PRINT DATE: 01/13/94

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6N-2074-X

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT
REVISION: 2 01/13/94

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	AFT LCA 1	MC450-0057-0001
LRU	:	AFT LCA 2	MC450-0058-0001
LRU	:	AFT LCA 3	MC450-0059-0001
SRU	:	CONTROLLER, HYBRID DRIVER	MC477-0264-0002

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, HYBRID DRIVER, HDC TYPE 4 - AUXILIARY POWER UNIT (APU) HEATERS, FUEL PUMP/LINE 1, 2, AND 3 POWER CIRCUITS

REFERENCE DESIGNATORS: 54V76A121AR(J10-k)
54V76A121AR(J10-BB)
55V76A122AR(J10-k)
55V76A122AR(J10-BB)
56V76A123AR(J10-k)
56V76A123AR(J10-BB)

QUANTITY OF LIKE ITEMS: 6
SIX

FUNCTION:
CONDUCTS POWER TO THE APU 1, 2, AND 3 FUEL PUMP HEATERS.

SH_ _E CRITICAL ITEMS LIST - _ ITER

SUBSYSTEM :EPD&C - AUXILIARY PWR FMEA NO 05-6N -2074 -1 REV:01/07/91

ASSEMBLY :AFT LCA 1,2,3
P/N RI :MC477-0264-0002
P/N VENDOR:
QUANTITY :6
:SIX
:

CRIT. FUNC: 1R
CRIT. RDW: 2

VEHICLE EFFECTIVITY:	102	103	104
PHASE(S): PL	X	X	X
LO			
OO	X		
DO			
LS			

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

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

APPROVED BY:
DES J.M. Anderson 1-21-91
REL [illegible] 1-11-91
QE [illegible] 1-23-91

APPROVED BY (NASA):
SSM [illegible] 2-15-91
REL [illegible]
QE [illegible]
EPDC Rel [illegible]
EPDC SSM [illegible]

ITEM:
CONTROLLER, HYBRID DRIVER, HDC TYPE 4 - AUXILIARY POWER UNIT (APU) HEATERS, GAS GENERATOR/FUEL PUMP 1, 2, AND 3 POWER CIRCUITS

FUNCTION:
CONDUCTS THE GROUND PATH MAIN BUS POWER FOR THE APU 1, 2, AND 3 FUEL PUMP/LINE/VALVE HEATERS.
54V76A121AR(J10-k), (J10-BB);
55V76A122AR(J10-k), (J10-BB);
56V76A123AR(J10-k), (J10-BB)

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

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) LOSS OF CAPABILITY TO COMPLETE THE AFFECTED HEATER CIRCUIT TO THE GROUND BUS.

(B) LOSS OF ONE OF TWO LINE/PUMP/VALVE HEATERS TO ONE APU.

(C,D) NO EFFECT - FIRST FAILURE

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (LOSS OF OUTPUT OF HDC IN REDUNDANT HEATER CIRCUIT) WHICH RESULTS IN LOSS OF FUEL PUMP/LINE/VALVE HEATERS TO THE SAME APU CAUSING FUEL (HYDRAZINE) FREEZING AND LINE RUPTURE UPON THAWING.

SUBSYSTEM :EPD&C - AUXILIARY PWR FMEA NO 05-6N -2074 -1 REV:01/07/9

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 OF AFTER CIG RETEST. ADDITIONALLY, BOTH 'A' & 'B' GAS GENERATOR / FUEL PUMP HEATER SYSTEMS ARE VERIFIED TO BE FUNCTIONING NOMINALLY PRIOR TO LAUNCH AND AFTER AFT COMPARTMENT CLOSEOUT

DWN.
2-13-91

(E) OPERATIONAL USE
FIRST FAILURE - SELECT ALTERNATE HEATER.