

DATE: June 13, 1988

FMEA #: 46-S70-0778-02-FL*-02

END ITEM EFFECTIVITY:

X	X	X
OV102	OV103	OV104

MODEL NO/NAME: S70-0778, APU QD/Filter Set

ORBITER SUBSYSTEM: APU System QTY: 3

PART NUMBER: PART NAME: REFERENCE DESIGNATION:

ME286-0072-0009 Filter * FL5, 7, 8

CRITICALITY NUMBER: 2

FUNCTION: Filter incoming N2H4 into orbiter fuel tanks.

CRITICAL FAILURE MODE: Pass contaminants.

CAUSE: Filter breakdown.

FAILURE EFFECT ON:

- (A) END ITEM: Possible damage to coupling attached to filter.
- (B) INTERFACING SUBSYSTEM(S): None.
- (C) ORBITER: Intrusion of contaminants into fuel tank, possible damage to tank bladder, subsequent flow through fuel lines into in-line 25 micron filter.
- (D) PERSONNEL: None.

HAZARDS: Intrusion of contaminants into APU fuel system (although there are internal fuel filters).

DATE: June 13, 1988

ACCEPTANCE RATIONALE

DESIGN: Filter elements and other welded parts are composed of corrosion resistant steel. Filter element is Dutch weave wire mesh cloth which removes particles of greater than 25 microns in size. No non-metal parts are used.

TEST:

DESIGN VERIFICATION: Acceptance tests per ME286-0072 include external leakage; operating, proof, burst, collapse pressures; rated, reverse flow; pressure drop; vibration; filtration; bubble point test; and contaminant capacity test at rated flow.

PRE-OPERATIONAL: Annual preventive maintenance per OMI V6A25 prior to use includes checks for missing parts; identification; cracks, corrosion, or deformation; proof pressure tags; fluid leakage; and general cleanliness. Additional cleaning and testing is per Wiltech Intermediate and Depot Maintenance Manual K-L24A-7J011.

INSPECTION: Filters are inspected for cleanliness to Level 100 of MA0110-301. Inspection also covers identification marking and packaging. Materials, process certification. Filters are placed in a 6 mil thick polyethylene contamination barrier cleaned to level 500 of MA0110-301. Welding and passivation are verified by inspection. Assembly, welding and testing are performed in class 100,000 environment per FED-STD-209. Filter ports are sealed with 2 mil thick nylon "6" material. Torquing is per ME286-0072 requirements.

OPERATIONAL USE: No special operations. During flight, the onboard fuel tank will trap some contaminant, lessening the potential for onboard filter clog. Also, the three APU fuel systems are independant, thus tolerant of a worst case onboard filter clog in any single system.

FAILURE HISTORY: Test failures of these filters included excessive pressure drop (1 failure) bubble point test failure (6), excessive particulate rating (2) (time period 8/85 - 10/87).