

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2702 -1 REV:05/03/88

ASSEMBLY :PANEL MA73C CRIT.FUNC: 1R
P/N RI :RWR80S1211FR CRIT. HDW: 3
P/N VENDOR: VEHICLE 102 103 104
QUANTITY :3 EFFECTIVITY: X X X
:THREE PHASE(S): PL LO X 00 X DO X LS
:

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES R PHILLIPS DES *SR: R. Burns* SSM *J.C. Starn 5/1/88*
REL M HOVE REL *Michael P. Hove 5-6-88* REL *Michael P. Hove 5/6/88*
QE J COURSEN QE *J.J. Courson 5/6/88* QEP *J.J. Courson*

ITEM:

RESISTOR, CURRENT LIMIT, 1.2K OHM - APT MCA 1, 2 AND 3 RCS/OMS DC BUSES AB, BC AND CA CONTROL CIRCUIT

FUNCTION:

PROVIDES CURRENT LIMITING/CIRCUIT PROTECTION FOR CONTROL CIRCUIT POWER TO THE RELATED SWITCH THAT POWERS APT MCA 1, 2 OR 3 RCS/OMS SUB-BUS AB, BC OR CA FOR CONTROL OF REACTION CONTROL SYSTEM/ORBITAL MANEUVERING SYSTEM (RCS/OMS) ISOLATION, CROSSPEED AND INTERCONNECT MOTOR VALVES. 85V73A129A5R1, R2 AND R3

FAILURE MODE:

OPEN

CAUSE(S):

STRUCTURAL FAILURE (VIBRATION, MECHANICAL SHOCK), THERMAL STRESS, ELECTRICAL STRESS, PROCESSING ANOMALY

EFFECT(S) ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:

(A) LOSS OF A REDUNDANT MAIN DC BUS POWER INPUT TO TWO ASSOCIATED APT MOTOR CONTROL ASSEMBLY RCS/OMS SUB-BUSES.

(B) LOSS OF REDUNDANCY. NO EFFECT FOR FIRST FAILURE. RCS/OMS SUB-BUSES ARE POWERED FROM TWO SEPARATE SOURCES.

(C,D) FIRST FAILURE - NO EFFECT.

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EFFECT(S) ON (CONTINUED):

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL
CRITICALITY EFFECT:

(E) POSSIBLE LOSS OF CREW/VEHICLE VIA THE FOLLOWING SCENARIO:

(1) LEAK IN AFT RCS MANIFOLD 3 OR 4 DURING EARLY ASCENT PHASE
NECESSITATING CLOSURE OF ALL AFT RCS TANK AND MANIFOLD ISOLATION
VALVES TO ISOLATE LEAK.

(2,3) FAILURE OF RESISTORS SUPPLYING REDUNDANT CONTROL POWER FOR
RCS/OMS SUB-BUS CA RESULTING IN LOSS OF ABILITY TO REOPEN RCS
PROPELLANT SUPPLY TO ANY AFT RCS PRIMARY MANIFOLD. RESULTS IN LOSS
OF ALL AFT RCS JETS REQUIRED FOR SAFE ORB/ET SEPARATION.

FAILS "B" SCREEN BECAUSE NEITHER RCS/OMS SUB-BUSES NOR STATUS OF
CIRCUITS CONTROLLING THEM ARE INSTRUMENTED.

DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

A,B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND

B) GROUND TURNAROUND TEST

VERIFY MCA OPERATIONAL STATUS INDICATORS ARE "ON" (ALL MOTOR CONTROL
RELAYS RESET) DURING NO OPERATION OF THE AC MOTOR MECHANISMS AND "OFF"
WHILE RCS/OMS VALVES ARE BEING CYCLED. TEST IS PERFORMED FOR ALL
FLIGHTS.

E) OPERATIONAL USE

NONE