SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - AFT-RCS FMEA NO 05-6KA-2257A -1 REV:11/03/87

ASSEMBLY :PANEL 07
P/N RI :JANTXV1N4246
P/N VENDOR:
QUANTITY :2
:TWO
:

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

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

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

PREPARED BY:
DES D SOVEREIGN
REL J BEEKMAN
QE

APPROVED BY:
DES
REL 11-14-87
QE 11/17/87

APPROVED BY (NASA):
SSM
REL
QE
EPD&C SSM

ITEM:
BLOCKING DIODE - LEFT AND RIGHT AFT 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 POSITION. 33V73A7A4CR1,3.

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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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 EXITS, REMOVE POWER FROM GROUND DRIVER BY PULLING CIRCUIT BREAKER. CIRCUIT BREAKER WILL BE RESET WHEN THE VALVE IS TO BE MOVED.