

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 21140E391

SHEET: 1

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: M/A A-PALS, B-PALS, C-PALS
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0's" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE. IF EE MODE CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING ----- N/A</p>	<p>DESIGN FEATURES -----</p> <p>DECODED OUTPUT ADDRESSES CONTROL THE OPERATION OF THE OUTPUT SHIFT REGISTER. THIS REGISTER COMPRISES TWO "A" TYPE CMOS DEVICES (M36510/050704).</p> <p>CMOS DEVICES OPERATE AT LOW POWER AND HENCE DO NOT EXPERIENCE SIGNIFICANT OPERATING STRESSES. THE TECHNOLOGY IS MATURE, AND DEVICE RELIABILITY HISTORY IS WELL DOCUMENTED. ALL STRESSES ARE ADDITIONALLY REDUCED BY DERATING THE APPROPRIATE PARAMETERS IN ACCORDANCE WITH SPAR-RMS-PA.003. SPECIAL HANDLING PRECAUTIONS ARE USED AT ALL STAGES OF MANUFACTURE TO PRECLUDE DAMAGE/STRESS DUE TO ELECTROSTATIC DISCHARGE.</p> <p>EEE PARTS HAVE BEEN SELECTED AND CONTROLLED IN ACCORDANCE WITH SPAR-RMS-PA.003. THIS DOCUMENT DEFINES THE PROGRAM REQUIREMENTS FOR MONITORING AND CONTROLLING EEE PARTS. THE REQUIREMENTS INCLUDE PARTS SELECTION TO AT LEAST "ESTABLISHED RELIABILITY" LEVELS, AND ADEQUATE DERATING OF PART STRESS LEVELS. PROCEDURES AND ACTIVITIES ARE SPECIFIED TO ENSURE AT LEAST EQUIVALENT QUALITY FOR NONSTANDARD AND IRREGULAR PARTS. RELIABILITY ANALYSIS HAS CONFIRMED NO PARTS WITH GENERICALLY HIGH FAILURE RATES. AEROSPACE DESIGN STANDARDS FOR DETAILING ELECTRONIC PARTS PACKAGING, MOUNTING AND STRUCTURAL/MECHANICAL/INTEGRITY OF ASSEMBLIES ARE APPLIED. SUCH DESIGN HAS BEEN REVIEWED AND FOUND SATISFACTORY THROUGH THE DESIGN AUDIT PROCESS, INCLUDING THE USE OF RELIABILITY MAINTAINABILITY AND SAFETY CHECKLISTS. MATERIAL SELECTION AND USAGE CONFORMS TO SPAR-SG.368 WHICH IS EQUIVALENT TO THE NASA MATERIALS USAGE REQUIREMENTS. WORST CASE ANALYSIS HAS BEEN CONDUCTED TO ENSURE THAT PERFORMANCE CAN BE MET UNDER WORST CASE TEMPERATURE AND AGING EFFECTS. EEE PARTS STRESS ANALYSIS HAS BEEN COMPLETED AND CONFIRMS THAT THE PARTS MEET THE DERATING REQUIREMENTS.</p> <p>PRINTED CIRCUIT BOARD DESIGNS HAVE BEEN REVIEWED TO ENSURE ADEQUATE CIRCUIT PATH WIDTH AND SEPARATION AND TO CONFIRM APPROPRIATE DIMENSIONS OF CIRCUIT SOLDER PADS AND OF COMPONENT HOLE PROVISIONS.</p> <p>PARTS MOUNTING METHODS ARE CONTROLLED IN ACCORDANCE WITH NSFC-STD-136 AND CAE PD93489. THESE DOCUMENTS REQUIRE APPROVED MOUNTING METHODS, STRESS RELIEF, AND COMPONENT SECURITY.</p> <p>WHERE APPLICABLE, DESIGN DRAWINGS AND DOCUMENTATION GIVE CLEAR IDENTIFICATION OF HANDLING PRECAUTIONS FOR ESD SENSITIVE PARTS.</p> <p>BOARD ASSEMBLY DRAWINGS INCLUDE THE REQUIREMENT FOR SOLDERING STANDARDS IN ACCORDANCE WITH MHB 5300.4(3A) AND JSC 08800A.</p>	<p>1) AUTOBRAKES AND EE MODE SWITCH (FOR JAWING THE SYSTEM) 2) DIRECT DRIVE AND BE MANUAL MODES. (EIE CONTINUING OPERATIONS)</p>

PREPARED BY:

MFWG

SUPERCEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 NCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 511406391

SHEET: 2

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: M/A A-PASS, B-PASS, C-PASS
1065	0	NCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES, ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE</p> <p>UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE. IF LE MODE SET TO AUTO. CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING</p> <p>N/A</p>	<p>2/12</p>	<p>ACCEPTANCE TESTS</p> <p>THE HARDWARE ITEM IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL TESTING AS PART OF THE D&C PANEL.</p> <p>0 VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1</p> <p>0 THERMAL: +100 DEGREES F TO +10 DEGREES F 2 CYCLES (9.5 HRS PER CYCLE)</p> <p>THE D&C PANEL ASSEMBLY IS FURTHER TESTED AS PART OF THE RMS SYSTEM (TP518 RMS STRONGBACK TEST AND TP552 FLAT FLOOR TEST) WHICH VERIFIES THE ABSENCE OF THE FAILURE MODE.</p> <p>QUALIFICATION TESTS</p> <p>THE D&C PANEL HAS BEEN SUBJECTED TO THE FOLLOWING QUALIFICATION TEST ENVIRONMENT:</p> <p>0 VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1</p> <p>0 SHOCK: 20G/11MS - 3 AXES (6 DIRECTION)</p> <p>0 THERMAL: 130 DEGREES F TO -23 DEGREES F (12 HRS PER CYCLE) (6 CYCLES)</p> <p>0 HUMIDITY: 95% (120 DEGREES F TO 82 DEGREES F CYCLE IN 16 HRS) 10 CYCLES TOTAL</p> <p>0 EMC: MIL-STD-461 AS MODIFIED BY SL-E-0002 (TEST CE01, CE CE03, CS01(DC/AC), CS02, CS06, RE02 (B/N), RS02, RS03, RS04) RE02 (B/N) RS02, 03, 04)</p> <p>FLIGHT CHECKOUT</p> <p>PDRS OPS CHECKLIST (ALL VEHICLES) JSC 16987</p>

1) AUTO BRAKES AND LE MODE SWITCH (FOR SAFING THE SYSTEM)
 2) DIRECT DRIVE AND EE MANUAL MODES

EXPEDITE PROCESSING

5040237A
 ATTACHMENT -
 PAGE 64 OF 471

PREPARED BY: MFVG

SUPERCEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 21140E391

SHEET: 3

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS , B-PASS, C-PASS
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE. CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING ----- N/A:</p>	<p>QA/INSPECTIONS -----</p> <p>EEE PARTS INSPECTION IS PERFORMED AS REQUIRED BY SPAR-RMS-PA.003. EACH EEE PART IS QUALIFIED AT THE PART LEVEL TO THE REQUIREMENTS OF THE APPLICABLE SPECIFICATION. ALL EEE PARTS ARE 100% SCREENED AND BURNED IN, AS A MINIMUM, AS REQUIRED BY SPAR-RMS-PA.003, BY THE SUPPLIER. ADDITIONALLY, EEE PARTS ARE 100% RE-SCREENED IN ACCORDANCE WITH REQUIREMENTS, BY AN INDEPENDENT SPAR APPROVED TESTING FACILITY. DPA IS PERFORMED AS REQUIRED BY PA.003 ON A RANDOMLY SELECTED 5% OF PARTS, MAXIMUM 5 PIECES, MINIMUM 3 PIECES FOR EACH LOT NUMBER/DATE CODE OF PARTS RECEIVED.</p> <p>WIRE IS PROCURED TO SPECIFICATION MIL-W-22759 OR MIL-W-81381 AND INSPECTED AND TESTED TO NASA JSC8080 STANDARD NUMBER 95A.</p> <p>RECEIVING INSPECTION VERIFIES THAT ALL PARTS RECEIVED ARE AS IDENTIFIED IN THE PROCUREMENT DOCUMENTS, THAT NO PHYSICAL DAMAGE HAS OCCURRED TO PARTS DURING SHIPMENT, THAT THE RECEIVING DOCUMENTS PROVIDE ADEQUATE TRACEABILITY INFORMATION AND SCREENING DATA CLEARLY IDENTIFIES ACCEPTABLE PARTS.</p> <p>PARTS ARE INSPECTED THROUGHOUT MANUFACTURE AND ASSEMBLY AS APPROPRIATE TO THE MANUFACTURING STAGE COMPLETED. THESE INSPECTIONS INCLUDE,</p> <p>PRINTED CIRCUIT BOARD INSPECTION FOR TRACK SEPARATION, DAMAGE AND ADEQUACY OF PLATED THROUGH HOLES,</p> <p>COMPONENT MOUNTING INSPECTION FOR CORRECT SOLDERING, WIRE LOOPING, STRAPPING, ETC. OPERATORS AND INSPECTORS ARE TRAINED AND CERTIFIED TO NASA MHB 5300.4(JA) STANDARD, AS MODIFIED BY JSC 08800A.</p> <p>CONFORMAL COATING INSPECTION FOR ADEQUATE PROCESSING IS PERFORMED USING ULTRAVIOLET LIGHT TECHNIQUES.</p> <p>POST P.C. BD. INSTALLATION INSPECTION, CLEANLINESS AND WORKMANSHIP (SPAR/GOVERNMENT REP. MANDATORY INSPECTION POINT)</p> <p>P.C. BD. INSTALLATION INSPECTION, CHECK FOR CORRECT BOARD INSTALLATION, ALIGNMENT OF BOARDS, PROPER CONNECTOR CONTACT MATING, WIRE ROUTING, STRAPPING OF WIRES ETC.,</p> <p>PRE-TEST INSPECTION OF D&C PANEL ASSY INCLUDES AN AUDIT OF LOWER TIER INSPECTION COMPLETION, AS BUILD CONFIGURATION VERIFICATION TO AS DESIGN ETC. (SPAR/GOVERNMENT REP. MANDATORY INSPECTION POINT)</p> <p>A TEST READINESS REVIEW (TRR) WHICH INCLUDES VERIFICATION OF TEST PERSONNEL, TEST DOCUMENTS, TEST EQUIPMENT CALIBRATION/ VALIDATION STATUS AND HARDWARE CONFIGURATION IS CONVENED BY QUALITY ASSURANCE IN CONJUNCTION WITH ENGINEERING, RELIABILITY CONFIGURATION CONTROL SUPPLIER AS APPLICABLE, AND THE GOVERNMENT REPRESENTATIVE, PRIOR TO THE START OF ANY FORMAL TESTING (ACCEPTANCE OR QUALIFICATION).</p> <p>ACCEPTANCE TESTING (AIP) INCLUDES AMBIENT PERFORMANCE,</p>	

1) AUTOBRAKES AND EE MODE SWITCH (FOR SAFING THE SYSTEM)
 2) DIRECT DRIVE AND EE MANUAL MODES (FOR CONTINUING OPERATIONS)

PREPARED BY: MFWG

SUPERCEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MCIU INSTALL D)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 51140E391

SHEET: 4

FMEA REF.	FMEA REV.	NAME QTY & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: NA A-PASS, B-PASS, C-PASS
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE, IF EE MODE SET TO AUTO. CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING</p>	<p>HMWR / FUNC. CRITICALITY</p>	<p>THERMAL AND VIBRATION TESTING, (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT).</p> <p>INTEGRATION OF D&C PANEL, RHC, TNC AND MCIU, INSPECTIONS ARE PERFORMED AT EACH STAGE OF INTEGRATION, WHICH INCLUDES GROUNDING CHECKS, INTER CONNECT CABLE VERIFICATION, CONNECTOR INSPECTION FOR BENT OR PUSHBACK CONTACTS ETC.</p> <p>SUB-SYSTEM PERFORMANCE TESTING (ATP), INCLUDES AN AMBIENT PERFORMANCE TEST. (MANDATORY INSPECTION POINT).</p> <p>SRMS SYSTEMS INTEGRATION, THE INTEGRATION OF MECHANICAL ARM SUBASSEMBLIES AND THE FLIGHT CABIN EQUIPMENT TO FORM THE SRMS. INSPECTIONS ARE PERFORMED AT EACH PHASE OF INTEGRATION WHICH INCLUDES GROUNDING CHECKS, THRU WIRING CHECKS, WIRING ROUTING, INTERFACE CONNECTORS FOR BENT OR PUSH BACK CONTACTS ETC.</p> <p>SRMS SYSTEMS TESTING - STRONGBACK AND FLAT FLOOR AMBIENT PERFORMANCE TEST. (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT)</p>

1) AUTOBRAKES AND EE MODE SWITCH (FOR SAFING THE SYSTEM)
 2) DIRECT DRIVE AND EE MANUAL MODES

EXPEDITE PROCESSING

5040237A
 ATTACHMENT
 PAGE 66 OF 47

PREPARED BY: MFNG SUPERCEDING DATE: NONE DATE: 11 JUL 91 CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 51140E391

SHEET: 5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: #A A-PASS, B-PASS, C-PASS
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE IF EE MODE SET TO AUTO. CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING</p> <p>-N7A-</p>	<p>FAILURE HISTORY ----- THERE HAVE BEEN NO FAILURES ASSOCIATED WITH THIS FAILURE MODE ON THE SRMS PROGRAM.</p>	<p>1) AUTOBRAKES AND EE MODE SWITCH (FOR SAFING THE SYSTEM) 2) DIRECT DRIVE AND EE MANUAL MODES (FOR CONTINUING OPERATIONS)</p>

PREPARED BY: MFWG

SUPERCEDING DATE: NONE

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CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 51160E391

SHEET: 6

FMEA REF.	FMEA REV.	NAME QTY & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: <u>MAA-P-11, B-P-11, C-P-11</u>
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 07305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEC PARTS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE. IF EE MODE SWITCH SET TO AUTO. CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING N/A</p>	<p>OPERATIONAL EFFECTS ----- COMPUTER SUPPORTED MODES CANNOT BE USED TO COMPLETE THE MISSION. DIRECT DRIVE AND BACKUP MODES REMAIN. IF PAYLOAD IS ATTACHED THE ARM SHOULD BE MANOUEVERED TO A SAFE POSITION FOR PAYLOAD RELEASE. LOSS OF NEXT REDUNDANT PATH RESULTS IN BEING ONE FAILURE AWAY FROM INABILITY TO CRADLE ARM. IF WITH SUBSEQUENT FAILURES ALL DRIVE MODES ARE LOST, THE ARM MAY BE JETTISONED. OR UNABLE TO RIGIDIZE/DERIGIDIZE. IF FAILURE OCCURS DURING RIGIDIZE SEQUENCE. THE CARRIATGE WILL NOT COMPLETELY RIGIDIZE AND ARM WILL REMAIN LIMP. IF IN AUTO MODE. OPERATOR WILL DETECT OFF NOMINAL OPERATION OF THE EE. OR WHEN MANUAL MODE SELECTED AND PAYLOAD CAPTURED EE WILL RELEASE PAYLOAD WITHOUT A COMMAND. ANNUNCIATED.</p> <p>CREW ACTION ----- THE EE MODE SWITCH SHOULD BE TURNED OFF. CREW SHOULD OBSERVE THE CAPTURE SEQUENCE AND DETERMINE THAT THE GRAPPLE FIXTURE HAS BEEN DRAWN FAR ENOUGH INTO THE EE TO PROHIBIT PAYLOAD ROTATIONS. IF THE INTERFACE DOES NOT APPEAR RIGID, ATTEMPT TO RIGIDIZE IN THE ALTERNATE MODE. IF RIGIDIZE IS UNSUCCESSFUL, ATTEMPT RELEASE USING A PRIMARY EE MODE. IF SHARES OPEN, MANEUVER THE ARM AWAY FROM THE PAYLOAD. IF SHARES DON'T OPEN, ATTEMPT TO RELEASE IN BACKUP MODE. IF SHARES OPEN, MANEUVER ARM AWAY FROM THE PAYLOAD, MANEUVER ORBITER AWAY FROM PAYLOAD. IF SHARES CANNOT BE OPENED IN ANY MODE, THEN THE ARM/PAYLOAD COMBINATION CAN BE JETTISONED. OR APPLY BRAKES. OR REDUCE HAND CONTROLLER COMMANDS FOR MANUAL AUGMENTED MODES. FOR SINGLE MODE, THE SWITCH MAY BE TOGGLED TO ACHIEVE REDUCED RATES, FOR AUTO MODES, APPLY BRAKES IF RATE EXCESSIVELY HIGH. OR USE AUTO MODE.</p> <p>CREW TRAINING ----- CREW TO BE TRAINED TO RECOGNIZE OFF NOMINAL OPERATION OF THE EE AND TO TURN MODE SWITCH TO OFF AFTER SPEC TIME AND MANEUVER THE ORBITER AWAY FROM A FREE FLYING PAYLOAD AT ANY TIME DURING ARM OPERATIONS. THE CREW SHOULD BE TRAINED TO ALWAYS OBSERVE WHETHER THE ARM IS RESPONDING PROPERLY TO COMMANDS. IF IT ISN'T, APPLY BRAKES. THE CREW WILL BE TRAINED TO SELECT EE MODE AFTER PAYLOAD IS STABILIZED AND AT ITS RELEASE POSITION.</p> <p>MISSION CONSTRAINT ----- WHEN CAPTURING A FREE FLYING PAYLOAD, THE EE MUST BE FAR ENOUGH AWAY FROM STRUCTURE TO PROHIBIT CONTACT REGARDLESS OF PAYLOAD ROTATIONS. EE MODE SW SHOULD BE RETURNED TO THE OFF POSITION IMMEDIATELY AFTER SPEC DRIVE TIME HAS ELAPSED. OPERATE UNDER VERNIER RATES WITHIN 10 FT OF STRUCTURE. THE</p>	

1) AUTOBRAKES AND EE MODE SWITCH (FOR SAVING THE SYSTEM)
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MODE SET TO AUTO

PREPARED BY: MFWG

SUPERCEDING DATE: NONE

RMS/D&C - 194

DATE: 11 JUL 91

CIL REV: 0

5040237A
 ATTACHMENT
 PAGE 68 OF 471

CRITICAL ITEMS LIST

PROJECT: SRNS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 21140E191

SHEET: 7

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	HOWR / FUNC. IT 2/12 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: M/A A-PALS, B-PALS, C-PALS
1065	0	MCIU - D&C DATA INTERFACE QTY-1 SCHEMATIC ED 87305	<p>MODE: ADDRESS DECODER OUTPUT LINE FAILS LOW OR HIGH.</p> <p>CAUSE(S): (1) EEE PARIS FAILURE. (2) SERIAL OUTPUT CIRCUIT FAILS LOW.</p>	<p>LOSS OF COMMUNICATION WITH D&C INTERFACE WILL INITIATE D&C COMMUNICATION FAILURE DETECTION. AUTOBRAKES. ARM COMES TO REST. GPC GOES INTO IDLE MODE. LOSS OF COMPUTER SUPPORTED MODES. ABE COMMUNICATION PATH REMAINS OPERABLE.</p> <p>IF D&C RESPONSE EE COMMAND BITS ARE CORRUPT: ONE OR MORE EE COMMANDS MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. DURING AUTO CAPTURE LIMPING IS LOST.</p> <p>FOR CAUSE 2): D&C COMMAND DATA FAILS TO ALL "0'S" AND RESPONSE DATA IS CORRUPT.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. UNCOMMANDED END EFFECTOR AUTO RELEASE SEQUENCE. IF EE MODE SET TO AUTO, CREW ACTION REQUIRED. ANNUNCIATED.</p> <p>REDUNDANT PATHS REMAINING ----- N/A.</p>	<p>OPERATOR MUST BE ABLE TO DETECT THAT THE ARM IS RESPONDING PROPERLY TO COMMANDS VIA WINDOW AND/OR CCTV VIEWS DURING ALL ARM OPERATIONS. DO NOT OPERATE WITH RATE HOLD WITHIN 10 FT OF 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. MODE SW TO BE LEFT IN OFF POSITION UNTIL EE IS IN PRECAPTURE OR RELEASE POSITION FOR FREE FLYING PAYLOADS OR IN THE CAPTURE ENVELOPE OR RELEASE POSITION FOR BERTHED PAYLOADS.</p> <p>OMRSD OFFLINE ----- VERIFY INPUT AND RETURN DATA BUS BY SENDING DATA TO NRU, RATE METER, AND ANNUNCIATORS, AND BY RECEIVING DATA FROM D&C PANEL SWITCHES</p> <p>OMRSD ONLINE INSTALLATION ----- NONE</p> <p>OMRSD ONLINE TURNAROUND ----- VERIFY ALL DISPLAYED DATA IS CORRECT VERIFY NO UNSCHEDULED CAUTION/WARNING ANNUNCIATORS</p>	

EXPEDITE PROCESSING

S040237A
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 PAGE 69 OF 471

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