

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - P/L RETENTION FMEA NO 05-6IE -2013 -1 REV:02/26/00

ASSEMBLY : D&C PNL A6A1 CRIT. FUNC: 1R
 P/N RI : ME452-0102-7201 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 2 EFFECTIVITY: X X X
 : TWO, ONE PER SYSTEM 1&2 PHASE(S): PL LO OO X DO LS

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES C ODEGARD DES *[Signature]* SSM *[Signature]*
 REL H YEW REL *[Signature]* REL *[Signature]*
 QE J COURSEN QE *[Signature]* QE *[Signature]*

EPD&C *[Signature]*
 RE *[Signature]*

ITEM:
 SWITCH, TOGGLE (2P2P), LOGIC POWER CONTROL

FUNCTION:
 ONE CONTACT SET PROVIDES MAIN BUS POWER TO THE DC CONTROL BUSES. THE SECOND CONTACT SET PROVIDES A DC RETURN FOR THE RTN (RETURN) BUSES. THE IN TURN PROVIDES THE HYBRID RELAYS WITH THE LOGIC POWER VOLTAGES NEEDED TO CONTROL PRM ACTUATOR DRIVE MOTORS. 36V73A6A1S46 AND S47

FAILURE MODE:
 FAILS OPEN, SHORTS TO GROUND

CAUSE(S):
 CONTAMINATION, PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION, PROCESSING ANOMALY

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) FIRST FAILURE - LOSS OF CAPABILITY TO CONDUCT POWER TO ONE OF TWO PAYLOAD RETENTION SYSTEM RESULTING IN LOSS OF REDUNDANCY. THE REMAINING PAYLOAD RETENTION SYSTEM WILL COMPLETE MISSION, BUT AT INCREASED OPERATING TIME.

(B) FIRST FAILURE - NONE

(C) FIRST FAILURE - NO EFFECT. SECOND FAILURE (FAILURE AT REDUNDANT SYSTEM) - LOSS OF CAPABILITY TO DEPLOY OR SECURE PAYLOAD COULD RESULT IN LOSS OF MISSION.

(D) FIRST FAILURE - NO EFFECT. SECOND FAILURE (FAILURE AT REDUNDANT SYSTEM) - IF FAILURE OCCURS DURING LATCH MID TRAVEL, THE INCOMPLETE LATCHING CYCLE (e.g., HALF CLOSED OR HALF OPEN) COULD CAUSE THE PAYLOAD TO BE LEFT UNSECURED RESULTING IN VEHICLE DAMAGE AND POSSIBLE LOSS OF CREW/VEHICLE UPON RE-ENTRY.

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DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

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

(B) GROUND TURNAROUND TEST

TEST IS PERFORMED AS PART OF RELEASE/LATCH OPERATION BY OBSERVING SWITCH MONITOR FUNCTION FOR LOGIC POWER SWITCH. WHEN LOGIC POWER IS ON, SWITCH MONITOR FUNCTION AT V54S25E, V54S8424E ARE AT "ON".

(E) OPERATIONAL USE

IF FAILURE OCCURS DURING LATCH/RELEASE PROCESS FOR LIGHTWEIGHT OR MIDDLEWEIGHT LONGERON LATCHES, AN EVA CAN BE PERFORMED TO MANUALLY DRIVE THE LATCHES. ALSO, INFLIGHT MAINTENANCE (IFM) PROCEDURE COULD BE CONSIDERED TO BYPASS THE FAILURE.