

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2117 -4 REV:06/15/88  
 ASSEMBLY : D & C PANEL R2 CRIT. FUNC: 1R  
 P/N RI : ME452-0102-7103 CRIT. HDW: 2  
 P/N VENDOR:  
 QUANTITY : 3 VEHICLE 102 103 104  
 : THREE EFFECTIVITY: X X X  
 : PHASE(S): PL LO X OO DO LS

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS  
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES JWB J BROWN DES Ed Beers EPDC SSM Ed Beers 4/15/88  
 REL gfp DEFENSOR REL Ikamasa 6/27/88 EPDC REL AKN 4/15/88  
 QE DMA D MASAI QE J. L. Cannon 6/27/88 MPS REL AKN 4/15/88  
 QE AKN 4/15/88

ITEM:  
 SWITCH, TOGGLE (ONE POLE, THREE POSITIONS), HELIUM SUPPLY ISOLATION VALVE A (LV1/3/5).

FUNCTION:  
 PROVIDES MANUAL CONTROL OF POWER TO HELIUM SUPPLY ISOLATION VALVE A. 32V73A2S55, 56, 57.

FAILURE MODE:  
 CONTACTS CLOSED IN "OPEN" POSITION, CONTACT-TO-CONTACT SHORT ("OPEN" 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) LOSS OF SWITCH TRANSFER FUNCTION.  
 (B) LOSS OF MANUAL CAPABILITY TO CLOSE HELIUM SUPPLY ISOLATION VALVE A.  
 (C,D) FIRST FAILURE - NO EFFECT.

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- (E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.  
TIME FRAME - ASCENT.  
1) HELIUM LEAK BETWEEN ISOLATION VALVE AND DOWNSTREAM CHECK VALVE  
(ASSUMES LEAK RATE IS NOT LARGE ENOUGH TO OVERPRESSURIZE AFT  
COMPARTMENT BEFORE CREW CAN RESPOND).  
2) SWITCH FAILS CLOSED IN "OPEN" POSITION.

RESULTS IN NON-ISOLATABLE LEAKAGE FROM THE HELIUM ENGINE SUPPLY.  
POSSIBLE OVERPRESSURIZATION OF AFT COMPARTMENT SINCE ISOLATION OF THE  
LINE CANNOT BE ACHIEVED WITHIN THE AVAILABLE RESPONSE TIME. POSSIBLE  
LOSS OF CREW/VEHICLE.

FAILS B SCREEN BECAUSE FAILURE IS NOT READILY DETECTABLE DURING CRITICAL  
PERIOD (ENGINE OPERATION) WHILE IN "OPEN" POSITION.

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

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

(B) GROUND TURNAROUND TEST

MDM AND D&C CMD VERIF, V41AAO.010, V41AAO.030, V41AAO.050 EVERY FLIGHT..

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.