

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MANIP LATCH CNTL FMEA NO 05-6IC-2001 -1 REV: 06/26/88

ASSEMBLY : PNL A8A2 (V082-730150) CRIT. FUNC: 1R
 P/N RI : ME452-0102-7203 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PHASE(S): PL LO OO X DO X LS
 :

PREPARED BY: DES B SEARS
 REL H YEW
 QE J COURSEN

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
 APPROVED BY: DES *[Signature]* APPROVED BY (NASA): SSM *[Signature]*
 REL *[Signature]* REL *[Signature]*
 QE *[Signature]* QE *[Signature]*

EPD&C SSAT *[Signature]*
 EPD&C REL *[Signature]*

ITEM:
 TOGGLE SWITCH (2P2P) - MRL LATCH/RELEASE

FUNCTION:
 PROVIDES POWER AND CONTROL TO REDUNDANT SYSTEMS FOR RELEASE/LATCH OPERATION OF THE MANIPULATOR RETENTION LATCH (MRL) TO ALLOW DEPLOY AND STOW OF THE RMS. THE SYSTEM RESTRAINS THE RMS DURING ASCENT AND REENTRY.
 36V73A8A2S6

FAILURE MODE:
 FAILS OPEN (ALL POLES), SHORTS TO GROUND

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

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

(A,B) FIRST FAILURE - FAILURE WILL RESULT IN LOSS OF ABILITY TO DRIVE THE MRL AND TO RELEASE/LATCH RMS.

(C) FIRST FAILURE - FAILURE WILL RESULT IN LOSS OF MISSION DUE TO INABILITY TO RELEASE RMS.

(D) FIRST FAILURE - SWITCH FAILURE IN RELEASE POSITION OR LATCH POSITION AFTER DEPLOYMENT CAUSES INABILITY TO RESTRAIN RMS. SECOND FAILURE (LOSS OF JETTISON) - POSSIBLE LOSS OF CREW/VEHICLE DUE TO UNRESTRAINED RMS MOTION CAUSING STRUCTURAL DAMAGE.

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.

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(B) GROUND TURNAROUND TEST

VERIFY MRL OPERATION BY PERFORMING RELEASE/LATCH REDUNDANCY TESTS FOR PORT MRL SYSTEM 1 AND 2. TESTS ARE PERFORMED FOR EVERY FLIGHT WITH MPH/MRL/RMS AND LRU REPLACEMENT.

(E) OPERATIONAL USE

PIN KIT CIRCUITRY PATCH MAY BE INSTALLED TO BYPASS FAILURE. IF REQUIRED, RMS MAY BE JETTISONED FOR SAFETY IF UNABLE TO LATCH TWO OF THREE MRLS OR EVA MAY BE PERFORMED FOR RMS TIE-DOWN. NO EVA EXISTS TO MANUALLY DRIVE THE MRLS FOR LATCH/UNLATCH OPERATION.