

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Aft OF MDM or AFT OF EMDM

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

FM CODE: A02

ITEM CODE: 50-02-01-03

REVISION: 2

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-130

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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) (See CIL 50-01-01-03 FM Code A02)
- o Core power supply modules (shorted)
- o Wiring harnesses/motherboards (shorted) (See CIL 50-01-01-03 FM Code A02)

FAILURE EFFECT SUMMARY:

- o In boost phase: Loss of TVC results in loss of mission, vehicle and crew caused by loss of control.
- o In separation phase: Loss of SRB separation leads to loss of mission, vehicle and crew resulting from 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 E&I subsystem is operated on A and B power independently during turnaround testing. BITE test capability for MDM (EMDM). Bus voltage measurements B76V1600C and B76V1601C.
- 2) Pass - Bus voltage Measurements B76V1600C and B76V1601C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

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

2. Component Description

See Appendix C, Section 2.

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix C, Section 3, Paragraph C

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

Note: Prom in EMDM will configure Test and monitoring equipment for EMDM responses

Aft Skirt ACO Test - SRB Aft MDM (EMDM) data bus redundancy is verified per 10REQ-0021, para. 2.2.2.2. (All Failure Causes)

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. (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. (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 C, Section 4.

2) KSC RELATED:

See Appendix C, 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.