NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		314FM03		
PURGE VALVE, ITEM 314 ---------- SV787027-3 (1)	2/1R	External gas leakage. Failure, housing seal bypass leakage (1).	END ITEM: Suit gas 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. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - There are two external leakage paths; one static radial "O" ring seal, and one dynamic radial "O" seal. The "O" ring seal design configurations, dimensions, and rigidness of assembly provide seal squeeze under all loading conditions. B. Test - Component Acceptance Test: Leakage test is performed per Air-Lock ATP 9900-03. At an inlet pressure of 4.2 +/-.13 psig the maximum allowable leakage is 20 scc/hr N2 (.33 scc/min). DCM O2/H2O Manifold Assembly Acceptance Test - The DCM O2/H2O Manifold Assembly (DCM mechanical components) undergoes testing per AT-E-385. At an inlet pressure of 4.7 psid, the maximum allowable vent circuit leakage is 20.0 scc/hr O2. PDA: An external leakage test is performed per SEMU-60-015. The purge valve is pressurized to 4.2-5.2 psid with oxygen. Leakage is measured for a 10 minute test period and must not exceed 20 scc/hr. Certification: Certified for a useful life of 15 years (ref. SEMU-46-006). C. Inspection - The internal O-ring is 100% inspected by Air-Lock, Inc. The external O-ring is class I and is 100% inspected. D. Failure History - H-EMU-314-D001 (8/29/86) During purge valve acceptance test at Airlock Inc. Purge valve S/N 122 had a flow rate .05 lbs/hr higher than specified flow rate. Corrective action was to remove coating from valve orifice edge to insure a sharp edge and predictable flow characteristics. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001. Pre-Flight Final SEMU Gas Structural and Leakage. None for EET processing. F. Operational Use - Crew Response - PreEVA: Troubleshoot problem. If no success, discontinue use of EMU, consider third EMU if available. EVA: When CWS data confirms an accelerated drop in primary 02 tank pressure, terminate EVA. Special 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. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-314 PURGE VALVE

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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

Approved by: RMB _____ 7/1/02
NASA – ~~SSA~~/SSM
ES5

_____
HS - Reliability

_____
NASA - EMU/SSM

_____ for
HS - Engineering Manager

_____
NASA - S & MA

_____
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager