SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - AUXILIARY PWR FMEA NO 05-6N-2072-IM-2 REV:C2/1

ASSEMBLY :AFT LCA 1,2,3
P/N RI :MC477-0261-0002
P/N VENDOR:
QUANTITY :6
:SIX, TWO/APU
:

CRIT. FUNC:				1R
CRIT. HDW:				3
VEHICLE EFFECTIVITY:	102 X	103 X	104 X	10 X
PHASE(S):	PL X LO X OO X DO X LS X			

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

PREPARED BY:
DES T NGUYEN
REL T KIMURA
QE W R HIGGINS

APPROVED BY:
DES
REL
QE

APPROVED BY (NASA):
SSM
REL
QE
EPDC RELIABILITY
EPDC SSM

ITEM:
CONTROLLER, HYBRID DRIVER, HDC TYPE 1 - IMPROVED AUXILIARY POWER UNI (IAPU) 1, 2, AND 3 GAS GENERATOR/FUEL PUMP HEATERS (A AND B) POWER CIRCUIT

FUNCTION:
UPON GSE COMMAND FROM MDM LA1, POWER IS PROVIDED TO THE APU GA GENERATOR/FUEL PUMP HEATER (A OR B).
54V76A121AR(J1-15), (J1-22);
55V76A122AR(J1-15), (J1-22);
56V76A123AR(J1-15), (J1-22)

FAILURE MODE:
INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF"

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 EFFECT:

(A) DEGRADATION OF REDUNDANCY AGAINST INADVERTENT POWERING OF HEATERS

(B,C,D) NO EFFECT - FIRST FAILURE

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR OTHER FAILURES (TWO PREFLIGHT TO-ESSENTIAL BUS DIODES FAIL SHORT WHICH ENERGIZES THE PREFLIGHT TEST BUS THERMOSTAT CONTACTS FAIL CLOSED, AND OVERTEMPERATURE THERMOSTAT CONTACT FAIL CLOSED) POWERING HEATER CONTINUOUSLY CAUSING FUEL DECOMPOSITION AN POSSIBLE FUEL SYSTEM RUPTURE.

FAILS "B" SCREEN BECAUSE FIRST FAILURE NOT DETECTABLE SINCE THE PREFLIGH TEST BUS IS NOT POWERED DURING FLIGHT UNLESS REQUIRED BY FLIGHT RULE 9-41

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SUBSYSTEM :EPD&C - AUXILIARY PWR FMEA NO 05-6N-2072-IM-2 REV:02/13

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

(A-D) DISPOSITION AND RATIONALE
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

(B) TEST
GROUND TURNAROUND TEST - APU 1/2/3 FUEL PUMP AND GAS GENERATOR HEA
CIRCUIT TESTS PERFORMED DURING ORBITER MAINTENANCE DOWN PERIOD (OMDP).

(E) OPERATIONAL USE
NONE