

| NAME P/N QTY | CRIT | FAILURE MODE & CAUSES | FAILURE EFFECT | RATIONALE FOR ACCEPTANCE |
|--|------|---|--|--|
| ----- | | | | |
| SHEAR PLATE ASSEMBLY, ITEM 115 (PIVOTED, PLANAR) ----- SV778540-56 (1) OR (ORU) ----- SV824133-8 (1) | 2/1R | 115FM15 Bladder loop external leakage (113E to 120 Transfer Tube, 113E Test Port Cap and TPG housing) or vent loop external leakage (113 PLSS SOP transfer fitting and lower relief tube). Seal failure. | END ITEM: Primary 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 minimum. 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: Minutes. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate REDUNDANCY SCREENS: A-PASS B-PASS C-PASS | A. Design - There are 8 external leak paths through radial seals and 3 through face seals. The 0-ring seal design dimensions and the rigidness of the assembly provide squeeze under all load conditions. Oxygen temperature and pressure are not extreme, bladder loop pressure is 15 psid; vent loop pressure is 4.3 psid. B. Test - Component Acceptance Test - None. PDA Test - The O2 feedwater circuit undergoes proof and leakage testing per SEMU-60-010. Initial proof pressure testing is at 30-32 psig for 5 minutes minimum. Any retest to proof pressure is to 19-21 psig. A leak test is run using 98% N2 and 2% He. With the circuit pressurized to 14.6 - 15.7 psig, a helium sniff test must show no evidence of leakage. Certification Test - Certified for a useful life of 20 years from the date of manufacture. Successful refurbishment will extend useful life to 30 years max. (ref EMUM1-0491, EMUM1-0027). C. Inspection - 0-ring grooves are 100% inspected per drawing dimensions and surface finish. 0-rings are inspected for surface characteristics per SVHS3432; 100% for Class I and II 0-rings, and at least 1.5 AQL for Class III. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Final SEMU Gas Structural and Leakage. None for EET processing. F. Operational Use - Crew Response - Pre/PostEVA: Trouble-shoot problem. If no success, use third EMU if available. Otherwise terminate EVA. EMU is no go for EVA. EVA: When CWS data confirms an accelerated drop in primary O2 tank pressure, terminate EVA. If SOP activation is also confirmed, abort EVA. Training - Standard 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. Real Time Data Systems allows ground monitoring of EMU systems. |

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-115 SHEAR PLATE ASSEMBLY
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *J. Roman / 3/27/02*
HS - Project Engineering

Approved by: *RMB*
LSS

M. Smyth
HS - Reliability

V. Barnes
EMU

Alan Plough for RMA
HS - Engineering Manager

[Signature]
EMU

James J. Som - ul/mods
EMU

John Olin
EMU

[Signature]
EMU