

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2654 -1 REV:05/03/88

ASSEMBLY :PANEL MA73C CRIT.FUNC: 1R
P/N RI :ME452-0102-7101 CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY :2 EFFECTIVITY: X X X
:TWO PHASE(S): PL LO X CO X DO X LS
:

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES R PHILLIPS DES *R. Beeman* SSM *R. C. Stang 5/12/88*
REL M HOVE REL *N. C. Stang 5/12/88* REL *W. J. ... 5/12/88*
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ITEM:
SWITCH, TOGGLE, SP2P - MID MCA 3 AND 2 DC BUS A AND C "ON/OFF" CONTROL

FUNCTION:
PROVIDES THE "ON/OFF" MANUAL CAPABILITY TO CONTROL DC BUS A AND C INPUTS TO MIDBODY MOTOR CONTROL ASSEMBLIES (MCA'S) #3 AND #2 FOR VENT DOOR, PAYLOAD BAY DOOR LATCH, RADIATOR DEPLOY/LATCH, AND REMOTE MANIPULATOR LATCH MOTORS. 85V73A129S3, S12

FAILURE MODE:
FAILS OPEN, PREMATURELY OPENS, SHORTS TO GROUND

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) LOSS OF ONE OF TWO MAIN DC BUS RELAY LOGIC POWER INPUTS TO THE ASSOCIATED MID MOTOR CONTROL ASSEMBLY.
(B) LOSS OF INTERFACE REDUNDANCY. NO EFFECT FOR FIRST FAILURE - THE REDUNDANT MOTOR CONTROLLED BY A DIFFERENT SWITCH COMPLETES THE... FUNCTION.
(C) POSSIBLE EARLY MISSION TERMINATION DUE TO LOSS OF REDUNDANCY FOR LATCHING PAYLOAD BAY DOOR CENTERLINE LATCHES.
(D) FIRST FAILURE - NO EFFECT.

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EFFECT(S) ON (CONTINUED):

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (LOSS OF
REDUNDANT MOTOR OR POWER/CONTROL CIRCUIT) DUE TO INABILITY TO LATCH
PAYLOAD BAY DOORS (RESULTING IN AERODYNAMIC STRUCTURAL DAMAGE DURING
ENTRY) AND/OR TO OPEN VENT DOORS DURING DESCENT (DOOR FAILED CLOSED
RESULTS IN VEHICLE STRUCTURAL DAMAGE DUE TO PRESSURE DIFFERENTIALS).
LEFT AND RIGHT VENT DOORS ARE NOT CONSIDERED TO BE REDUNDANT TO EACH
OTHER. "B" SCREEN PASSES SINCE THE FAILURE CAN BE DETECTED BY CREW
MONITORING MECHANISM OPERATION TIMES OR-BY LOSS OF MCA OPERATIONAL
STATUS MEASUREMENTS AVAILABLE TO GROUND PERSONNEL.

DISPOSITION & RATIONALE:

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

,B,C,D) DISPOSITION AND RATIONALE

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

) 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.

) OPERATIONAL USE

CONSIDERATION WILL BE GIVEN TO STOWING MECHANISMS WITH THE LOSS OF
REDUNDANCY. LOSS OF REDUNDANCY FOR CLOSING CENTERLINE PLBD LATCHES
INVOKES A MINIMUM DURATION FLIGHT IF LATCH GANG IS ACCESSIBLE BY EVA,
OTHERWISE ENTER TO NEXT PRIMARY LANDING SITE. FOR LOSS OF REDUNDANT
VENT DOOR OPEN CAPABILITY, OPEN VENT DOORS PRIOR TO ENTRY.