

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AUXILIARY PWR FMEA NO 05-6N -2059A -2 REV:08/02/90

ASSEMBLY : AFT LCA 1,2,3 CRIT. FUNC: 1
 P/N RI : MC477-0263-0002 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 24 EFFECTIVITY: X X X
 : TWENTY FOUR PHASE(S): PL X LO X OC X DO X LS X
 :

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES T NGUYEN DES Y. M. ... SSM Walter Smith 8/6/90
 REL T KIMURA REL ... REL ...
 QE J T COURSEN QE ... QE ...

EPD&C Rev. ... 8/30/90
 EPD&C SSM ...

ITEM:
 CONTROLLER, HYBRID DRIVER, HDC TYPE 3 - AUXILIARY POWER UNIT (APU)
 HEATERS TANK/FUEL LINE 1, 2, AND 3 (A AND B) POWER CIRCUITS

FUNCTION:
 WITH THE PROPER STIMULI AND LOGIC THE HDC CONDUCTS MAIN BUS POWER TO THE
 TANK/FUEL LINE HEATERS (THERMOSTAT CONTROLLED).
 54V76A121AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-JJ),
 (J10-LL), (J10-NN);
 55V76A122AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-JJ),
 (J10-LL), (J10-NN);
 56V76A123AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-
 (J10-LL), (J10-NN)

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,B) FIRST FAILURE - LOSS OF AUTOMATIC THERMOSTAT HEATER CONTROL
 (HEATER IS CONTINUOUSLY ON WHEN "APU HTRS TANK/FUEL LINE" SWITCH IS ON
 "AUTO").

(C,D) NO EFFECT - FIRST FAILURE

(E) POSSIBLE LOSS OF MISSION, CREW AND VEHICLE AFTER SECOND FAILURE
 (SWITCH FAILED CLOSED) POWERING HEATERS CONTINUOUSLY RESULTING IN FUEL
 DECOMPOSITION AND LINE RUPTURE.

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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

(B) TEST

APU 1/2/3 HEATER TEST BY COCKPIT COMMAND PERFORMED IN FLIGHT EVERY FLOW OR AFTER CIG RETEST.

(E) OPERATIONAL USE

FIRST FAILURE - TURN OFF POWER TO FAILED ON HEATER AND SELECT ALTERNATE HEATER BASED ON TEMPERATURE INDICATIONS.