NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		391FM02		
JUMPER HARNESS, ITEM 391 ---------- SV821755-1 (1)	2/1RB	Electrical open, warning tone or status tone 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 signal in warning tone or status tone line. GFE INTERFACE: No audible tones when activated by CWS. MISSION: Crewman would not be alerted to subsequent failures and could not properly respond with corrective action. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, oxygen, or low vent flow. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: Minutes. TIME REQUIRED: Seconds. REDUNDANCY SCREENS: A-PASS B-FAIL C-PASS	A. Design - Open circuits are minimized by the following: Each connector/adapter ring interface is locked in place by a mechanical lo prevent rotation. #24 AWG Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are operat at 56.7% of derated temperature and wire at less than 1% 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 ha internal edges blended smooth to prevent cable chafing. Strain relief is provided by the combination of convolute tubing, metal EMI braid, and 0.5" 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- B. Test - Component Acceptance Test - The 391 harness is subjected to acceptance testing per AT-E-391 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 not intermittent shorts ar verify the integrity of the harness strain relief. AC 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 dielectri strength between each conductor and the shield ground is measured to ensure there are no shorts. PDA Test- The warning tone and status tone lines are checked during DCM PDA testing p 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 the start of crimping and at the conclusion of crimping and pull tested to ensure the crimp tooling is opera properly. All crimp terminations are inspected for defects. Harness cable conductors are visually inspected prior to assembly to ensure there are no defects which could cause an open due to workmanship. Electrical bond test 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 ensu there are not open/short circuits. D. Failure History - None. E. Ground Turnaround - Tested per FEMU-R-001. Tones test.

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F. Operational Use -
Crew Response- Pre-EVA: Troubleshoot. If no success, consider third EMU
available. Otherwise, EMU go for EVA. Rely on visual monitoring of displa
messages. EVA: If detected during airlock depress, continue EVA. Rely o
visual monitoring of displayed messages.

Training- Standard EMU training covers this failure mode.

Operational Considerations -
Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128
defines go/no go criteria related to EMU CWS. Define EMU as lost if crew a
ground determine insufficient CWS data is available. Generic EVA Checklist
48023, procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware
integrity and systems operational status prior to EVA. EMU CWS provides re
on status. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-391 JUMPER POWER HARNESS

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____
HS - Project Engineering

Approved by: _____ 5/16/02
NASA – ~~SSA~~/SSM
ES5

_____
HS - Reliability

_____ 5/21/02
NASA – EMU/SSM

_____ 4/24/02
HS - Engineering Manager

_____ 5/28/02
NASA - S & MA

_____ 5-30-02
NASA - MOD

_____ 6/04/02
NASA - Crew

_____ 6/3/02
NASA - Program Manager