

SRB CRITICAL ITEMS LIST

SUBSYSTEM: STRUCTURES & MISCELLANEOUS ITEMS

ITEM NAME: Range Safety Antenna Cover

PART NO.: 10406-0095

FM CODE: A01

ITEM CODE: 60-02-05

REVISION: Basic

CRITICALITY CATEGORY: 1

REACTION TIME: Immediate

NO. REQUIRED: 2

DATE: March 1, 2002

CRITICAL PHASES: Boost, Separation

SUPERCEDES: March 31, 1997

FMEA PAGE NO.: E-13

ANALYST: S. Parvathaneni

SHEET 1 OF 2

APPROVED: S. Parvathaneni

CN 044

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

- o Aerodynamic loading, combined with Improper Fabrication, Improper Material, Improper Installation or Improper Assembly.

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to damage to the Orbiter/ET from generated debris.

RATIONALE FOR RETENTION:

A. DESIGN

- O The Range Safety Antenna Cover is constructed of laminated fiberglass cloth using a high temperature polyester resin. It is secured to the baseplate with a total of 22 standard aerospace fasteners.
- 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). CN 044
- O The fasteners are installed in accordance with MSFC-STD-486. (Threaded Fasteners, Torque Limits For).
- O This design is a duplicate of that flown on all Saturn I and IB flights. It is qualified for use on the Shuttle program by test and analysis, as documented in Certificates of Qualification A-RSS-3104 and A-RSS-3106
- O Qualification test (vibration/ordnance, shock and thermal cycling) were conducted on the Range Safety Antenna Cover per as-run NASA procedure MTCP-CC-SRB 569, Rev. Basic, which is in appendix of QTR ET-45-SRB-604.

- O Analysis shows that a factor of safety of +1.71 exists for the Range Safety Antenna Cover under the worst aerodynamic loading (Ref: BPC-ANAL-003-87).

B. TESTING

- O No testing is performed during each flow that is applicable to this failure mode; however, each new Range Safety Antenna Cover, fabricated as a flight article, is proof tested to 10.0 PSIG and leak tested per Sheet 1, Note 5 of USA SRBE Drawing 10406-0095 to verify structural integrity.

C. INSPECTION

VENDOR RELATED INSPECTION

- O USA SRBE SIP 1351 controls the USA SRBE QAR inspection criteria at the vendor. (Improper Fabrication)
- O Materials are accepted on the basis of supplier certification. Certifications are verified by USA SRBE QAR per SIP 1351. (Improper Material)
- O USA SRBE QAR verifies proper processing per SIP 1351. (Improper Fabrication)

Critical Processes/Inspections/Operations:

- O None

ASSEMBLY/CHECKOUT RELATED INSPECTIONS

- O The Antenna Cover P/N 10406-0095 is a piece part of the RSS Antenna Assembly P/N 10406-0093 and is installed by the vendor. The RSS Antenna Assembly is installed at USA SRBE-KSC. The TPS Integrity Inspection and the Structural Assessment Walkdown Inspection are conducted in accordance with OMRSD File V, Vol. I Requirement numbers B08ST0.010 and B09TP0.010 (Improper Installation)

PRELAUNCH CHECKOUT RELATED INSPECTIONS

- O Visual inspection, in accordance with File V, Vol. 1, requirement number B08ST0.010, verifies Range Safety Antenna Covers. (Improper Assembly)

D. FAILURE HISTORY

- O Criticality Category 1:
  - o Failure histories maybe obtained from the PRACA data base.

E. OPERATIONAL USE

- o Not applicable to this failure mode.