[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2016-9067; Product Identifier 2016-NM-043-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (SNPRM); reopening of comment period.

SUMMARY: We are revising an earlier notice of proposed rulemaking (NPRM), which applies to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes. This action revises the NPRM by adding a reporting requirement. We are proposing this airworthiness directive (AD) to address the unsafe condition on these products. Since these actions impose an additional burden over that proposed in the NPRM, we are reopening the comment period to allow the public the chance to comment on these changes.

DATES: The comment period for the NPRM published in the Federal Register on September 8, 2016 (81 FR 62031), is reopened.

We must receive comments on this SNPRM 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: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this SNPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster 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, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

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-2016-9067; 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 SNPRM, 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: Bill Ashforth, Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: bill.ashforth@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2016-9067; Product Identifier 2016-NM-043-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this SNPRM. We will consider all comments received by the closing date and may amend this SNPRM 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 SNPRM.

Discussion

We issued an NPRM to amend 14 CFR part 39 by adding an AD that would apply to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes. The NPRM published in the Federal Register on September 8, 2016 (81 FR 62031). The NPRM was prompted by a report of fatigue cracking in airplanes that are approaching or have exceeded their design service objective and a structural reevaluation that identified additional structural elements that qualify as structural significant items (SSIs). The NPRM proposed to require revising the maintenance or inspection program to include inspections that will give no less than the required damage tolerance rating (DTR) for certain SSIs, inspecting for cracks of all SSI structure, and repairing any cracked structure.

Actions Since the NPRM was Issued

Since we issued the NPRM, we have determined that reporting must be required in order to ensure the continuing structural airworthiness of The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes with a high number of flight cycles. All cracks involving an SSI or related structure in close vicinity to the SSI must be reported to Boeing in order to evaluate the effectiveness of the supplemental structural inspections. We have revised paragraph (h) of this proposed AD to include reporting as part of the inspection program.

Comments

We gave the public the opportunity to comment on the NPRM. The following presents the comments received on the NPRM and the FAA's response to each comment.

Support for the NPRM

United Airlines stated that it concurs with the NPRM and has no further comments.

Requests to Revise Certain Compliance Times

Boeing and United Parcel Service (UPS) requested that we include a compliance time of "1,000 flight cycles measured from 12 months after the effective date of the AD" instead of a compliance time of "within 1,000 flight cycles or 12 months after the effective date of this AD, whichever occurs later" as specified in paragraphs (i)(1)(ii), (i)(2)(ii), (j)(1)(ii), and (j)(2)(ii) of the proposed AD (in the NPRM). Boeing stated that it is not realistic to incorporate the proposed inspections within 12 months, as specified in paragraph (h) of the proposed AD (in the NPRM), while simultaneously performing inspections as specified in paragraphs (i) and (j) of the proposed AD (in the NPRM). Boeing noted that the related AD, AD 2004-07-22 R1, Amendment 39-15326 (73 FR 1052, January 7, 2008; corrected February 14, 2008 (73 FR 8589)) ("AD 2004-07-22

R1"), increases the compliance time up to 1,000 flight cycles, after allowing 12 months to implement the new program. UPS stated that the proposed AD (in the NPRM) should include a 1,000-flight-cycle grace period similar to that provided in paragraphs (i)(1)(ii) and (i)(2)(ii) of AD 2004-07-22 R1. UPS stated that the proposed AD (in the NPRM) creates a situation for airplanes that are already over a threshold to have inspections due almost immediately upon the revision of the maintenance or inspection program.

In addition, KLM Royal Dutch Airlines requested that we provide a grace period for SSI items for which the inspection interval has to be lowered due to a flight-hour/flight-cycle ratio of 7.0 or more. British Airways stated that a suitable grace period should be introduced given that certain inspection intervals could be reduced from 6 years to 2 years.

We agree with the requests to revise the compliance time. The revised compliance time proposed by Boeing and UPS is consistent with the compliance time in AD 2004-07-22 R1, and will not adversely affect safety. This revised compliance time provides an adequate grace period for reduced intervals. We have revised paragraphs (i)(1)(ii), (i)(2)(ii), (j)(1)(ii), and (j)(2)(ii) of this proposed AD accordingly.

Requests to Clarify Compliance Times for Components

Boeing and KLM Royal Dutch Airlines requested that we clarify the compliance times for removable structural components. The commenters noted that for inspections of removable structural components, the accumulated flight cycles and flight hours on the component should be used instead of flight cycles and flight hours on the airframe. Boeing noted that some SSI details are replaced, such as when installing removable structural components or installing used structural parts in a repair. The commenters recommended we add a note to paragraphs (i) and (j) of the proposed AD (in the NPRM) to address this issue.

We agree because an SSI can be removed from the airframe and replaced, and have different flight cycles and flight hours than the airframe. Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; state the following:

> The initial inspection (threshold) and intervals are measured in flight cycles or flight hours that a particular SSI detail has accumulated regardless of what the airframe as a whole has accumulated. Most SSI details have never been replaced and therefore have accumulated the same flight cycles and flight hours as the airframe. Some SSI details are replaced, such as when installing removable structural components (repairable/rotable/expendables) or installing used structural parts as a repair. In these cases the SSI details have accumulated flight cycles and flight hours that may be different than the airframe. The operator must account for this in determining when inspections must be done.

We have added new content to paragraph (l) to this proposed AD (replacing the content in paragraph (l) of the proposed AD (in the NPRM)) to state that for compliance times that specify total flight cycles and total flight hours, and the SSI is a removable structural component, those compliance times must be measured on the SSI since its installation, regardless of what the airframe as a whole has accumulated. If the total flight cycles and total flight hours on the SSI are not available or cannot be determined, the airframe total flight cycles and total flight hours are to be used for the compliance times identified in paragraphs (i) and (j) of this proposed AD. We have also added a reference to "paragraph (l) of this AD" to paragraphs (i) and (j) of this proposed AD.

Request to Add Explanation to Continue Inspections

Boeing requested that we add an explanation to the NPRM regarding the continuation of the inspections in AD 2004-07-22 R1 until the start of the new

inspections specified in the NPRM. Boeing recommended that we add the following text to the "Proposed AD Requirements" section in the preamble of the NPRM:

> Note it is required to start and continue inspections per D6-35022 Rev G, as required by AD 2004-07-22 R1; until inspections per D6-35022 Rev H, dated Sept. 2013, and if required also D6-35022-1 Appendix A, dated Nov. 2015, are accomplished as required by the new AD.

We agree with the statement that Boeing provided. Inspections required by AD 2004-07-22 R1 are terminated only after accomplishment of the corresponding inspections required by this AD, as specified in paragraphs (i) and (j) of this proposed AD. However, the "Proposed AD Requirements" section is not restated in this proposed AD. Therefore, we have not changed this proposed AD in this regard.

Request to Clarify Affected Airplanes in Paragraph (i) of the Proposed AD (in the NPRM)

Boeing requested that we revise the header and first sentence of paragraph (i) of the proposed AD (in the NPRM) to clarify the affected airplanes. Boeing stated that the text "all Model 747 airplanes" should be revised so that the paragraph excludes Model 747-8 and 747-8F airplanes. Boeing noted those models are not included in the applicability specified in paragraph (c) of the proposed AD (in the NPRM).

We agree to clarify the language for the affected airplanes for paragraph (i) of this proposed AD. When we use the term "all airplanes" in the regulatory text of an AD, we mean all airplanes identified in paragraph (c) of the AD. Model 747-8 and 747-8F airplanes are not identified in paragraph (c) of this proposed AD. We have revised the header and first sentence of paragraph (i) of this proposed AD by specifying "all airplanes except . . ." instead of "all Model 747 airplanes except . . . ."

Request to Clarify Alternative Methods of Compliance (AMOCs) for AD 2004-07-22 R1

Boeing requested that we revise paragraph (m)(3) of the proposed AD (in the NPRM) to clarify that AMOCs are no longer needed for AD 2004-07-22 R1 after the requirements of the proposed AD (in the NPRM) are implemented. Boeing stated that both ADs should not be required to be reported on FAA Form 8100-9.

We agree to clarify the AMOC requirements, but we do not agree to revise paragraph (p)(3) of this proposed AD (paragraph (m)(3) of the proposed AD (in the NPRM)). Paragraphs (i) and (j) of this proposed AD state that doing the actions in paragraph (i) or (j) of this proposed AD terminates the corresponding action required by AD 2004-07-22 R1. Thus, an AMOC for AD 2004-07-22 R1 is no longer needed for a given SSI once the inspection for that SSI is done as required by this proposed AD. We have not changed this proposed AD in this regard.

Request to Clarify Approval of Previous AMOCs

Qantas Airways requested that we clarify paragraph (m)(4) of the proposed AD (in the NPRM), which approves previous AMOCs for the actions specified in paragraphs (h), (i), and (j) of the proposed AD (in the NPRM), except for any SSI that has an expanded inspection area identified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; or Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015. Qantas Airways requested that previous AMOCs also be approved for the actions required by paragraph (k) of the proposed AD (in the NPRM), which specifies repairing any cracked structure.

We agree and have added a reference to paragraph (k) in paragraph (p)(4) of this proposed AD (paragraph (m)(4) of the proposed AD (in the NPRM)).

Request for Relief from Certain Requirements

UPS requested that we revise paragraph (k) of the proposed AD (in the NPRM) to match the wording in paragraph (j) of AD 2004-07-22 R1 in order to avoid an unnecessary burden for Boeing, operators, and the FAA. UPS stated that paragraph (k) of the proposed AD (in the NPRM) specifies repairs to be done in accordance with AMOC-approved methods. UPS noted that previous repairs have been approved as AMOCs to paragraph (j) of AD 2004-07-22 R1, which corresponds to paragraph (k) of the proposed AD (in the NPRM). UPS further stated that paragraph (m)(4) of the proposed AD (in the NPRM) states that AMOCs approved for AD 2004-07-22 R1 are approved as AMOCs for the corresponding provisions of paragraphs (h), (i), and (j) of the proposed AD (in the NPRM). UPS noted that paragraph (j) of AD 2004-07-22 R1 requires repairs to be done in accordance with FAA-approved methods. UPS concluded that a requirement to have all repairs be AMOC-approved creates an unnecessary burden.

We agree to revise paragraph (k) of this proposed AD. Paragraph (j) of AD 2004-07-22 R1 allows repairs to be performed using an FAA-approved method. This is because the original intent of the supplemental structural inspection document (SSID) program was to perform damage-tolerant-type inspections of SSIs that had no significant prior fatigue crack history on pre-14 CFR 25.571 amendment 45 airplanes. In accordance with the SSID program, when cracking was found, Boeing would remove the SSI from the SSID, produce a separate service bulletin to address the cracking, and the FAA would then mandate the inspections specified in that service bulletin. These repairs would then need an AMOC to the corresponding AD when inspections were due. Since AD 2004-07-22 R1 was issued, the FAA and Boeing have determined that in many cases it is not necessary to create a separate service bulletin and AD, provided the cracks are found in an SSI and the existing inspections in the SSID are sufficient to maintain airworthiness and detect cracks in a timely manner. This is similar to how airworthiness limitations

programs are managed on post-14 CFR 25.571 amendment 45 airplanes. We have revised paragraph (k) of this proposed AD to state that repairs are to be performed using an FAA-approved method.

We also acknowledge that AMOCs to AD 2004-07-22 R1 have been issued, but these were issued to paragraph (l)(3) of that AD, rather than to paragraph (j) of that AD as discussed by UPS. These AMOCs were issued because operators could not inspect the SSI in accordance with the SSID and required alternate inspections or inspection intervals. We have determined that the guidance on when AMOCs are needed relative to the SSID program is not clear. Therefore, we have discussed this in the "Proposed Requirements of this SNPRM" section in this document and added new content to paragraph (m) to this proposed AD to clarify when operators must request an AMOC.

Request for Approval of Alternative Determination of Utilization

British Airways and UPS requested that we approve an alternative determination of airplane utilization (i.e., an airplane's average flight hours/flight cycles). The commenters stated that section 5.1.3. of Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, specifies that the utilization is an average of flight hours per flight for each airplane and that the utilization should be determined since the last D-check. British Airways recommended that utilization be considered from the delivery of the airplane. British Airways stated the proposed change is a more realistic average over the life of the airplane, makes it easier for operators to determine future utilization, and reduces the possibility of missing inspections due to minor changes in utilization between D-checks.

UPS recommended that an option be included to allow operators to use projected utilizations. UPS stated that the following terminology in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, can be contradictory and cannot be complied with: "for

determining utilization, use flight hours and cycles accumulated since the last D check or its equivalent. If future utilization is known, use the new average flight hours." UPS stated that the option would allow the operator to determine utilization from its maintenance program.

We disagree that future airplane utilization (unless known through scheduled maintenance) or airplane utilization based on the delivery date of the airplane is acceptable. The terminology used in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, is:

> After implementing the FLS [Flight Length Sensitive] inspections and to account for utilization changes over time, it is recommended the operator re-assess the airplane's utilization at least every D check or its equivalent. As a result of a re-assessment, SSIs which require inspection more frequently should be inspected within the new interval since the last inspection or at the next C check, whichever is later.

Future airplane utilization or airplane utilization from the delivery date would not, in general, be conservative in assessing the aircraft structure and is not equivalent. We have not changed this proposed AD in this regard.

We also disagree that the terminology that UPS cited in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, is contradictory. If the utilization that is used to set up the maintenance program changes over time, then the maintenance program schedule should be updated based on the new utilization. For example, if the average flight hours increase over the assessment period, then that operator should revise its maintenance program in consideration of the new average flight hours. We have not changed this proposed AD in this regard.

Requests to Allow a Tolerance for Selecting Forms

UPS and British Airways requested that we provide a tolerance for selecting the appropriate DTR forms. UPS recommended a tolerance of +/- 0.1 hour be allowed for selecting DTR forms. UPS stated that the historic utilization of its fleet is slightly less than 7 flight hours per flight cycle since delivery of the airplane and over the most recent D-check interval. UPS stated that current utilization projections show an average over 7 flight hours per flight cycle. UPS concluded that since it would have no knowledge ahead of time which airplane will be under or over 7, a tolerance in selecting the appropriate DTR form would provide a significant benefit to incorporating the program change without affecting the level of safety. British Airways recommended a tolerance of +/- 0.2 hour for the 7-hour utilization threshold and +/- 0.25 hour for 9- or 11-hour utilization thresholds. British Airways noted that if the utilization increases during the next interval, then the interval is significantly reduced, causing difficulty in providing the correct maintenance. The commenters noted that no tolerance is provided in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013.

We do not find it necessary to include the requested tolerance in this AD, because section 5.1.3 of Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, states, "DTR values can be read to the nearest two significant figures (0.1)," and section 7.3 of that document provides the following example on how to determine what the average flight hours per flight cycle without the use of additional tolerances:

> For Wing SSIs, the initial step is to check to see if the SSI if Flight Length Sensitive (FLS). If so, the operator uses the average flight length to select the DTR Check Form that the airplane's average flight length fits under. For example, at the SSID threshold, the airplane's average flight length is 8.6 hours. For this SSID item, there may be forms for <7

hours and >7 hours. In this case, the operator is to use the >7 hour DTR check form.

Therefore, an operator will be able to determine if its average flight hours are either <7 hours or ≥7 hours without needing the aid of an additional tolerance. We have not changed this proposed AD in this regard.

Request to Clarify if a Reassessment is Required

UPS requested that we clarify whether a reassessment of utilization is required. UPS stated that Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, states, "it is recommended the operator re-assess the airplane's utilization at least every D check or equivalent," but it is not clear if this recommendation is a requirement of the proposed AD (in the NPRM) or an option.

We agree to clarify. Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, is for an exploratory program. When that document calls out recommendations on re-assessing the airplane's utilization, this should be done at the operator's own discretion. The reassessment is not a requirement of this proposed AD. We have not changed this proposed AD in this regard.

Request to Provide Guidelines for Adjusting Certain Intervals

KLM Royal Dutch Airlines (KLM) requested that we provide guidance for adjusting certain intervals. KLM stated that no information is given on how to adjust repeat flight length sensitive (FLS) tasks for airplanes with a flight-hour/flight-cycle ratio of 7.0 or more once the initial inspection is performed. KLM stated that chapter 5.0 of Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, does not give clear guidelines. KLM stated that FLS tasks in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, will

result in a significant decrease of the repetitive interval of complex inspections for a flight-hour/flight-cycle ratio of 7.0 or more.

In reviewing Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, we have determined that it adequately addresses adjustment of the repetitive FLS tasks in sections 5.1.3 and 7.3. In addition, under the provisions of paragraph (p) of this AD, we will consider requests for alternate approaches to compliance time changes if sufficient data are submitted to substantiate that the approach and compliance time changes would provide an acceptable level of safety. We have not changed this proposed AD in this regard.

Request to Fix Typographical Error

Boeing and KLM requested that we revise a typographical error in paragraph (j)(2) of the proposed AD (in the NPRM), which refers to paragraph (i)(2)(ii) of the proposed AD (in the NPRM). The commenters stated that the correct reference is paragraph (j)(2)(ii) of the proposed AD (in the NPRM).

We agree with the request. We have revised paragraph (j)(2) of this proposed AD accordingly.

Removal of Inspection Program for Transferred Airplanes

We have determined that the requirements specified in paragraph (l) of the proposed AD (in the NPRM) are not necessary. The inspection program for transferred airplanes was included in early SSID programs that involved a "candidate fleet" (a specific group of airplanes that was inspected instead of all airplanes). Therefore, we have removed those requirements from this proposed AD.

Related Service Information under 1 CFR part 51

We reviewed Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013. This service

information describes procedures for inspections to detect cracks of all structure identified as SSIs, and includes six new SSIs since the last revision.

We also reviewed Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015. This service information describes procedures for inspections of the wings, fuselage, and empennage SSIs for Model 747-400 LCF airplanes.

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.

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 these same type design. Certain changes described above expand the scope of the NPRM. As a result, we have determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this SNPRM.

Proposed Requirements of this SNPRM

This SNPRM would require revising the maintenance or inspection program to include inspections that will give no less than the required damage tolerance rating (DTR) for certain SSIs, inspecting for cracks of all SSI structure, and repairing any cracked structure. This proposed AD also would require reporting all cracks involving an SSI or related structure in close vicinity to the SSI to Boeing.

This SNPRM would require revisions to certain operator maintenance documents to include new inspections. Compliance with these inspections is required by 14 CFR 91.403(c). For airplanes that have been previously modified, altered, or repaired in the areas addressed by these inspections, the operator may not be able to accomplish the actions described in the revisions. In this situation, to comply with 14 CFR 91.403(c), the

operator must request approval for an alternative method of compliance according to paragraph (p) of this proposed AD. The request should include a description of changes to the required inspections that will ensure the continued damage tolerance of the affected airplane.

Costs of Compliance

We estimate that this proposed AD affects 118 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
Revision of maintenance or inspection program	1 work-hour X $85 per hour = $85	$0	$85	$10,030

We have not specified cost estimates for the inspection and repair specified in this proposed AD. Compliance with this proposed AD constitutes a method of compliance with the FAA aging airplane safety final rule (AASFR) (70 FR 5518, February 2, 2005) for certain baseline structure of Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes. The AASFR requires certain operators to incorporate damage tolerance inspections into their maintenance inspection programs. These requirements are described in 14 CFR 121.1109(c)(1) and 14 CFR 129.109(b)(1). Accomplishment of the actions specified in this proposed AD will meet the requirements of these regulations for certain baseline structure. The costs for accomplishing the inspection portion of this proposed AD were accounted for in the regulatory evaluation of the AASFR for airplanes affected by that rule. For airplanes not affected by the AASFR, we have received no definitive data that would enable us to provide cost estimates for the inspection portion of this proposed AD.

We estimate the following costs to do any necessary reporting that would be required based on the results of the proposed inspections in the maintenance inspection program. We have no way of determining the number of aircraft that might need this action:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Reporting	1 work-hour X $85 per hour = $85	$0	$85 per inspection cycle

Paperwork Reduction Act

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. The control number for the collection of information required by this proposed AD is 2120-0056. The paperwork cost associated with this proposed AD has been detailed in the Costs of Compliance section of this document and includes time for reviewing instructions, as well as completing and reviewing the collection of information. Therefore, all reporting associated with this proposed AD is mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Ave., SW, Washington, DC 20591, ATTN: Information Collection Clearance Officer, AES-200.

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 proposed 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 to the Director of the System Oversight Division.

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-2016-9067; Product Identifier 2016-NM-043-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

This AD affects AD 2004-07-22 R1, Amendment 39-15326 (73 FR 1052, January 7, 2008; corrected February 14, 2008 (73 FR 8589)) ("AD 2004-07-22 R1").

(c) Applicability

This AD applies to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes, certificated in any category.

Note 1 to paragraph (c) of this AD: A Model 747-400 LCF airplane is a Model 747-400 series airplane that has been modified from a passenger airplane to a freighter configuration, as specified in Boeing Service Bulletin 747-00-2084.

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage; 54, Nacelles/Pylons; 55, Stabilizers; 57, Wings.

(e) Unsafe Condition

This AD was prompted by a report of incidents involving fatigue cracking in transport category airplanes that are approaching or have exceeded their design service objective, and a structural reevaluation by the manufacturer that identified additional structural elements that qualify as structural significant items (SSIs). We are issuing this AD to ensure the continued structural integrity of all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes.

(f) Compliance

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

(g) Definition of SSI

For the purposes of this AD, an SSI is defined as a principal structural element (PSE). A PSE is a structural element that contributes significantly to the carrying of flight, ground, or pressurization loads, and whose integrity is essential in maintaining the overall structural integrity of the airplane.

(h) Maintenance or Inspection Program Revision for All Airplanes

Prior to reaching the compliance times specified in paragraph (i)(1)(i), (i)(2)(i), (j)(1)(i), or (j)(2)(i) of this AD, as applicable, or within 12 months after the effective date of this AD, whichever occurs later: Incorporate a revision into the maintenance or inspection program, as applicable, that provides no less than the required damage tolerance rating (DTR) for each SSI listed in the applicable service information specified in paragraph (h)(1) or (h)(2) of this AD. The revision to the maintenance or inspection program must include, and must be implemented in accordance with, the procedures in

Section 5.0, "Damage Tolerance Rating (DTR) System Application," and Section 6.0, ''SSI Discrepancy Reporting'' of Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; as applicable. Accomplishing the revision required by this paragraph terminates the actions required by paragraphs (f), (g), and (h) of AD 2004-07-22 R1.

(1) For all airplanes except Model 747-400 LCF airplanes: SSIs listed in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013.

(2) For Model 747-400 LCF airplanes: SSIs listed in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and SSIs listed in Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015. For SSIs listed in both Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; and Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013: Incorporate the SSIs listed in Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015.

(i) Inspections for All Airplanes Except Model 747-400 LCF Airplanes

For all airplanes except Model 747-400 LCF airplanes: Perform inspections to detect cracks of all structure identified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013, at the times specified in paragraph (i)(1), (i)(2), or (i)(3) of this AD, as applicable, except as required by paragraph (l) of this AD. Once the initial inspection has

been performed, in order to remain in compliance with the maintenance or inspection program, as required by paragraph (h) of this AD, repetitive inspections are required at the intervals specified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013. Doing an inspection required by this paragraph terminates the corresponding inspection required by paragraph (i) of AD 2004-07-22 R1.

(1) For wing structure, except as provided by paragraph (i)(3) of this AD: Inspect at the times specified in paragraph (i)(1)(i) or (i)(1)(ii) of this AD, whichever occurs later.

(i) Within the applicable compliance time specified in paragraph (i)(1)(i)(A) or (i)(1)(i)(B) of this AD.

(A) For all Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SR, and 747SP series airplanes: Prior to the accumulation of 20,000 total flight cycles or 100,000 total flight hours, whichever occurs first.

(B) For all Model 747-400, 747-400D, and 747-400F series airplanes: Prior to the accumulation of 20,000 total flight cycles or 115,000 total flight hours, whichever occurs first.

(ii) Within 1,000 flight cycles measured from 12 months after the effective date of this AD.

(2) For all structure other than wing structure, except as provided by paragraph (i)(3) of this AD: At the time specified in paragraph (i)(2)(i) or (i)(2)(ii) of this AD, whichever occurs later.

(i) Prior to the accumulation of 20,000 total flight cycles.

(ii) Within 1,000 flight cycles measured from 12 months after the effective date of this AD.

(3) For any portion of an SSI that has been replaced with new structure: Inspect at the later of the times specified in paragraphs (i)(3)(i) and (i)(3)(ii) of this AD.

(i) At the time specified in paragraph (i)(1) or (i)(2) of this AD, as applicable.

(ii) Within 10,000 flight cycles after the replacement of the part with a new part.

(j) Inspections for Model 747-400 LCF Airplanes

For Model 747-400 LCF airplanes: Perform inspections to detect cracks of all structure identified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; at the times specified in paragraph (j)(1) or (j)(2) of this AD, as applicable, except as required by paragraph (l) of this AD. Once the initial inspection has been performed, in order to remain in compliance with the maintenance or inspection program, as required by paragraph (h) of this AD, repetitive inspections are required at the intervals specified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015. For SSIs listed in both Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; the SSIs listed in Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015, take precedence (i.e., the SSIs in the latter document prevail). Doing an inspection required by this paragraph terminates the corresponding inspection required by paragraph (i) of AD 2004-07-22 R1.

(1) For wing structure: Inspect at the times specified in paragraph (j)(1)(i) or (j)(1)(ii) of this AD, whichever occurs later.

(i) Prior to the accumulation of 20,000 total flight cycles or 115,000 total flight hours, whichever occurs first.

(ii) Within 1,000 flight cycles measured from 12 months after the effective date of this AD.

(2) For all structure other than wing structure: At the time specified in paragraph (j)(2)(i) or (j)(2)(ii) of this AD, whichever occurs later.

(i) At the earlier of the times specified in paragraphs (j)(2)(i)(A) and (j)(2)(i)(B) of this AD.

(A) Prior to the accumulation of 20,000 total flight cycles.

(B) Within the applicable initial compliance time specified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015. For SSIs are listed in both Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; and Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015; the SSIs listed in Boeing Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015, take precedence (i.e., the SSIs in the latter document prevail).

(ii) Within 1,000 flight cycles measured from 12 months after the effective date of this AD.

(k) Repair

If any cracked structure is found during any inspection required by paragraph (i) or (j) of this AD, repair before further flight using an FAA-approved method.

(l) Compliance Time Clarification

For compliance times identified in paragraphs (i) and (j) of this AD that specify total flight cycles and total flight hours, and the SSI is a removable structural component, those compliance times must be measured on the SSI since its first installation on any airplane, regardless of what the airframe as a whole has accumulated. If the total flight cycles and total flight hours on the SSI are not available or cannot be determined, use the airframe total flight cycles and total flight hours for the compliance times identified in paragraphs (i) and (j) of this AD.

(m) No Alternative Inspections and Inspection Intervals

After accomplishing the revision required by paragraph (h) of this AD, no alternative inspections or inspection intervals may be used unless the alternative inspection or inspection interval is approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (p) of this AD.

(n) Terminating Action for AD 2004-07-22 R1

Accomplishing the revision required by paragraph (h) of this AD and all of the initial inspections required by paragraph (i) or (j) of this AD, as applicable, terminates all requirements of AD 2004-07-22 R1.

(o) Paperwork Reduction Act Burden Statement

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2120-0056. Public reporting for this collection of information is estimated to be approximately 5 minutes per response, including the time for reviewing instructions, completing and reviewing the collection of information. All responses to this collection of information are mandatory. Comments

concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

(p) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle 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 identified in paragraph (q)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.

(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, 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, Seattle ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved for AD 2004-07-22 R1 are approved as AMOCs for the corresponding provisions of paragraphs (h), (i), (j), and (k) of this AD for the SSIs identified in the AMOC, except for any SSI that has an expanded inspection area identified in Boeing Document D6-35022, "Supplemental Structural Inspection Document for Model 747 Airplanes," Revision H, dated September 2013; or Boeing

Document D6-35022-1, "747-400 LCF Supplemental Structural Inspection Document – Appendix A," dated November 2015, as applicable.

(q) Related Information

(1) For more information about this AD, contact Bill Ashforth, Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: bill.ashforth@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet https://www.myboeingfleet.com. You may view this referenced service information at the FAA, Transport Standards Branch, 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 September 25, 2017.

Dionne Palermo,
Acting Director,
System Oversight Division,
Aircraft Certification Service.
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