

## SRB CRITICAL ITEMS LIST

SUBSYSTEM: RANGE SAFETY COMMAND DESTRUCT

ITEM NAME: Safe and Arm Assembly

PART NO.: 10311-0003-801

FM CODE: A05

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ITEM CODE: 70-13

REVISION: Basic

CRITICALITY CATEGORY: 1

REACTION TIME: Immediate

NO. REQUIRED: 1

DATE: March 31, 1999

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CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

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FMEA PAGE NO.: F-45, F-46

ANALYST: K. C. Finch/S. Roney

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SHEET 1 OF 3

APPROVED: P. Kalia

FAILURE MODE AND CAUSES: Safes prematurely caused by:

- o Broken detent ring
- o Vibration/Shock

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FAILURE EFFECT SUMMARY: Loss of the ability to detonate the destruct ordnance may result in loss of life or injury to the public in the case of an abort during the boost phase.

### RATIONALE FOR RETENTION:

#### A. DESIGN

O Design specification USBI 10SPC-0230

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- o Vibration levels per paragraph 3.4.1.2 (Vibration)
- o Shock and detent ring levels per paragraph 3.4.1.3 (Shock, Broken Detent ring)

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O Detent is titanium alloy, type 6AL-4V Per AMS 4928 (Broken Detent ring)

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O Qualification

- o S&A Assembly 10311-0003-801 is qualified per SDI QTR 107190-2022. (Connector) and SDI RPT-106521 Volume I-IV (Includes (NTS) Test Report 8971 (CC-16837-14) Volumes I-IV. (COQ A-PYR-6135). (1 Mission - SRB)

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O Qualification Test

- o Life cycle test (1000 cycles of 90° rotation) (Broken Detent ring)
- o Vibration (Vibration)
- o Shock (Shock)

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B. TESTING

- O Lot acceptance test per Procedure SDI ATP 106521
  - o X-ray inspection of entire lot. (Broken Detent ring)
  - o Temperature cycle and ambient Electrical Checkout. (Broken Detent ring)
  - o Acceptance random vibration test of entire lot. (Vibration)
  - o Vibration test of destructive lot samples (ten percent of lot). (Vibration)
  - o N-Ray inspection of entire lot. (Broken Detent ring)

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C. INSPECTION:

VENDOR RELATED INSPECTION

- O Receiving Inspection: Detent ring receiving inspection is performed by Contractor Quality Assurance and verified by USBI Quality Assurance per: (Broken Detent ring)
  - o USBI Quality Assurance
    - USBI SIP 1485
  - o Contractor Quality Assurance
    - SDI Receiving Inspection Plan /Drawing 106521
- O Assembly Operation: Detent installation is verified by Contractor Quality Assurance and this inspection is verified USBI Quality Assurance per: (Broken Detent ring)
  - o USBI Quality Assurance
    - USBI SIP 1485
  - o Contractor Quality Assurance
    - SDI Manufacturing and Inspection Plan/Drawing T106521

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- Lot Acceptance Test: N-ray and X-ray films are inspected by certified vendor personnel and verified by USBI personnel. Vibration testing on entire lot and DLAT units are witnessed by Contractor Quality Assurance and monitored one hundred percent by USBI Quality Assurance per: (All Failure Causes)

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- USBI Quality Assurance

- USBI SIP 1485

- Contractor Quality Assurance

- SDI -ATP-106521.

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- Lot review and certification per USBI plan 10PLN-0049.

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- Critical Processes/Inspections/Operations: The following critical processes/inspections/operations are used to assure that the explosive charge is properly sealed:

- Helium Leak Test per SDI ATP 106521
- N-Ray per SDI ATP 106521
- X-RAY per SDI ATP 106521

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KSC RELATED INSPECTION

- Receiving Inspection per OMRSD File V, Vol. 1, requirement number B000FL.004.

- Visual indication of rotor position vs. circuit position indicator safe monitor circuit continuity verifies proper mechanical operation during electrical verification of S&A operation. (All Failure Causes)

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D. FAILURE HISTORY

- Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

- Not applicable to this failure mode.