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Critical Item: Filter (3)  
Find Number: A86481  
Criticality Category: 1

SAA No: 09PP02-001

System/Area: LOX MPS/LOA

NASA  
Part No: 79K80231-13

PMN/ S72-0814  
Name: GHe/GN2 Sys., MLP MPS Loading

Mfg/ Wintec/  
Part No: 14112-010

Drawing/ 79K06064/1  
Sheet No: 79K40027/1

Function: Connects into the LOX main fill line at the T-0 umbilical and is used to leak check the main fill line and assists in the blowdown of the LOX fill line after launch or ET drain.

Critical Failure Mode: Pass contaminants. FM No. 09PP02-001.002 (MLP).

Failure Cause: Structural failure of the filter element.

Failure Effect: Possible contamination of the Shuttle main propulsion system and damage to the Orbiter SSMEs during scrub turnaround resulting in possible loss of the vehicle. This failure is not detectable.

#### Acceptance Rationale

##### Design:

- o This component was designed in accordance with NASA specification 79K80231-13.
- o This filter is used within the design specification.

	<u>Specification</u>	<u>Operating</u>
Operating Pressure (PSIG)	6500	750 to 398
Flowrate (SCFM)	1470	300
Operating Temperature (°F)	-300 to +450	70 (ambient)
Element Collapse Pressure (PSID)	3000	---
Max Differential Operating Press Across Element (PSID)	20	7.6 to 13.4

- o This filter rating is 10 micron (absolute).

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Filter A86481 (Continued)

- o The filter element and body is constructed of 300 series stainless steel. The seal and O-ring material is Teflon.
- o This filter is a final filter in the drain assist, SSME MPS purge and LOX leak check system. The filter sees only Gaseous Helium and Gaseous Nitrogen that is within a sealed system.
- o The helium is filtered through an upstream 20 micron filter and the nitrogen is filtered through a 10 micron filter.

Test:

- o Acceptance testing was in accordance with the requirements of NASA Component Specification 79K80231-13. Acceptance testing included the following:
  - Proof
  - Leak
  - Bubble Point
- o Micron rating of filter element is assured by bubble point test per ARP 901.

Inspection:

- o Preventive maintenance will be in accordance with the requirements of NASA component drawing 79K90231.
- o Leak check at approximate 100% of maximum rated operating pressure.
- o Bubble tight externally with Helium at all operating pressures for a minimum of one minute.
- o The OMRSD File VI requires the following:
  - Filter element to be replaced after first functional test (cold flow) of an MLP or Pad, thereafter replace filter element annually (12 months) or when contamination is suspected, at time of filter replacement, filter will be cleaned and NDT tested.
- o Manufacturing/assembly (source) inspection was in accordance with the requirements of NASA Component Specification 79K80231-13.

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Failure History:

- o The GIDEP failure data interchange system was researched and no failure data on this component was found.
- o The PRACA data base was queried and no failure history on this component was found.

Operational Use:

- o Correcting Action:  
None
- o Timeframe:  
N/A