

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cables X13W14 J42/P2 (J51/P2), X13W15 J41/P2 (J52/P2), X13W16 J43/P2 (J56/P2) (SRM Chamber Pressures A, B and C)

PART NO.: 10400-0029  
10400-0030  
10400-0031

FM CODE: A12

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-675

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of two of three SRM Chamber Pressure measurements in two out of three cables due to:

- o One pin or wire open caused by: open crimp or solder, open wire, broken/bent pin, unseated pin, broken pin locking mechanism, corroded pin.
- o One pin or wire short to ground caused by: bent pin, contamination in connector, insulation breakdown, frayed shielding, abraded or cut insulation.
- o Loss of connector P2 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.
- o Loss of connectors J42 (J51), J41 (J52) or J43 (J56) caused by: connector not fully mated. (Pullaway connector)

FAILURE EFFECT SUMMARY: Loss of separation cue from two of three SRM Pressure measurements to Orbiter leading to loss of mission, vehicle and crew due to premature separation. One success path remains after the first failure. Operation is not affected until both paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS:

- 1) Pass - All cables are system tested during ground turnaround sequence.

- 2) Pass - SRM A, B and C pressure measurements B47P1300C, B47P1301C and B47P1302C.
- 3) Pass - No credible causes.

**RATIONALE FOR RETENTION:**

**A. DESIGN Per Appendix A Section # IV**

**B. TESTING**

- 1) **VENDOR RELATED Per Appendix B Section # IB**
- 2) **KSC RELATED Per Appendix B Section # IIB**
- 3) **SYSTEM/ UNIQUE FUNCTIONAL**

Cables are tested per OMRSD File II, Vol. 1, requirement number S00000.450 (SRM Chamber Pressure Sensor Measurement). (Open, Short or Loss of Connector)

Last time cables are tested is during final countdown per OMRSD File II, Vol. 1, requirement number S00FF0.180 (SRM Chamber Pressure Bias and Calibration Check). (Open, Short or Loss of Connector)

**C. INSPECTION**

- 1) **VENDOR RELATED Per Appendix C Section # I (Crimped and Soldered Connector)**
- 2) **KSC RELATED Per Appendix C Section # IIB**

Additional: Connectors J41(J52), J42(J51) and J43(J56) are pullaway type. SPC measures connector clearance to ensure connector is fully mated (Loss of connector)

**D. FAILURE HISTORY**

Failure Histories may be obtained from the PRACA database.

**E. OPERATIONAL USE**

Not applicable to this failure mode.