

## SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Integrated Electronic Assembly (IEA), Aft (Logic and Networks Distributor and OF Signal Conditioner)

PART NO.: 10400-0328

FM CODE: A04

ITEM CODE: 50-01-01-03

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-50

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Finnegan

CN 044

FAILURE MODE AND CAUSES: Loss of Orbiter buses A and B to the Aft OF MDM caused by:

- o Wiring harnesses (open)

FAILURE EFFECT SUMMARY: Loss of Orbiter A and B Bus power to Aft MDM leads to loss of power to APUs, loss of capability to gimbal SRB nozzle, loss of vehicle control, and breakup resulting in loss of mission, vehicle and crew. One success path remains after the first failure. Operation is not affected until both paths are lost.

### REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - MDM BITE measurements.
- 2) Pass - APU Turbine Speed measurements B46R1406C, B46R1407C, B46R1408C and B46R1409C.
- 3) Pass - No credible causes.

### RATIONALE FOR RETENTION:

#### A. DESIGN:

##### 1. System Description

See Appendix B, Section 1, Paragraph (s) A(2) & K

##### 2. Component Description

See Appendix B, Section 2, Paragraph (s) A, E(2).

B. TESTING

1) VENDOR RELATED:

See Appendix B, Section 3, Paragraph(s) A(1), B

2) KSC RELATED:

See Appendix B, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Aft Skirt Assembly Checkout (ACO) - The SRB electrical equipment power-up is verified per 10REQ-0021, para. 2.2.2.1. This test verifies Orbiter A and B power buses. (Wiring Harnesses)

Prelaunch Test -

Shuttle Interface Test (SIT) - The transfer of power from Orbiter to SRB A and B buses is verified per OMRSD File II, Vol. 1, Requirement Number S00000.470. The Aft IEA MDM operational mode and redundant Orbiter power are verified per OMRSD File V, Vol. 1, Requirement numbers B75MD0.011 and B75MD0.015. These tests verify Orbiter A and B power buses. (Wiring Harnesses)

Terminal Countdown Demonstration Test (TCDDT) - The SRB Aft IEA MDM functional redundancy and A and B bus power separation are verified per OMRSD File II, Vol. 1, Requirement Numbers S00FE0.185 and S00FE0.230. These tests verify Orbiter A and B power buses. (Wiring Harnesses)

Launch Countdown - The SRB Aft IEA MDM functional redundancy and A and B bus power separation are verified per OMRSD File II, Vol. 1, Requirement Numbers S00FE0.185 and S00FE0.230. These tests verify Orbiter A and B power buses. (Wiring Harnesses)

Last Test of Failure Mode Prior to Launch - Launch Countdown tests per OMRSD File II, Vol. 1, Requirement Numbers S00FE0.185 and S00FE0.230 verify Aft MDM functional redundancy and A and B bus power separation. (Wiring Harnesses)

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C. INSPECTION

1) VENDOR RELATED:

See Appendix B, Section 4, Paragraph(s) A, E

2) KSC RELATED:

See Appendix B, Section 5, Paragraph(s) A(1),A(2)(a),B(1)(a) (d)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.

F. WAIVERS/DARS

See Appendix E, Paragraphs 2, 5, 7-15.