

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2267 -2 REV: 04/25/88

ASSEMBLY : AV BAY 4 CRIT. FUNC: 1R
P/N RI : JANTXV1N5551 CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 1 EFFECTIVITY: X X X
: ONE PHASE(S): PL X LO OO DO LS
:

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES M. J. BROWN DES R. Brown EPDC SSM Lowell Murray for w.c. Stang
REL F DEFENSOR gd REL M. Cl. Hall 5-6-88 EPDC REL Lowell Murray for w.c. Stang
QE 90 D MASAI QE J. L. Cousin 5-6-88 MPS SSM Lowell Murray for w.c. Stang
MPS REL Lowell Murray for w.c. Stang
QE Lowell Murray for w.c. Stang

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

FUNCTION:
ISOLATES GROUND OPEN COMMAND FROM MANUAL SWITCH GROUND. CONDUCTS MANUAL SWITCH OPEN COMMAND TO ONE OF TWO OPEN SOLENOID SERIES HDCS FOR CONTROL OF LH2 INBOARD FILL/DRAIN VALVE. 54V76A208A2CR19.

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 GROUND OPEN COMMAND DUE TO GROUNDING THROUGH MANUAL SWITCH. DEGRADATION OF REDUNDANCY AGAINST PREMATURE POWER TO CLOSE SOLENOID.
(B) FIRST FAILURE - NO EFFECT.
(C,D) FIRST FAILURE - NO EFFECT.

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- (E) 1R2, 1 SUCCESS PATH AFTER FIRST FAILURE. TIME FRAME - PRELAUNCH.
1) DIODE SHORTS.
2) SWITCH CONTACT-TO-CONTACT SHORT OF CLOSE FILL/DRAIN VALVE
COMMAND RESULTS 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

COPPER PATH VERIFICATION, V41ABO.121B EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT: NO CREW ACTION CAN BE TAKEN.

GROUND: NONE.

05-6J-443