

SAA09GS05-003
REV. B
D/L: 72.60
SYS: ECS/SLF/SL5

AUG 11 1988

Critical Item: Refrigeration Control System Relays (7 each)

Find Numbers: 1CR, 3CR, 10CR, 1M, 4TR, 5CR, 2CR

Criticality Category: 15

SAA No: 09GS05-003

System/Argg: ECS/SLF/SL5

NASA

Part Kg: N/A

PMW: 57D-0534/

Name: Portable Purge Unit

Mfg/ Allen Bradley/

Part No: NPN

Drawing/

Sheet No: 79K06081/1

Function: Provide control power for operation of compressor.

Critical Failure Mode: Contacts fail open, FM No. 09GS05-003.015
FM No. 09GS05-003.028
FM No. 09GS05-003.029
FM No. 09GS05-003.030
FM No. 09GS05-003.031
FM No. 09GS05-003.032
FM No. 09GS05-003.033

Failure Cause: Broken relay contacts, open/shorted coil.

Failure Effect: Compressor shutdown. Compressor/blower interlock stops blower, causing loss of purge to Orbiter compartments. Loss of refrigerant flow causes shutdown of compressor and interlock causes loss of blower, resulting in loss of purge to Orbiter compartments. Loss of ability to monitor purge air for leaks. Possible loss of life or vehicle during a hazardous condition such as leakage of hazardous fluids or gases.

Acceptance Rationale

Design:

- o Double pole, double throw contact arrangement.
- o Commercially available component.
- o Operational life rated at 100,000 operations.

680720wME-96

5AA098505-003
REV. B
B/L: 72.60
STS: ECS/SLF/SLB

AUG 11 1988

Refrigeration Control System 1CR, 3CR, 10CR, 1M, 4TR, 5CR, 2CR (Continued)

Test:

- o The OMRSD, File VI will require that operation of the portable purge unit is verified prior to each use.
- o The refrigeration control system relays are functionally tested quarterly for proper operation of the seven relays per OMI No. 46072 (Preventive Maintenance, Portable Purge Unit).
- o The purge unit is powered up and verified operational approximately three hours prior to Orbiter landing per OMI 50028 and 50026.

Inspection:

- o The electrical elements are inspected monthly for:
 - loose or missing hardware
 - corrosion
 - signs of arcing or shorts

Failure History:

- o No PRACA failure history identified in the critical failure mode.
- o No GIDEP failure history identified.

Operational Use:

- o There is nothing that can be done immediately to mitigate the effect of the failure.
- o The purge unit is monitored for any indication of malfunction. If any anomalies are observed, appropriate steps are taken to repair or replace the item.

880720gwm3-296