

CIL
EMU CRITICAL ITEMS LIST

Page: 1
Date: 11/10/94

12/24/94 SUPERSEDES 12/24/92

ANALYST:

NAME P/W QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
POWER MODE SELECTOR SWITCH, ITEM 364 5V778596-4 (1)	2/2	364FM13: Switch fails in SCU position. (17). CAUSE: Contact welding caused by arcing or by exposure to vacuum, damage to switch actuator lever.	END ITEM: Switch contacts remain in SCU position when placed in battery position. OPE INTERFACE: loss of consumables monitoring capabilities by the CMS due to battery power discrete remaining off when switch is in battery position. MISSION: Terminate EVA. 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-8805/66 with the 10 amp contacts silver plated, Switch contacts rated for 10 amperes. Actual current flow is 3.8 amperes. The external solder terminals are designed to withstand an axial pull of 8 lbs. without degradation. The ball socket of the toggle pivot is greased (Braycote 601) prior to assembly. 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. In-Process Test - Operation and integrity of the switch are verified during four separate in-process tests during initial item 350 assembly. These tests include continuity and output voltage. The switch is cycled during these tests. PDA Test - The switch is subjected to Acceptance/PDA 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/PDA electrical functional tests. Certification Test - The item completed 3,664 inductive and 8,536 resistive cycles during 1/81 which fulfilled the cycle certification requirement of 3,404 and 8,536 respectively. Class I Engineering change 42806-386 (Toggle Handle Pull Test) has been incorporated since this configuration was certified. C. Inspection - To preclude failure due to internal contamination, the switches are assembled by the vendor in an environmentally controlled room. Assembly and processing is per

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	2/2	364FN13:		<p>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 are visually checked as part of source inspection for the part. The terminals are also inspected after lead wires are soldered on during DCW assembly. Solder joints are inspected per MM89300.4, (3A-1).</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Tested per FEMU-R-001, EMU Vacuum Performance, and DCW Display Verification.</p> <p>F. Operational Use - Crew Response - PreEVA: Troubleshoot problem, if no success, consider third EMU if available. Otherwise, EMU go for EVA. EVA: Continue EVA. Training - Standard training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define go/no go criteria related to EMU CMS. Real Time Data System allows ground monitoring of EMU systems.</p>