

DATE: October 16, 1990

FMEA #: 35-870-0529-14--01

END ITEM EFFECTIVITY:		
X	X	X
OV102	OV103	OV104

MODEL NO/NAME: 870-0529, LO₂ T-0 Umbilical Carrier Plate

ORBITER SUBSYSTEM: Aft Fuselage

PART NUMBER:	PART NAME:	REFERENCE DESIGNATION:	QUANTITY (PER SYSTEM)
ME286-0068-0003	Filter, In-Line, Miniature	---	1

CRITICALITY NUMBER: 1S

FUNCTION: Filter incoming GN₂ purge gas for routing to purge cans of carrier plate.

CRITICAL FAILURE MODE: Clog (loss of purge)

CAUSE: Contaminants in ground GN₂

FAILURE EFFECT ON:

- (A) END ITEM: Possible icing at contact areas of purge can seals.
- (B) INTERFACING SUBSYSTEM(S): None.
- (C) ORBITER: Possible icing, damage to orbiter TPS. Excessive leaking O₂ undiluted by GN₂ provides a hazardous explosive environment which could result in loss of orbiter due to explosion.
- (D) PERSONNEL: Hazard to crew during descent depending on extent of TPS damage. Loss of crew life due to (C).

HAZARDS: Cut-off of purge could lead to ice build-up and damage to aft fuselage TPS.

35-570-0529-14-*01 (Continued)

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ACCEPTANCE RATIONALE

DESIGN: Filter is designed to be compatible with KC126 unions using teflon seal rings. Filter element, once installed, is non-separable, and no non-metals are used in the assembly (all parts are of corrosion-resistant steel). Filter element is single layer Dutch weave wire mesh which traps particles greater than 25 microns in size. Filter operates in any attitude with flow in either direction.

TESTS:

ACCEPTANCE TESTS: Acceptance tests per ME286-0068 include product examination, proof pressure, filter cleanliness, bubble point test and filter drying.

CHECK-OUT TEST: Check-out tests per ME286-0068 include clean pressure drop test, vibration, filtration and contamination capacity test, differential pressure test, lot acceptance test and reverse flow.

CERTIFICATION OR QUALIFICATION TESTS: The filters are in compliance with the source control drawing ME286-0068 and T-0 Umbilical Carrier Plate document ML0208-0012. No certification or qualification tests were conducted on these filters.

INSPECTION: Filter case and element are precision cleaned to level 100A of MA0110-301, also passivated, vapor degreased, and sealed in contamination barrier bags and foam-cushioned for shipping (performed in a Class 100,000 clean room or better).

The filter is required to be cleaned for every mission per OMI V2456.

OPERATIONAL USE: Cutoff of liquid oxygen flow through carrier plate to preclude leakage, icing. Securing of LO₂ system per S1003.

FAILURE HISTORY: No carrier plate-related failures were reported.