NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		156FM05		
REAL TIME DATA SYSTEM HARNESS, ITEM 156 --- SV789134-2 (1)	2/2	Electrical open or short in microphone signal line. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires.	END ITEM: Open circuit or short to ground in microphone lines. GFE INTERFACE: Loss of use of microphones. MISSION: Terminate EVA with loss of other microphone line. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - Open and short circuits in any of the circuits in the Item 156 harness are minimized by the following: Conductors are hard potted in Stycast 2651 in the area that they interface the metal backshell to minimize their movement and chance of shorting to the backshell. The conductors are strain relieved at the connector/harness interface with a molded rubber backshell. This minimizes the effects of cable tension on the individual conductors. Conductors are sheathed within a woven Nomex outer layer. This holds the cables together to share any loading. Each connector/adapter ring interface is locked in place to prevent rotation by a mechanical and adhesive lock. #22 and #24 AWG Teflon insulated wires with connector contacts, crimped per SVSH4909, Class II, (based on MSFC Spec-Q-1A) provide electrical and mechanical properties to prevent wire breakage and to help prevent shorting. B. Test - Component Acceptance Test - The harness is acceptance tested per the following tests of AT-EMU-156 to insure there are no workmanship problems which would cause actual or potential open or short circuits. Pull Test - This test subjects each connector/harness interface to a specific pull test (4.5 to 7.5 pounds depending on connector size) designed to exceed stress encountered in actual use. Insulation resistance between each conductor and ground circuit is measured during the test to insure there is no shorting. The test is followed by a continuity check of each conductor path to insure there are no open circuits. Continuity Test - The resistance of each circuit is measured to insure there are no open circuits or high resistance paths. Insulation Resistance/Dielectric Strength Test - The harness is tested for short circuits or low resistance paths between each conductor to the shield circuits and between each conductor to each other conductor by insulation resistance and dielectric strength measurements at 200 VDC and 200 VAC respectively. PDA Test - An open or short circuit in the microphone line would be detected during the Audio Test portion of the PLSS PDA test per Para. 6.0 of SEMU-60-010. Certification Test - Certified for a useful life of 20 years (ref. EMUM1-0244). C. Inspection - During harness manufacturing, the following inspections are performed: Visual inspection of conductors prior to potting operations to insure there are no damaged conductors and that the conductors are routed properly. Visual inspection of the harness prior to and after rubber boot molding process to insure there are no damaged conductors which could cause an open or short circuit. In-process electrical checkout of the harness before and after potting and molding to insure there are no open or short circuits. Visual inspection of the conductors prior to application of the outer sheath to insure there are no damaged conductors that could cause an open or short circuit. Connector contact crimp samples are made prior to and after crimping and subjected to pull testing to insure the crimping tools are operating

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EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-156 REAL TIME DATA SYSTEM HARNESS

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____ 3/27/02
HS - Project Engineering

Approved by: _____
NASA – ~~SSA~~/SSM
ISS

_____
HS - Reliability

_____
NASA – EMU/SSM

_____
HS - Engineering Manager

_____
NASA - S & MA

_____
NASA - MOD

_____
NASA - Crew

_____
NASA - Program Manager