

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

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

PART NO.: 10400-0329

FM CODE: A02

ITEM CODE: 50-01-01-02

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-5

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

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CN 044

FAILURE MODE AND CAUSES: Loss of Orbiter Bus A and B power (to all E&I subsystem functions requiring Orbiter A or B power) caused by:

- o EMC filters (shorted)
- o Transorb lightning suppression diodes (shorted)
- o Power bus isolation supplies (shorted)
- o Wiring harnesses (shorted)
- o Solid state switch (shorted)

FAILURE EFFECT SUMMARY: Loss of TVC leads to loss of vehicle control resulting in loss of mission, vehicle and crew.

Loss of separation capability leads to vehicle breakup and 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 Measurements B76V1(2)600C, B76V1(2)601C
- 2) Pass - Same as Screen No. 1.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix A, Section 1, Paragraph (s) A & I

2. Component Description

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

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix A, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

Assembly Checkout (ACO) - ACO Forward Skirt Assembly Power Up verifies the SRB Orbiter A and B bus redundancy, per 10REQ-0021, para. 1.2.2.1.1. (All Failure Causes)

Prelaunch Tests - Shuttle Interface Test (SIT) - The Orbiter to SRB power transfer to 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 Forward IEA MDM Prelaunch verification is per OMRSD File II, Vol. 1, Requirement Number S00FE0.185. This test verifies Orbiter A and B power buses. (All Failure Causes)

Launch Countdown - The SRB Forward IEA MDM Prelaunch verification is per OMRSD File II, Vol. 1, Requirement Number S00FE0.185. This test verifies 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 Number S00FE0.185.verify Orbiter bus A and B redundancy. (All Failure Causes)

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C. INSPECTION

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix A, 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 1-5, 7-15.