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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0504; Product Identifier 2018-NM-046-AD; Amendment 39-19433; AD 2018-19-32]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all The Boeing Company Model 707, 720, and 720B series airplanes. This AD was prompted by a report indicating that a fracture of the midspar fitting resulted in the separation of the inboard strut and engine from the airplane, and a determination that existing inspections are not sufficient for timely detection of cracking. This AD requires repetitive inspections of certain nacelle strut spar and overwing fittings, and diagonal braces and associated fittings; replacement of the diagonal brace assembly on certain airplanes; and applicable related investigative and corrective actions. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective November 2, 2018.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of November 2, 2018.

ADDRESSES: For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>. You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0504.

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-2018-0504; or in person at Docket Operations between 9 a.m. and 5

p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) is 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: Jeffrey Chang, Aerospace Engineer, Propulsion Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5263; fax: 562-627-5210; email: jeffrey.chang@faa.gov; or George Garrido, Aerospace Engineer, Airframe Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5232; fax: 562-627-5210; email george.garrido@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all The Boeing Company Model 707, 720, and 720B series airplanes. The NPRM published in the Federal Register on June 7, 2018 (83 FR 26383). The NPRM was prompted by a report indicating that a fracture of the midspar fitting resulted in the separation of the inboard strut and engine from the airplane, and a determination that existing inspections are not sufficient for timely detection of cracking. The NPRM proposed to require repetitive inspections of certain nacelle strut spar and overwing fittings, and diagonal braces and associated fittings; replacement of the diagonal brace assembly on certain airplanes; and applicable related investigative and corrective actions.

We are issuing this AD to address cracks, which if not detected and corrected, could grow beyond a critical length, allowing the strut fitting to fail and reducing the structural integrity of the nacelle. This, in combination with damage to adjacent attachment structure, could result in the loss of an engine from the airplane.

Comments

We gave the public the opportunity to participate in developing this final rule. The following presents the comment received on the NPRM and the FAA's response.

Request To Clarify Service Information Used for Oversizing Certain Holes

Boeing requested that we revise paragraph (k) of the proposed AD to specify outboard diagonal brace end fitting (forward or aft) attach holes that have been oversized as specified in Boeing 707 Alert Service Bulletin A3364, "Revision 3, dated May 29, 1981," rather than "Revision 4, dated February 21, 2017." Boeing noted that Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017, does not contain instructions for oversizing the attach holes, but instead refers to oversizing done as specified in Revision 3. Boeing added that, as written, the proposed AD would not require operators to replace a diagonal brace assembly with attach holes that were oversized as specified in Boeing 707 Alert Service Bulletin A3364, Revision 3, dated May 29, 1981, potentially allowing an unsafe condition to continue.

We agree with the commenter's request. We have revised paragraph (k) of this AD to specify ". . . outboard diagonal brace end fitting (forward or aft) attach holes have been oversized as specified in Boeing 707 Alert Service Bulletin A3364, Revision 3, dated May 29, 1981."

Conclusion

We reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this final rule with the change described previously and minor editorial changes. We have determined that these minor changes:

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

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information Under 1 CFR Part 51

We reviewed the following service information.

- Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017. This service information describes procedures for repetitive detailed inspections of the diagonal brace tube for any crack; repetitive detailed inspections and high frequency eddy current (HFEC) inspections of the nacelle strut diagonal brace end fittings, forward mating fitting, and aft mating fitting for any crack; an alternative dye penetrant inspection of vertical webs on aft mating fitting for any crack; an HFEC inspection of the diagonal brace tube for any crack; and corrective actions.
- Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017. This service information describes procedures for repetitive detailed, HFEC, and ultrasonic inspections of the overwing support fittings for any crack at the bolt hole forward of the wing front spar and at the holes for the four fasteners attaching the fitting to the spar, and related investigative and corrective actions.
- Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016. This service information describes procedures for repetitive detailed and surface HFEC inspections of the front spar fittings at nacelle struts numbers 1, 2, 3, and 4 for cracks, and replacement of cracked front spar fittings.

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 65 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

Estimated Costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Detailed inspections per Service Bulletin A3364, Revision 4	36 work-hours × \$85 per hour = \$3,060 per inspection cycle	\$0	\$3,060 per inspection cycle	\$198,900 per inspection cycle.
HFEC inspections per Service Bulletin A3364, Revision 4	128 work-hours × \$85 per hour = \$10,880 per inspection cycle	0	\$10,880 per inspection cycle	\$707,200 per inspection cycle.

Inspections per Service Bulletin A3365, Revision 3	20 work-hours × \$85 per hour = \$1,700 per inspection cycle	0	\$1,700 per inspection cycle	\$110,500 per inspection cycle.
Detailed inspections per Service Bulletin A3514, Revision 1	12 work-hours × \$85 per hour = \$1,020 per inspection cycle	0	\$1,020 per inspection cycle	\$66,300 per inspection cycle.
HFEC inspections per Service Bulletin A3514, Revision 1	32 work-hours × \$85 per hour = \$2,720 per inspection cycle	0	\$2,720 per inspection cycle	\$176,800 per inspection cycle.

We estimate that any necessary replacement of affected fittings would take about 96 work-hours for a cost of \$8,160 per fitting. We have received no definitive data on the parts costs of the affected fittings. We have no way of determining the number of aircraft that might need this replacement.

We have received no definitive data that would enable us to provide cost estimates 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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

Regulatory Findings

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 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 adding the following new airworthiness directive (AD):



FAA
Aviation Safety

AIRWORTHINESS DIRECTIVE

www.faa.gov/aircraft/safety/alerts/
www.gpoaccess.gov/fr/advanced.html

2018-19-32 The Boeing Company: Amendment 39-19433; Docket No. FAA-2018-0504; Product Identifier 2018-NM-046-AD.

(a) Effective Date

This AD is effective November 2, 2018.

(b) Affected ADs

This AD affects AD 82-24-03, Amendment 39-4496 (47 FR 51099, November 12, 1982) ("AD 82-24-03") and AD 2005-08-15, Amendment 39-14067 (70 FR 21136, April 25, 2005) ("AD 2005-08-15").

(c) Applicability

This AD applies to all The Boeing Company Model 707-100 Long Body, -200, -100B Long Body, and -100B Short Body series airplanes; Model 707-300, -300B, -300C, and -400 series airplanes; and Model 720 and 720B series airplanes; certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 54, Nacelles/pylons.

(e) Unsafe Condition

This AD was prompted by a report indicating that a fracture of the midspar fitting resulted in the separation of the inboard strut and engine from the airplane, and a determination that existing inspections for other nacelle strut fittings are not sufficient for timely detection of cracking. We are issuing this AD to address cracks, which if not detected and corrected, could grow beyond a critical length, allowing the strut fitting to fail and reducing the structural integrity of the nacelle. This, in combination with damage to adjacent attachment structure, could result in the loss of an engine from the airplane.

(f) Compliance

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

(g) Repetitive Detailed Inspections of the Front Spar Fittings at Nacelle Struts Numbers 1, 2, 3, and 4

Prior to the accumulation of 3,500 total flight hours; within 700 flight hours after the most recent inspection specified in Boeing 707 Alert Service Bulletin A3514, dated July 29, 2004, was done; or within three months after the effective date of this AD; whichever occurs later: Do a detailed inspection for cracking of the front spar fittings at nacelle struts numbers 1, 2, 3, and 4, in accordance

with the Accomplishment Instructions of Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016. If any cracking is found, before further flight, replace the affected fitting, in accordance with the Accomplishment Instructions of Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016. Repeat the inspections thereafter at intervals not to exceed 700 flight hours.

(h) Repetitive Surface High Frequency Eddy Current (HFEC) Inspections of the Aft Lugs on the Front Spar Fittings at Nacelle Struts Numbers 1, 2, 3, and 4

Within 1,500 flight cycles or 48 months after the most recent detailed inspection required by paragraph (g) of this AD was done, whichever occurs first, do a surface HFEC inspection for cracking of the aft lugs on the front spar fittings at nacelle struts numbers 1, 2, 3, and 4, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016, except as required by paragraph (l)(4) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection thereafter at intervals not to exceed 1,500 flight cycles or 48 months, whichever occurs first.

(i) Repetitive Inspections of the Overwing Support Fitting at Nacelle Struts Numbers 1, 2, 3, and 4

At the times specified in paragraph 1.E., "Compliance," of Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017, except as required by paragraph (l)(1) of this AD: Do the inspections specified in paragraphs (i)(1) through (i)(3) of this AD and do all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017, except as required by paragraph (l)(3) of this AD. Do all applicable related investigative and corrective actions before further flight. Repeat the inspections thereafter at the applicable time specified in paragraph 1.E., "Compliance," of Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017.

(1) Do a detailed inspection for any crack at all five holes in the overwing support fitting, and at the flange radii.

(2) Do the inspection specified in paragraph (i)(2)(i) or (i)(2)(ii) of this AD.

(i) Do a surface HFEC inspection for any crack in the overwing support fitting around the hole immediately forward of the spar chord, with the bolt in place, and at the flange radii.

(ii) Do an open hole HFEC inspection for any crack in the overwing support fitting at the hole immediately forward of the spar chord.

(3) Do the inspection specified in paragraph (i)(3)(i) or (i)(3)(ii) of this AD.

(i) Do an ultrasonic inspection for any crack in the overwing support fitting around the four holes common to the fitting and the spar chord, with the bolts in place.

(ii) Do a surface HFEC inspection for any crack in the overwing support fitting around the four holes common to the fitting and the spar chord, with the bolts in place.

(j) Inspections of the Nacelle Strut Diagonal Braces and Associated Fittings

For airplanes with nacelle strut diagonal braces and associated fittings which have accumulated 7,500 flight cycles or more: At the applicable times specified in paragraph 1.E., "Compliance" of Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017, except as required by paragraph (l)(2) of this AD, do the inspections specified in paragraphs (j)(1) through (j)(3) of this AD. Repeat the inspections thereafter at the applicable intervals specified in tables 1, 2, 3, and 4 of paragraph 1.E., "Compliance," of Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017. If any crack is found during any inspection required by this paragraph, before further flight, do all applicable corrective actions, in accordance with the Accomplishment

Instructions of Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017, except as required by paragraph (l)(3) of this AD.

(1) Do a detailed inspection of the nacelle strut diagonal brace end fittings, diagonal brace tube, forward mating fitting, and aft mating fitting for any crack.

(2) Do HFEC inspections of the nacelle strut diagonal brace end fittings, forward mating fitting, and aft mating fitting for any crack. As an alternative for the aft mating fitting, do a dye penetrant inspection of vertical webs on aft mating fitting for any crack.

(3) Do an HFEC inspection of the diagonal brace tube for any crack.

(k) Replacement

For Group 3, 4, and 6 airplanes as identified in Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017, on which the outboard diagonal brace end fitting (forward or aft) attach holes have been oversized as specified in Boeing 707 Alert Service Bulletin A3364, Revision 3, dated May 29, 1981: Within 1,000 flight cycles after the effective date of this AD, replace the diagonal brace assembly, in accordance with Figure 3 of Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017.

(l) Exceptions to Service Information Specifications

(1) For purposes of determining compliance with the requirements of this AD: Where Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017, uses the phrase “the Revision 3 date of this service bulletin,” this AD requires using “the effective date of this AD.”

(2) For purposes of determining compliance with the requirements of this AD: Where Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017, uses the phrase “the Revision 4 date of this service bulletin,” this AD requires using “the effective date of this AD.”

(3) Where Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017; and Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017; specify contacting Boeing: This AD requires repair using a method approved in accordance with the procedures specified in paragraph (o) of this AD.

(4) Where Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016, specifies contacting Boeing for replacement instructions: This AD requires replacement using a method approved in accordance with the procedures specified in paragraph (o) of this AD.

(m) Terminating Action for Other ADs

(1) Accomplishing the initial inspections required by paragraph (j) of this AD terminates all requirements of AD 82-24-03.

(2) Accomplishing the initial inspections required by paragraph (g) of this AD, terminates all requirements of AD 2005-08-15.

(n) Parts Installation Prohibition

As of the effective date of this AD, no person may install, on any airplane, a front spar fitting having a part number other than the part numbers specified in paragraph 2.C.2. of Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016.

(o) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Los Angeles ACO Branch, 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 manager of the certification office, send it to the attention of the person(s) identified in paragraph (p)(1) of this AD. Information may be emailed to: 9-ANM-LAACO-AMOC-Requests@faa.gov.

(2) 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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, replacement, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Los Angeles ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, replacement deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(p) Related Information

(1) For more information about this AD, contact Jeffrey Chang, Aerospace Engineer, Propulsion Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5263; fax: 562-627-5210; email: jeffrey.chang@faa.gov; or George Garrido, Aerospace Engineer, Airframe Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5232; fax: 562-627-5210; email: george.garrido@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (q)(3) and (q)(4) of this AD.

(q) 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 the AD specifies otherwise.

(i) Boeing 707 Alert Service Bulletin A3364, Revision 4, dated February 21, 2017.

(ii) Boeing 707 Alert Service Bulletin A3365, Revision 3, dated March 9, 2017.

(iii) Boeing 707 Alert Service Bulletin A3514, Revision 1, dated November 9, 2016.

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(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 Des Moines, Washington, on September 17, 2018.

John P. Piccola,
Acting Director, System Oversight Division,
Aircraft Certification Service.