

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE

POROUS PLATE SUBLIMATOR, ITEM 140 ----- SV783850-24 (1)	2/1R	Internal leakage, coolant to vent circuit.	END ITEM: Water flow path from coolant passageway to vent loop.	A. Design - The interface between the vent circuit and the coolant circuit is a continuous wall of 0.08 thick parent material at an actual stress of less than 200 psi vs the material yield strength of 3500 psi. There are no seals, welds etc. to act as leak paths.
OR ----- SV805279-5 (1)		Structural failure, pin hole in parting sheet.	GFE INTERFACE: Water leakage into vent loop. Water carryover, possible helmet fogging.	B. Test - Component Acceptance Test - A leakage test is performed on the coolant loop per AT-E-140-2. With the coolant loop pressurized to 28.1 - 29.1 psig, and the vent loop open to ambient, leakage is observed for 60 minutes minimum and must not exceed 3 scc/hr. PDA Test - A combined water circuits leakage test is run per SEMU-60-020. In this test the water circuits are pressurized to 15.7-15.9 psig with water for 60 minutes minimum. Leakage must not exceed 6 scc/hr.
			MISSION: Terminate EVA.	Certification Test - Certified for a useful life of 25 years (ref. EMUM1-0243, EMUM1-1269).
			CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP.	This component (Item 140) is certified for the coolant loop proof pressure of 42.2 psid because the calculated safety factor for yield is 15.1 (for bulging of the coolant loop plates) at the 28.1 psid maximum operating pressure.
			TIME TO EFFECT /ACTIONS: Minutes. Activate SOP, turn off fan, open purge valve.	C. Inspection - The parting sheets are 100% inspected in assembly.
			TIME AVAILABLE: Minutes.	D. Failure History - None.
			TIME REQUIRED: Seconds.	E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Water Servicing Leakage, and Gas Removal. None for EET processing.
			REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	F. Operational Use - Crew Response - PostEVA: No response, single failure undetectable by crew or ground (recharge). Training - No training specifically covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-140 SUBLIMATOR
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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