

# Advisory Wire

REFERENCE NO:	AW700-28-0496, Rev 1	INFORMATION TYPE:	Maintenance Operational
ATA:	28-41	EFFECTIVITY:	Global Express Global XRS Global 5000 Global 5000 feat. Vision Flight Deck Global 6000 Global 5500 Global 6500
SUBJECT:	<b>Fuel Quantity Indication Fluctuation</b>		

## 1. REFERENCES:

- 1.1 Standard Practices Manual (SPM) 20-12-01-05, Electrical Wiring Continuity Test.
- 1.2 Standard Practices Manual (SPM) 20-20-62-04 MIL-C-25516 Coaxial Connectors.
- 1.3 Advisory Wire AW700-28-0368, No Fault Found initiative: Fuel Management and Quantity Gauging Computer (FMQGC).
- 1.4 Advisory Wire AW700-28-0331, Fuel Tank Sumping.

## 2. INTRODUCTION:

This Advisory Wire revision adds aircraft models to the effectivity, updates the customer portal link and the SmartFix Plus image.

This Advisory Wire aims to provide Operators with troubleshooting tips should they experience a fuel quantity indication fluctuation condition on the ground and/or during flight operations in order to reduce the number of FMQGC (Fuel Management and Quantity Gauging Computer) removals.

## 3. DESCRIPTION:

The Fuel Management and Quantity Gauging Computer (FMQGC) monitors the aircraft fuel quantity in each tank by reading the capacitance of the fuel probes and compensators. The capacitance value represents the height of the fuel in the tank for a specific fuel probes location. The probe wetted length combined with the pitch and roll coefficient is used to calculate the fuel volume for each fuel compartment.

The FMQGC computes the different tank fuel mass, by using the summation of the individual fuel compartment fuel volume and the fuel density value.

# Advisory Wire

To provide redundancy, each FMQGC processor interfaces with half the tank units (TU) in each tank through two independent TU drive modules. Each tank unit drive module has independent excitations for each fuel tank (Refer to figure 1).

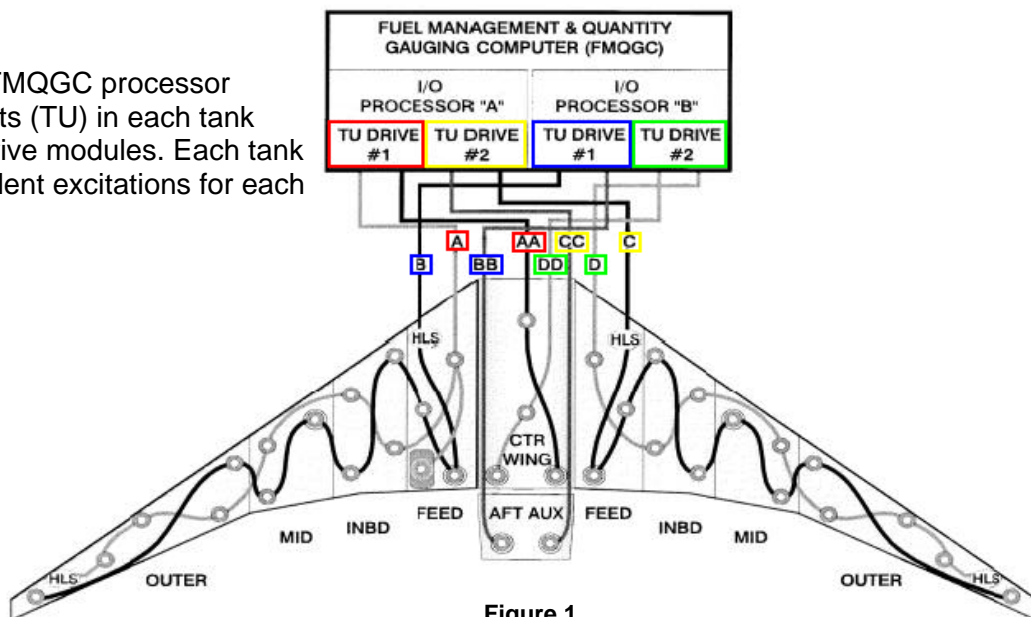


Figure 1

Events have been reported to Bombardier where rapid fuel quantity indication fluctuations were noticed during aircraft operation for the different aircraft fuel tanks. Depending on which aircraft fuel tank the quantity reading fluctuation was experienced and the amount of the fuel quantity variation, the following fuel system conditions were also observed:

- Un-scheduled automatic fuel transfer i.e.: from wing to wing, aft transfer, center transfer.
- Miscellaneous transfer pumps failures posted on the fuel synoptic page due to “phantom” fuel.
- Miscellaneous CAS messages such as:
  - **Fuel Imbalance** Caution message.
  - **Wing To Ctr Leak** Caution message.
  - **Aft Xfer Fail** Caution message.
  - **Ctr Fuel Xfer Fail** Caution message.
  - **Fuel Qty Degraded** Advisory message.

When accessing the CAIMS/OMS fault messages, multiple probe failures powered by the same excitation power were also reported. Further troubleshooting revealed that a large number of events were caused by loose cable nut on the co-axial excitation connectors (Refer to figure 2, picture below shows as an example).

The cable nut is designed to provide an electrical contact between the wire shielding and the coax connector external shell to ensure shield continuity between the FMQGC and the various fuel probes. Proper shielding of the excitation circuitry prevents Electromagnetic Interference (EMI) and ensures a clean signal for the different fuel probes connected on the same excitation line.

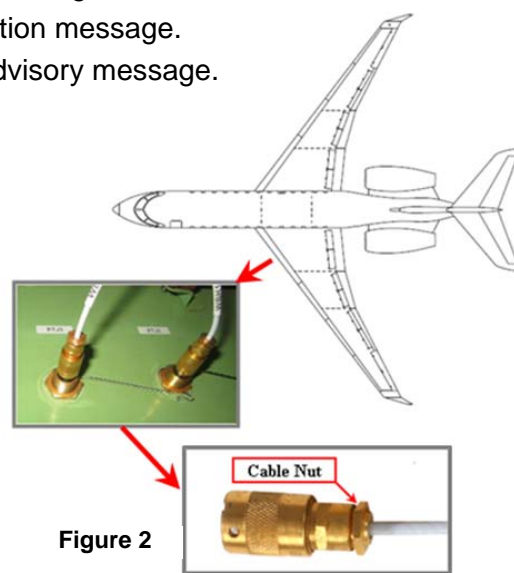


Figure 2

# Customer Services

## Advisory Wire

### 4. ACTION:

- During troubleshooting for a fuel quantity fluctuation issue where multiples probe failures are reported on the same excitation circuit, Operators are recommended to perform a wiring check between the FMQGC and the fuel probes to ensure excitation circuit integrity (ref 1.1). Particular attention needs to be taken to ensure cable nut on the back of the co-axial connector is secured and the connector is not damaged (ref 1.2).
- The SmartFix Plus™ troubleshooting tool includes this condition in the *Observed faults* section, in order to prevent unnecessary removals of the FMQGC (ref 1.3). Troubleshooting recommendations can also be found for specific fuel probe failures under the *Troubleshooting by CAIMS/OMS* section of SmartFix Plus, accessed from the [Bombardier Customer Portal](#).

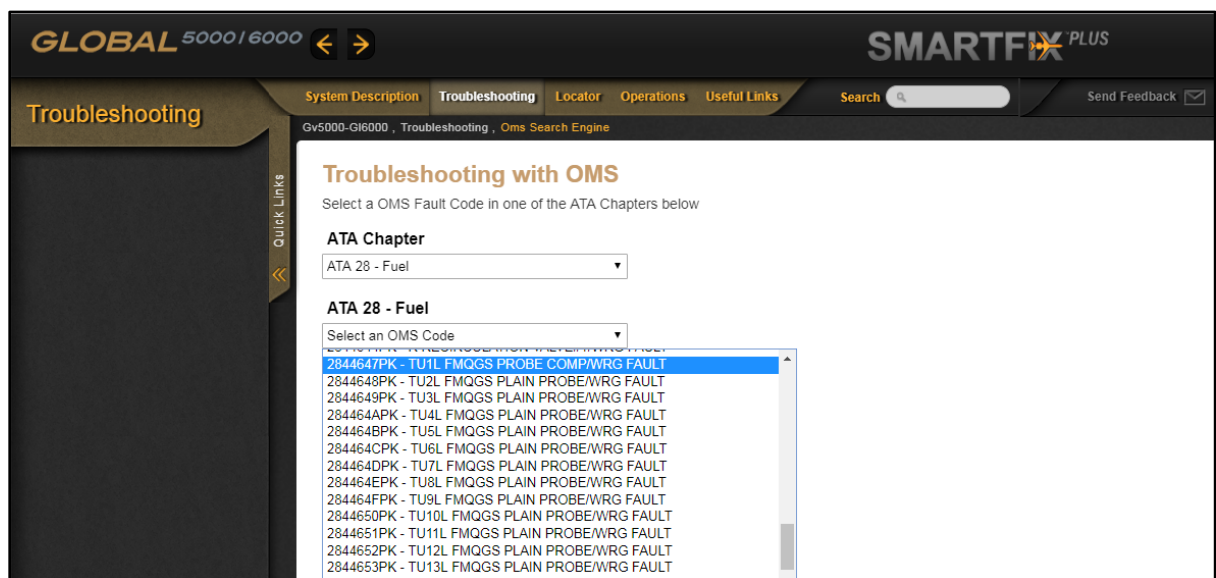


Figure 3

- Another contributing factor to erroneous fuel quantity indication is the accumulation of water in the fuel tanks. The accumulated water could cause contamination, which will affect the fuel dielectric constant used by the FMQGC for capacitance calculation. Operators should be familiar with the Advisory Wire related to fuel tank sumping (ref 1.4).

Should you have any technical queries pertaining to this Advisory Wire, please contact your Field Service Representative (FSR).