

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS

FMEA NO 05-6KF-2257A -1

REV: 11/01/87

ASSEMBLY : PANEL 08  
 P/N RI : JANTXV1N4246  
 P/N VENDOR:  
 QUANTITY : 1  
 : ONE  
 :

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

CRIT. FUNC: 1R  
 CRIT. HDW: 3

PREPARED BY:  
 DES D SOVEREIGN  
 REL J BEEKMAN  
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS  
 APPROVED BY:  
 DES R. S. Quinn APPROVED BY (NASA)  
 REL Michael S. Quinn 11-16-87 SSM  
 QE Michael S. Quinn 11-16-87 REL Michael S. Quinn 11-16-87  
 QE Michael S. Quinn 11-16-87 QE Michael S. Quinn 11-16-87

ITEM:

BLOCKING DIODE - FORWARD RCS FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE MANUAL SWITCH CONTROL CIRCUIT PROTECTION ("CLOSE" SIDE).

FUNCTION:

PROVIDES TOGGLE SWITCH "CLOSE" COMMAND CIRCUIT PROTECTION AGAINST INADVERTENT STIMULI AND CONTINUOUS COIL POWER WHILE THE TOGGLE SWITCH IS IN THE CENTER GPC (GENERAL PURPOSE COMPUTER) POSITION. 33V73A8CR1.

FAILURE MODE:

OPEN, FAILS TO CONDUCT, HIGH RESISTANCE

CAUSE(S):

THERMAL STRESS, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:

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

(A) LOSS OF PROTECTION AGAINST INADVERTENT STIMULI.

(B) MANUAL SWITCH "CLOSE" COMMAND CIRCUITRY IS VULNERABLE TO SWITCH AND HOT SHORT FAILURES THAT COULD LEAD TO CONTINUOUS COIL POWERING. NO EFFECT, REQUIRES ADDITIONAL FAILURES. SWITCH FUNCTION IS NOT IMPAIRED.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO POSSIBLE VALVE OVERHEATING AND FUEL DECOMPOSITION AFTER CONTINUOUS COIL POWERING AND LEADING TO POTENTIAL VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES 2 OTHER FAILURES (SWITCH INTERNAL SHORTING, "CLOSE" TYPE III DRIVER FAILED ON) BEFORE EFFECT IS MANIFESTED. THE FAILURE STRING COULD BE UNDETECTABLE AFTER THE FIRST FAILURE DUE TO LACK OF MEASUREMENT INDICATIONS FOR THE TYPE III AND TYPE IV HYBRID DRIVERS.

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REV:11/03/87

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. 3 - DIODE.

(B) GROUND TURNAROUND TEST

COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND. THE TESTING CONSISTS OF CYCLING VALVE MANUAL SWITCHES AND/OR SENDING GENERAL PURPOSE COMPUTER (GPC) COMMANDS TO CYCLE VALVES OR HEATERS WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF CONTINUOUS POWER SITUATION EXISTS, REMOVE POWER FROM GROUND DRIVER BY PULLING CIRCUIT BREAKER. CIRCUIT BREAKER WILL BE RESET WHEN THE VALVE IS TO BE MOVED.