

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2250 -3 REV:11/19/87

ASSEMBLY :AFT PCA-2 CRIT. FUNC: 1R
P/N RI :JANTX1N1204RA CRIT. HDW: 2
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 FEED DISCONNECT VALVE

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>JWB</i> J BROWN	DES <i>[Signature]</i>	EPDC SSM <i>[Signature]</i>
REL <i>[Signature]</i> F DEFENSOR	REL <i>[Signature]</i> 12-5-87	MPS SSM <i>[Signature]</i>
QE <i>DM</i> D MASAI	QE <i>[Signature]</i> 12/9/87	EPDC REL <i>[Signature]</i> for ML peterson
		MPS REL <i>[Signature]</i>

ITEM:

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

FUNCTION:

PREVENTS INADVERTENT MCM COMMAND OR PREMATURE HDC-I OUTPUT FROM ACTUATING OPEN SOLENOID PREMATURELY. DIODE ISOLATES REDUNDANT POWER BUSES WHICH ENERGIZE THE OPEN SOLENOID FOR THE LH2/LO2 TANK FEED DISCONNECT VALVE. ISOLATES REDUNDANT POWER BETWEEN RPC OUTPUTS. 55V76A132A3CR4, A2CR5.

FAILURE MODE:

SHORTS TO GROUND

CAUSE(S):

PIECE PART MECHANICAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:

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

(A) LOSS OF POWER TO OPEN SOLENOID - BOTH RPCs WILL TRIP. SERIES RPC WILL TRIP DUE TO THE LOAD TERMINAL DIRECTLY CONNECTING TO GROUND; PARALLEL RPC WILL TRIP DUE TO THE LOAD TERMINAL CONNECTING TO GROUND THROUGH THE HDC III REVERSE BIAS DIODE.

(B) NO EFFECT - FIRST FAILURE. BISTABLE FEATURE MAINTAINS DISCONNECT VALVE IN OPEN POSITION.

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(C,D) POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (PREMATURE ACTUATION OF CLOSE SOLENOID) 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. NOTE - LATCH IS NOT DESIGNED OR CERTIFIED TO HOLD PNEUMATICALLY-CLOSED FLAPPER UNDER FLOW CONDITIONS, THEREFORE, NOT CONSIDERED A VALID SUCCESS PATH FOR THIS SCENARIO.

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

COMPLETE ELECTRICAL VERIFICATION, V4LAB0.150N, 150N EVERY FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-412