

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - P/L RETENTION FMEA NO 05-6IE -2001 -2 REV:08/22/89

ASSEMBLY : PNL A6A1
 P/N RI : ME452-0093-5231
 P/N VENDOR:
 QUANTITY : 1
 : ONE, 10 POLES/5 POSITION
 : S/ 5 DECKS

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL	LO	OO X EO LS

CRIT. FUNC: 1
 CRIT. HDW: 1

PREPARED BY: DES C ODEGARD
 REL H YEW
 QE J COURSEN

REDUNDANCY SCREEN: A- B- C-
 APPROVED BY (NASA):
 DES C. V. Bains
 REL W. B. Waltham
 QE J. S. Courson

SSM W. B. Waltham 10/30/89
 REL G. E. ... 10/30/89
 QE J. S. Courson 10/30/89

EPD&C P/L W. B. Waltham 10/30/89
 EPD&C SSM J. S. Courson 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. CONDUCT: 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:
 FAILS OPEN (ALL CONTACT SETS), FAILS CLOSED IN MONITOR POSITION

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 PAYLOAD BAY SELECT CAPABILITY

(B) FIRST FAILURE - LOSS OF CONTROL OF PAYLOAD RETENTION LATCH

(C,D) FIRST FAILURE - POSSIBLE LOSS OF MISSION, CREW/VEHICLE IF :
 1) PAYLOAD CAN NOT BE BROUGHT BACK DUE TO WEIGHT LIMITATION OR HAZARDOUS ENVIRONMENT POSED BY THE PAYLOAD TO BE RETURNED; 2) PAYLOAD IS SECURED BY MORE THAN ONE PAYLOAD BAY AREA, THE FIRST PAYLOAD BAY SELECT WAS MADE PROPERLY ALLOWING THE ASSOCIATED PAYLOAD RETENTION LATCHES TO BE RELEASED, AND THE FOLLOWING PAYLOAD BAY SELECT WAS NOT MADE DUE TO ROTARY SWITCH FAILURE CAUSING THE INABILITY TO RELEASE OR RE-LATCH THE PAYLOAD RETENTION LATCHES.

DISPOSITION & RATIONALE:
 (A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

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(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.