NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		104FM26		
BRIEF ASSEMBLY, ITEM 104 --- 0104-811071-04 (1)	2/1R	Loss of hip joint ring. Defective material.	END ITEM: Loss of primary axial restraint. GFE INTERFACE: Loads will be transferred to secondary restraint webbing. MISSION: None. CREW/VEHICLE: None with loss of primary restraint. Loss of crewman with loss of secondary webbing. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: Days. TIME REQUIRED: Hours. REDUNDANCY SCREENS: A-PASS B-N/A C-PASS	A. Design - The hip joint ring is fabricated from 17-4 stainless steel. The rings are machined, ultrasonic cleaned, passivated and either electropolished or dry hone finished. Tensile testing of the axial restraint hip joint ring demonstrated a minimum ultimate strength of 2383 lbs and a yield strength of 2146 lbs. At 4.4 psid (normal operating pressure) the S/AD limit load is 593 lbs, giving the ring a safety factor of 4.0 for ultimate and 3. 6 for yield. At 5.5 psid (max failure pressure) and 8.8 (max BTA operating pressure) the ring provides safety factors for ultimate of 4.3 and 4.9 against limit loads of 560 lbs and 483 lbs, respectively. The S/AD minimum safety factor for hardware at 4.4 psid is 2.0 for ultimate and 1.5 for yield. At both 5.5 psid and 8.8 psid the S/AD minimum safety factor for hardware is 1.5 for ultimate. B. Test - Component: Component - See Inspection. PDA Test - The following test is conducted at the LTA assembly level in accordance with ILC Document 0111-710112: Proof pressure test at 8.0 + 0.2 - 0.0 psig for a minimum of 5 minutes conducted with the TMG removed. Certification Test - The hip joint rings were successfully tested (manned) during SSA certification to duplicate 458 hours operational life (Ref. ILC Report 0111-711330). The following usage, reflecting requirements of significance to the brief, was documented during certification: Requirement / S/AD / Actual Hip Abd/Add: 458 / 1200 Hip Flex/Ext.: 1524 / 3200 Wrist Flex/Ext: 1234 / 2800 Wrist Rotation: 2466 / 6000 Don/Doff Cycles: 98 / 400 Pressure Hours: 458 / 916 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 material received is as identified in the procurement documents; that no damage has occurred during shipment; and that supplier certifications have been received which provide traceability information. In addition, ILC incoming receiving inspection performs the following functions: Verify dimensions and verify magnetic particle acceptance. During PDA, the following inspection points are performed at the LTA assembly level in accordance with ILC document 0111-710112: 1. Visual inspection for structural damage following proof pressure test.

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		104FM26		D. Failure History - None. E. Ground Turnaround - None, for every component within its limited life requirement. Every 4 years or 229 hours of manned pressurized time the lower torso restraint and bladder assembly is removed from the LTA and subjected to complete visual inspection for material degradation or damage. F. Operational Use - Crew Response - Pre/post-EVA : If not detected, no response. If detected audibly or tactily, troubleshoot problem. If no success, use spare LTA if available or terminate EVA prep. EVA : Single failure not detectable, no response. Special Training - No training specifically covers this failure mode. Operational Considerations - Not applicable.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-104 LOWER TORSO ASSEMBLY (LTA)

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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