AD/B747/212 Modular Avionics Warning Electronic Assembly 11/99 TX

Applicability: Model 747-400 series aeroplanes, line numbers 1121 through 1177 inclusive, equipped with a modular avionics warning electronic assembly (MAWEA) power supply Part Number (P/N) 285T0035-201.

Requirement: 1. Check the status page of the engine indication and crew alerting system (EICAS) for any MAWEA failure; and perform the following system functional tests to detect loss of any visual, aural, or tactile alert:

Note 1: The following tests are an abbreviated version of Section 3, Work Instructions, of Boeing Service Bulletin (SB) 747-31-2288, dated 17 December 1998, and SB 747-31-2288 Revision 1, dated 28 January 1999.

a. Perform a takeoff (T/O) configuration warning test to check the T/O configuration warning card, master monitors A and B, and left and right aural synthesizer cards.

(i) Set the parking brake.

(ii) Initiate the following central maintenance computer (CMC) ground test - 31 indication/recording: T/O warning.

(iii) Verify that the left and right master warning lights (MWL) illuminate and the siren is heard from both the left and right speakers.

b. Perform an altitude alert test to check the crew alert module.

(i) Verify the parking brake is still set.

(ii) Set the selected altitude on the mode control panel (MCP) to approximately 400 feet above the current altitude.

(iii) Verify that the box around the current altitude on the altitude tape becomes bright white.

(iv) Set the selected altitude on the MCP to 10,000 feet.

(v) Verify the aural warning owl is not activated.

c. Perform a stall warning test to check the left and right stall management module cards.

(i) Ensure that the air data computers (ADC) are operational.

(ii) Initiate the following CMC ground test – 27 stall warning: Left.

(iii) Verify that both stick shakers activate.

(iv) Initiate the following CMC ground test – 27 stall warning: Right.

(v) Verify that both stick shakers activate.

d. Perform an autopilot (A/P) disconnect test to check the left and right clacker wailer card.

(i) Press and hold the A/P disconnect on either control wheel.

(ii) Verify the wailer aural is heard over the left and right speakers and MWL's.

(iii) Release the A/P disconnect switch.

e. Perform a MAWEA card light emitting diode (LED) test per Airplane Maintenance Manual (AMM) task 31-51-00-715-014, "MAWEA operational test," to verify that no red LED on the MAWEA circuit cards illuminate.

Note 2: The EICAS status page check and the system functional tests are maintenance functions that require an aircraft log book entry and maintenance release prior to flight.

2. If any failure of the MAWEA, or the loss of any visual, aural, or tactile alert is detected during any Requirement 1 test, replace the power supply of the MAWEA with a new power supply, P/N 285T0035-202 Mod A, in accordance with either SB 747-31-2288 or SB 747-31-2288 Revision 1.

Note 3: Page 59 of SB 747-31-2288 Revision 1 incorrectly references the Boeing 767 AMM as the appropriate source of service information for accomplishment of the removal and replacement of the power supply. The correct reference is the Boeing 747 AMM.

3. MAWEA power supply P/N 285T0035-201 may not be installed on any aeroplane as a replacement part.

Note 4: FAA AD 99-18-16 Amdt 39-11282 refers.

Compliance: 1. Before 1 October 1999 and thereafter before each flight.

Replacement of the MAWEA power supply P/N with P/N 285T0035-202 Mod A, in accordance with either SB 747-31-2288 or SB 747-31-2288 Revision 1 is terminating action for the Requirement 1 repetitive inspections.

2. Before further flight.

3. As of the effective date of this Directive.

This Airworthiness Directive becomes effective on 22 September 1999.

Background: The Federal Aviation Administration has received a report advising that during a production test flight of a Model 747-400 series aeroplane the flight test crew noticed a power supply failure on the status page of the EICAS. Investigation revealed the automatic bench test procedure for the MAWEA overstressed the 5.7 volt over-voltage clamp circuit which resulted in the failure of the circuit to protect the warning cards in the MAWEA.

A slow failure of the MAWEA power supply could result in the gradual degradation of available visual, aural and tactile alerts which could result in flight crew not being aware of and not taking immediate or appropriate action in the event of an unsafe condition occurring.

This Directive requires repetitive checks to detect failures of the MAWEA power supply and if necessary, corrective action. The Directive also provides for an optional terminating action.