

## SRB CRITICAL ITEMS LIST

SUBSYSTEM: STRUCTURES & MISCELLANEOUS ITEMS

ITEM NAME: Cover of SRM Igniter and S&A Device Heater/Sensor Cables Feed-Thru

PART NO.: ~~10751-0092~~ 10160-0380

FM CODE: A01

ITEM CODE: 60-02-20

REVISION: Basic

CRITICALITY CATEGORY: 1

REACTION TIME: Immediate

NO. REQUIRED: 1 per SRB

DATE: March 1, 2002

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: E-26B

ANALYST: C. Reynolds/S. Parvathaneni

SHEET 1 OF 3

APPROVED: S. Parvathaneni

CN 044

FAILURE MODE AND CAUSES: Structural failure of SRM Igniter and S&A device heater/sensor cable cover caused by:

- o Aerodynamic loading combined with improper fabrication, improper heat treatment, improper installation or unusual environments.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to generated debris damage to the Orbiter/ET leading to fire and explosion during ascent, or structural breakup of Orbiter during reentry.

### RATIONALE FOR RETENTION:

#### A. DESIGN

- O The materials of the cable cover is aluminum alloy 2219, selected in accordance with 10PLN-0150 (Materials Control and Verification Program Management Plan for SS SRB Program) and MSFC-SPEC-522 (Design Criteria for Controlling Stress Corrosion Cracking). The cover is mechanically attached. CN 044
- O The design allowables are in compliance with MIL-HDBK-5 (Metallic Materials and Elements for Aerospace Vehicle Structures) and MSFC-SPEC-505 (Structure Strength Program Requirements).
- O The installation of fasteners is in compliance with MSFC-STD-486 (Thread ed Fasteners, Torque Limits for).
- O Analysis shows that an ultimate margin of safety of +1.99 exists between the design of the Heater/Sensors Covers and the predicted maximum loading during ascent. (Ref. JRM-011-88-E).

B. TESTING

- O No testing is performed during each flow applicable to this failure mode.

C. INSPECTION

VENDOR RELATED INSPECTION

- O USA SRBE SIP 1453 controls the USA SRBE QAR inspection criteria at the vendor's facility. (Improper Fabrication)
- O Materials are accepted on the basis of supplier certifications. Certifications are verified by USA SRBE QAR per SIP 1453. (Improper Material)

Critical Processes/Inspections:

- O None

ASSEMBLY/CHECKOUT RELATED INSPECTIONS

- O After each flight visual inspection is performed by USA SRBE QA. Any physical damage, corrosion, stains, raised metal, cuts, dents, gouges, cracks, or unusual condition are recorded, documented, and repaired as required. The inspection criteria is contained in 10SPC-0131 (Refurbishment Engineering Specifications for Space Shuttle Solid Rocket Booster Assembly Project). (Unusual Environments)

PRELAUNCH CHECKOUT RELATED INSPECTIONS

- O The Heaters/Sensors cover is installed including verification of proper torque per OMRSD File V, Vol. 1, requirement number B08GEN.010. (Improper Installation)

D. FAILURE HISTORY

- O Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

- o Not applicable to this failure mode.