

SAAPS000000-001

JUN 22 1994

B/L: 72.02
SYS: HYPERGOLIC
VAPOR
SCRUBBER,
SLS-1

Critical Item: Pressure Regulator (1 Item Total)

Find Number: A137580

Criticality Category: 1B

SAA No: PS000000-001

System/Area: Hypergolic Vapor Scrubbers/
SLS-1

NASA

Part No: 79K80007-10

PMN/

S70-0570-04/

Name:

GN2 Purge Panel

Mfg/ Teecom Corporation

Drawing/

79K18888/

Part No: 26-1621-38-353

Sheet No:

4

Function: Reduce and regulate 3000 psi GN2 to 30 psi.

Critical Failure Mode/Failure Mode No: Regulates low/PS000000-001.002

Failure Cause: Jammed/structural failure due to corrosion/fatigue.

Failure Effect: Loss of GN2 hazard proofing purge to vapor scrubber's pump and electrical boxes could result in fire/explosion possibly causing loss of life in the event of a hazardous condition.

Time to effect: Loss of GN2 flow to the scrubber pump and electrical control boxes would be immediate. Loss of GN2 atmosphere in the purged enclosure will lag loss of GN2 flow by minutes.

Detection method: Pressure drop detectable on downstream pressure gage scrubber pressure gage which is monitored continuously by personnel during scrubber operation.

ACCEPTANCE RATIONALE

Design:

- This component was designed in accordance with NASA Specification 79K80007-10.
- Component specifications:

	Rated	Actual
Operating pressure (psig inlet)	6000	3000
(psig outlet)	0-150	30

- Proof pressure inlet is 9000 psig and outlet is 225 psig.

*Attachment
50502342 Q
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- Burst pressure is 24,000 psig.
- Materials:
 - Body, Filter - Series 300 SST to provide a rust proof regulator.
 - Diaphragm - Neoprene to provide a long life diaphragm.
 - Seats - Teflon to provide durable seal.
- GN2 from the upstream distribution panel is sampled for particulate level prior to GSE connection. Due to the contingency use of this equipment (propellant tank drain) an upstream filter was not deemed necessary.

Test:

- GN2 flow through the S70-0570-04 panel to the scrubbers is required for operation of the 3" and 6" scrubber valves and is verified prior to scrubber connection to facility power (per OMI V1070). This verifies the GN2 purge is present and the hardware is functioning properly.
- Annual calibration (per OMI V2239.002) and validation (per OMI V2239.001) of S70-0570-04 panel verifies regulator lock-up and response for varying inputs and checks output pressure as regulator is adjusted to verify proper operation.
- Qualification and acceptance testing was in accordance with the requirements of NASA component specification 79K80007-10. Acceptance testing included the following:
 - Proof
 - Leak
 - Functional
- Testing after refurbishment is performed in accordance with the requirements of NASA component maintenance drawing 79K90007. Revalidation testing includes:
 - Regulation
 - Leakage

Inspection: No inspection for the critical failure causes is performed.

Failure History:

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

Operational Use: This equipment is for contingency use only in the event propellant tank drain is required at SLS-1.

- Correcting Action: There is no action which can be taken to restore the GN2 purge if lost. However, the System Engineer would be notified of pressure loss and would provide instructions for best safing the operation based on training and experience.
- Timeframe: Minutes (to interrupt draining operations if action directed by System Engineer).