

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SYSTEM : EPD&C - MAIN PROP.

FMEA NO 05-6J -2302 -2

REV: 06/15/88

ASSEMBLY : PANEL R2

CRIT. FUNC: 1R

P/N RI : ME452-0102-7203

CRIT. HDW: 2

P/N VENDOR:

VEHICLE 102 103 104

QUANTITY : 1

EFFECTIVITY: X X X

: ONE

PHASE(S): PL LO X OO DO LS

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

PREPARED BY:

APPROVED BY:

APPROVED BY (NASA):

DES *JWB* J BROWN

DES *[Signature]*

EPDC SSM *[Signature]* *for w.c. stry*

REL *[Signature]* DEFENSOR

REL *J. Korman 6/27/88*

MPS SSM *[Signature]*

QE *DUN* D MASAI

QE *[Signature]* *6/27/88*

EPDC REL *[Signature]* *6/27/88*

MPS REL *[Signature]*

QE *[Signature]* *6/30/88*

ITEM:

TOGGLE SWITCH (TWO POLES, THREE POSITIONS), PNEUMATIC HELIUM SUPPLY ISOLATION VALVE NO. 1 AND 2 (LV7/8) CONTROL CIRCUIT.

FUNCTION:

PROVIDES MANUAL CONTROL OF POWER TO CONTROL SOLENOID OF PNEUMATIC HELIUM SUPPLY ISOLATION VALVES. 12V73A2S15.

FAILURE MODE:

FAILS OPEN, FAILS CLOSED IN "OPEN" POSITION, CONTACT-TO-CONTACT SHORT ("OPEN" CONTACT), SHORT TO GROUND.

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 PNEUMATIC HELIUM SUPPLY ISOLATION VALVES.

(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 APT  
COMPARTMENT BEFORE CREW CAN RESPOND).  
2) SWITCH FAILS.

RESULTS IN NON-ISOLATABLE LEAKAGE FROM THE HELIUM ENGINE SUPPLY.  
POSSIBLE OVERPRESSURIZATION OF APT 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, V41AA0.070A,D,E EVERY FLIGHT.

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

05-6J-489