

CIL
EMU CRITICAL ITEMS LIST

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ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
BACTERIA FILTER CARTRIDGE, ITEM 425 (1) DRAIN FILTER, (1) FILL FILTER (2 PER SCU) SV784967-1	2/2	423FMO41 Restricted flow of fill line bacteria filter. CAUSE: Entrained contamination.	END ITEM: Restricted water flow path through bacteria beads. Unable to recharge water reservoir due to clogged fill-line in SCU. OPE INTERFACE: Unable to complete the EMU recharge sequence. MISSION: Loss of use of one EMU. CREW/VEHICLE: None.	A. Design - The filter cartridge is packed with iodine impregnated beads to prevent bacteria migration into the LSS. These cartridges are replaced every 12 EVAs. The bacteria filter cartridge has screen covered openings at both ends of a cylindrical bed of iodine impregnated beads. The screens have large openings, 147 microns and are designed solely for retention of the iodine impregnated beads. The total effective flow area for these openings is 0.04 square inches. Filter materials, polypropylene, Kel-F and Fluorfen ETFE or FEP Teflon and stainless steel are corrosion resistant and thus will not generate contaminant particles causing additional pressure drop. B. Test - The item is pressure drop tested for a maximum delta P of 0.95 psi at 30-35 pph H2O at the vendor after iodine bead packing. Certification: A cartridge was subjected to 15 years worth (515 pounds) of bacteria containing water (spec challenge solution) during 5/84. Throughout the test, the organism killing capability of the cartridge remained within specification requirements. Engineering Changes 42806-488 and -992 have been incorporated to extend the limited life of this item from 6 EVAs to 12 EVAs and were certified based upon actual flight usage/delta P data. Pressure drop testing of cartridges used for two EVAs showed delta P results essentially the same as cartridges drawn at random from finished stores. C. Inspection - Verification of proper iodine and quantity is accomplished during filter packing at vendor. The cleanliness of the filter is maintained to level EM150 per SVHS 3150 and the filter retained in water from the time it is originally packed. The preload spring is 100% inspected for meeting dimensional and force-displacement requirements.

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	2/2	423FM04:		<p>There are two radial seals (per cartridge) which prevent internal leakage past the filter. Both interfacing surfaces are 100% inspected to meet dimensional and surface finish requirements.</p> <p>Both O-seals are 100% inspected to meet dimensional and surface finish requirements.</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Tested per FEMU-R-801, Orbiter SCU Checkout.</p> <p>F. Operational Use - Crew Response - PostEVA (recharge): Troubleshoot problem. If no success, use other SCU to perform EMU water dump and charge. Special Training - Standard EMU training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.</p>