AIRWORTHINESS DIRECTIVE

For the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/B737/125 Amdt 2 and issues the following AD under subregulation 39.001 (1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the 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.

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AD/B737/125 Centre Wing Fuel Tank Float Switch Wiring 4/2005 Amdt 3

Applicability: Model 737-200, -200C, -300, -400 and -500 series aeroplanes, on which centre wing fuel tanks are activated.

Note 1: This Airworthiness Directive is not applicable to aeroplanes equipped with centre wing tank volumetric top-off systems or alternating current (AC) powered centre tank float switches.

Requirement:

1. Accomplish either of the following on Model 737-200, -300, -400 and -500 series aeroplanes having line numbers 1 to 3108 inclusive:

    a. Remove the fuelling float switch and wiring from the centre fuel tank and perform a detailed visual inspection of the float switch wiring, in accordance with Boeing Alert Service Bulletin (ASB) 737-28A1132 dated 2 December 1998 or Revision 1 dated 15 January 1999 or Revision 2 dated 17 June 1999, to detect discrepancies (i.e. evidence of electrical arcing; exposure of the copper conductor; presence or scent of fuel on the electrical wiring; or worn insulation). After the effective date of this Directive only Revision 2 may be used.

Note 2: For the purposes of this Directive, a detailed inspection is defined as:

"An intensive visual examination of the specific structural area, system, installation or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses etc may be used. Surface cleaning and elaborate access procedures may be required."

or

    b. Deactivate the centre tank float switch by either:

        i. Cutting the two wires for the float switch at the splices on the front spar, capping and stowing the four wire ends. Then paint a 'Caution' that shows a conservative maximum fuel capacity for the centre tank on the underside of the right-hand wing near the fuelling station door; and install an 'INOP' placard on the fuelling panel.

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or

ii. Cutting, stowing and splicing the two wires for the float switch at the splices on the front spar. Then paint a 'Caution' that shows a conservative maximum fuel capacity for the centre tank on the underside of the right-hand wing near the fuelling station door.

or

c. Accomplish the inspection and modification of the pressure fuelling system in accordance with Boeing ASB 737-28A1141 Revision 3 dated 9 December 2005.

Note 3: Accomplish the requirements specified in either 1.b.i. or 1.b.ii., in accordance with Part 2 of the Accomplishment Instructions of Boeing ASB 737-28A1132 or Revision 1 or Revision 2.

2. If no discrepancy is detected during the Requirement 1.a. inspection, carry out either of the following:

a. Measure the resistance between the wires and the float switch housing, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2.

or

b. Replace the float switch and wiring with a new float switch and wiring, and install double Teflon sleeving over the wiring of the float switch, in accordance with the ASB; or replace the float switch and wiring with a new, improved float switch and wiring in accordance with the Accomplishment Instructions of Boeing ASB 737-28A1141 Revision 3, except, if the replacement float switch and wiring are not available, accomplish Requirements 1.b. and 10.

Note 4: After the effective date of this Directive only a new, improved float switch and wiring may be installed.

3. If the resistance measured at Requirement at 2.a. is less than 200 megohms (MΩ), replace the float switch with a new float switch, and install double Teflon sleeving over the wiring of the float switch and wiring, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2; or replace the float switch and wiring with a new, improved float switch and wiring in accordance with the Accomplishment Instructions of Boeing ASB 737-28A1141 Revision 3; except, if the replacement float switch and wiring are not available, accomplish Requirements 1.b. and 10.

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4. If the resistance measured at Requirement at 2.a. is greater than or equal to 200 MΩ, blow dirt out of the conduit, install double Teflon sleeving over the wiring of the float switch, and reinstall the existing float switch, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2.

5. If, during the Requirement 1.a. inspection, any worn insulation is detected, but no copper conductor is exposed, and evidence of arcing is not detected; accomplish either Requirement 2.a. or 2.b.

6. If, during the Requirement 1.a. inspection, any electrical arcing or exposed copper conductor is detected, carry out either of the following:

    a. replace any section of the electrical conduit where the arcing occurred with a new section, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2, and accomplish Requirement 2.b.;

    or

    b. perform a detailed visual inspection to detect fuel leaks of the electrical conduit, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2.

7. If no fuel leak is detected during the Requirement 6.b. inspection, accomplish Requirement 2.b. and repeat the Requirement 6.b. inspection.

8. If any fuel leak is detected during the Requirement 6.b. inspection, replace any section of the electrical conduit where the leak is with a new section, in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2. Immediately following the replacement, accomplish Requirement 2.b.

9. If, during the Requirement 1.a. inspection, any presence or scent of fuel on the electrical wires is detected, locate the source of the leak and replace the damaged conduit with a new conduit in accordance with the ASB 737-28A1132 or Revision 1 or Revision 2. Immediately following the replacement accomplish Requirement 2.a. or 2.b. unless, unless previously accomplished in accordance with Requirements 2, 5 or 6.

10. For aeroplanes on which Requirement 1.b. has been accomplished, carry out the following actions:

    a. Operators must ensure that aeroplane fuelling crews are properly trained in accordance with the procedures specified in Boeing Telex M-7200-98-04486, dated 1 December 1998. This one-time training must be accomplished prior to utilising the procedures specified in Requirement 10.c.

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b. Prior to fuelling the aeroplane, perform a check to verify that the fuelling panel centre tank quantity indicator is operative.

i. If the fuelling panel centre tank quantity indicator is found to be inoperative following the Requirement 10.b. check, replace the fuelling panel centre tank quantity indicator with a serviceable part.

c. One of the two manual fuelling procedures for the centre fuel tank must be used for each fuelling occurrence, in accordance with Boeing Telex M-7200-98-04486, dated 1 December 1998.

Where there are differences between Boeing ASB and this Directive, the Directive prevails.

11. Dispatch with the centre fuel tank float switch deactivated, in accordance with ASB 737-28A1132 or Revision 1 is allowed until replacement float switches and wiring are available for installation. Where there are differences between the Master Minimum Equipment List (MMEL) and this Directive, this Directive prevails.

12. For aeroplanes having line numbers 1 to 3108 inclusive, on which the Requirement 6.b. inspection has been accomplished prior to the effective date of this Directive, but the Requirement 8 conduit replacement has not been accomplished; replace any section of the electrical conduit where arcing or leaking occurred with new conduit in accordance with ASB 737-28A1132 Revision 2.

13. Accomplish the following for all aeroplanes:

a. Replace the existing centre fuel tank float switches with new improved float switches and install a conduit liner system in accordance with ASB 737-28A1141, Revision 3.

b. Replace the existing wing fuel tanks the float switches and conduit assemblies with new, improved float switches and conduit assemblies that include a liner system inside the conduit in accordance with the ASB 737-28A1141, Revision 3.

c. For aeroplanes subject to the repetitive inspections required by Requirement 7 where the electrical conduit in the centre fuel tank has not been replaced as specified in Requirement 8. Prior to or concurrently with the replacement of the float switch in the centre fuel tank required by Requirement 13.a or 13.b of this Directive, replace, with new conduit, any section of the centre fuel tank electrical conduit where arcing or a leak occurred, in accordance with the ASB 737-28A1132, Revision 2. Such replacement constitutes terminating action for the repetitive inspection requirements of Requirement 7 of this Directive.

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Note 5: Replacement of float switches and conduit assemblies, and installations of conduit liner systems, as applicable, accomplished before the effective date of Amendment 2 to this Directive in accordance with ASB 737-28A1141 or Revision 1or Revision 2, are considered acceptable for compliance with the corresponding action specified in this Directive, provided that the following requirements are met.

(1) The B-nuts on the float switch cable conduit must be torqued to the values specified in ASB 737-28A1141, Revision 3.

(2) The float switch bonding strap must be installed and securely fastened to the float switch bracket or main structure, as specified in the ASB 737-28A1141, Revision 3.

(3) Lock wire must be installed in the bolt heads on the front spar, as specified ASB 737-28A1141 Revision 3.

14. For Model 737-200C series aeroplanes having L/Ns 1 through 3108 inclusive accomplish Requirements 1 to 9 inclusive of this Directive. (If the actions specified in Requirements 1 to 9 inclusive of this Directive have been accomplished before the effective date of this Directive, no further action is required by this Requirement.) If the actions required by Requirement 13 of this Directive, including the replacement required by Requirement 13.c. of this Directive, are accomplished within the compliance time specified operators are not required accomplish Requirements 1 to 9 inclusive of this Directive.

15. A float switch having part number F8300-146 shall not be installed on any aeroplane.

Note 6: FAA AD 2004-15-04 Amdt 39-13738 and FAA Alternate Method of Compliance (AMOC) letter 140S-04-194 dated 7 December 2004 refer.

Compliance: For Requirement 1 - Prior to the accumulation of 30 000 hours total time in service or within 30 days from the effective date of the original Directive (18 March 1999), whichever occurs later.

For Requirement 2 - Prior to further flight.

For Requirement 3 - Prior to further flight.

For Requirement 4 - Prior to further flight.

For Requirement 5 - Prior to further flight.

For Requirement 6 - Prior to further flight.

For Requirement 7 - Prior to further flight and then re-inspect in accordance with Requirement 6.b. at intervals not to exceed 1500 hours time in service until the replacement directed by Requirement 8 is accomplished.

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For Requirement 8 - Prior to further flight.

For Requirement 9 - Prior to further flight.

For Requirement 10.a. - Prior to utilising Requirement 10.c. manual fuelling procedures.

For Requirement 10.b. - Prior to fuelling the aeroplane.

For Requirement 10.b.i. - Prior to further flight.

For Requirement 10.c. - As of the effective date of this Directive if Requirement 1.b. is accomplished.

For Requirement 11 - As of the effective date of this Directive.

For Requirement 12 - Prior to the accumulation of 1500 flight hours or 6 months after the effective date of Amendment 1 to this Directive, whichever occurs first. This is terminating action for the repetitive inspections of Requirement 7.

For Requirement 13 - No later than 2 years from the effective date of Amendment 1 to this Directive. Accomplishment of Requirement 13 is terminating action for this Directive.

For Requirement 14 - Prior to the accumulation of 30,000 total flight hours, or within 30 days after the effective date of this Directive, which ever occurs later.

For Requirement 15 - As of the effective date of Amendment 1 to this Directive.

This Amendment becomes effective on 14 April 2005.

Background: Boeing has received several reports indicating that chafing of the direct current (DC) powered float switch wiring insulation in the centre fuel tank has occurred on several aeroplanes. The actions specified in this Directive are intended to detect and correct such chafing and the resultant arcing from the wiring to the in-tank conduit, which could present an ignition source inside the fuel tank and consequent fire/explosion. The Federal Aviation Administration has advised that additional rulemaking is anticipated.

Amendment 1 introduced additional Requirements 12, 13, 14 and 15 and provided terminating action for the Directive.

Amendment 2 contained some minor formatting and editorial changes, whilst at the same time introduced an alternate method of compliance.

Amendment 3 corrected a typographical error in Requirement 13.a.

The original issue of this Directive became effective on 18 March 1999.

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Amendment 1 of this Directive became effective on 20 January 2005.

Amendment 2 of this Directive became effective on 9 February 2005.

James Coyne
Delegate of the Civil Aviation Safety Authority

3 March 2005