

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - ARPCS FMEA NO 05-6UC-200 -1 REV:12/08/88

ASSEMBLY : P/NLS 014 & 015 CRIT. FUNC: 1  
 P/N RI : MC454-0026-2030 CRIT. HDW: 1  
 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  
 : ONE PER VALVE

REDUNDANCY SCREEN: A-N/A B-N/A C-N/A

PREPARED BY: DES J BROWN *JB* APPROVED BY: DES *R V Brown* APPROVED BY: (NASA) *H. K. ...*  
 REL M ROVE *MR* REL *M. R. ... 11-8-88* REL *H. K. ...*  
 QE J COURSEN *JC* QE *J. Courson* QE *H. K. ... 19-05-88*  
 EPDC RELTOR *H. K. ... 11/11/88*  
 EPDC SSM *H. K. ...*

ITEM:  
 CIRCUIT BREAKER, (3 AMPS) - O2 CROSSOVER VALVE CONTROL.

FUNCTION:  
 PROVIDES CONTROL OF MAIN DC BUS POWER AND OVERLOAD PROTECTION TO O2 CROSSOVER VALVE SOLENOID CIRCUIT, SYSTEMS 1 AND 2. (THIS FMEA IS APPLICABLE FOR THE CASE WHEN THE AUXILIARY O2 TANK IS NOT INSTALLED. FAILURE EFFECTS FOR THE CASE OF AUXILIARY O2 INSTALLED WILL BE ADDRESSED IN THE MISSION KIT FMEA ON A MISSION BY MISSION BASIS).  
 33V73A14CB20, 33V73A15CB19.

FAILURE MODE:  
 FAILS OPEN, FAILS TO CONDUCT, FAILS TO CLOSE.

CAUSE(S):  
 STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION, PROCESSING ANOMALY.

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

(A) LOSS OF POWER TO HOLD OPEN ONE O2 CROSSOVER VALVE.

(B) LOSS OF CROSS-TIE CAPABILITY BETWEEN TWO O2 DISTRIBUTION LOOPS AND LOSS OF ONE O2 SOURCE TO LAUNCH AND ESCAPE SUITS (L.E.S.) AND AIRLOCK.

(C) POSSIBLE EARLY MISSION TERMINATION AS ONLY ONE OXYGEN SOURCE REMAINS FOR AIRLOCK AND L.E.S. REQUIREMENTS.

(D) ONE OF TWO CIRCUIT BREAKERS FAILED OPEN RESULTS IN ONE OF TWO O2 CROSSOVER VALVES FAILED CLOSED RESULTING IN INSUFFICIENT O2 SUPPLY TO L.E.S. SYSTEM. LOSS OF THIS EMERGENCY SYSTEM (L.E.S.) IN A CABIN/CREW ATMOSPHERE WHERE HARMFUL CONTAMINANTS OR DEPRESSURIZATION EXIST MAY RESULT IN LOSS OF CREW/VEHICLE.

05-6UC-1

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SUBSYSTEM : EPD&C - ARPCS

FMEA NO 05-6UC-200 -1

REV: 12/08/88

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX D ITEM NO. 1 - CIRCUIT BREAKER.

(B) GROUND TURNAROUND TEST

OPERATION OF THE O2 CROSSOVER VALVE CIRCUIT IS VERIFIED FOR SYSTEMS 1 AND 2 AS PART OF THE EMERGENCY O2 SYSTEM TEST (L.E.S.) PRIOR TO EACH FLIGHT.

(E) OPERATIONAL USE

CREW RESPONSE

WITH MISSION CONTROL APPROVAL, CREW CAN ATTEMPT TO RESET CIRCUIT BREAKER.

TRAINING

NONE.

OPERATIONAL CONSIDERATION

REAL TIME DATA SYSTEM ALLOWS FOR GROUND MONITORING.

VALVES ARE NORMALLY FLOWN IN THE OPEN (POWERED) POSITION.

05-6UC-2