

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Throwaway Cables X13W16 J43/P2 (J56/P2), X13W17 J45/P2 (J54/P2) and X13W18 J44/P2 (J55/P2) (Rate Gyro 1 (LSRB), 2 (RSRB), 3 (LSRB), and 4 (RSRB) Input Power)

PART NO: 10400-0031
10400-0033
10400-0032

FM CODE: A21

ITEM CODE: 50-04-X13

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-680A

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of 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 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 J43 (J56), J45(J54) and J44 (J55) 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)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 # 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 numbers S00000.640 and S00000.643 (SRE Rate Gyro Power ON/SMRD/Null Test and 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 or Soldered Connector)

2) **KSC RELATED** Per Appendix C Section # III

Additional: Connectors J43(J56), J44(J55), and J45(J54) are pullaway type 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.