12/24/93 SUPERSEDES 12/24/91 ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
FEEDWATER VALVE SWITCH, ITEM 367 --- SV767795-3 (1)	2/2	367/M04: No power to feedwater close solenoid when switch is in the valve "CLOSE" position. CAUSE: Electrical open in the wire leads or connections; linkage mechanism fractured.	END ITEM: Feedwater switch does not send current to 137 valve close solenoid. OFE INTERFACE: Unable to close the feedwater valve. Depletion of the water reservoir during airlock repressurization. MISSION: Venting of reservoir water into airlock. Terminate EVA. CREW/VEHICLE: None.	A. Design - Switching mechanism and contacts are encased in a hermetically sealed case back-filled with dry nitrogen. Each switch position has dual contacts for redundancy. The switch is designed to withstand a toggle force of 25 lbs. without degradation in subsequent performance. Contact is accomplished through a roller type contact. This keeps switching forces to a minimum. B. Test - Component Acceptance Test - Vendor acceptance tests include 500 actuation cycles, contact resistance, and dielectric withstanding voltage tests. In-Process Test - Switch operation and continuity are verified during four separate in-process tests during DCM Item 350 assembly. PDA Test - Proper operation is verified during DCM PDA which includes continuity, functional, and operating torque tests. The switch is vibrated and exposed to thermal cycles during PDA as part of the DCM. Certification Test - The item completed the 15 year structural vibration and shock cert requirements during 10/83. The item is cycle certified by similarity to the item 368 switch which has completed 127,000 cycles during 8/85. This is 86 times the item 367 cycle cert requirement of 1,472. EC42886-999-7 added a lead to the switch for the redesigned DCM. This created the -2 switch configuration. Switch certification was not affected. C. Inspection - The external lead wires are inspected for damage as part of the source inspection for the part of the source inspection for the part and again during assembly of the DCM. To preclude failure due to internal contamination, the switches are assembled by the vendor in a Class 100,000 clean room. The switches are flushed internally using chlorothene NG and Genesolve D to remove contaminants prior to case welding.

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	2/2	367FM04:		After welding the switches are vacuum baked and back filled with GN2 to a pressure of 3-5 psig and sealed. Leak checks are performed during subsequent processing to verify seal integrity. Two x-ray inspections are performed, prior to run-in cycling and after vibration, to verify absence of weld splatter and loose pieces, and to verify contact alignment. D. Failure History - None. E. Ground Turnaround - Tested per PEMU-A-001, PLSS & DCM Electrical Checkout, 137 Activation. F. Operational Use - Crew Response - EVA: No response, single failure cannot be detected. Post EVA: Perform water dump procedures. For subsequent EVA's, consider third EMU if available. Otherwise EMU go for EVA. Training - Standard EMU 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 thermal control.