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Critical Item: Relief Valve (2 Items 1/Pad) (2 Items Total)
Find Number: A105246
Criticality Category: 1S

SAA No:	09PPAB12-002	System/Area:	L02/G02 FCSS/Pads A & B
NASA Part No:	79K80158-10	PMN/Name:	S72-0697-03 OMBUD FCSS GN2/GHe Service Panel
Mfg/Part No:	Anderson, Greenwood and Company/#81JS48-2	Drawing/Sheet No:	79K06004 & 79K40034

Function: Provides overpressure protection downstream of regulator A105240.

Critical Failure Mode/Failure Mode No: Fails open/FM No. 09PPAB12-002.002.

Failure Cause: Structural failure, corrosion, broken spring

Failure Effect: GN2 would flow out the open relief valve. Complete loss of GN2 would render the 0-3 Mid-Body Umbilical Carrier Plate Compartment purge inoperative, detectable by pressure transducer A105244. There is a potential fire/explosion hazard if this failure is coupled with a hazardous leak. Could cause loss of life or vehicle.

Time To Effect: Immediately.

ACCEPTANCE RATIONALE

Design:

- Set Pressure Range: 701 to 1180 psig
- Actual set pressure: 880 psig
- Normal operating pressure: 750 psig
- Proof pressure: 1-1/2 x set pressure
- Burst pressure: 4 x set pressure
- Cracking pressure: Not less than 95% of set pressure
- Reset pressure: Not less than 92% of set pressure
- Service: Nitrogen
- Operating temperature: 20°F to +165°F
- Body material: 316 stainless steel

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921211mjPS0118

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- Spring material: 316 stainless steel
- Internal metal parts: 316 stainless steel
- Seal material: KFI-F-81

Test:

Manufacturer's certification test requirements include the following tests:

- Proof
- Leak
- Operational

Calibration of the Relief Valve Cracking Pressure and Reseat Pressure is performed annually by OMI V7061.

Inspection:

- OMRSD, File VI

Verify purge pressure of 750±30 psig is present on transducer A105244, and verify there is audible flow at carrier plate.
Frequency: Prior to cryo loading.

- OMI V1040 validates the PRSD servicing system.

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:

- Correcting Action:

Loss of GN2 purge pressure is detectable by pressure transducer A105244.

Upon loss of the purge pressure, the L02 flow is automatically terminated, by closure of the normally closed L02 high pressure block valve A102112, which receives its actuation pressure from the same source as the GN2 purge. The FCSS L02 fill, vent and drain lines may be drained and inerted by manual action. These actions mitigate the effect of the loss of purge by removing system pressure and draining L02/G02 from the umbilical carrier plate.

- Timeframe:

Immediately.

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