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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2010-0221; Directorate Identifier 2010-NM-043-AD; Amendment 39-16233; AD 2010-06-09]**

**RIN 2120-AA64**

### **Airworthiness Directives; The Boeing Company Model 777-200, -200LR, -300, -300ER, and 777F Series Airplanes**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Model 777-200, -200LR, -300, -300ER, and 777F series airplanes. This AD requires installing new operational program software for the autopilot flight director computers. This AD results from reports of rejected takeoffs at speeds above takeoff decision speed following inadvertent autopilot engagement on the ground, and from the discovery during flight simulations that the climb gradient is less than optimal for obstacle clearance during a performance-limited takeoff situation. We are issuing this AD to prevent inadvertent engagement of the autopilot during takeoff roll, which could result in rejected takeoff at rotation speed, and consequent possible overrun of the runway. We are also issuing this AD to prevent a lower-than-optimal climb gradient during takeoff, and consequent failure to clear obstacles on the ground during a performance-limited takeoff.

**DATES:** This AD is effective April 1, 2010.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of April 1, 2010.

We must receive comments on this AD by May 3, 2010.

**ADDRESSES:** You may send comments 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 AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; e-mail me.boecom@boeing.com; Internet <https://www.myboeingfleet.com>.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (telephone 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Frank van Leynseele, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6492; fax (425) 917-6590.

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

We have received reports (including two in January 2010) of rejected takeoffs at speeds above takeoff decision speed following inadvertent engagement of the autopilot on the ground. Since 1995, there have been nine reported instances of a rejected takeoff because of higher than normal control column forces at takeoff rotation due to the pilot inadvertently engaging the autopilot in lower-speed takeoff roll. When the flightcrew inadvertently engages the autopilot on ground during the lower-speed phase of the takeoff roll, the control column forces will be higher than normal when the pilot attempts to initiate the takeoff rotation. This condition, if not corrected, could result in rejected takeoff at rotation speed, and consequent possible overrun of the runway.

The Boeing Company has also discovered during flight simulations that the climb gradient is less than optimal for obstacle clearance during a one-engine takeoff (performance-limited) situation. This is caused by an error in the pitch command law of the autopilot flight director computer (AFDC). This condition, if not corrected, could result in a lower-than-optimal climb gradient during takeoff, and consequent failure to clear obstacles on the ground during a performance-limited takeoff.

#### **Relevant Service Information**

We reviewed Boeing Alert Service Bulletin 777-22A0024, dated January 22, 2010. The alert service bulletin describes procedures for installing new operational program software for the left, center, and right AFDCs. The new software will disengage the autopilot whenever the flaps are extended and the airplane is on the ground and not in rollout mode. Autopilot engagement is inhibited when the flaps are extended and the airplane is on the ground or below 50 feet above ground level. The new software also maintains the initial engine-out (performance-limited) takeoff pitch target for a longer duration to minimize altitude loss during the takeoff, and targets a velocity to maximize climbout performance.

## **FAA's Determination and Requirements of This AD**

We are issuing this AD because we evaluated all the relevant information and determined the unsafe conditions described previously are likely to exist or develop in other products of these same type designs. This AD requires accomplishing the actions specified in the service information described previously, except as discussed under "Differences Between the AD and the Service Information."

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

Although Boeing Alert Service Bulletin 777-22A0024, dated January 22, 2010, recommends accomplishing the operational program software installation "within 12 months after the original issue date of this service bulletin," we have determined that this compliance time would not address the identified unsafe conditions in a timely manner. In developing an appropriate compliance time for this AD, we considered not only the manufacturer's recommendation, but the degree of urgency associated with addressing the subject unsafe condition, the average utilization of the affected fleet, and the time necessary to perform the operational program software installation. In light of all of these factors, we find a compliance time of 90 days after the effective date of this AD for completing the required actions to be warranted, in that it represents an appropriate interval of time for affected airplanes to continue to operate without compromising safety. This difference has been coordinated with The Boeing Company.

## **FAA's Justification and Determination of the Effective Date**

A rejected takeoff at rotation speed significantly increases the risk of a runway overrun, and a lower-than-optimal climb gradient during a performance-limited takeoff drastically increases the risk of failure of the airplane to clear obstacles on the ground during the initial climb phase after takeoff. Both of these conditions can result in fatal injury to flightcrew, passengers, and people on the ground, as well as extensive damage to the airplane and property on the ground. Because of our requirement to promote safe flight of civil aircraft and thus the critical need to ensure the proper functioning of the autopilot flight director system, in addition to the two recent reports and the short compliance time involved with this action, this AD must be issued immediately.

Because an unsafe condition exists that requires the immediate adoption of this AD, we find that notice and opportunity for prior public comment hereon are impracticable and that good cause exists for making this amendment effective in less than 30 days.

## **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments before it becomes effective. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2010-0221; Directorate Identifier 2010-NM-043-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

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

## **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979), 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.

You can find our regulatory evaluation and the estimated costs of compliance in the AD Docket.

## **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 AD:



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**2010-06-09 The Boeing Company:** Amendment 39-16233. Docket No. FAA-2010-0221; Directorate Identifier 2010-NM-043-AD.

**Effective Date**

(a) This airworthiness directive (AD) is effective April 1, 2010.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to The Boeing Company Model 777-200, -200LR, -300, -300ER, and 777F series airplanes, certificated in any category; as identified in Boeing Alert Service Bulletin 777-22A0024, dated January 22, 2010.

**Subject**

(d) Air Transport Association (ATA) of America Code 22: Auto Flight.

**Unsafe Condition**

(e) This AD results from reports of rejected takeoffs at speeds above takeoff decision speed following inadvertent autopilot engagement on the ground, and from the discovery during flight simulations that the climb gradient is less than optimal for obstacle clearance during a performance-limited takeoff situation. The Federal Aviation Administration is issuing this AD to prevent inadvertent engagement of the autopilot during takeoff roll, which could result in rejected takeoff at rotation speed, and consequent possible overrun of the runway. We are also issuing this AD to prevent a lower-than-optimal climb gradient during takeoff, and consequent failure to clear obstacles on the ground during a performance-limited takeoff.

**Compliance**

(f) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

**Software Installation for the Autopilot Flight Director Computers**

(g) Within 90 days after the effective date of this AD, install new operational program software in the left, center, and right autopilot flight director computers, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-22A0024, dated January 22, 2010.

## **Special Flight Permit**

(h) Special flight permits, as described in Section 21.197 and Section 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199), are not allowed.

## **Alternative Methods of Compliance (AMOCs)**

(i)(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to Attn: Frank van Leynseele, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6492; fax (425) 917-6590. Information may be e-mailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

## **Material Incorporated by Reference**

(j) You must use Boeing Alert Service Bulletin 777-22A0024, dated January 22, 2010, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

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

(3) You may review copies of the service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221 or 425-227-1152.

(4) You may also review copies of the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Renton, Washington, on March 3, 2010.

Suzanne Masterson,  
Acting Manager, Transport Airplane Directorate,  
Aircraft Certification Service.