

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2494 -2 REV:05/03/88

ASSEMBLY :AFT LCA 1 & 2	CRIT.FUNC: 1R
P/N RI :MC477-0261-0002	CRIT. HDW: 3
P/N VENDOR:	VEHICLE 102 103 104
QUANTITY :4	EFFECTIVITY: X X X
:FOUR	PHASE(S): PL X LO X OO DO LS
:	

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
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ITEM:

HYBRID DRIVER, TYPE I - CONTROL POWER MAIN DC POWER/L AND R SRB BUSES

FUNCTION:

MASTER EVENTS CONTROLLER COMMANDS ENABLES THE HYBRID DRIVER WHICH CONTROLS A REMOTER POWER CONTROLLER AND RELAY FOR TRANSFERRING ORBITER MAIN DC BUS POWER A, B OR C TO THE RIGHT AND LEFT SRB BUSES A AND B. 54V76A121HDC J4(32, 33), 55V76A122HDC J4(32, 33)

FAILURE MODE:

FAILS "ON", INADVERTENT OUTPUT, FAILS TO TURN "OFF"

CAUSE(S):

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

EFFECT(S) ON:

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

(A) LOSS OF CONTROL OF ONE REDUNDANT ORBITER DC BUS TO AN SRB BUS.

(B) LOSS OF ABILITY TO SWITCH TO ORBITER BUS C IF REQUIRED.

(C,D) FIRST FAILURE - NO EFFECT. FAILURE RESULTS IN THE NORMAL OPERATING STATE.

(E) POSSIBLE LOSS OF CREW/VEHICLE IF BOTH SRB BUSES ARE LOST RESULTING IN LOSS OF SRB THRUST VECTOR CONTROL AS WELL AS LOSS OF RATE GYRO DATA FROM AFFECTED SRB. THE ADDITIONAL FAILURES REQUIRED ARE (1) SERIES RPC ON SAME SRB DC BUS FAILS "OFF" AND (2) RELAY FAILS OPEN ON THE OTHER DC BUS IN THE SAME SRB. FAILS "B" SCREEN BECAUSE FAILURE TO TRANSFER IS NOT DETECTABLE UNTIL TRANSFER IS REQUIRED AFTER LOSS OF ONE SRB DC BUS POWER FEED FROM ORBITER.

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SYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2494 -2 REV:05/03/88

DISPOSITION & RATIONALE:

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

(A, B, C, D) DISPOSITION AND RATIONALE

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

1) GROUND TURNAROUND TEST

VERIFY ORB/SRB POWER INTERFACE BY ACTIVATING THE MASTER EVENT CONTROLLER SRB POWER COMMANDS AND MONITORING POWER STIMULI COMMANDS, DISCRETE EVENTS, AND OPERATIONAL BUS VOLTAGES. TEST IS PERFORMED FOR ALL FLIGHTS.

) OPERATIONAL USE

NONE