

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cables X13W17 J45/P2 (J54/P2), X13W18 J44/P2 (J55/P2) (Orbiter Bus A and Bus B Power)

PART NO.: 10400-0032
10400-0033

FM CODE: A15

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: IR

REACTION TIME: Seconds

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-681

ANALYST: R. Smith/ A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Orbiter Bus A and Bus B power to Aft IEA 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 P2 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.
 - o Loss of connectors J45 (J54) and J44 (J55) caused by connector not fully mated. (Pullaway connector)

FAILURE EFFECT SUMMARY: Boost: Loss of mission, vehicle and crew due to loss of TVC and/or separation cue. Separation: Loss of SRB separation leads to vehicle breakup resulting in loss of mission, vehicle and crew. 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) Pass - Bus A and B voltage measurements B76V1600C and B76V1601C
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # IV

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

 - 2) KSC RELATED Per Appendix B Section # IIB

 - 3) SYSTEM/ UNIQUE FUNCTIONAL

After transfer to SPC, cables are tested during SRB/ET Strut Electrical Mate per OMRSD File V, Vol. 1, requirement numbers B75BU0.010 (SRB Bus Isolation Test). Cables are also tested during SIT per OMRSD File II, Vol. 1, requirement number S00000.470 (Orbiter/SRB Power Transfer Buses A and B). (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: Connectors J44(J55) and J45(J54) are pullaway connectors. 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.