

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2376 -1 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:	APPROVED BY:	APPROVED BY (NASA):
DES J BROWN	DES <u>[Signature]</u>	EPDC SSM <u>[Signature]</u>
REL F DEFENSOR	REL <u>[Signature]</u> 12-5-87	MPS SSM <u>[Signature]</u>
QE D MASAI	QE <u>[Signature]</u> 1/1/88	EPDC REL <u>[Signature]</u>
		MPS REL <u>[Signature]</u>

ITEM:
 DIODE, BLOCKING (12 AMP), LH2/LO2 17-INCH FEEDLINE DISCONNECT VALVE LATCH LOCK SOLENOID, RPC B OUTPUT DIODE.

FUNCTION:
 DIODE USED TO ISOLATE REDUNDANT MAIN BUS POWER TO A LOCK SOLENOID. LOCATED AT RPC B OUTPUT AHEAD OF LOCK COMMAND B HDC III. 55V76A135A2CR39, CR42.

FAILURE MODE:
 OPEN, FAILS OPEN, FAILS 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 TO 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 SECOND POWER PATH TO LOCK SOLENOID, BISTABLE FEATURE MAINTAINS DISCONNECT 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 BECAUSE PARALLEL 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, V41AB0.155C, 165C EVERY FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-547