

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: 000 PANEL

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

SI

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HWR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 87305	<p>MODE: DATA ERRATIC FROM D&C TO MCIU.</p> <p>CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM DBC TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE ----- UNEXPECTED MOTION. 6 JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</p> <p>REDUNDANT PATHS REMAINING ----- N/A</p>	<p>DESIGN FEATURES -----</p> <p>OUTPUT MULTIPLEXING IS PERFORMED BY THREE, QUAD AND/OR SELECT GATES. THESE ARE 'A' TYPE CMOS DEVICES, GENERIC TYPE 4019.</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 GENERALLY 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 MSFC-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>	

PREPARED BY:

MFWG

SUPERSEDING DATE: 06 OCT 87

APPROVED BY:

DATE: 24 JUL 91

CIL REV: 1

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: D&C PANEL

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

SHEET: 2

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 87305	<p>MODE: DATA ERRATIC FROM D&C TO MCIU.</p> <p>CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM D&C TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE UNEXPECTED MOTION, & JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</p> <p>REDUNDANT PATHS REMAINING N/A</p>	<p>ACCEPTANCE TESTS ----- THE HARDWARE ITEM IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL TESTING AS PART OF THE D&C PANEL.</p> <p>O VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1 O 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 (1P518 RMS STRONGBACK TEST AND 1P552 FLAT FLOOR TEST) WHICH VERIFIES THE ABSENCE OF THE FAILURE MODE.</p> <p>QUALIFICATION TESTS ----- THE D&C PANEL HAS BEEN SUBJECTED TO THE FOLLOWING QUALIFICATION TEST ENVIRONMENT:</p> <p>O VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1 O SHOCK: 20G/11MS - 1 AXES (6 DIRECTION) O THERMAL: 130 DEGREES F TO 10 - 23 DEGREES F (12 HRS PER CYCLE) (6 CYCLES) O HUMIDITY: 95% (120 DEGREES F TO 82 DEGREES F CYCLE IN 16 HRS) 10 CYCLES TOTAL O 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 ----- PDRS OPS CHECKLIST (ALL VEHICLES) JSC 16987</p>	

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
ASS'Y P/N: 51T&OE391

SHEET: 3

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	HDWR / FUNC. / 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 87305	<p>MODE: DATA ERRATIC FROM D&C TO MCIU.</p> <p>CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM D&C TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE ----- UNEXPECTED MOTION. 6 JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</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 JSC8000 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 WHB 5300.4(3A) STANDARD, AS MODIFIED BY JSC 0800A.</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 (ATP) INCLUDES AMBIENT PERFORMANCE,</p>	

PREPARED BY: MFMG

SUPERCEDING DATE: 06 OCT 87

APPROVED BY: _____

DATE: 24 JUL 91

CTL REV: 1

CRITICAL ITEMS LIST

PROJECT: SRMS
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	I / FUNC. 1/1 CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 87305	<p>MODE: DATA ERRATIC FROM D&C TO MCIU.</p> <p>CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM D&C TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE ----- UNEXPECTED MOTION, 6 JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</p> <p>REDUNDANT PATHS REMAINING ----- N/A</p>	<p>THERMAL AND VIBRATION TESTING, (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT).</p> <p>INTEGRATION OF D&C PANEL, RHC, THC 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>

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CRITICAL ITEMS LIST

PROJECT: SRMS

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	HWR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 87305	<p>MODE- DATA ERRATIC FROM D&C TO MCIU.</p> <p>CAUSE(S):</p> <p>(1) FAILURE OF THE INVERTER NETWORK.</p> <p>(2) FAILURE OF THE SELECTOR CIRCUIT.</p> <p>(3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM D&C TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO.</p> <p>OR</p> <p>POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE</p> <p>-----</p> <p>UNEXPECTED MOTION, 6 JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</p> <p>REDUNDANT PATHS REMAINING</p> <p>-----</p> <p>N/A</p>	<p>FAILURE HISTORY</p> <p>-----</p> <p>NO EEE PARTS FAILURES HAVE OCCURRED SUBSEQUENT TO ASSEMBLY OF PARTS.</p>	

PREPARED BY: MEWG

SUPERCEDING DATE: 06 OCT 87

APPROVED BY: _____

DATE: 24 JUL 91

CIL REV: 1

CRITICAL ITEMS LIST

PROJECT: SRMS

SYSTEM: D&C SUBSYSTEM

ASS'Y NOMENCLATURE: D&C PANEL

ASS'Y P/W: 51120E391

SHEET: 6

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 1/1 CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: N/A
1071	1	OUTPUT MULTIPLIER QTY-1 SCHEMATIC ED 87305	<p>MODE: DATA ERRATIC FROM D&C TO NCIU.</p> <p>CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.</p>	<p>DATA ERRATIC FROM D&C TO NCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL NCIU SAFING. GPC MAY DROP INTO TOLE.</p> <p>EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO.</p> <p>OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE.</p> <p>WORST CASE UNEXPECTED MOTION. 6 JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED.</p> <p>REDUNDANT PATHS REMAINING</p> <p>N/A</p>	<p>OPERATIONAL EFFECTS</p> <p>ARM MAY STOP USING THE STOP SWITCH DURING AN AUTO SEQ. THE SEQUENCE MAY STILL FOLLOW ITS PREPROGRAMMED PATH UNTIL THE DESIRED ENDPOINT IS REACHED. STOP SWITCH IS DESIGNED TO INTERRUPT AUTO SEQUENCE. FOR UNEXPECTED MOTION, BRAKES SHOULD BE USED TO STOP ARM.</p> <p>OR ARM WILL NOT LIMP DURING CAP/RIG SEQUENCE. ARM JOINTS WILL NOT CONFORM TO PAYLOAD DURING A CAPTURE SEQUENCE. IF THERE IS ANY MISALIGNMENT WITH THE GRAPPLE FIXTURE, THE PAYLOAD WILL CHANGE ITS ATTITUDE DURING A FREE FLYING CAPTURE, OR THE ARM WILL BE PRELOADED IF THE PAYLOAD IS BERTHED. IT MAY TAKE LONGER TO COMPLETE A CAPTURE SEQUENCE.</p> <p>OR THE ARM COULD BEGIN TO OPERATE WITH (OR CANNOT CANCEL) RATE HOLD AT ANY TIME WHILE COMMANDING IN A MANUAL AUGMENTED MODE. THE OPERATOR WILL DETECT AND INHERENTLY COMPENSATE.</p> <p>CREW ACTION</p> <p>APPLY BRAKES INSTEAD OF THE PROCEED/STOP SWITCH TO STOP THE ARM.</p> <p>OR NONE FOR FREE FLYING CAPTURES. ENTER TEST MODE TO LIMP ARM AFTER COMPLETION OF A BERTHED PAYLOAD CAPTURE.</p> <p>OR APPLY BRAKES TO STOP ARM AND CANCEL THE RATE HOLD FUNCTION.</p> <p>CREW TRAINING</p> <p>THE CREW WILL BE TRAINED TO ALWAYS OBSERVE WHETHER THE ARM IS RESPONDING PROPERLY TO COMMANDS. IF IT ISN'T, APPLY BRAKES. CREW SHOULD BE TRAINED TO OBTAIN MINIMUM MISALIGNMENT ERRORS PRIOR TO CAPTURE OF PAYLOAD TO KEEP PRELOAD ON ARM TO A MINIMUM.</p> <p>MISSION CONSTRAINT</p> <p>CREW SHOULD NOT ENTER ANY AUTO MODE UNLESS THEY KNOW EXACTLY WHAT TRAJECTORY THE ARM WILL TAKE AND ENSURE THAT THERE ARE NO OBSTACLES IN THE PATH OF THE SEQUENCE. THE BRAKES SHOULD BE USED TO STOP ARM (NOT STOP SWITCH) IF UNUSUAL ARM BEHAVIOUR. WHEN CAPTURING A FREE FLYER, THE EE MUST BE FAR ENOUGH AWAY FROM STRUCTURE TO PROHIBIT CONTACT REGARDLESS OF PAYLOAD ROTATIONS. OPERATE WITHOUT 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.</p> <p>OMRSD OFFLINE</p> <p>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>

CRITICAL ITEMS LIST

PROJECT: SRMS
 ASS'Y NOMENCLATURE: D&C PANEL

SYSTEM: D&C SUBSYSTEM
 ASS'Y P/N: 5114DE391

SHEET: 7

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: N/A
1079	1	OUTPUT MULTIPLEXER QTY-1 SCHEMATIC ED 67305	MODE: DATA ERRATIC FROM D&C TO MCIU. CAUSE(S): (1) FAILURE OF THE INVERTER NETWORK. (2) FAILURE OF THE SELECTOR CIRCUIT. (3) FAILURE OF PARALLEL/SERIAL CONVERTER.	DATA ERRATIC FROM D&C TO MCIU. EFFECTS VARY DEPENDING UPON WHICH WORD/BIT FAILS. IF IN EE AUTO MODE, POSSIBLE PREMATURE RELEASE. COULD DROP IN OR OUT OF RATE HOLD. MAY NOT BE ABLE TO STOP AUTO SEQUENCE WITH STOP SWITCH. MAY NOT LIMP IN E/E MANUAL MODE. MAY NOT BE ABLE TO CANCEL MCIU SAFING. GPC MAY DROP INTO IDLE. EE COMMAND MAY FAIL ON. EE MAY BE COMMANDED AS SOON AS EE MODE SWITCH SET TO AUTO. OR POSSIBLE LOSS OF EE AUTO COMMANDS AND LOSS OF LIMPING DURING CAPTURE. WORST CASE ----- UNEXPECTED MOTION, & JOINT RUNAWAY. UNCOMMANDED END EFFECTOR RELEASE. UNANNUNCIATED. CREW ACTION REQUIRED. REDUNDANT PATHS REMAINING ----- N/A	OMRSD ONLINE INSTALLATION ----- NONE OMRSD ONLINE TURNAROUND ----- EXERCISE ALL D&C PANEL SWITCHES AND DISPLAYS VERIFY CORRECT RESPONSE	

PREPARED BY: MFVG SUPERCEDING DATE: 06 OCT 87 APPROVED BY: _____ DATE: 24 JUL 91 CIL REV: 1