NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		392FM13		
JUMPER HARNESS, ITEM 392 ---------- SV821756-2 (1)	2/2	Electrical open in program line. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires, conductor severed, contact resistance.	END ITEM: Loss of continuity in program line. GFE INTERFACE: Loss of crew input and control of CWS. Loss of ability to acknowledge failure messages, recall stored messages and perform suit leak check. MISSION: Loss of use of one EMU. Terminate EVA. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: Minutes. TIME REQUIRED: Minutes. 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. #24 Teflon insulated wires and connector provide electrical conduction and insulation properties to prevent wire breakage and to help prevent shorting Connector pins are operating at 56.7% of derated temperature and wire at le than 1% of derated current. The woven Halar sheath is assembled over the internal cables to provide protection from abrasion and impact. Strain reli 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 connec Wire crimping is performed per SVHS4909 (based on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance tes per AT-E-392 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 bet each conductor and the ground circuit is measured during this test to ensu 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 circuit to ensure there are no open circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and th shield ground is measured to ensure there are no shorts. PDA Test - The program lines are checked during DCM PDA testing per SEMU-60-015 para. (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: Cont 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. crimp terminations are inspected for defects. Harness cables and conductors visually inspected prior to assembly to ensure there are no defects which c cause an open due to workmanship. Electrical bond test is performed to veri ground path through various points on the harness. In-process and final electrical checkout of the harness (conductor continuity, dielectric streng and insulation resistance tests) are performed to ensure there are no open/ circuits. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Tones Test. FEMU-R-001, Para 8.2, EMU Pre-flight KSC Checkout for EET processing. F. Operational Use -

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		392FM13		Crew Response - PreEVA: Trouble shoot problem, consider third EMU if avai Otherwise continue EVA prep by performing leak check manually. EVA: When detected during periodic status check, troubleshoot using RTDS. If status data valid continue EVA. Training - Standard training covers this failure mode. Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-12 defines go/no go criteria related to EMU CWS. Generic EVA Checklist, JSC- procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integ 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-392 JUMPER SIGNAL HARNESS

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

_____
HS - Reliability

_____
HS - Engineering Manager

Approved by: _____ 5/21/02
NASA – SSA/SSM
CSS

_____ 5/24/02
NASA – EMU/SSM

_____ 5/29/02
NASA - S & MA

_____ 5-30-02
NASA - MOD

_____ 6/04/02
NASA - Crew

_____ 6/3/02
NASA - Program Manager