

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Forward OF MDM or FWD OF EMDM

PART NO.: 10400-0452-802
10400-0941-801

FM CODE: A02

ITEM CODE: 50-02-01-04

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost and Separation

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-151

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

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

- o EMC filters (shorted)
- o Core power supply modules (shorted)
- o Wiring harnesses/motherboards (shorted)
- o IOM Power Supply Module (Shorted)

FAILURE EFFECT SUMMARY:

- o In boost phase: Loss of TVC resulting in flight instability leading to loss of mission, vehicle and crew caused by loss of control.
- o In separation phase: Loss SRB separation leading to loss of mission, vehicle and crew caused by loss of separation leading to vehicle breakup.
- o One success path remains after the first failure. Operation is not affected until two paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - Voltage measurements B76V1(2)600C, B76V1(2)601C
- 2) Pass- Voltage measurements B76V1(2)600C, B76V1(2)601C
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix D, Section 1, Paragraph (s) A

2. Component Description

See Appendix D, Section 2.

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix D, Section 3, Paragraph C

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

Forward Skirt ACO Test - verification of the SRB Forward MDM (EMDM) power-up and Operational Modes are performed per 10REQ- 0021, paras. 1.2.2.1.1, 1.2.2.1.2, and 1.2.2.2.1.

Shuttle Interface Test - SRB MDM (EMDM) Operational Modes verification is performed per OMRSD File V, Vol. 1, Requirement Number B75MD0.011. (All Failure Causes)

Terminal Countdown Demonstration Test - SRB MDM (EMDM) pre-launch verification is performed per OMRSD File II, Vol. 1, Requirement Number S00FE0.185. Bus voltages are verified per Launch Commit Criteria.(All Failure Causes)

Launch Countdown to requirements of Launch Commit Criteria - SRB MDM (EMDM) pre-launch verification is performed per OMRSD File II, Vol. 1, Requirement Number S00FE0.185. Bus voltages are verified per Launch Commit Criteria. (All Failure Causes)

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In addition, each time the MDM (EMDM) is powered up, an initialization sequence verifies that the failure mode does not exist.

Last Test for Failure Mode Prior to Launch

The power supply BITE test of the MDM (EMDM) is conducted per OMRSD File II, Vol. 1 Requirement Number S00FE0.185. (All Failure Causes)

The above referenced OMRSD testing is performed every flight.

C. INSPECTION

1) VENDOR RELATED:

See Appendix D, Section 4.

2) KSC RELATED:

See Appendix D, Section 5.

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, Paragraph 2, 7-15.