

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: A02

ITEM CODE: 50-01-01-03

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-48

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SHEET 1 OF 3

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CN 044

FAILURE MODE AND CAUSES: Loss of Orbiter Bus A and B power caused by:

- o EMC filters, open or shorted
- o Transorb lightning suppression diodes, shorted
- o PBISs, shorted
- o Wiring harnesses, open or shorted
- o Solid state switches, shorted.
- o APU BITE card failure
- o APU controller card failure

FAILURE EFFECT SUMMARY: Boost: Loss of TVC leads to loss of vehicle control resulting in loss of mission, vehicle and crew. Separation: Loss of SRB separation leads to vehicle 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 - Voltage Measurement B76V1600C, B76V1601C.
- 2) Pass - Same as screen No. 1.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

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

2. Component Description

See Appendix B, Section 2, Paragraph(s) A,B,C,D,E(1)(2),F,G,H

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix B, Section 3, Paragraph B(2)

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Aft Skirt Assembly Checkout (ACO) - The SRB electrical equipment power-up is verified per 10REQ-0021 paras. 2.2.2.1.1 and 2.2.2.1.1.1. This test verifies Orbiter A and B power buses. (All Failure Causes)

Prelaunch Tests -

Shuttle Interface Test (SIT) - The transfer of power from the Orbiter to SRB A and B buses is verified per OMRSD File II, Vol. 1, Requirement Number S00000.470.(All Failure Causes)

Terminal Countdown Demonstration Test (TCDT) - 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. (All Failure Causes)

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. (All Failure Causes)

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 SRB Aft IEA MDM functional redundancy and bus A and B power separation. (All Failure Causes)

CN 044

C. INSPECTION

1) VENDOR RELATED:

See Appendix B, Section 4, Paragraph(s) A,B,C,D,E,F,G,H

2) KSC RELATED:

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

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 2,3,4,5, 7-15.