

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2275 -1 REV: 11/19/87  
 ASSEMBLY : AV BAY 4 DIODE BOX CRIT. FUNC: 1R  
 P/N RI : JANTXV1N5551 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 1 EFFECTIVITY: X X X  
 : ONE PHASE(S): PL X LO OO DO LS  
 : 1 PER LH2 INBOARD FILL/DRAIN VALVE

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

ITEM:  
 DIODE, BLOCKING (3 AMP), LH2 INBOARD FILL/DRAIN VALVE, GROUND OPEN COMMAND.

FUNCTION:  
 ISOLATES MANUAL SWITCH GROUND FROM GROUND OPEN COMMAND, CONDUCTS GROUND OPEN COMMAND TO ONE OF TWO SERIES HDCs AND PROVIDES INHIBIT TO CLOSE SOLENOID HDC FOR CONTROL OF POWER FOR LH2 INBOARD FILL/DRAIN VALVE. V54A76A208A2CR20.

FAILURE MODE:  
 OPENS, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):  
 PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:  
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE  
 (A) LOSS OF ONE OF TWO POWER PATHS (GROUND OPEN COMMAND) TO ONE OF TWO SERIES HDCs FOR OPEN SOLENOID. LOSS OF CLOSE SOLENOID INHIBIT.  
 (B,C,D) FIRST FAILURE - NO EFFECT. POSSIBLE LOSS OF CREW AND VEHICLE AFTER SECOND FAILURE (ROLLER/SPRING OF MANUAL SWITCH BREAKS AND SHORTS ACROSS A SET OF CLOSE CONTACTS INHIBITING OPEN SOLENOID AND PREMATURELY ACTUATING CLOSE SOLENOID) RESULTING IN PREMATURE CLOSURE OF LH2 INBOARD FILL/DRAIN VALVE. TERMINATION OF PROPELLANT LOADING WHICH MAY CAUSE A PRESSURE SPIKE AND POSSIBLE RUPTURE OF ORBITER FILL LINE AND/OR GSE INTERFACE/FACILITY LINES. POSSIBLE AFT COMPARTMENT OVERPRESSURIZATION AND FIRE/EXPLOSION HAZARD. POSSIBLE LOSS OF ADJACENT CRITICAL FUNCTIONS DUE TO CRYO EXPOSURE.

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DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE.

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V41ABO.121B EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - TERMINATE LOADING.

05-6J-459