

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2074A-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	MC477-0263-0002

PART DATA

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

REFERENCE DESIGNATORS: 54V76A121AR(J7-30)
54V76A121AR(J7-56)
54V76A121AR(J10-m)
54V76A121AR(J10-CC)

55V76A122AR(J7-30)
55V76A122AR(J7-56)
55V76A122AR(J10-m)
55V76A122AR(J10-CC)

56V76A123AR(J7-30)
56V76A123AR(J7-56)
56V76A123AR(J10-m)
56V76A123AR(J10-CC)

**QUANTITY OF LIKE ITEMS: 12
TWELVE**

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

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE

NUMBER: 05-6N-2074A-02

REVISION# 2 01/13/94

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: AFT LGA 1, 2, 3

CRITICALITY OF THIS

ITEM NAME: CONTROLLER, HYBRID DRIVER

FAILURE MODE: 1R3

FAILURE MODE:

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

MISSION PHASE:

PL	PRELAUNCH
LO	LIFT-OFF
OO	ON-ORBIT
DO	DE-ORBIT
LS	LANDING SAFING

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 COLUMBIA
 103 DISCOVERY
 104 ATLANTIS
 105 ENDEAVOUR

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:

A)

B)

FIRST FAILURE NOT DETECTABLE IN FLIGHT SINCE THE OPERATIONAL STATUS OF
EACH SERIES DRIVER (HDC-3) IS NOT MONITORED.

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**DEGRADATION OF REDUNDANCY AGAINST INADVERTENT ENERGIZING OF FUEL PUMP
HEATERS.**(B) INTERFACING SUBSYSTEM(S):**

NO EFFECT - FIRST FAILURE

(C) MISSION:

NO EFFECT - FIRST FAILURE

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(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW AND VEHICLE AFTER TWO OTHER FAILURES (SECOND
HDC-3 FAILED ON, HDC-4 GROUND DRIVER FAILED ON) POWERING HEATERS
CONTINUOUSLY RESULTING IN FUEL DECOMPOSITION AND LINE RUPTURE.

-DISPOSITION RATIONALE-

(A) DESIGN:
FOR DISPOSITION AND RATIONALE, REFER TO APPENDIX B, ITEM NO. 1 - HYBRID
DRIVER

(B) TEST:
FOR DISPOSITION AND RATIONALE, REFER TO APPENDIX B, ITEM NO. 1 - HYBRID
DRIVER

GROUND TURNAROUND TEST - APU 1/2/3 FUEL PUMP AND GAS GENERATOR HEATER
CIRCUIT TESTS PERFORMED IN FLIGHT EVERY OMDP.

(C) INSPECTION:
FOR DISPOSITION AND RATIONALE, REFER TO APPENDIX B, ITEM NO. 1 - HYBRID
DRIVER

(D) FAILURE HISTORY:
FOR DISPOSITION AND RATIONALE, REFER TO APPENDIX B, ITEM NO. 1 - HYBRID
DRIVER

(E) OPERATIONAL USE:
NONE

- APPROVALS -

EDITORIALLY APPROVED : RI
EDITORIALLY APPROVED : JSC
TECHNICAL APPROVAL : VIA CR

Handwritten signature and date:
: *[Signature]* 1/24/94
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