NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		107FM17		
MULTIPLE CONNECTOR (LCVG HALF), ITEM 107 --- A/L 9693-03 (1) CLAMP --- A/L 9697-04 (1)	2/2	Fails to engage. Contamination or foreign material; Broken, bent or missing trip pin.	END ITEM: Unable to connect LCVG to HUT. GFE INTERFACE: No vent system operation. No cooling water flow. MISSION: Terminate EVA prep. Loss of use of EMU. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - The Trip Pin is machined from stainless steel (410-416) and press -fitted into the aluminum (6061 T6) housing. Almost half the 0.207" pin length is pressed into the housing. The high strength of the pin material, makes it unlikely that the pin would break during or after installation. Press fitting, high strength alloy, high hardness, and short exposed pin length are features which produce a rigid cantilever beam condition and preclude bending of the pin in service. The minimum diametric interference on the fit is 0.006 inches, thereby precluding the pin from coming out once properly installed. The spring loaded plug end seals against an "O" ring near the end of the housing sleeve to create a water tight seal. Contamination and foreign material are precluded from entering the connector and creating a non-engaging condition by the geometry of the interfacing components and the location of the O-ring. Polylube coating and smooth (63) surface finishes, together with many rounded surfaces, combine to create a surface to which contamination or foreign matter would not readily adhere. When not in use, the connector is completely enclosed by a cover that protects the interfacing parts from exposure to contamination or foreign material. This further reduces the likelihood of a failure due to contamination. B. Test - Acceptance: The MWC is subjected to testing per Airlock ATP 9693 with ILC verification. Engagement force with the HUT-side-MWC at 15 psig and the LCVG-MWC at 17.7 psig is tested with force not to exceed 30 lb. PDA: The following tests are conducted at the LCVG Assembly level in accordance with ILC Document 0111-70028J: Multiple Connector engagement force test to verify force does not exceed 30 lbs. Engagement cycling to verify the connector engagement function. Certification: The LCVG hardware was successfully tested (manned) during SSA certification to duplicate operational usage. The LCVG hardware met the S/AD requirement of 300 hardware engagements (Ref ILC EM-98-0008). C. Inspection - Components and material manufactured to ILC requirements at an Approved Supplier is documented from procurement through shipping by the supplier. ILC incoming receiving inspection verifies that the hardware received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certifications have been received which provide traceability information. The following MIP's are performed during the MWC manufacturing process to assure the failure cause is precluded from the fabricated item: Inspect for cleanliness to VC level. Verify dimensional conformance to the drawing. Verify Multiple Water Connector engagement force.

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		107FM17		

Components and material manufactured to ILC requirements at an approved supplier is documented from procurement through shipping by the supplier. ILC incoming receiving inspection verifies that the hardware received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certifications have been received which provide traceability information.

D. Failure History -
I-EMU-107--013 (1/30/90) -
The LCVG side of the MWC would not mate with the HUT side. The LCVG MWC trigger pin, which pushes in a button on the HUT-side MWC to release a spring actuated slide that locks the two halves together, was too short.
The LCVG MWC drawing (Air-Lock) does not require an inspection of the trigger pin installed height because it is a drawing reference dimension. An Air-Lock Drawing Change Notice was issued to remove the reference note from the trigger pin height and insure an inspection after the press fit installation.

E. Ground Turnaround -
Inspected per FEMU-R-001, Pre-Flight MWC Engagement Test.
Every 369 days clean and lubricate Multiple Water Connector and replace o-rings.

F. Operational Use -
Crew Response -
Pre-EVA : Troubleshoot problem using IFM tools or lacing cord, if no success, use spare LCVG if available. Otherwise, terminate EVA operations.
EVA: N/A
Special Training -
No training specifically 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 ventilation flow and thermal control.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-107 LIQUID COOLING & VENTILATION GARMENT (LCVG)

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

_____
HS - Reliability

_____ 4/24/02
HS - Engineering Manager

Approved by: _____
NASA – SSA/SSM

_____
NASA – EMU/SSM

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NASA – S&MA

_____
NASA – MOD

_____
NASA – Crew

_____ 7/4/02
NASA – Program Manager