS
PA

CHAPTER 24 AVIONIC FEEDERS

CHAPTER 27 STALL WARNING
STICK PUSHER
FLAP

CHAPTER 31 CLOCK
FDR

CHAPTER 32 WEIGHT ON WHEEL

CHAPTER 34 ADF
ADU
AHRS
AHRS CONT
ATC
DISPLAY
DISPLAY CONT.
DME
FMS
GPWS
RAD ALT
TCAS
VHF NAV
WxD

ADU

AVIONICS CIRCUIT BRAKER PANEL

A7 ADU #1
C7 ICP #1
A6 ADU #2
C6 ICP #2

additional info

AVIONICS CIRCUIT BRAKER PANEL ▶
LEFT MAIN CIRCUIT BRAKER PANEL ▶
115 V AC CIRCUIT BRAKER PANEL ▶
RIGHT MAIN CIRCUIT BRAKER PANEL ▶

C/B LOCATION QUICK FINDER

(C/B) LOCATIONS & POSITION WILL BE DISPLAYED WHEN SELECTING ONE LISTED SYSTEM.

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◀ BACK TO CLP E-mail to infotools

◀ BACK TO CLP ▶ BACK MORE ▶

LEFT MAIN CIRCUIT BRAKER PANEL ▶ RIGHT MAIN CIRCUIT BRAKER PANEL ▶ 115 V AC CIRCUIT BRAKER PANEL ▶

AVIONICS CIRCUIT BRAKER PANEL -400

ALL CIRCUIT BRAKER PANELS CAN BE DISPLAYED

FOR EXAMPLE LH AVIONICS CIRCUIT BRAKER PANEL

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◀ BACK TO CLP E-mail to infotools

← BACK TO CLP

ENGINE INSTRUMENTS

ARCDCU VERSION 0.01

FOR POSSIBLE FAULTS OPEN FAULT ISOLATION MANUAL AND FILL IN THE SEARCH FIELD FAULT CODE IS *** AND PUSH ENTER

NUMBER OF FAULTS PUSH NEXT FOR NEXT FAULT CODES

ENG 2 1 1 57 SEE MORE < 57

FLIGHT DECK PARAM MORE

16 - JAN - 2005 09:31:48

SUSPENDED LINK PROGN

< IGNITER B 50

IGNITION BOX > 35

< ENG CONTROLS HARNESS 10

EEC (DISC OUT) > 5

PUSH FOR MORE INFORMATION FOR THIS FAULT CODE

PUSH RET FOR POWERPLAN FAULTS MENU

ARCDCU SIMULATOR

THE ARCDU SIMULATOR IS A GUIDE FOR T/S IN CO-OPERATION WITH THE FLIGHT CREW, TO RECEIVE FAULT CODE INFORMATION FROM THE ARCDU.

ACTIVE LINKS LIKE POWERPLANT, ED FAULTS, FADEC FAULT CODE CLEAR, PEC FAULT CODE CLEAR

infotools

Additional info:

POWERPLANT, ED (Advisory) - TASK 77-31-00-810-835

Fault Isolation

FADEC Fault Code Clear TASK 73-21-00-070-801

PEC Fault Code Clear TASK 61-20-36-070-801

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Operational Check of the Proximity Sensor Electronic Unit (PSEU) BITE Panel TASK 32-61-00-710-801

Retrieval of Data from the Proximity Sensor Electronic Unit (PSEU) TASK 32-61-00-742-801

Erase the Data from the Proximity Sensor Electronic Unit (PSEU) TASK 32-61-00-743-801

Inductance Value Check of the Proximity Sensors TASK 32-61-00-280-801

Removal of the Proximity Sensor Electronic Unit TASK 32-61-01-000-801

Installation of the Proximity Sensor Electronic Unit TASK 32-61-01-400-801

Rigging of the Proximity Sensors TASK 32-61-06-830-801

NOTE: The items in the top menu show in the sequence that follows:

PSEU SIMULATOR

THE PSEU SIMULATOR IS A GUIDE FOR T/S IN COOPERATION WITH THE FLIGHT CREW, TO RECEIVE FAULT CODE INFORMATION FROM THE PSEU.

ALL OTHER INFORMATIONS ARE ACTIVE LINKS.

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FAULT HISTORY ERASE

PUSH REVERSE FOR SYSTEM STATUS

PUSH YES FOR FAULT HISTORY ERASE

PUSH NEXT FOR PRESENT FAULT

PUSH ON/OFF TO SWITCH PSEU OFF

NOTE: If there is no BITE keypad activity for 15 minutes the PSEU display will go blank.

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For more information on the Q400 CLP software tool, operators can contact **Infotools** at infotools@chello.at; telephone: 43-699-10742997.

Christian Geisler, the co-contributor for this article, is the Manager of Engineering at Tyrolean Airways in Innsbruck, Austria. He can be reached at cgeisler@tyrolean.at; telephone: 43-512-222-1870.

Q400-ISAR-2007-06-3250

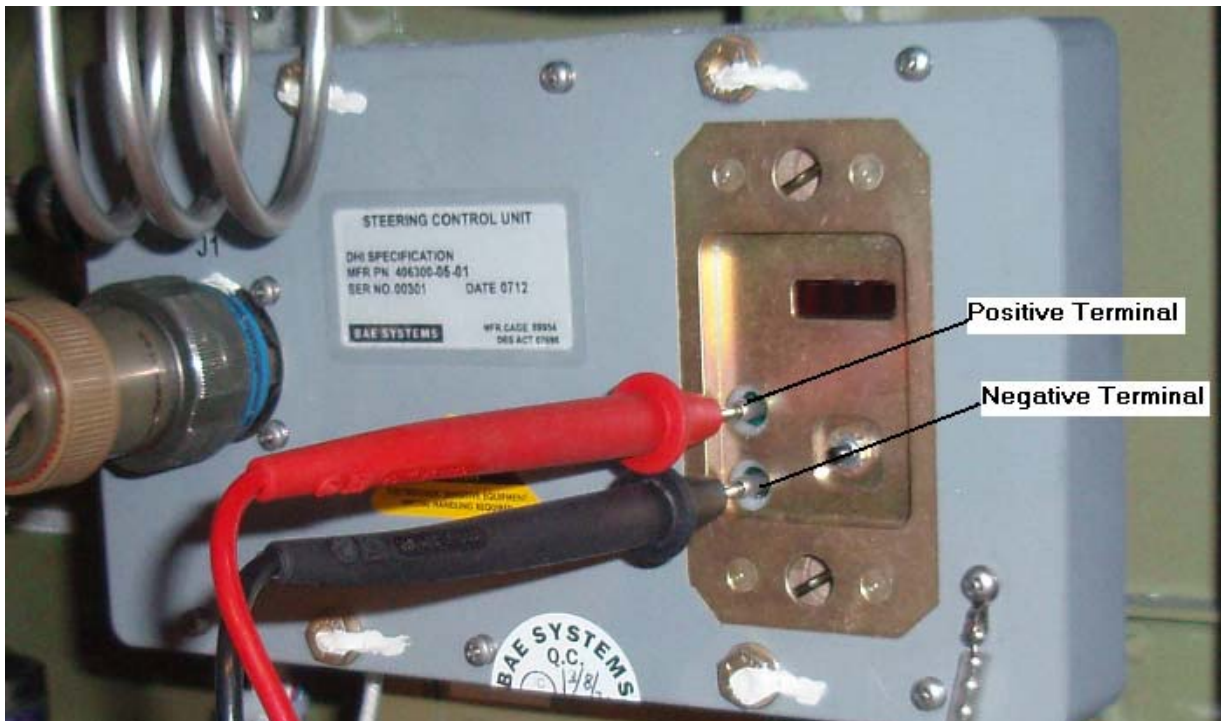
Nose Landing Gear Electronic Steering Control Unit

contributed by Dave de Vogel, In-Service Engineering (Systems)

Applicability: Q400

Reference: AMM Task 32-51-00-830-801

It has been reported that the test jacks located on the front face of the steering control unit are not identified POSITIVE and NEGATIVE.

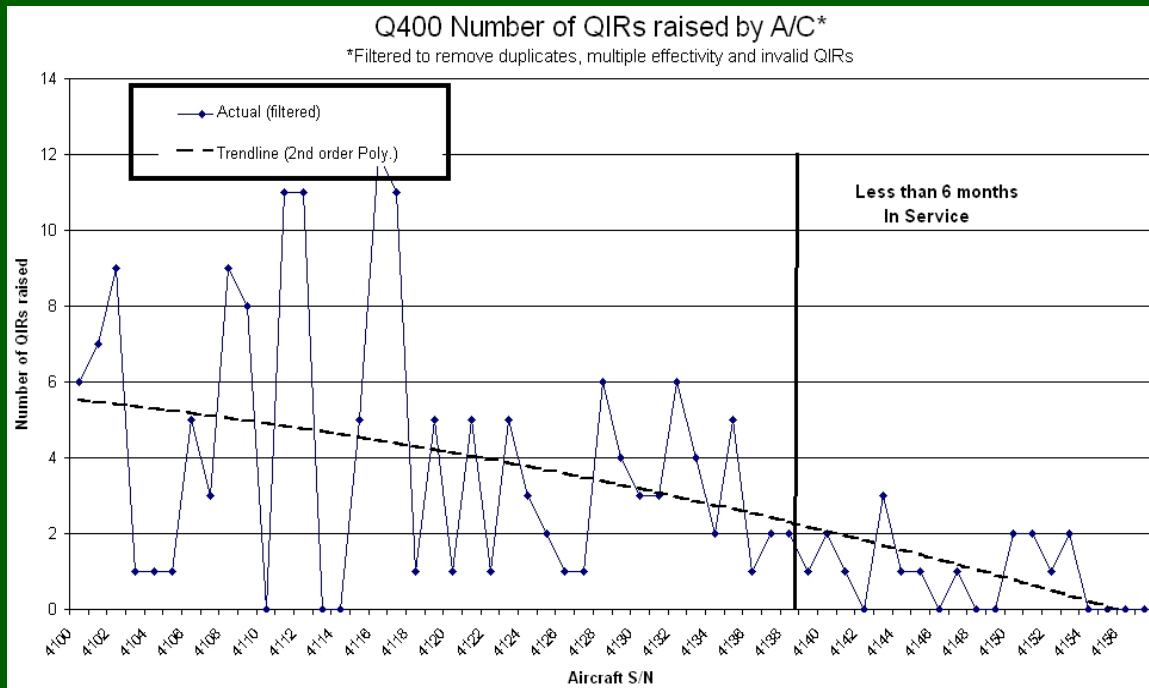


When performing the rigging function of the RVDTs (ref. AMM Task 32-51-00-830-801), operators are advised that, when measuring the output voltage, the **upper** test jack is POSITIVE and the **lower** test jack is NEGATIVE.

A Manual Change Request (MCR) has been raised to amend the rigging task, adding a note in the procedure to identify the polarity of each test jack.

QUALITY CORNER

contributed by Matt Simmons, Quality Corrective Action Group (e-mail: matthew.simmons@aero.bombardier.com)



CORRECTIVE ACTIONS

Upper Anti-Collision Light Drain Holes

A Quality Investigation Request (QIR) was received reporting that on four recently delivered aircraft, an operator found screws installed in the drain hole positions of the upper anti-collision light. This is contrary to Q400 AMM Task 33-44-06-400-801. Investigation revealed that there was no corresponding instruction in Production to remove the screws (item #6 in the referenced AMM task) when the light is used in the upper position, or to remove the plug (item #1 in the AMM task) when the light is used in the lower position. The plug and screws come installed in the light assemblies from the supplier. This issue has now been addressed in Production via Modsum 4Y122343 for aircraft S/N 4165 and subsequent. Operators should take note to verify that the requirements of this AMM task are complied with at the next opportunity, to ensure proper drainage for the anti-collision lights.

To report a Quality nonconformance, e-mail all information to: thd.qseries@aero.bombardier.com

MAINTENANCE ENGINEERING NEWS

The material in this section originates from the Maintenance Programs & Planning, Maintenance Data Analysis, and Aircraft Economics groups. Inquiries regarding this information should be addressed to **Vasil Rambj**, Manager, Maintenance Engineering (e-mail: vasil.rambi@aero.bombardier.com; telephone: 1-416-373-5529). Note that the latest Maintenance Engineering initiatives can be viewed on the RACS website.

Q400-ISAR-2007-06-0003

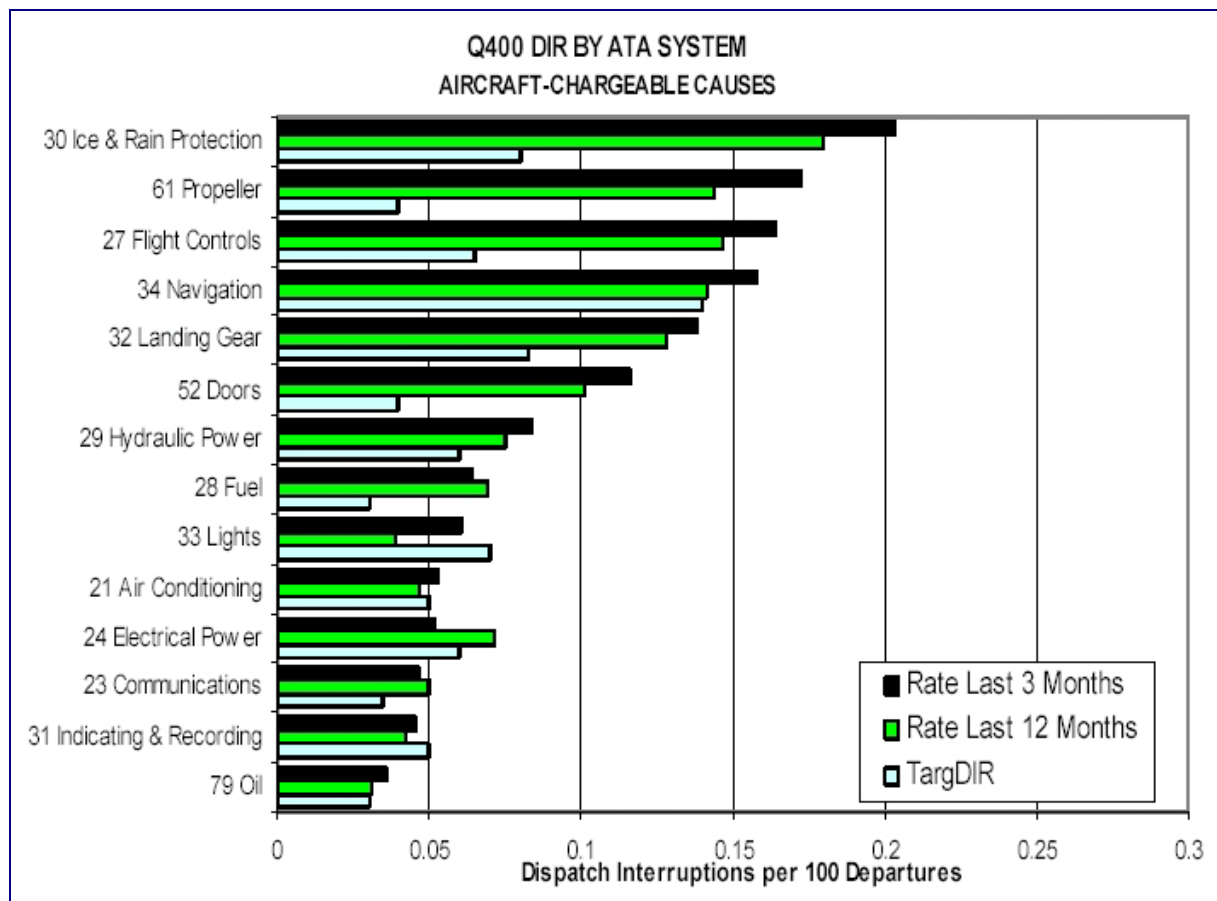
Monthly FRACAS Report “Snapshot”

contributed by Eddy Rassy, Maintenance Engineering

Reference: FRACAS Report PSM 1-84-23, Issue 63

TOTAL FLEET	HOURS	1,003,818	TOP AIRCRAFT	HOURS	S/N 4030	15,137
	CYCLES	1,117,111		CYCLES	S/N 4030	15,510

FLEET DISPATCH	MEASURE	Q400
AIRCRAFT CHARGEABLE	DISPATCH RELIABILITY	98.42 %
	SCHEDULED COMPLETION RATE	99.54 %
AIRCRAFT CHARGEABLE PLUS NON-CHARGEABLE	DISPATCH RELIABILITY	98.07 %
	SCHEDULED COMPLETION RATE	99.48 %



Q400-ISAR-2007-06-0004

Q Series AEWG Teleconference No.10 Summary

contributed by Kofi Sonokpon, Maintenance Engineering (Aircraft Economics)

Q Series AEWG Teleconference No.10 was held on May 16, 2007. Bombardier Maintenance Engineering is grateful to the operators and suppliers/partners who participated in the meeting.

Operators were represented by AEWG Chairman Trygve Tessem of Widerøe and Henry Welsh of Air Canada Jazz. Supplier/partner participants included Michael Furr of Aviall (Dallas), Charmaine Lock of Dowty Propellers, and Swithun Wolsoncroft of Ultra. Bombardier staff participating included Alisa Turk, Manager, Technical Help Desk, Derek Barnes of In-Service Engineering (Systems), Vince Mattacchione of Supplier Liaison, while Maintenance Engineering was represented by Philippe Herfray (Q Series Program Coordinator), Mohammad (KK) Khan (Chief, Aircraft Economics), Mahendra (Minoo) Patel, David Granville, Kofi Sonokpon, Roger Yau, Viola Youssef, and Petrit Dode of Aircraft Economics; Maintenance Data Analysis was represented by Hasmukh Mistry and Tahoura Soltani.

Highlights of Discussions on Top Issues

1. Q400 Best Practices - Brakes (ref. AEWG Action Register Item 1.6610)

The official letters to operators' senior management highlighting the potential savings on Q400 brakes were signed by Todd Young, VP Customer Support, and mailed on May 3. This item was therefore closed during the teleconference.

2. Q400 Propeller Maintenance Costs

The former Item 1.7010 has been split into five new items to focus on specific issues.

Item 1.7013: On-Wing Repair of Leading Edge

Dowty Propellers granted a repair concession to Qantas. Results of the trial at Qantas will determine the need for further trials. Bombardier and Widerøe suggested to Dowty that trials also be conducted at Widerøe, Flybe, Horizon, and SAS. Kerry Garfield of Dowty Propellers will give an update on this issue to the AEWG by July 11, 2007 or sooner.

Item 1.7014: Bearings - Availability and Leadtime for Blade Overhaul

Dowty Propellers have taken the necessary actions to improve availability of the bearings by 2Q08 (ref. Dash 8 Series Propeller System Status Review - April 2007 - available on the RACS website). Supplier Liaison will monitor the bearing availability KPIs (key performance indicators).

Item 1.7015: Aviall Amsterdam Facility - Support From Dallas

Key parts to be held at Aviall Amsterdam are listed in the "Dash 8 Series Propeller System Status Review - April 2007" (on RACS). Overall, 90% of the parts listed are already available at Aviall Amsterdam. 65% of the stock is in place, with the balance due by mid-June 2007 (except longer leadtime items, which are expected by July 2007). Q400 operators, who want Aviall / Dowty Propellers to consider additional parts, are invited to contact Charmaine Lock at Dowty. AOG requests will be handled either from Amsterdam or Dallas depending on the time the AOG orders are placed.

Item 1.7016 Deicing Harness and Static Seal Reliability

Widerøe reported grease leakage on four propellers. The operator is working with Dowty Propellers to replace the internal bearing seals, although required tooling is awaited (availability summer 2007). Charmaine Lock arranged a conference call between Dowty Propellers, Widerøe, and Bombardier ISE to discuss the leakage issue.

3. Q200/300/400 ATVA High Removal Rate and High Cost (ref. Item 1.9301)

Ultra confirmed that their ATVA improvement plan is on track. A first batch is expected in August 2007.

4. Q100/200/300 7G772 Hydraulic LP Switch and 7G773 Hydraulic Pressure Switch - Reliability and Cost (ref. Item 1.7500)

ISAR Q123-2007-05-2720, with Modsum IS8Q2700010 effectiveness reporting guidelines, was released in late May 2007. Air Canada Jazz and Widerøe agreed to close this item. Operators who have incorporated the IS Modsum are encouraged to report their in-service reliability findings to Bombardier In-Service Engineering.

Highlights of Discussions on Q Series AEWG Action Register

Q400 Propeller Electronic Control (PEC) NFF Charges (ref. Action Register Item 1.3800)

Supplier Liaison was tasked with arranging a conference call between Q400 operators and Ultra to discuss their PEC NFF charges.

Q400 ANVS Controller Turn-Around Time (ref. Item 1.9301.1)

Bombardier and the operators asked Ultra to present their key performance indicators on the turn-around time at AEWG Meeting No.6, and to track turn-around time improvements. The operators' common understanding of turn-around time is that it is *door-to-door*, including the repair time and quote approval time, etc.

Q Series AEWG Action Register Statistics

DISPOSITION	STATUS POST-TELECONFERENCE NO.10 (MAY 18)	STATUS AT TELECONFERENCE NO.10 (MAY 16)	STATUS POST-AEWG MEETING NO.5 (MAR.13)
PROPOSE TO CLOSE ITEMS	1	10	0
CLOSED ITEMS	132	123	122
OPEN ITEMS	26	26	34
TOTAL REPORTABLE ITEMS IN ACTION REGISTER	159	159	156

During Teleconference No.10, ten actions were considered for closure; nine were accepted closed, and no new items were raised. The number of items closed since AEWG Meeting No.5 therefore increased to ten.

Next Teleconference

Q Series AEWG Teleconference No.11 will be held on July 11, 2007 at 10:00 a.m. EDT (GMT-4). The Action Register will be reviewed (an updated version will be available prior to the teleconference). Operators are warmly encouraged to participate. Prior to the teleconference, they should use the "New Business Issues" form to submit new issues for discussion.

Any comments or questions regarding the AEWG should be directed to: **Kofi Sonokpon** (telephone: 1-416-375-3997; fax: 1-416-373-7911; e-mail: kofi.sonokpon@aero.bombardier.com).



ALL OPERATOR MESSAGES (AOM) RECENTLY ISSUEDAll AOMs are available on the RACS website (www.racs.bombardier.com).

AOM	ATA	SUBJECT	ISSUED
224	2700	Aileron Control Cable Wear	2007-05-22
225	2761	Roll Spoiler Control Cable Disconnect Sensor Assembly	2007-06-05
226	0000	RACS Portal Update	2007-06-06

SERVICE LETTERS (SL) RECENTLY ISSUED

All SLs are available on the RACS website.

SL No.	REV	ATA	SUBJECT	ISSUED
DH8-400-SL-61-005	--	6100	Static Propeller Unfeathering Difficulties Using Auxiliary Feathering Pump	2007-06-13

GENERIC REFERENCE INSTRUCTION LETTER (RIL) UPDATE

RILs in the table below are issued/closed (or still open) subsequent to the list published in the last ISAR. All RILs are available on the RACS website. "CLOSED BY" TR or Rev. number refers to AMM (unless otherwise specified).

RIL	ISS	ATA	ISSUED	SUBJECT	CLOSED BY
84-05-006	1	0553	2007-03-06	Request for Information to Assist With Engine Oil Indication System Problem	--
84-20-012	3	2000	2006-06-21	Application of Dow Corning RTV 3140 Sealant to Proximity Sensors	--
84-20-018	1	2020	2007-03-04	Making of Rigid Fluid Lines (AMM Task 20-20-16-900-801) - Use of CRES in Lieu of 6061 T6 Aluminum	--
84-23-005	1	2381	2007-02-02	Installation of ARCDU CDU3933AE05	--
84-32-049	1	3240	2007-02-14	Allowable Reinforcing Cord Exposure on Dunlop Tires Installed on Main and Nose Landing Gear	--
84-32-051	1	3251	2007-06-05	Installation of Rotary Variable Differential Transformer (RVDT)	NEW
84-33-002	1	3341	2007-05-10	Removal and Installation of Landing and Taxi Light Panel Integral Lighting Assemblies	NEW
84-49-002	1	4920	2007-05-07	APU FADEC Harness and Fuel Line Wire Locking	--
84-52-022	1	5243	2006-09-20	Removal/Installation of APU Access Door Forward/Rear Pin Latch Assembly	--
84-57-006	1	5723	2007-06-11	Alternate Procedure for Testing Deice System Following Outer Leading Edge Replacement	NEW
84-71-006	1	7122	2006-11-13	Removal and Installation of Hydraulic Torque Compensation System (HTCS) Reservoir	TR71-108

GENERIC REPAIR DRAWINGS (RD) RECENTLY ISSUED

Bombardier's Structural Repair group continues to provide new and revised generic Repair Drawings (RDs). Copies of these RDs will be issued as part of normal manual update. Unless otherwise stated, RDs listed below are applicable to all Q400 aircraft. All generic RDs are available on the RACS website.

RD No.	Iss.	SUBJECT
RD8/4-54-412	1	Temporary Repair for Thread Damage to Door Strut Pedestal Fitting
The following RDs have been updated with minor editorial corrections and additions:		
		<i>none this month</i>



NEW !

BOMBARDIER AEROSPACE REGIONAL AIRCRAFT TCG2007B

BOMBARDIER AEROSPACE REGIONAL AIRCRAFT TECHNICAL CONTACT GUIDE

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TCG2007B - MAY 30, 2007

Prepared by Regional Aircraft Customer Support for the Use of CRJ and Q Series Operators

The Technical Contact Guide presents to the family of CRJ and Q Series aircraft operators a concise list of individuals at Bombardier Aerospace responsible for providing front-line service in a variety of disciplines. The TCG also presents a list of key technical, operations, and some top administrative personnel for each operator. The TCG will be reissued four times per year in electronic format only (Adobe PDF). It is posted on the Regional Aircraft Customer Services (RACS) website. To find it, log-in to RACS, go to TECHNICAL LIBRARY, click on Contacts, then click on Technical Contact Guide. The TCG is also distributed free-of-charge via e-mail to operator recipients on request.

The accuracy and completeness of the TCG depends on the timely forwarding of operator/Bombardier personnel information regarding staff dispositions, aircraft types in service, etc. *We count on our Customer Support Account Managers, Field Service Representatives, and the operators to provide news as it happens.*

The next edition of the Technical Contact Guide, TCG2007C, is planned for release in August ... so if there are any changes you would like to see, please forward them to the editor:

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