

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2474 -1 REV:05/03/88

ASSEMBLY :FWD LCA 1,2,3	CRIT.FUNC: 1R
P/N RI :MC477-0263-0002	CRIT. HDW: 3
P/N VENDOR:	VEHICLE 102 103 104
QUANTITY :3	EFFECTIVITY: X X X
:THREE	PHASE(S): PL X LO X_00 X DO X LS X
:	

PREPARED BY:	REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS	APPROVED BY:	APPROVED BY (NASA):
DES R PHILLIPS		DES <i>R. Burns</i>	SSM <i>A.C. King</i>
REL M HOVE		REL <i>David C. King 5-6-88</i>	REL <i>David C. King 5/11/88</i>
QE J COURSEN		QE <i>J. J. Lawson 5/6/88</i>	QE <i>RK</i>

ITEM:

HYBRID DRIVER, TYPE III - AC BUS SET 1, 2, 3 "OFF" CONTROL CIRCUIT

FUNCTION:

UPON COMMAND FROM A GROUND CONTROLLED MULTIPLEXER/DEMULTIPLEXER (MDM), THE HYBRID DRIVER PROVIDES CONTROL VOLTAGE TO OPEN RELAYS K1, K2 AND K3 IN AN INVERTER DISTRIBUTION AND CONTROL ASSEMBLY. OPENING THE RELAYS DISCONNECTS THE INVERTER ARRAY OUTPUTS FROM THE ASSOCIATED AC BUS SET. 81V76A16AR(III) J1-109, 82V76A17AR(III) J1-109, 83V76A18AR(III) J1-109

FAILURE MODE:

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

CAUSE(S):

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

EFFECT(S) ON:

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

(A,B,C,D) FIRST FAILURE - NO EFFECT. PRE-FLIGHT TEST BUSES ARE NORMALLY NOT POWERED DURING FLIGHT.

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF AC ELECTRICAL POWER NECESSARY FOR CRITICAL LOADS (LOSS OF TWO OF THREE AC BUSES) IF PRE-FLIGHT TEST BUS IS INADVERTENTLY POWERED DURING FLIGHT. REQUIRES THE FOLLOWING SCENARIO:

- (1) FAILED "ON" HYBRID DRIVER.
- (2, 3) INADVERTENTLY POWERED PRE-FLIGHT TEST BUS (REQUIRES TWO FAILURES) WHICH RESULTS IN LOSS OF ONE THREE-PHASE AC BUS.
- (4) LOSS OF ANOTHER AC BUS.

FAILS "B" SCREEN SINCE THERE IS NO INDICATION THAT THIS FAILURE HAS

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EFFECT(S) ON (CONTINUED):

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

OCCURRED UNTIL THE PRE-FLIGHT TEST BUS IS POWERED AND THE AC BUS IS
SUBSEQUENTLY DISCONNECTED.

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

B) GROUND TURNAROUND TEST

VERIFY GROUND COMMAND "ON/OFF" SIGNALS BY MONITORING AC BUS VOLTAGES.
TEST IS PERFORMED FOR ALL VEHICLE FLOWS.

E) OPERATIONAL USE

NONE