

DATE: October 16, 1990

FMEA #: 35-870-0517-05--01

END ITEM EFFECTIVITY:

X	X	X
OV102	OV103	OV104

MODEL NO/NAME: 870-0517, LH₂ T-0 Umbilical Carrier Plate

ORBITER SUBSYSTEM: Aft Fuselage

PART NUMBER:	PART NAME:	REFERENCE DESIGNATOR	QUANTITY (PER SYSTEM)
ME286-0066-0010	Filter, In-line	---	1

CRITICALITY NUMBER: 1S

FUNCTION: Filter incoming Helium into OV/ET 17 inch disconnect area.

CRITICAL FAILURE MODE: Clog

CAUSE: Build-up of contaminants from ground system.

FAILURE EFFECT ON:

- (A) END ITEM: None, filter would require replacement or cleaning.
- (B) INTERFACING SUBSYSTEM(S): None.
- (C) ORBITER: Loss of orbiter due to insufficient purge of OV/ET 17 inch disconnect, LH₂ side, resulting in possible ice buildup and fire if accompanied by hydrogen gas leak. Possible damage to TPS.
- (D) PERSONNEL: Loss of crew life due to potential fire.

HAZARDS: If accompanied by hydrogen leak, possible build-up and fire/explosion of hydrogen gas in LH₂ disconnect area.

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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. Non-metal parts are Teflon. The filter is designed to operate within specifications for GN₂/He. Filter will withstand differential pressure up to 1,500 psi in direction of flow before collapse. The filter is designed for operating pressure of 6000 Psig, proof pressure of 9000 Psig and burst pressure of 24000 Psig. Occurrence of filters clogging is minimized by sampling the media (GN₂/He) for cleanliness prior to loading.

TEST:

ACCEPTANCE TESTS: Acceptance tests per ME286-0066 include product examination, proof pressure, element cleanliness, bubble point test, element drying, case cleanliness and external leakage.

CHECK-OUT TESTS: Check-out tests per ME286-0066 include shipping capability test, clean pressure drop test, reverse flow, filtration and contamination capacity test, collapse pressure test and lot acceptance test.

CERTIFICATION OR QUALIFICATION TESTS: The filter is in compliance with Source Control drawing ME286-0066 and T-0 Umbilical Carrier Plate document ML0208-0012. No certification or qualification tests were conducted on this filter.

INSPECTION: Filters are subject to cleanliness verification per Level 100A of MA0110-301C Product Cleanliness Requirements; also inspection of filter for sealing, packing, and shipping.

Filters are inspected for mating to QD's prior to installation of QD's into the carrier plate.

The filter is required to be cleaned once a year or before use.

OPERATIONAL USE: ET would be vented to reduce pressure if leakage occurs; LH₂ system would be secured per OMI S1014.

Leakage can be detected by hazardous gas detection system. Terminate and purge supply line if leakage exceeds 3.5% per launch commit criteria.

SENT BY:TM-PCO-3/SMAC/x4925 '12-19-90 :11:28AM :

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85255020:838

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FAILURE HISTORY: There were no carrier plate-related failure recorded against this part.