CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU
SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: ST140FT174-3&-5
SHEET: 1

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. Z/1R CRITICALITY — RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED, EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.	DESIGN FEATURES --- COMPARATORS AND OPERATIONAL AMPLIFIERS ARE STANDARD LINEAR INTEGRATED CIRCUITS WITH MATURE MANUFACTURING TECHNOLOGY. APPLICATION CONSTRAINTS ARE IN ACCORDANCE WITH SPAR-RMS-PA.003. THE DESIGN UTILIZES PROVEN CIRCUIT TECHNIQUES AND IS IMPLEMENTED USING CMOS LOGIC DEVICES. 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. DISCRETE SEMICONDUCTOR DEVICES SPECIFIED TO AT LEAST THE TX LEVEL OF MIL-S-19500. ALL DEVICES ARE SUBJECTED TO RE-SCREENING BY AN INDEPENDANT TEST HOUSE. SAMPLES OF ALL PROCURED LOTS/DATE CODES ARE SUBJECTED TO DESTRUCTIVE PHYSICAL ANALYSIS (DPA) TO VERIFY THE INTEGRITY OF THE MANUFACTURING PROCESSES. DEVICE STRESS LEVELS ARE, DERATED IN ACCORDANCE WITH SPAR-RMS-PA.003 AND VERIFIED BY DESIGN REVIEW. ALL RESISTORS AND CAPACITORS USED IN THE DESIGN ARE SELECTED FROM ESTABLISHED RELIABILITY (ER) TYPES. LIFE EXPECTANCY IS INCREASED BY ENSURING THAT ALL ALLOWABLE STRESS LEVELS ARE DERATED IN ACCORDANCE WITH SPAR-RMS-PA.003. ALL CERAMIC AND ELECTROLYTIC CAPACITORS ARE ROUTINELY SUBJECTED TO RADIOGRAPHIC INSPECTION. ALL EEEU LOGIC FUNCTIONS ARE CONTAINED ON ONE BOARD WHERE CIRCUIT PATHS ARE MINIMIZED.

PREPARED BY: MIWG
SUPERCEDING DATE: 06 OCT 87
APPROVED BY: _____
DATE: 24 JUL 91
CIL REV: 3

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU
SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: 51T40F1174-3&-5
SHEET: 2

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY — RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U16 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.	ACCEPTANCE TESTS --- THE EEEU IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL TESTING AS AN SRU. O VIBRATION: LEVEL AND DURATION REFERENCE TABLE 6 O THERMAL: +70 DEGREES C TO -25 DEGREES C (1 1/2 CYCLES) THE EEEU IS INTEGRATED INTO THE END EFFECTOR AND IS FURTHER EXPOSED TO THE END EFFECTOR ACCEPTANCE TEST ENVIRONMENTS (VIBRATION AND THERMAL VACUUM). THE END EFFECTOR ASSEMBLY IS PART OF THE INTEGRATED RMS SYSTEM TESTS (IP518 RMS STRONGBACK TEST AND TP552 FLAT FLOOR TEST) WHICH VERIFIES THE ABSENCE OF THE FAILURE MODE. QUALIFICATION TESTS --- THE EEEU IS SUBJECTED TO THE FOLLOWING SRU QUALIFICATION TEST ENVIRONMENTS. O VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 6 O SHOCK: 20G/11MS - 3 AXES (6 DIRECTIONS) O THERMAL: +81 DEGREES C TO -34 DEGREES C (6 CYCLES) 1 X 10**-6 TORR O HUMIDITY: TESTED IN THE END EFFECTOR HUMIDITY TEST. O EMC: MIL-STD-461 AS MODIFIED BY SL-E-0002 (TESTS CE01, CE03, CS01, CS02, CS06, RE01, RE02 (H/B) RS01). FLIGHT CHECKOUT --- PDRS OPS CHECKLIST (ALL VEHICLES) JSC 16987

PREPARED BY: MFWG
SUPERCEDING DATE: 06 OCT 87
APPROVED BY: _____
DATE: 24 JUL 91
CIL REV: 3

RMS/ELEC - 932

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: S1140F1174-38-5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUICH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.		QA/INSPECTIONS --- UNITS ARE MANUFACTURED UNDER DOCUMENTED QUALITY CONTROLS. THESE CONTROLS ARE EXERCISED THROUGHOUT DESIGN PROCUREMENT, PLANNING, RECEIVING, PROCESSING, FABRICATION, ASSEMBLY, TESTING AND SHIPPING OF THE UNITS. MANDATORY INSPECTION POINTS ARE EMPLOYED AT VARIOUS STAGES OF FABRICATION ASSEMBLY AND TEST. GOVERNMENT SOURCE INSPECTION IS INVOKED AT VARIOUS CONTROL LEVELS. 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. WIRE IS PROCURED TO SPECIFICATION MIL-W-22759 OR MIL-W-81381 AND INSPECTED AND TESTED TO NASA JSCM8080 STANDARD NUMBER 95A. 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. PARTS ARE INSPECTED THROUGHOUT MANUFACTURE AND ASSEMBLY AS APPROPRIATE TO THE MANUFACTURING STAGE COMPLETED. THESE INSPECTIONS INCLUDE, PRINTED CIRCUIT BOARD INSPECTION FOR TRACK SEPARATION, DAMAGE AND ADEQUACY OF PLATED THROUGH HOLES, COMPONENT MOUNTING INSPECTION FOR CORRECT SOLDERING, WIRE LOOPING, STRAPPING, ETC. OPERATORS AND INSPECTORS ARE TRAINED AND CERTIFIED TO NASA NHB 5300.4(3-1) STANDARD. CONFORMAL COATING INSPECTION FOR ADEQUATE PROCESSING IS PERFORMED USING ULTRAVIOLET LIGHT TECHNIQUES. POST P.C. BD. INSTALLATION INSPECTION, CLEANLINESS AND WORKMANSHIP (SPAR/GOVERNMENT REP. MANDATORY INSPECTION POINT) P.C. BD. INSTALLATION INSPECTION, CHECK FOR CORRECT BOARD INSTALLATION, ALIGNMENT OF BOARDS, PROPER CONNECTOR CONTACT MATING, WIRE ROUTING, STRAPPING OF WIRES ETC., PRE-CLOSURE INSPECTION, WORKMANSHIP AND CLEANLINESS (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT) PRE-ACCEPTANCE TEST INSPECTION, WHICH INCLUDES AN AUDIT OF LOWER TIER INSPECTION COMPLETION, AS BUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC., (MANDATORY INSPECTION POINT).

PREPARED BY: MFWG

SUPERCEDING DATE: 06 OCT 87

APPROVED BY: _____

DATE: 24 JUL 91

CIL REV: 5

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: 51T40F1174-3&5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY — RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q6 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.	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). ACCEPTANCE TESTING (ATP) INCLUDES AMBIENT PERFORMANCE, THERMAL AND VIBRATION TESTING, (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT). INTEGRATION OF UNIT TO END EFFECTOR ASSY - INSPECTIONS INCLUDE GROUNDING CHECKS, CONNECTERS FOR BENT OF PUSHBACK CONTACTS, VISUAL, CLEANLINESS, INTERCONNECT WIRING ETC. AND POWER-UP TEST TO SPAR INSPECTION TEST PROCEDURE ITP-251D. PRE-ACCEPTANCE TEST INSPECTION, WHICH INCLUDES AN AUDIT OF LOWER TIER INSPECTION COMPLETION, AS BUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC., (MANDATORY INSPECTION POINT). ACCEPTANCE TESTING (ATP) INCLUDES, AMBIENT, VIBRATION AND THERMAL-VAC TESTING, (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT) 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. SRMS SYSTEMS TESTING - STRONGBACK AND FLAT FLOOR AMBIENT PERFORMANCE TEST. (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT)

PREPARED BY: MFWG — SUPERCEDING DATE: 06 OCT 87 — APPROVED BY: _____ — DATE: 24 JUL 91 — CIL REV: 3

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU
SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: 51140F1174-3E-5
SHEET: 5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY — RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.	FAILURE HISTORY --- THERE HAVE BEEN NO FAILURES ASSOCIATED WITH THIS FAILURE MODE ON THE SRMS PROGRAM.

PREPARED BY: MFWG
SUPERCEDING DATE: 06 OCT 87
APPROVED BY:
DATE: 24 JUL 91
CIL REV: 3

CRITICAL ITEMS LIST

PROJECT: SRM
ASS'Y NOMENCLATURE: EEEU
SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: 51T40FT174-3E-5
SHEET: 6

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY — RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.	OPERATIONAL EFFECTS --- UNABLE TO RIGIDIZE/DERIGIDIZE. IF FAILURE OCCURS DURING RIGIDIZE SEQUENCE, THE CARRIAGE WELL NOT COMPLETELY RIGIDIZE AND ARM WILL REMAIN LIMP IF IN AUTO MODE. OPERATOR WILL DETECT OFF NOMINAL OPERATION OF THE EE. 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 SNARES OPEN, MANEUVER THE ARM AWAY FROM THE PAYLOAD. IF SNARES DON'T OPEN, ATTEMPT TO RELEASE IN BACKUP MODE. IF SNARES OPEN, MANEUVER ARM AWAY FROM THE PAYLOAD. MANEUVER ORBITER AWAY FROM PAYLOAD. IF SNARES CANNOT BE OPENED IN ANY MODE, THEN THE ARM/PAYLOAD COMBINATION CAN BE JETTISONNED. 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. MISSION CONSTRAINT --- WHEN CAPTURING A FREE FLYING PAYLOAD, THE EE MUST BE FAR ENOUGH AWAY FROM STRUCTURE TO PROHIBIT CONTACT REGARDLESS OF PAYLOAD ROTATIONS. OMRSD OFFLINE --- PERFORM MANUAL EE RIGIDIZE. VERIFY CORRECT TIME FOR RIGIDIZE FLAG TO CHANGE STATE. PERFORM MANUAL EE DERIGIDIZE. VERIFY CORRECT TIME FOR EXTEND FLAG TO CHANGE STATE. OMRSD ONLINE INSTALLATION --- NONE OMRSD ONLINE TURNAROUND --- PERFORM MANUAL EE RIGIDIZE VERIFY CORRECT TIME FOR RIGIDIZE FLAG TO CHANGE TO GREY.

PREPARED BY: MFWG
SUPERCEDING DATE: 06 OCT 87
APPROVED BY:
DATE: 24 JUL 91
CIL REV: 3

CRITICAL ITEMS LIST

PROJECT: SRMS
ASS'Y NOMENCLATURE: EEEU
SYSTEM: ELECTRICAL SUBSYSTEM
ASS'Y P/N: 5114OF1174-3E-5
SHEET: 7

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDWR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3250	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF RIGIDIZE AND DERIGIDIZE. CAUSE(S): (1) U2 FAILS H. U8D FAILS L. (2) U26B FAILS L. U7B FAILS H. U8A FAILS H. U8B FAILS L. (3) U15A FAILS L. Q3 FAILS O/C Q4 FAILS O/C U23 D.E. OR F FAILS L. U18D FAILS H. U14 D.E. OR F FAILS LOW. (4) U4 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. CAUSE (1)&(2): WHEN RIGID OR DERIG COMMANDED EEEU WILL NOT ENABLE MOTOR OR CLUTCHES/BRAKE. CAUSE (3): WHEN RIGID OR DERIGID COMMANDED. EEEU WILL ENABLE MOTOR BUT NOT BRAKE/CLUTCH. MOTOR WILL SLIP THE CLUTCH. CAUSE (4): NO RESPONSE WHEN DERIGIDIZE COMMANDED. IF RIGIDIZE COMMANDED, DERIGIDIZE OCCURS. DURING RIGIDIZE SEQUENCE, MOTOR WILL REVERSE. IF EXTENDED, MOTOR WILL STALL OR SLIP CLUTCH IF RIGIDIZE COMMANDED. WORST CASE --- UNEXPECTED PAYLOAD MOTION. INCOMPLETE RIGIDIZATION. CREW ACTION REQ. REDUNDANT PATHS REMAINING --- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.		PERFORM MANUAL BE DERIGIDIZE. VERIFY CORRECT TIME FOR EXTEND FLAG TO CHANGE TO GREY.

PREPARED BY: MFWG
SUPERCEDING DATE: 06 OCT 87
APPROVED BY:
DATE: 24 JUL 91
CIL REV: 3