

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Watertight Reusable Cable X21W3R P1/P2, X21W4R P1/P2 (Orbiter Bus A and Bus B Power)

PART NO.: 10400-0048
10400-0049

FM CODE: A03

ITEM CODE: 50-04-X21

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-701

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 from Aft IEA to Forward IEA in both cables due to:

- o One pin or wire open caused by: open crimp, 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 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.

FAILURE EFFECT SUMMARY: Boost: Loss of mission, vehicle and crew due to loss of TVC. 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 - Orbiter Bus A and B voltage measurements B76V1600C and B76V1601C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # II

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

 - 2) KSC RELATED Per Appendix B Section # IIIB

 - 3) SYSTEM/ UNIQUE FUNCTIONAL

After transfer to and installation by SPC, cables are tested during Shuttle Interface Test (SIT) per OMRSD File V, Vol. 1, requirement numbers B75BU0.010 (SRB Bus Isolation Test). Cables are also tested 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 Connector)

 - 2) KSC RELATED Per Appendix C Section # IIIB

- D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

- E. OPERATIONAL USE
- Not applicable to this failure mode.