

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2355B -2 REV: 11/18/87

ASSEMBLY : AV HAY 6 DIODE BOX CRIT. FUNC: 1R  
 P/N RI : JANTXVIN5551 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-FAIL B-FAIL C-PASS

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>JWB</i> J BROWN	DES <i>RV Brown</i>	EPDC SSM <i>Galanti et al</i>
REL <i>F</i> DEFENSOR	REL <i>Molten = CL Horz 12/2/87</i>	MPS SSM <i>[Signature]</i>
QE D MASAI	QE-PP <i>[Signature]</i>	EPDC REL <i>[Signature]</i>
		MPS REL <i>[Signature]</i>
		QE <i>[Signature]</i>

ITEM:

DIODE, BLOCKING (3 AMP), LO2 OUTBOARD FILL/DRAIN VALVE, MANUAL OPEN SWITCH COMMAND.

FUNCTION:

ISOLATES GROUND OPEN COMMAND FROM MANUAL SWITCH OPEN COMMAND, CONDUCTS MANUAL SWITCH OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID OF LO2 OUTBOARD FILL/DRAIN VALVE. 56V76A209A3CR17.

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION, THERMAL SHOCK.

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF COMMAND ISOLATION. DEGRADATION OF REDUNDANCY AGAINST PREMATURE DEACTUATION OF OPEN SOLENOID.

(B,C,D) FIRST FAILURE - NO EFFECT. POSSIBLE LOSS OF CREW AND VEHICLE AFTER SECOND FAILURE (ROLLER/SPRING BREAKS. ONE PARTICLE BRIDGES CLOSE CONTACTS. SECOND PARTICLE SHORTS OPEN CONTACT TO GROUND. THIS RESULTS IN INADVERTENT CLOSE COMMAND AND OPEN INHIBIT COMMAND, AND LOSS OF GROUND OPEN COMMAND, RESPECTIVELY) 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. FAILS A AND B SCREENS BECAUSE NO INSTRUMENTATION IS AVAILABLE TO DETECT FAILURE.

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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 - DIODE.

(B) GROUND TURNAROUND TEST

UNDETECTABLE - REQUIRES INVASIVE TESTING.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.