NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
02 PRESSURE REGULATOR 2ND STAGE, ITEM 213D SVT99042-5 (1)	1/1	213DFM07A: External gas leakage. CAUSE: Seal failure, bellows leakage.	END ITEM: Leakage of emergency oxygen supply to ambient. OFE INTERFACE: Premature depletion of SOP. MISSION: Abort EVA. Less than 30 minutes available while on SOP. CREW/VEHICLE: Possible loss of crewman with excessive leakage.	A. Design - The static radial silicone O-ring design dimensions and assembly tightness provide O-ring squeeze under all load conditions. The second stage cover assembly will not distort at pressures above the 4.3 psid normal operating pressure, thus keeping the O-ring seal integrity. The bellows is designed for 84 psid. Proof pressure is 25 psid, operating pressure is 5.9 psid. B. Test - Vendor Component Acceptance Test - The regulator manufacturer, CII, performs an external leakage test to assure seal and bellow integrity. PDA Tests - The item is external leakage tested on the SOP. The SOP bottles are pressurized to 5800-6200 psig with a 2% GHe and 98% GN2 mixture. The fill valve, the test port valve, and TPD are capped with the appropriate flight cap and torqued to 30-40 in-lbs. The item is tested in chamber vacuum and leakage must not exceed 5.55 x 10 -5 scc/sec He. 5.55 x 10 -5 scc/sec He represents total SOP leakage. Certification Test - The item completed 906 No Flow Hours during 8/82 which is 50 times the certification requirement of 18 hours. The item completed 112 blowdown cycles during 8/82 which is 3 times the cycle certification requirement of 35. The item completed the 15 year structural vibration and shock certification requirement during 10/83. No class I engineering changes have been incorporated since the configuration was certified. C. Inspection - All details, gases, and test facilities are cleaned and inspected to MS3150 GMSOX to preclude contamination clogging. Details, including the O-ring, O-ring grooves and sealing surfaces, are 100% inspected per drawing dimensions and surface finish characteristics. Details are manufactured from material with certified physical and chemical properties. A trial assembly is performed on all regulator details, and then they are visually inspected. The running and final torque of all threaded connections are

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	1/1	203PH07A:		verified by Vendor and DCAS inspection. D. Failure History - None. E. Ground Turnaround - Tested per FEMU-R-001, Gas Structural and Leakage. F. Operational Use - Crew Response - EVA: Since EVA termination is required as soon as SOP is flowing, crew would abort EVA when excessive SOP usage is detected. Training - Standard EMU training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define go/no-go criteria related to EMU pressure integrity and regulation. Flight rules define EMU as lost for loss of operational SOP. Real Time Data System allows ground monitoring of EMU systems.