

Critical Items List (CIL) Sheet

Critical Item: Filter (2 items)
Find Number: F3, F4
Criticality Category: 1

B/L: 801.07

FMEA/CIL No: STS88-0232

System/Area: OMS/RCS / HMF, OPF

NASA

PMN/ S70-1132/ OMS/

Part No: ME286-0072-0013

Name: RCS, QD/Filter Set

Mfg./ Wintec/

Drawing/ G070-684769/-

Part No: 14228-635-13

Sheet No:

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

Critical Failure Mode/Failure Mode No: Pass contaminates/ FMN: STS88-0232.002

Failure Cause: Manufacturing defect, wear, or corrosion.

Failure Effect: Releases contaminates into the pod-side OMS/RCS subsystem MMH crossfeed line. Subsequent fuel 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 (FL002), later resulting in two fuel 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 LV007 and right OME LV007
 - left OME LV007 and right OME LV009
 - left OME LV009 and right OME LV007
 - left OME LV009 and right OME LV009
- 2) Common cause contamination loads both OMS MMH filter screens (FL002), resulting in later termination of fuel 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 deorbit 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 A97363/A96363 (HMF)
- C70-1602 panel, filter A501119 (OPF)

Contaminate capacity: 3 grams

Pressure (psig):

- operating:	250
- rated:	400
- proof:	600
- burst:	1600
- element collapse:	400 differential

Test: The ME286-0072 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:

STS88-0232
Revision A
October 11, 2001

- Correcting Action: None