

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
WATER PRESSURE REGULATOR, ITEM 113E ----- SV778873-15 (1)	2/1R	113EFM03 Fails closed or reduced flow. Contamination. Clogging of the inlet filter; ball actuator or return plunger jams.	END ITEM: Unable to maintain the water reservoir pressure at 15.15 psig. GFE INTERFACE: Drop in reservoir pressure to suit pressure (4.3 psid). Dissolved gases in water will come out of solution. Poor LCVG cooling water circulation. Loss of cooling loop degassing capability. The reserve water tank will not provide sublimator operation. MISSION: Terminate EVA if cooling is insufficient. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Minutes. If EVA, return to vehicle, If	A. Design - Stem clearance is 0.001 - 0.0015. Material combination resists wear and galling. (Stem is Inconel 718, Body is Al-Bronze). Valve and sense cavity protected by a 25 micron filter upstream and downstream. Bellow operates with 15 psi differential pressure and it is rated for 84 psi proof. The sensing orifice downstream limits an external leak to 6 lb/hr should a leakage failure occur across the bellows. Springs operate at a stress below yielding value. B. Test - Vendor Component Acceptance Test - The manufacturer, CTI, performs a sea level performance test to assure that the regulator has not failed closed. Contamination is reduced/minimized by cleaning all of the internal details and oxygen passageways to HS3150 EM50A. The test facility and gases also meet the requirements. PDA Test - Performance tests per SEMU-60-010 verify proper feedwater regulator function. With the oxygen bottles pressurized to 850-950 psia, the regulator must regulate to 14.6 - 15.7 psig at flow rates of 0.01 - 0.02 lb/hr and 0.03 - 0.05 lb/hr O2. With the bottles pressurized to 75-85 psia, the regulator must regulate to 14.6 - 15.7 psig at a flow rate of 0.03 - 0.05 lb/hr O2. For bottle pressures of 850-950 psia and 75-85 psia, the regulator must regulate to 13.6 - 16.7 as monitored on the 132A transducer. Certification Test - Certified for a useful life of 20 years (Ref. EMUM-0083). C. Inspection - Details are 100% inspected per drawing dimensions and surface finish characteristics. Details are manufactured from material with certified physical and chemical properties. All details, gases and test facilities are cleaned and inspected to HS3150 EM50A to preclude contamination clogging. The running and final torque of all threaded connections are verified by Vendor and DCAS inspection. A trial assembly is run on all details and then they are visually inspected. The demand valve pintle is manually depressed to assure free motion. D. Failure History - H-EMU-113-C013 (3-3-81) Valve stem clearance too small causing jamming. Open stem clearance by EC 42803-667. H-EMU-113-A006 (1-25-81) Leakage past demand valve lip seal. The seat retainer was not fully pressed into the valve body. The assembly procedures were changed to preclude this assembly problem. E. Ground Turnaround - Tested for non-EET processing for FEMU-R-001, V1103 Performance Data and Item 113 Regulator Check. None for EET processing. F. Operational Use - Crew Response - PreEVA: Trouble-shoot problem, if no success, consider EMU 3 if available. EMU go for SCU operation.

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		113EFM03	EMU cooling cannot be maintained. TIME AVAILABLE: Minutes. TIME REQUIRED: Seconds. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	EVA: When CWS data confirms loss of feedwater gas pressure, terminate EVA if cooling is insufficient. Training - Standard EMU training covers this failure. Crewman are trained for one man EVA scenario. Operational Considerations - Flight rules define go/no go criteria related to EMU thermal control. Flight rules define EMU as go to remain on SCU (available for rescue if required). EVA checklist and FDF procedures verify hardware integrity and operational status prior to EVA. Real Time Data Systems allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-113 PRIMARY PRESSURE CONTROL MODULE
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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