

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2264 -1 REV: 04/25/88  
 ASSEMBLY : D & C PANEL R4 CRIT. FUNC: 1R  
 P/N RI : ME451-001B-0100 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 3 EFFECTIVITY: X X X  
 :THREE PHASE(S): PL LO X OO DO LS  
 :

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS  
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES ANB J BROWN DES R. B. B... EPDC SSM ...  
 REL F DEFENSOR ... REL ... EPDC REL ...  
 QE ... D MASAI QE ... MPS REL ...  
 QE ... MPS REL ...

ITEM:  
 FUSE (1 AMP), LH2 INBOARD FILL/DRAIN, TOPPING, AND HIGH POINT BLEED VALVES.

FUNCTION:  
 PROVIDES CONTROL BUS PROTECTION IN THE EVENT OF LH2 INBOARD FILL/DRAIN, TOPPING, AND HIGH POINT BLEED VALVE CONTROL CIRCUIT FAULTS.  
 32V73A4F12, F13, F14.

FAILURE MODE:  
 FAILS OPEN, FAILS TO CONDUCT.

CAUSE(S):  
 STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS.

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

- (A) LOSS OF MANUAL SWITCH COMMAND.
- (B) LOSS OF MANUAL CAPABILITY TO CONTROL LH2 INBOARD FILL/DRAIN, HIGH POINT BLEED VALVE, AND/OR TOPPING VALVE. NOTE - SEQUENCING DURING VACUUM INERT IS BY MANUAL SWITCH COMMAND.
- (C,D) FIRST FAILURE - NO EFFECT.

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- (E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.  
TIME FRAME - LH2 VACUUM INERT.  
1) FUSE FAILS OPEN CAUSING INABILITY TO OPEN INBOARD FILL/DRAIN VALVE (PV12).  
2) RELIEF SHUTOFF VALVE (PV8) FAILS TO OPEN/REMAIN OPEN.

RESULTS IN LACK OF RELIEF CAPABILITY. POSSIBLE RUPTURE OF THE LH2 MANIFOLD CAUSING LH2 LEAKAGE INTO AFT COMPARTMENT, OVERPRESSURIZATION, AND FIRE/EXPLOSION HAZARD. POSSIBLE LOSS OF CRITICAL ADJACENT COMPONENTS DUE TO CRYOGENIC EXPOSURE. POSSIBLE LOSS OF CREW VEHICLE.

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX D, ITEM NO. 4 - FUSE, PLUG-IN.

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V41ABO.121F, ABO.131D EVERY FLIGHT.

(E) OPERATIONAL USE

FOR OPS 1 VACUUM INERT OPERATIONS, THE CREW WOULD BE DIRECTED TO OPEN THE RTLS DUMP VALVES ON GROUND CALL.

05-6J-435