CIL
EMU CRITICAL ITEMS LIST

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Date: 12/12/89

09/01/89 SUPERSEDES / / ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL DIAGRAM HARNESS ITEM 152 --- SV700132-2 (1)	2/1R	152/M19: Electrical short, status line or program line. CAUSE: Cable shorting against connector shell or shield. Improper connector strain relief.	END ITEM: Short from status line or program line to ground. RPE INTERFACE: Shutdown of the DC/DC converter when switch is placed in the status or program position, loss of CWS, tones, and DCH display. MISSION: None for single failure. Terminate EVA with loss of DCH 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 crewmen with loss of CCC, vent flow, or oxygen.	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/adapter ring interface is locked in place to prevent rotation by a mechanical lock and an adhesive lock. #24 AWG Teflon coated wire provides the required insulation resistance. The conductors are bundled within a woven copper sheath over braided with a Nomex outer sheath. This ensures the cables to act together and there any loading and resist any damage from abrasion and impact. B. Test - Component Acceptance Test - The 152 harness is subjected to acceptance testing prior to final acceptance testing. This testing includes the following tests which insures there are no workmanship problems which would cause an electrical short to ground in the status line or program line. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to insure there are no shorts. Each connector/cable interface is pull tested (10 pounds) to detect any workmanship problems which could cause a short circuit. PDA Test - This circuit is not tested during PLSS PDA testing but is checked at short EMU level testing. Certification Test - This item has completed the structural vibration and shock certification requirements during 10/85. Engineering change 42806-527-2 (added connector pull test) has been incorporated and certified since this configuration was certified. C. Inspection - To insure 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 insure there are no defects which could cause

07/01/89 SUPERSEDES / / ANALYST:

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	B/R	152FM01:		a short to ground due to defects in the cable insulation. Connector wiring is inspected before and after potting to insure there is no conductor damage and that the conductors are properly strain relieved and properly dressed to prevent conductor shorting to the adapter ring. Insulation resistance and dielectric strength are measured between each conductor and shield ground to insure there are no shorts prior to and after potting of the connectors.

B. Failure History -
None. Related Failure:
M-EMU-152-A0001 (F-P-84)
During PASS Acceptance testing, all sensor outputs read full scale. A short circuit to the harness was found between Vref and ground. The short was due to improper assembly and testing by the vendor. The vendor's assembly and test procedures were revised.
A-EMU-152-002 (4-11-85)
During a pre-flight communications check, it was not possible to transmit through the right microphone on the CCA. The failure was caused by a short circuit between the right microphone power line and the cable grounding shield. The insulation on the power line has been damaged prior to the cable assembly. EC 42806-527-2 was issued to create the 50T89152-2 harness configuration by adding a connector pull test to the acceptance testing requirements.

E. Ground Turnaround -
Ground turnaround tested per FEMA-B-86).

F. Operational Use -
Pre-EVA: 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 crewmember's status check.
Training - Standard EMU training covers this failure mode.. Crewmembers are thoroughly trained in EVA termination and abort procedures using both neutral buoyancy and 1-G techniques.
Operational Considerations - Redundant loss of failure (right) audio during EMU go to standby on SCU for loss of CWS. EVA checklist and OST procedures verify hardware integrity

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	2/BR	MISSION:		and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.