

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cables X32W1 P1/P2 and X32W2 P1/P2 (Forward Separation Bolt PIC A and PIC B Output to Forward Separation Bolt NSI A and NSI B)

PART NO.: 10400-0087
10400-0088

FM CODE: A01

ITEM CODE: 50-04-X32

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1996

CRITICAL PHASES: Separation

SUPERCEDES: March 1, 1995

FMEA PAGE NO.: D-761

ANALYST: R. Smith/J.Duggan

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Forward Separation Bolt PIC A and PIC B outputs to Forward 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 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 Forward Separation Bolt separation leading to damage caused by 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.

- A. DESIGN Per Appendix A Section # IV

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

 - 2) KSC RELATED Per Appendix B Section # IIA

 - 3) SYSTEM/ UNIQUE FUNCTIONAL

Cables are tested during ACO per 10REQ-0021, paras. 1.2.2.7.1 and 1.2.2.7.4 (Thrust Pin Separation System A and B Circuits). (Open, Short or Loss of Connector)

After cables are transferred to SPC, a NSI Bridgewire Test is performed. (Open, Short or Loss of Connector)

Cables are tested after Final Ordnance Installation and Connection per OMR5D File II, Vol. I, requirement number 500000.410 (PIC Resistance Test). (Open, Short or Loss of Connector)

Last time cables are tested is during Final Countdown per OMRSD File II, Vol. I, requirement number SOOFAO.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 # IIA and IIIB

Additional: P2 connector is a Bayonet type. SPC mates and verifies locking pins visible per OMRSD File V, Vol. I B75GEN.011 (Loss of Connector)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.