

SRB CRITICAL ITEMS LIST

SUBSYSTEM: STRUCTURES & MISCELLANEOUS ITEMS

ITEM NAME: ET Attach Ring Covers

PART NO.: 10170-0270, -0362, FM CODE: A01  
10751-0033 thru 0036,  
0059 thru 0060, 0070,  
0093 thru 0095,  
10755-0049 thru 0054

ITEM CODE: 60-02-09 REVISION: Basic

CRITICALITY CATEGORY: 1 REACTION TIME: Immediate

NO. REQUIRED: 16 DATE: March 1, 2002

CRITICAL PHASES: Boost, Separation SUPERCEDES: March 1, 1993

FMEA PAGE NO.: E-17 ANALYST: C. Reynolds/ S. Parvathaneni

SHEET 1 OF 3 APPROVED: S. Parvathaneni

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

- O Aerodynamic loading combined with Improper fabrication, Improper material, Improper heat treatment, Improper torque, Improper assembly, or unusual environments.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to loss of required thrust at separation, loss of vehicle control or loss of separation capability.

RATIONALE FOR RETENTION:

A. DESIGN

- O The ET Attach Ring Covers are roll formed to interface with the ET Attach Ring. The material is steel, 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). Each cover is mechanically attached to the ET Attach Ring with standard aerospace fasteners.

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- 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 The fasteners are installed in accordance with MSFC-STD-486 (Threaded Fasteners, Torque Limits for).

- O The welding is in compliance with MSFC-SPEC-135 (Welding, Fusion). Weld wire controls are in compliance with MSFC-SPEC-655 (Standard Weld Filler, Control of).
- O The heat treat operations are in compliance with MIL-H-6875 (Heat Treatment of Steels Aircraft Practice, Process for).
- O The covers were qualified by analysis as documented in Certificate of Qualification A-STR-7114. (This COQ does not cover 10751-0093 called out P/N).
- O Analysis shows that a yield factor of safety of +1.55 exists between the design of the ET Attach Ring 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 USA SRBE QAR per SIP 1453. (Improper Material)

Critical Processes/Inspections:

- O Heat treat operations per MIL-H-6875. (Improper Heat Treatment)
- O Welding operations per MSFC-SPEC-560. (Improper Fabrication)

ASSEMBLY/CHECKOUT RELATED INSPECTIONS

- O After each flight visual inspection is performed by USA SRBE QA. Any physical damage, leaks, corrosion, saltwater intrusion, stains, raised metal, cuts, dents, gouges, cracks, damaged threads, and rounding of nut corners, or unusual conditions are recorded, photographed, 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 ET Attach Ring Covers are installed including verification of proper torque per OMRSD File V, Vol. 1, requirement number B08GEN.010. (Improper Torque)
- O Visual Inspection, in accordance with OMRSD File V, Vol I requirement No. B08ST0.010. (Improper assembly)

D. FAILURE HISTORY

O Criticality Category 1:

O Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

O Not applicable to this failure mode.