

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2300 -1 REV:06/15/88

ASSEMBLY : D & C PANEL R2 CRIT. FUNC: 1R
P/N RI : ME451-0018-0100 CRIT. HDW: 2
P/N VENDOR:
QUANTITY : 2 VEHICLE 102 103 104
EFFECTIVITY: X X X
PHASE(S): PL LO X OO DO LS

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES MB J BROWN DES R. Brown EPDC SSM Conceded Value by W.C. Sledge
REL g F DEFENSOR REL Kamura 6/27/88 MPS SSM 6/28/88
QE Dum D MASAI QE R. Conner 6/27/88 EPDC REL 7/1/88
MPS REL 6/30/88

ITEM:
FUSE (1 AMP), PNEUMATIC HELIUM SUPPLY ISOLATION VALVE NO. 1 AND 2 (LV7/8) CONTROL CIRCUIT.

FUNCTION:
PROVIDES CONTROL BUS PROTECTION IN THE EVENT OF PNEUMATIC HELIUM SUPPLY ISOLATION VALVE CONTROL CIRCUIT FAULTS. 32V73A2F53, F54.

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT.

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

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

(A) LOSS OF MANUAL SWITCH COMMAND TO ONE OF TWO PARALLEL PNEUMATIC HELIUM SUPPLY ISOLATION VALVES.

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

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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) FUSE FAILS OPEN.

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 REDUNDANT GPC 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 D, ITEM NO. 4 - FUSE, PLUG-IN TYPE.

(B) GROUND TURNAROUND TEST

COMPLETE ELECTRICAL VERIF, V4LAA0.070E EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-483