NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
POROUS PLATE SUBLIMATOR, ITEM 140 --- SV783850-20 (1) --- Z OR SV805279-3 (1)	2/1R	140FH08A: External water leakage, feedwater. CAUSE: Failure, seal bypass leakage. Shim bypass leakage.	END ITEM: Feedwater leakage to ambient. GFE INTERFACE: Depletion of the water reservoir. MISSION: Terminate EVA when the water supply drops below CWS limits. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP.	A. Design - External leakage is prevented by elastomeric O-ring seals. One O-ring is made of silicone and the other is made of fluorosilicone. The O-ring design dimensions and rigidness of assembly provide squeeze under all load conditions. The shim and mating sublimator housing are to be flat within 0.002 in to avoid leakage bypass. The temperature and pressure are not extreme (32 degrees F to 900 degrees F and 15 psid). B. Test - Component Acceptance Test - Leakage is tested during performance tests per AT-E-140. Certification Test - The item completed the 15 year structural vibration and shock certification requirement during 10/83. The following engineering changes have been incorporated since that time: 42806-555 (incorporated Increased Capacity Sublimator), 42806-277 (expanded Porous Plate Flow Range), 42806-287 (added Karopon/Polyurethane to prevent corrosion), 42806-306 (incorporated a Revised Screw/Washer Configuration), 42806-361 (modified Porous Plate Flow Requirement), 42806-801 (provided Shim Positioning Criteria), 42806-801-1 (replaced Mylar Shim with Kapton Shim). C. Inspection - O-ring grooves are 100% inspected per drawing dimensions and surface finish. O-rings are inspected for surface characteristics per SVHS5432; 100% for Class I and II O-rings, and at least 1.5 AQL for Class III. The shim and sublimator housing are inspected per D/P to be flat within 0.002 inches. D. Failure History - J-EMU-140-A001 (8-23-82) - Leakage between the sublimator and valve module which was caused by bent alignment pins causing misalignment of the sublimator to the valve module. Corrective action changed the pin material from aluminum to stainless steel and also the receptacle diameter was increased to making mating easier.

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	2/1R	140FM08A:		H-EMU-140-0019 (8/12/86) - The shim separating the large pourous plate from the core was found to be locally out of position (outward). Investigation revealed a particle (possible excess porous plate edge coating) prevented the porous plate from contacting the shim in this local area. No corrective action was taken since the presence of this particle is considered an isolated occurence. H-EMU-140-0020 (10-6-86) - Feedwater leakage was observed at the corner of the small porous plate. Upon disassembly, an abrupt local step of .003 was noted in the small porous plate mounting surface caused during machining of an adjacent surface feature. Corrective action consisted of an operation sheet revision to define a machining sequence which assumes a flat porous plate mounting surface. H-EMU-140-·001 (10/17/90) - Sublimator feedwater leaked to ambient through the interface gasket (Halar shim) between the porous plate and the aluminum housing. The Halar Shim located around the perimeter of the large porous plate stretched and displaced outward causing an overboard feedwater leakage path. EC 42806-801-1 replaces the Halar shim with a Kapton shim which is less susceptible to stretching. In addition, EC 42806-801 verifies proper shim positioning and that no gap greater than 0.0015" exists between the feedwater outlet housing and the sublimator grid (without shim and porous plate installed). H-EMU-140-0022 (11/17/90) - Sublimator S/N 007 exhibited edge leakage between the piggyback sublimator core and feedwater outlet housing due to a warped feedwater outlet housing. No Corrective Action was taken. In addition, S/N 007 exhibited water carryover, which is tracked by H-EMU-140-A004. E. Ground Turnaround - Tested per FEMU-R-001, EMU vacuum performance. Sublimator Performance F. Operational Use - Crew Response - EVA: When CWS data confirms loss of feedwater and cooling is insufficient, terminate EVA. Consider vacuum water recharge

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	2/1R	140PM08A:		to recover EMU operation. Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rules define go/no go criteria related to EMU thermal control, EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.