

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

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

PART NO.: 10400-0328

FM CODE: A68

ITEM CODE: 50-01-01-03

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Separation

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-105

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

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FAILURE MODE AND CAUSES: Loss of A and B Aft BSM ignition PIC outputs caused by:

- o PIC failures
- o Wiring harnesses (open or shorted)
(Separation Solid State switches addressed in another CIL)

FAILURE EFFECT SUMMARY: Loss of aft BSM thrust leads to recontact of SRB with Orbiter/ET 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 - PIC Load Test B55X1836X, B55X1837X, PIC Resistance Test B55X1818X, B55X1819X.
- 2) Fail - Not verified for PIC fire 1 and fire 2 functions.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

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

2. Component Description

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

B. TESTING

1) VENDOR RELATED:

See Appendix B, Section 3, Paragraph(s) A(4), 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 BSM PIC functions and IEA PIC BITE and Energy tests are verified per 10REQ-0021, paras. 2.2.2.3.3, 2.2.2.3.4, 2.2.2.4.3 and 2.2.2.4.4. These test verify PIC and wire harness functions. (All Failure Causes)

Prelaunch Tests -

Shuttle Interface Test (SIT) - The SRB Separation PIC resistance test is verified per OMRSD File V, Vol. 1, requirement number B75PI0.011. This test verifies wire harness functions. (Wiring Harness)

Ordnance Installation - The SRB separation PIC Arm and Fire test is verified per OMRSD File II, Vol. 1, requirement number S00000.525. This test verifies PIC and wire harness functions. (All Failure Causes)

Terminal Countdown Demonstration Test (TCDDT) - The SRB separation PIC resistance test is verified, including the wiring inside the Aft IEA, per OMRSD File II, Vol. 1, requirement number S00FA0.015. This test verifies wire harness functions. (Wiring Harnesses)

Launch Countdown - The SRB separation PIC resistance test verified per OMRSD File II, Vol. 1, requirement number S00FA0.015. (Wiring Harnesses)

Last Test of Failure Mode Prior to Launch - The SRB PIC Arm and Fire test per OMRSD File II, Vol. 1, requirement number S00000.525 is the last system test for loss of A or B separation PICs prior to launch. (All Failure Causes)

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C. INSPECTION

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix B, Section 5, Paragraph(s) A.(1)(2)(k),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, 5, 6-15.