



## 適航指令發布單

### Airworthiness Directive Issuance Form

|   |   |                     |           |
|---|---|---------------------|-----------|
| 民航局 AD 編號<br>AD number  | CAA-2021-06-007   | 發布日期<br>Date issued | 2021/6/17 |
| 適用之航空產品<br>Applied to (models, serial numbers or part numbers, as applicable)   | Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, certificated in any category, Line Numbers (L/Ns) 1 through 7596 inclusive, except L/Ns 7352, 7362, 7377, 7417, 7457, 7522, 7587, and 7592.  |                     |           |
| 主旨摘要  | This AD requires revising the existing maintenance or inspection program, as applicable, to incorporate the April 2019 or November 2020 revision of the airworthiness limitations document.   |                     |           |
| <div style="text-align: center;">民航局<br/>CAA</div> <input type="checkbox"/> 本國產品<br>Native products<br><br><input type="checkbox"/> 其他個案<br>Other   | <div style="text-align: center;">設計國民航主管機構<br/>Original Authorities</div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> FAA<br/> <input type="checkbox"/> EASA<br/> <input type="checkbox"/> Brazil<br/> <input type="checkbox"/> Transport Canada Civil Aviation<br/> <input type="checkbox"/> DGAC         </div> <div style="width: 45%;"> <input type="checkbox"/> Germany LBA<br/> <input type="checkbox"/> CAA-NL<br/> <input type="checkbox"/> UK CAA<br/> <input type="checkbox"/> Japan CAB<br/> <input type="checkbox"/> CAA of Israel<br/> <input type="checkbox"/> Other _____         </div> </div> |                     |           |
|   | 設計國 AD 編號<br>Original AD number   | 2021-11-24          |           |
|   | 1. 直接採用原 AD 之內容?(Is the original AD directly adopted?)<br><input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _<br>a. 生效日期另訂為(Re-specify the effective date as) : _____<br>b. 執行時限另訂為(Re-specify the compliance time or period as) : _____<br><input type="checkbox"/> 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do <input type="checkbox"/> Users need to report the status of compliance to the CAA?)<br><input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)   |                     |           |
| 備註<br>Note  | ATA 28. Ref. Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019. and Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated November 2020.   |                     |           |
| 註： 1. AD 內容後附。<br>2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。<br>3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail：<br><a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a><br>Note： 1. The AD text is enclosed.<br>2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval.<br>3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail：<br><a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a> |   |                     |           |

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[Rules and Regulations]

[Pages 31604-31609]

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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2020-0341; Project Identifier 2020-NM-017-AD; Amendment 39-21586; AD 2021-11-24]**

**RIN 2120-AA64**

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

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes. This AD was prompted by significant changes made to the airworthiness limitations (AWLs) related to fuel tank ignition prevention and the nitrogen generation system (NGS). This AD requires revising the existing maintenance or inspection program, as applicable, to incorporate the April 2019 or November 2020 revision of the airworthiness limitations document. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective July 20, 2021.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of July 20, 2021.

**ADDRESSES:** For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>. You may view this service information at the FAA, 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 on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0341.

### **Examining the AD Docket**

You may examine the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0341; 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:** Christopher Baker, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3552; email: Christopher.R.Baker@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 certain The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes. The NPRM published in the Federal Register on May 6, 2020 (85 FR 26888). The NPRM was prompted by significant changes made to the AWLs related to fuel tank ignition prevention and the NGS. The NPRM proposed to require revising the existing maintenance or inspection program, as applicable, to incorporate the April 2019 revision of the airworthiness limitations document.

The FAA is issuing this AD to prevent the potential for ignition sources inside the fuel tanks and also to prevent increasing the flammability exposure of the center fuel tank caused by latent failures, alterations, repairs, or maintenance actions, which could result in a fuel tank explosion and consequent loss of an airplane. In addition, the FAA is issuing this AD to address the potential loss of engine fuel suction feed capability, which could result in dual engine flameouts, inability to restart engines, and consequent forced landing of the airplane.

### **Comments**

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

### **Support for the NPRM**

The Air Line Pilots Association, International (ALPA), United Airlines, and an individual stated support for the NPRM.

### **Request To Delay Issuance of Final Rule**

All Nippon Airways (ANA) requested that the FAA delay issuance of the final rule until Boeing releases the next revision of Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04. The commenter explained that in the current revision of Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019 (Boeing D626A001-9-04, dated April 2019), for Airworthiness Limitation (AWL) No. 47-AWL-09, "Nitrogen Generation System–Oxygen Sensor," operators must replace the NGS oxygen sensor with a new oxygen sensor because installation of an overhauled part is not approved at this time. The commenter stated that Boeing is working with the FAA to allow testing of the oxygen sensor using the component maintenance manual, and on-wing testing using the aircraft maintenance manual, and Boeing plans to revise AWL No. 47-AWL-09 to allow testing and installation of an overhauled part. The commenter anticipated that the next revision of Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, would include the revised AWL No. 47-AWL-09.

The FAA acknowledges the commenter's request. Since publication of the NPRM, Boeing has issued Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated November 2020 (Boeing D626A001-9-04, dated November 2020), which limits the applicability of AWL No. 47-AWL-09 to certain Model 737 airplanes and states that an oxygen sensor can be replaced with a new oxygen sensor or an oxygen sensor repaired per AWL No. 47-AWL-10 "Nitrogen Generation System–Oxygen Sensor Repair." This AD requires updating the existing maintenance/inspection program to incorporate Boeing D626A001-9-04, dated April 2019; or Boeing D626A001-9-04, dated November 2020. In addition, based upon requests from other commenters, the FAA has extended the initial compliance time for replacement of the oxygen sensor due to a parts availability issue. The FAA has revised the grace period for the initial ALI task in paragraph (g)(13) of this AD from 12 months to 36 months. This extended grace period will still provide an acceptable level of safety.

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

Air China, ANA, China Eastern Airlines (CEA), Delta Air lines (DAL), Japan Airlines (JAL), Okay Airlines (OKY), Southwest Airlines (SWA), and Turkish Airlines (THY) requested that the initial compliance time for the replacement of the oxygen sensor as specified in paragraph (g)(13) of the proposed AD be extended because of a parts availability issue. The commenters contacted Boeing and determined that there would be a shortage of parts, which would prevent them from complying with the proposed requirement specified in paragraph (g)(13) of the proposed AD within the compliance time specified in the proposed AD.

The FAA agrees with the commenters' requests based on the information provided by the commenters. The FAA contacted Boeing and confirmed that there is a parts availability issue, which could create an undue burden on operators because it could prevent them from complying with the requirement specified in paragraph (g)(13) of this AD, subsequently grounding the affected airplanes. The FAA has revised the initial compliance time in paragraph (g)(13) of this AD from 12 months to 36 months.

### **Request To Add an Off-Wing Inspection for AWL No. 47-AWL-09**

SWA requested that the FAA consider coordinating this AD with Boeing to allow for an off-wing inspection of the oxygen sensor, and repair if necessary, as opposed to a mandated time-limited replacement. SWA stated that this would mitigate the parts availability impact across the industry as well the cost of complying with AWL No. 47-AWL-09.

The FAA agrees that an off-wing inspection would reduce the burden on operators. This AD allows operators to optionally incorporate Boeing D626A001-9-04, dated November 2020, which includes an off-wing inspection as specified in AWL No. 47-AWL-10. Boeing modified the requirement of AWL No. 47-AWL-09 to allow the use of repaired parts and added AWL No. 47-AWL-10 to describe the requirements for the method of inspection/repair in Boeing D626A001-9-04, dated November 2020. This AD still requires operators to use Boeing D626A001-9-04, dated April 2019, but provides an option for operators to incorporate Boeing D626A001-9-04, dated November 2020, into their maintenance program. In addition, the FAA has determined that an on-wing inspection is currently being developed by Boeing and that subject on-wing inspection is expected to be implemented in a future revision of the Boeing D626A001-9-04 document. Under the provisions of paragraph (k) of this AD, the FAA will consider requests for approval of an alternative method of compliance (AMOC) if sufficient data are submitted to substantiate that the change would provide an acceptable level of safety.

## **Request To Clarify the Applicability of a Certain AWL Item**

CEA, DAL, JAL, OKY, Ryan Air, and THY requested clarification of the applicability specified in AWL No. 47-AWL-09, which addresses replacement of the oxygen sensor in the NGS. The commenters noted that in Boeing D626A001-9-04, dated April 2019, the other AWLs specific to the NGS show the airplane applicability in terms of the airplanes that have the NGS installed, or incorporation of the actions in Boeing Service Bulletin 737-47-1002 or Boeing Service Bulletin 737-47-1003. The commenters noted that all airplanes on the U.S. registry are required to have the NGS system installed, but the commenters expected the applicability of AWL No. 47-AWL-09 to be similar to the other AWLs included in Boeing D626A001-9-04, dated April 2019. In addition, OKY noted that the applicability in AWL No. 47-AWL-09 was listed as all airplanes, but in Boeing Fleet Team Digest Document 737NG-FTD-47-19003, created on May 8, 2020, the applicability is Model 737NG airplanes delivered after June 2019 or modified with a new, improved ASM (air separation module) using the procedures in Boeing Service Bulletin 737-47-1015.

DAL and the other commenters explained that they contacted Boeing regarding this applicability issue. The commenters stated that Boeing confirmed that the applicability specified in AWL No. 47-AWL-09 is incorrect and Boeing advised that in the next revision of Boeing D626A001-9-04, dated April 2019, the applicability specified in AWL No. 47-AWL-09 will be updated to include airplanes having L/Ns 1820, 1831, 2517, 2620, and subsequent, and all airplanes that have incorporated the actions specified in Boeing Service Bulletin 737-47-1003. Several of the commenters stated that paragraph (g)(13) of the proposed AD should include additional text to clarify the applicability of AWL No. 47-AWL-09. The commenters stated that by incorporating this information into the final rule, the FAA would prevent the need for operators to apply for an AMOC in the future.

The FAA acknowledges the commenters' requests. As mentioned previously, Boeing has published Boeing D626A001-9-04, dated November 2020, and in this revision the applicability specified in AWL No. 47-AWL-09 was updated and limited to specify only airplanes having L/Ns 1820, 1831, 2517, 2620, and subsequent, and all airplanes that have incorporated the actions specified in Boeing Service Bulletin 737-47-1003. The FAA has changed the AD to allow the use of Boeing D626A001-9-04, dated November 2020, which correctly identifies the applicability for AWL No. 47-AWL-09.

## **Request To Clarify the Unsafe Condition**

Boeing, DAL, and CEA requested clarification of the unsafe condition specified in the Discussion section of the NPRM and paragraph (e) of the proposed AD. The commenters remarked that the wording implied that increased flammability in the center fuel tank leads to fuel tank explosion. The commenters explained that increased flammability alone does not lead to a fuel tank explosion; there must also be a concurrent ignition source in the center fuel tank. The commenters suggested that it would be more accurate to state that the increased flammability combined with an ignition source could lead to a fuel tank explosion.

In addition, the commenters requested that the unsafe condition be revised to address the potential loss of engine fuel suction feed capability. The commenters pointed out that paragraph (g)(14) of the proposed AD specified AWL No. 28-AWL-101, "Engine Fuel Suction Feed Operational Test," which would be required to protect the airplane from engine flameout during suction feed operations. The commenters observed that this proposed action is not associated with the prevention of fuel tank ignition.

The FAA agrees with the commenters' requests based on the reasons provided by the commenters. The FAA has revised the Background section in this final rule and paragraph (e) of this AD accordingly.

## **Request To Account for Indirect Costs**

ANA, CEA, DAL, OKY, SWA, and THY expressed concern regarding the indirect financial burden associated with accomplishing the actual on-wing work resulting from the maintenance program or inspection program changes that would be required by the proposed AD. DAL specifically noted that accomplishment of the oxygen sensor replacement specified in AWL No. 47-AWL-09, would require replacement of approximately 130 oxygen sensors with new oxygen sensors, and based on price quotes from the manufacturer of the oxygen sensors, it would cost an additional \$7,000,000 over the estimated \$7,560 per operator specified in the Costs of Compliance section of the NPRM. DAL stated that once all airplanes have reached the threshold for replacing the oxygen sensor the recurring cost would be approximately \$2,000,000 per year for this task.

The FAA disagrees with changing the cost of compliance information for this AD. The cost information provided in this AD describes only the direct costs of the specific actions required by this AD. The FAA recognizes that, in doing the actions required by an AD, operators might incur incidental costs in addition to the direct costs. The extended compliance time previously mentioned could alleviate some of these indirect costs, as they would be spread out over 36 months instead of occurring within 12 months. Also, Boeing D626A001-9-04, dated November 2020, was revised to allow operators to use a repaired oxygen sensor in AWL No. 47-AWL-09 and added AWL No. 47-AWL-10 to describe the requirements for the method of inspection/repair. As identified above in a previous comment, operators now have the option to incorporate Boeing D626A001-9-04, dated November 2020, into their maintenance and inspection program, thereby reducing the financial impact of these requirements. The AD has not been changed in this regard.

## **Request for Clarification of Compliance Time Interval Units**

DAL and CEA requested that the FAA explain why paragraph (g) of the proposed AD expressed compliance time intervals in terms of months when Boeing D626A001-9-04, dated April 2019, specifies these intervals in terms of years. The commenter mentioned it was unclear if an AMOC would be required if an operator incorporated the compliance intervals in years, as specified in Boeing D626A001-9-04, dated April 2019, instead of months, as specified in the proposed AD.

The FAA disagrees that there is a difference in the calculated compliance times described by the commenters. The FAA uses compliance times defined in months for required AD actions. Operators have the capability of converting years to months when comparing the compliance times of required AD actions and the times specified in a manufacturer's document. The FAA has determined that operators should not be confused when these conversions take place and an operator does not need to request an AMOC. Regardless of how an operator records the compliance time, within 36 months or within 3 years after the effective date of this AD, the compliance times in this AD, Boeing D626A001-9-04, dated April 2019, and Boeing D626A001-9-04, dated November 2020, end at the same time. The FAA has not changed this AD in regard to this issue.

## **Request To Include Additional Affected AD in Paragraph (b) of Proposed AD**

DAL and CEA requested that AD 2018-20-13, Amendment 39-19447 (83 FR 52305, October 17, 2018) (AD 2018-20-13), be included in the list of affected ADs in paragraph (b) of the proposed AD. DAL and CEA noted that paragraphs (i)(1)(i) through (iii) of AD 2018-20-13 require incorporation of AWL Nos. 28-AWL-21, 28-AWL-22, and 28-AWL-24 that are included in Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated June 2018, into an operator's maintenance or inspection program as applicable. DAL and CEA suggested that only the latter revision of these AWLs that are included in Boeing D626A001-9-04, dated April 2019, should be mandated. DAL and CEA stated that the requirements of paragraphs (i)(1)(i) through (iii) of AD 2018-20-13 should be terminated when the requirements of the proposed AD become effective.

The FAA agrees with the commenter's request; paragraph (b) of this AD has been revised to include AD 2018-20-13 in paragraph (b)(6) of this AD, and the subsequent paragraph has been redesignated as paragraph (b)(7) of this AD. In addition, this AD has been revised to include a new paragraph (j)(6) of this AD to terminate the requirements specified in paragraphs (i)(1)(i) through (iii) of AD 2018-20-13, and the subsequent paragraph has been redesignated as paragraph (j)(7) of this AD.

### **Request To Change the Subject in Paragraph (d) of the Proposed AD**

DAL and CEA requested that the Subject in paragraph (d) of the proposed AD be changed from Air Transport Association (ATA) of America Code 71, Powerplant, to ATA Code 28, Fuel. DAL and CEA noted that the unsafe condition specified in the proposed AD is associated with ignition sources in the fuel tanks and flammability exposure of the center fuel tank. The fuel system is the subject of ATA Code 28. Previously issued ADs identified in paragraph (b) of the proposed AD, which are similar to the proposed AD, have specified ATA Code 28 as the subject in paragraph (d).

The FAA agrees with the commenter's request based on the reasons provided by the commenter. Paragraph (d) of this AD has been changed to ATA Code 28, Fuel.

### **Effects of Winglets on Accomplishment of the Proposed Actions**

Aviation Partners Boeing stated that the installation of blended or split scimitar winglets per Supplemental Type Certificated (STC) ST008300SE does not affect compliance with the proposed actions.

The FAA agrees that STC ST008300SE does not affect compliance with the actions required by this AD. The FAA has not changed this AD in this regard.

### **Reduction of Applicable Airplanes Since NPRM Was Issued**

The FAA has updated the applicability, paragraph (c) of this AD, to remove airplanes that were delivered with Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019, thereby reducing the scope of the affected airplanes in this final rule.

### **Conclusion**

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. The FAA has determined that these minor changes:

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

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

### **Related Service Information Under 1 CFR Part 51**

The FAA reviewed Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019; and Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated November 2020. This service information describes AWLs that include airworthiness limitation instructions (ALIs) and critical design configuration control limitations (CDCCLs) tasks related to fuel tank ignition prevention and the NGS. 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.

### **Differences Between This AD and the Service Information**

The “Description” column of AWL No. 28-AWL-20 identifies certain operational tests. However, the operational test for left center tank fuel boost pump relay R54 and right center tank fuel boost pump relay R55 is not required for airplanes on which the actions specified in paragraph (g)(2)(ii) of AD 2011-20-07, Amendment 39-16818 (76 FR 60710, September 30, 2011), have been done, or airplanes that have installed STC ST02076LA.

Paragraph (g) of this AD requires operators to revise their existing maintenance or inspection program by incorporating, in part, AWL No. 28-AWL-05, “Wire Separation Requirements for New Wiring Installed in Proximity to Wiring That Goes Into the Fuel Tanks” in Boeing D626A001-9-04, dated November 2020. Paragraph (h) of this AD allows certain changes to be made to the requirements specified in AWL No. 28-AWL-05 as an option.

### **Costs of Compliance**

The FAA estimates that this AD affects 2,057 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

The FAA determined that revising the existing maintenance or inspection program takes an average of 90 work-hours per operator, although the agency recognizes that this number may vary from operator to operator. In the past, the FAA estimated that this action takes 1 work-hour per airplane. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), the FAA determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, the FAA estimates the average total cost per operator to be \$7,650 (90 work-hours x \$85 per work-hour).

### **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.

### **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:



**FAA**  
**Aviation Safety**

## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

**2021-11-24 The Boeing Company:** Amendment 39-21586; Docket No. FAA-2020-0341; Project Identifier 2020-NM-017-AD.

### **(a) Effective Date**

This airworthiness directive (AD) is effective July 20, 2021.

### **(b) Affected (Airworthiness Directives) ADs**

This AD affects the ADs specified in paragraphs (b)(1) through (7) of this AD.

- (1) AD 2008-06-03, Amendment 39-15415 (73 FR 13081, March 12, 2008) (AD 2008-06-03).
- (2) AD 2008-10-10 R1, Amendment 39-16164 (75 FR 1529, January 12, 2010) (AD 2008-10-10 R1).
- (3) AD 2008-17-15, Amendment 39-15653 (73 FR 50714, August 28, 2008) (AD 2008-17-15).
- (4) AD 2011-18-03, Amendment 39-16785 (76 FR 53317, August 26, 2011) (AD 2011-18-03).
- (5) AD 2013-15-17, Amendment 39-17533 (78 FR 52838, August 27, 2013) (AD 2013-15-17).
- (6) AD 2018-20-13, Amendment 39-19447 (83 FR 52305, October 17, 2018) (AD 2018-20-13).
- (7) AD 2018-20-24, Amendment 39-19458 (83 FR 51815, October 15, 2018) (AD 2018-20-24).

### **(c) Applicability**

This AD applies to The Boeing Company Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, certificated in any category, Line Numbers (L/Ns) 1 through 7596 inclusive, except L/Ns 7352, 7362, 7377, 7417, 7457, 7522, 7587, and 7592.

### **(d) Subject**

Air Transport Association (ATA) of America Code 28, Fuel.

### **(e) Unsafe Condition**

This AD was prompted by significant changes made to the airworthiness limitations (AWLs) related to fuel tank ignition prevention and the nitrogen generation system (NGS). The FAA is issuing this AD to address the development of an ignition source inside the fuel tanks and also to prevent increasing the flammability exposure of the center fuel tank, which could lead to fuel tank explosion and consequent loss of the airplane. The FAA is also issuing this AD to prevent increasing the flammability exposure of the center fuel tank, which together with an ignition source in the fuel tank, could lead to a fuel tank explosion and consequent loss of the airplane. In addition, the FAA is issuing this AD to address the potential loss of engine fuel suction feed capability, which could result in dual engine flameouts, inability to restart engines, and consequent forced landing of the airplane.

### **(f) Compliance**

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

## **(g) Maintenance or Inspection Program Revision**

Within 60 days after the effective date of this AD, revise the existing maintenance or inspection program, as applicable, to incorporate the applicable information specified in Section A, including Subsections A.1., A.2., and A.3, of Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019; or November 2020; except as provided by paragraph (h) of this AD. The initial compliance times for the airworthiness limitation instruction (ALI) tasks are within the applicable compliance times specified in paragraphs (g)(1) through (14) of this AD.

(1) For AWL No. 28-AWL-01, “External Wires Over Center Fuel Tank”: Within 120 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, or within 120 months after the most recent inspection was performed as specified in AWL No. 28-AWL-01, whichever is later.

(2) For AWL No. 28-AWL-03, “Fuel Quantity Indicating System (FQIS)—Out Tank Wiring Lightning Shield to Ground Termination”: Within 120 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, or within 120 months after the most recent inspection was performed as specified in AWL No. 28-AWL-03, whichever is later.

(3) For AWL No. 28-AWL-19, “Center Tank Fuel Boost Pump Automatic Shutoff System”: Within 12 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 12 months after accomplishment of the actions specified in Boeing Service Bulletin 737-28A1206, or within 12 months after the most recent inspection was performed as specified in AWL No. 28-AWL-19, whichever is latest. This AWL does not apply to airplanes that have complied with paragraph (s) of AD 2011-18-03.

(4) For AWL No. 28-AWL-20, “Over-Current and Arcing Protection Electrical Design Features Operation—Boost Pump Ground Fault Interrupter (GFI)”: Within 12 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 12 months after accomplishment of the actions specified in Boeing Service Bulletin 737-28A1201, or within 12 months after the most recent inspection was performed as specified in AWL No. 28-AWL-20, whichever is latest.

(5) For AWL No. 28-AWL-23, “Center Tank Fuel Boost Pump Power Failed On Protection System”: Within 12 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 12 months after accomplishment of the actions specified in Boeing Service Bulletin 737-28A1248, or within 12 months after the most recent inspection was performed as specified in AWL No. 28-AWL-23, whichever is latest. This AWL does not apply to airplanes that have complied with paragraph (s) of AD 2011-18-03.

(6) For AWL No. 28-AWL-24, “Spar Valve Motor Operated Valve (MOV) Actuator—Lightning and Fault Current Protection Electrical Bond”: Within 72 months after accomplishment of the actions specified in Boeing Service Bulletin 737-28A1207, or within 72 months after the most recent inspection was performed as specified in AWL No. 28-AWL-24, whichever is later.

(7) For AWL No. 28-AWL-29, “Full Cushion Clamps and Teflon Sleeving (If Installed) Installed on Out-of-Tank Wire Bundles Installed on Brackets that are Mounted Directly on the Fuel Tanks”: For airplanes having line numbers (L/N) 1 through 1754 inclusive, within 120 months after accomplishment of the actions specified in Boeing Service Bulletin 737-57A1279. For airplanes having L/N 1755 and subsequent, within 120 months after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, or within 48 months after the effective date of this AD, whichever is later.

(8) For AWL No. 28-AWL-35, “Fuel Quantity Indicating System (FQIS)—Center Fuel Tank In-Tank Component and Wire Harness Protection Features-Separation from Center Tank Internal Structure”: For airplanes that have incorporated Boeing Service Bulletin 737-28-1356, within 120 months after accomplishment of the actions specified in Boeing Service Bulletin 737-28-1356, or

within 120 months after the most recent inspection was performed as specified in AWL No. 28-AWL-35, whichever is later.

(9) For AWL No. 28-AWL-37, “Fuel Quantity Indicating System (FQIS)–Built in Test Equipment (BITE) Test”: For airplane L/Ns 6987 and 7000 and subsequent, within 750 flight hours since the date the most recent BITE test was accomplished as specified in AWL No. 28-AWL-37, or within 750 flight hours after the effective date of this AD, whichever is later.

(10) For AWL No. 47-AWL-04, “Nitrogen Generation System–Thermal Switch”: Within 22,500 flight hours after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 22,500 flight hours after accomplishment of the actions specified in Boeing Service Bulletin 737-47-1003, or within 22,500 flight hours after the most recent inspection was performed as specified in AWL No. 47-AWL-04, whichever is latest.

(11) For AWL No. 47-AWL-06, “Nitrogen Generation System (NGS)–Cross Vent Check Valve”: Within 13,000 flight hours after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 13,000 flight hours after accomplishment of the actions specified in Boeing Service Bulletin 737-47-1003, or within 13,000 flight hours after the most recent inspection was performed as specified in AWL No. 47-AWL-06, whichever is latest.

(12) For AWL No. 47-AWL-07, “Nitrogen Generation System (NGS)–Nitrogen Enriched Air (NEA) Distribution Ducting Integrity”: Within 6,500 flight hours after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, within 6,500 flight hours after accomplishment of the actions specified in Boeing Service Bulletin 737-47-1003, or within 6,500 flight hours after the most recent inspection was performed as specified in AWL No. 47-AWL-07, whichever is latest.

(13) For AWL No. 47-AWL-09, “Nitrogen Generation System–Oxygen Sensor”: Within 18,000 flight hours after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness, or within 18,000 flight hours after the most recent replacement was performed as specified in AWL No. 47-AWL-09, or within 36 months after the effective date of this AD, whichever is latest.

(14) For AWL No. 28-AWL-101, “Engine Fuel Suction Feed Operational Test”: Within 7,500 flight hours or 36 months, whichever occurs first, after the date of issuance of the original airworthiness certificate or the original export certificate of airworthiness; or within 7,500 flight hours or 36 months, whichever occurs first, after the most recent inspection was performed as specified in AWL No. 28-AWL-101; whichever is later.

#### **(h) Additional Acceptable Exceptions to the AWLs**

As an option, when accomplishing the actions required by paragraph (g) of this AD, the changes specified in paragraphs (h)(1) through (3) of this AD are acceptable.

(1) Where AWL No. 28-AWL-05 identifies wire types BMS 13-48, BMS 13-58, and BMS 13-60, the following wire types are acceptable: MIL-W-22759/16, SAE AS22759/16 (M22759/16), MIL-W-22759/32, SAE AS22759/32 (M22759/32), MIL-W-22759/34, SAE AS22759/34 (M22759/34), MIL-W-22759/41, SAE AS22759/41 (M22759/41), MIL-W-22759/86, SAE AS22759/86 (M22759/86), MIL-W-22759/87, SAE AS22759/87 (M22759/87), MIL-W-22759/92, and SAE AS22759/92 (M22759/92); and MIL-C-27500 and NEMA WC 27500 cables constructed from these military or SAE specification wire types, as applicable.

(2) Where AWL No. 28-AWL-05 identifies TFE-2X Standard wall for wire sleeving, the following sleeving materials are acceptable: Roundit 2000NX and Varglas Type HO, HP, or HM.

(3) Where AWL No. 28-AWL-20 specifies the operational test for left center tank fuel boost pump relay R54 and right center tank fuel boost pump relay R55, for airplanes that have complied with paragraph (g)(2)(ii) of AD 2011-20-07, Amendment 39-16818 (76 FR 60710, September 30,

2011), or that have installed Supplemental Type Certificate (STC) ST02076LA, that action does not apply.

**(i) No Alternative Actions, Intervals, or Critical Design Configuration Control Limitations (CDCCLs)**

Except as provided in paragraph (h) of this AD, after the existing maintenance or inspection program has been revised as required by paragraph (g) of this AD, no alternative actions (e.g., inspections), intervals, or CDCCLs may be used unless the actions, intervals, and CDCCLs are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (k) of this AD.

**(j) Terminating Action for Certain AD Requirements**

Accomplishment of the revision required by paragraph (g) of this AD terminates the requirements specified in paragraphs (j)(1) through (7) of this AD for that airplane.

(1) The revision required by the introductory text to paragraph (h) and paragraph (h)(1) of AD 2008-06-03.

(2) All requirements of AD 2008-10-10 R1.

(3) The revision required by paragraph (g) of AD 2008-17-15.

(4) The revision required by paragraph (k) of AD 2011-18-03.

(5) All requirements of AD 2013-15-17.

(6) The revisions required by paragraphs (i)(1)(i) through (iii) of AD 2018-20-13.

(7) All requirements of AD 2018-20-24.

**(k) 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 (l) 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, 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.

**(l) Related Information**

For more information about this AD, contact Christopher Baker, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3552; email: Christopher.R.Baker@faa.gov.

**(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 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated April 2019.

(ii) Boeing 737-600/700/700C/800/900/900ER Special Compliance Items/Airworthiness Limitations, D626A001-9-04, dated November 2020.

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

(4) You may view this service information at the FAA, 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, email [fedreg.legal@nara.gov](mailto:fedreg.legal@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on May 21, 2021.

Lance T. Gant,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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