SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2248 -1 REV:11/04/87

ASSEMBLY :AFT PCA-2 CRIT. FUNC: 1R
P/N RI :JANTX1N1204RA CRIT. HDW: 3
P/N VENDOR:
QUANTITY :2
:TWO
:1 PER LH2/LO2 FEED DISCONNECT VALVE

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X

PHASE(S): PL X LO X OO DO LS

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

PREPARED BY:		APPROVED BY:		APPROVED BY (NASA):	
DES	J BROWN	DES		EPDC SSM	
				MPS SSM	
REL	F DEFENSOR	REL	7/5/87	EPDC REL	
				MPS REL	
QE	D MASAI	QE	7/7/	QE	

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

FUNCTION:
DIODE USED TO ISOLATE REDUNDANT MAIN BUS B POWER TO AN OPEN SOLENOID. LOCATED AT RPC B OUTPUT AHEAD OF OPEN COMMAND C HDC III. 55V76A132A2CR6, A3CR12.

FAILURE MODE:
OPEN, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):
PIECE PART MECHANICAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

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

(A) LOSS OF ONE OF TWO POWER PATHS TO THE FEED DISCONNECT VALVES OPEN SOLENOID.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF SECOND POWER PATH TO OPEN SOLENOID, BISTABLE FEATURE WILL MAINTAIN FEED DISCONNECT VALVE IN OPEN POSITION. THIRD 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. FAILS B SCREEN BECAUSE REDUNDANT POWER PATH MASKS FAILURE. 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, V41ABO.150E, 160E EVERY FLIGHT.

(E) OPERATIONAL USE
NO CREW ACTION CAN BE TAKEN.