NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		391FM09		
JUMPER HARNESS, ITEM 391 --- SV821755-1 (1)	2/2	Electrical open in battery sense + or - line. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires, insulation breakdown, conductor severed, contact resistance.	END ITEM: Low continuity in CWS battery volage sense lines. GFE INTERFACE: Battery voltage sensor reads zero volts. BATT VDC LOW, BATT VDCC XX.X warning message issued. MISSION: False warning that battery has failed. Terminate EVA. 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 - Open circuits are minimized by the following: Each connector/adapter ring interface is locked in place to prevent rotation by a mechanical lock. #22 AWG Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are operating at 56.7% of derated temperature and wire at 89.4% of derated current. The woven Halar sheath is assembled over the internal cables to provide protection from abrasion and impact. The P3 connector backshell housing has internal edges blended smooth to prevent cable chafing. Strain relief is provided by the combination of convolute tubing, metal EMI braid , and 0.5" extra cable length. The braided items are secured by a band strap at each connector/cable interface. The convolute tubing is threaded into the connectors. Wire crimping is performed per SVHS4909 (based on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 391 harness is subjected to acceptance testing per AT-E-391 prior to final acceptance to ensure there are no workmanship problems that could cause an open or short circuit. Each connector/harness interface is subjected to a 9-lb. pull test. The insulation resistance between each conductor and the ground circuit is measured during this test to ensure there are no intermittent shorts and to verify the integrity of the harness strain relief. A continuity test is performed to measure the resistance of each circuit to ensure there are no open circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there are no shorts. PDA Test - The SSER battery sense (+) or (-) is checked during DCM PDA testing per SEMU-60-015 para. 4.0 (Electrical Testing). Certification Test - Certified for a useful life of 15 years (ref. EMU1-13-046). C. Inspection - To ensure that there are no workmanship problems which could cause an open circuit in the harness conductors, the following inspections are made: Contact crimp samples are made prior to start of crimping and at the conclusion of crimping and pull tested to ensure the crimp tooling is operating properly. All crimp terminations are inspected for defects. Harness cables and conductors are visually inspected prior to assembly to ensure there are no defects which could cause an open due to workmanship. Electrical bond test is performed to verify ground path through various points on the harness. In-process and final electrical checkout of the harness (conductor continuity, dielectric strength, and insulation resistance tests) are performed to ensure there are no open/short circuits. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Final Pre-Flight Communications. FEMU-R-001, Para. 8.2, EMU Pre-flight KSC Checkout for EET processing.

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		391FM09		F. Operational Use - Crew Response - Pre-EVA: Troubleshoot problem. Consider third EMU if available. If no success, terminate EVA prep. EVA: When battery low voltage message occurs, terminate EVA. Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-12820 defines go/no go criteria related to EMU battery power. 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-106 GLOVE ASSEMBLY

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

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HS - Reliability

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Approved by: _____
NASA – SSA/SSM

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NASA – EMU/SSM

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NASA - Crew

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