SSD99FO027
March29, 2002

Critical Items List (CIL) Sheet

Critical Item: PRCS Evacuation Plug, Ground Ops
Total Quantity: 28
Find Number: 1P3
Criticality Category: 1

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

FMEA/CIL No.: SSD99FO027

System/Area: RCS / OPF Pads

NASA Part No.: -

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

Mfg/ Part No.: G070-300018-001

Drawing/ Sheet No.: G070-300018/ 1

Function: Seals thruster throat for evacuation of water; supports vacuum line.

Critical Failure Mode/ Failure Mode No: Separates prematurely from thruster throat SSD99FO027.003

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

Failure Effect: Plug falls from thruster. Falling plug and attachments may impact on personnel causing injury/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

Inspection: -OMIs V1158/V1045/V1070 detail insertion requirements and stipulate operational controls for the water evacuation procedure. Visual inspection of the plug is required prior to insertion into the thruster throat.

- OMI V6048 details inspection and refurbishment requirements after flow.

- OMRSD File VI (TBD) requires inspection of the fingers with 10x magnification during refurbishment after every flow to verify no cracks or defects.

Test: - Certification Testing completed to verify operational use and performance of plug prior to usage as GSE. Testing included fit check for snugness in thruster throat, insertion/removal force evaluation, ferry flight vibration, and an extended life test consisting of 256 insertion/removal cycles.

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

Failure History:

- Current data on test failure, unexplained anomalies, and failures experienced during processing activities can be found in the PRACA database. The PRACA database was researched and no failure data was found on this component in the critical failure modes.

- 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.