

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2056B -2 REV:11/18/87

ASSEMBLY : APT LCA-3 CRIT. FUNC: 1R  
 P/N RI : JANTXV1N5551 CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 1 EFFECTIVITY: X X X  
 : ONE PHASE(S): PL LO X OO DO LS  
 : 1 PER LO2 OUTBOARD FILL/DRAIN VALVE

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>JWB</i> J BROWN	DES <i>[Signature]</i>	EPDC SSM <i>[Signature]</i>
REL <i>[Signature]</i> F DEFENSOR	REL <i>[Signature]</i> 12-7-87	MPS SSM <i>[Signature]</i>
QE D MASAI	QE <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, MDM OPEN COMMAND BLOCKING.

FUNCTION:

ISOLATES MDM OPEN COMMAND FROM CLOSE SOLENOID INHIBIT, CONDUCTS MANUAL SWITCH OPEN COMMAND AND GROUND OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID OF LO2 OUTBOARD FILL/DRAIN VALVE. 56V76A123CR J3(61).

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

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

EFFECT(S) ON:

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

(A) LOSS OF COMMAND ISOLATION. DEGRADATION OF REDUNDANCY AGAINST LOSS OF POWER TO CLOSE SOLENOID.

(B, C, D) NO EFFECT - FIRST FAILURE

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(E) POSSIBLE LOSS OF CREW AND VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - PREMATURE OPEN MDM COMMAND ACTUATING OPEN SOLENOID AND INHIBITING CLOSE SOLENOID CAUSING OUTBOARD VALVE TO OPEN. THIRD FAILURE - LO2 INBOARD FILL/DRAIN VALVE FAILS OPEN) RESULTING IN OVERBOARD LEAKAGE OF LO2. LOSS OF USABLE PROPELLANT WILL LEAD TO A PREMATURE ENGINE CUTOFF. ACCELERATION LOADS MAY ALSO RUPTURE THE FILL/DRAIN LINE CAUSING AFT COMPARTMENT OVERPRESSURIZATION AND FIRE/EXPLOSION HAZARD. FAILS B SCREEN BECAUSE NO INSTRUMENTATION IS AVAILABLE TO DETECT FAILURE.

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

MDM COMMAND/COPPER PATH VERIFICATION, V41ABC.091B EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.