

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Nonwatertight Reusable Cables X31W17R P1/P3 and 231W13R P1/P4 [Rate Gyro 2 (RSRB) and 4 (RSRB) Input Power].

PART NO.: 10400-0069  
10400-0114

FM CODE: A05B

ITEM CODE: 50-04-X31

REVISION: Basic

CRITICALITY CATEGORY: IR

REACTION TIME: Immediate

NO. REQUIRED: 1 each X31W17R  
1 each 231W13R

DATE: March 1, 1995

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 1, 1994

FMEA PAGE NO.: D-718B

ANALYST: R. Smith/A. Craft

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of OI Bus A and C (right SRB) at RGAs in both cables due to:

- o One pin or wire short to ground caused by: bent pin, contamination in connector, insulation breakdown, frayed shielding, abraded or cut insulation.

FAILURE EFFECT SUMMARY: Loss of OI Bus A and C power leading to loss of 2 of 3 chamber pressure sensors resulting in premature separation. Loss of mission, vehicle and crew.

REDUNDANCY SCREENS AND MEASUREMENTS:

- 1) Pass - All cables are system tested during ground turnaround sequence.
- 2) Pass - Voltage measurements B47P2300C, B47P2302C, and B76V2600C.
- 3) Pass - No credible causes.

A. DESIGN

SRB nonwatertight reusable cables are designed per 10SPC-0212 (Cable Assemblies, Non-Watertight, Reusable, Specification For). The cables are designed for 20 mission capability and are environmentally sealed against moisture condensation and moderate water exposure. Cables are designed to operate in a temperature range of -48°C (-54°F) to 93°C (200°F) and under worst case SRB vibration requirements as specified in 10SPC-0165 (formerly MSFC-SPEC-16A02980)

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). (Short)

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). (Short)

Cables are again tested during final countdown per OMRSD File II, Vol. 1, requirement numbers S00FF0.230 (RGA Torque Test). (Short)

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

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.