

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

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

PART NO.: 10400-0328

FM CODE: A56

ITEM CODE: 50-01-01-03

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Separation

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-95

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 2

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FAILURE MODE AND CAUSES: Loss of separation A and B PIC arm bus, fire 1 bus, or fire 2 bus.

- o Solid state switches fail (open)
- o Wiring harnesses (open or shorted)
- o Miscellaneous IV card failures (open diode)

FAILURE EFFECT SUMMARY: Loss of capability to achieve 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 two paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - Separation PIC Load Test Measurements B55X1826 through B55X1837.
- 2) Fail - Not verified for A and B fire 1 bus and fire 2 bus outputs.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix B, Section 1, Paragraph (s) H(1), K

2. Component Description

See Appendix B, Section 2, Paragraph (s) A, E(3), F(2), I

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix B, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Aft Skirt Assembly Checkout (ACO) - The SRB Separation System and IEA PIC BITE and Energy tests are verified per 10REQ-0021, paras. 2.2.2.3 and 2.2.2.4. These tests verify operation of the PIC solid state switches, wiring harnesses, and the Miscellaneous IV card. (All Failure Causes)

Prelaunch Tests -

Ordnance Installation - The SRB IEA PIC Arm and Fire test is verified per OMRSD File II, Vol. 1, requirement number S00000.525. This test verifies the operation of the PIC solid state switches, wiring harnesses, and the Miscellaneous IV card. (All Failure Causes)

Last Test of Failure Mode Prior to Launch - The SRB IEA PIC Arm and Fire test per OMRSD File II, Vol. 1, requirement number S00000.525 is the last test for this failure mode prior to launch. (All Failure Causes)

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C. INSPECTION

1) VENDOR RELATED:

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

2) KSC RELATED:

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

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 2,4, 5, 7-15.