

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST, & CONT FMEA NO 05-6 -2902 -1 REV:05/03/88

ASSEMBLY :AFT-MCA-1,2,3 CRIT.FUNC: 1R  
P/N RI :JANTX1N1204RA CRIT. HDW: 3  
P/N VENDOR: VEHICLE 102 103 104  
QUANTITY :6 EFFECTIVITY: X X X  
:SIX PHASE(S): PL LO X OO X DO X LS  
:

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS  
PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
DES R PHILLIPS DES R. Burns SSM M. G. Starn 5/12/88  
REL M HOVE REL Howard Clifton 5/6/88 REL John Woodard 5/16/88  
QE J COURSEN QE J. Courson 5/6/88 QE R. [Signature]

ITEM:

DIODE, ISOLATION, 12A - AFT MCA 1, 2 AND 3 RCS/OMS BUS AB, BC, CA  
INPUT ISOLATION

FUNCTION:

PROVIDES ISOLATION BETWEEN TWO POWER INPUT CIRCUITS FEEDING AFT MOTOR CONTROL ASSEMBLIES #1, #2 AND #3 RCS/OMS BUSES AB, BC AND CA FOR CONTROL OF REACTION CONTROL SYSTEM/ORBITAL MANEUVERING SYSTEM (RCS/OMS) ISOLATION, CROSSFEED AND INTERCONNECT MOTOR VALVES.  
54V76A114CR1, CR2; 55V76A115CR1, CR2; 56V76A116CR1, CR2

FAILURE MODE:

OPENS, FAILS TO CONDUCT

CAUSE(S):

STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), 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 THE ASSOCIATED AFT MOTOR CONTROL ASSEMBLY RCS/OMS SUB-BUS.

(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 DIODES SUPPLYING REDUNDANT MAIN DC BUS POWER TO  
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 SUPPLYING 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 F, ITEM NO. 2 - DIODE, POWER, STUD-MOUNTED

(B) GROUND TURNAROUND TEST

NONE IDENTIFIED

(E) OPERATIONAL USE

NONE