

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Nonwateright Reusable Cables 131W14R P3, 231W13R P1/P4 and X31W17R P3 (Rate Gyro 1 (LSRB), 2 (RSRB), 3 (LSRB), and 4 (RSRB) Input Power)

PART NO.: 10400-0114
10400-0949
10400-0069

FM CODE: A06

ITEM CODE: 50-04-X31

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 2 each

DATE: March 1, 1995

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-719

ANALYST: R. Smith/ A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Bus A or B and Bus C input power to three of four Rate Gyro Assemblies in three out of four 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 (Silicone RGAs only).
- o Loss of connector caused by: connector not fully mated, mechanical overstress, improperly torqued, improperly lockwired, defective threads (Krytox RGAs only)

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 # 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. 1.2.2.19.1 (Rate Gyro Assembly Power on and SMRD Test). (Open, Short or Loss of connector)

Cables are tested per OMRSD File II, Vol. 1, requirement numbers S00000.640 and S00000.643 (SRB Rate Gyro Power ON/SMRD/Null Test and RGA Torque Test). (Open, Short, or Loss of connector)

Cables are again tested during final countdown per OMRSD File II, Vol. 1, requirement numbers S00FF0.230 (RGA Torque Test). (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 # IIA 1,2,3,4 and 6

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.