

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2011 -2 REV:04/25/88

ASSEMBLY : D & C PANEL R4 CRIT. FUNC: 1
 P/N RI : ME452-0102-7354 CRIT. HDW: 1
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PHASE(S): PL LO X OO DO LS
 :

REDUNDANCY SCREEN: A- B- C-
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES *J. Brown* DES *J. Brown* EPDC SSM *James H. Brown 5-17-88*
 REL F DEFENSOR *gd* REL *Mehar Ch. Har 5-6-88* EPDC REL *James H. Brown 5-17-88*
 QE *S.L. Masai* QE *J. J. Coarsen 5-6-88* MPS REL *James H. Brown 5-17-88*
 QER *James H. Brown*

ITEM:
 TOGGLE SWITCH (THREE POLES, THREE POSITIONS, CENTER LEVER LOCKED), LO2 RELIEF SHUTOFF VALVE CLOSE SOLENOID (LV24).

FUNCTION:
 PROVIDES MANUAL CONTROL OF POWER TO CLOSE SOLENOID OF LO2 RELIEF SHUTOFF VALVE. 32V73A4S17.

FAILURE MODE:
 FAILS CLOSE, CONTACT-TO-CONTACT SHORT, POLE-TO-POLE SHORT - "CLOSE" COMMAND CONTACTS.

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

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

- (A) INADVERTENT SWITCH CLOSE COMMAND TO LO2 RELIEF SHUTOFF VALVE CLOSE SOLENOID.
- (B) LOSS OF CAPABILITY TO OPEN LO2 RELIEF SHUTOFF VALVE (PV7).

RESULTS IN LACK OF RELIEF CAPABILITY PRIOR TO DUMP. POSSIBLE RUPTURE OF THE LO2 MANIFOLD CAUSING LO2 LEAKAGE INTO AFT COMPARTMENT, OVERPRESSURIZATION, AND FIRE/EXPLOSION HAZARD. POSSIBLE LOSS OF ADJACENT CRITICAL COMPONENTS DUE TO CRYOGENIC EXPOSURE.

A VENT PATH EXISTS (APPROXIMATELY 4 SCFM PER BLEED CHECK VALVE) THROUGH THE POGO SYSTEM TO THE SSME HPOT SEAL AND RELEASED OVERBOARD. THIS VENT PATH IS NOT CONSIDERED SUFFICIENT TO RELIEVE THE LO2 MANIFOLD IF THE MANIFOLD RELIEF SYSTEM FAILS.

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(C,D) POSSIBLE LOSS OF CREW/VEHICLE.

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

COMPLETE ELECTRICAL VERIFICATION V41ABO.070 "O" EVERY FLIGHT.

(E) OPERATIONAL USE

LO2 MANIFOLD PRESSURE IS ON CAUTION AND WARNING.

POST MECO/PRE DUMP: START MPS PROPELLANT DUMP AS SOON AS POSSIBLE.

POST DUMP: OPEN THE LO2 FILL/DRAIN VALVES.

05-6J-16