SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - FWD-RCS FMEA NO 05-6KF-2090 -1 REV:11/03/87

ASSEMBLY :FWD LCA 3
P/N RI :RWP40S1211FR
P/N VENDOR:
QUANTITY :1
:ONE
:

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
QE

APPROVED BY (NASA):
SSM
REL
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ITEM:
CURRENT LIMIT RESISTOR (1.2 KILO OHM, 2 WATT) - FORWARD RCS FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE LOGIC AND MEASUREMENT CIRCUIT POWER.

FUNCTION:
THE INDIVIDUAL CIRCUIT RESISTORS CONDUCT CIRCUIT POWER AND PROVIDE CURRENT LIMITING TO THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE LOGIC AND MEASUREMENT CIRCUIT POSITION SWITCHES. 83V76A18R(G2-104).

FAILURE MODE:
OPEN, ELEMENT OPENS, HIGH RESISTANCE.

CAUSE(S):
STRUCTURAL FAILURE, VIBRATION, MECHANICAL SHOCK.

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

(A) LOSS OF CIRCUIT POWER.

(B) LOSS OF INTERFACE FUNCTION - THE AFFECTED POWER INHIBIT LOGIC INPUTS ARE NOT ENERGIZED.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO VALVE OVERHEATING AND PROPELLANT DECOMPOSITION BY CONTINUOUS SOLENOID COIL POWERING LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES 2 OTHER FAILURES (SWITCH SHORTS, TYPE IV "OPEN/CLOSE" DRIVER FAILS 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 E, ITEM NO. 3 - RESISTOR, WIRE WOUND.

(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 HYBRID DRIVER FAILS ON, MINIMIZE RISK OF CONTINUOUS POWER SITUATION BY PULLING APPROPRIATE CIRCUIT BREAKERS. CIRCUIT BREAKERS WILL BE RESET WHEN VALVE IS TO BE MOVED.