

**CRITICAL ITEMS LIST**

PROJECT: RMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 5114071174-38-5 SHEET: 1

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 2/1A CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	<p>MODE: LOSS OF CAPTURE</p> <p>CAUSE(S): (1) UDD FAILS N. (2) UT FAILS LOW.</p>	<p>ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.</p> <p>CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.</p> <p>CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SHARE. CREW ACTION REQ.</p> <p>REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.</p>	<p>DESIGN FEATURES -----</p> <p>COMPARATORS AND OPERATIONAL AMPLIFIERS ARE STANDARD LINEAR INTEGRATED CIRCUITS WITH MATURE MANUFACTURING TECHNOLOGY. APPLICATION CONSTRAINTS ARE IN ACCORDANCE WITH SPAR-RMS-PA.003.</p> <p>THE DESIGN UTILIZES PROVEN CIRCUIT TECHNIQUES AND IS IMPLEMENTED USING CMOS LOGIC DEVICES.</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>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.</p>

RMS/ELEC - 945

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
 ASS'Y NOMENCLATURE: EEU

SYSTEM: ELECTRICAL SUBSYSTEM  
 ASS'Y P/N: 51140F1174-34-5

SHEET: 2

RMS/ELEC - 946

FMEA REF.	FMEA REV.	NAME, QTY & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	RNDWR / FUNC. Z/IR CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF CAPTURE  CAUSE(S): (1) UBD FAILS H. (2) U1 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.  CAUSE (1): WHEN CAPTURE COMMANDED, EEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.  CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.  WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SHARE. CREW ACTION REQ.  REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE.  2) BACKUP EE RELEASE.	ACCEPTANCE TESTS ----- THE EEU 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 EEU 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 IP552 FLAT FLOOR TEST) WHICH VERIFIES THE ABSENCE OF THE FAILURE MODE.  QUALIFICATION TESTS ----- THE EEU 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 -36 DEGREES C (6 CYCLES) 1 X 10 <sup>-6</sup> TORR  O HUMIDITY: TESTED IN THE END EFFECTOR HUMIDITY TEST.  O EMC: MIL-STD-461 AS MODIFIED BY SL-E-0002 (TES1S CE01, CE03, CS01, CS02, CS06, RE01, RE02 (N/B) RS01).  FLIGHT CHECKOUT ----- PDRS OPS CHECKLIST (ALL VEHICLES) JSC 16987

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 51140F1174-3A-5

SHEET: 3

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. Z/IR CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	<p>MODE: LOSS OF CAPTURE</p> <p>CAUSE(S): (1) UOD FAILS H. (2) U1 FAILS LOW.</p>	<p>ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.</p> <p>CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.</p> <p>CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SNARE. CREW ACTION REQ.</p> <p>REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.</p>	<p>QA/INSPECTIONS -----</p> <p>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.</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 JSCM0000 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 MHD 5300.4(3-1) STANDARD.</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-CLOSURE INSPECTION, WORKMANSHIP AND CLEANLINESS (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT)</p> <p>PRE-ACCEPTANCE TEST INSPECTION, WHICH INCLUDES AN AUDIT OF LOWER TIER INSPECTION COMPLETION, AS BUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC., (MANDATORY INSPECTION POINT).</p>

RMS/ELEC - 947

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 51140FT174-38-5

SHEET: 4

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HWR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	<p>MODE LOSS OF CAPTURE</p> <p>CAUSE(S): (1) UDD FAILS N. (2) UT FAILS LOW.</p>	<p>ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.</p> <p>CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.</p> <p>CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SHARE. CREW ACTION REQ.</p> <p>REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.</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, THERMAL AND VIBRATION TESTING, (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT).</p> <p>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.</p> <p>PRE-ACCEPTANCE TEST INSPECTION, WHICH INCLUDES AN AUDIT OF LOWER IIR INSPECTION COMPLETION, AS BUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC., (MANDATORY INSPECTION POINT).</p> <p>ACCEPTANCE TESTING (ATP) INCLUDES, AMBIENT, VIBRATION AND THERMAL-VAC TESTING, (SPAR/GOVERNMENT REP. - 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>

RMS/ELEC - 948

PREPARED BY:

MFUG

SUPERCEDING DATE: 06 OCT 87

APPROVED BY:

DATE: 26 JUL 91

CIL REV: 3

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 51160F1174-36-5 SHEET: 5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HDMR / FUNC. Z/FN CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF CAPTURE  CAUSE(S): (1) USD FAILS N. (2) U1 FAILS LOM.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.  CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.  CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.  WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SWARE. 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.

RMS/ELEC - 949

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 51140F1174-38-5

SHEET: 6

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	<p>MODE: LOSS OF CAPTURE</p> <p>CAUSE(S): (1) UDD FAILS H. (2) U1 FAILS LOW.</p>	<p>ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.</p> <p>CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.</p> <p>CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.</p> <p>WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SHARE. CREW ACTION REQ.</p> <p>REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE. 2) BACKUP EE RELEASE.</p>	<p>OPERATIONAL EFFECTS ----- EE DOES NOT OPERATE NOMINALLY WHEN COMMANDED. ARM REMAINS LIMP UNTIL EE MODE SWITCH IS TURNED OFF DURING AN AUTO CAPTURE SEQUENCE.</p> <p>CREW ACTION ----- FOR ANY OFF NOMINAL OPERATION OF THE EE, THE EE MODE SWITCH SHOULD BE TURNED OFF. ATTEMPT TO CAPTURE IN THE ALTERNATE MODE. IF THE SHARES REMAIN OPEN, MANEUVER ARM AWAY FROM PAYLOAD. IF THE SHARES ARE PARTIALLY CLOSED, 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, EVA CAN BE USED TO RELEASE THE PAYLOAD OR THE ARM/PAYLOAD COMBINATION CAN BE JETTISONED.</p> <p>CREW TRAINING ----- CREW WILL BE TRAINED TO RECOGNIZE OFF NOMINAL EE OPERATIONS AND TO MANEUVER THE ORBITER AWAY FROM A FREE FLYING PAYLOAD AT ANY TIME DURING ARM OPERATIONS.</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. THE EE MODE SWITCH SHOULD BE PLACED BACK IN THE OFF POSITION IMMEDIATELY AFTER THE SPEC DRIVE TIME HAS ELAPSED.</p> <p>OMRSD OFFLINE ----- PERFORM MANUAL EE CAPTURE. VERIFY CORRECT TIME FOR CLOSE FLAG TO CHANGE STATE.</p> <p>OMRSD ONLINE INSTALLATION ----- NONE</p> <p>OMRSD ONLINE TURNAROUND ----- PERFORM MANUAL EE CAPTURE. VERIFY CORRECT TIME FOR CLOSE FLAG TO CHANGE TO GREY.</p>	

RMS/ELEC - 950

**CRITICAL ITEMS LIST**

PROJECT: SRMS  
ASS'Y NOMENCLATURE: EEEU

SYSTEM: ELECTRICAL SUBSYSTEM  
ASS'Y P/N: 51140F1174-38-5 SHEET: 7

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	HWR / FUNC. 2/1A CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
3270	3	COMMAND LOGIC QTY-1 REFERENCE SCHEMATIC 2563765	MODE: LOSS OF CAPTURE  CAUSE(S): (1) UOD FAILS H. (2) U1 FAILS LOW.	ARM REMAINS LIMP UNTIL EE MODE SW TO OFF DURING AN AUTO CAPTURE SEQUENCE. RELEASE IS STILL AVAILABLE IN BOTH EE PRIMARY MODES.  CAUSE (1): WHEN CAPTURE COMMANDED, EEEU WILL NOT ENABLE MOTOR OR CLUTCH/BRAKE.  CAUSE (2): IF CAPTURE CMD, MOTOR WILL REVERSE AND REL OCCURS. IF RELEASED AND CAPTURE COMMANDED, MOTOR WILL STALL OR SLIP CLUTCH.  WORST CASE ----- UNEXPECTED PAYLOAD MOTION. INCOMPLETE SHARE. CREW ACTION REQ.  REDUNDANT PATHS REMAINING ----- 1) MANUAL EE MODE RELEASE.  2) BACKUP EE RELEASE.	

RMS/ELEC - 951