ADVISORY WIRE

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REFERENCE NO:	AW700-28-0558	INFORMATION TYPE:	Maintenance Operational
ATA:	28-23	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:	**Refuel/Defuel manifold cracking**		

1. REFERENCES:

1.1. Global Advisory Council meeting #33, Montreal (Qc), April 20-22, 2016

1.2. Aircraft Maintenance Manual (AMM) 12-11-01-650-801, Pressure Refueling, rev. 18 May 4, 2016.

1.3. Aircraft Maintenance Manual (AMM) 12-11-03-650-801, Pressure Defueling, rev.18 May 4, 2016.

1.4. Aircraft Maintenance Manual (AMM) 12-11-05-650-801, Suction Defueling, rev.18 May 4, 2016.

1.5. Ground Handling and Servicing Information manual (GHSI) Section 04-Servicing, rev.18 May 4, 2016.

1.6. Quick Reference Cards Refueling Guide, May 2016.

2. INTRODUCTION:

During the Global Advisory council meeting (Ref 1.1), Bombardier Business Aircraft (BBA) has committed to inform the Operators about the root cause and the action taken by BBA to reduce the risk of fuel leakage from the forward belly fairing originating from a fuel manifold crack.

3. DESCRIPTION:

Since the beginning of the Global program, seven events have been reported to Bombardier where during refueling, fuel was noticed under the forward belly fairing. Inspection revealed that the fuel leak originated from a visible crack on the refuel defuel manifold between the left wing port “B” and the center wing port “C” (ref. Figure 1).

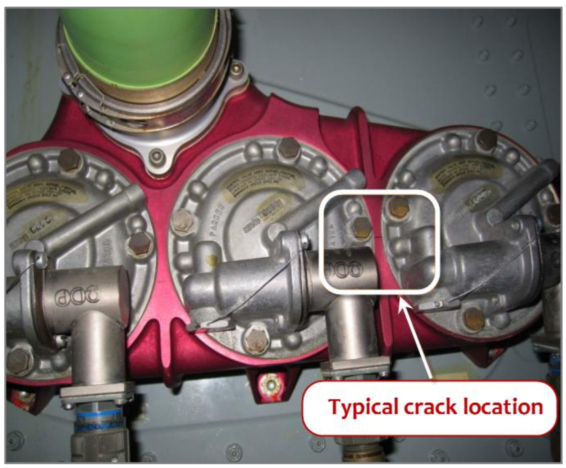

Figure 1. Typical crack location on the Refuel/Defuel manifold between port “B” (left wing port) and port “C” (center wing port).

As shown in Figure 2, the aircraft pressure refueling is achieved via the single point refuel/defuel adaptor located in the right-hand wing root. Fuel enters the manifold assembly via the port “A” and the fuel flow is then re-directed through any of the four outlets ports “B”, “C”, “E”, and “D” to the respective fuel tank. The output port “B”, “C” and “E” are controlled by three hydraulically actuated valves and operated by energizing or de-energizing the solenoid on each valve. The solenoid input is based on the Refuel Defuel Control Panel (RDCP) manual selection or by the FMQGC command in automatic mode. Port “D” is used to defuel the wing tank, and, for the Global XRS and 6000 models, is used to refuel the aft tank and the forward auxiliary tank. These fuel tanks have their own separate shutoff valves.

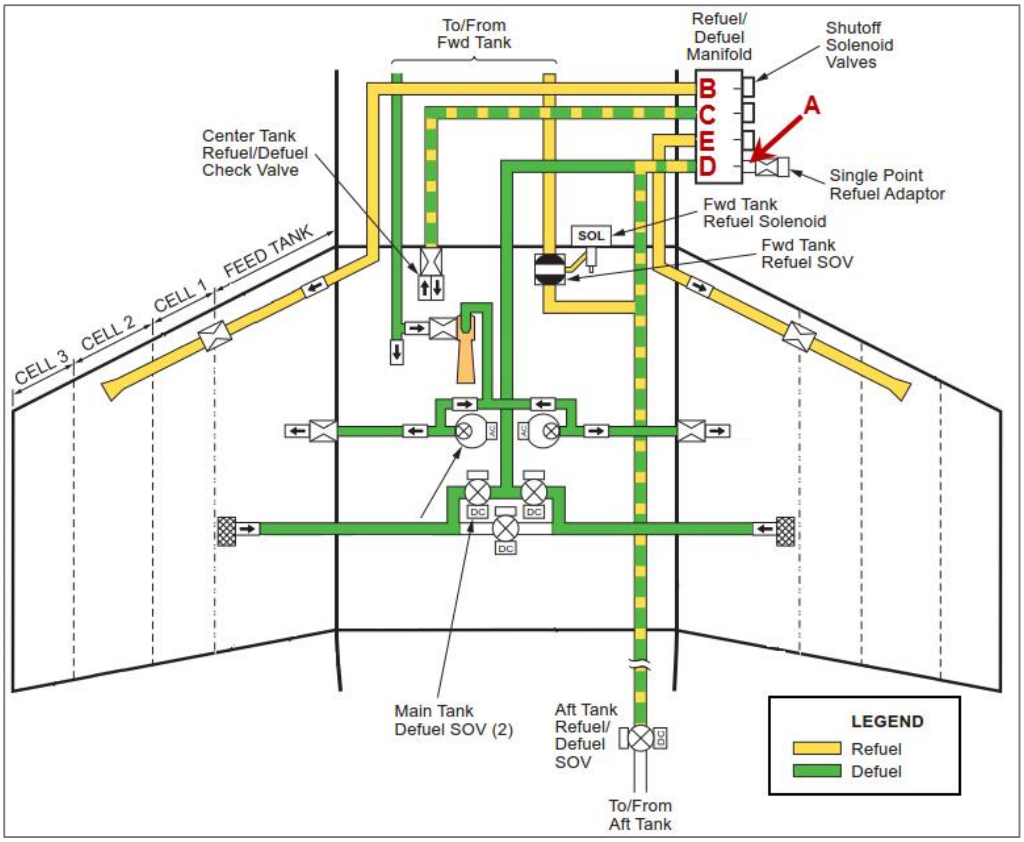

Figure 2. XRS/6000 Refuel/Defuel System and fuel manifold port.

Following an extensive investigation, the failure cause was determined to be overpressure caused by fuel thermal expansion within the refuel/defuel manifold.

The expansion of fuel trapped in the refuel/defuel manifold can potentially generate a pressure rise sufficient to surpass the manifold's burst pressure. The probability of an over pressure event is higher if the fuel system is serviced and the aircraft is then parked in a very hot environment.

4. ACTION:

Based on the root cause conclusions, Bombardier has identified a procedure to minimize the occurrence of pressure build up in the manifold thus reducing the risk of damaging the manifold assembly.

This procedure consists of opening the center refuel/defuel valve after pressure refueling is completed (ref Figure 3). Performing this action will ensure that any residual pressure in the refuel/defuel manifold, is released thus maximizing the pressure margin for fuel thermal expansion.

Bombardier recommends Operators familiarize themselves with the revised AMM/GHSI procedure for refueling/defueling (reference 1.2 to 1.5) and the Quick Reference Card Refueling Guide (reference 1.6).

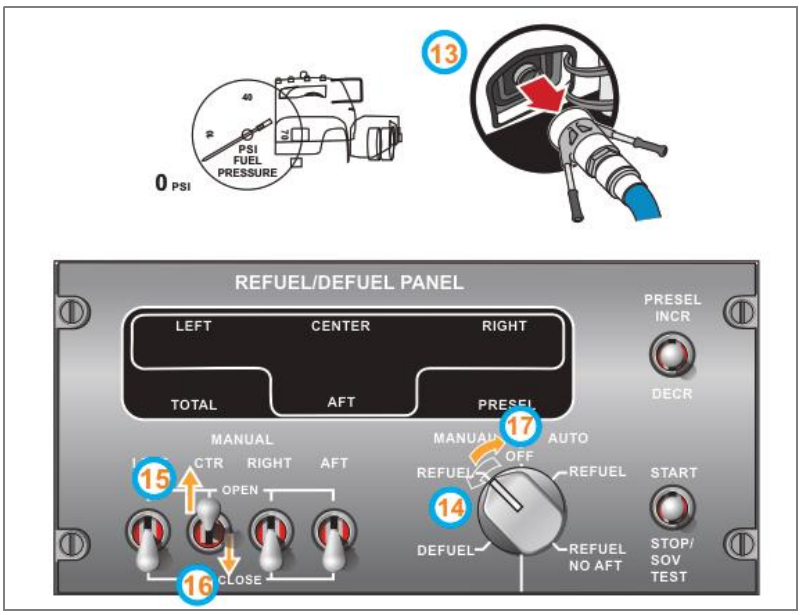

Figure 3. Extract of the Global Express XRS quick reference card (revision May 2016).

Should you have any questions or require more information, please contact your Bombardier Field Service Representative FSR or the Customer Response Center CRC.