

CIL
EMU CRITICAL ITEMS LIST

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ANALYST:

NAME P/W QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
POWER MODE SELECTOR SWITCH, ITEM 366 6V773595-4 (1)	2/2	364FM16: Power switch fails in battery power position (1B). CAUSE: Contact welding caused by arcing or by exposure to vacuum, damage to switch actuator lever.	END ITEM: Switch remains in battery position when toggle placed in SCU position. SFE INTERFACE: Unable to recharge battery on affected EMU. MISSION: Do not use affected EMU. CREW/VEHICLE: None.	A. Design - Each of the three switches is sealed in a dry nitrogen filled, hermetically sealed case. The switches are per MIL-S-8805/46 with the 10 amps contacts silver plated. Microswitch contacts are rated for 10 amps. Actual current draw is 3.8 amps. The external solder terminals are designed to withstand an axial pull of 8 lbs. without degradation. Switch contacts are nickel silver to prevent oxidation of contacts. Microswitch actuator overtravel is adjusted to .007 inch minimum to ensure the common contact arm rotates completely over to the normally open contact. B. Test - Component Acceptance Test - Switch operation and continuity are verified during vendor acceptance tests. The switch is also subjected to 500 run-in cycles and an axial pull test on the handle to verify that it will not come loose during normal use. vacuum as part of the DON. In-Process Test - Operation and integrity of the switch are verified during four separate in-process tests during Initial Item 358 assembly. These tests include continuity and output voltage. The switch is cycled during these tests. PBA Test - The switch is subjected to Acceptance/PBA testing as part of item 350. Tests include continuity, operating torque, vibration, thermal cycling, and thermal vacuum. The switch is also cycled during Item 350 Acceptance/ PBA electrical functional tests. Certification Test - The item completed 5,464 inductive and 8,536 resistive cycles during 1/81 which fulfilled the cycle certification requirement of 5,464 and 8,536 respectively. Class 1 Engineering Change 42006-386 (Toggle handle pull test) has been incorporated since this configuration was certified.

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	2/2	364FHT41		<p>C. Inspection - To preclude failure due to internal contamination, the switches are assembled by the vendor in an environmentally controlled room. Assembly and process is per MIL-8-8805/46. The switches receive in-process cycling and leak checks. The entire item 364 is x-ray inspected for acceptability of brazing. The solder terminals on the switch are visually checked as part of source inspection for the part. The terminals are also inspected after lead wires are soldered on during OCM assembly. Solder joints are inspected per RHB5300.4. (3A-1).</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Tested per FEMU-R-001, EMU checkout in Orbiter V1103, EMU Performance Checks.</p> <p>F. Operational Use - Crew Response - PostEVA: Troubleshoot problem, if no success, use spare battery or other EMU to charge depleted battery. Training - Standard training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.</p>