

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2205 -1 REV:11/04/87

ASSEMBLY : AFT LCA-4, 5, & 6 CRIT. FUNC: 1R  
 P/N RI : JANTX1N1204RA CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 3 EFFECTIVITY: X X X  
 :THREE PHASE(S): PL X LO X OO DO LS  
 :1 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 EPDC REL *[Signature]*  
 QE D MASAI QE *[Signature]* MPS REL *[Signature]*

ITEM:

DIODE, BLOCKING (12 AMP), LH2 PREVALVE 1, 2, & 3, OPEN COMMAND B RPC OUTPUT.

FUNCTION:

USED TO ISOLATE REDUNDANT MAIN BUS POWER TO A COMMON OPEN SOLENOID. LOCATED AT RPC OUTPUT AHEAD OF OPEN COMMAND C HDC III. 54V76A134A4CR32, 55V76A135A4CR32, 56V76A136A4CR32

FAILURE MODE:

OPENS, FAILS OPEN, FAILS TO CONDUCT POWER.

CAUSE(S):

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

EFFECT(S) ON:

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

(A) LOSS OF COMMAND B POWER PATH TO HDC III.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF COMMAND A POWER PATH TO HDC III, BISTABLE FEATURE MAINTAINS PREVALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE ACTUATION OF CLOSE SOLENOID) RESULTING IN PREMATURE LH2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO PROPELLANT STARVATION CUTOFF. FAILS B SCREEN BECAUSE REDUNDANT POWER PATH MASKS FAILURE. NOTE - BISTABLE FEATURE NOT DEMONSTRATED BY TEST (CERTIFIED BY ANALYSIS). A FULL FLOW DETENT VERIFICATION TEST IS SCHEDULED FOR QFY 1988.

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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. 2 - DIODE, POWER-STUD MOUNTED.

(B) GROUND TURNAROUND TEST

MDM COMMAND REDUNDANCY, V41AEO.180D; 200D; 220D EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-320