

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2653 -2 REV:05/03/88

ASSEMBLY :PANEL MA73C CRIT.FUNC: 1R
 F/N RI :ME452-0102-7101 CRIT. HDW: 3
 F/N VENDOR:
 QUANTITY :4 VEHICLE 102 103 104
 :FOUR EFFECTIVITY: X X X
 : PHASE(S): PL LO OO X DO LS

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES R PHILLIPS	DES <u>W. C. Stapp</u>	SSM <u>W. C. Stapp 5/16/88</u>
REL M HOVE	REL <u>W. C. Stapp 5/16/88</u>	REL <u>W. C. Stapp 5/16/88</u>
QE J COURSEN	QE <u>J. Courson 5/16/88</u>	QE <u>J. Courson 5/16/88</u>

ITEM:

SWITCH, TOGGLE, SP2P - MID MCA 1, 2 AND 4 DC BUS A, B AND C "ON/OFF" CONTROL

FUNCTION:

PROVIDES THE "ON/OFF" MANUAL CAPABILITY TO CONTROL DC BUS A, B AND C INPUTS TO THE MIDBODY MOTOR CONTROL ASSEMBLIES (MCA'S) 1, 2 AND 4 RELAY LOGIC FOR VENT DOOR, PAYLOAD BAY DOOR, RADIATOR DEPLOY/LATCH AND REMOTE MANIPULATOR DEPLOY/LATCH MOTORS. 85V73A129S2, S7, S9 AND S13

FAILURE MODE:

FAILS CLOSED, SHORTS (CONTACT TO CONTACT)

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, PROCESSING ANOMALY

EFFECT(S) ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:

- (A) UNABLE TO DE-ENERGIZE ONE MCA LOGIC BUS.
- (B) LOSS OF REDUNDANCY TO PROTECT AGAINST INADVERTENT PAYLOAD BAY DOOR CLOSURE.
- (C,D) FIRST FAILURE - NO EFFECT.
- (E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO INADVERTENT COMMANDING OF PAYLOAD BAY DOOR CLOSURE WITH REMOTE MANIPULATOR SYSTEM OR KU-BAND ANTENNA DEPLOYED VIA THE FOLLOWING SCENARIO:
 - (1) FAILURE OF RELAY LOGIC SWITCH CLOSED.
 - (2) FAILURE OF PAYLOAD BAY DOOR ARMING SWITCH CLOSED.
 - (3) "PSYCHOTIC GPC" RESULTING IN INADVERTENT COMMANDING OF PAYLOAD BAY DOOR CLOSURE.

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EFFECT(S) ON (CONTINUED):

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL
CRITICALITY EFFECT:

MAY RESULT IN LOSS OF ABILITY TO CLOSE AND LATCH PAYLOAD BAY DOOR DUE TO DAMAGE CAUSED BY COLLISION WITH DEPLOYED MECHANISMS OR PAYLOADS. INABILITY TO CLOSE AND LATCH THE PAYLOAD BAY DOORS RESULTS IN A LOSS OF ORBITER VEHICLE STRUCTURAL STIFFNESS AND POSSIBLE STRUCTURAL DAMAGE DUE TO AERODYNAMIC FORCES DURING DESCENT.

FAILS "B" SCREEN BECAUSE SWITCHES NORMALLY REMAIN CLOSED THROUGH ALL MISSION PHASES.

DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

A,B,C,D) DISPOSITION & RATIONALE

REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

B) GROUND TURNAROUND TEST

VERIFY MCA OPERATIONAL STATUS INDICATORS ARE "ON" (ALL MOTOR CONTROL RELAYS RESET) DURING NO OPERATION OF THE AC MOTOR MECHANISMS. TEST IS PERFORMED FOR ALL FLIGHTS.

E) OPERATIONAL USE

NONE