NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRESSURE TRANSDUCER, ITEM 215 SV778473-6 (1)	2/2	2154M01A: Drifts low. CAUSE: Failure of internal electrical wiring or strain gages.	END ITEM: False indication of low SOP pressure. SFE INTERFACE: Loss of SOP pressure reading. Erroneous CWS warning of low SOP pressure. CWS will calculate too little time remaining for O2. MISSION: False indication that SOP O2 supply is being prematurely depleted. CREW/VEHICLE: None.	A. Design - The electronic components in the transducer network are screened to MIL-STD-883 and the hybrid assembly (A820-A-21812) receives burn in and temperature cycle screen per Kulite ATP 42541 to assure their operational reliability and circuit integrity. B. Test - Component Acceptance Test - The pressure Transducer output is checked at the vendor (Kulite Semiconductor Inc.) per section 80.7 (Error Band Test) of Acceptance Test Procedure ATP25412. This test consists of checking transducer output from -14.7 psig to 7400 psig and back to -14.7 psig at temperatures of 70 degrees F, 0 degrees F and 100 degrees F. Component Functional Calibration Test per At-E-215 - the item is pressurized with a known pressure over the ranges of 0-7400 psig and 7400-0 psig. The output of the transducer when compared to the known pressure must be within 250 psig, except at 0 psig it shall be within 165 psig. An incorrect signal would be detected at this test. POA Testing per SEMU-60-007 - The item is checked for proper operation by pressurizing the end item (SOP) to a known pressure of 7200-7400 psig. The SOP is then to blow down at the rate of 5.26 - 5.46 lbs/hr O2. The item pressure when compared to the known pressure shall be within 250 psig except at 0 psig it shall be within 165 psig. Certification Testing - The item completed the 15 year structural vibration and shock certification requirement during 10/83. Engineering changes 42806-841 during 10/83 (Preclude the possibility of a cable entry failure), 42806-301 (Eliminate a potential interference between transducer and the SOP), 42806-499 (Added weld inspection requirements and a more stringent leakage test) and 42806-690 (Added a voltage conditioning requirement and a more stringent screening procedure) have been incorporated and verified since this configuration was certified. However, these changes do not pertain to the failure mode. A test specimen survived 500 operating pressure cycles and 12 proof pressure cycles and still

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	2/2	215FM01A:		operated with an acceptable output. C. Inspection - 100% visual inspections of electrical wiring and strain gages during assembly at vendor. D. Failure History - H-EMU-215-0001 (1-11-83) Sensor reads low due to a severed internal sensor wire. A redesign of the internal sensor wiring corrected the problem. FEMU-215-5001 (4-16-85) and FEMU-215-002 (8-5-85) SOP Pressure Transducer reading out of spec caused by erroneous transducer reading. No corrective action was implemented because the anomaly could not be repeated. None for this failure. Related Failures: H-EMU-215-002 (1-19-87) The transducer had damaged cable connector. This was the result of the use of Scotch Weld which made the cable attachment too rigid. The Scotch Weld will be deleted in all (-6) configurations and subsequent. H-EMU-215-A001 (1-23-87) The electrical bonding between the sensor and oxygen manifold was over specified limits. This was the result of Krytox being applied between the mating surfaces during assembly. Assembly Operation Sheets were revised to clarify areas of application. H-EMU-215-0005 (5/04/90) SOP pressure transducer read -282 psi when actual pressure was zero psi at Hamilton. Allowable difference is 185 psi at zero psi. Discrepant readings were due to an error in the vendor's (Kulite) Acceptance Test Procedure which allowed a 250 psi error band at zero psi. Kulite's Acceptance Test Procedure has been corrected to reflect the 185 psi band. E. Ground Turnaround - Tested per FEMU-H-001 Para. 2.2.4.11, SOP Preflight Processing, and Transducer and DCH Gauge Calibration Check, both would detect loss of output during calibration. F. Operational Use - Crew Response - EVA: Since EVA termination should begin as soon as SOP is alarming, the response is to abort EVA.

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	2/2	215FN01A:		Training - Standard EMU training covers this failure mode. Crewmembers are thoroughly trained in EVA termination and abort procedures using both neutral buoyancy and 1-G techniques. Operational Considerations - Reference/Loss Failure Flight Rules: Define EMU as test for lack of operational SOP. EVA checklist and SOF procedures verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.