

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

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

PART NO.: 10400-0329

FM CODE: A28

ITEM CODE: 50-01-01-02

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-25

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Parvathaneni

CN 044

FAILURE MODE AND CAUSES: No output from two of two forward BSM ignition PICs caused by:

- o PICs (A and B) fail (open)
- o Wiring harnesses (A and B) fail (open or shorted)

FAILURE EFFECT SUMMARY: Loss of forward BSM thrust leads to SRB recontact, damaging ET/Orbiter at separation, resulting in loss of mission, vehicle and crew. One success path remains after the first failure. Operation is not affected until both paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - Forward BSM PIC A and B Load Test B55X1834X, B55X1835X.
Forward BSM PIC A and B Resistance Test B55X1816X, B55X1817X.
- 2) Fail - Not verifiable; no measurements available.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix A, Section 1, Paragraph (s) E(1) & I

2. Component Description

See Appendix A, Section 2, Paragraph (s) A,F(1)(4),I

B. TESTING

1) VENDOR RELATED:

See Appendix A, Section 3, Paragraph(s) A(3)(5), B

2) KSC RELATED:

See Appendix A, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Forward Skirt Assembly Checkout (ACO): SRB Forward Skirt Stand Alone Test - The SRB BSM Ignition A and B PIC functions are verified per 10REQ-0021, paras. 1.2.2.7.3.1, 1.2.2.7.3.5, 1.2.2.7.2.1, and 1.2.2.7.2.5. (All Failure Causes)

Prelaunch Tests -

Shuttle Interface Test (SIT) - The BSM ignition A and B PIC to NSI wiring resistance circuits, including the wiring internal to the Forward IEA, are verified per OMRSD File V, Vol. 1, Requirement Number B75PI0.011. (Wiring Harness)

Ordnance Installation - The BSM ignition A and B PIC Arm and Fire circuits are verified per OMRSD File II, Vol. 1, Requirement Number S00000.525. (All Failure Causes)

Terminal Countdown Demonstration Test - The BSM ignition A and B PIC to NSI interface wiring resistance, including that wiring internal to the Forward IEA, is verified per OMRSD File II, Vol. 1, Requirement Number S00FA0.015. (Wiring Harness)

Launch Countdown - The SRB BSM Ignition A and B PIC resistance test verifies the proper PIC to NSI connections per OMRSD File II, Vol. 1, requirement number S00FA0.015. (Wiring Harnesses)

Last Test of Failure Mode Prior to Launch - Ordnance Installation test is final verification of proper operation of the BSM Ignition A and B PIC Arm and Fire circuits per OMRSD File II, Vol. 1, Requirement Number S00000.525. (All Failure Causes)

CN 044

C. INSPECTION

1) VENDOR RELATED:

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

2) KSC RELATED:

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

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, 5-15.