

CRITICAL ITEMS LIST

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

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155F180-5

SHEET: 1

| 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 |
|-----------|-----------|--|---|---|---|---|
| 2215 | 0 | FAILURE DETECTOR QTY. 1. SCHEMATIC 812797. | <p>MODE: AUTOBRAKES AND MCIU FAILURE WARNING CLEARING CIRCUIT FAILS LOW</p> <p>CAUSE(S): 1) BRAKE LEVEL CONVERSION CIRCUIT OUTPUT FAILS TO "BRAKES ON" 2) CLEARING CIRCUIT OUTPUT FAILS LOW</p> | <p>IF MCIU FAILURE WARNING AND/OR BRAKES ARE SET THEY CANNOT BE CLEARED BY BRAKES SWITCH.</p> <p>FOR CAUSE 1): IF BRAKES ARE OFF AT TIME OF FAILURE AUTOBRAKES WILL BE APPLIED DUE TO H/W WATCHDOG TIMER BITE VERIFICATION TEST ONE SECOND AFTER FAILURE. BRAKE TRUTH TABLE WILL FAIL FOR ONE SECOND AFTER FAILURE. ARM COMES TO REST. LOSS OF COMPUTER SUPPORTED MODES, LOSS OF LIMPING DURING END EFFECTOR CAPTURE.</p> <p>FOR CAUSE 2): BRAKE TRUTH TABLE WILL FAIL WHEN BRAKE SWITCH IS TRANSITIONED FROM ON TO OFF.</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 D&C BRAKE SWITCH CONTROLS THE OPERATION OF THE BRAKE DRIVER THROUGH AN OPTO-ISOLATOR WHICH ACTS AS A SOLID-STATE RELAY. OPTO-ISOLATORS (DIODE AND TRANSISTOR) MEET THE SAME QUALITY AND APPLICATION CRITERIA THAT HAVE BEEN APPLIED TO DISCRETE SEMICONDUCTORS.</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> <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> | |

PREPARED BY:

MFWG

SUPERCEDING DATE: NONE

DATE: 11 JUL 91

CIL REV: 0

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PROJECT: SRMS (-5 MCIU INSTALLED)
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 ASS'Y P/N: 51155F180-5

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 |
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EXPLORE

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SHEET: 3

| FMEA REF. | FMEA REV. | NAME, QTY, & DRAWING REF. DESIGNATION | FAILURE MODE AND CAUSE | FAILURE EFFECT OR END ITEM | HOWR / F'INC. 2/1R CRITICALITY | RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS |
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CRITICAL ITEMS LIST

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

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155F160-5

SHEET: 4

| 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 |
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CRITICAL ITEMS LIST

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

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155FT80-5

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 |
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CRITICAL ITEMS LIST

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

SYSTEM: ELECTRICAL SUBSYSTEM
 ASS'Y P/N: 51155PT60-5

SHEET: 6

| FMEA REF. | FMEA REV. | NAME, QTY. & DRAWING REF. DESIGNATION | FAILURE MODE AND CAUSE | FAILURE EFFECT ON END ITEM | NDMR / FUNC. 2/1R CRITICALITY | RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS |
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APPROVED
 FOR ISSUING

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CRITICAL ITEMS LIST

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SHEET: 7

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SHEET: 8

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ENTRANCE DATE
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