

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS FMEA NO 05-6L -2251 -2 REV:10/30/87

ASSEMBLY : APT PCA 1,2,3 CRIT. FUNC: 1R
 P/N RI : JANTXIN1204RA CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 16 EFFECTIVITY: X X X
 : SIXTEEN PHASE(S): PL LO X OO X DO X LS
 : (TWO DIODES PER VALVE)

PREPARED BY: DES D SOVEREIGN APPROVED BY: REDUNDANCY SCREEN: A-FAIL B-FAIL C-PASS
 REL F DEFENSOR DES *P. S. R. B...* APPROVED BY (NASA):
 QE J COURSEN REL *Ed Mehan CL Form 11-19-87* SSM *John Harris*
DM / SMC / 2-7-77 REL *11-19-87* QE *W. J. ...*
EPD&C OMS

ITEM:
 DIODE, ISOLATION, 12AMP, LEFT AND RIGHT OMS HELIUM AND VAPOR ISOLATION A AND B, 1 AND 2 VALVE CIRCUIT.
 (REMOTE POWER CONTROLLER OUTPUT DIODE).

FUNCTION:
 PROVIDES BUS ISOLATION BETWEEN TWO POWER INPUT CIRCUITS TO THE "OPEN" SOLENOID COIL OF THE LEFT AND RIGHT OMS HELIUM AND VAPOR ISOLATION VALVES A AND B, 1 AND 2. FOR OV-102; RIGHT - 54V76A131A1CR13, CR14, A2CR11, CR12. 56V76A133A2CR6, CR14, A3CR3, CR4. LEFT - 54V76A131A3CR13, 14, 15, 16. 55V76A132A2CR3, 4, 11, 12. FOR OV-103 AND SUBSEQUENT: RIGHT - 54V76A131CR24, 25, 26, 27. 56V76A133CR1, 2, 3, 4. LEFT - 54V76A131CR18, 19, 22, 23. 55V76A132CR7, 8, 26, 27.

FAILURE MODE:
 SHORTS, INTERNAL SHORT, LOW BACK RESISTANCE.

CAUSE(S):
 CONTAMINATION, THERMAL STRESS, MECHANICAL SHOCK, VIBRATION.

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) FIRST FAILURE HAS NO EFFECT. DEGRADATION OF ELECTRICAL ISOLATION BETWEEN PARALLEL REMOTE POWER CONTROLLERS.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO OPEN THE ISOLATION VALVES. REQUIRES TWO OTHER FAILURES (ANODE SIDE OF SAME DIODE SHORTS TO GROUND, PARALLEL ISOLATION VALVE FAILS CLOSE) BEFORE THE EFFECT IS MANIFESTED. FAILURE IS NOT READILY DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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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

NOT DETECTABLE DURING NORMAL GROUND CHECKOUT. REQUIRES INVASIVE TESTING.

(E) OPERATIONAL USE

NO ACTION ON THE FIRST FAILURE - NOT DETECTABLE. IF VALVE FAILS TO MOVE, USE REDUNDANT FLOW PATH.