

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2273 -1 REV: 11/19/87

ASSEMBLY : AFT LCA-1	CRIT. FUNC:	1R
P/N RI : JANTXVIN5551	CRIT. HDW:	3
P/N VENDOR:	VEHICLE	102 103 104
QUANTITY : 1	EFFECTIVITY:	X X X
: ONE	PHASE(S):	PL X LO OO DO LS
: 1 PER LH2 INBOARD FILL/DRAIN VALVE		

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>NS</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> 12/4	EPDC REL <i>[Signature]</i>
		MPS REL <i>[Signature]</i>

ITEM:

DIODE, BLOCKING (3 AMP), LH2 INBOARD FILL/DRAIN VALVE, MDM OPEN COMMAND A.

FUNCTION:

ISOLATES GROUND OPEN COMMAND FROM MDM OPEN COMMAND A, CONDUCTS MDM OPEN COMMAND A TO ONE OF TWO SERIES HDCs FOR CONTROL OF POWER TO OPEN SOLENOID OF LH2 INBOARD FILL/DRAIN VALVE. 54V76A121 J1(54).

FAILURE MODE:

OPENS, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, CONTAMINATION, 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 (OPEN COMMAND A) POWER PATHS TO ONE OF TWO SERIES HDCs FOR OPEN SOLENOID. DEGRADATION OF REDUNDANCY AGAINST PREMATURE DEACTUATION OF OPEN SOLENOID.

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

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(E) POSSIBLE LOSS OF CREW AND VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF GROUND OPEN COMMAND, BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE ACTUATION OF CLOSE SOLENOID) RESULTING IN PREMATURE CLOSURE OF LH2 INBOARD 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) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE.

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V41ABO.121B EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-455