[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2015-0247; Directorate Identifier 2014-NM-178-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Trent 800 series engines. This proposed AD was prompted by a report of multiple cases of heat damage to the strut aft fairing heat shield primary seal, as well as heat and wear damage to the heat shield insulation blankets. This proposed AD would require repetitive inspections for heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier and fire wall) and heat shield primary seal, and heat and wear damage to heat shield insulation blankets; and related investigative and corrective actions if necessary. This proposed AD would also provide optional terminating action for the repetitive inspections. We are proposing this AD to detect and correct heat damage to the strut aft fairing lower spar web structure and heat shield primary seal, as well as heat and wear damage to the heat shield insulation blankets, which could lead to through-cracks in the aft fairing web structure and heating of the aft fairing web structure, and consequent uncontrolled fire in the aft fairing, fuel tank ignition or possible departure of the engine, and subsequent loss of the airplane.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to http://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: 202-493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

• Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet https://www.myboeingfleet.com. 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 https://www.regulations.gov by searching and locating Docket No. FAA-2015-0247.

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-2015-0247; 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 proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office

(phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Kevin Nguyen, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6501; fax: 425-917-6590; email: kevin.nguyen@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2015-0247; Directorate Identifier 2014-NM-178-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to http://www.regulations.gov, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We have received a report of multiple cases of heat damage to the strut aft fairing heat shield primary seals, as well as heat and wear damage to the heat shield insulation blankets. Improper design of the strut aft fairing #1 heat shield (a titanium pan casting) and #1 heat shield insulation blanket allows hot turbulent gas from the exhaust nozzle to wear and cause degradation of the front face of the #1 insulation blankets and flow into the heat shield cavity, the space or cavity between the heat shields and insulation

blankets, and the strut aft fairing lower spar web structure. Continuous exposure to hot turbulent gas further damages the primary seal and #1 insulation blanket, increases the temperature in the heat shield cavity, and can damage all insulation blankets and lower web structure.

The insulation blankets are attached underneath the lower spar web structure and are intended to protect the web from hot exhaust gas. The insulation blankets were not originally designed to withstand additional hot gas exposure, and consequently are unable to adequately protect the lower web structure. The strut aft fairing lower spar web structure is made of aluminum and designed to be a flammable fluid zone barrier and firewall, as part of the aft fairing fire protection system.

Insufficient thermal protection and continuous exposure to hot gases and elevated temperatures can degrade the lower spar web structure material property. The heat-damaged web structures could become annealed and cracked from fatigue, compromising the firewall and allowing flammable fluids to leak onto the high-temperature heat shield, initiate a fire, and cause an uncontained fire in the aft fairing, potentially leading to fire in the wing tank. An uncontained fire in the aft fairing can weaken the diagonal brace and lower wing skin, which are primary structural elements that carry and support engine loads. This condition, if not corrected, could result in through-cracks in the aft fairing web structure and heating of the aft fairing web structure, and consequent uncontrolled fire in the aft fairing, fuel tank ignition or possible departure of the engine.

Related Service Information under 1 CFR part 51

We reviewed the following service information:

- Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014.
- Boeing Service Bulletin 777-54-0030, dated May 27, 2014.

The service information describes procedures for repetitive inspections for heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier

and fire wall) and heat shield primary seal, and heat and wear damage to heat shield insulation blankets; and related investigative and corrective actions. For information on the procedures and compliance times, see this service information. This service information is reasonably available; see ADDRESSES for ways to access this service information.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require accomplishing the actions specified in the service information described previously.

The phrase "related investigative actions" is used in this proposed AD. "Related investigative actions" are follow-on actions that (1) are related to the primary actions, and (2) further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

The phrase "corrective actions" is used in this proposed AD. "Corrective actions" are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Costs of Compliance

We estimate that this proposed AD affects 57 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspections	40 work-hours X	$0	$3,400 per	$193,800 per

	$85 per hour = $3,400 per inspection cycle	inspection cycle	inspection cycle

We estimate the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. We have no way of determining the number of airplanes that might need these replacements:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Heat shield primary seal replacement	10 work-hours X $85 per hour = $850	$1,940	$2,790
Cracked or damaged parts replacement	110 work-hours X $85 per hour = $9,350	$52,992	$62,342

According to the manufacturer, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

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 proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 proposed regulation:

(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.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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):

The Boeing Company: Docket No. FAA-2015-0247; Directorate Identifier 2014-NM-178-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Trent 800 series engines, certificated in any category, as identified in Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by reports of heat damage to the strut aft fairing heat shield primary seal, as well as heat and wear damage to the heat shield insulation blankets. We are issuing this AD to detect and correct heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier and fire wall) and heat shield primary seal, as well as heat and wear damage to the heat shield insulation blankets, which could lead to through-cracks in the aft fairing web structure and heating of the aft fairing web structure, and consequent uncontrolled fire in the aft fairing, fuel tank ignition or possible departure of the engine.

(f) Compliance

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

(g) Repetitive Inspections

At the applicable time specified in paragraph 1.E., "Compliance," of Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014, except as required by paragraph (i) of this AD: Do the inspections specified in paragraphs (g)(1), (g)(2), and (g)(3) of this AD, and do all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014. Do all applicable related investigative and corrective actions before further flight. Repeat the inspections specified in paragraphs (g)(1), (g)(2), and (g)(3) of this AD at the applicable time specified in paragraph 1.E., "Compliance," of Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014.

(1) Do a detailed inspection for cracks and heat damage of the aft fairing lower spar upper surface.

(2) Do a conductivity inspection for heat damage of the aft fairing lower spar upper surface.

(3) Do a detailed inspection for wear of the heat shield primary seal.

(h) Optional Terminating Action

The concurrent accomplishment of the actions specified in paragraphs (h)(1) and (h)(2) of this AD terminates the requirements of paragraph (g) of this AD.

(1) Replacement of all heat shield insulation blankets (rub strips, heat shield pan casting, Velcro strips, aft fairing web drain sump, drain screen, and drain tubes, as applicable) in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-54-0030, dated May 27, 2014.

(2) A one-time detailed inspection for cracks and heat damage of the aft fairing lower spar upper surface, conductivity inspection for heat damage of the aft fairing lower spar upper surface, and detailed inspection for wear of heat shield primary seal, and all applicable related investigative and corrective actions, in accordance with the

Accomplishment Instructions of Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014, provided all applicable related investigative and corrective actions are done before further flight.

(i) Exception to Service Information Specifications

Where Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014, specifies a compliance time "After the Original Issue Date of this Service Bulletin," this AD requires compliance within the specified compliance time after the effective date of this AD.

(j) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraphs (g)(1), (g)(2), (g)(3) and (h)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-54A0031, dated June 7, 2013.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), 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 ACO, send it to the attention of the person identified in paragraph (l)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-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 required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager,

Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(l) Related Information

(1) For more information about this AD, contact Kevin Nguyen, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6501; fax: 425-917-6590; email: kevin.nguyen@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet https://www.myboeingfleet.com. 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.

Issued in Renton, Washington, on February 19, 2015.

Jeffrey E. Duven,
Manager,
Transport Airplane Directorate,
Aircraft Certification Service.
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