

CRITICAL ITEMS LIST

PROJECT: SMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: MCIU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 5135F160-5

SHEET: 1

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. Z/FIR CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1865	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 832797	<p>MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED.</p> <p>CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LDM. 2) INPUT FILTER FAILS.</p>	<p>FAILURE OF EXTERNAL FRAME SYNC RITE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LTHPING DURING END EFFECTOR CAPTURE.</p> <p>WORST CASE ----- UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY.</p> <p>REDUNDANT PATHS REMAINING ----- TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).</p>	<p>DESIGN FEATURES ----- 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 SPAN-RMS-PA.003. SPECIAL HANDLING PRECAUTIONS ARE USED AT ALL STAGES OF MANUFACTURE TO PRECLUDE DAMAGE/STRESS DUE TO ELECTROSTATIC DISCHARGE.</p>	

PREPARED BY: HFWC

SUPERSEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

5040237A
 ATTACHMENT
 PAGE 265 OF 471

CRITICAL ITEMS LIST

PROJECT: SRMS (5 NCIU INSTALLED)
 ASS'Y NOMENCLATURE: NCIU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155F100-5

SHEET: 2

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END STATE	HOMR / FUNC. 2/3R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1885	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 012797	<p>MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED.</p> <p>CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.</p>	<p>FAILURE OF EXTERNAL FRAME SYNC BITE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LIMPING DURING END EFFECTOR CAPTURE.</p> <p>WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY.</p> <p>REDUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) WINECP DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).</p>		<p>ACCEPTANCE TESTS THE NCIU IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL TESTING AS AN LRU.</p> <p>0 VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 3.2 0 THERMAL: +40 DEGREES C TO -16 DEGREES C (2 CYCLES)</p> <p>QUALIFICATION TESTS THE NCIU IS SUBJECTED TO THE FOLLOWING LRU QUALIFICATION ENVIRONMENTS:</p> <p>0 VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 3.2 0 SHOCK: BY SIMILARITY TO -3 NCIU 0 THERMAL: +51 DEGREES C TO -27 DEGREES C (10 CYCLES) 0 HUMIDITY: BY SIMILARITY TO -3 NCIU 0 EMC: MIL-STD-461 AS MODIFIED BY SL-E-0002 (TESTS CE01, CE03, CS01, CS02, CS06, RE02 (R/B), RS01, RS02) 0 LIFE: 630 OPERATING HOURS 1000 POWER ON/OFF CYCLES</p> <p>FLIGHT CHECKOUT PDRS UPS CHECKLIST (ALL VEHICLES) JSD 16987</p>

PREPARED BY: HLMG

SUPERSEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SMS (5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: MCIU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 5155F180-5

SHEET: 3

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1005	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 812797	<p>MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED.</p> <p>CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.</p>	<p>FAILURE OF EXTERNAL FRAME SYNC BIIE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LEMPING DURING END EFFECTOR CAPTURE.</p> <p>WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY.</p> <p>REBUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) DIRECT BRINE. 2) BACK-UP BRINE. 3) JETTISON (TO SECURE ORBITER).</p>	<p>QA/INSPECTIONS</p> <p>DOCUMENTED QUALITY CONTROLS ARE EXERCISED THROUGHOUT DESIGN PROCUREMENT, PLANNING, RECEIVING, PROCESSING FABRICATION, ASSEMBLY, TESTING AND SHIPPING OF THE MCIU. GOVERNMENT SOURCE INSPECTION IS INVOKED AT VARIOUS LEVELS OF COMPONENT ASSEMBLY AND TEST OPERATIONS. MANDATORY INSPECTION POINTS ARE EMPLOYED AT VARIOUS LEVELS OF ASSEMBLY AND TEST.</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, INSPECTED, AND TESTED TO SPAR-RMS-PA.003.</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. OPERATIONS AND INSPECTORS ARE TRAINED AND CERTIFIED TO NASA NHB 5300.413A-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> <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</p>	

PREPARED BY:

MFG

SUPRECEDING DATE: NONE

DATE: 11 JUL 91

CEL REV: 0

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 ATTACHMENT
 PAGE 207 OF 471

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CRITICAL ITEMS LIST

PROJECT: SRMS C-3 ACU (INSTALLED)
 ASSY NOMENCLATURE: ACU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASSY P/N: 51555160-5

SHEET: 4

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	HOMR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1085	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 612797	<p>MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED.</p> <p>CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.</p>	<p>FAILURE OF EXTERNAL FRAME SYNC BITS CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LIMPING DURING END EFFECTOR CAPTURE.</p> <p>WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY.</p> <p>REDUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).</p>		<p>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, VIBRATION, AND THERMAL TESTING (SPAR/GOVERNMENT REP. - MANDATORY INSPECTION POINT).</p>

PREPARED BY:

MEMG

SUPERCEDING DATE: NONE

1

DATE: 11 JUL 91

CII REV: 0

504237A
 ATTACHMENT
 PAGE 268 OF 471

CRITICAL ITEMS LIST

PROJECT: SRMS (-5 MC(U) INSTALLED)
 ASS'Y NOMENCLATURE: MC(U)

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 21155PT80-5

SHEET: 5

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RISK / FUNC. Z/TR CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1885	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 812797	MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED. CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.	FAILURE OF EXTERNAL FRAME SYNC BLE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY. REDUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETPSON (TO SECURE ORBITER).	FAILURE HISTORY ----- THERE HAVE BEEN NO FAILURES ASSOCIATED WITH THIS FAILURE MODE ON THE SRMS PROGRAM.

PREPARED BY: NING SUPERSEDING DATE: NONE

DATE: 11 JUL 91 CIL REV: 0

RMS/ELEC - 30

5040237A
 ATTACHMENT
 PAGE 269 OF 471

CRITICAL ITEMS LIST

PROJECT: SRMS (5 MCID INSTALLED)
 ASS'Y NOMENCLATURE: MCID

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155F100-5

SHEET: 6

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT IN END ITEM	HOWR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1005	0	FAILURE DETECTOR QTY. 1 SCHEMATIC 012797	<p>MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED.</p> <p>CMUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW.</p> <p>Z1 INPUT FILTER FAILS.</p>	<p>FAILURE OF EXTERNAL FRAME SYNC BITE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LIMPING DURING END EFFECTOR CAPTURE.</p> <p>WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY.</p> <p>REDUNDANT PATHS REMAINING</p> <p>TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).</p>	<p>OPERATIONAL EFFECT</p> <p>AUTOBRAKES. DIRECT DRIVE AND BACKUP AVAILABLE. LOSS OF LIMPING. LOSS OF COMPUTER SUPPORTED MODES.</p> <p>CREW ACTION</p> <p>SELECT DIRECT DRIVE. SINGLE/DIRECT DRIVE SWITCH SHOULD BE PULSED TO MAINTAIN PROPER RATES.</p> <p>CREW TRAINING</p> <p>CREW IS TRAINED TO ALWAYS OBSERVE WHETHER THE ARM IS RESPONDING PROPERLY TO COMMANDS.</p> <p>MISSION CONSTRAINT</p> <p>NONE</p>	

PREPARED BY:

MIMG

SUPRECEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

CRITICAL ITEMS LIST

PROJECT: SRMS (5 MCM INSTALLED)
 ASSY NUMERATOR: ACTU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASSY P/N: 51155160-5

SHEET: 7

PHEA REF.	PHEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	HWR / FUNC. Z/TX CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1005	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 812797	MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED. CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.	FAILURE OF EXTERNAL FRAME SYNC BITE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LAMPING DURING END EFFECTOR CAPTURE. WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY. REDUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).	SCREEN FAILURES N/A	

PREPARED BY:

MEWG

SUPERSEDING DATE: NONE

DATE: 11 JUN 91

CIL REV: 0

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 ATTACHMENT
 PAGE 271 OF 471

CRITICAL ITEMS LIST

PROJECT: SBMS (-5 MCIU INSTALLED)
 ASS'Y NOMENCLATURE: MCIU

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155FTSD-5

SHEET: 8

FMEA REF.	FMEA REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	MDMR / FUNC. 2/1R CRITICALITY	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
1085	0	FAILURE DETECTOR QTY. 1. SCHEMATIC 812797	MODE: LOSS OF EXTERNAL FRAME SYNC MONITOR CIRCUIT WITH AUTOBRAKES APPLIED. CAUSE(S): 1) EXTERNAL FRAME SYNC MONITOR LATCH FAILS LOW. 2) INPUT FILTER FAILS.	FAILURE OF EXTERNAL FRAME SYNC BITE CIRCUITRY. VERIFICATION TEST WILL FAIL. AUTOBRAKES ARE APPLIED. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES. LOSS OF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE UNABLE TO RELEASE BRAKES. LOSS OF ARM DRIVE CAPABILITY. REDUNDANT PATHS REMAINING TO CONTINUE OPERATIONS: 1) DIRECT DRIVE. 2) BACK-UP DRIVE. 3) JETTISON (TO SECURE ORBITER).	OMRSD OFFLINE VERIFY NO BITE BITS SET DURING TEST. OMRSD ONLINE INSTALLATION NONE OMRSD ONLINE TURNAROUND VERIFY NO BITE ANNUNCIATIONS.	

PREPARED BY:

HMW

SUPERSEDING DATE: NONE

DATE: 11 JUL 91

CTL REV: U