

[Federal Register Volume 76, Number 105 (Wednesday, June 1, 2011)]
[Rules and Regulations]
[Pages 31459-31462]
From the Federal Register Online via the Government Printing Office [www.gpo.gov]
[FR Doc No: 2011-12585]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-0673; Directorate Identifier 2009-NM-208-AD; Amendment 39-16705; AD 2011-11-06]

RIN 2120-AA64

Airworthiness Directives; BAE SYSTEMS (OPERATIONS) LIMITED Model BAe 146 and Avro 146-RJ Airplanes

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

ACTION: Final rule.

SUMMARY: We are superseding an existing airworthiness directive (AD) that applies to the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

In June 2000, prompted by a crack found at the top of the Nose Landing Gear (NLG) oleo, BAE Systems Operations) Ltd (BAE Systems) issued Inspection Service Bulletin (ISB) ISB.32-158. * * *

Later, as part of an accident investigation, the examination of a fractured NLG main fitting showed that M-D (Messier-Dowty) SB.146-32-150 was not accomplished * * *. BAE Systems determined that more NLG units could be similarly affected. * * *

Subsequently, investigation and analysis by M-D identified the need for a reduction of the inspection threshold and the repetitive inspection interval for the affected NLG units * * *.

* * * * *

* * * [I]nvestigation by M-D showed that if any undetected crack was present at the time of the embodiment of M-D SB 146-32-150, Part B or Part C, it could continue to grow while the NLG is in service and could lead to the failure of the main fitting and possible collapse of the NLG. * * * [B]AE Systems have received additional reports of cracked NLG main fittings. One operator reported a crack in a premodification main fitting. * * *

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Undetected cracks could lead to failure of the NLG Main Fitting and collapse of the NLG.

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The unsafe condition is cracking of the NLG, which could adversely affect the airplane's safe landing. We are issuing this AD to require actions to correct the unsafe condition on these products.

DATES: This AD becomes effective July 6, 2011.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of July 6, 2011.

ADDRESSES: You may examine the AD docket on the Internet at <http://www.regulations.gov> or in person at the U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Todd Thompson, Aerospace Engineer, International Branch, ANM-116, Transport Airplane Directorate, FAA, 1601 Lind Avenue, SW., Renton, Washington 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 include an AD that would apply to the specified products. That NPRM was published in the Federal Register on February 7, 2011 (76 FR 6575), and proposed to supersede AD 2002-03-10, Amendment 39-12651 (67 FR 6855, February 14, 2002). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

In June 2000, prompted by a crack found at the top of the Nose Landing Gear (NLG) oleo, BAE Systems (Operations) Ltd (BAE Systems) issued Inspection Service Bulletin (ISB) ISB.32-158. This ISB was classified mandatory by the United Kingdom Civil Aviation Authority under AD number 002-06-2000, requiring repetitive Non-Destructive Testing (NDT) crack inspections on the upper end of the NLG oleo. The AD also provided an optional terminating action for the repetitive inspections, by embodiment of Messier-Dowty (M-D) Service Bulletin (SB) SB.146-32-150.

Later, as part of an accident investigation, the examination of a fractured NLG main fitting showed that M-D SB.146-32-150 was not accomplished, although the records indicated that it had been. BAE Systems determined that more NLG units could be similarly affected. These NLG units were overhauled at Messier Services in Sterling, Virginia, in the United States. To address this situation, [European Aviation Safety Agency] EASA issued Emergency AD 2009-0043-E to require repetitive NDT inspections of each affected NLG unit and, if cracks are found, replacement with a serviceable unit, in accordance with the instructions of BAE Systems Alert ISB.A32-180 and M-D SB.146-32-149.

Subsequently, investigation and analysis by M-D identified the need for a reduction of the inspection threshold and the repetitive inspection interval for the affected NLG units and replaced M-D SB 146-32-149 with M-D SB.146-32-174. Consequently, BAE Systems SB 32-158 was withdrawn and superseded by BAE Systems Alert

ISB.A32-180 Revision 1, which was mandated by EASA Emergency AD 2009-0197-E.

As further information became available, BAE Systems saw a need to clarify the compliance instructions in the ISB and issued Revision 2 of Alert Service Bulletin ISB.A32-180. The layout of Revision 2 was no longer compatible with the instructions of EASA Emergency AD 2009-0197-E, so EASA issued AD 2010-0001-E which superseded EASA AD 2009-0197-E and which reduced the threshold and interval of the repetitive NDT inspections and required repetitive NDT inspections of each affected NLG unit and, if cracks were found, the replacement of the NLG with a serviceable unit.

The optional closing action of EASA AD 2010-0001-E is embodiment of M-D SB 146-32-150 (polishing and shot peening of the NLG main fitting) or confirmation that it has already been accomplished, as applicable. Further investigation by M-D showed that if any undetected crack was present at the time of the embodiment of M-D SB 146-32-150, Part B or Part C, it could continue to grow while the NLG is in service and could lead to the failure of the main fitting and possible collapse of the NLG. For this reason, EASA issued AD 2010-0072 (and its revision 1) which required the introduction of repetitive NDT inspections (defined in BAE Systems ISB 32-181) on NLG main fittings following embodiment of M-D SB 146-32-150. Despite the aforementioned measures, BAE Systems have received additional reports of cracked NLG main fittings. One operator reported a crack in a pre-modification main fitting. Shot peening was not present, as this was a pre-modification gear, but the surface finish was better than that required for a post-modification fitting. This implies that the surface finish achieved by the modification may not be effective in preventing cracking. In addition, a positive inspection return from BAE Systems ISB 32-181 also questions whether the combination of improved surface finish and shot peening are effective, as a crack may have initiated from a surface which is compliant with the modification standard.

It has been concluded that the polishing and the shot peening of the NLG main fitting embodied through M-D SB 146-32-150 are potentially ineffective in preventing cracks and that all NLG main fittings should be subject to the same 300 Flight Cycles (FC) repetitive inspection to ensure pre-critical crack detection.

Undetected cracks could lead to failure of the NLG Main Fitting and collapse of the NLG.

With that view, BAE Systems issued ISB.32-182 to implement this repetitive 300 FC inspection on all NLG main fittings regardless of their modification standard. ISB.32-182 supersedes existing ISBs A32-180 and 32-181, initially with no closing action.

For the reasons described above, this AD supersedes EASA Emergency AD 2010-0001-E and EASA AD 2010-0072 Revision 1 and requires repetitive NDT inspections of all NLG main fittings and, if cracks are found, replacement of the NLG with a serviceable unit.

This AD is revised to require corrective actions on the NLG main fittings and not on the whole NLGs. NLGs and NLG main fittings may have accumulated different flight cycle amounts.

The unsafe condition is cracking of the NLG, which could adversely affect the airplane's safe landing. You may obtain further information by examining the MCAI in the AD docket.

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.

Conclusion

We reviewed the available data and determined that air safety and the public interest require adopting the AD as proposed.

Differences Between This AD and the MCAI or Service Information

We have reviewed the MCAI and related service information and, in general, agree with their substance. But we might have found it necessary to use different words from those in the MCAI to ensure the AD is clear for U.S. operators and is enforceable. In making these changes, we do not intend to differ substantively from the information provided in the MCAI and related service information.

We might also have required different actions in this AD from those in the MCAI in order to follow our FAA policies. Any such differences are highlighted in a Note within the AD.

Costs of Compliance

We estimate that this AD will affect 1 product of U.S. registry.

There are no retained actions in this final rule that are required by AD 2002-03-10.

We estimate that it will take about 1 work-hour per product to comply with the new 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 to the U.S. operators to be \$85.

We have received no definitive data that would enable us to provide a cost estimate for the on-condition actions 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 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); and
3. 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.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains the NPRM, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

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 Amendment 39-12651 (67 FR 6855, February 14, 2002) and adding the following new AD:



2011-11-06 BAE Systems (Operations) Limited: Amendment 39-16705. Docket No. FAA-2010-0673; Directorate Identifier 2009-NM-208-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective July 6, 2011.

Affected ADs

- (b) This AD supersedes AD 2002-03-10, Amendment 39-12651.

Applicability

(c) This AD applies to BAE Systems (OPERATIONS) LIMITED Model BAe 146-100A, -200A, and -300A airplanes and Model Avro 146-RJ70A, 146-RJ85A, and 146-RJ100A airplanes; certificated in any category; all serial numbers.

Subject

- (d) Air Transport Association (ATA) of America Code 32: Landing Gear.

Reason

- (e) The mandatory continuing airworthiness information (MCAI) states:

In June 2000, prompted by a crack found at the top of the Nose Landing Gear (NLG) oleo, BAE Systems (Operations) Ltd (BAE Systems) issued Inspection Service Bulletin (ISB) ISB.32-158. * * *

Later, as part of an accident investigation, the examination of a fractured NLG main fitting showed that M-D (Messier-Dowty) SB.146-32-150 was not accomplished * * *. BAE Systems determined that more NLG units could be similarly affected. * * *

Subsequently, investigation and analysis by M-D identified the need for a reduction of the inspection threshold and the repetitive inspection interval for the affected NLG units * * *.

* * * * *

* * * [I]nvestigation by M-D showed that if any undetected crack was present at the time of the embodiment of M-D SB 146-32-150, Part B or Part C, it could continue to grow while the NLG is in service and could lead to the failure of the main fitting and possible collapse of the NLG. * * * [B]AE Systems have received additional reports of cracked NLG main fittings. One operator reported a crack in a premodification main fitting. * * *

* * * * *

Undetected cracks could lead to failure of the NLG Main Fitting and collapse of the NLG.

* * * * *

The unsafe condition is cracking of the NLG, which could adversely affect the airplane's safe landing.

Compliance

(f) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

Inspection

(g) Before the accumulation of 5,000 total flight cycles on the NLG main fitting, or within 300 flight cycles after the effective date of this AD, whichever occurs later, do an ultrasonic inspection on the upper part of the NLG main fitting for any crack, in accordance with the Accomplishment Instructions of Messier-Dowty Service Bulletin 146-32-174, Revision 2, dated August 16, 2010, including Appendix A, Revision 1, dated September 2, 2009. Thereafter, repeat the inspection at intervals not to exceed 300 flight cycles.

(h) An inspection that has been done in accordance with the Accomplishment Instructions of Messier-Dowty Service Bulletin 146-32-174, Revision 1, dated September 2, 2009; or in accordance with the Accomplishment Instructions of Messier-Dowty Service Bulletin 146-32-175, Revision 2, dated March 5, 2010; before the effective date of this AD but not more than 300 flight cycles before the effective date of this AD, is considered acceptable for compliance with the initial inspection required by paragraph (g) of this AD.

Replacement

(i) If any crack is found from the inspections required by paragraph (g) of this AD, before further flight, replace the NLG main fitting with a serviceable NLG main fitting, using a method approved by the Manager, International Branch, ANM-116, Transport Airplane Directorate, FAA; or the European Aviation Safety Agency (EASA) (or its delegated agent).

Note 1: Guidance on replacing the NLG main fitting with a serviceable NLG main fitting can be found in Subsection 32-20-11 of BAE SYSTEMS (OPERATIONS) LIMITED BAe 146 Series/Avro 146-RJ Series Aircraft Maintenance Manual, AMM 146.153, Revision 101, dated July 15, 2010.

(j) Replacing the NLG main fitting with a serviceable NLG main fitting is not a terminating action for the repetitive inspections required by paragraph (g) of this AD.

Parts Installation

(k) As of the effective date of this AD, no person may install an affected NLG main fitting on any airplane, unless that NLG main fitting has been inspected in accordance with paragraph (g) of this AD and no cracking is found.

FAA AD Differences

Note 2: This AD differs from the MCAI and/or service information as follows: No differences.

Other FAA AD Provisions

(l) 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. Send information to ATTN: Todd Thompson, Aerospace Engineer, International Branch, ANM-116, Transport Airplane Directorate, FAA, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 227-1175; fax (425) 227-1149. 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) Airworthy Product: For any requirement in this AD to obtain corrective actions from a manufacturer or other source, use these actions if they are FAA-approved. Corrective actions are considered FAA-approved if they are approved by the State of Design Authority (or their delegated agent). You are required to assure the product is airworthy before it is returned to service.

Related Information

(m) Refer to MCAI EASA Airworthiness Directive 2010-0202R1, dated October 14, 2010; and Messier-Dowty Service Bulletin 146-32-174, Revision 2, dated August 16, 2010, including Appendix A, Revision 1, dated September 2, 2009; for related information.

Material Incorporated by Reference

(n) You must use Messier-Dowty Service Bulletin 146-32-174, Revision 2, dated August 16, 2010, including Appendix A, Revision 1, dated September 2, 2009; to do the actions required by this AD, unless the AD specifies otherwise. (Page 6 of this document does not contain a revision level or date.)

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

(2) For Messier-Dowty service information identified in this AD, contact Messier Services Americas, Customer Support Center, 45360 Severn Way, Sterling, Virginia 20166-8910; telephone 703-450-8233; fax 703-404-1621; Internet <https://techpubs.services.messier-dowty.com>.

(3) For BAE SYSTEMS (OPERATIONS) LIMITED 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; e-mail Rpublications@baesystems.com; Internet <http://www.baesystems.com/Businesses/RegionalAircraft/index.htm>.

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

(5) You may also review copies of the 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/code_of_federal_regulations/ibr_locations.html.

Issued in Renton, Washington, on May 13, 2011.

Ali Bahrami,
Manager, Transport Airplane Directorate,
Aircraft Certification Service.