NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		110FM03		
BITE VALVE ASSEMBLY, ITEM 110 --- 0110-24777-07 (1) DISPOSABLE IDB TUBING SUBASSEMBLY, ITEM 110 --- 0110-812729-02 (1)	2/2	Fails to retain position. IDB BITE VALVE: Defective Material: Adhesive, Velcro. Damaged valve limiting pin. DIDB Tubing subassembly: Damaged or inadequate connection to bite valve, drink tube, barb or elbow port. Defective D-barb ultrasonic weld.	END ITEM: Assembly dislodged from accessible location. GFE INTERFACE: Unable to provide crewman with potable water. MISSION: Terminate EVA. CREW/VEHICLE: Crewmember Dehydration. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - IDB: The IDB bladder assembly is fabricated from ten (10) mil, Tuftane 410 polyurethane film. This material has an ultimate tensile strength of 5381 psi and a tear strength of 444 lb./in. Bladder material fails (failing leak test) before the adhesive bond breaks. The valve silicone O-ring and diaphragm cover prevents contamination from entering the bite valve assembly. The bite valve is cleaned with alcohol to remove contamination and foreign matter. The IDB is worn inside the HUT which protects the valve from damage. Velcro on the outside of the bladder locates and secures the bite valve in place. DIDB: The disposable IDB Tubing sub-assembly is a 3 part assembly consisting of a silicon bite valve, a polyurethane drink tube and a nylon D-barb inserted into a polyethelene elbow port which is heat sealed into the bladder film interface to preclude leakage and prevent contamination. The D-barb is a 3 part assembly. A dome valve is inserted between 2 halves of the barb housing. The 2 halves are snap fit together and subsequently ultrasonically welded to retain the dome valve. The drink tube has a 60 deg. Bend heat set into the tube to position the bite valve close to the crewmember's mouth. All interfaces of the Tubing sub-assembly are friction fit. The DIDB is contained within a reusable fabric restraint that is attached to the front wall of the HUT, which protects the valve from damage. B. Test - Acceptance: Component. See inspection for acceptance. PDA: The following tests are conducted at the IDB and DIDB assembly level in accordance with ILC Document 0111-70028J (IDB) or 0111-710112 (DIDB). 1. Proof pressure leakage tested in restraining fixture to 2.0 (+0.1 -0.1) psig (IDB); 2.2-2.5 psig (DIDB). 2. Leak tested to verify no leakage through valve and hose assemblies (IDB) or DIDB tubing sub-assembly (DIDB). 3. Visual inspected to ensure no structural damage. Certification: IDB: 0110-82829-12: The IDB was successfully tested (manned) during SSA cert. to duplicate six years operational usage (Ref Cert. Test Report for the SSA, ILC Doc 0111-70027). 0110-82829-13/14: The IDB was successfully tested during certification to duplicate 6 years operational usage (Ref. Cert Test Report for the SSA, ILC Doc 0111-70027). DIDB Assembly: The DIDB was successfully tested (manned) during certification to duplicate a single usage (with safety factor). (Ref. Cert. Test Report for the DIDB, ILC Doc. 0111-712763). The DIDB assembly successfully passed S/AD requirements

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		110FM03		

including 64 actuations of the tubing sub assembly to ensure proper operation.

Requirements	S/AD	ACTUAL
Fill Cycles (using water)	1	2
Drain cycles (Bite Valve Actuation)	32	64
Instalation/Removal into Restraint	1	2
Don/Doff	1	2

C. Inspection -
IDB/DIDB:
Components and materials 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 the supplier certifications have been received which provide traceability information.

Fastener tape positioning is visually checked during in-line inspection during the manufacturing process.

During PDA, the following MIPs are performed at the IDB and DIDB assembly level in accordance with ILC Document 0111-70028J(IDB) or 0111-710112(DIDB). Visually inspected for material degradation or damage.

D. Failure History -
IDB:
None.

DIDB:
None.

E. Ground Turnaround -
All bladder assemblies:
During ground turnaround in accordance with FEMU-R-001, the IDB or DIDB restraint is subjected to structural and leakage (IDB only) tests and visual inspection for material damage or degradation. The DIDB bladder is not subjected to ground turn around since it is a disposable item.

F. Operational Use -
Crew Response:
Pre/Post EVA: Troubleshoot problem. If not successful, replace IDB/DIDB. If no replacement, terminate EVA.

Special Training: Standard EMU training covers this failure mode.

Operational Considerations -
Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-110 IN-SUIT DRINK BAG (IDB)

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

M. Snyder
HS - Reliability

L. Mumford 4/24/02
HS - Engineering Manager

Approved by: _____
NASA - SSA/SSM

5/4/02
NASA - EMU/SSM

Charles J Dargo 5/24/02
NASA - S & MA

See attachment
NASA - MOD

6/4/02
NASA - Crew

6/3/02
NASA - Program Manager

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-110 IN-SUIT DRINK BAG (IDB)

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

M. Snyder
HS - Reliability

L. Mumford 4/24/02
HS - Engineering Manager

Approved by: _____
NASA – SSA/SSM

5/4/02
NASA – EMU/SSM

Charles J Dorgo 5/24/02
NASA - S & MA

Paul S Boehm 5-29-02
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager