

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cables X13W15 J41/P2 (J52/P2), and X13W16 J43/P2 (J56/P2) (Rate Gyro 1 (LSRB), 2 (RSRB), 3 (LSRB), and 4 (RSRB) Pitch/Yaw Outputs)

PART NO.: 10400-0030
10400-0031

FM CODE: A20

ITEM CODE: 50-04-X13

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1994

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1992

FMEA PAGE NO.: D-674-A

ANALYST: R. Smith/ A. Craft

SHEET 1 OF 2

APPROVED: R. Henritze

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 or solder, 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 P2 caused by: connector not fully mated, improperly safety wired, improperly torqued, defective threads, mechanical overstress.
 - o Loss of connectors J41 (J52) and J43 (J56) caused by: connector not fully mated. (Pullaway type)

FAILURE EFFECT SUMMARY: Loss of three of four Rate Gyros rate detection results in guidance system 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)+10C, B79R1(2)+12C, B79R1(2)+11C, and B79R1(2)+13C.
- 3) Pass - No credible causes.

RATIONALE FOR RETENTION:

A. DESIGN Per Appendix A Section # IV

B. TESTING

- 1) **VENDOR RELATED** Per Appendix B Section # IB
- 2) **KSC RELATED** Per Appendix B Section # IIB
- 3) **SYSTEM/ UNIQUE FUNCTIONAL**

Cables are tested per OMRSD File II, Vol. 1, requirement number S00000.643 (RGA Torque Test). (Open, Short or Loss of Connector)

Last time cables are tested is during final countdown per OMRSD File II, Vol. 1, requirement number S00FFO.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 # IIB

Additional: Connectors J41(J52) and J43(J56) are pullaway connectors. SPC measures connector clearance to verify connector is fully mated (Loss of connector).

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.