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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2022-0154; Project Identifier AD-2021-01153-T; Amendment 39-22162; AD 2022-18-11]**

**RIN 2120-AA64**

### **Airworthiness Directives; The Boeing Company Airplanes**

#### **AGENCY:**

Federal Aviation Administration (FAA), DOT.

#### **ACTION:**

Final rule.

#### **SUMMARY:**

The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company Model 777 airplanes. This AD was prompted by a report of a crack found in a front spar lower chord undergoing an underwing longeron replacement. This AD requires repetitive inspections for cracking of the left and right side ring chords, repair angles, front spar lower chords, and front spar webs (depending on configuration) common to the underwing longeron located at station (STA) 1035; modification of the front spar lower chord for some airplanes; repetitive post-modification inspections; and applicable on-condition actions. The FAA is issuing this AD to address the unsafe condition on these products.

#### **DATES:**

This AD is effective October 31, 2022.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of October 31, 2022.

#### **ADDRESSES:**

For service information identified in this final rule, 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 [myboeingfleet.com](http://myboeingfleet.com). You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at [regulations.gov](http://regulations.gov) by searching for and locating Docket No. FAA-2022-0154.

## Examining the AD Docket

You may examine the AD docket at [regulations.gov](http://regulations.gov) by searching for and locating Docket No. FAA-2022-0154; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

## FOR FURTHER INFORMATION CONTACT:

Luis Cortez-Muniz, Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3958; email: [luis.a.cortez-muniz@faa.gov](mailto:luis.a.cortez-muniz@faa.gov).

## SUPPLEMENTARY INFORMATION:

### Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) by adding an AD that would apply to all The Boeing Company Model 777-200, -200LR, -300, -300ER, and 777F airplanes. The NPRM published in the **Federal Register** on March 25, 2022 ([87 FR 17032](#)). The NPRM was prompted by a report of a crack found in a front spar lower chord undergoing an underwing longeron replacement. In the NPRM, the FAA proposed to require repetitive inspections for cracking of the left and right side ring chords, repair angles, front spar lower chords, and front spar webs (depending on configuration) common to the underwing longeron located at STA 1035; modification of the front spar lower chord for some airplanes; repetitive post-modification inspections; and applicable on-condition actions. The FAA is issuing this AD to address, detect, and correct such cracking, which in combination with cracking in the front spar web, could result in a fuel leak and fire hazard, or in the case of more severe cracking, could also affect the structural integrity of the airplane.

## Discussion of Final Airworthiness Directive

### Comments

The FAA received comments from two commenters, including Boeing and the Air Line Pilots Association, International (ALPA), who supported the NPRM without change.

The FAA received additional comments from four commenters, including American Airlines, Delta Air Lines, FedEx Express (FedEx), and United Airlines. The following presents the comments received on

the NPRM and the FAA's response to each comment.

### **Request To Clarify Whether Certain Modifications Terminate Certain Actions**

American Airlines (AAL) requested clarification on whether accomplishing certain modifications terminates certain inspections required by AD 2019-11-02, Amendment 39-19648 ([84 FR 28722](#), June 20, 2019) (AD 2019-11-02). AAL noted that tables 27 and 28 in paragraph 1.E., “Compliance,” of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, specify modifying the left-hand and right-hand front spar lower chord (FSLC), after which, the repeat inspections specified in tables 9 and 10 are terminated and new repeat inspections are specified. AAL noted that a related situation arises in Boeing Alert Service Bulletins 777-53A0081, Revision 2, dated March 29, 2019 (required by AD 2019-11-02), in which a repeat inspection is specified for the underwing longerons (UWL) and then if a crack is found in that longeron, it is replaced and new repetitive inspections are specified. AAL added that Boeing confirmed that when the left-hand or right-hand FSLC is modified, then inspections specified in Boeing Alert Service Bulletins 777-53A0081, Revision 2, dated March 29, 2019; and Boeing Service Bulletin 777-53-0084, Revision 2, dated December 9, 2020 (which specifies modifying UWLs); would be satisfied for the modified side. AAL requested clarification on whether the proposed AD would be revised to state that the post-FSLC modification inspections in tables 27 and 28 of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, would replace or supersede the post-modification inspections in tables 6, 7, and 8, as applicable, of Boeing Alert Service Bulletin 777-53A0081, Revision 2, dated March 29, 2019, which is required by AD 2019-11-02.

The FAA agrees to clarify. Paragraph 4, “Approval,” of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, states that the Manager of the FAA Seattle ACO Branch approves accomplishing UWL inspections, repairs, and modifications in accordance with Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, as an alternative method of compliance (AMOC) to the inspection and corrective action requirements of paragraph (g) of AD 2019-11-02, for the modified longeron on that side only. AD 2019-11-02 would remain fully applicable to any unmodified side. The post-modification actions required by paragraph (g) of this AD would remain applicable to any modified side. The FAA has not revised this AD in this regard.

### **Request To Correct the Number of Required Tables**

Delta Air Lines (Delta) requested adding a new exceptions paragraph to paragraph (h) of the proposed AD to correct the number of applicable tables specified in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. Delta stated that in paragraph 1.E., “Compliance,” of the RB, it states to accomplish the actions in “Tables 1 through 50,” however, there are 54 tables that describe the necessary actions, not 50.

The FAA agrees with the request. The FAA has added paragraph (h)(3) to this AD to specify “Tables 1 through 54.”

### **Request To Address Formatting Issue With a Figure in Boeing Alert Requirements Bulletin 777-57A0122 RB, Dated October 8, 2021**

Delta requested that an exception be added to paragraph (h) of the proposed AD to address a formatting issue with Figure 20 in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated

October 8, 2021. Delta stated that in Figure 20, Sheet 1 of 4, the text cuts off and there is no image, but the text and image continue on the next sheet.

The FAA agrees that there appears to be a formatting issue with the text and image in Figure 20, Sheet 1 of 4, in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. However, the figure does include all of the text and image, and contains all the required information. The FAA has not revised this AD in this regard.

### **Request To Allow a Certain Modification**

FedEx requested a revision to paragraph (h) of the proposed AD to allow a modification of the front spar using Section 57-10-10-2R in the Boeing 767 structural repair manual (SRM) as an alternate method of compliance for Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. FedEx explained that its review of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, did not show any difference in the post-modification inspection intervals for airplanes modified per the SRM section. FedEx added that the SRM repair has not been shown to be unsafe or unreliable, and operators and vendors may already have parts in stock to do the repair.

The FAA disagrees with the commenter's request. The SRM referenced by FedEx is for Model 767 airplanes and would not apply to the Model 777 airplanes referenced in this AD. The FAA infers that FedEx intended to refer to the Boeing 777 SRM, which has a similar repair. The FAA notes that Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, has configurations based in part on whether or not the FSLCs have been repaired using section 57-10-10 of the Boeing 777 SRM or similar Boeing ODA-approved repair, and that while the post-modification intervals may be the same, certain configurations have an additional ultrasonic inspection. The FAA has determined that some of the materials specified in the SRM's repair instructions do not provide equivalent fatigue properties as the modification specified in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. However, under the provisions of paragraph (i) of this AD, the FAA will consider requests for alternative repairs or modification if sufficient data are submitted to substantiate that the alternative would provide an acceptable level of safety. The FAA has not changed this AD in this regard.

### **Request To Revise AMOC Statement**

FedEx requested a revision to the applicable longerons identified in the AMOC statement in paragraph 4, "Approval," in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. FedEx stated that the wording, "only applies to modified longerons," is potentially misleading and should be revised to state "only applies to underwing longerons modified by SB 777-57A0122 RB." FedEx noted that tables 39 and 40 of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, include actions to inspect the modifications to the front spar, but omit any repetitive inspections of the UWL modification. Thus, FedEx reasoned, an operator could incorrectly interpret the AMOC statement as applying to airplanes previously modified by Boeing Service Bulletin 777-53-0084, Revision 1, dated March 4, 2020, and stop accomplishing the repetitive UWL inspections required by AD 2019-11-02.

The FAA agrees to clarify the AMOC statement in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. The AMOC statement does not extend to airplanes previously modified by Boeing Service Bulletin 777-53-0087 or 777-53-0084. The AMOC statement's applicability is limited to UWL inspections, repairs, and modifications accomplished in accordance with Boeing Alert

Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. The AMOC does not extend to modifications done in accordance with any other service information. Further, the AMOC applies only to the actions required by paragraph (g) of AD 2019-11-02, which requires only Boeing Alert Service Bulletin 777-53A0081, Revision 2, dated March 29, 2019. The FAA has not changed this AD in this regard.

### **Request To Reference Service Bulletin Instead of Requirements Bulletin**

FedEx requested revising the proposed AD to reference Boeing Alert Service Bulletin 777-57A0122, dated October 8, 2021, instead of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. FedEx noted that Boeing Alert Service Bulletin 777-57A0122, dated October 8, 2021, is written in a manner consistent with FAA Advisory Circular 20-176, and that Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, duplicates the figures and tables from the service bulletin version to a point where it is cumbersome. FedEx also stated that the duplication could lead to discrepancies between the duplicated data. FedEx added that the RB document is only available as part of Boeing Alert Service Bulletin 777-57A0122, dated October 8, 2021, so the proposed AD would not be referencing an independent document.

The FAA disagrees with the commenter's request. As noted in Note 1 to paragraph (g) of this AD, the service bulletin may be used for guidance. Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, and the required for compliance (“RC”) steps included in Boeing Alert Service Bulletin 777-57A0122, dated October 8, 2021, include identical information. Therefore, complying with the “RC” steps in Boeing Alert Service Bulletin 777-57A0122, dated October 8, 2021, would also satisfy the requirements of this AD. The FAA notes that the requirements bulletin contains only the steps that are required for compliance with this AD and is posted to Docket No. FAA-2022-0154. The related service bulletin contains additional information that may be helpful when complying with the AD, but is not needed for compliance. Therefore, this AD specifies the requirements bulletin, not the service bulletin. The FAA has not changed this AD in this regard.

### **Request To Reduce Number of Groups and Configurations**

United Airlines (United) requested a revision to Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, to reduce the large number of airplane groups and configurations identified in the service information. United stated that the large number of groups and configurations creates a planning challenge, and could increase the potential for errors and non-compliance.

The FAA acknowledges the commenter's concerns about the relatively large number of airplane groups and configurations identified. However, the large number of airplane groups and configurations are necessary to address the unsafe condition in a fleet with differences in existing repairs and modifications in the inspected area. The FAA has not changed this AD in this regard.

### **Request To Extend Compliance Time**

United requested an extension to the compliance time(s) for accomplishing the initial inspection. United explained that the initial inspection involves entering the center tank, and that the current compliance time would require accomplishing the inspection at maintenance intervals that usually do not involve entering the center tank. United explained that adding the task of entering the center tank

to those visits would extend the out-of-service time during those visits and would result in increased costs to operators.

The FAA disagrees with the request to revise the compliance time. In developing an appropriate compliance time, the FAA considered the urgency associated with the subject unsafe condition, the availability of required parts, and the practical aspect of accomplishing the required modification within a period of time that corresponds to the normal scheduled maintenance for most affected operators. The FAA has determined that the compliance time provides an acceptable level of safety. However, under the provisions of paragraph (i) of this AD, the FAA will consider requests for an extension of the compliance time if sufficient data are submitted to substantiate that the change would provide an acceptable level of safety. The FAA has not changed this AD in this regard.

## Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

## Related Service Information Under [1 CFR Part 51](#)

The FAA reviewed Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. This service information specifies procedures for repetitive high frequency eddy current (HFEC), detailed, and ultrasonic inspections (depending on configuration) for cracking of the left and right side ring chords, repair angles, front spar lower chords, and front spar webs (depending on configuration) common to the underwing longeron located at STA 1035; modification of the front spar lower chord for some airplanes; repetitive post-modification inspections; and applicable on-condition actions. On-condition actions include repair. 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 **ADDRESSES**.

## Costs of Compliance

The FAA estimates that this AD affects 261 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

### Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection(s)	44 work-hours × \$85 per hour = \$3,750 per inspection cycle	\$0	\$3,750 per inspection cycle	\$976,140 per inspection cycle.

*\* Number of affected airplanes that will be required to do this action is unknown*

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Modification *	137 work-hours × \$85 per hour = \$11,645	\$47,964	\$59,609	Up to \$15,557,949.
Post-modification inspection(s) *	46 work-hours × \$85 per hour = \$3,910 per inspection cycle	\$0	\$3,910 per inspection cycle	Up to \$1,020,510 per inspection cycle.

*\* Number of affected airplanes that will be required to do this action is unknown*

The FAA has received no definitive data on which to base the cost estimates for the repairs specified in this AD.

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

### **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.

The FAA is 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) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in [14 CFR Part 39](#)**

- Air transportation
- Aircraft
- Aviation safety
- Incorporation by reference
- Safety

## 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:

**2022-18-11 The Boeing Company:** Amendment 39-22162; Docket No. FAA-2022-0154; Project Identifier AD-2021-01153-T.

#### (a) Effective Date

This airworthiness directive (AD) is effective October 31, 2022.

#### (b) Affected ADs

None.

#### (c) Applicability

This AD applies to all The Boeing Company Model 777-200, -200LR, -300, -300ER, and 777F airplanes, certificated in any category.

#### (d) Subject

Air Transport Association (ATA) of America Code 57, Wings.

#### (e) Unsafe Condition

This AD was prompted by a report of a crack found in a front spar lower chord undergoing an underwing longeron replacement. The FAA is issuing this AD to detect and correct such cracking, which in combination with cracking in the front spar web, could result in a fuel leak and fire hazard, or in the case of more severe cracking, could also affect the structural integrity of the airplane.

#### (f) Compliance



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

### **(g) Required Actions**

Except as specified by paragraph (h) of this AD: At the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021. Actions identified as terminating action in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, terminate the applicable required actions of this AD, provided the terminating action is done in accordance with the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021.

### **Note 1 to paragraph (g):**

Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 777-5A0122, dated October 8, 2021, which is referred to in Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021.

### **(h) Exceptions to Service Information Specifications**

- (1) Where the Compliance Time columns of the tables in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, use the phrase “the original issue date of Requirements Bulletin 777-57A0122 RB,” this AD requires using “the effective date of this AD.”
- (2) Where Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, specifies contacting Boeing for repair instructions: This AD requires doing the repair using a method approved in accordance with the procedures specified in paragraph (i) of this AD.
- (3) Where the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021, uses the phrase “Tables 1 through 50,” this AD requires using “Tables 1 through 54.”

### **(i) 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 responsible Flight Standards 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 (j)(1) of this AD. Information may be emailed to: [9-ANM-Seattle-ACO-AMOC-Requests@faa.gov](mailto: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 responsible Flight Standards 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 Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, 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.

#### **(j) Related Information**

(1) For more information about this AD, contact Luis Cortez-Muniz, Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3958; email: [luis.a.cortez-muniz@faa.gov](mailto:luis.a.cortez-muniz@faa.gov).

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

#### **(k) 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 Alert Requirements Bulletin 777-57A0122 RB, dated October 8, 2021.

(ii) [Reserved]

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

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

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: [archives.gov/federal-register/cfr/ibr-locations.html](http://archives.gov/federal-register/cfr/ibr-locations.html).

Issued on August 23, 2022.

Christina Underwood,

Acting Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[[FR Doc. 2022-20773](#) Filed 9-23-22; 8:45 am]

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