

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: A31

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-27

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 Separation Bolt PICs A and B caused by:

- o PICs (two of two) fail (open)
- o Wiring harnesses fail (open or shorted)

FAILURE EFFECT SUMMARY: Failure to separate SRB forward attach point at separation 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 A and B Load Test B55X1826X, B55X1827X.
Forward Separation Bolt PIC A and B Resistance Test B55X1808X, B55X1809X.
- 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) F(1) & I

2. Component Description

See Appendix A, Section 2, Paragraph (s) A.F(2)(4),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 Test - The SRB Forward Thruster Pin (Separation Bolt) system A and B PIC circuits are verified per 10REQ-0021, para. 1.2.2.7.1.1, 1.2.2.7.1.5, 1.2.2.7.4.1 and 1.2.2.7.4.5. (All Failure Causes)

Prelaunch Tests -

Shuttle Interface Test (SIT) - The Forward Separation Bolt system A and B PIC to NSI interface wiring resistance including wiring internal to Forward IEA is verified per OMRSD File V, Vol. 1, Requirement Number B75PI0.011. (Wiring Harness)

Ordnance Installation - The Forward Separation Bolt system 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 (TCDT) - The Forward Separation Bolt system 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 Forward Thruster Pin (Separation Bolt) system 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 the final verification of proper operation of the Forward Separation Bolt system A and B PIC Arm and Fire circuits per OMRSD File II, Vol. 1, Requirement Number S00000.525. (All Failure Causes)

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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, 5-15.