

SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: SRB OF Nonwatertight Reusable Cables 131W7R P1/J2 (231W7R P1/J2) and X31W9R P1/J2
(Forward Separation Bolt PIC A and B outputs to Forward Separation Bolt NSI A and NSI B)

PART NO.: 10400-0890 (10400-0891)
10400-0065

FM CODE: A02

ITEM CODE: 50-04-X31

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Immediate

NO. REQUIRED: 1 each

DATE: March 1, 1996

CRITICAL PHASES: Separation

SUPERCEDES: March 1, 1995

FMEA PAGE NO.: D-711

ANALYST: R. Smith/J. Duggan

SHEET 1 OF 2

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Loss of Forward Separation Bolt PIC A and PIC B outputs to forward separation bolt NSI A and NSI B in both 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, improperly safety wired, improperly torqued, defective threads, mechanical overstress.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of Forward Separation Bolt separation leading to damage caused by recontact between SRB and the ET/Orbiter. One success path remains after the first failure. Operation is not affected until both paths are lost.

REDUNDANCY SCREENS AND MEASUREMENTS:

- 1) Pass - All cables are system tested during ground turnaround sequence.
- 2) Fail - Not verified.
- 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 IOREQ-0021, para. 1.2.2.7.1 and 1.2.2.7.4 (Thrust Pin Separation System A & B Circuits). (Open, short or loss of connector)

After cables are transferred to SPC, a Firing Line Continuity and Isolation Test is performed. (Open, short or loss of connector)

Cables are tested after Final Ordnance Installation and Connection per OMRSD File II, Vol. 1, requirement number S00000.410 (PIC Resistance Test).

Last time cables are tested is during Final Countdown per OMRSD File II, Vol. 1, requirement number S00FA0.015 ("GO" PIC Resistance 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 and IIIB

D. **FAILURE HISTORY**

Failure Histories may be obtained from the PRACA database.

E. **OPERATIONAL USE**

Not applicable to this failure mode.