NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		392FM03		
JUMPER HARNESS, ITEM 392 ---------- SV821756-2 (1)	2/1RB	Electrical short, +5V, -14.2V or +14.2V line to ground. Cable chafing against connector shell or shield. Improper connector strain relief, insulation resistance.	END ITEM: Short from +5V, -14.2V or +14.2V line to ground. Loss of power. GFE INTERFACE: Increase in battery power consumption. The current is limited in the DCM DC/DC converter to 1.8 +/- 0.25 amps. Shutdown of the DC/DC converter. Loss of CWS, tones and DCM display. MISSION: None for single failure. Terminate EVA with loss of DCM display, CWS and ability to monitor operational integrity of EMU. Loss of use of one EMU CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, oxygen, and low vent flow. TIME TO EFFECT	A. Design - Short circuits are minimized by the following: Each connector/adapter ring interface is locked in place to prevent rotation by a mechanical lock. #22 Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are operating at 56.7% of derate temperature and 4.68% of derated voltage, and the wire is at 14.26% or dera current. The convoluted tubing provides an additional layer of insulation t prevent shorts between the EMI braid and any internal unshielded conductors woven Halar sheath is assembled over the internal cables to provide protect from abrasion and impact. Connector pins are insulated by a polyphenylene sulfide insert. Strain relief is provided by the combination of convolute tubing, metal EMI braid , and 0.5" extra cable length. The braided items ar secured by a band strap at each connector/cable interface. The convolute tu is threaded into the connectors. Wire crimping is performed per SVHS4909 (b on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance testing per AT-E-392 prior to fi acceptance to ensure there are no workmanship problems that could cause an or short circuit. Each connector/harness interface is subjected to a 9-lb. test. The insulation resistance between each conductor and the ground circ is measured during this test to ensure there are no intermittent shorts and 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 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 +5V, -14.2V, and +14.2V lines are checked during DCM PDA testing per SE 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 a short circuit in the harness conductors, the following inspections are made: Cor 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 a short due to workmanship. Electrical bond test is performed to ver ground path through various points on the harness. In-process and final electrical checkout of the harness (conductor continuity,dielectric strengt insulation resistance tests) are performed to ensure there are no open/shor circuits. D. Failure History - None. E. Ground Turnaround -

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		392FM03		
			/ACTIONS: Minutes.	Tested per FEMU-R-001, Transducer and DCM Gage Calibration Check. FEMU-R-0 Para. 8.2, EMU Pre-flight KSC Checkout for EET processing.
			TIME AVAILABLE: Minutes.	F. Operational Use - Crew Response - PreEVA: Trouble shoot, if no success, consider third EMU if available. Otherwise, EMU is no go for EVA.
			TIME REQUIRED: Minutes.	EVA: Terminate EVA when detected by ground or during crewmember's status ch PostEVA: N/A
			REDUNDANCY SCREENS: A-PASS B-FAIL C-PASS	Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-12820 defines go/no go criteria related to CWS. Define EMU as lost if crew and ground determine insufficient CWS data available. Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Chec and 4 (EVA prep) verify hardware integrity and systems operational status p to EVA. EMU CWS provides readout on status. 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