

**Critical Items List (CIL) Sheet**

**Critical Item:** PRCS Throat Plug, Ferry  
**Total Quantity:** 42  
**Find Number:** 1P1  
**Criticality Category:** 1

**B/L:** 600.37 & 890.00  
**System:** RCS

**FMEA/CIL No.:** SSD99FO027

**System/Area:** RCS / OPF,  
VAB, PAD,  
HMF,CLS,  
Ferry

**NASA  
Part No.:** -

**PMN/  
Name:** A70-1136/  
Universal &  
Evacuation Throat  
Plug Assembly

**Mfg / Rockwell  
Part No.:** G070-300012-305

**Drawing/  
Sheet No.:** G070-300012/ 6

**Function:** Prevents moisture intrusion; relieves pressure buildup in thruster chamber; supports Ferry Flight Vent Assy

**Critical Failure Mode/ Failure Mode No:** Separates prematurely from thruster throat / SSD99FO027.001

**Failure Cause:** Material defect or end-of-life effect (fatigue)

**Failure Effect:** Plug falls from thruster. The falling plug may be ingested by the SCA engine resulting engine failure and possible loss of vehicle/life. Also, the falling plug may impact personnel causing injury or loss of life.

**ACCEPTANCE RATIONALE**

**Design:** Materials of Construction – Plug Body & Plug Fingers - Teflon  
Piston - Stainless Steel  
Spring - Stainless Steel  
Vent Assembly - Stainless Steel  
O-Rings - Kalrez

Design Factor of Safety – 4:1

Use – Inserted by properly trained personnel using the PRCS Throat Plug Installation Tool.

**Test:** - Certification Testing completed to verify operational use and performance of plug prior to usage as GSE. Testing included an extended life test which consisted of 100 simulated insert/removal cycles, fit check for snugness of fit into throat, insertion & removal force evaluation, and ferry flight vibration simulation.

- Acceptance testing done on each new production plug. Testing included a fit check for snugness of fit into throat and an insertion & removal force evaluation.

**Inspection:**

- OMI V6029 requires periodic inspections of the thruster GSE attachments.
- OMI V1070 and S0026 details installation and inspection requirements.
- OMI V6048 details inspection and refurbishment requirements after ferry.
- OMRSD File VI (TBD) requires inspection of the fingers with 10x magnification during refurbishment after ferry to verify no cracks or defects.

**Failure History:**

- Current data on test failures, unexplained anomalies, and failures experienced during ground processing activities can be found in the PRACA database. The PRACA database was researched and failure data was found on this in the failure mode.
  - The failure occurred 01/10/1996, PV-6-299296
  - The failure cause was broken fingers
  - The correcting action was replacement of the teflon housing.

NASA failure analysis KSC-MSL-0576-1999 was performed on broken fingers and the resulting report recommended that the fingers be inspected under magnification for evidence of crazing or hairline cracks during refurbishment.

CAR KG0071 Documented a missing vent assembly after a ferry. A safety wire feature was added between the plug and vent assembly closing this CAR.

- The GIDEP failure data interchange system has been researched and no failure data was found on this component in the critical failure mode.

**Operational Use:**

- Correcting Action:

There is no action that can be taken to mitigate the failure effect.

- Time Frame

Since no correcting action is available, time frame does not apply.