

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2269 -2 REV:04/25/88

ASSEMBLY : AFT LCA-1 CRIT. FUNC: 1R
P/N RI : JANTXV1N5551 CRIT. HDW: 2

P/N VENDOR: VEHICLE 102 103 104
EFFECTIVITY: X X X
QUANTITY : 1 PHASE(S): PL X LO OO DO LS
: ONE
:

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA);
DES J BROWN DES [Signature] EPDC SSM [Signature] 5/13/88
REL F DEFENSOR [Signature] REL [Signature] 5-6-88 EPDC REL [Signature] 5/13/88
QE [Signature] D MASAI QE [Signature] 5-6-88 MPS REL [Signature] 5/13/88
QE [Signature]

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

FUNCTION:
ISOLATES MDM OPEN COMMAND B FROM MANUAL SWITCH GROUND. CONDUCTS MANUAL SWITCH OPEN COMMAND TO ONE OF TWO SERIES HDCs FOR CONTROL OF LH2 INBOARD FILL/DRAIN VALVE. 54V76A121CR J3(59).

FAILURE MODE:
SHORT (END TO END).

CAUSE(S):
STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), CONTAMINATION, ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY.

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) LOSS OF POWER TO OPEN SOLENOID DUE TO GROUNDING OF MDM OPEN COMMAND B.

(B) NO EFFECT - FIRST FAILURE. BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN OPEN POSITION AS LONG AS CLOSE SOLENOID POWER REMAINS OFF.

(C,D) FIRST FAILURE - NO EFFECT.

05-6J-450

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- (E) 1R2, 1 SUCCESS PATH AFTER FIRST FAILURE. TIME FRAME - PRELAUNCH.
1) DIODE SHORTS.
2) CLOSE SOLENOID HDC FAILS ON RESULTING IN INADVERTENT CLOSURE OF
FILL/DRAIN VALVE.

CLOSURE OF LH2 INBOARD FILL/DRAIN VALVE RESULTS IN TERMINATION OF
PROPELLANT LOADING OR DETANKING WHICH MAY CAUSE A PRESSURE SPIKE AND
POSSIBLE RUPTURE OF ORBITER FILL LINE, FEED 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. POSSIBLE LOSS OF CREW/VEHICLE.

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, AXIAL LEAD.

(B) GROUND TURNAROUND TEST

MDM AND D & C COPPER PATH VERIFICATION, V41ABO,121G EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT: NO CREW ACTION CAN BE TAKEN.

GROUND: NONE.