

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: A29

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-26

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 2

APPROVED: S. Finnegan

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FAILURE MODE AND CAUSES: Premature output of one of two forward Booster Separation Motors (BSM) ignition PICs after arm command, caused by:

- o PIC failure (output switches Fire 1 and Fire 2, fail shorted)

FAILURE EFFECT SUMMARY: Premature ignition of forward BSMs leads to SRB recontact damaging ET/Orbiter at separation, resulting in loss of mission, vehicle and crew.

REDUNDANCY SCREENS AND MEASUREMENTS:

- 1) Pass -Forward Separation Motors PIC A and B Load Test B55X1834X, B55X1835X.  
Forward Separation Motors PIC A and B Capacitor Voltage measurement B55V1613C, B55V1614C.
- 2) Fail -Not verified; PIC discharge is not visible to flight or ground crew.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

See Appendix A, Section 1, Paragraph (s) E(2) & I

2. Component Description

See Appendix A, Section 2, Paragraph (s) A,I

B. TESTING

1) VENDOR RELATED:

See Appendix A, Section 3, Paragraph(s) A(2)(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 tests verify the SRB Forward BSM system A & B PIC circuits per 10REQ-0021, paras. 1.2.2.7.3.3, 1.2.2.7.3.4, 1.2.2.7.2.3, and 1.2.2.7.2.4. (PICs)

Prelaunch Tests:

Ordnance Installation - The SRB Forward BSM system A and B PICs Arm and Fire is verified per OMRSD File II, Vol. 1 requirement number S00000.525. (PICs)

Last Test of Failure Mode Prior to Launch - Ordnance installation test per OMRSD File II, Vol. 1 requirement number S00000.525 is final verification of the SRB Forward BSM system A and B PIC Arm and Fire. (PICs)

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C. INSPECTION

1) VENDOR RELATED:

See Appendix A, Section 4, Paragraph(s) A,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, Paragraph 6-15