

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-8N-2050 -X**

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)

REVISION: 0 11/21/87

PART DATA

	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	: DIODE	JANTXV1N5551

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

DIODE, ISOLATION (3 AMP) - AUXILIARY POWER UNIT (APU) HEATERS, LUBE OIL LINE 1, 2, AND 3 POWER CIRCUITS

REFERENCE DESIGNATORS: 54V76A121(4)
55V76A122(4)
56V76A123(4)

QUANTITY OF LIKE ITEMS: 12
TWELVE (FOUR PER APU)

FUNCTION:

TO PROVIDE ISOLATION FOR THE GSE TYPE 1 HYBRID DRIVER CONTROLLERS.

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 05-6N-2050- 02

REVISION#: 01 08/01/98

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)

LRU: AFT LCA 1, 2, 3

CRITICALITY OF THIS

ITEM NAME: DIODE

FAILURE MODE: 1R3

FAILURE MODE:

SHORT (END TO END)

MISSION PHASE:

PL	PRE-LAUNCH
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:STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), CONTAMINATION,
ELECTRICAL STRESS, THERMAL STRESS, CONTAMINATION, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) N/A
	C) PASS

PASS/FAIL RATIONALE:

A)

B)

DIODE IS 2-DEFAULT TOLERANT WITH 2 REMAINING LEGS VERIFIABLE IN FLIGHT.
OPERATION OF THERMOSTAT IS VERIFIABLE IN FLIGHT. STATUS OF REMAINING APUS
IS VERIFIABLE IN FLIGHT.

C)

- FAILURE EFFECTS -

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
NUMBER: 05-94-2050- 02**

NO EFFECT - FIRST FAILURE. HEATER STAYS ON AFTER THREE FAILURES.

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT - FIRST FAILURE. HEATER STAYS ON AFTER THREE FAILURES.

(C) MISSION:

NO EFFECT - FIRST FAILURE. ABORT DECISION REQUIRED AFTER THREE FAILURES DUE TO LOSS OF ONE APU.

(D) CREW, VEHICLE, AND ELEMENT(S):

NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE OTHER FAILURES (SWITCH CONTACT FAILS CLOSED, THERMOSTAT CONTACTS FAIL CLOSED, LOSS OF SECOND APU) DUE TO LOSS OF TWO OF THREE APU'S.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(B) TEST:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

GROUND TURNAROUND TEST APU 1/2/3 LUBE OIL HEATER CIRCUIT TESTS PERFORMED EVERY FLOW.

(C) INSPECTION:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(D) FAILURE HISTORY:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

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(E) OPERATIONAL USE:
NONE

- APPROVALS -

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

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:96-CIL-010