

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Watertight Reusable Cable X13W26R P1/J2 and X13W27R P1/J2 (Aft Lower Strut Separation Bolt PIC A and PIC B Outputs to Aft Lower Strut Separation Bolt NSI A and NSI B)

PART NO.: 10400-0035
10400-0036

FM CODE: A17

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 31, 1998

CRITICAL PHASES: Separation

SUPERCEDES: March 1, 1995

FMEA PAGE NO.: D-685

ANALYST: R. Smith/S. Parvathaneni

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Aft Lower Strut Separation Bolt PIC A and PIC B outputs to Aft Lower Strut Separation Bolt NSI A and NSI B in both cables due to:

- o One pin or wire open caused by: open crimp, 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 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of Aft Lower Strut separation leading to recontact between SRB and the ET/Orbiter.

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) Fail - Not verified.
- 3) Pass- No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # II
- B. TESTING
 - 1) VENDOR RELATED Per Appendix B Section # IA
 - 2) KSC RELATED Per Appendix B Section # IIB
 - 3) SYSTEM/ UNIQUE FUNCTIONAL

After installation, cables are tested in series with other strut NSI cable X18W1 or X18W2 for NSI bridge-wire continuity and isolation. (Open, Short or Loss of Connector)

Cables are also tested per OMRSD File V, Vol. 1, requirement number B75PI0.011 (PIC Resistance Test) and File II, Vol. 1, requirement number S00GEN.635 (Stray Voltage Test). (Open, Short or Loss of Connector)

After Final Ordnance Installation and Connection cables are tested per OMRSD File II, Vol. 1, requirement number S00000.410 (PIC Resistance Test). (Open, Short or Loss of Connector) The last time the cables are checked is during Final Countdown per OMRSD File II, Vol. 1, requirement number S00FA0.015 ("GO" PIC Resistance Test). (Open, Short or Loss of Connector)

- C. INSPECTION
 - 1) VENDOR RELATED Per Appendix C Section # I (Crimped Connector)
 - 2) KSC RELATED Per Appendix C Section # IIB
- D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

- E. OPERATIONAL USE
 - Not applicable to this failure mode.