SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB Throwaway Cables X33W6 P1/P2 and X33W7 P1/P2 (Forward BSM PIC A and B Output to Forward BSM NSI A and NSI B)

PART NO.: 10400-0096, 10400-0097

FM CODE: A02

ITEM CODE: 50-04-X33

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-767

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Forward BSM PIC A and PIC B outputs to Forward BSM NSI A and NSI B in both cables due to:

- One pin or wire open caused by: open crimp, open wire, broken/bent pin, unseated pin, broken pin locking mechanism, corroded pin.
- One pin or wire short to ground caused by: bent pin, contamination in connector, insulation breakdown, frayed shielding, abraded or cut insulation.
- Loss of connector caused by: connector not fully mated, mechanical overstress, failure of locking mechanism.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of ability to fire the Forward Separation Motors at separation. Loss of separa- tion thrust will lead to vehicle damage caused by recontact between SRB and 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 # IV

B. TESTING

1) VENDOR RELATED Per Appendix B Section # II

2) KSC RELATED Per Appendix B Section # IIA

3) SYSTEM/ UNIQUE FUNCTIONAL

Cables are subjected to electrical continuity isolation and DWV test per OMRSD 10REQ-0021 para. 1.2.1.1.1, 1.2.1.1.2 and 1.2.1.1.8 after the frustum has been mated to the SRB forward skirt. (Open, Short or Loss of Connector)

Cables are tested during ACO per 10REQ-0021, paras. 1.2.2.7.2 and 1.2.2.7.3 (BSM System A & B Circuitry Verification). (Open, Short or Loss of Connector)

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

Cables are 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)

Last time 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 # IIA

Additional: P2 connector is mated by SPC and locking pins are verified visible per OMRSD File V, Vol.I B75GEN.011.

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.