

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: A52

ITEM CODE: 50-01-01-02

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-42

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 2

APPROVED: S. Parvathaneni

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FAILURE MODE AND CAUSES: Loss of two of three SRM chamber pressure measurements between T+100 seconds and occurrence of less than 50 psi SRM chamber pressure, caused by:

- o Wiring harnesses (open or shorted)

FAILURE EFFECT SUMMARY: Erroneous (0 psi) SRM chamber pressure data routed to Orbiter for determination of separation cue: leads to premature separation and 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 - SRM chamber pressure measurements B47P1300C (B47P2300C) through B47P1302C (B47P2302C).
- 2) Pass- Same as Screen No. 1.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN:

1. System Description

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

2. Component Description

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

B. TESTING

1) VENDOR RELATED:

See Appendix A, Section 3, Paragraph(s) A(6)(8), B

2) KSC RELATED:

See Appendix A, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

Assembly Checkout (ACO) - ACO Forward Skirt Checkout verifies the SRM chamber pressure sensor circuits per 10REQ-0021, paras. 1.2.2.19.2.1, 1.2.2.19.2.2 and 1.2.2.19.2.3. (Wiring Harnesses)

Prelaunch Tests -

Shuttle Interface Test (SIT) - The SRM chamber pressure sensor functions, including redundancy, are verified per OMRSD File II, Vol. 1, Requirement number S0000.450. (Wiring Harnesses)

Terminal Countdown Demonstration Test (TCDDT) - The SRM chamber pressure sensor bias and calibration are verified per OMRSD File II, Vol. 1, Requirement number S00FF0.180. (Wiring Harnesses)

Launch Countdown - The SRB chamber pressure sensor bias and calibration are verified per OMRSD File II, Vol. 1, Requirement number S00FF0.180. (Wiring Harness)

Last Test of Failure Mode Prior to Launch - Launch Countdown test per OMRSD File II, Vol. 1, Requirement Number S00FF0.180 verifies SRM chamber pressure sensor bias and calibration. (Wiring Harnesses)

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C. INSPECTION

1) VENDOR RELATED:

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

2) KSC RELATED:

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

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, 7-15.