

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2348 -1 REV: 11/04/87

ASSEMBLY : AFT PCA-6 CRIT. FUNC: 1R  
 P/N RI : JANTXIN1204RA 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>	REL	<i>[Signature]</i>	MPS SSM	<i>[Signature]</i>	
QE	D MASAI	QE	<i>[Signature]</i>	QE	<i>[Signature]</i>	EPDC REL	<i>[Signature]</i>	
						MPS REL	<i>[Signature]</i>	

6/11/88

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

FUNCTION:  
 PREVENTS INADVERTENT MDM COMMAND OR PREMATURE HDC I OUTPUT FROM ACTUATING LATCH LOCK SOLENOID PREMATURELY. DIODE ISOLATES REDUNDANT POWER WHICH ENERGIZES THE LATCH LOCK SOLENOID FOR THE FEED DISCONNECT VALVE. ISOLATES REDUNDANT POWER BETWEEN RPC OUTPUTS. 56V76A136A2CR41, CR44.

FAILURE MODE:  
 OPENS, FAILS OPEN, FAIL TO CONDUCT.

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) LOSS OF ONE OF TWO POWER PATHS (COMMAND A) TO LOCK COMMAND C HDC III. DEGRADATION OF REDUNDANCY TO POWER LATCH LOCK SOLENOID.  
 (B,C,D) NO EFFECT - FIRST FAILURE.

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(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (SECOND FAILURE - LOSS OF POWER FROM HDC I REMOVING LOCK SOLENOID POWER, BISTABLE FEATURE MAINTAINS LATCH IN LOCK POSITION. THIRD FAILURE - PREMATURE ACTUATION OF UNLOCK SOLENOID ROTATING LATCH TO THE UNLOCK POSITION. 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 REDUNDANT POWER PATH MASKS 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, V41ABO.155N, 165N EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.