

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2027 -1 REV:06/20/88

ASSEMBLY : AFT LCA-2 & 3 CRIT. FUNC: 1R  
 P/N RI : MC477-0261-0002 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 2 EFFECTIVITY: X X X  
 : TWO PHASE(S): PL LO X OO DO LS  
 :

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS  
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES J BROWN DES A Brown EPDC SSM Conrad, Friday 6/21/88  
 REL DEFENSOR REL J. Kammer 6/27/88 MPS SSM 6/29/88  
 QE DNM D MASAI QE S. Brown 6/27/88 EPDC REL 4/11/88  
 MPS REL 6/23/88

ITEM:  
 CONTROLLER, HYBRID DRIVER (HDC), TYPE I, POINT SENSOR ELECTRONICS BUS NO. 2, 3 AND 4.

FUNCTION:  
 UPON MDM COMMAND, CONDUCTS MAIN BUS POWER FOR CONTROL OF SERIES HDC III FOR POINT SENSOR ELECTRONICS MAIN BUS 2 OR 3 AND CONTROL OF SERIES RPC TO POINT SENSOR ELECTRONICS BUS NO. 4, 55V76A122J1(104), 56V76A123J1(104).

FAILURE MODE:  
 LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON".

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

EFFECT(S) ON:  
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY  
 (A) LOSS OF POWER TO ONE BUS (BUS NO. 2 OR 3) OF POINT SENSOR ELECTRONICS AND ULLAGE PRESSURE SIGNAL CONDITIONERS. LOSS OF ONE OF TWO POWER PATHS TO POINT SENSOR ELECTRONICS BUS NO. 4.  
 (B) FALSE WET SIGNAL FROM ASSOCIATED LO2 AND LH2 ECO SENSORS. LOSS OF ASSOCIATED GO2 AND GH2 ULLAGE PRESSURE SIGNALS AND FLOW CONTROL VALVE CLOSE COMMANDS.  
 (C,D) NO EFFECT - FIRST FAILURE.

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- (E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.  
TIME FRAME - ASCENT.  
1) HDC FAILS "OFF".  
2) SECOND HDC FAILS "OFF".

FAILURES WILL RESULT IN INADVERTENT DEACTUATION OF TWO GH2 AND GO2 FLOW CONTROL VALVE CLOSE SOLENOIDS. RESULTS IN EXCESSIVE LO2 AND LH2 ULLAGE PRESSURE CAUSING ET VENT VALVES TO RELIEVE EXCESS PRESSURE. POTENTIAL FIRE/EXPLOSION HAZARD EXTERIOR TO THE VEHICLE. POSSIBLE VIOLATION OF THE ET MAXIMUM STRUCTURAL CAPABILITY REQUIREMENTS. POSSIBLE LOSS OF CREW/VEHICLE.

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER.

(B) GROUND TURNAROUND TEST

MPS SIG COND PWR CONTROL VERIFY V41A10.080B,C EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.