FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER: 05-6N-2056 -X

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)
REVISION: 1 11/30/93

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, SWITCH SCAN ISOLATION (3 AMP) - AUXILIARY POWER UNIT (APU) HEATERS TANK/FUEL LINE 1, 2, AND 3 (A AND B) POWER CIRCUIT

REFERENCE DESIGNATORS:
54V76A121(J3-12)
54V76A121(J3-13)
54V76A121(J3-14)
54V76A121(J3-28)
54V76A121(J3-29)
54V76A121(J3-30)
55V76A122(J3-12)
55V76A122(J3-13)
55V76A122(J3-14)
55V76A122(J3-28)
55V76A122(J3-29)
55V76A122(J3-30)
56V76A123(J3-12)
56V76A123(J3-13)
56V76A123(J3-14)
56V76A123(J3-28)
56V76A123(J3-29)
56V76A123(J3-30)

QUANTITY OF LIKE ITEMS: 18
EIGHTEEN

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FUNCTION:
PROVIDES CONTROL BUS ISOLATION BY PREVENTING THE DIFFERENT SWITCH COMMANDS FROM BEING TIED TOGETHER.

FAILURE MODES EFFECTS ANALYSIS FMEA – NON-CIL FAILURE MODE
NUMBER: 05-6N-2056- 02

REVISION#: 02 08/01/96

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)
LRU: AFT LCA 1, 2, 3
ITEM NAME: DIODE
CRITICALITY OF THIS 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, 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-FAULT TOLERANT WITH TWO REMANING LEGS VERIFIABLE IN FLIGHT. THERMAL SWITCH OPERATION IS VERIFIABLE IN FLIGHT. TOGGLE SWITCH CONTACTS ARE VERIFIABLE IN FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: 05-6N-2056- 02

LOSS OF CONTROL BUS ISOLATION

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT - FIRST FAILURE

(C) MISSION:
NO EFFECT - FIRST FAILURE

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO OTHER FAILURES (TWO CONTACT SETS OF SWITCH FAIL CLOSED, THERMOSTAT CONTACTS FAIL CLOSED) WHICH POWER THE HEATERS CONTINUOUSLY RESULTING IN FUEL DECOMPOSITION AND LINE RUPTURE.

-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 FUEL HEATER CIRCUIT TEST PERFORMED EVERY OMDP OR AFTER CIG RETEST.

(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	: Donna F. Jones 8/29/96
EDITORIALLY APPROVED	: JSC	: Sam Searcy 8-29-96
TECHNICAL APPROVAL	: VIA JSC	: 96-CIL-010