

DATE: October 16, 1990

FMEA #: 35-S70-0529-14--02

END ITEM EFFECTIVITY:

X	X	X
OV102	OV103	OV104

MODEL NO/NAME: S70-0529, LO₂ T-0 Umbilical Carrier Plate

ORBITER SUBSYSTEM: Aft Fuselage

PART NUMBER:	PART NAME:	REFERENCE DESIGNATION:	QUANTITY (PER SYSTEM)
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ME286-0066-0012	Filter	---	1
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CRITICALITY NUMBER: 2 (Below 36°F ambient temperature)

FUNCTION: Filter incoming GHe through orbiter into ET LO₂ prepressurization anti-ice line.

CRITICAL FAILURE MODE: Clog (loss of flow).

CAUSE: Contamination from ground system.

FAILURE EFFECT ON:

- (A) END ITEM: None.
- (B) INTERFACING SUBSYSTEM(S): None.
- (C) ORBITER: Possible damage to orbiter TPS from ice breakaway from LO₂ tank external feedline when ambient temperature is less than 36°F.
- (D) PERSONNEL: Hazard to crew during descent depending on extent of TPS damage incurred during ascent.

HAZARDS: Possible damage to TPS due to icing.

35-B70-0529-14*-02 (Continued)

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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 GHe. Filter will withstand differential pressure up to 1,500 psi in direction of flow before collapse. Occurrence of filter clogging is minimized by sampling the media (GHe) 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 before use.

OPERATIONAL USE: Hold of launch due to possible icing and damage to orbiter. Cryogenic drain to raise temperature.

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