SUBSYSTEM: STRUCTURES AND MISCELLANEOUS ITEMS

ITEM NAME: Blast Container

PART NO.: 10171-0035 (Blast Container, Upper)
10171-0050 (Shock Absorber, Lower)
10171-0051 (Shock Absorber, Upper)
10171-0058 (Blast Container Assy. Lower)

FM CODE: A01

ITEM CODE: 60-04-08

REVISION: Basic

CRITICALITY CATEGORY: 1

REACTION TIME: Immediate

NO. REQUIRED: 4

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 1, 1995

FMEA PAGE NO.: E-60A

ANALYST: S. Parvathaneni

SHEET 1 OF 4

APPROVED: S. Parvathaneni

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FAILURE MODE AND CAUSES: Structural failure of blast container caused by:

O Defective material
O Improper installation
O Improper heat treat

FAILURE EFFECT SUMMARY: Loss of mission, vehicle and crew due to damage to the Orbiter/ET leading to fire and explosion.

RATIONALE FOR RETENTION:

A. DESIGN

O The blast container is a machined unit designed to attenuate and contain any debris generated when the frangible nut separates. The basic material of construction is Inconel 718. (Improper Material)

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). (Defective Material, Improper Heat Treat)

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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). (Defective Material, Improper Heat Treat)

O The fasteners are installed in accordance with MSFC-STD-486 (Threaded Fasteners, Torque Limits For). (Improper Installation)

O The Blast Container is qualified for flight by analysis and testing as documented in USA SRBE COQ A-STR-7123-. (All Failure Causes)

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. (Defective Material, Improper Heat Treat)

O USA SRBE QAR verifies the material certifications per SIP 1453. (Defective Material)

O USA SRBE QAR verifies ultrasonic and eddy current inspection per SIP 1453. (Defective Material)

O USA SRBE QAR verifies heat treat data and charts per USA SRBE SIP 1453. (Defective Material)

O Critical Processes/Inspections:

- o Heat treat operations are performed in accordance with AMS 5664. (Improper Heat Treatment)
- o Ultrasonic inspection operations are performed in accordance with MIL-STD-2154. (Defective Material)

ASSEMBLY/CHECKOUT RELATED INSPECTIONS

O Installation of the lower half of the Blast Container includes witness verification of proper torque requirements of the fasteners attaching the container to the aft skirt by USA SRBE Quality in accordance with 10115-0004, 10116-0004 (Component Installation, Aft Skirt). (Improper Installation)

O After flight the covers are inspected by USA SRBE QA for damage, corrosion, cuts, dents, gouges, cracks, or other unusual conditions. The acceptance criteria is contained in 10SPC-0131 (Refurbishment Engineering Specification for Space Shuttle Solid Rocket Booster Assembly Project). (Improper Installation)

PRELAUNCH CHECKOUT RELATED INSPECTIONS

O Prior to final closeout, the interior of the lower half of the Blast Container is visually inspected for debris per OMRSD File V, Vol. I requirement no. B08AS0.021. (Improper Installation)

O Installation of the upper half of Blast Container includes torquing of the HDP blast container per the applicable drawing per OMRSD File V, Vol. 1, requirement number B08GEN.010 and B08GEN.020. (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.

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