NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		128FM03A		
CHECK VALVE ASSEMBLY, ITEM 128 ---------- SV767699-1 (1)	2/1R	External leakage, water. Seal failure.	END ITEM: Water leakage from internal passageway to ambient. GFE INTERFACE: Depletion of the water reservoir and loss of LCVG cooling. MISSION: Terminate EVA when the water supply drops below CWS limits. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Minutes. If defog/cooling is required, open purge valve to activate SOP. TIME AVAILABLE: Minutes. TIME REQUIRED: Seconds. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - External leak is through a radial 0-ring seal (Viton). Seal dimensions and rigidness of assembly provide squeeze under all loading conditions. Fluid temperatuare and pressure are not extreme. LCG outlet water at 28.1 psid maximum. B. Test - Component Acceptance Test - An external leakage test is performed on the check valve per AT-E-127/128. With the valve pressurized to 42.8 - 44.8 psia it is submerged in water for a 5 minute minimum test period. No visible external leakage is allowed. PDA Test - A combined water circuits leakage test is run per SEMU-60-010. In this test the water circuits are pressurized to 15.7 - 15.9 psig with water for 60 minutes minimum. Leakage must not exceed 6 scc/hr. Certification Test - Certified for a useful life of 25 years (ref. EMUM1-0023). The PLSS coolant loop subsystem is certified for the 42.2 psid proof pressure because the lowest calculated safety factor for yield is 6.7 for the Item 123 at the 28.1 psid maximum operating pressure. C. Inspection - The 127/128 valve housing and cover sealing interfaces are 100% inspected to meet dimensional and surface finish requirements. The 0-seal is 100% inspected to meet dimensional and surface finish requirements. D. Failure History - H-EMU-128-D006 (04/08/99) - The O-ring between the housing bore and cover assembly was cut and twisted within the groove, creating a leak path which caused the check valve to fail external leak test. Assembly of the seal without lubrication is the probable cause of the twisting and cuts. Engineering Change 182135-276 was generated to install seal with Braycote. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Water Servicing, Leakage and Gas Removal. None for EET processing. F. Operational Use - Crew Response - EVA: Failure probably not detectable unless water is visually detected or failure message is annunciated. In either case, terminate EVA when CWS confirms loss of water. Training - Standard training covers this failure mode. Operational Considerations - RTDS allows ground monitoring of EMU systems. EVA check list procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define loss of EMU for loss of thermal control. Flight rules define water consumable redline.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-128 CHECK VALVE AND HOUSING

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____ 3/27/01
HS - Project Engineering

Approved by: _____ 4/3/01
NASA - SSA/SSM

_____
HS - Reliability

_____
NASA - EMU/SSM

_____
HS - Engineering Manager

_____
NASA - S&MA

_____
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager