

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2213 -2 REV:11/04/87

ASSEMBLY : APT LCA-1, 2, 3 CRIT. FUNC: 1R
 P/N RI : JANTXV1N4246 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 6 EFFECTIVITY: X X X
 : SIX PHASE(S): PL X LO X OO DO LS
 : 2 PER PREVALVE 1, 2, 3

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES J BROWN DES *[Signature]* EPDC SSM *[Signature]*
 REL F DEFENSOR REL *[Signature]* MPS SSM *[Signature]*
 QE D MASAI QE *[Signature]* EPDC REL *[Signature]*
 MPS REL *[Signature]* QE *[Signature]*

ITEM:

DIODE, BLOCKING (1 AMP), LH2 PREVALVE 1, 2, & 3, MAINSTAGE BLOCKING DIODE

FUNCTION:

DIODE ISOLATES MANUAL SWITCH COMMAND FROM MDM, CONDUCTS MDM MAINSTAGE COMMAND TO INHIBIT HDC FOR CONTROL OF REDUNDANT POWER TO CLOSE SOLENOIDS FOR LH2 PREVALVE OPERATION. 54V76A121CR-J1(27), (31); 55V76A122CR-J1(27), (31); 56V76A123CR-J1(27), (31).

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

PIECE PART MECHANICAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS

EFFECT(S) ON:

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

(A) DEGRADATION OF REDUNDANCY AGAINST FAILURE TO CLOSE LO2 PREVALVE.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (SECOND FAILURE SECOND LH2 MAINSTAGE DIODE SHORTS. THIRD FAILURE - ROLLER/SPRING OF MANUAL LH2 PREVALVE SWITCH BRIDGES TWO OPEN CONTACTS PROVIDING TWO INADVERTENT OPEN COMMANDS. INHIBITS FROM LH2 SWITCH PROPAGATE INTO LO2 CIRCUIT. FOURTH FAILURE - SSME SHUTDOWN WITH UNCONTAINED DAMAGE REQUIRING LO2 SUPPLY ISOLATION) DUE TO FAILURE TO ISOLATE LO2 SUPPLY. FAILS B SCREEN BECAUSE MAINSTAGE COMMANDS ARE NOT INSTRUMENTED.

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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

CLOSE INHIBIT REDUNDANCY VERIFICATION, V41AGO.010D, 020D, 030D EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - IF A MAJOR LEAK IS DETECTED, CLOSE PREVALVES (PV1, 2, 3), 202 17-INCH DISCONNECT (PD1); DRAIN MANIFOLD.

05-6J-346