

SRB CRITICAL ITEMS LIST

SUBSYSTEM: STRUCTURES & MISCELLANEOUS ITEMS

ITEM NAME: Strut Cable Covers

PART NO.: 10176-0049, 0050, 0051,
0052, 0053, 0080

FM CODE: A01

ITEM CODE: 60-02-14

REVISION: Basic

CRITICALITY CATEGORY: 1

REACTION TIME: Immediate

NO. REQUIRED: 8

DATE: March 1, 2002

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 1, 2001

FMEA PAGE NO.: E-23

ANALYST: C. Reynolds/S. Parvathaneni

CN 044

SHEET 1 OF 2

APPROVED: S. Parvathaneni

FAILURE MODE AND CAUSES: Structural failure of the covers caused by:

- o Aerodynamic loading combined with improper fabrication, improper material, improper torque, or unusual environments
- o Internal overpressure

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of TVC and/or loss of ability to separate.

RATIONALE FOR RETENTION:

A. DESIGN

- O The Aft ET Attach Strut Cable Covers are formed from 300 series corrosion resistant steel. The covers provide aerodynamic protection for the NSI cables and the operational cables to the Orbiter.
- O The materials used in the design were 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). CN 044
- O The design allowables are in compliance with MIL-HDBK-5 (Metallic Materials and Elements for Aerospace Vehicle Structures) and MSFC-HDBK-505 (Structural Strength Program Requirements).
- O Qualification of the strut cable covers is by analysis. The covers are included in the ET Attach Strut assembly documented in USA SRBE Certificate of Qualification A-STR-7115.
- O Analysis shows that a factor of safety of +2.5 exists between the design of the strut cable covers and the predicted maximum loading during ascent (Ref: BPC-ANAL-003-87).

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 vendor QA and by USA SRBE QAR per SIP 1453. (Improper Material)

Critical Processes/Inspections/Operations:

- O None

ASSEMBLY/CHECKOUT RELATED INSPECTIONS

- O After each flight the covers are inspected for damage, corrosion, cuts, dents, gouges, cracks, or any other unusual condition by USA SRBE QA. The acceptance criteria is contained in 10SPC-0131 (Refurbishment Engineering Specifications for Space Shuttle Solid Rocket Booster Assembly Project). Any such condition is recorded, photographed, documented, and repaired. (Unusual Environments)

PRELAUNCH CHECKOUT RELATED INSPECTIONS

- O The strut covers are installed including verifications of proper torque per OMRSD File V, Vol. 1, requirement number B08GEN.010. (Improper Torque)
- O One vent/drain hole in each of the diagonal and lower struts fairing, and the upper strut protective covering (Aft side of each strut) is visually verified to be clear of any obstruction or foreign matter per OMRSD File V, Vol. 1, Requirement Number B08SB0.061. (Internal Overpressure)

D. FAILURE HISTORY

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

E. OPERATIONAL USE

- o Not applicable to this failure mode.