

SUBSYSTEM : EPD&C - AUXILIARY PWR FMEA NO 05-6N -2059A-IM-2 REV:04/29/92

ASSEMBLY : AFT LCA 1,2,3	CRIT. FUNC: 1R
P/N RI : MC477-0263-0002	CRIT. HDW: 2
P/N VENDOR:	VEHICLE 102 103 104 105
QUANTITY : 24	EFFECTIVITY: X X X X
: TWENTY FOUR	PHASE(S): PL X LO X OO X DO X LS X

PREPARED BY:	APPROVED BY:	REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
DES T NGUYEN	DES J. M. Anderson 4/29/92	APPROVED BY (NASA):
REL T KIMURA	REL T. J. Higgins 5/14/92	SSM J. W. Anderson 6-9-92
QE W R HIGGINS	QE W. R. Higgins 5/14/92	REL J. W. Anderson 5/14/92
		EPD&C REL J. W. Anderson 6-1-92
		EPD&C SSM J. W. Anderson 6-1-92

ITEM:

CONTROLLER, HYBRID DRIVER, HDC TYPE 3 - ~~IMPROVED~~ AUXILIARY POWER UNIT
SUBSYSTEM (ZAPU)-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-JJ),
(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 CREW/VEHICLE DUE TO THE CONTINUOUS ENERGIZING OF HEATERS RESULTING IN FUEL DECOMPOSITION AND LINE RUPTURE:

(CRIT 1R2) AFTER ONE OTHER FAILURE FOR THE DRAIN AND SERVICE LINE HEATERS (SWITCH FAILED CLOSED).

(CRIT 1R3) AFTER TWO OTHER FAILURES FOR THE FUEL LINE HEATERS (SWITCH FAILED CLOSED AND OVER TEMPERATURE THERMOSTAT CONTACTS FAILED CLOSED).

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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 DURING GROUND TURNAROUND TEST IF FLIGHT DATA IS UNAVAILABLE OR AFTER LRU RELACEMENT.

(E) OPERATIONAL USE

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