

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2349 -2 REV: 11/04/87

ASSEMBLY : AFT PCA-5 CRIT. FUNC: 1R  
 P/N RI : JANTX1N1204RA CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 2 EFFECTIVITY: X X X  
 : TWO PHASE(S): PL X LO X OO DO LS  
 : 1 PER LH2/LO2 17" DISCONNECT LATCH

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:	DES	J BROWN	APPROVED BY:	DES	<i>[Signature]</i>	APPROVED BY (NASA):	EPDC SSM	<i>[Signature]</i>
REL	F DEFENSOR	REL	<i>[Signature]</i>	12-547	EPDC REL	<i>[Signature]</i>	MPS SSM	<i>[Signature]</i>
QE	D MASAI	QE	<i>[Signature]</i>	11/9/87	MPS REL	<i>[Signature]</i>	11.188	<i>[Signature]</i>

ITEM:

DIODE, CROSSOVER (12 AMP), LH2/LO2 17-INCH FEEDLINE DISCONNECT VALVE LATCH UNLOCK SOLENOID POWER.

FUNCTION:

PREVENTS INADVERTENT MDM COMMAND OR PREMATURE HDC-I OUTPUT FROM ACTUATING LATCH UNLOCK SOLENOID PREMATURELY. DIODE ISOLATES REDUNDANT POWER WHICH ENERGIZES THE LATCH UNLOCK SOLENOID FOR THE FEED DISCONNECT VALVE. ISOLATES REDUNDANT POWER BETWEEN RPC OUTPUTS. 55V76A135A2CR44, CR49.

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

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

EFFECT(S) ON:

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

(A) DEGRADATION OF REDUNDANCY AGAINST PREMATURE UNLOCK SOLENOID POWER.

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

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP.

FMEA NO 05-6J -2349 -2

REV:11/04/87

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (SECOND FAILURE - PREMATURE UNLOCK COMMAND B OR HDC I OUTPUT PREMATURELY ACTUATING THE UNLOCK SOLENOID. THIRD FAILURE - PREMATURE DEACTUATION OF LOCK SOLENOID. FOURTH FAILURE - FLAPPER FAILS TO THE CLOSED POSITION) RESULTING IN PREMATURE DISCONNECT VALVE CLOSURE WHILE ENGINES ARE RUNNING. SURGE PRESSURE FROM VALVE CLOSURE MAY CAUSE DAMAGE OR RUPTURE TO THE MPS AND/OR ET SYSTEM, DEPENDING ON THE RATE OF CLOSURE. SHUTDOWN OF ALL THREE SSMEs SIMULTANEOUSLY. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN BECAUSE NO INSTRUMENTATION IS AVAILABLE TO DETECT FAILURE.

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE:

REFER TO APPENDIX F, ITEM NO. 2 - DIODE, POWER-STUD MOUNTED.

(B) GROUND TURNAROUND TEST

COMPLETE ELECTRICAL VERIFICATION, V41AB0.155I, 165I EVERY FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.