B/L: 7.00
SYS: PAD A WATER, MLP-3

AUG 2 3 1999

Critical Item: Solenoid Valve, Pneumatic (5 items)

Find Number: See Table 11

Criticality Category: 1S

SAA No:	09SY03-001, Rev. D	**System/Area:**	Pad A Water, MLP-3
NASA Part No:	None	**PMN/ Name:**	See Table 11
Mfg/ Part No:	ASCO/ 834481	**Drawing/ Sheet No:**	79K06011/3,15,16 80K55529/4

Function: Controls air flow to pressurize and vent open and close sides of associated Firex water control valve actuator.

Critical Failure Mode/Failure Mode No: Fail to energize open/see Table 11

Failure Cause: Caused by corrosion, contamination, or structural failure of internal piece part.

Failure Effect: Loss of open control of associated water valve actuator. Loss of Firex water flow at associated area (see table). Possible loss of life during a hazardous condition. Time to effect: immediate.

ACCEPTANCE RATIONALE

Design:

	Rated	Actual
Differential operating pressure:	125 psid	125 psid
Body operating pressure	480 psig	155 psig

- 4 Way - 2 position valve
- Brass bar stock valve body
- All internal parts in contact with fluid are stainless steel
- Continuous duty coil
- Valve seat Buna "N"

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Test:

- System pre-mission validation (OMI M2044/M2075) requires cycling of water valves to verify proper operation (verifies solenoid valve operational).
- System pre-mission validation (OMI M2082) requires cycling of MLP water valves to verify proper operation (verifies solenoid valve operational).
- OMRSD, File VI requires verification of the operational function of the water valve in all modes of operation semiannually (service structure), annually (perimeter area), or with each shuttle processing flow (MLP) and at replacement. (Note: Water valve operational function verification also verifies operability of solenoid valve.)

Inspection:

- Pre-mission OMI's require the inspection of the firex valves for for signs of corrosion and/or contamination.
- Preventative Maintenance of the MLPs' Firex Distribution System (OMI M6110) requires inspection and leak check of the pneumatic valves on the MLP annually.

Failure History:

- The PRACA database was researched and failure data was found on this component in the critical failure mode.

  1) - The failure occurred 11/27/90.

  - The failure cause was debris in valve (binding).

  - The correcting action was removal & replacement of the solenoid valve.

  2) - The failure occurred 1/9/91.

  - The failure cause was environmental degradation (corrosion).

  - The correcting action was removal & replacement of the solenoid valve.

  3) - The failure occurred 2/24/92.

  - The failure cause was failure of an internal piece part.

  - The correcting action was removal & replacement of the solenoid valve.

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

Operational Use:

- An operational failure can be detected by monitoring associated water valve position switch function designators.
- Corrective Action:

  There is no action which can be taken to mitigate the failure effect.
- Timeframe:

  Since no corrective action is available, timeframe does not apply.

Table 11 **ASCO SOLENOID VALVE CRITICAL ITEMS SUMMARY**

FIND NO. (IDENT.)	ASCO P/N	FUNCTION	FAILURE EFFECT	FMN.
A98261 (SV-23)	834461 (Double Coil)	CONTROLS AIR FLOW TO VALVE V-18 ACTUATOR (PMN: K60-0046-03)	LOSS OF FIREX WATER FLOW TO MLP-3 SIDE 1 CRYO SKID AREA	09SY03-001.012