

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Aft OF MDM or AFT OF EMDM

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

FM CODE: A04

ITEM CODE: 50-02-01-03

REVISION: 2

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-132

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Parvathaneni

CN 044

FAILURE MODE AND CAUSES: Loss of all Aft MDM (EMDM) DOL outputs caused by:

- o Core power supply modules (open or shorted)
- o IOM power supply modules (shorted)
 - o EMC filters open
- o Wiring harnesses/motherboards (open or shorted)
 - o DOL modules failures

FAILURE EFFECT SUMMARY:

- o Loss of thrust vector control due to shutdown of both HPUs leading to loss of mission, vehicle and crew.
- o One success path remains after the first failure. Operation is not affected until two paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass -MDM (EMDM) is operated on A and B power independently during turnaround testing.
- 2) Pass -APU speed measurements B46R1406C, B46R1407C, B46R1408C, and B46R1409C.
- 3) Pass -No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

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

2. Component Description

See Appendix C, Section 2.

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix C, Section 3, Paragraph C

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

Aft Skirt ACO Test - SRB Data Bus Redundancy Verification is performed 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)

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) pre-launch verification is conducted per OMRSD File II, Vol. 1 Requirement Number S00FE0.185. (All Failure Causes)

CN 044

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.