

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: INTERNAL SYSTEM

SYSTEM: MECHANICAL ARM SUBSYSTEM  
ASS'Y P/N: 511401657 SHEET: 1

ITEM REF.	REV.	NAME QTY & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	MODE / FUNC. 2/1RAD CRITICALITY	RATIONALE FOR ACCEPTANCE
4330	1	HEATER BUS/ FUSES. QTY-2 FOR E/E 5114001470-1	<p>MODE: LOSS OF POWER TO ONE OF HEATER GROUPS.</p> <p>CAUSE(S): (1) OPEN WIRE. (2) SHORT CIRCUIT TO GROUND. (3) SHORT CIRCUIT HEATER OR HEATER CONNECTIONS. (4) BLOWN FUSE.</p>	<p>IF FAILED SYSTEM SELECTED. HEATER POWER LOST. ARM WILL COOL DOWN. JOINT BEARING MAY BIND. (SLUGGISH JOINT)</p> <p>WORST CASE</p> <p>LOSS OF MISSION. SUBSEQUENT FAILURE MAY RESULT IN UNEXPECTED MOTION. SLUGGISH JOINT. UNANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING</p> <p>OTHER SYSTEM HEATING GROUP</p>	<p>DESIGN FEATURES</p> <p>THE BASIC DESIGN FEATURES, OF THE SRMS HEATERS, ARE IDENTICAL TO THE ORGITER HEATERS DEFINED BY ROCKWELL SPECIFICATIONS MC343-0024, -0031, AND -0037. THE SPECIFIC FEATURES FOR SRMS USE (SHAPE, SIZE, ELEMENT RESISTANCE) ARE DEFINED BY SPAN-DC.459/000.</p> <p>CONNECTION, TO THE HEATER ELEMENT, IS BY MEANS OF A PAIR OF TEFLOM-INSULATED WIRES. IN GENERAL, THESE WIRES ARE TERMINATED IN CRIMP-STYLE CONTACTS AND THE CONTACTS ARE INSERTED BY BRUSH BLOCK CONNECTORS. WHERE NECESSARY TO TERMINATE A WIRE DIRECTLY AT A THERMAL SWITCH, CONNECTIONS ARE MADE BY SOLDER JOINT. ALL SOLDER JOINTS ARE COVERED WITH SOLITHANE TO PRECLUDE SHORT CIRCUITS. ALL WIRE BUNS ARE STRAPPED AT INTERVALS TO ENSURE NO RELATIVE MOTION DUE TO VIBRATION/SHOCK.</p> <p>THE HEATER SYSTEMS ARE DUPLICATED AND OPERABLE IN STANDBY REDUNDANCY.</p> <p>FUSES USED IN THE SHOULDER FUSE PLUG ASSEMBLIES ARE OF THE DESIGN DEFINED BY NSIC SPECIFICATION 40N30259. FOR SRMS APPLICATION, DESIGN AND PROCESS IMPROVEMENTS HAVE BEEN NEGOTIATED WITH, AND IMPLEMENTED BY, THE MANUFACTURER. THESE INCLUDE:</p> <ul style="list-style-type: none"> <li>- IMPROVED ATTACHMENT OF END CAPS.</li> <li>- CONTROL OF FUSE ELEMENT LENGTH AND DISPOSITION WITHIN THE FUSE BODY TUBE.</li> <li>- CONTROL SOLDERING BETWEEN FUSE ELEMENT AND THE END CAPS.</li> </ul> <p>PRIOR TO ASSEMBLY IN THE FUSE PLUG ASSEMBLY, A CONNECT PIN IS SOLDERED TO EACH OF THE FUSE LEAD WIRES. THIS PROCESS IS CONTROLLED BY ESTABLISHED PROCEDURES WHICH INCLUDE THE REQUIREMENT OF A "METERED" QUALITY OF SOLDER FOR EACH SOLDER JOINT. THE FUSE BODY AND LEAD WIRES ARE SLEEVED TO PRECLUDE SHORT CIRCUITS. EACH FUSE AND ALL SOLDERED JOINTS ARE SUBJECTED TO RADIOGRAPHIC INSPECTION.</p> <p>THE FUSE PLUG ASSEMBLY INCLUDES AN ALUMINUM POTTING SHELL. FOLLOWING INTEGRATION OF THE FUSES, THE CONNECTOR ASSEMBLY IS POTTED USING A SEMI-RESILIENT (RTV) COMPOUND. THE POTTING MEDIUM PROVIDES GOOD HEAT TRANSFER AND ENSURES MECHANICAL STABILITY OF THE INDIVIDUAL FUSES.</p>	

PREPARED BY: HLWG SUPERSEDING DATE: 18 OCT 88 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**CRITICAL ITEMS LIST**

PROJECT: SHS  
 ASS'Y NOMENCLATURE: THERMAL SYSTEM

SYSTEM: MECHANICAL ARM SUBSYSTEM  
 ASS'Y P/N: 511401470

SHEET: 6

ITEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	MODE / FUNC. 2/1RAB CRITICALITY	RATIONALE FOR ACCEPTANCE
4330	1	HEATER BUS/ FUSES. QTY-2 FOR E/E 511401470-1	<p>MODE: LOSS OF POWER TO ONE OF HEATER GROUPS.</p> <p>CAUSE(S): (1) OPEN WIRE. (2) SHORT CIRCUIT TO GROUND. (3) SHORT CIRCUIT HEATER OR HEATER CONNECTIONS. (4) BLOWN FUSE.</p>	<p>IF FAILED SYSTEM SELECTED. HEATER POWER LOST. ARM WILL COOL DOWN. JOINT BEARING MAY BIND. (SLUGGISH JOINT)</p> <p>WORST CASE ----- LOSS OF MISSION. SUBSEQUENT FAILURE MAY RESULT IN UNEXPECTED MOTION. SLUGGISH JOINT. UNANNOUNCATED.</p> <p>REDUNDANT PARTS REMAINING ----- OTHER SYSTEM HEATING GROUP</p>	<p>OPERATIONAL EFFECTS ----- NONE. ONE JOINT MAY MOVE AT A SLOWER THAN COMMANDED RATE IF A PRIOR FAILURE OF THE HEATER CIRCUIT HAS OCCURRED. ARM DOES NOT RESPOND CORRECTLY TO COMMANDS. CREW WILL INHERENTLY COMPENSATE IN MANUAL AUGMENTED MODE.</p> <p>CREW ACTION ----- APPLY BRAKES</p> <p>CREW TRAINING ----- CREW WILL BE TRAINED TO RECOGNIZE IF THE ARM IS RESPONDING CORRECTLY TO COMMANDS.</p> <p>MISSION CONSTRAINT ----- OPERATE UNDER VERNIER RATES WITHIN 10 FT OF STRUCTURE. AUTO TRAJECTORIES MUST BE DESIGNED TO COME NO CLOSER THAN 5 FT FROM STRUCTURE. THE OPERATOR MUST BE ABLE TO DETECT THAT THE ARM IS RESPONDING PROPERLY TO COMMANDS VIA WINDOW AND/OR CCTV VIEWS DURING ALL ARM OPERATIONS. BOTH HEATER POWER BUSES TO BE IN AUTO WHEN OPERATING ARM.</p> <p>SCREEN FAILURES ----- A: INDEPENDENT THERMOSTATS ARE NOT ACCESSIBLE, ARE NOT INSTRUMENTED AND THE REDUNDANT ELEMENTS ARE STILL OPERABLE. B: REDUNDANT ELEMENTS ARE STILL OPERABLE.</p> <p>CMRS OFFLINE ----- PARTIAL CHECK WITH ELBOW DEMATED. CMRS ONLINE INSTALLATION ----- NONE CMRS ONLINE TURNDOWN ----- NONE</p>	

PREPARED BY: MFVG

SUPERSEDING DATE: 19 OCT 88

APPROVED BY: \_\_\_\_\_

RMS/MECH - 330