

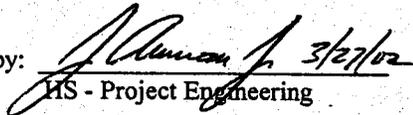
NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CAUTION AND WARNING HARNESS, ITEM 153 ----- SV789153-6 (1)	2/1RB	153FM01 Electrical short, +5V, +13.9V or - 13.9V power supply lines. Cable chafing against connector shell or shield. Improper connector strain relief.	END ITEM: Short to ground in the +5V, +13.9V or -13.9V lead. 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 voltage to Items 112, 114, 116, 121, 122, 132A, 132B, 138, 139 and 215 sensors. Loss of CWS, tones, and DCM Display. MISSION: Terminate EVA. Loss of use of one EMU. 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:	A. Design - Each connector/cable interface is strain relieved by potting the conductors in place. A rubber backshell is then molded over the connector/cable interface. Each connector/adaptor ring interface is locked in place to prevent rotation by a mechanical lock and an adhesive lock. Wire is #24 AWG, teflon coated to provide the required insulation resistance. B. Test - Component Acceptance Test - The 153 per AT-EMU-153 harness is subjected to acceptance testing prior to final acceptance testing. This testing includes the following tests which ensures there are no workmanship problems which would cause an electrical short in the +5V, +13.9V and -13.9V power supply lines. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there no shorts. Each connector/cable interface is pull tested (3 to 10 pounds, depending on connector size) to detect any workmanship problems which could cause a short circuit. PDA Test - The +5V, +13.9V and -13.9V power supply lines are functionally checked during PLSS PDA testing per SEMU-60-010, test 27.0 to ensure there are no shorts to shield ground which affect the performance of the PLSS. Certification Test - Certified for a useful life of 20 years (ref. EMUM1-0099). C. Inspection - To ensure there are no workmanship problems which would cause a short circuit in the harness conductors, the following inspections are performed: Harness cables and conductors are visually inspected prior to assembly to ensure there are no defects which could cause short to ground due to defects in the cable insulation. Connector wiring is inspected before and after potting to ensure there is no conductor damage and that the conductors are properly strain relieved and properly dressed to prevent conductor shorting to the adaptor ring. Insulation resistance and dielectric strength are measured between each conductor and shield ground to ensure there are no shorts prior to and after potting of the connectors. D. Failure History - H-EMU-153-D002 (12/15/87) nomex sheath pulled out of connector viton boot. Operation sheet changed to inspect length of nomex and to remove conformal coating in boot area to assure adhesion of boot to the sheath. H-EMU-153-D004 (1/18/93) - The CWS Electrical Harness (Item 153) connector shell broke loose from its viton boot while applying 11 in lbs of torque to the boot. The boot was incorrectly molded too far outboard on the connector shell. All

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		153FM01	Minutes. TIME REQUIRED: Minutes. REDUNDANCY SCREENS: A-PASS B-FAIL C-PASS	electrical harness connectors will now require visual inspection at the molding vendor's facility. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Transducer and DCM Gage Calibration Check. FEMU-R-001 Para 8.2 EMU Preflight KSC Checkout for EET processing. F. Operational Use - Crew Response - PreEVA: Trouble shoot, if no success, consider third EMU if available. Otherwise EMU is no-go for EVA. EVA: Terminate EVA when detected by ground or during crewmembers status check. Training - Standard EMU training covers this failure mode. Operational Considerations - Reference Loss/Failure flight rules: define EMU go/no-go criteria related to CWS. EVA checklist and FDF procedures verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

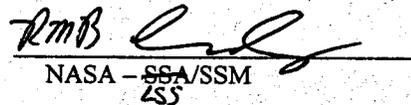
EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-153 CAUTION AND WARNING HARNESS
CRITICAL ITEM LIST (CIL)

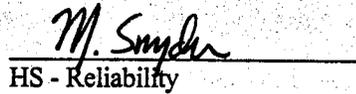
EMU CONTRACT NO. NAS 9-97150

Prepared by:


HS - Project Engineering

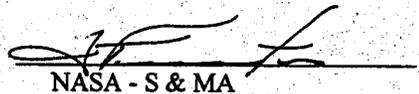
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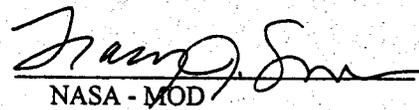

NASA - SSA/SSM
LSS

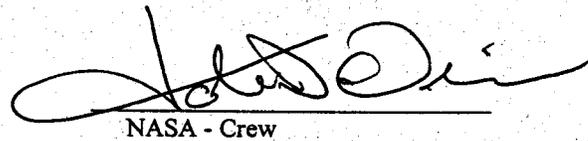

HS - Reliability

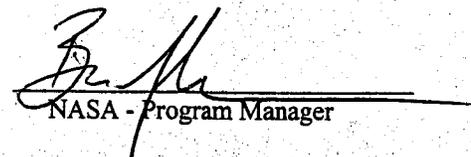

NASA - EMU/SSM


HS - Engineering Manager


NASA - S & MA


NASA - MOD


NASA - Crew


NASA - Program Manager