

[Federal Register Volume 82, Number 1 (Tuesday, January 3, 2017)]

[Rules and Regulations]

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[FR Doc No: 2016-30412]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2016-0457; Directorate Identifier 2015-NM-084-AD; Amendment 39-18751; AD 2016-25-25]

RIN 2120-AA64

Airworthiness Directives; BAE Systems (Operations) Limited Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: We are superseding Airworthiness Directive (AD) 2012-11-15 for all BAE Systems (Operations) Limited Model 4101 airplanes. AD 2012-11-15 required a one-time detailed inspection for cracks, corrosion, and other defects of the rear face of the wing rear spar, and repair if necessary. This new AD requires repetitive detailed inspections, and repair if necessary. This AD was prompted by new reports of cracking found in the wing rear spar and technical analysis results, which confirmed that the crack initiation and propagation are due to fatigue, with no indication of any other crack initiation mechanism (e.g., stress corrosion). We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective February 7, 2017.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of February 7, 2017.

ADDRESSES: For service information identified in this final rule, contact BAE Systems (Operations) Limited, Customer Information Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, United Kingdom; telephone +44 1292 675207; fax +44 1292 675704; email RApublications@baesystems.com; Internet <http://www.baesystems.com/Businesses/RegionalAircraft/index.htm>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-0457.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-0457; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (telephone 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Todd Thompson, Aerospace Engineer, International Branch, ANM-116, Transport Airplane Directorate, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; telephone 425-227-1175; fax 425-227-1149.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2012-11-15, Amendment 39-17079 (77 FR 36127, June 18, 2012) ("AD 2012-11-15"). AD 2012-11-15 applied to all BAE Systems (Operations) Limited Model 4101 airplanes. The NPRM published in the Federal Register on January 21, 2016 (81 FR 3350) ("the NPRM"). The NPRM was prompted by new reports of cracking found in the wing rear spar and technical analysis results, which confirmed that the crack initiation and propagation are due to fatigue, with no indication of any other crack initiation mechanism (e.g., stress corrosion). The NPRM proposed to require a one-time detailed inspection for cracks, corrosion, and other defects of the rear face of the wing rear spar, and repair if necessary. The NPRM also proposed to require repetitive detailed inspections, and repair if necessary. We are issuing this AD to detect and correct cracking in the wing rear spar, which could propagate to a critical length, possibly affecting the structural integrity of the area and resulting in a fuel tank rupture, with consequent damage to the airplane and possible injury to its occupants.

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Union, has issued EASA Airworthiness Directive 2015-0100, dated June 3, 2015 (referred to after this as the Mandatory Continuing Airworthiness Information, or "the MCAI"), to correct an unsafe condition for all BAE Systems (Operations) Limited Model 4101 airplanes. The MCAI states:

During an investigation of a fuel leak on the rear spar of a Jetstream 4100 aeroplane, 4 cracks were found between Ribs 6 and 7 (immediately inboard of the inboard engine rib). The cracks initiated at adjacent fastener bores in the rear spar upper boom, and progressed downwards, diagonally, into the rear spar web.

These cracks, if not detected and corrected, could propagate to a critical length, affecting the structural integrity of the area, possibly resulting in a fuel tank rupture with consequent damage to the aeroplane and injury to occupants.

Prompted by these findings, EASA issued AD 2011-0096 [which corresponds to FAA AD 2012-11-15, Amendment 39-17079 (77 FR 36127, June 18, 2012)] to require a one-time [detailed] inspection [for cracks, corrosion, and other defects] of the rear face of the wing rear spar and the accomplishment of applicable corrective actions [i.e., repair], depending on findings. Initial analysis of the event did not lead to the conclusion that the cracking was fatigue related, therefore [EASA] AD 2011-0096 did not require repetitive inspections.

Since that [EASA] AD [2011-0096] was issued, the results of the technical analysis confirmed that the cracks were due to fatigue, with no indication of any other crack initiation mechanism (e.g. stress corrosion). In addition, further similar in-service events have been reported. During investigation of those events, further metallurgical analysis indicated that the crack initiation and propagation are indeed fatigue driven and occur at the same location.

To address this unsafe condition, a review of the inspection interval was undertaken based on the cracks from both aeroplanes and BAE Systems (Operations) Ltd issued Service Bulletin (SB) J41-A57-029 Revision 3 in order to reduce the inspection interval of the wing rear spar from 2 000 flight cycles (FC) to 1 600 FC.

For the reasons described above, this [EASA] AD supersedes [EASA] AD 2011-0096, without retaining its requirements, introduces repetitive inspections and, depending on findings, requires the accomplishments of applicable corrective action(s) [i.e., repair].

You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-0457.

Comments

We gave the public the opportunity to participate in developing this AD. We received no comments on the NPRM or on the determination of the cost to the public.

Explanation of Change in This AD

The NPRM incorrectly referred to Subject 57-00-00, Wings General, of Chapter 57, Wings, of the BAE Systems (Operations) Limited Jetstream Series 4100 Structural Repair Manual (SRM), Volume 1, Revision 32, dated October 15, 2014, for damage criteria and repair instructions. We have revised this final rule to refer to Chapter 57 of the SRM instead of Subject 57-00-00.

Conclusion

We reviewed the available data and determined that air safety and the public interest require adopting this AD as proposed, except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

Related Service Information Under 1 CFR Part 51

BAE Systems (Operations) Limited has issued Alert Service Bulletin J41-A57-029, Revision 3, dated April 8, 2014. The service information describes detailed inspections for cracks, corrosion, and other defects of the rear face of the wing rear spars.

BAE Systems (Operations) Limited also has issued Chapter 57, Wings, of the Jetstream Series 4100 SRM, Volume 1, Publication Ref. No. (Transmittal No.) SA 4-4100/SRM/400, Revision 32, dated October 15, 2014. Among other actions, Chapter 57 describes damage criteria and procedures for repairing the wing structure.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

We estimate that this AD affects 15 airplanes of U.S. registry.

We also estimate that it takes up to 25 work-hours per product to comply with the basic requirements of this AD. The average labor rate is \$85 per work-hour. Based on these figures, we estimate the cost of this AD on U.S. operators to be up to \$31,875, or up to \$2,125 per product.

We have received no definitive data that enables us to provide a cost estimate for the on-condition actions (repairing cracks, corrosion, and defects) specified in this AD.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

1. Is not a "significant regulatory action" under Executive Order 12866;
2. Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979);
3. Will not affect intrastate aviation in Alaska; and
4. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2012-11-15, Amendment 39-17079 (77 FR 36127, June 18, 2012), and adding the following new AD:



2016-25-25 Bombardier: Amendment 39-18751; Docket No. FAA-2016-0457; Directorate Identifier 2015-NM-084-AD.

(a) Effective Date

This AD is effective February 7, 2017.

(b) Affected ADs

This AD replaces AD 2012-11-15, Amendment 39-17079 (77 FR 36127, June 18, 2012) ("AD 2012-11-15").

(c) Applicability

This AD applies to BAE (Operations) Limited Model 4101 airplanes, certificated in any category, all models and all serial numbers.

(d) Subject

Air Transport Association (ATA) of America Code 57, Wings.

(e) Reason

This AD was prompted by new reports of cracking found in the wing rear spar and technical analysis results, which confirmed that the crack initiation and propagation are due to fatigue, with no indication of any other crack initiation mechanism (e.g., stress corrosion). We are issuing this AD to detect and correct cracking in the wing rear spar, which could propagate to a critical length, possibly affecting the structural integrity of the area and resulting in a fuel tank rupture, with consequent damage to the airplane and possible injury to its occupants.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Repetitive Inspections and Repair

Within 30 days after the effective date of this AD, or within 1,600 flight cycles since the most recent detailed inspection was done as specified in BAE Systems Alert Service Bulletin J41-A57-029, whichever occurs later: Do a detailed inspection for cracks, corrosion, and other defects (defects include scratches, dents, holes, damage to fastener holes, or damage to surface protection and finish) of the rear face of the wing rear spars, in accordance with the Accomplishment Instructions of BAE Systems Alert Service Bulletin J41-A57-029, Revision 3, dated April 8, 2014. Repeat the inspection thereafter at intervals not to exceed 1,600 flight cycles.

(1) If any cracking, corrosion, or other defect is found within the criteria defined in Chapter 57, Wings, of the Jetstream Series 4100 Structural Repair Manual (SRM), Volume 1, Publication Ref.

No. (Transmittal No.) SA 4-4100/SRM/400, Revision 32, dated October 15, 2014 ("Chapter 57 of the SRM"): Before further flight, repair the affected area, in accordance with the repair instructions of Chapter 57 of the SRM.

(2) If any cracking, corrosion, or other defect is found exceeding the criteria defined in Chapter 57 of the SRM: Before further flight, repair using a method approved by the Manager, International Branch, ANM-116, Transport Airplane Directorate, FAA; or the European Aviation Safety Agency (EASA); or BAE Systems (Operations) Limited's EASA Design Organization Approval (DOA).

(h) Repair Does Not Constitute Terminating Action Except for Certain Repairs

Accomplishment of a repair as required by paragraphs (g)(1) and (g)(2) of this AD, does not constitute terminating action for the repetitive inspections required by paragraph (g) of this AD, unless the approved repair required by paragraph (g)(2) of this AD states otherwise (e.g., the approved repair states the repair terminates the inspections for the repaired area only).

(i) Other FAA AD Provisions

The following provisions also apply to this AD:

(1) Alternative Methods of Compliance (AMOCs): The Manager, International Branch, ANM-116, Transport Airplane Directorate, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the International Branch, send it to ATTN: Todd Thompson, Aerospace Engineer, International Branch, ANM-116, Transport Airplane Directorate, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; telephone 425-227-1175; fax 425-227-1149. Information may be emailed to: 9-ANM-116-AMOC-REQUESTS@faa.gov. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office. The AMOC approval letter must specifically reference this AD.

(2) Contacting the Manufacturer: As of the effective date of this AD, for any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, International Branch, ANM-116, Transport Airplane Directorate, FAA; or the EASA; or BAE Systems (Operations) Limited's EASA DOA. If approved by the DOA, the approval must include the DOA-authorized signature.

(j) Related Information

Refer to Mandatory Continuing Airworthiness Information (MCAI) EASA Airworthiness Directive 2015-0100, dated June 3, 2015, for related information. This MCAI may be found in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-0457.

(k) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) BAE Systems Alert Service Bulletin J41-A57-029, Revision 3, dated April 8, 2014.

(ii) Chapter 57, Wings, of the BAE Systems (Operations) Limited Jetstream Series 4100 Structural Repair Manual, Volume 1, Publication Ref. No. (Transmittal No.) SA 4-4100/SRM/400, Revision 32, dated October 15, 2014.

(3) For service information identified in this AD, contact BAE Systems (Operations) Limited, Customer Information Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, United Kingdom; telephone +44 1292 675207; fax +44 1292 675704; email RAPublications@baesystems.com; Internet <http://www.baesystems.com/Businesses/RegionalAircraft/index.htm>.

(4) You may view this service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on December 6, 2016.

Dionne Palermo,
Acting Manager, Transport Airplane Directorate,
Aircraft Certification Service.