

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - P/L RETENTION FMEA NO 05-6IE -2001 -1 REV:08/22/89

ASSEMBLY : PNL A6A1				CRIT. FUNC: 1R
P/N RI : ME452-0093-5231				CRIT. HDW: 2
P/N VENDOR:		VEHICLE	102	103
QUANTITY : 1		EFFECTIVITY:	X	X
: ONE, 10 POLES/5 POSITION		PHASE(S):	PL	LO
: S/ 5 DECKS			OO	DO X LS

PREPARED BY:		REDUNDANCY SCREEN:	A-PASS	B-PASS	C-PASS
DES	C ODEGARD	APPROVED BY:	APPROVED BY (NASA):		
REL	H YEW	DES	<i>C. O. V. Bunn</i>	SSM	<i>[Signature]</i>
QE	J COURSEN	REL	<i>[Signature]</i>	REL	<i>[Signature]</i>
		QE	<i>[Signature]</i>	QE	<i>[Signature]</i>

EPD&C Rel *[Signature]* 10/30/89
 EPD&C SSM *[Signature]* 10/30/89

ITEM: SWITCH, ROTARY, PAYLOAD RETENTION MECHANISM SELECTION/SEQUENCE

FUNCTION:
 PROVIDES FOR MANUAL SEQUENCING OF THE PAYLOAD RETENTION MECHANISMS (PRM) FOR THE DEPLOYMENT OR SECURING OF PAYLOADS IN THE VEHICLE. CONDUCTS CONTROL POWER TO THE DC, IND (INDICATOR) AND RTN (RETURN) BUSES AND MONITORS FOR THE RELEASE AND LATCH FUNCTIONS FOR EACH PRM GROUP ASSIGNED TO A SPECIFIC BUS. 36V73A6A1-S37

FAILURE MODE:
 SHORTS TO GROUND (ONE CONTACT SET), SHORTS POLE-TO-POLE

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 TRANSFER/CONTROL TO ASSOCIATED PRM ACTUATOR MOTOR.

(B) FIRST FAILURE - LOSS OF REDUNDANCY. REMAINING ACTUATOR MOTOR WILL COMPLETE FUNCTION WITH INCREASED OPERATING TIME.

(C) FIRST FAILURE - NO EFFECT. SECOND FAILURE (REDUNDANT CIRCUIT FAILS)- LOSS OF CAPABILITY TO RELEASE OR LATCH PAYLOAD RESULTING IN LOSS OF MISSION

(D) FIRST FAILURE - NO EFFECT. SECOND FAILURE (REDUNDANT CIRCUIT FAILS)- 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 STRUCTURAL 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. 2 - ROTARY SWITCH

(B) GROUND TURNAROUND TEST

VERIFY THAT PAYLOAD SELECT SWITCH OPERATES PROPERLY AS IT IS ROTATED THROUGHOUT ALL LATCHES WITH THE FOLLOWING POWER ON : MAIN A AND B, LOGIC POWER, AB1, BC1 AND AC BUS. TEST INCLUDES VISUAL AND AUDIO CHECK THAT NO BINDING/JAMMING OF LATCH OCCURS DURING LATCH AND RELEASE PROCESS. CHECKS THAT NO OTHER "LATCHED" OR "RELEASED" INDICATOR CHANGES.

(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.