Critical Items List (CIL) Sheet

Critical Item: Filter (2 items)
Find Number: F5, F6
Criticality Category: 1

B/L: 801.07

FMEA/CIL No: STS88-0232

System/Area: OMS/RCS / HMF

NASA
Part No: ME286-0068-0015

PMN/ S70-1132/ OMS/
Name: RCS, QD/Filter Set

Mfg./ Wintec/
Part No: 6267-520-15

Drawing/ ESR 16477/-
Sheet No:

Function: Filters pressurant gases flowing into N2O4 side of OMS/RCS Pod crossfeed interface flange during post-flight deservicing.

Critical Failure Mode/Failure Mode No: Pass contaminates/ FMN: STS88-0232.003

Failure Cause: Manufacturing defect, wear or corrosion.

Failure Effect: Releases contaminates into the pod-side OMS/RCS subsystem N2O4 crossfeed line. Subsequent oxidizer loading carries the contamination into the manifolded OMS & RCS propellant tanks. During orbital insertion OME firing, the following could occur:

1) Common cause contamination passes through both 100 micron OMS filter screens (FL001), later resulting in two oxidizer bi-propellant valves to fail closed/ fail to open during deorbit burn (ref. Orbiter CIL 03-3-4001-02) in one or more of the following manners:
   - left OME LV008 and right OME LV008
   - left OME LV008 and right OME LV010
   - left OME LV010 and right OME LV008
   - left OME LV010 and right OME LV010

2) Common cause contamination loads both OMS N2O4 filter screens (FL001), resulting in later termination of oxidizer flow to both engines (ref. Orbiter CIL 03-3-4002-1) during deorbit burn.

In either case, both OMS engines fail, resulting in the inability to deoribit and possible loss of life/vehicle.

Time to effect: days.

ACCEPTANCE RATIONALE

Design:

Nonseparable, canister design

Materials : - Body: Stainless steel
- Element: welded, single layer, Dutch Weave, stainless steel, wire mesh cloth

Upstream filtration: - S70-0868 panels, filters A97362/A96362 (HMF)

Contaminate capacity: 3.6 grams

Pressure (psig):

- operating:	250
- rated:	1500
- proof:	2250
- burst:	6000
- element collapse:	400 differential

This equipment is designed and used in accordance with SN-C-0005, Contamination Control Requirements.

These filters are only used with fluids that conform to SE-S-0073, STS Fluid Procurement and Use Control Specification.

Test: The ME286-0068 filter procurement specification requires the following tests:
- Each filter element is "bubble point" tested (prior to assembly to the body)
- Each filter is proof pressure tested for no less than three minutes
- Lot representative filters are filtration tested with contaminate dust
- Lot representative filters are vibration tested
- Lot representative filters are (filter element) collapse pressure tested with contaminate dust

Inspection:

- Early Program filter element inspections of dissected, actual-use filters showed no indications of corrosion, wear or material defect. Further, no actual-use filter so inspected contained a contaminate quantity approaching its rated capacity.

OMRSD File VI TBD.

Failure History:

- The PRACA database was queried and no failure data was found on this component in the critical failure mode.

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

Operational Use:

- Correcting Action: None