

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS

FMEA NO 05-6KF-2252 -2

REV: 11/03/87

ASSEMBLY : FWD PCA 1,2  
 P/N RI : JANTX1N1204RA  
 P/N VENDOR:  
 QUANTITY : 4  
 : FOUR  
 :

	VEHICLE	102	103	104
EFFECTIVITY:		X	X	X
PHASE(S) :	PL	LO X	OO	DO LS

CRIT. FUNC: 1R  
 CRIT. HDW: 3

PREPARED BY:

DES D SOVEREIGN  
 REL J BEEKMAN  
 QE

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

APPROVED BY:

DES *[Signature]*  
 REL *[Signature]*  
 QE *[Signature]*

APPROVED BY (NASA):

SSM *[Signature]*  
 REL *[Signature]*  
 QE *[Signature]*

ITEM:

ISOLATION DIODE (12 AMP) - FORWARD RCS HELIUM ISOLATION VALVE A AND B SOLENOID POWER CIRCUIT.

FUNCTION:

PROVIDES ISOLATION BETWEEN TWO POWER INPUT CIRCUITS TO THE "OPEN" SOLENOID COIL OF HELIUM ISOLATION VALVES A AND B FOR THE FORWARD RCS PRESSURIZATION SYSTEMS.

81V76A22CR13,37. 82V76A23CR7,8.

FAILURE MODE:

SHORT, INTERNAL SHORT, LOW BACK RESISTANCE.

CAUSE(S):

CONTAMINATION, THERMAL STRESS.

EFFECT(S) ON:

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

(A) SYSTEM DEGRADATION.

(B) LOSS OF REDUNDANT CIRCUIT ISOLATION WHEN VALVE SOLENOID IS ENERGIZED FROM THE ALTERNATE SOURCE. POSSIBLE LOSS OF REDUNDANCY IF THE SAME DIODE SHOULD SHORT TO GROUND AND PRECLUDE POWERING THE "OPENING" SOLENOID COIL. NO EFFECT, THE REDUNDANT PRESSURIZATION PATH CAN COMPLETE THE FUNCTION WHEN REQUIRED.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LACK OF PRESSURIZATION TO PERFORM NOMINAL EXTERNAL TANK SEPARATION. THREE OTHER FAILURES (SAME DIODE SHORT TO GROUND, REGULATOR B FAILED CLOSE, AND LOSS OF ULLAGE) ARE REQUIRED BEFORE TANK PRESSURIZATION FUNCTION IS LOST AND A NOMINAL EXTERNAL TANK SEPARATION CANNOT BE PERFORMED. FAILURE IS NOT DETECTABLE IN-FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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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  
CANNOT CHECK OUT ON THE GROUND WITHOUT A MAJOR IMPACT TO THE TURNAROUND  
FLOW.

(E) OPERATIONAL USE  
NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF VALVE FAILS TO OPEN,  
USE REDUNDANT FLOW PATH.

10-14-87