CIL
EMU CRITICAL ITEMS LIST

Page: 1
Date: 12/02/91

12/26/91 SUPERSEDES 01/02/90 ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRESSURE GAGE ITEM 2130 SV799062-3 (1)	2/2	2130FM02: Erroneous output, reads high (above 600 psi). CAUSE: Friction.	END ITEM: False indication of leaking or failed open first stage SOP regulator. SFE INTERFACE: False indication of leaking or failed open first stage regulator. MISSION: Loss of use of one EMU for EVA, during SOP checkout. CREW/VEHICLE: None.	A. Design - The maximum expected number of operating pressure cycles during the life of this item is 4000 and proof pressure cycles is 25. The bourdon tube is made of Inconel x-750 and is silver soldered into a 304 cres tube at one end. That tube is in turn copper brazed into a 303 cres socket. The other end of the tube is closed off and soldered to the pointer. The vendor, Kratos, performs five (5) stress proof pressure cycles to 15,000 psi and five (5) proof pressure cycles to 11,200 psi prior to gage calibration. If hysteresis remains, then five (5) more proof pressure cycles to 11,200 psi are performed prior to a re-calibration. The gage is scrapped if hysteresis still remains, this procedure ensures that the bourdon tube is properly strain hardened. B. Test - Component Acceptance Test - The vendor, Kratos, performs five (5) stress proof pressure cycles to 15,000 psi and five (5) proof pressure cyles to 11,200 psi prior to gage calibration. If hysteresis remains then five (5) more proof pressure cycles to 11,200 psi are performed prior to a re-calibration. The gage is scrapped if hysteresis still remains, this procedure ensures that the bourdon tube is properly strain hardened. GE1 PDA Test - The item is externally leak tested with a 2% He and 98% N2 gas mixture at a pressure of 5800-6200 psig in a chamber vacuum. Leakage must not exceed 5.55 x 10 - 5 scc/sec he (5.55 x 10 - 5 scc/sec He as mal represents total end item (sop) leakage). The accuracy of the item is checked by pressurizing it to 200 and 6000 psig with tolerances of +300/-200 and +/-600 psig respectively. Certification Tests - During 5/89 the SV799065 SOP completed 5000 on/off cycles and 100 proof cycles which is four times the 15 year expected use cycles. During the flow testing phase, the SOP completed 325 total hours of regulation at 5 pph or 8.16 pph. The SOP assembly also completed the 15 year random vibration, sinusoidal vibration, design shock and bench shock testing. During 8/82 the SV787710 SOP completed 112 blowdown cycles

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/2	2130FM02:		which is 5 times the cycle certification requirement of 15 to satisfy the SW700045 certification requirements. C. Inspection - There is NDBX inspection, including proof pressure and leakage test of all the elements exposed to the high pressure medium during vendor acceptance testing. Particulates are minimized by cleaning these elements exposed to the oxygen to MS315B ENSOR. D. Failure History - None. E. Ground Turnaround - Tested for gage calibration per FEMU-R-001, SOP servicing for flight. F. Operational Use - Crew Response - PRE-EVA: since there is no way to differentiate between a failed high gage and a failed first stage SOP regulator, this EMU is no go for nominal EVA. Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rules define EMU as "lost" for loss of operational SOP.