Critical Item: Pressure Regulator

Find Number: A105948

Criticality Category: 2

SAA No: 09PP03-001

NASA Part No: 79K80005-5

Mfg/ Part No: Tescom/ 26-1023-54-271

System/Area: LH2 MPS/LOA

PMN/ Name: S72-0685-5 Orbiter Helium Anti-Ice Panel

Drawing/ Sheet No: 79K06063/79K40023 2

Function: Sets the dome pressure for regulator A105951 which supplies GHe for the LH2 and LOX prepress. line anti-icing purges.

Critical Failure Mode: Regulates low. FM. No. 09PP03-001.020

Failure Effect: Loss of the ET LH_2 and LOX prepress line anti-icing GHe. Possible damage to the Orbiter TPS from falling ice. Failure is detectable by pressure transducer A105955 which monitors the output of regulator A105951.

Acceptance Rationale

Design:

- This regulator is operated within all design specifications.
- This component is only Criticality Category 2 when the ambient temperature is 36°F or below because the unheated backup helium supply is not effective at these temperatures.
- Component Specifications:

	Rated	Actual
Pressure (psig)	6000/25-4000	750/200
Flow (scfm)	N/A	N/A
Temperature (°F)	-20 to +250	Ambient on the MLP

- The burst pressure is 4 times rated pressure (24,000 psig).
- The pressure regulator body and filter are constructed of 300 series SST, the seats are KEL-F-81, the O-rings are made of a fluorocarbon elastomer, and the seals are per MIL, AMS or NAS standards.

Pressure Regulator, A105948 (Continued)

Test/Inspection:

- o File VI verifies the following:
  - Functional operation of the primary purge prior to each launch and at component replacement. The purge is verified via pressure switch indication and must satisfy a temperature specification after heater activation.
  - Functional operation of the redundant purge prior to each launch and at component replacement. The purge must satisfy a purge pressure specification.
- o The manufacturer's certification test requirements included the following tests:
  - Proof
  - Leak
  - Functional
- o Drawing 79K12402 Requirements:

  The regulator will be functionally tested by LPS with each use.

  The component will be tested annually and at component replacement. Test will consist of a pressure creepage test.

Failure History:

- o PRACA - The PRACA data base was queried and there were no Problem Reports found for this component.
- o GIDEP - The GIDEP Failure Data Interchange System has been researched, and no data on this component was found.