Simultaneous L(R) FUEL XFR VALVE OPEN on Pre Fuel Common Gauging Aircrat (Fleet pre-MOD 155636)

SAVE

Reference: 28.15.00.003 Issue date: 15-SEP-2021 Last check date: 02-MAY-2024 Status: Closed
A/C type/serie: A319, A320 ATA: 28-15
Engine manufacturer: Supplier: EATON LIMITED, ...
Purpose / Reason for revision: Clarification added - TFU validated for fleet pre-mod 155636

Engineering Support Status: Closed

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Issue Description

A318/A319/A320 fleet pre-MOD 155636 (pre-fuel common gauging) have reported simultaneous L and R XFR VALVE OPEN ECAM messages in the PFR, identified as occurring in flight phases 02, 05, 06, 08, and 09. An example of the corresponding PFR failure message would be FUEL INTERCELL XFR VALVE 29QM/72QM/10QP (the other transfer valves can also be indicated as failed).

The fault message is being observed in aircraft that are post SB 28-1050, modification 23260J0978.

Consequence

Outer to inner fuel transfer occurs normally and thus there is no disruption to the normal fuel distribution. This ECAM message is considered spurious.

Investigation Status

During the power on BITE test of the FLSCU and Level Sensors, the FLSCU changes the XFR valve positions by applying a state change to the Level Sensors. The valve positions are then checked against their expected positions.

It has been identified on the Airbus test facilities that if the FQIC power on BITE test is interrupted, then the ARINC label that transmits the signal "One Transfer Valve Fails to Shut" for the left and right wing is set to true. When the ICTV's subsequently correctly open (usually at the end of flight, in phases 06, 08 and 09), FQIC transmits the signal "Transfer Valve Open" and trigger the ECAM message "Fuel L (R) XFR Valve Open". (Refer to ESLD 1.28.440 and 1.28.450). This triggering of the ICTV XFR Valve Open ECAM Caution is similar to the ICTV XFR Valve Closed ECAM caution. Please refer to TFU 28.15.00.004.

Investigations have identified that a failure of a single ICTV actuator (FIN 9QP, 10QP, 11QP, 12QP) can cause the observed fault message. Therefore if any single ICTV actuator is being reported as a hard failure in the PFR then this can be changed as one of the first troubleshooting steps. It has also been identified that some single motor actuators can transmit incorrect intermittent feedback signals, which is due to the microswitch trip arm not being correctly set during operation. Again replacement of the actuator reduced the transfer valve open messages. TSM task 28-15-00-810-829 has been updated to take this into consideration.

Note that the FLSS commanded BITE does not check the actual operation of the transfer valves for correct movement.

Mitigation / Interim Plan

Please refer to the maintenance advice below.

Maintenance Information

In case L XFR VALVE OPEN or R XFR VALVE OPEN ECAM messages are being reported it is suggested that the following troubleshooting actions are completed:

a) Reset the FQIC by opening and then closing FQI C/Bs (1QT, 2QT and 8QT) using the procedure in the FCOM Supplementary Techniques - Electrical section 3.04.24 page 5.

b) The FQIC will go through the power on BITE check in about 40 seconds, including a BITE check of the ICTVs which cycles the ICTVs open and closed.

c) During completion of the FQIC power on BITE test the operation of the ICTV's are confirmed. With the ICTV's moving from closed to open and then back to closed position.

d) Confirm that at the end of the FQIC power on BITE test there are no reported faults with the L(R) ICTV's.

For additional information please also refer to:

a/ Functional BITE test of the ICTVs - FLSS Status (AMM 28-15-00-740-002)

b/ Functional BITE test of the low-level sensors - FLSS BITE (AMM 28-46-00-740-001)

If both functional test of FLSS Status and FLSS Bite, as well as FQIC power on BITE test, show NO FAULT no further action is required. If the fault remains, and PFR indicates one or more ICTV's, then it is suggested that a replacement of the associated single motor actuator is performed as a first step.

Solution

The new standard of FOIC software. entitled "-30", was certified. However. an issue occurred at installation and the software needs to go to -31.