

## SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

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

PART NO.: 10400-0328

FM CODE: A13

ITEM CODE: 50-01-01-03

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-57

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Parvathaneni

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FAILURE MODE AND CAUSES: Loss of two of three SRM chamber pressure measurements (Second failure must occur 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 paths remains after the first failure. Operation is not affected until two paths are lost.

### REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass - SRM chamber pressure measurements B47P1300C through B47P1302C.
- 2) Pass - Same as screen No. 1.
- 3) Pass - No credible causes.

### RATIONALE FOR RETENTION:

#### A. DESIGN:

##### 1. System Description

See Appendix B, Section 1, Paragraph (s) B & K

##### 2. Component Description

See Appendix B, Section 2, Paragraph (s) A, E(1)(2)(3)

B. TESTING

1) VENDOR RELATED:

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

2) KSC RELATED:

See Appendix B, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Aft Skirt Assembly Checkout (ACO) - The Aft IEA chamber pressure measurement wiring is verified per 10REQ-0021, para. 2.2.2.7.5. (Wiring Harnesses)

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Prelaunch Test -

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 (TCDT) - The SRM chamber pressure sensor functions, including redundancy, are verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.180. (Wiring Harnesses)

Launch Countdown - The SRM chamber pressure sensor functions, including redundancy, are verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.180. (Wiring Harnesses)

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 redundancy. (Wiring Harnesses)

C. INSPECTION

1) VENDOR RELATED:

See Appendix B, Section 4, Paragraph(s) A, E

2) KSC RELATED:

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

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.