AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below repeals Airworthiness Directive (***AD***) AD/B747/298 Amdt 1 and issues the following AD under subregulation 39.001 (1) of CASR 1998 and subsection 33 (3) of the *Acts Interpretation Act 1901*. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct an unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Boeing 747 Series Aeroplanes

AD/B747/298 Amdt 2 — Thrust Reverser System Locks — 10/2014

Applicability: Boeing Model 747-400 series aeroplanes powered by General Electric (GE) Model CF6-80C2 series engines.

Requirement:

1. Perform a functional test to detect discrepancies of the centre drive unit (CDU) cone brake on each thrust reverser as follows:

    a. **For 747-400 series aeroplanes equipped with thrust reversers that have not been modified in accordance with Boeing Service Bulletin (SB) 747-78-2151 or a production equivalent** - Perform the test in accordance with Boeing SB 747-78A2166, Revision 1, dated 9 October 1997; or paragraph 3.C. of Boeing Alert Service Bulletin (ASB) 747-78A2166, Revision 2, dated 15 March 2001; or the applicable section of paragraph III.A. of the Accomplishment Instructions of Boeing SB 747-78A2113, Revision 2, dated 8 June 1995; or Revision 3, dated 11 September 1997.

    b. **For 747-400 series aeroplanes equipped with thrust reversers that have been modified in accordance with Boeing SB 747-78-2151 or a production equivalent -** Perform the test in accordance with paragraph 3.C. of ASB 747-78A2166, Revision 2.

Note 1: Model 747-400 series aeroplanes, line numbers 1061 and subsequent, equipped with GE CF6-80C2 engines, had a third locking system installed during production in accordance with PRR 80452-102, and were not modified in accordance with Boeing SB 747-78-2151 (which is a retrofit action for aeroplanes having line numbers 700 through 1060 inclusive).

Note 2: Where reference to Boeing SB 747-78-2151 is made in this Directive it means SB 747-78-2151 original issue or Revision 1 or Revision 2.

Note 3: Accomplishment of the functional test of the CDU cone brake, as specified in Requirement 1, constitutes terminating action for the repetitive tests of the CDU cone brake required by AD/B747/277 Amdt 2 Requirement 2 (paragraph (b)(1) of FAA AD 94-15-05).

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2. If any Requirement 1.a. or 1.b. functional test cannot be successfully performed as specified in the referenced service bulletin or if any discrepancy is detected during any functional test either:

    a. Repair the CDU cone brake in accordance with Boeing ASB 747-78A2166, Revision 2; or Boeing SB 747-78A2113, Revision 2 or Revision 3, or

    b. Operate the aeroplane in accordance with the provisions and limitations specified in the operator's approved Minimum Equipment List, provided that no more than one thrust reverser on the aeroplane is inoperative.

3. **For 747-400 series aeroplanes listed in Boeing SB 747-78-2151, Revision 2, dated 13 January 2000** - Perform out the following actions:

    a. Install and activate a thrust reverser actuator system (TRAS) lock on each thrust reverser per the Accomplishment Instructions of Boeing SB 747-78-2151, Revision 1, dated 21 August 1997; as revised by Notice of Status Change (NSC) 747-78-2151 NSC 04, dated 26 November 1997 and NSC 747-78-2151 NSC 05, dated 18 December 1997; or Boeing SB 747-78-2151, Revision 2.

    b. If not previously accomplished:

        (i) Install a bracket and fastening hardware for the third locking system on each thrust reverser, per Lockheed Martin SB 78-1007, Revision 1, dated 18 March 1997, or Middle River Aircraft Systems (MRAS) SB 78-1007, Revision 2, dated 10 March 1998.

        (ii) Install wiring provisions in various areas of the aeroplane, per the Accomplishment Instructions of Boeing SB 747-78-2132, Revision 2, dated 11 December 1997.

        (iii) Install a TRAS lock (also called an electromechanical lock or brake) and a flexible drive cable on each thrust reverser, per Lockheed Martin SB 78-1020, Revision 2, dated 20 March 1997; or MRAS SB 78-1020, Revision 3, dated 16 March 1998; or MRAS CF6-80C2B SB 78-1020, Revision 4, dated 10 October 2002**.**

        (iv) Install new integrated display system (IDS) software in six integrated display units and three electronic flight information/engine indication and crew alerting system (EICAS) interface units, per the Accomplishment Instructions of Boeing SB 747-31-2242, dated 18 April 1996. Where the service bulletin specifies installation of IDS software version 995-0017-012, installation of IDS software version 995-0017-013, 995-0017-014, 995-0017-015, 995-0017-016, 995-0017-018, 3174-COL-EG5-01, 3177-COL-EG5-02, or 3176-COL-EG5-03 is also acceptable for compliance with this Requirement.

Boeing 747 Series Aeroplanes

AD/B747/298 Amdt 2 (continued)

(v) Replace two central maintenance computers (CMC), part number 622-8592-103, with new, improved CMCs, part number 622-8592-105, and install new software for the CMCs, per the Accomplishment Instructions of Boeing SB 747-45-2016, Revision 1, dated 2 May 1996. Where the service bulletin specifies installation of CMC software version 685-2270-009, installation of CMC software version 685-2270-010 or 685-2270-011 is also acceptable for compliance with this Requirement.

4. **For aeroplanes on which a TRAS lock is installed on the thrust reversers** - carry out a functional test of the TRAS lock per the Accomplishment Instructions of Boeing ASB 747-78A2166, Revision 2.

5. If the Requirement 4 functional test cannot be successfully performed, repair per the Accomplishment Instructions of Boeing ASB 747-78A2166, Revision 2, and repeat the test until it is successful.

6. If, prior to accomplishment of Boeing SB 747-78-2151, or later revision, on any aeroplane, it becomes necessary to install a thrust reverser with the TRAS lock installed, dispatch of the aeroplane is allowed per the conditions and limitations specified in the 747-400 Master Minimum Equipment List (MMEL), provided that the thrust reverser assembly that has the TRAS lock installed is deactivated per the 747-400 Dispatch Deviations Guide, Boeing Document D6U10151, dated 28 June 2002**.** Installation of a thrust reverser without a TRAS lock installed and reactivation of the thrust reverser must be accomplished within the time constraints specified in the MMEL.

7. If, after accomplishment of Boeing SB 747-78-2151, or later revision, on any aeroplane, it becomes necessary to install a thrust reverser assembly that does not have the TRAS lock installed, dispatch of the aeroplane is allowed per the conditions and limitations specified in the Boeing Model 747-400 MMEL, provided that the thrust reverser assembly that does not have the TRAS lock installed is deactivated per the 747-400 Dispatch Deviations Guide, Boeing Document D6U10151, dated 28 June 2002. Installation of a thrust reverser with the TRAS lock installed and reactivation of the thrust reverser must be accomplished within the time constraints specified in the MMEL.

Note 4: FAA AD 2003-16-16 Amdt 39-13269 refers.

Note 5: Later revisions of Service Bulletins contained within this AD that are approved by the United States Federal Aviation Administration (FAA) as an Alternate Method of Compliance (AMOC) to FAA AD 2003-16-16 are considered acceptable for compliance with the equivalent requirements of this AD. All other requirements of the AD not specifically referenced in an AMOC remain fully applicable and must be complied with.

Boeing 747 Series Aeroplanes

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Compliance: For Requirement 1.a. - Within 650 hours time-in-service (TIS) from the previous CDU cone brake functional test carried out in accordance with AD/B747/298 Amdt 1 Requirement 1.a; and thereafter repeat the test at intervals not to exceed 650 hours TIS.

For Requirement 1.b. - Within 1000 hours time-in-service (TIS) from the previous CDU cone brake functional test carried out in accordance with AD/B747/298 Amdt 1 Requirement 1.b; and thereafter repeat the test at intervals not to exceed 1000 hours TIS.

For Requirement 2 - Before further flight after the Requirement 1 functional test.

For Requirement 3.a. - Within 36 months after the effective date of the original issue of this Directive.

For Requirement 3.b. - Prior to or concurrently with Requirement 1.

For Requirement 4 - Within 1,000 hours time in service (TIS) after the installation of the TRAS lock, or within 90 flight hours after the effective date of this Directive, whichever is later, and thereafter repeat the test at least every 1,000 hours TIS.

For Requirement 5 - Before further flight.

For Requirements 6 and 7 - As of the effective date of this Directive.

This Amendment becomes effective on 14 May 2014.

Background: The original issue of this Directive superseded AD/B747/231 Amdt 1, which was cancelled. The Directive continued the repetitive inspection requirements of AD/B747/231 Amdt 1 but also required the installation and activation of TRAS lock on each thrust reverser together with various related modifications and installations. The Directive also introduced additional repetitive functional testing and, if necessary, corrective action, at the same time the Directive provided dispatch limitations.

These actions were designed to prevent an inadvertent deployment of a thrust reverser during flight, which could result in a loss of control of the aeroplane.

Amendment 1 corrected editorial errors together with an omission in the compliance statement of the original Directive.

Amendment 2, notates the acceptability of an AMOC that has been approved by the FAA for AD 2003-16-16.

Boeing 747 Series Aeroplanes

AD/B747/298 Amdt 2 (continued)

The original issue of this Airworthiness Directive became effective on 22 January 2004.

Mike Higgins
Delegate of the Civil Aviation Safety Authority

13 May 2014