

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Nonwatertight Reusable Cables 131W102R P4 (231W102R P4) and 131W105R P3 (231W105R P3) (Rate Gyro 1(LSRB), 2(RSRB), 3(LSRB) and 4(RSRB) Pitch/Yaw Rate Outputs)

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

FM CODE: A13

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-733

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of three of four Rate Gyro Pitch and Yaw rate outputs in three out of four cables due to:

- o One pin or wire open caused by: open crimp, open wire, broken/bent pin, unsealed 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 three of four Rate Gyros rate detection results in flight instability leading to loss of mission, vehicle and crew.

REDUNDANCY SCREENS AND MEASUREMENTS:

- 1) Pass - All cables are system tested during ground turnaround sequence.
- 2) Pass - Rate Gyro 1(LSRB), 2(RSRB), 3(LSRB) and 4(RSRB) Pitch and Yaw rate measurements B79R1(2)410C, B79R1(2)412C, B79R1(2)411C and B79R1(2)413C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

- A. DESIGN Per Appendix A Section # Y
  
- 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. 1.2.2.19.1 (Rate Gyro Assembly power on and SMRD Test) (open, short or loss of connector)

Cables are tested per OMRSD File II, Vol. 1, requirement number S00000.643 (RGA Torque Test).

The last time cables are tested is during final countdown per OMRSD File II, Vol. 1, requirement number S00FF0.230. (RGA Torque Test)

- C. INSPECTION
  - 1) VENDOR RELATED Per Appendix C Section # I (Crimped Connector)
  
  - 2) KSC RELATED Per Appendix C Section # IIA 1.2.3.4. and 2
  
- D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.