

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2220 -2 REV:11/04/87

ASSEMBLY : AFT PCA-4, 5, 6 CRIT. FUNC: 1R  
 P/N RI : JANTXVIN4246 CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 9 EFFECTIVITY: X X X  
 : NINE PHASE(S): PL X LO X OO DO LS  
 : 3 PER LH2 PREVALVE 1, 2, & 3

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

|                |                          |                               |
|----------------|--------------------------|-------------------------------|
| PREPARED BY:   | APPROVED BY:             | APPROVED BY (NASA):           |
| DES J BROWN    | DES <u>J. Brown</u>      | EPDC SSM <u>Ch. [unclear]</u> |
| REL F DEFENSOR | REL <u>Mehin Ch. Han</u> | MPS SSM <u>[unclear]</u>      |
| QE D MASAI     | QE <u>[unclear]</u>      | EPDC REL <u>[unclear]</u>     |
|                |                          | MPS REL <u>[unclear]</u>      |

ITEM:

DIODE, BLOCKING (1 AMP), LH2 PREVALVE 1, 2, & 3, OPEN SWITCH SCAN BLOCKING DIODE.

FUNCTION:

DIODE ISOLATES OPEN SWITCH SCAN SIGNALS FROM OTHER MANUAL SWITCH OPEN COMMANDS. 54V76A134A1CR11, 12, 15; 55V76A135A1CR11, 12, 15; 56V76A136A1CR11, 12, 15.

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL SHOCK.

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) LOSS OF MANUAL SWITCH OPEN COMMAND ISOLATION.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - CONTACT-TO-CONTACT SHORT ACROSS ONE OPEN TERMINAL OF MANUAL SWITCH CAUSING OPEN SOLENOID TO FAIL ON. THIRD FAILURE - SSME SHUTDOWN WITH UNCONTAINED DAMAGE REQUIRING LH2 PROPELLANT SUPPLY ISOLATION) DUE TO INABILITY TO CLOSE LH2 PREVALVE. FAILS B SCREEN BECAUSE NO INSTRUMENTATION IS AVAILABLE TO DETECT THIS FAILURE.

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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. 3 - DIODE.

(B) GROUND TURNAROUND TEST

D & C CONTROL BUS REDUNDANCY, V41AFO.100D-F, 120D-F, 140D-F EVERY FLIGHT

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - IF A MAJOR LEAK IS DETECTED, CLOSE PREVALVES (PV4, 5, 6), LH2 17-INCH DISCONNECT (PD2), LH2 4-INCH RECIRC DISCONNECT (PD3), LH2 RECIRC VALVES (PV14-16); DRAIN MANIFOLD.

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