

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP.

FMEA NO 05-6J -2282 -1

REV: 11/19/87

ASSEMBLY : APT LCA-2
P/N RI : JANTXVIN5551

CRIT. FUNC: 1R
CRIT. HDW: 3

P/N VENDOR:

QUANTITY : 1

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL X LO	OO	DO 1S

: 1 PER LO2 INBOARD FILL/DRAIN VALVE

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

PREPARED BY:

APPROVED BY:

APPROVED BY (NASA):

DES J BROWN

DES [Signature]

EPDC SSM [Signature]

REL F DEFENSOR

REL [Signature]

MPS SSM

QE D MASAI

QE [Signature]

EPDC REL [Signature]

MPS REL [Signature]

ITEM:

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

FUNCTION:

DIODE ISOLATES MDM OPEN COMMAND A FROM MANUAL SWITCH GROUND AND GROUND OPEN COMMAND, CONDUCTS MANUAL SWITCH OPEN COMMAND AND GROUND OPEN COMMAND TO HDC III FOR CONTROL OF POWER TO OPEN SOLENOID OF LO2 INBOARD FILL/DRAIN VALVE (PV10). 55V76A122-J3(60)

FAILURE MODE:

OPEN, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):

CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:

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

(A) LOSS OF GROUND OPEN COMMAND TO OPEN SOLENOID. DEGRADATION OF REDUNDANCY AGAINST LOSS OF OPEN SOLENOID POWER.

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

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(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF OPEN COMMAND A CAUSING LOSS OF OPEN SOLENOID POWER, BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE ACTUATION OF CLOSE SOLENOID; RESULTING IN PREMATURE CLOSURE OF 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 THE B SCREEN BECAUSE PARALLEL COMMAND PATH MASKS FAILURE.

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 NUMBER 4 - DIODE.

(B) GROUND TURNAROUND TEST

MDM COMMAND/COPPER PATH VERIFICATION, V41ABO.101F EVERY FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.