12/24/94 SUPERSEDES 12/24/92 ANALYST:

| NAME P/N QTY | CRIT | FAILURE MODE & CAUSES | FAILURE EFFECT | RATIONALE FOR ACCEPTANCE |
|---|---|---|---|---|
| COMMON MULTIPLE CONNECTOR, ITEM 418<br>SV778872-18<br>(1) | 2/2 | 418FM04:<br>External leakage, coupled, cooling water (there are two couplings: one inlet and one outlet).<br><br>CAUSE:<br>Failure, coupling O-seal bypass leakage, defective interfacing dynatube line or line fitting leakage. | END ITEM:<br>Water leakage to ambient.<br><br>SFE INTERFACE:<br>Depletion of the vehicle water reservoir.<br><br>MISSION:<br>Terminate EVA. Unable to use one EMU during airlock activity.<br><br>CREW/VEHICLE:<br>None. | A. Design -<br>The coupled cooling water supply fittings each have four potential external leakage paths. Two paths are blocked by single, static, radial O-seals. The third leakage path contains three radial O-seals which slide axially along sealing surfaces during coupling and uncoupling. A combination of two seals must leak before this leakage paths develops. The O-rings seal design configuration and rigidness of assembly provide squeeze under all loading conditions of the elastomeric seals.<br><br>The fourth leakage path is by a Dynatube fitting joint at the flex hose to SCU connector oxygen elbow. These fittings are required to have a 32 micro-inch maximum circular lap surface finish to preclude leakage.<br><br>B. Test -<br>Component Acceptance:<br>Airlock Inc. ATP 9902-03 requires that at 22.5 + .5 psig (H20) "In" Cooling Water, the maximum allowable external leakage is .15 cc/hr. At 22.5 + 0 .5 psig (H20) "Out" Cooling Water, the maximum allowable external leakage is 0.15 cc/hr.<br><br>PQA:<br>A leakage test is performed per SEMU-60-015. The multiple connector (with cooling lines attached)is mated, and pressurized with water to 21.5-24.5 psig. Leakage is monitored for 60 minutes minimum. No evidence of external leakage is allowed.<br><br>Certification:<br>The item completed 4600 mate/demate cycles to the I-330 multiple connector during 8/85 which fulfills the cycle certification requirement of 1,495. The item completed proof pressure testing to 60 psig and was analyzed for acceptability to burst pressures during 1/82. Class I Engineering Change 42806-091 (elimination of the possibility of SCU handle set screws loosening) has been incorporated and certified by analysis/similarity since this configuration was certified. |

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| | 2/2 | 410FM04: | | C. Inspection -<br>The "O" seals and metal sealing surfaces are 100% inspected by Airlock, Inc. for surface characteristics.<br><br>D. Failure History -<br>None.<br><br>E. Ground Turnaround -<br>Tested per FEMU-R-001, V1103-02 EMU Checkout in Orbiter.<br><br>F. Operational Use -<br>Crew Response -<br>Pre/PostEVA: Troubleshoot problem. If no success, discontinue use of SCU. Operate EMU on battery power. Consider sharing other SCU for cooling and O2 if battery constraints permit. Consider in-suit battery swap using spare battery(s).<br>Special Training - Standard EMU training covers this failure mode.<br>Operational Considerations - At least one spare EMU battery is manifested for each flight. EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. |