

CRITICAL ITEMS LIST

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

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

SHEET: 1

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
340	1	END EFFECTOR AUTO/OFF/MANUAL MODE SWITCH QTY-1 P/N ME 452-0102-7306 ED 92020 SHEET 3	MODE: PERMANENT 10V AUTO SELECT FLAG. CAUSE(S): (1) S/C 10V CONTACT.	IF SWITCH IN AUTO: NO EFFECT. IN MANUAL MODE: ARM WILL REMAIN LIMP AFTER CAPTURE COMMAND HAS BEEN RELEASED AND BEFORE RIGIDIZE COMMAND IS APPLIED. IF PAYLOAD IS NOT CAPTURED AND EE AUTO MANUAL SWITCH IS OFF: MOMENTARY CAPTURE COMMAND WILL LIMP THE ARM. WORST CASE ----- UNEXPECTED MOTION. UNEXPECTED LIMPING. CREW ACTION REQ. REDUNDANT PATHS REMAINING ----- EE AUTO MODE		DESIGN FEATURES ----- TOGGLE SWITCHES USED ON THE D&C PANEL ARE HERMETICALLY SEALED, AND OF A MATURE AND PROVEN DESIGN. THESE SWITCHES ARE IN COMMON USE ON THE ORBITER VEHICLE. THE SWITCHES ARE CONTROLLED BY ROCKWELL INTERNATIONAL SPECIFICATION MC 452-0102 AND HAVE BEEN QUALIFIED TO THE REQUIREMENTS OF THIS SPECIFICATION. ELECTRICAL CONNECTIONS TO THE SWITCH ARE ACHIEVED BY MEANS OF SOLDERABLE TERMINALS. WIRING TO SWITCH TERMINALS UTILIZES NICKEL PLATED CONDUCTORS WITH A POLYAMID INSULATION. SOLDERING OF THE NICKEL PLATED WIRE TO THE SWITCH TERMINALS IS CONTROLLED BY CAE PROCESS SPECIFICATION PD 91059. THE WIRING HARNESS IS DESIGNED TO BE CAPABLE OF SEPARATE TESTING (FOR INSULATION RESISTANCE, DIELECTRIC STRENGTH, AND CONTINUITY). MOUNTING OF THE SWITCH TO THE D&C PANEL IS BY MEANS OF A 15/32 NUT WHICH ENGAGES A THREADED BUSHING ON THE SWITCH. A KEYED WASHER PROVIDES ROTATION RESTRAINT. AFTER INSTALLATION AND TORQUING, THE NUT IS STAKED TO THE PANEL BY A BLOB OF EPOXY ADHESIVE. A STAINLESS STEEL GUARD PROTECTS THE SWITCH LEVER AGAINST DAMAGE OR INADVERTENT OPERATION. ANALYSIS OF THE BASIC PANEL STRUCTURE HAS DEMONSTRATED THAT THERE ARE NO RESONANCES IN THE RELEVANT VIBRATION FREQUENCY SPECTRUM. THIS ANALYSIS HAS BEEN VERIFIED BY VIBRATION TESTING OF THE D&C PANEL ASSEMBLY. APPLICATION ANALYSIS HAS CONFIRMED THAT ADEQUATE ELECTRICAL STRESS MARGINS ARE ACHIEVED. AT THE PART LEVEL, QUALIFICATION/CERTIFICATION TESTING IS DEFINED BY ROCKWELL INTERNATIONAL SPECIFICATION MC452-0102. THIS TEST REQUIREMENT INCLUDES: INSULATION RESISTANCE, DIELECTRIC STRENGTH, CONTACT RESISTANCE, RANDOM VIBRATION (48 MINUTES PER AXIS) LEAKAGE AT ONE ATMOSPHERE DIFFERENTIAL PRESSURE, TOGGLE STRENGTH. FOR SWITCH OPERATIONAL CYCLES REFER TO TABLE 13. ALL UNITS ARE SUBJECTED TO ACCEPTANCE TESTS WHICH INCLUDE PRE-ACCEPTANCE RUN-IN, DIELECTRIC STRENGTH, INSTALLATION RESISTANCE, CONTACT RESISTANCE, ACCEPTANCE VIBRATION, SEAL TEST, VISUAL EXAMINATION, AND RADIOGRAPHIC INSPECTION.

PREPARED BY:

MFWG

SUPERCEDING DATE: 11 SEP 86

APPROVED BY:

DATE: 24 JUL 91

CIL REV: 1

CRITICAL ITEMS LIST

PROJECT: SRM
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 OR END ITEM	HWDR / FUNC. 2/1R CRITICALITY RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
340	1	END EFFECTOR AUTO/OFF/ MANUAL MODE SWITCH QTY-1 P/N ME 452-0102-7306 ED 92020 SHEET 3	MODE: PERMANENT 10V AUTO SELECT FLAG. CAUSE(S): (1) S/C 10V CONTACT.	IF SWITCH IN AUTO: NO EFFECT. IN MANUAL MODE: ARM WILL REMAIN LIMP AFTER CAPTURE COMMAND HAS BEEN RELEASED AND BEFORE RIGIDIZE COMMAND IS APPLIED. IF PAYLOAD IS NOT CAPTURED AND EE AUTO MANUAL SWITCH IS OFF: MOMENTARY CAPTURE COMMAND WILL LIMP THE ARM. WORST CASE ----- UNEXPECTED MOTION. UNEXPECTED LIMPING. CREW ACTION REQ. REDUNDANT PATHS REMAINING ----- EE AUTO MODE	ACCEPTANCE TESTS ----- THE HARDWARE ITEM IS SUBJECTED TO THE FOLLOWING ACCEPTANCE ENVIRONMENTAL TESTS AS PART OF THE D&C PANEL ASSEMBLY. O VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1 O THERMAL: +110 DEGREES F TO PLUS 10 DEGREES F (2 CYCLES - 9.5 HRS/CYCLE.) THE D&C PANEL ASSEMBLY IS FURTHER TESTED AS PART OF THE RMS SYSTEM TESTS (TP510 RMS STRONGBACK TEST AND TP552 FLAT FLOOR TEST) WHICH VERIFIES THE ABSENCE OF THE FAILURE MODE. QUALIFICATION TESTS ----- THE SWITCH ITEM HAS BEEN QUALIFIED FOR ORBITER USE. THE D&C PANEL ASSEMBLY HAS BEEN SUBJECTED TO THE FOLLOWING QUALIFICATION TEST ENVIRONMENTS. O VIBRATION: LEVEL AND DURATION - REFERENCE TABLE 1 O SHOCK: 200/11 MS - 3 AXES (6 DIRECTIONS) O THERMAL: 130 DEGREES F TO -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 ENC: MIL-STD-461 AS MODIFIED BY SL-E-0002 (TEST CE01, CE02, CE03, CS01 (DC/AC), CE03, CS01 (DC/AC), CS02, CS06, RE02 (B/N), RS02, RS03, RS04) FLIGHT CHECKOUT ----- PDORS OPS CHECKLIST (ALL VEHICLES) JSC 16987

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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: 3

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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PREPARED BY: MFWG

SUPERCEDING DATE: 11 SEP 86

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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/N: 51140E3V1

SHEET: 4

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

SUPERCEDING DATE: 11 SEP 86

APPROVED BY: _____

DATE: 26 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: 5

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
340	1	END EFFECTOR AUTO/OFF/MANUAL MODE SWITCH QTY-1 P/N HE 452-0102-7306 ED 92020 SHEET 3	MODE: PERMANENT 10V AUTO SELECT FLAG. CAUSE(S): (1) S/C 10V CONTACT.	IF SWITCH IN AUTO: NO EFFECT. IN MANUAL MODE: ARM WILL REMAIN LIMP AFTER CAPTURE COMMAND HAS BEEN RELEASED AND BEFORE RIGIDIZE COMMAND IS APPLIED. IF PAYLOAD IS NOT CAPTURED AND EE AUTO MANUAL SWITCH IS OFF: MOMENTARY CAPTURE COMMAND WILL LIMP THE ARM. WORST CASE ----- UNEXPECTED MOTION. UNEXPECTED LIMPING. CREW ACTION REQ. REDUNDANT PATHS REMAINING ----- EE AUTO MODE		OPERATIONAL EFFECTS ----- IF MANUAL MODE SELECTED ARM REMAINS LIMP UNEXPECTEDLY BETWEEN CAPTURE AND RIGIDIZE SEQUENCE. CREW ACTION ----- NONE CREW TRAINING ----- CREW SHOULD BE TRAINED TO KEEP TO A MINIMUM TIME BETWEEN CAPTURE AND RIGIDIZE SEQUENCE. MISSION CONSTRAINT ----- NONE. OHRSD OFFLINE ----- EXERCISE D&C PANEL AUTO/MANUAL MODE SWITCH VERIFY EE MODE BITS IN MCIU/D&C PANEL DATA BUS OHRSD ONLINE INSTALLATION ----- NONE OHRSD ONLINE TURNAROUND ----- WITH EE AUTO/MANUAL/OFF MODE SWITCH SET TO 'OFF' VERIFY AUTO BIT NOT SET

PREPARED BY: MFWG

SUPERCEDING DATE: 11 SEP 86

DATE: 24 JUL 91

CIL REV: 1