

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cable X13W23 P1/J2 and Watertight Reusable Cable X13W30R P1/J2. (Aft Upper Strut Separation Bolt PIC A and PIC B Output to Aft Upper Strut Separation Bolt NSI A and NSI B)

PART NO.: 10400-0034
10400-0039

FM CODE: A16

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-683

ANALYST: R. Smith/A. Craft

SHEET 1 OF 3

APPROVED: P. Kalla

FAILURE MODE AND CAUSES: Loss of Aft Upper Strut Separation Bolt PIC A and PIC B outputs to Aft Upper Strut Separation Bolt NSI A and NSI B in both 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 connectors P1 and J2 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.
- o Loss of connector J2 (X13W23 only) caused by: connector not fully mated. (Pullaway type)

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of Aft Upper 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 sequences.

2) Fail - Not Verified.

3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN Per Appendix A Section # II & IV

B. TESTING

1) VENDOR RELATED Per Appendix B Section # IA & IB

2) KSC RELATED Per Appendix B Section # IIB

3) SYSTEM/ UNIQUE FUNCTIONAL

Cables are tested in series with other strut NSI cables for NSI bridge-wire continuity and isolation (Open, Short or Loss of Connector)

Cables are again tested, after mate to other strut NSI cables, for continuity and isolation per OMRSD File V, Vol. I Requirement B75PIO.011. (Open, Short or Loss of Connector)

After Final Ordnance Installation and Connection Cables are tested per OMRSD File II, Vol. I, requirement number S00000.410 (PIC Resistance Test) (Open, Short or Loss of Connector)

The last time the cables are checked is at T-4 hours during Final Countdown per OMRSD File II, Vol. I 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 and Soldered Connector)

2) KSC RELATED Per Appendix C Section # IIB

Additional: Connector J2 of cable X13W23 is a pullaway type: SPC measures connector clearance to verify 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.