NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
DCM ELECTRONICS, ITEM 350 SV792291-27 (1)	2/2	350FM04: loss of feedwater valve (137) electrical power. CAUSE: Semiconductor or solder joint failure, broken connection, output printed circuit trace shorts to ground.	END ITEM: Loss of capability to change position of feedwater valve (137). OFE INTERFACE: Unable to place sublimator on line at the start of EVA, or to isolate the sublimator (140) at the completion of EVA. MISSION: Terminate EVA due to loss of defogging and cooling capability (see remarks). CREW/VEHICLE: None.	A. Design - Semiconductor failure is minimized through the use of high reliability components. Established reliability capacitators (Level S) and resistors (Level R) are used and qualified to the requirements of their respective MIL Spec and thermal shocked per condition B of MIL-STD-202 Method 107. The transistors and diodes are qualified to the requirements of MIL-S-19500 and receive the burn-in of JANTXV level parts per the applicable methods, 1038, 1039, and 1040, of MIL-STD-750. The Electronic components are operating requirements of SVHS 7804. The printed circuit boards are polyimide per MIL-P-13949 type GI and manufactured per SN-P-006. Parts mounting and soldering is per MSFC-STD-136 and NHB5300. 4 (3A-1). The board assemblies are hard mounted to the DCM case to provide a thermal transfer path between the board heatsinks and the case to direct heat was from the electronic components. The board assemblies are also conformal coated per MIL-A-46146 (DOW Corning RTV 3140) for environmental protection. All wiring used in the DCM is M22759/11 (Teflon insulated). Soldering is per NHB5300. 4 (3a-1) and wire crimping is per SVHS6909 (Based on MSC-SPEC-Q-1a). All wires are strain relieved. Electrical connectors are environmentally sealed to prevent damage due to contamination and humidity. B. Test - In-Process Test - The DCM electronics assembly is tested during initial build-up; at the board assembly level, after the PC boards have been interwired, after installation of the boards and wiring, and after installation of the front cover. These tests consist of continuity through the switches and wiring, voltage checks, functional check of all current limiters, and full operation of the DCM electronics. The tests insure proper operation of all electronic components. PDA Test - Vibration testing per SEMU-60-015 followed by continuity and full functional testing verifies the integrity of the solder joints and crimp connections in the DCM. The random vibration level for this test is 6.6 grms for a duration of 1 minute per axis for each of the three orthogonal axes.

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/2	350FM04:		(JSC Spec SP-T-0023) Thermal Vacuum testing followed by full functional electrical testing per SEMU-60-015 also verifies the health of the solder joints as well as the acceptability of the components. The DCM is placed in a vacuum chamber at 1 x 10-3 torr. The DCM case temperature is cycled 3 times from 70 to 130 degree F. At the end of the third cycle, the temperature is held at between 130 and 135 degrees F for a minimum of four hours. The DCM display must remain on throughout the test. This verifies proper transfer of heat from the electronics to the DCM case to prevent overheating of components. Certification Test - The Liquid Crystal Display version of the DCM electronics assembly (Item 350, SV792291-7), as part of the full DCM Item 300 (Items 350 and 385 combined), was successfully subjected to levels of vibration and shock equivalent to those experienced over a fifteen (15) year life. Random Flight Vibration 1.625 grms 4B min/axis Sinusoidal Flight Vibration 1 grms. 5-35 Hz ea. axis Design Shock 6.5 grms. 11 ms/peak The LED display version of the DCM Electronics Assembly (Item 350, SV792291-5) was subjected to certification of EMI which occurred in September of 1985. The testing verified the basic integrity and flight worthiness of the redesigned DCM configuration (Item 300, SV792294). The Item 350 completed Qualification Vibration (7.8 GRMS, 6 minutes per axis) as a separate item, and structural vibration (1.625 GRMS, 48 minutes per axis), and shock testing as part of the full DCM Item 300 (Item 350 combined with Item 385). The DCM/300 also completed the four hour thermal vacuum certification at 135 degree F and storage temperature testing at 35 degree F. No class I EC's have been incorporated into this version of the DCM since certification was completed. C. Inspection - 100% inspection of all soldering (PC Boards and wiring) by

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/2	350FN04:		Hamilton Standard QA and DCAS QA. All board assemblies are inspected for damage and contamination. All wiring is inspected for damage, nicks in the insulation, wear, and strain relief. The BCM is internally inspected after installation of the circuit boards and wiring to insure no damage has occurred during assembly. D. Failure History - None. E. Ground Turnaround - Operation of the current limiter is verified during ground turnaround per PEMU-A-001, EMU Vacuum Chamber Performance Verification. F. Operational Use - Crew Response - PREEVA: No Response, single failure undetectable by crew or ground. EVA: When CWS data confirms loss of feedwater and cooling is insufficient, terminate EVA. POSTEVA: Perform water dump procedures. For subsequent EVA's, consider third EMU if available. Otherwise EMU go for SCU without fan. Training - Standard EMU training covers this failure mode. Operational Consideration - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define go/no go criteria related to thermal control. Real time data system allows ground monitoring.