

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2056B -1 REV:11/18/87

ASSEMBLY : AFT 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 X LO CO 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>J BROWN</i>	DES <i>J Brown</i>	EPDC SSM <i>J. Banks</i>
REL <i>F DEFENSOR</i>	REL <i>M. ... 12-7-87</i>	MPS SSM <i>[Signature]</i>
QE <i>D MASAI</i>	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, MANUAL SWITCH OPEN COMMAND/GROUND OPEN COMMAND.

FUNCTION:

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

FAILURE MODE:

OPEN, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):

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

EFFECT(S) ON:

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

(A) LOSS OF ONE OF TWO COMMANDS TO OPEN HDC.

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

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(E) POSSIBLE LOSS OF CREW AND VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF SECOND COMMAND TO OPEN HDC CAUSING PREMATURE DEACTUATION OF THE OPEN SOLENOID, BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE ACTUATION OF 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. FAILS B SCREEN BECAUSE REDUNDANT COMMAND MASKS 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, V41ABO.091F EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - TERMINATE LOADING.

05-6J-98