

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME SRB OF Nonwatertight Reusable Cables 131W101R P4 (231W101R P4), 131W102R P3 (231W102R P3) and 131W105R P2 (231W105R P2) (SRM Chamber Pressure Input Power and Pressure Measurements)

PART NO.: 10400-0105 (10400-0116)  
10400-0106 (10400-0117)  
10400-0107 (10400-0118)

FM CODE: A14

ITEM CODE: 50-04-X31

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1 each

DATE: March 1, 1995

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-735

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of input power and pressure measurement from/to two of three SRM Chamber Pressure Sensors A, B and C in two out of three 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, mechanical overstress, failure of locking mechanism.

FAILURE EFFECT SUMMARY: Loss of input power or loss of sensor output from/to two of three SRM Chamber Pressure Sensors resulting in premature separation cue leading to loss of mission, vehicle and crew due to premature separation. 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 - SRM Chamber Pressure measurements A, B and C - B47P1300C, B47P1301C and B47P1302C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # V
  
- B. TESTING
  - 1) VENDOR RELATED Per Appendix B Section # IA
  
  - 2) KSC RELATED Per Appendix B Section # IIA
  
  - 3) SYSTEM/ UNIQUE FUNCTIONAL

Cables are tested during ACO per 10REQ-0021, para. 1.2.2.19.2 (SRM Chamber Pressure Circuit Verification).  
(open, short or loss of connector)

Cables are tested per OMRSD File II, Vol. 1, requirement number S00000.450 (SRM Chamber Pressure Measurement).

Cables are again tested during final countdown per OMRSD File II, Vol. 1, requirement number S00FF0.180 (SRM Chamber Pressure Bias and Calibration Check).

- C. INSPECTION
  - 1) VENDOR RELATED Per Appendix C Section # I (Crimped Connector)
  
  - 2) KSC RELATED Per Appendix C Section # IIA

Additional: Connectors are Bayonet type. SPC mates connectors and verifies locking pins visible per OMRSD File V, Vol. I B75GEN.010 (loss of connector)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.