

C11
EMU CRITICAL ITEM LIST

09/07/89 SUPERSEDES 1 /

AMOUNT:

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NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL SOU HARNESS ASSEMBLY 110N 429 ----- BY77763-1 ; (3)	2/2	429P005; Electrical short, battery charge blew. EFFECT: Cable chafing against connector shell or shield, improper connector strain relief.	END ITEM: High battery power draw and electrical power supply. STE INTERSPACE: Battery discharges until the BCU current shut opens. The electrical power supply shuts down. MISSION: Loss of EMU. ENVIRONMENT: None.	A. Design - The cable/connector interfaces on either end of the electrical harness are strain relieved to prevent excessive conductor loads and possible shorting. The multiple connector end is potted with BIV and is captured within a metal housing. The vehicle connector utilizes a metal strain relief type backshell. The aircraft and BCU connector interfaces have rubber seals to prevent contamination from entering after being mated together. The wire is 429 AWG Tuffon coated to provide the required insulation resistance. Conductors are tied together at 1 to 2 inch intervals and sheathed in a cloth outer layer to hold cables together so they share any loading and to prevent impact or abrasion of conductors. B. Test - Component Acceptance Test - Insulation resistance and isolation resistance tests are performed per 8771261-5 Operation Sheets OP's 810 and 120 respectively. The insulation resistance test verifies that there is a minimum of 100 megohm resistance between any current carrying conductor and the harness shell at 500 VDC. The isolation resistance test verifies that the minimum resistance between each current carrying conductor and every other current carrying conductor is 8 megohms at 50 VDC. These tests insure no conductor is shorted to any other conductor or to the harness shell, and that no conductor has insulation damage. PDA Test - Insulation resistance and dielectric tests, are performed per 8800-44-005, tests 25.0 and 26.0 respectively to insure this item has not shorted. Certification Test - The item completed the 15 year structural vibration and shock certification requirements during 10/88. Engineering change 42004-124 (Definition of Mechanically Locked Backshell) has been incorporated and deemed to have no impact on certification since this configuration was certified.

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CIA
EMU CRITICAL EVENTS LIST

09/01/88 IMPERISHED / /

ANALYST:

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UNID	P/N	QTY	CRIT	FRAGILE CODE & CAUSES	FRAGILE EFFECT	RATIONALE FOR ACCEPTANCE
			2/2	4231HOS;		

C. Inspection -
Final inspection of the harness assembly checks face of connector for conductive contaminants. Visual inspection of conductors prior to potting operation to insure there are no damaged conductors and that the conductors are properly routed.
In-process electrical checkout of harness before and after potting to insure there are no short circuits.
Visual inspection of the conductors prior to assembly of outer sheath to insure there are no damaged conductors to cause a short circuit.

D. Failure History -
None.

E. Ground Turnaround -
Tested per PEM-8-001, Orbiter power interface and charging system functional check.

F. Operational Use -
Crew Response - Prepared to troubleshoot problem. If no success, discontinue use of EMU. Consider third EMU if available.
Training - Standard EMU training covers this failure mode.
Operational Considerations - Flight rules define go/no go criteria related to EMU battery and EMU power. EMU checkout procedures verify hardware integrity and systems operational status prior to use.