

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-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 : 2 EFFECTIVITY: X X X
 : TWO PHASE(S): PL X LO X OO X DO X LS X
 :

PREPARED BY: REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 DES D SOVEREIGN APPROVED BY: APPROVED BY (NASA):
 REL J BEEKMAN DES *D.S. Beeman* SSM
 QE REL *Michael B. ... 11-14-87* REL *...*
 QE QE *...* QE *...*

ITEM:
 CIRCUIT BREAKER (3 AMP) - LEFT AND RIGHT AFT 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. 32V73A15CB71,72.

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.