NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		112FM07		
PRIMARY OXYGEN PRESSURE SENSOR, ITEM 112 ---------- SV778528-1/-2 (1)	2/1R	External gas leakage. Seal failure.	END ITEM: Leakage of primary 02 supply to ambient. GFE INTERFACE: Depletion of the 02 primary supply would result in automatic activation of the SOP during EVA. MISSION: Termination of EVA. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crew with loss of SOP. TIME TO EFFECT /ACTIONS: Seconds. If EVA, return to the vehicle. If detected during the EMU checkout sequence, do not use EMU. TIME AVAILABLE: Seconds. TIME REQUIRED: Immediate. REDUNDANCY SCREENS:	A. Design - -1 Conrac and -2 Gulton: The external leak path for the primary oxygen pressure sensor is through a static, radial 0-seal molded from a fluorocarbon elastomer rubber. The seal groove configuration and rigidness of assembly provide squeeze under all tolerance and environmental conditions. The seal design configuration features a Teflon backup ring for prevention of gas impingement and a metal to metal interface. B. Test - Component Acceptance Test - Conrac: The primary oxygen pressure sensor is subjected to acceptance testing per ATP 51329-64 prior to shipment by the assembly vendor. This testing includes the following tests which insure there is no external leakage at the sensor port. Proof pressure testing to a pressure of 1650 psia for one minute using fixture which simulates the sensor installation in the PLSS. Calibration check of sensor to 1100 psia, nine times, using a fixture which simulates the sensor installation. Gulton: The Primary oxygen pressure sensor is subjected to acceptance testing prior to shipment by the assembly vendor. This testing includes the following tests which insure there is no external leakage at the sensor port. Proof pressure testing to a pressure of 1650 psia for one minute using fixture which simulates the sensor installation in the PLSS. Calibration check of sensor to 1100 psia, nine times, using a fixture which simulates the sensor installation. Pressure cycling sensor 0-1210 psi for 10 cycles using oxygen and a fixture which simulates the sensor installation. PDA Test - The primary oxygen sensor undergoes proof leakage and performance testing per SEMU-60-010 installation in the shear plate assembly. The item is proof tested at 1135-1180 psia for at least 5 minutes followed by a leakage test. The leakage test pressurizes the sensor and installation with a 2% helium 98% nitrogen gas mixture to 850-950 psi and a helium mass spectrometer is used to sniff for evidence of leakage. Certification Test - Certified for a useful life of 25 years (Ref. EMUM-1434). C. Inspection - Inspection: To insure proper port configuration to prevent external leakage. The detail part and assembled sensor are visually and dimensioanlly inspected to ensure it meets B/P dimensions. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, High Pressure O2 Leakage. None for EET processing.

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			A-PASS B-PASS C-PASS	F. Operational Use - Crew Response - PreEVA: When detected prior to primary 02 tank topoff, trouble shoot problem if no success, consider EMU 3 if available. EMU no go for EVA. EVA: When CWS data confirms an accelerated primary 02 use rate, terminate EVA. Training - Standard EMU training covers this mode. Operational Considerations - Flight rules define require EVA termination when minimum primary consumables remain. EVA checklist procedures verify hardware integrity and systems 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-112 PRIMARY OXYGEN PRESSURE SENSOR

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____ 3/27/02
HS - Project Engineering

Approved by: _____
NASA - SSA/SSM
ZSS

_____
HS - Reliability

_____
NASA - EMU SSM

_____
HS - Engineering Manager

_____
NASA - S & M

_____
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager