NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CO2 TRANSDUCER, ITEM 122 --- SV767798-3 (1) OR --- Y SV809145-1 (1) OR IR CO2 TRANSDUCER, --- Z SV809286-4 (1)	2/1RB	122FM04: Electrical short. CAUSE: Contamination in the electrical connector. Faulty lead wires. Failure of electronic part in a shorted mode.	END ITEM: P/Ns SV767798-3 and SV809145-1: Loss of sensor output. P/N SV809286-4: Increased current draw from 14.2 volt supply (Item 350 DC/DC converter). SFE INTERFACE: P/Ns SV767798-3 and SV809145-1: Increase in battery power consumption. The current is limited in the DCM DC/DC converter to 1.8 +/- 0.25 amps. Shutdown of the DC/DC converter. Loss of CWS, tones and DCM display. P/N SV809286-4: Increase in battery power consumption. The current is limited in the DCM DC/DC converter to 1.8 +/- 0.25 amps. Shutdown of the DC/DC converter. Loss of CWS, tones and DCM display. MISSION: None for single failure. Terminate EVA with loss of	A. Design - P/N's SV767798/SV809145: The use of established reliability capacitors and resistors are qualified to the requirements of MIL-R-39XXX and thermal shocked per condition B, Method 107 of MIL-STD-202. Microcircuits are qualified to the requirements of MIL-M-38510 and receive the burn in of Class B parts per method 5004 of MIL-STD-883. Transistors and diodes are qualified to the requirements of MIL-S-19500 and receive the burn in of JANTVX level parts per the applicable Methods, 1038, 1039 or 1040 of MIL-STD-750. Electronics and electrical assemblies designed and assembled per NASA solder spec NHB 5300.4 (3A-1). P/N SV809286: The electronic components are operating within the power derating requirements of MIL-STD-975. Established reliability capacitors (Level P minimum) are qualified to MIL-C-123, MIL-C-39014, MIL-C-55365 or MIL-C-55681. Established reliability resistors (Level P minimum) are qualified to MIL-R-55342 or MIL-R-55182. Microcircuits are surface mounted DESC controlled components which are MIL-STD-883 compliant and PIND tested (cavity devices). Transistors and diodes are qualified to the requirements of MIL-S-19500, Level JANTXV as a minimum and PIND tested (cavity devices). Electronics and electrical assemblies are designed and assembled per NASA solder Spec. NHB 5300.4 (3A-1). B. Test - P/N's SV767798/SV809145: Component Acceptance Test (Vendor) - The CO2 sensor is subjected to Acceptance testing per Sensonetics spec 551866 prior to shipment by the assembly vendor. This testing includes the following tests which insure the sensor output voltage stability: a. Insulation resistance is measured across all functional connector pins and case at 100VDC. This insures there are no low resistance paths which would affect output voltage stability. b. Calibration is checked to see that the unit is not shorted and is reading within specified limits. This insures the unit has not shifted after being subjected to random vibration testing (6.1g rms).

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	2/1RB	122FN04:	DCM display, CMS and ability to monitor the operational integrity of the EMU. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, oxygen or low vent flow.	PDA Test - A CO2 sensor ramp test is run per SEMU-60-010 which subjects powered sensor to a CO2 pressure ramp from 0.5 to 15 mm CO2 over a 30 minute period. This insures the sensor will respond to a high CO2 condition properly. Certification Test - The item completed the 15 year structural vibration and shock certification requirement during 10/83. The item completed 10,084 flow cycles during 7/85 to fulfill the cycle certification requirement of 10,084. Class I engineering changes 42806-120 (revised requirement), 42806-168 (new sensor cover), 42806-192 (new filter), 42806-264-1 (revised output graph), and 42806-292 (calibration test change) have been incorporated and certified by analysis/similarity since this configuration was certified. P/N SV809286: Component Acceptance Test - The CO2 transducer is subjected to the following acceptance tests per SVHS13466 to ensure electrical integrity prior to installation in a PLSS: a) Random vibration in each of three axes for 0.5 to 1.0 minute with electrical power. The output voltage shall have no discontinuities greater than 10 milliseconds. b) Insulation resistance is measured across each connector pin and ground at 100 VDC and must be greater than 5.2 Megohm. c) Power consumption must be 2.4 watts maximum at the nominal +/- 15 VDC input. PDA Test - A CO2 transducer ramp test is run per SEMU-60-010. This test subjects a powered transducer to six 2.5 mmHg CO2 step increases from 0 to 15 mmHg CO2. the six IR CO2 sensor readings are verified two minutes after each step change. This ensures the transducer will respond to a high CO2 condition properly. Certification Test - The item completed the 15 year structural vibration and shock certification requirement during 11/94. C. Inspection -

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	2/IRB	122FM04:		P/N's SV767798/SV809145: The sensor is subject to visual inspections and insulation resistance testing during assembly to ensure there are no short circuits present. P/N SV809286: The transducer is subject to visual inspections and insulation resistance testing during assembly to ensure there are no short circuits present. D. Failure History - P/N's SV767798/SV809145: None for this failure mode. P/N SV809286: H-EMU-122-CD04 (3/9/92) - The transducer failed the conducted emissions (CE03) requirements on the +/-13 volt internal power lines. CE03 requirements apply to the Airlock Power Supply 28V input power leads only. No corrective action taken because internal EMU power lines are exempt from conductive emission requirements. E. Ground Turnaround - P/N's SV767798/SV809145/SV809286: Tested preflight per PEMU-M-001, para. 7.3.3.3.2.1, CO2 Response Time Check. F. Operational Use - P/N's SV767798/SV809145/SV809286: Crew Response - PreEVA: Trouble shoot problem, if no success, consider EMU 3 if available. EMU no-go for EVA. EVA: When loss of CWS displays and tones detected terminate EVA. Training - Standard EMU training covers this mode. Operational Considerations - Flight rules define operational CWS as at least able to monitor a valid status list. EVA checklist procedures verify hardware integrity and operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.