

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2191 -3 REV:05/03/88

ASSEMBLY :AFT PCA 4,5,6	CRIT.FUNC: 1R
P/N RI :JANTXIN1188R	CRIT. HDW: 3
P/N VENDOR:	VEHICLE 102 103 104
QUANTITY :6	EFFECTIVITY: X X X
:SIX, TWO/SERIES/PCA	PHASE(S): PL X LO X OO DO LS

PREPARED BY:	REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS	APPROVED BY (NASA):
DES R PHILLIPS	DES <u><i>R. Brown</i></u>	SSM <u><i>A.C. Stage 5/12/88</i></u>
REL M HOVE	REL <u><i>Robert C. Hove 5-6-88</i></u>	REL <u><i>JD [unclear] 5/14/88</i></u>
QE J COURSEN	QE <u><i>J. J. Courson 5/6/88</i></u>	QE <u><i>[unclear]</i></u>

ITEM: DIODE, BLOCKING, 35 AMP - PRE-FLIGHT TEST BUS TO ESSENTIAL BUS POWER CIRCUIT

FUNCTION: ALLOWS POWERING OF ESSENTIAL BUSES FROM PRE-FLIGHT TEST BUSES BUT BLOCKS POWER IN THE REVERSE DIRECTION. 54V76A134CR1, CR2; 55V76A135CR1, CR2; 56V76A136CR1, CR2

FAILURE MODE: SHORTS TO GROUND

CAUSE(S): THERMAL STRESS, CONTAMINATION, STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), ELECTRICAL STRESS, PROCESSING ANOMALY

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

(A,B,C,D) LOSS OF PRE-FLIGHT TEST BUS SOURCE TO AN ESSENTIAL BUS DURING PRELAUNCH OPERATIONS. SECOND FAILURE - SAME DIODE SHORTED RESULTS IN FUSE (FB) OPENING WHICH LOSES POWER TO LO2 AND LH2 PREVALVE CONTROL CIRCUITS. ESSENTIAL BUS 3AB IN THE AFT LOAD CONTROL ASSEMBLY NO. 3 ALSO REQUIRED FOR SRB MAIN DC BUS SOURCE REDUNDANCY. NO EFFECT - PREVALVE CIRCUITS ARE REDUNDANT.

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (LOSS OF REDUNDANT PREVALVE CIRCUITS) DUE TO INABILITY TO CLOSE MAIN ENGINE PREVALVES DURING MAIN ENGINE SHUTDOWN. FAILS "B" SCREEN SINCE THERE ARE NO MEASUREMENTS FOR PRE-FLIGHT TEST BUS STATUS.

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DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:

(B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX F, ITEM NO. 1 - DIODE, POWER - STUD MOUNTED

(E) GROUND TURNAROUND TEST

PRE-FLIGHT BUS ACTIVATION - VERIFY 28 VOLTS DC NOMINAL AT ESSENTIAL BUSES WITH PRE-FLIGHT BUS GROUND POWER "ON" AND MAIN DC BUS GROUND POWER "OFF". TEST PERFORMED ALL VEHICLES FOR ALL FLIGHTS.

(E) OPERATIONAL USE

NONE