

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Watertight Reusable Cable X13W28R P1/I2 and X13W29R P1/I2 (Aft Diagonal/Middle Strut Separation Bolt PIC A and PIC B Output to Aft Diagonal/Middle Strut Separation Bolt NSI A and NSI B)

PART NO.: 10400-0037  
10400-0038

FM CODE: A18

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Separation

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-687

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Aft Diagonal/Middle Strut Separation Bolt PIC A and PIC B outputs to Aft Diagonal/Middle 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 Diagonal/Middle 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 # IIIE
  
  - 3) SYSTEM/ UNIQUE FUNCTIONAL

After installation, cables are tested in series with other strut NSI cables X17W1 and X17W2 for NSI bridge-wire continuity and isolation. (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 # IIIE

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.