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 CRITICAL ITEMS LIST  
 FILE: CIL2/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL POWER HARNESS ITEM IS1 SV749151-6 111	2/2	IS1/HS1: ELECTRICAL OPEN OR SHORT FEEDWATER OPEN/CLOSE LINES.  CAUSE: CABLE CHAFING AGAINST CONNECTOR SHELL OR SHIELD. IMPROPER CONNECTOR STRAIN RELIEF. FAULTY CONNECTION BETWEEN THE CONNECTOR AND THE LEAD WIRES.	END ITEM: ELECTRICAL OPEN OR SHORT TO GROUND IN FEEDWATER OPEN/CLOSE LINES. THESE LINES ARE CURRENT LIMITED TO .7 / .2 AMPS ON THE DCV.  OFC INTERFACE: LOSS OF POWER TO IS1 VALVE. UNABLE TO CHANGE POSITION OF FEEDWATER VALVE (137). IF CLOSED, NO COOLING OR DEMINERALIZATION AVAILABLE.  MISSION: PERHINTAR EVA. LOSS OF EPW.  CREW/VEHICLE: NONE FOR SINGLE FAILURE.	A. DESIGN - OPEN AND SHORT CIRCUITS IN ANY OF THE CIRCUITS IN THE ITEM IS1 HARNESS ARE MINIMIZED BY THE FOLLOWING: CONDUCTORS ARE FIBER FORTED IN STYCAST ZAG1 IN THE AREA THAT THEY INTERFACE THE METAL BACKSHELLS TO MINIMIZE THEIR MOVEMENT AND CHANCE OF SHORTING TO THE BACKSHELL. THE CONDUCTORS ARE STRAIN RELIEVED AT THE CONNECTOR/HARNESS INTERFACE WITH A MOLDED RUBBER BACKSHELL. THIS MINIMIZES THE EFFECTS OF CABLE TENSION ON THE INDIVIDUAL CONDUCTORS. CONDUCTORS ARE STRENGTHENED WITHIN A MESHED NYLON OUTER LAYER. THIS HOLDS THE CABLES TOGETHER TO SHARE ANY LOADING. EACH CONNECTOR/ADAPTER RING INTERFACE IS LOCKED IN PLACE TO PREVENT ABRIATION BY A MECHANICAL AND ADHESIVE LOCK. R22 AND R24 AND TEFION INSULATED WIRES PROVIDE ELECTRICAL AND MECHANICAL PROPERTIES TO PREVENT WIRE BREAKAGE AND TO HELP PREVENT SHORTING. WIRE CRIMPING IS PER SV749151-6 BASED ON MS7C-SPEC-B-2A1.  B. TEST - COMPONENT ACCEPTANCE: THE HARNESS IS ACCEPTANCE TESTED PER THE FOLLOWING TESTS OF AT-RHW-153 TO ENSURE THERE ARE NO WORKMANSHIP PROBLEMS WHICH WOULD CAUSE ACTUAL OR POTENTIAL OPEN OR SHORT CIRCUITS. PULL TEST - THIS TEST SUBJECTS EACH CONNECTOR/HARNESS INTERFACE TO A SPECIFIC PULL TEST 19 POUNDS DESIGNED TO EXCEED ANY STRESS ENCOUNTERED IN ACTUAL USE. THE INSULATION RESISTANCE BETWEEN EACH CONDUCTOR AND THE GROUND CIRCUIT IS MEASURED DURING THE TEST TO ENSURE THERE IS NO SHORTING. THE TEST IS FOLLOWED BY A CONTINUITY CHECK OF EACH CONDUCTOR PATH TO INSURE THERE ARE NO OPEN CIRCUITS. CONTINUITY TEST - THE RESISTANCE OF EACH CIRCUIT IS MEASURED TO ENSURE THERE ARE NO OPEN CIRCUITS OR HIGH RESISTANCE PATHS. INSULATION RESISTANCE/DIELECTRIC STRENGTH TESTING - THE HARNESS IS TESTED FOR SHORT CIRCUITS OR LOW RESISTANCE PATHS BETWEEN EACH CONDUCTOR TO THE SHIELD CIRCUITS AND BETWEEN EACH CONDUCTOR TO EACH OTHER CONDUCTOR BY INSULATION RESISTANCE AND DIELECTRIC STRENGTH MEASUREMENTS AT 200 VDC AND 200 VAC RESPECTIVELY.

CRITICAL ITEMS LIST  
FILE: C217/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL POWER HARNESS (ITEM 15) SV789151-9 (1)	2/2	IDENTIFY: ELECTRICAL OPEN OR SHORT FEEDWATER OPEN/CLOSE LINES.		<p>PDA TEST - AN OPEN OR SHORT CIRCUIT IN THE FEEDWATER OPEN/CLOSE LINES WOULD BE DETECTED DURING THE FEEDWATER USE FLOW RATE PORTION OF PLSA TESTING PER PARA. 81.0 OF SEMI-60-080.</p> <p>CERTIFICATION TEST - THIS ITEM COMPLETED THE 25 YEAR STRUCTURAL VIBRATION AND SHOCK CERTIFICATION REQUIREMENT DURING 10/83. EC'S 42804-577-2 (INSULATION RESISTANCE CHECK DURING PULL TEST) AND 42806-865 (REMOVE CRIMP SPLICES) HAVE BEEN INCORPORATED AND CERTIFIED BY TEST SINCE THIS CONFIGURATION HAS CERTIFIED.</p> <p>C. INSPECTION - DURING HARNESS MANUFACTURING, THE FOLLOWING INSPECTIONS ARE PERFORMED: VISUAL INSPECTION OF CONDUCTORS PRIOR TO POTTING OPERATIONS TO INSURE THERE ARE NO DAMAGED CONDUCTORS AND THAT THE CONDUCTORS ARE ROUTED PROPERLY. VISUAL INSPECTION OF THE HARNESS PRIOR TO AND AFTER RUBBER BODY HOLDING PROCESS TO INSURE THERE ARE NO DAMAGED CONDUCTORS WHICH COULD CAUSE AN OPEN OR SHORT CIRCUIT. IN-PROCESS ELECTRICAL CHECKOUT OF THE HARNESS BEFORE AND AFTER POTTING AND HOLDING TO INSURE THERE ARE NO OPEN OR SHORT CIRCUITS. VISUAL INSPECTION OF THE CONDUCTORS PRIOR TO APPLICATION OF THE OUTER SHEATH TO INSURE THERE ARE NO DAMAGED CONDUCTORS THAT COULD CAUSE AN OPEN OR SHORT CIRCUIT. CONNECTION CONTACT CRIMP SAMPLES ARE MADE PRIOR TO AND AFTER CRIMPING AND SUBJECTED TO PULL TESTING TO INSURE THE CRIMPING TOOLS ARE OPERATING PROPERLY. THIS INSURES THERE WILL NOT BE ANY HIGH RESISTANCE PROBLEMS AT THE CONTACTS.</p> <p>D. FAILURE HISTORY - THE FOLLOWING RDR'S WERE ISSUED FOR ITEM 15B DUE TO OPEN CIRCUITS: W-614-261-0001 (7-8-85) INTERMITTENT OPEN DUE TO A BROKEN WIRE AT THE P12 CONNECTOR DURING ACCEPTANCE TESTING. THIS FAILURE WAS CAUSED BY A MANUFACTURING PROBLEM. THE CORRECT ACTION TAKEN WAS TO ADD A VISUAL INSPECTION PRIOR TO EXPOUND.</p>

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CEL  
CRITICAL ITEM LIST  
FILE: CH17/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL POWER HARNESS ITEM 161 SV709161-4 11)	2/2	BSIFML21 ELECTRICAL OPEN OR SHORT FLEXIONATED OPEN/CLOSE LINES.		<p>D. FAILURE HISTORY - (CONTINUED) H-EMU-161-000X (12-12-83) INTERMITTENT OPEN DUE TO A BROKEN WIRE AT THE P3 CONNECTOR DURING ACCEPTANCE TESTING DUE TO A WORKMANSHIP PROBLEM. THE CORRECTIVE ACTION TAKEN WAS TO ISSUE EC 42004-627 WHICH FIXES THE ANGULAR LOCATION OF THE P3 ADAPTER RING SLOT TO INSURE PROPER WIRE EXIT AND EC 42804-627-2 WHICH REQUIRES THAT A PULL TEST BE PERFORMED TO DETECT OPENS OR SHORTS.</p> <p>THE FOLLOWING ROR'S WERE ISSUED FOR ITEM 161 FAILURES CAUSED BY SHORT CIRCUITS: H-EMU-161-000X 10-27-83 SHORT CIRCUIT BETWEEN A P3 CONNECTOR CONDUCTOR AND THE ADAPTER RING CAUSED BY AN IMPROPER REMARK THAT ROTATED THE CONNECTOR ADAPTER RING/CONNECTOR ASSEMBLY 20 DEGREES RELATIVE TO THE MOLDED RUBBER FORM. THIS FORCED THE CONDUCTORS AGAINST THE ADAPTER RING SLOP EDGE AND A SHORT CIRCUIT RESULTED. CORRECTIVE ACTION: EC'S 42004-627 AND 627-2 HAVE BEEN ISSUED TO SPECIFY AN ANGULAR LOCATION REQUIREMENT BETWEEN THE ADAPTER RING SLOT AND THE MASTER KEYWAY TO PULL TEST EACH CONNECTOR/HARNESS INTERFACE. J-EMU-161-004 AND J-EMU-161-005 (12-12-83) - BOTH FAILURES OCCURRED DURING AND ETR AIRLOCK SUPPLY FUNCTIONAL TEST. THE FAILURE WERE CAUSED BY A SHORT CIRCUIT BETWEEN THE EVC POWER/BATTERY SENSE (+) LINE AND CASE GROUND (CONNECTOR BODY). THE FAILURE CAUSED THE SILENT RETURN LINE IN THE OCM TO FUSE OPEN. THE FAILURE INVESTIGATION FOUND THAT A CRIMP SPLICE WITHIN THE MOLDED BACKSHELL WAS NOT SUFFICIENTLY COVERED BY SHRINK TUBING. THE EXPOSED PORTION OF THE CRIMP WAS ALLOWED TO COME IN CONTACT WITH THE CONNECTOR BODY. CORRECTIVE ACTION: CLASS 3 EC 42004-617-2 CREATED THE SV709161-3 HARNESS CONFIGURATION BY ADDING A CONNECTOR PULL TEST REQUIREMENT TO THE ACCEPTANCE TEST REQUIREMENTS. CLASS 1 EC 42804-646 CREATED THE SV709161-4 HARNESS CONFIGURATION BY ELIMINATING THE BAD CRIMP SPLICES INT CH P3 CONNECTION. TO PREVENT THEM FROM SHORTING TO CASE.</p> <p>E. GROUND BUSHINGS - TESTED PER FEMU-N-008, ITEM 137 (REGONATED VALVE) ACTIVATION.</p>
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CRF ITEMS LIST  
FILE: CIL7/E

NAME P/N QTY	CRIF	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
ELECTRICAL POWER HARNESS ITEM 151 SV709161-4 111	2/2	ISSUES: ELECTRICAL OPEN OR SHORT OPEN/WATER OPEN/CLOSE LINES.		<p>F. OPERATIONAL USE - CATH RESPONSE - PRE-EVA: TROUBLESHOOT PROBLEM. CONSIDER THIRD ERM IF AVAILABLE. IF NO SUCCESS, CONTINUE EVA PREP. EVA: WHEN CMS DATA CONFIRMS LOSS OF SUBLIMATOR PRESSURE DUE TO FAULTED CLOSED VALVE AND COOLING IS NOT ADEQUATE, TERMINATE EVA. WHEN FAULTED OPEN VALVE IS DETECTED BY WATER IN AIRLOCK DURING REPRESS, PERFORM WATER DUMP OF REEMATER TANKS. CONSIDER VACUUM WATER RECHARGE PRIOR TO SUBSEQUENT EVA.</p> <p>TRAINING - STANDARD TRAINING COVERS THIS FAILURE MODE. OPERATIONAL CONSIDERATIONS - EVA CHECKLIST PROCEDURES VERIFY HARNESS INTEGRITY AND SYSTEM OPERATIONAL STATUS PRIOR TO EVA. REAL TIME DATA SYSTEM ALLOWS GROUND MONITORING OF ERM SYSTEMS. FLIGHT RULES DEFINE DOWN TO CRITERIA RELATED TO ERM THERMAL CONTROL.</p>

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