



Civil Aviation Authority

PROPOSED AIRWORTHINESS DIRECTIVE



Number: 1983

Issue date: 08 September 2021

In accordance with the CAA Continuing Airworthiness Procedures, the issuance of an Airworthiness Directive (AD) is proposed which will be applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

Type Approval Holder's Name:

Type/Model Designation(s):

BAE SYSTEMS (OPERATIONS) LIMITED

Jetstream 4100 series aircraft

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| Effective Date: | <i>(TBD upon issue of final AD)</i> |
| TCDS: | United Kingdom No. BA 27 |
| Foreign AD (if applicable): | Not applicable |
| Superseding AD: | EASA AD No: 2008-0040 dated 27 February 2008 |

ATA: 28 – Fuel System – Tank Bonding Leads – Tank bonding improvement - Fuel Pipe Clearance – Inspection / Adjustment

Manufacturer(s):

Jetstream Aircraft Ltd, British Aerospace Regional Aircraft and British Aerospace (Operations) Ltd

Applicability:

Jetstream 4100 series aircraft, all models, all serial numbers

Definitions:

For the purpose of this AD, the following definitions apply:

The SB: BAE Systems (Operations) Ltd J41-28-013 Revision 2

Reason:

In 2007 BAE Systems assessed the design of fuel tank wiring installation as required by SFAR88 and equivalent JAA/EASA policy. BAE Systems identified two features in the Jetstream 4100 where the need for design changes was apparent. These two features were addressed by modification number JM4141659 and Service Bulletin (SB) J41-28-013 Revision 1 dated 10 November 2006 which introduced additional bonding leads between pipes, structure and various components to improve the electrical bond paths within the fuel tank areas and provided instructions to inspect the

existing bonding leads, to replace any defective leads and to examine all fuel system pipe runs in the wings to ensure appropriate clearances were maintained.

Insufficient or defective bonding in the fuel tank area, if not corrected, could lead to ignition of fuel vapours and subsequent fuel tank explosion.

As a result of the situation described above, EASA issued AD 2008-0040 dated 27 February 2008. It referenced BAE Systems (Operations) Ltd J41-28-013 Revision 1 and required the installation of additional bonding leads; inspection of existing bonding leads and all fuel system pipe runs in the wing and follow on corrective actions, as necessary.

In 2019 BAE Systems (Operations) Ltd identified that the initial issue of SB J41-28-013 (which provided for the installation on aircraft construction number 41015) and Revision 1 accidentally omitted additional bonding instructions for the Crossfeed Valve. This requirement had been identified within the original SFAR 88 analysis and incorporated into modification number JM4141659.

Having identified this omission, BAE Systems (Operations) Ltd investigated the potential for this omission to result in a Potential Unsafe Condition. A requirement of the safety review was to demonstrate that an ignition source within the fuel system could not result from a single failure and would be extremely improbable. Recognising that insufficient bonding of the Crossfeed valve had been identified, a catastrophic failure, due to ignition of fuel or vapour could occur after a single system failure but only in combination with a combination of factors, a leak inside the dry bay, leaving the presence of fuel or fuel vapour in the bay (recognised as being single failure) in combination with: (1) a lightning strike, (2) which penetrates through the aircraft skin, (3) above the dry bay and (4) which directly strikes the Crossfeed valve.

The CAA consider mandatory action is required to ensure aircraft fully comply with the requirements of SFAR 88 FAR Part 25 at Amendment 102 paragraphs 25.901 and 25.981(a) and (b).

The required additional action is addressed in BAE Systems (Operations) Ltd Service Bulletin J41 - 28-013 Revision 2.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously.

The technical requirements of EASA AD 2008-0040 dated 27 February are retained, with additional requirement given in BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 2 added.

Within 24 months after the effective date of this AD, carry out the following actions:

- (1) Inspect the bonding leads between ribs 1 and 9 and between ribs 16 and 19, in the left (LH) and right (RH) wings in accordance with paragraphs 2B(2) of BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 2 and replace any defective bonding leads. The technically equivalent steps in BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 1 satisfy this requirement.
- (2) Examine all fuel system pipe runs inside the LH and RH wings in accordance with paragraphs 2B(3) of BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 2 and if incorrect clearances are found, before next flight adjust clearances: (The technically equivalent steps in BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 1 satisfy this requirement).

- (3) Install additional electrical bonding of components within the LH and RH wings in accordance with paragraphs 2B(4) to 2B(16) of BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 2. The technically equivalent steps in BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 1 satisfy this requirement.
- (4) **Additionally** Install and create additional electrical bonding of components within the dry bay at Rib 1 on the aircraft centreline and below the fuselage in accordance with paragraph 2B(5) of BAE Systems (Operations) Ltd Service Bulletin J41-28-013 Revision 2.

Reference Publications:

BAE System (Operations) Limited SB J41-28-013 Revision 1 and 2.

The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.

Remarks:

- (1) This PAD will be closed for consultation on 7 October 2021.
- (2) Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the CAA aviation safety reporting system. This may include reporting on the same or similar components, other than those covered by the design to which this AD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.
- (3) Enquiries regarding this PAD should be referred to: Continued.Airworthiness@caa.co.uk
- (4) For any questions concerning the technical content of the requirements in this PAD, please contact: BAE Systems (Operations) Ltd, Customer Information Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, The United Kingdom. Telephone: +44 1292 675207, Facsimile +44 1292 675704; E-mail: RAPublications@baesystems.com