NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		111FM02		
PRIMARY OXYGEN BOTTLE, ITEM 111 ---------- SV784099-2 (2)	2/1R	External gas leakage. Failure due to fitting sealing surface damage, or O-seal material defect.	END ITEM: Oxygen leakage to ambient. GFE INTERFACE: Excessive consumption of the primary oxygen supply. The SOP is automatically activated during EVA if the suit pressure drops to 3.33 psid. MISSION: Terminate EVA. Loss of use of one EMU. Unable to charge primary 02 tank. 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. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - Bottle to manifold sealing is accomplished by a radial elastomeric O-seal. The viton elastomeric seal design configuration, dimensions and rigidness of assembly provide squeeze under all loading conditions. B. Test - Component Acceptance Test - The PLSS bottle acceptance test procedure is specified in SVHS 7811 Table 1. Tests are performed by vendor and are as follows: Para. No. — Test 4.2.3 C — Proof pressure and volumetric expansion 4.2.3 D — Helium leak test PDA Test - (Both Types) The Primary Oxygen Bottles are tested per SEMU-60-010. The bottles are leak tested by pressurizing the bottles to 850-950 psia with a mixture of 98% N2 and 2% He. A helium mass spectrometer is then used to "sniff" for evidence of leakage from the bottles. At final inspection the item is visually inspected for evidence of damage. Certification Test - Certified for a useful life of 25 years from date of manufacture (375 charge cycles max). Ref. EMUM-1478. C. Inspection - All details, gases, and test facilities are cleaned and inspected to HS3150 EM50A to preclude contamination. Details, including the 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. Radiographic inspection is performed to detect crack, voids or other irregularities in the welds and parent metal of tank as specified in SVHS 9430 Para. 3.3.7 Fracture Control. In addition, flourescent penetrant inspection to detect surface defect in the welds and parent metal of tank as specified in SVHS 9430, Para. 3.3.7 Fracture Control. Inspection of proof, leakage radiographic inspection and examination of interior surfaces are performed at vendor and monitored by Hamilton Sunstrand source inspection. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, High Pressure O2 Leakage. None for EET processing. F. Operational Use - Crew Response - PreEVA: When detected prior to primary O2 tank topoff, troubleshoot problem, if no success, consider EMU 3 if available. EMU no go for EVA. EVA: When CWS data confirms an accelerated primary O2 use rate, terminate EVA.

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		111FM02		Training - Standard EMU training covers this failure 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-111 PRIMARY OXYGEN BOTTLE

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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

Approved by: _____
NASA - SSM
LSS

_____
HS - Reliability

_____
NASA - EMU SSM

_____
HS - Engineering Manager

_____
NASA - S&MA

_____
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager