

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2510 -2 REV:05/03/88

ASSEMBLY :MEC, BAYS-4, 5 CRIT.FUNC: 1R  
P/N RI :MC450-0018-0008 CRIT. HDW: 2  
P/N VENDOR: VEHICLE 102 103 104  
QUANTITY :12 EFFECTIVITY: X X X  
:12-6 EACH MEC PHASE(S): PL LO X-00 DO LS  
:

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES R PHILLIPS	DES <u>W. R. Beeman</u>	SSM <u>W. C. Starn 5/12/88</u>
REL M HOVE	REL <u>W. R. Beeman 5-6-88</u>	REL <u>W. C. Starn 5/12/88</u>
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ITEM:

CONTROLLER, PYRO INITIATOR (PIC) - RIGHT/LEFT ET/ORB UMBILICAL ATTACH RELEASE #1, #2 AND #3.

FUNCTION:

PROVIDES A SINGLE CHANNEL PYRO-FIRING CIRCUIT, AN INITIATOR RESISTANCE TEST CIRCUIT, AND A PYRO-FIRING LOAD TEST CIRCUIT FOR THE CONTROL AND CHECKOUT OF THE RIGHT/LEFT EXTERNAL TANK/ORB UMBILICAL ATTACH RELEASE #1, #2 AND #3 FUNCTIONS. 54V76A13PIC1-6; 55V76A14PIC1-6

FAILURE MODE:

PREMATURE OUTPUT (FOLLOWING AN ARM COMMAND)

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, VIBRATION, THERMAL STRESS, MECHANICAL SHOCK, PROCESSING ANOMALY

EFFECT(S) ON:

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

(A,B,C,D) NO EFFECT - PIC MUST BE ARMED BEFORE PREMATURE INITIATOR FIRING CAN OCCUR. IF FAILURE OCCURS FOLLOWING A VALID ARM COMMAND, THERE WOULD BE NO SIGNIFICANT EFFECT SINCE THE WORST CASE RESULT WOULD BE RELEASE OF ONE ATTACH POINT APPROXIMATELY ONE SECOND BEFORE THE OTHER TWO ATTACH POINTS ON THE LO2 OR LH2 UMBILICAL. POSSIBLE LAUNCH DELAY OR SCRUB IF DETECTED DURING PRE-LAUNCH.

(E) POSSIBLE LOSS OF CREW/VEHICLE IF PREMATURE OUTPUT IS PRECEDED BY A FAILURE WHICH RESULTS IN PREMATURE ARMING OF THE PIC DUE TO POSSIBLE LEAKAGE OF PROPELLANTS WHEN ONE OF THREE ATTACH POINTS FOR LO2 OR LH2 ET/ORB UMBILICAL IS PREMATURELY RELEASED DURING SSME OPERATION. FAILS "B" SCREEN BECAUSE PIC OUTPUT STATUS IS NOT MONITORED DURING FLIGHT.

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SYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2510 -2 REV:05/03/88

DISPOSITION & RATIONALE:

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

(B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX H, ITEM NO. 1 - PYRO INITIATOR CONTROLLER

GROUND TURNAROUND TEST

VERIFY MEC 1 AND MEC 2 POWER REDUNDANCY FOR EACH MEC WITH THE LOSS OF TWO OF THREE POWER INPUTS. VERIFY THAT THE PRE-FLIGHT MEC BITE RESPONDS TO COMMANDS, THE ARM COMMANDS CHARGE THE PIC'S, AND THE GO / NO GO LOAD TESTS ARE SATISFIED. TEST IS PERFORMED FOR ALL FLIGHTS.

OPERATIONAL USE

PYRO'S ARE NOT ARMED UNTIL OUTPUT IS REQUIRED.