

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS FMEA NO 05-6KF-2280 -2 REV: 11/03/87

ASSEMBLY : PANEL R15 CRIT. FUNC: 1R
 P/N RI : MC454-0026-2030 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PHASE(S): PL X LO X OO X DO X LS X
 :

PREPARED BY: APPROVED BY: REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 DES D SOVEREIGN DES D.S. R. Bunn APPROVED BY (NASA):
 REL J BEEKMAN REL Mohand Ch. Han 11-14-87 SSM
 QE 2.6/1/1987 J. Smith/7/ QE EPD&C 4541 - Vehicle 102
 11-14-87

ITEM:
 CIRCUIT BREAKER (3 AMP) - FORWARD RCS FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE, MANUAL SWITCH GROUND DRIVER COMMAND CIRCUIT.

FUNCTION:
 THE CIRCUIT BREAKER CONDUCTS LOGIC INPUTS FROM THE MANUAL SWITCH TO THE GROUND DRIVER AND PROVIDES THE CAPABILITY TO MANUALLY ISOLATE THE MANUAL SWITCH. 32V73A15CB73.

FAILURE MODE:
 SHORT, FAILS CLOSED, INTERNALLY SHORTS

CAUSE(S):
 PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
 (A) LOSS OF REDUNDANCY.
 (B) NO EFFECT FIRST FAILURE. BREAKER IS NORMALLY IN THE CLOSED POSITION
 (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 3 OTHER FAILURES (REASON TO MOVE SWITCH, SWITCH JAM, TYPE III OPEN 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 D, ITEM NO. 1 -
CIRCUIT BREAKER.

(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 - NOT DETECTABLE.