[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2015-0247; Directorate Identifier 2014-NM-178-AD; Amendment 39-18513; AD 2016-10-02]

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 certain The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Trent 800 series engines. 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. This AD requires repetitive inspections for cracks and heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier), for wear to the heat shield primary seal, and, as applicable, for heat and wear damage to heat shield insulation blankets; and related investigative and corrective actions if necessary. This AD also provides optional terminating action for the repetitive inspections. We are issuing this AD to detect and correct cracks and heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier), wear to the heat shield primary seal, and heat and wear damage to heat shield insulation blankets, which could lead to through-cracks in the aft fairing lower web structure and heating of the aft fairing lower web structure, and consequent uncontrolled fire in the aft fairing, fuel tank ignition or possible departure of the engine.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this final rule, 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 AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 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: 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:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Trent 800 series engines. The NPRM published in the Federal Register on March 12, 2015 (80 FR 12954) ("the NPRM"). The NPRM 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. The NPRM proposed to require repetitive inspections for cracks and heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier), for wear to the heat shield primary seal, and, as applicable, for heat and wear damage to heat shield insulation blankets; and related investigative and corrective actions if necessary. The NPRM also provided optional terminating action for the repetitive inspections. We are issuing this AD to detect and correct cracks and heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier), wear to the heat shield primary seal, and heat and wear damage to heat shield insulation blankets, which could lead to through-cracks in the aft fairing lower web structure and heating of the aft fairing lower web structure, and consequent uncontrolled fire in the aft fairing, fuel tank ignition or possible departure of the engine.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM and the FAA's response to each comment. Marc Philippi stated that he supports the NPRM.

Request to Clarify Precipitating Event and Unsafe Condition

Boeing requested that we revise the SUMMARY and parts of the Discussion section of the NPRM to clarify that we received 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. Boeing also requested that we revise the SUMMARY of the NPRM and paragraph (e) of the proposed AD to clarify that the unsafe condition could lead to through-cracks in the aft fairing lower web structure and heating of the aft fairing lower web structure. Boeing further requested that we revise the Discussion section of the NPRM to indicate that the 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 cause wear and degradation of the front face of the #1 insulation blanket, enter the heat shield cavity (the space or cavity between the heat shields and insulation blankets), and contact the strut aft fairing lower spar web structure. Boeing additionally pointed out that continuous exposure to hot turbulent gas further damages the primary seal and #1 insulation blanket, increasing the temperature in the heat shield cavity, and causes damage to the insulation blankets and lower web structure.

We agree that the requested changes provide clarity about the unsafe condition and consistency to the entire AD, and have revised the SUMMARY of this final rule and paragraph (e) of this AD accordingly. However, the requested revisions to the Discussion section of the NPRM are not included since certain paragraphs of the Discussion section of NPRMs are not restated in final rules.

Request to Remove References to the Lower Spar Web Structure as a Firewall

Boeing requested that we remove references to the strut aft fairing lower spar web structures as a firewall from the preamble of the NPRM and paragraph (e) of the proposed AD. Boeing indicated that the strut aft fairing lower spar web structure acts as a flammable fluid zone barrier, not a firewall. Boeing pointed out that a fire zone is defined as a region where flammable fluid and/or vapor leakage can occur where there is an ignition source present. Boeing also pointed out that a flammable fluid leakage zone is defined as an area in which flammable fluid and/or vapor leakage can occur, but where

no ignition sources are present, and that since there are no ignition sources present in the strut aft fairing cavity, The Boeing Company 777 strut fire protection document defines the strut aft fairing cavity as a flammable fluid leakage zone.

We agree with the commenter, and have revised the preamble of this final rule and paragraph (e) of this AD accordingly.

Request to Include Information Notice in the Final Rule

Air New Zealand (ANZ) requested that we revise paragraph (h) of the proposed AD to include reference to Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015. ANZ pointed out that Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015, includes a statement to clarify part interchangeability and part intermixability. ANZ also pointed out that Boeing Service Bulletin 777-54-0030, dated May 27, 2014, does not include the statement to clarify part interchangeability and part intermixability and that the modification included in the optional terminating action could therefore potentially be removed by installing older design parts as specified in Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014. ANZ noted that Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015, is not approved by the FAA or any other regulatory authority.

We acknowledge that Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015, contains the updated part interchangeability and part intermixability restriction statement for certain parts (such as insulation blankets). Boeing has issued Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015, which contains the information specified in Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015. Once an airplane has been modified as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014, or Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015 (optional terminating action of installing redesigned or newer insulation blankets, and other associated parts), and the operator has

shown compliance with paragraph (h)(1) of this AD, the modification cannot be removed without requesting approval of an Alternative Method of Compliance (AMOC). Any change to install the older design parts would invalidate the terminating action accomplished as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014, or Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015.

Therefore, we have revised paragraph (h)(1) of this AD to refer to Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015, and provided credit for actions accomplished using Boeing Service Bulletin 777-54-0030, dated May 27, 2014, in paragraph (j)(2) of this AD.

ANZ stated that they believe the AMOC statement in the impending Airworthiness Notice should include Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015. We infer that ANZ is requesting an AMOC for that information notice.

We disagree with giving AMOC approval for Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015, because we are requiring Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015, that already includes the information contained in Boeing Information Notice 777-54-0030 IN 01, dated April 7, 2015.

Request for Revised Service Information and Credit

ANZ requested that we revise paragraph (j) of the proposed AD to include credit for actions accomplished as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014. ANZ pointed out that they have accomplished the actions required by paragraph (h)(1) of the proposed AD, on multiple 777-200 airplanes in their fleet, as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014. ANZ also stated that they believe that credit for accomplishing the actions required by paragraph (h)(1) of

the proposed AD, as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014, should be added to paragraph (j) of the proposed AD.

We agree with the request to include actions accomplished as specified in Boeing Service Bulletin 777-54-0030, dated May 27, 2014, in paragraph (j) of this AD. Therefore, as stated previously, we have revised this final rule to provide credit for actions accomplished using Boeing Service Bulletin 777-54-0030, dated May 27, 2014, in paragraph (j)(2) of this AD.

Request to Correct a Typographical Error

Boeing requested that we correct a typographical error by inserting missing dollar signs in the Cost of Compliance column of the On-Condition Costs table.

We agree and have revised this final rule to include the missing information.

Clarification of Actions

Boeing issued Information Notice 777-54A0031 IN 01, dated September 24, 2015, to clarify access information when removing and installing pan casting number 6. Information Notice 777-54A0031 IN 01, dated September 24, 2015, specifies that when removing pan casting number 6 in FIGURE 9 and FIGURE 10 of Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014, it is acceptable to remove and keep the bracket attached to the drain lines or remove the P-clamps for access. We refer to Boeing Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014, as the appropriate source of service information for accomplishing the actions required by paragraph (g) of this AD. Note 12 in Paragraph 3.A., "General Information," of Boeing Alert Service Bulletin 777-54A0031, dated June 7, 2013; and Revision 1, dated May 9, 2014; contains statements informing and permitting removal of more parts for access when necessary. Also, operators may have been performing these same or similar access steps when removing pan casting number 6. Thus, the clarification in the information notice is neither new nor additional work. Further, this clarification of access information

is already included in Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015, which is the appropriate source of service information for accomplishing the actions required by paragraph (h)(1) of this AD. Therefore, we have determined it is not necessary to include reference to Information Notice 777-54A0031 IN 01, dated September 24, 2015, in the regulatory text of this AD.

Clarification of Credit

Although the Accomplishment Instructions of Boeing Alert Service Bulletin 777-54A0031, dated June 7, 2013, correctly show all nine insulation blankets for doing the actions, paragraph 2., "Material Information" only lists eight insulation blankets and is missing part number 313W5421-29. Therefore, we have clarified paragraph (j)(1) of this AD to specify that credit for previous actions are acceptable, provided that insulation blanket part number 313W5421-29 is inspected and reinstalled, or replaced with a new insulation blanket; as applicable, as specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 777-54A0031, dated June 7, 2013.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes 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 correcting 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 AD.

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, Revision 1, dated September 30, 2015.

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 heat shield primary seal, and heat and wear damage to heat shield insulation blankets; and related investigative and corrective actions. 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 57 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
Inspections	40 work-hours X $85 per hour = $3,400 per inspection cycle	$0	$3,400 per inspection cycle	$193,800 per inspection cycle

We estimate the following costs to do any necessary replacements that would be required based on the results of the required 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 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

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):

2016-10-02 **The Boeing Company:** Amendment 39-18513; Docket No. FAA-2015-0247; Directorate Identifier 2014-NM-178-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 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 cracks and heat damage to the strut aft fairing lower spar web structure (a flammable fluid zone barrier), wear to the heat shield primary seal, and heat and wear damage to heat shield insulation blankets, which could lead to through-cracks in the aft fairing lower web structure and heating of the aft fairing lower 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, Revision 1, dated September 30, 2015.

(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

(1) 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, provided that insulation blanket part number 313W5421-29 is inspected and reinstalled, or replaced with a new insulation blanket, as applicable, as specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 777-54A0031, dated June 7, 2013. This service information is not incorporated by reference in this AD.

(2) This paragraph provides credit for the actions specified in paragraph (h)(1) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 777-54-0030, dated May 27, 2014. This service information is not incorporated by reference in this AD.

(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 ACO, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6501; fax: 425-917-6590; email: kevin.nguyen@faa.gov.

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

(m) 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 Service Bulletin 777-54A0031, Revision 1, dated May 9, 2014.

(ii) Boeing Service Bulletin 777-54-0030, Revision 1, dated September 30, 2015.

(3) For Boeing 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.

(4) You may view this service information at 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 April 28, 2016.

Dionne Palermo,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.
[FR Doc. 2016-10931 Filed: 5/10/2016 8:45 am; Publication Date: 5/11/2016]