

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2356A -1 REV: 11/20/87

ASSEMBLY : AFT LCA-2
 P/N RI : JANTXV1N5551
 P/N VENDOR:
 QUANTITY : 1
 : ONE
 : 1 PER LH2 OUTBOARD FILL/DRAIN VALVE

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

CRIT. FUNC: 1R
 CRIT. HDW: 3

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <u>J BROWN</u>	DES <u>[Signature]</u>	EPDC SSM <u>[Signature]</u>
REL <u>F DEFENSOR</u>	REL <u>[Signature]</u>	MPS SSM <u>[Signature]</u>
QE <u>D MASAI</u>	QE <u>[Signature]</u>	EPDC REL <u>[Signature]</u>
		MPS REL <u>[Signature]</u>
		QE <u>[Signature]</u>

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ITEM:
 DIODE, BLOCKING (3 AMP), LH2 OUTBOARD FILL/DRAIN VALVE, OPEN COMMAND.

FUNCTION:
 ISOLATES MANUAL SWITCH OPEN COMMAND AND GROUND OPEN COMMAND FROM MDM OPEN COMMAND, CONDUCTS MDM OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID OF LH2 OUTBOARD FILL/DRAIN VALVE. 55V76A122CR J1(57).

FAILURE MODE:
 OPEN, 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 COMMANDS TO OPEN HDC.
- (B,C,D) NO EFFECT - FIRST FAILURE
- (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 LH2 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.

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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 NO. 4 - DIODE

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V41AB0.111B EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.