NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		103FM01Y		
DUAL SEAL SCYE BEARING ASSEMBLY, ITEM 103 (1) LEFT, (1) RIGHT --- A/L 10085-03/04 (2) OR --- A/L 10134-01/02 (2) OR --- A/L 10135-01/02 (2)	3/1RA	External gas leakage (ball port or test port). Contamination, wear or deterioration of ball port plug or test port plug O-seal. Defective material; ball port or test port plug O-seal.	END ITEM: Gas leakage through test port or ball port seal. GFE INTERFACE: Opening of leakage path between ball race area and ambient. MISSION: No effect with single failure (loss of test port or ball port seal). With second failure (loss of primary seal) high O2 use. Abort EVA. CREW/VEHICLE: No effect with single failure (test port or ball port seal) or second failure (primary seal). Loss of crewperson with third failure (loss of SOP). TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS:	A. Design - The fluorosilicone O-seals mounted in the test port or ball port plug are in a static condition. Proper lead-in chamfers and radii on mating hardware components preclude damage to the O-seals during insallation. The screws are fabricated from an AMS 5737 (A286) stainless steel and procured to A.N. specifications. Loss of the screws is precluded in design by adherence to standard engineering torque requirements for screw installations. B. Test - Component Acceptance Test: The scye bearing is subjected to testing per Airlock ATP 10085 at Airlock with ILC source verification. During acceptance testing, a test port with the same size O-ring is utilized for pressure testing. No specific pressure test is conducted on the test port plug assembly. PDA: The following tests are conducted at the scye bearing level in accordance with ILC Document 0111-710112: 1. Initial leak test at 4.3 +/- 0.1 psig to verify leakage less than 4.0 scc/min. 2. Proof pressure test at 8.0 + 0.2 - 0.0 psig to verify no structural damage. 3. Post-proof pressure leak test at 4.3 +/- 0.1 psig to verify leakage less than 4.0 scc/min. 4. Final leak test at 4.3 +/- 0.1 psog to verify leakage less than 4.0 scc/min. Certification: The dual seal scye bearing successfully passed SSA certification testing (manned). Reference "15 year Certification Report for the Dual Seal Scye Bearing", ILC Document 0111-710464. C. Inspection - Components and material manufactured to ILC requirements at an approved supplier are documented from procurement through shipping by the supplier. ILC incoming receiving inspection verifies that the materials received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certification has been received which provides traceability information. The following MIP's are performed during the scye bearing assembly manufacturing process to assure the failure cause is precluded from the fabricated item: 1. Verification of presence of ball port plug, test port plug and retainer screws. 2. Visual inspection of ball port and test port plug O-seal for gouges, nicks, tears and mold imperfections. During PDA, the following inspection points are performed at the scye bearing level in accordance with ILC Document 0111-710112: 1. Inspection for cleanliness to VC level. 2. Visual inspection for damage after proof-pressure test. D. Failure History -

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			A-FAIL B-N/A C-PASS	None. E. Ground Turnaround - None for every component which is within its limited life requirements. Also, every 4 years or 229 hours of manned pressurized time, the scye bearing assembly is disassembled, cleaned, inspected, lubricated and reassembled. The bearing (at arm level) is then subjected to structural and leakage tests. F. Operational Use - Crew Response - PreEVA: No response, single failure not detectable. EVA: No response, single failure not detectable. Special Training - No 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.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-103 ARM ASSEMBLY

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

Approved by: _____
NASA - SSA/SSM

_____
HS - Reliability

_____
NASA - EMU/SSM

_____ 4/24/02
HS - Engineering Manager

_____ 6/26/02
NASA - S&MA

_____ 6/27/02
NASA - MOD

_____ 7/1/02
NASA - Crew

_____ 7-1-02
NASA - Program Manager