

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
WATER PRESSURE REGULATOR, ITEM 113E ----- SV778873-15 (1)	2/1R	113EFM05 External gas leakage. Seal failure, bellows leakage.	END ITEM: Leakage of primary oxygen supply to ambient. GFE INTERFACE: Excessive consumption of the primary oxygen supply. The SOP is automatically activated during EVA if the suit pressure drops to 3.33 psia minimum. MISSION: Terminate EVA. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Immediate. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - Leak is through a radial O-seal on the bellows cap, two radial O-seals at the 15 psi outlet, and the bellows. The seal design configuration, dimensions and rigidness of assembly provide squeeze under all load conditions. The bellows has a proof pressure of 84 psi. B. Test - Vendor Component Acceptance Test - The regulator manufacturer, Carleton performs an external leakage test to assure bellows and seal integrity. PDA Test - An external leakage test per SEMU-6-010 verifies bellows and seal integrity. With the regulator outlet pressurized to 14.6 - 15.7 psig using 98% N2 and 2% He, a helium sniff test must show no evidence of leakage. 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 torques 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. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Final SEMU Gas Structural and Leakage. None for EET processing. F. Operational Use - Crew Response - PreEVA: When detected during suit leak check, trouble shoot problem, if no success consider EMU 3 if available. EMU no go for EVA. EVA: When CWS data confirms an accelerated primary O2 use rate, terminate EVA. If CWS data confirms a loss of suit pressure integrity coupled with an accelerated primary O2 use rate, abort EVA. Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rules define go/no go criteria related to EMU suit pressure regulation. Consider periodic vacuum O2 recharge to recover EMU operation. EVA checklist and FDF procedures verify hardware integrity and operational status prior to EVA. Real Time Data System 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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