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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2012-1318; Directorate Identifier 2012-NM-104-AD; Amendment 39-17789; AD 2014-05-16]**

**RIN 2120-AA64**

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

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 747-200B, 747-300, 747-400, 747-400D, 747-400F series airplanes, and Model 767 series airplanes, powered by General Electric (GE) CF6-80C2 engines. This AD was prompted by reports of failure of the electro mechanical brake flexshaft (short flexshaft) of the thrust reverser actuation system (TRAS). This AD requires replacing the short flexshaft on each engine with a new short flexshaft, testing of the electro mechanical brake and center drive unit (CDU) cone brake to verify the holding torque, and performing related investigative and corrective actions if necessary. We are issuing this AD to prevent an uncommanded in-flight thrust reverser deployment and consequent loss of control of the airplane.

**DATES:** This AD is effective April 25, 2014.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of April 25, 2014.

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

For Middle River Aircraft Systems service information identified in this AD, contact Middle River Aircraft Systems, 103 Chesapeake Park Plaza, Baltimore, MD 21220; telephone 410-682-1500; fax 410-682-1230; email [; Internet <http://www.mras-usa.com/contact.html>.](mailto:usa.com)

You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

## **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 address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Tung Tran, Aerospace Engineer, Propulsion Branch, ANM-140S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6505; fax: 425-917-6590; email: [Tung.Tran@faa.gov](mailto:Tung.Tran@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 747-200B, 747-300, 747-400, 747-400D, 747-400F series airplanes, and Model 767 series airplanes, powered by General Electric (GE) CF6-80C2 engines. The NPRM published in the Federal Register on January 16, 2013 (78 FR 3363). The NPRM was prompted by reports of failure of the electro mechanical brake flexshaft (short flexshaft) of the thrust reverser actuation system (TRAS). The NPRM proposed to require replacing the short flexshaft on each engine with a new short flexshaft, testing of the electro-mechanical brake and center drive unit (CDU) cone brake to verify the holding torque, and performing related investigative and corrective actions if necessary. We are issuing this AD to prevent an uncommanded in-flight thrust reverser deployment and consequent loss of control of the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal (78 FR 3363, January 16, 2013) and the FAA's response to each comment.

### **Request To Clarify Applicability and Reliability Difference Between Engine Models**

Air France Industries asked if the thrust reversers on GE CF6-80E1 powered airplanes are addressed by the NPRM (78 FR 3363, January 16, 2013), and if the flexshaft reliability difference between GE CF6-80C2 and CF6-80E1 engines is due to the systematic introduction of the double P-Seal on translating cowls on GE CF6-80E1 engines.

We agree to clarify why the NPRM (78 FR 3363, January 16, 2013) did not address the GE CF6-80E1 thrust reversers. This final rule was prompted by reports of failure of the electro-mechanical brake flexshaft (short flexshaft) of the TRAS on Model 747 and Model 767 airplanes powered by GE CF6-80C2 engines. Therefore, we did not conduct a safety assessment on airplanes powered by GE CF6-80E1 engines. We have not determined that the double P-Seal was a contributing factor to the failure of the flexshaft on GE CF6-80C2 engines. We are aware that this defective flexshaft could be installed on other engines. We have contacted the appropriate office to address the safety concerns regarding this defective flexshaft on other airplane models, and might consider additional rulemaking if an unsafe condition is identified on other engines. We have not changed this final rule in this regard.

### **Request To Include Additional Service Information**

UPS requested that we allow the use of Middle River Aircraft Systems (MRAS) CF6-80C2B Service Bulletin 78-1168, Revision 1, dated August 26, 2010, to comply with the flexshaft replacement proposed by paragraph (g) of the NPRM (78 FR 3363, January 16, 2013). UPS stated that it has fully complied with the flexshaft replacement requirement using this service information.

We agree with the commenter's request. Since we issued the NPRM (78 FR 3363, January 16, 2013), we have determined that flexshaft replacements done in accordance with Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 1, dated August 26, 2010; and Revision 2, dated April 19, 2011; meet the intent of this final rule. We have changed paragraph (g) of this final rule to include Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 2, dated April 19, 2011, as an appropriate source of service information; and we have also added new paragraph (m) to this final rule to provide credit for actions done prior to the effective date of this final rule using Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 1, dated August 26, 2010. We have redesignated subsequent paragraphs accordingly.

### **Request To Update Parts Cost**

MRAS provided current cost data and requested that we update the estimated parts costs accordingly.

We agree to update the estimated parts costs. We have changed the estimated parts cost to \$4,031 for each flexshaft, which changes the estimated parts cost to \$32,248 for a Model 747 airplane, and to \$16,124 for a Model 767 airplane.

### **Request To Change Parts Installation Prohibition Paragraph**

Boeing and MRAS requested that we change paragraph (k) of the NPRM (78 FR 3363, January 16, 2013), which would prohibit installation of part number (P/N) 3278500-( ), on any airplane, to specify that this prohibition applies only to Boeing airplanes. MRAS stated that P/N 3278500-( ) is still certified on Airbus Model A330 airplanes.

We partially agree with the commenters' request. This final rule applies only to the airplanes identified in paragraph (c) of this final rule. Paragraph (k) of this final rule specifies "any airplane," which refers to the airplanes identified in paragraph (c) of this final rule. However, to add clarity to this final rule, we have revised paragraph (k) of this final rule to specify that the parts prohibition applies only to the airplanes identified in paragraph (c) of this final rule.

### **Request To Clarify CDU Cone Brake Replacement Action**

Boeing and MRAS requested that we change the fifth paragraph of the Relevant Service Information section of the NPRM (78 FR 3363, January 16, 2013), which specified that the corrective action for a CDU cone brake test failure is replacement of the CDU cone brake with a new CDU cone brake. The commenters stated that the cone brake is not a line-replaceable unit (LRU), and that if a CDU cone brake fails, the entire CDU must be replaced with a serviceable CDU. MRAS stated that the cone brake within the CDU can be replaced only in a component maintenance shop.

We agree that the cone brake is not an LRU, and that the corrective action for a CDU cone brake test failure is replacement of the CDU with a new or serviceable CDU. Paragraph (i) of this final rule requires doing the corrective action for a failed cone brake functional test in accordance with certain applicable service information, which does specify replacing the CDU—not just the cone brake—after a failed test. The Relevant Service Information paragraph of the NPRM (78 FR 3363, January 16, 2013) is not repeated in this final rule; therefore, we have not changed this final rule in this regard.

## **Request To Extend the Repetitive Inspection Interval**

Air New Zealand (ANZ) requested that we extend the repetitive inspection interval specified in paragraph (h) of the NPRM (78 FR 3363, January 16, 2013) to 3,000 flight hours or greater. ANZ cited several previous alternative methods of compliance (AMOC) approvals for issued ADs to extend the inspection intervals on the thrust reverser CDU cone brake and the electro-mechanical brakes.

We do not agree to extend the repetitive inspection interval proposed in the NPRM (78 FR 3363, January 16, 2013) to 3,000 flight hours or greater. The AMOC extension to inspection intervals to 3,000 flight hours or greater was granted based on a fault tree analysis that assumed the engine cowl anti-ice system was causing the short flexshaft to fail. We now have enough data to invalidate that assumption. As part of the certification process of the new flexshaft, the system safety analyses on all Model 747 and Model 767 airplanes with GE CF6-80C2 engines were refined, and the predicted failure rate from the comparative testing was used. We have determined that we could meet average and specific risk requirements with an inspection interval of 2,000 flight hours for both the CDU cone brake and TRAS lock flexshaft. Therefore, we have determined that a repetitive inspection interval of 2,000 flight hours is necessary to address the unsafe condition. We have not changed this final rule in this regard.

## **Request To Combine Multiple ADs Into One AD**

ANZ requested that we combine the following ADs into one new AD to reduce the complexity of multiple regulatory requirements.

- AD 2003-16-16, Amendment 39-13269 (68 FR 51439, August 27, 2003).
- AD 2000-15-04, Amendment 39-11833 (65 FR 47252, August 2, 2000).
- AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000).

We partially agree with the commenter's request. We agree with the commenter about the complexity of complying with multiple regulatory requirements. We disagree with the request to combine the requirements of these ADs into one new AD, because this final rule is not the proper venue for addressing this issue. We are issuing this final rule to require replacement of the short flexshaft with a better and more reliable part. We have considered the previous rulemaking by allowing this new part replacement and repetitive inspections to be a terminating action for the repetitive inspections set by previous ADs, as specified in paragraph (j) of this final rule. We have not changed this final rule in this regard.

## **Request To Add Airplanes to the Applicability**

Boeing requested that we include Model 767 airplanes powered by GE CF6-80C2 engines in the applicability of the NPRM (78 FR 3363, January 16, 2013); and require all production airplanes to do the requirements of paragraph (h) of the NPRM. Boeing stated that AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 5, 2000), which is applicable to Model 767 airplanes powered by GE CF6-80C2 engines, mandates the inspection of the TRAS lock flexshaft and CDU cone brake at 1,000 hours, and that these airplanes should be able to use the extended 2,000-hour TRAS lock flexshaft and CDU tests granted in the NPRM.

We disagree with the commenter's request. Adding airplanes to the applicability would necessitate (under the provisions of the Administrative Procedure Act) reissuing the notice, reopening the comment period, considering additional comments subsequently received, and eventually issuing a final rule. In consideration of the amount of time that has already elapsed since issuance of the original notice (78 FR 3363, January 16, 2013), we have determined that further delay of this final rule is not appropriate. However, we might consider further rulemaking on this issue. We have not changed this final rule in this regard.

## **Request To Allow Dispatch of an Airplane With a Failed CDU Cone Brake Check**

Boeing requested that we allow a master minimum equipment list (MMEL) dispatch of an airplane when a CDU cone brake check fails. Boeing stated that a certain FAA AMOC approval letter already allows for an MMEL dispatch of an airplane when only the CDU cone brake check fails.

We agree with the commenter's request. The electro-mechanical brake provides an additional level of protection against the inadvertent in-flight deployment of the thrust reverser. We have added new paragraph (l) to this final rule, which specifies that in the event of a CDU cone brake failure, an airplane may be operated as specified in the operator's FAA-approved minimum equipment list, provided that certain conditions are met. We have redesignated subsequent paragraphs accordingly.

## **Requests for Terminating Action**

Boeing requested we specify that the functional tests in paragraph (h) of the NPRM (78 FR 3363, January 16, 2013) terminate the functional test requirements of paragraph (e), as well as paragraph (f), of AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000).

Delta Airlines requested we specify that the functional tests in paragraph (h) of the NPRM (78 FR 3363, January 16, 2013) terminate the requirements of paragraph (a), as well as paragraph (e), of AD 2003-16-16, Amendment 39-13269 (68 FR 51439, August 27, 2003).

We agree with the commenters' requests. The functional tests required by paragraph (h) of this final rule address the tests required by the AD requirements cited by the commenters. We have changed paragraphs (j)(1) and (j)(3) of this final rule, as specified by the commenter.

## **Request for Credit for Previous Actions**

Atlas Air requested that we give credit for the actions required by paragraph (h) of the NPRM (78 FR 3363, January 16, 2013), if those actions were done before the effective date of this AD using the service information specified in paragraph (h) of the NPRM.

Specifying credit for the actions done before the effective date of this final rule using the same service information specified in paragraph (h) of this final rule is unnecessary. Paragraph (f) of this final rule specifies to comply with the AD within the compliance times specified, unless already done. We have not changed this final rule in this regard.

## **Requests for Clarification of Installation Instructions**

American Airlines (AAL) requested that we revise paragraph (g) of the NPRM (78 FR 3363, January 16, 2013) to clarify that the installation instructions for the new short flexshaft contain a lower torque value than the torque value specified in AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000), and the service information referenced in AD 2000-09-04.

We agree to clarify the installation instructions. The torque value for the new short flexshaft installation in paragraph (g) is lower than the torque value described for the part specified in AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000). We have added Note 1 to paragraph (g) of this final rule to clarify this issue.

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

AAL requested we clarify that the compliance time of paragraph (h) of the NPRM (78 FR 3363, January 16, 2013) supersedes the compliance times specified in AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000); Boeing Service Bulletin 767-78A0081, Revision 2, dated April 19, 2001; and FAA AMOC 140S-03-313, dated December 19, 2003.

We agree to clarify the compliance time. This final rule does not supersede AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000). FAA AMOC 140S-03-313, dated December 19,

2003, applies to AD 2000-09-04, and not to this final rule. We have determined that the functional test compliance times specified in paragraph (h) of this final rule are necessary to ensure the continued airworthiness of the airplane. Under the provisions of paragraph (n) of this final rule, however, we may consider requests for adjustments to the compliance time if data are submitted to substantiate that such an adjustment would provide an acceptable level of safety. We have not changed this final rule in this regard.

### Request for Certain Hardware Approvals

AAL requested that we approve FAA AMOC 140S-12-42, dated March 14, 2012, as an AMOC to the NPRM (78 FR 3363, January 16, 2013), or specifically list the hardware approvals and actions in AMOC 140S-12-42 dated March 14, 2012, in the NPRM.

We disagree with the commenter's requests. The commenter did not provide data to substantiate that the hardware actions specified in FAA AMOC 140S-12-42, dated March 14, 2012, are applicable to the new short flexshaft installation required by this final rule. Under the provisions of paragraph (n) of this final rule, however, we will consider requests for approval of an AMOC if sufficient data are submitted to substantiate that alternative hardware requirements would provide an acceptable level of safety. We have not changed this final rule in this regard.

### Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 3363, January 16, 2013) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 3363, January 16, 2013).

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

### Costs of Compliance

We estimate that this AD affects 298 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

**Estimated Costs**

| <b>Action</b>                                       | <b>Labor cost</b>                       | <b>Parts cost</b> | <b>Cost per product</b> | <b>Cost on U.S. operators</b> |
|---|---|-------------------|-------------------------|-------------------------------|
| Replacement Model 747 airplanes (72 airplanes)      | 8 work-hours × \$85 per hour = \$680    | \$32,248          | \$32,928                | \$2,370,816                   |
| Replacement Model 767 airplanes (226 airplanes)     | 4 work-hours × \$85 per hour = \$340    | 16,124            | 16,464                  | 3,720,864                     |
| Functional test Model 747 airplanes (72 airplanes)  | 12 work-hours × \$85 per hour = \$1,020 | 0                 | 1,020                   | 73,440                        |
| Functional test Model 767 airplanes (226 airplanes) | 12 work-hours × \$85 per hour = \$1,020 | 0                 | 1,020                   | 230,520                       |

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in 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),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):



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**2014-05-16 The Boeing Company:** Amendment 39-17789; Docket No. FAA-2012-1318; Directorate Identifier 2012-NM-104-AD.

**(a) Effective Date**

This AD is effective April 25, 2014.

**(b) Affected ADs**

This AD affects AD 2003-16-16, Amendment 39-13269 (68 FR 51439, August 27, 2003); AD 2000-15-04, Amendment 39-11833 (65 FR 47252, August 2, 2000); and AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000).

**(c) Applicability**

This AD applies to The Boeing Company airplanes, certificated in any category, powered by General Electric (GE) CF6-80C2 engines, as identified in paragraphs (c)(1) and (c)(2) of this AD.

(1) Model 747-200B, 747-300, 747-400, 747-400D, and 747-400F series airplanes, as identified in Boeing Alert Service Bulletin 747-78A2185, dated October 26, 2010.

(2) Model 767-200, -300, -300F, and -400ER series airplanes, as identified in Boeing Alert Service Bulletin 767-78A0100, dated October 26, 2010.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7830, Thrust reverser.

**(e) Unsafe Condition**

This AD was prompted by reports of failure of the electro-mechanical brake flexshaft (short flexshaft) of the thrust reverser actuation system (TRAS). We are issuing this AD to prevent an uncommanded in-flight thrust reverser deployment and consequent loss of control of the airplane.

**(f) Compliance**

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

**(g) Flexible Drive Shaft Replacement**

Within 60 months after the effective date of this AD, replace the short flexshaft on each thrust reverser half of each engine with a new short flexshaft, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-78A2185, dated October 26, 2010; or Boeing Alert Service Bulletin 767-78A0100, dated October 26, 2010; as applicable; or Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 2, dated April 19, 2011.

Note 1 to paragraph (g) of this AD: The torque value for the short flexshaft installation specified in paragraph (g) of this AD is lower than the torque value described for the part specified in AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000).

#### **(h) Functional Test**

Within 2,000 flight hours after accomplishment of the short flexshaft replacements required by paragraph (g) of this AD: Do a functional test on the electro-mechanical brakes and the cone brake of the center drive unit (CDU) to verify the holding torque, on all thrust reversers and on all engines, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78A2166, Revision 3, dated July 29, 2004 (for Model 747 airplanes); Boeing Alert Service Bulletin 767-78A0081, Revision 2, dated April 19, 2001 (for Model 767-200, -300, and -300F airplanes); or Boeing Alert Service Bulletin 767-78A0088, dated April 19, 2001 (for Model 767-400ER airplanes). Repeat the functional test thereafter at intervals not to exceed 2,000 flight hours.

#### **(i) Corrective Action**

If any functional test required by paragraph (h) of this AD fails: Before further flight, do related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78A2166, Revision 3, dated July 29, 2004 (for Model 747 airplanes); Boeing Alert Service Bulletin 767-78A0081, Revision 2, dated April 19, 2001 (for Model 767-200, -300, and -300F airplanes); or Boeing Alert Service Bulletin 767-78A0088, dated April 19, 2001 (for Model 767-400ER airplanes); and repeat the applicable test or check until successfully accomplished.

#### **(j) Terminating Actions**

(1) Accomplishment of the initial test specified in paragraph (h) of this AD terminates the requirements of paragraphs (a) and (e) of AD 2003-16-16, Amendment 39-13269 (68 FR 51439, August 27, 2003), for Model 747-400 series airplanes powered by GE Model CF6-80C2 series engines.

(2) Accomplishment of the initial test specified in paragraph (h) of this AD terminates the requirements of paragraph (g) of AD 2000-15-04, Amendment 39-11833 (65 FR 47252, August 2, 2000), for Model 747-200 and -300 series airplanes powered by General Electric Model CF6-80C2 series engines.

(3) Accomplishment of the initial test specified in paragraph (h) of this AD terminates the requirements of paragraphs (e) and (f) of AD 2000-09-04, Amendment 39-11712 (65 FR 25833, May 4, 2000), for Model 767 series airplanes powered by General Electric Model CF6-80C2 series engines.

#### **(k) Parts Installation Prohibition**

As of the effective date of this AD, no person may install a flexshaft having part number 3278500-( ) on any airplane identified in paragraph (c) of this AD.

#### **(l) Operation With a CDU Cone Brake Failure**

In the event of a CDU cone brake failure, an airplane may be operated as specified in the operator's FAA-approved minimum equipment list, provided that the conditions specified in paragraphs (l)(1) through (l)(3) of this AD, as applicable, are met.

(1) Only one CDU cone brake check on any engine thrust reverser on the Model 767 airplane has failed.

(2) The electro-mechanical brake (TRAS lock) on the inoperative thrust reverser must be locked in the forward thrust position.

(3) Since the most recent flight, and before further flight, on the affected engine, the electro-mechanical brake (TRAS lock) holding torque is determined to be acceptable in accordance with the function test specified in paragraph (h) of this AD.

#### **(m) Credit for Previous Actions**

This paragraph provides credit for actions required by paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 1, dated August 26, 2010, which is not incorporated by reference in this AD.

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

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (o)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

#### **(o) Related Information**

(1) For more information about this AD, contact Tung Tran, Aerospace Engineer, Propulsion Branch, ANM-140S, Seattle Aircraft Certification Office (ACO), FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6505; fax: 425-917-6590; email: Tung.Tran@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference may be obtained at the addresses specified in paragraphs (p)(4) and (p)(5) of this AD.

#### **(p) 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 Service Bulletin 747-78A2185, dated October 26, 2010.

(ii) Boeing Alert Service Bulletin 767-78A0081, Revision 2, dated April 19, 2001.

(iii) Boeing Alert Service Bulletin 767-78A0088, dated April 19, 2001.

(iv) Boeing Alert Service Bulletin 767-78A0100, dated October 26, 2010.

(v) Boeing Service Bulletin 747-78A2166, Revision 3, dated July 29, 2004.

(vi) Middle River Aircraft Systems CF6-80C2B Service Bulletin 78-1168, Revision 2, dated April 19, 2011.

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

(4) For Middle River Aircraft Systems service information identified in this AD, contact Middle River Aircraft Systems, ATTN: Commercial Spares Support, Mail Point 46, 103 Chesapeake Park Plaza, Baltimore, MD 21220; fax: 410-682-0090; email: [spares\\_support@mras-usa.com](mailto:spares_support@mras-usa.com).

(5) You may view this service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(6) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>. \*COM019\*

Issued in Renton, Washington, on February 18, 2014.

Ross Landes,  
Acting Manager, Transport Airplane Directorate,  
Aircraft Certification Service.