

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2213 -1 REV:11/04/87

ASSEMBLY :AFT LCA-1, 2, 3 CRIT. FUNC: 1R  
 P/N RI :JANTXVIN4246 CRIT. HDW: 2  
 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] 12-5-87 MPS SSM [Signature]  
 QE D MASAI QE [Signature] 11/77 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:

OPEN, FAILS OPEN

CAUSE(S):

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

EFFECT(S) ON:

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

(A) DEGRADATION OF REDUNDANCY AGAINST PREMATURE CLOSURE OF LH2 PREVALVE.

(B,C,D) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (ROLLER/SPRING BRIDGES TWO CLOSE CONTACTS PROVIDING TWO INADVERTENT CLOSE COMMANDS AND TWO OPEN INHIBITS) RESULTING IN PREMATURE LH2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN BECAUSE NO INSTRUMENTATION 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

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

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-344