

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Nonwatertight Reusable Cables X31W8R P1/P2 and X31W10R P1/P2 (SRM Ignition PIC A and PIC B outputs To SRM Ignition NSI A and NSI B)

PART NO.: 10400-0064
10400-0066

FM CODE: A03

ITEM CODE: 50-04-X31

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-713

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of SRM Ignition PIC A and PIC B outputs to SRM Ignition 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, unsealed 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 P1 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads mechanical overstress.
- o Loss of connector P2 caused by: failure of locking mechanism, connector not fully mated, mechanical overstress.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of SRM Ignition for one SRB resulting in thrust imbalance. 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 verifiable.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # V

- B. TESTING
 - 1) **VENDOR RELATED** Per Appendix B Section # IA

 - 2) **KSC RELATED** Per Appendix B Section # IIA

 - 3) **SYSTEM/ UNIQUE FUNCTIONAL**

Cables are tested during ACO per 10REQ-0021, para. 1.2.2.8.1 and 1.2.2.8.2 (SRB Ignition Systems A & B Circuits). (Open, short or loss of connector)

After transfer to SPC, cables are tested per OMRSD File V, Vol. 1, requirement number B75PI0.011 (PIC resistance test) and File II, Vol. 1, requirement number S00000.510 (SRM Ignition arm/Fire Test). (Open, short or loss of connector)

Cables are also tested per OMRSD File II, Vol. 1, requirement number S00000.525 (SRB PIC Arm and Fire Test). (Open, Short or Loss of Connector)

Cables are again tested after Final Ordnance Installation and Connection 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 tested is during Final Countdown per OMRSD File II, Vol. 1, requirement number S00FA0.015. (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 # IIA (I1) and IIIB (P2)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.