

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2065-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	: DIODE	JANTXV1N5551

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, ISOLATION (3 AMP) - AUXILIARY POWER UNIT (APU) HEATERS GAS
GENERATOR/FUEL PUMP 1, 2, AND 3 POWER CIRCUIT**

REFERENCE DESIGNATORS: 54V76A121(J3-2)
54V76A121(J3-3)
54V76A121(J3-17)
54V76A121(J3-18)
54V76A121(J3-35)
54V76A121(J3-37)

55V76A122(J3-2)
55V76A122(J3-3)
55V76A122(J3-17)
55V76A122(J3-18)
55V76A122(J3-35)
55V76A122(J3-37)

56V76A123(J3-2)
56V76A123(J3-3)
56V76A123(J3-17)
56V76A123(J3-18)
56V76A123(J3-35)
56V76A123(J3-37)

**QUANTITY OF LIKE ITEMS: 18
EIGHTEEN**

**FUNCTION:
PROVIDES ISOLATION FOR THE GAS GENERATOR/FUEL PUMP SWITCH SCAN
MONITORING CIRCUITS.**

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2065-02

REVISION# 2 01/13/94

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: AFT LCA 1, 2, 3

ITEM NAME: DIODE

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:
SHORT (END TO END)

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:
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) FAIL
 C) PASS

PASS/FAIL RATIONALE:

A)

B)

FIRST FAILURE NOT DETECTABLE IN FLIGHT SINCE THE SHORT FAILURE MODE OF THIS DIODE DOES NOT AFFECT THE FUNCTIONAL OPERATION OF THE SYSTEM UNLESS THERE ARE ADDITIONAL ASSOCIATED FAILURES.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
DEGRADATION OF REDUNDANCY AGAINST LOSS OF CONTROL BUS ISOLATION.

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

(C) MISSION:

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2065-02**

NO EFFECT - FIRST FAILURE

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW AND VEHICLE AFTER TWO OTHER FAILURES (TWO CONTACTS SETS OF SWITCH FAIL SHORT, THERMOSTAT CONTACTS FAIL CLOSED) POWERING 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 PUMP AND GAS GENERATOR HEATER CIRCUIT TESTS PERFORMED EVERY OMDP.

(C) INSPECTION:
REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(D) FAILURE HISTORY:
REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(E) OPERATIONAL USE:
NONE

- APPROVALS -

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

Tomlin
John Stobey 1/20/94
05-6N-2065 550270