

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2354B -1 REV:11/18/87

ASSEMBLY : AV BAY 6 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 LO2 OUTBOARD FILL/DRAIN VALVE

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES *J Brown* J BROWN DES *[Signature]* EPDC SSM *[Signature]*  
 REL *F Defensor* F DEFENSOR REL *[Signature]* 12-7-87 EPDC REL *[Signature]*  
 QE D MASAI QE *[Signature]* MPS REL *[Signature]*  
 GE *[Signature]* 11/18/87

ITEM:  
 DIODE, BLOCKING (3 AMP), LO2 OUTBOARD FILL/DRAIN VALVE, GROUND OPEN COMMAND.

FUNCTION:  
 ISOLATES MANUAL SWITCH OPEN COMMAND FROM GROUND OPEN COMMAND, CONDUCTS MDM GROUND OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID AND PROVIDES INHIBIT FOR CLOSE SOLENOID OF LO2 OUTBOARD FILL/DRAIN VALVE. 56V76A209A3CR18.

FAILURE MODE:  
 OPEN, FAILS OPEN, FAILS TO CONDUCT

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

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

(A) LOSS OF CLOSE SOLENOID INHIBIT DUE TO LOSS OF GROUND OPEN COMMAND. DEGRADATION OF REDUNDANCY AGAINST PREMATURE ACTUATION OF CLOSE SOLENOID.

(B,C,D) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW AND VEHICLE AFTER SECOND FAILURE (CONTACT-TO-CONTACT SHORT INHIBITING THE OPEN SOLENOID AND PREMATURELY ACTUATING THE CLOSE SOLENOID) RESULTING IN PREMATURE CLOSURE OF LO2 OUTBOARD 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) DISPOSITION AND RATIONALE:

REFER TO APPENDIX F, ITEM NUMBER 4 - CIODE.

(B) GROUND TURNAROUND TEST

MDM COMMAND/COPPER PATH VERIFICATION, V41AB0.091C EVERY FLIGHT

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - TERMINATE LOADING.