

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: A32

ITEM CODE: 50-01-01-02

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-29

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 2

APPROVED: S. Parvathaneni

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FAILURE MODE AND CAUSES: Premature output of SRB Forward Separation Bolt PIC A or B after separation arm command caused by:

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

FAILURE EFFECT SUMMARY: Premature release of forward SRB attach point, leads to SRB recontact damaging ET/Orbiter, 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 Separation Bolt PIC Load Test OK B55X1826X, B55X1827X.
Forward Separation Bolt PIC capacitor voltage B55V1606C, V55V1607C.
- 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) F(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 Thruster Pin (Separation Bolt) system A and B PIC circuits in 10REQ-0021, para. 1.2.2.7.1.3, 1.2.2.7.1.4, 1.2.2.7.4.3 and 1.2.2.7.4.4. (PICs)

Prelaunch Tests -

Ordnance Installation - The SRB Forward Separation Bolt system A and B PIC circuits are verified in 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 SRB Forward Separation Bolt system A and B PIC circuits. (PICs)

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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)(f),B.(1)(f)

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 and 6-15.