

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2118 -2 REV:06/15/88

ASSEMBLY :AFT LCA-1, 2, 3 CRIT. FUNC: 1R
P/N RI :MC477-0263-0002 CRIT. HDW: 2

P/N VENDOR: VEHICLE 102 103 104
EFFECTIVITY: X X X
QUANTITY :3 PHASE(S): PL LO X OO DO LS
THREE
:

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES J. Brown DES A. Burns EPDC SSM Control Panel, feeding from a storage tank
REL DEFENSOR REL J. Korman 6/21/88 MPS SSM Control Panel, feeding from a storage tank
QE D. Masai QE J. Korman 6/21/88 EPDC REL Control Panel, feeding from a storage tank
MPS REL Control Panel, feeding from a storage tank
QE J. Korman 6/21/88 QE J. Korman 6/21/88

ITEM:
CONTROLLER, HYBRID DRIVER (HDC), TYPE III, HELIUM ISOLATION VALVE A (LV1/3/5).

FUNCTION:
CONDUCTS POWER TO HELIUM SUPPLY ISOLATION VALVE A (LV1/3/5).
54V76A121J3(76), 55V76A122J3(76), 56V76A123J3(76).

FAILURE MODE:
UNADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF".

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

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

(A) CONTINUOUS OPEN POWER TO HELIUM SUPPLY ISOLATION VALVE A (LV1/3/5).
(B) INABILITY TO DEACTUATE HELIUM SUPPLY ISOLATION VALVE A (LV1/3/5).
(C,D) FIRST FAILURE - NO EFFECT.

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(E) IR/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) HDC FAILS "ON".

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 DETECTABLE DURING CRITICAL PERIOD
(ENGINE OPERATION) WHILE HDC IS COMMANDED "ON".

DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER.

(B) GROUND TURNAROUND TEST

MDM AND D&C CMD VERIF, V41AAO.010, V41AAO.030, V41AAO.050 EVERY FLIGHT.

(E) OPERATIONAL USE.

NO CREW ACTION CAN BE TAKEN.