

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Watertight Reusable Cable X13W1R P1/P2 and X13W5R P1/P2 (APU A1 and B1 Start Commands; APU A and B Fuel Shutoff Valve Commands; APU A and B Pulse Control Valve Commands)

PART NO.: 10400-0017  
10400-0021

FM CODE: A02

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: IR

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-658

ANALYST: R. Smith/ A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of APU A1 and B1 Start commands and/or APU A and B Fuel Shutoff Valve commands and/or APU A and B Pulse Control Valve commands (short only) 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: Loss of APU A1 and B1 Start commands and/or APU A and B Fuel Shutoff Valve commands and/or OI Bus A and B power (short only) results in loss of both APUs causing loss of TVC leading to 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 - Event measurements B46X1861X, B46X1863X, B46X1851X through B46X1854X.
- 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 # IIE

3) SYSTEM/ UNIQUE FUNCTIONAL

Cables are tested per OMRSD File V, Vol. 1, requirement numbers B42APO.050 (APU BITE Resistance Test) and B42APO.080 (Bearing Soak). (Open, Short or Loss of Connector)

The last time cables are tested is during final countdown per OMRSD File II, Vol. 1, requirement number S00FR0.070 (Start SRB HPU) at T- 28 sec. (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 # IIE

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.