SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2111 -4 REV:06/15/88

ASSEMBLY :D & C PANEL R2 CRIT. FUNC: 1R
P/N RI :ME452-0102-7203 CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY :3 EFFECTIVITY: X X X
:THREE PHASE(S): PL LO X OO DO LS
:

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

| PREPARED BY: | APPROVED BY: | APPROVED BY (NASA): |
|---|---|---|
| DES J BROWN | DES | EPDC SSM |
| | | MPS SSM |
| REL F DEFENSOR | REL J Kimura 6/27/88 | EPDC REL |
| | | MPS REL |
| QE D MASAI | QE | QE |

ITEM:
SWITCH, TOGGLE (TWO POLES, THREE POSITIONS), HELIUM SUPPLY ISOLATION VALVE (LV2/4/6).

FUNCTION:
PROVIDES MANUAL CONTROL OF POWER TO HELIUM SUPPLY ISOLATION VALVE B. 32V73A2S12, 13, 14.

FAILURE MODE:
FAILS CLOSED IN "OPEN" POSITION, CONTACT-TO-CONTACT SHORT ("OPEN" CONTACTS).

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY.

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

(A) LOSS OF SWITCH TRANSFER FUNCTION.

(B) LOSS OF MANUAL CAPABILITY TO CLOSE HELIUM SUPPLY ISOLATION VALVE B.

(C,D) FIRST FAILURE - NO EFFECT.

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(E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.
TIME FRAME - ASCENT.
1) HELIUM LEAK BETWEEN ISOLATION VALVE AND DOWNSTREAM CHECK VALVE (ASSUMES LEAK RATE IS NOT LARGE ENOUGH TO OVERPRESSURIZE AFT COMPARTMENT BEFORE CREW CAN RESPOND).
2) SWITCH FAILS CLOSED IN "OPEN" POSITION.

RESULTS IN NON-ISOLATABLE LEAKAGE FROM THE HELIUM ENGINE SUPPLY. POSSIBLE OVERPRESSURIZATION OF AFT COMPARTMENT SINCE ISOLATION OF THE LINE CANNOT BE ACHIEVED WITHIN THE AVAILABLE RESPONSE TIME. POSSIBLE LOSS OF CREW/VEHICLE.

FAILS B SCREEN BECAUSE FAILURE IS NOT READILY DETECTABLE DURING CRITICAL PERIOD (ENGINE OPERATION) WHILE IN "OPEN" POSITION.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

(B) GROUND TURNAROUND TEST
COMPLETE ELECTRICAL VERIFICATION, V41AA0.015D, V41AA0.035D, V41AA0.055D EVERY FLIGHT.

(E) OPERATIONAL USE
NO CREW ACTION CAN BE TAKEN.