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PRINT DATE: 09/03/93

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2063-X**

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

REVISION: 1 11/30/93

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: PANEL A12	V070-730365
SRU	: DIODE	JANTXV1N4246

PART DATA

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

REFERENCE DESIGNATORS: 36V73A12A1CR2
36V73A12A1CR4
36V73A12A2CR2
36V73A12A2CR4
36V73A12A3CR2
36V73A12A3CR4
36V73A12A7CR1
36V73A12A7CR3
36V73A12A8CR1
36V73A12A8CR3
36V73A12A9CR1
36V73A12A9CR3

**QUANTITY OF LIKE ITEMS: 12
TWELVE**

**FUNCTION:
TO PROVIDE CONTROL BUS ISOLATION FROM THE GAS GENERATOR/FUEL PUMP
CIRCUITS.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2063-01**

REVISION# 1 09/30/93

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: PANEL A12

ITEM NAME: DIODE

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:

OPEN, FAILS TO CONDUCT

MISSION PHASE:

OO ON-ORBIT

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

CAUSE:

STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), 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 DUE TO THE PARALLEL REDUNDANCY OF
THE CONTROL POWER SOURCES FOR THE GAS GENERATOR/FUEL PUMP HEATER
CIRCUITS.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF REDUNDANT POWER TO ONE OF TWO REDUNDANT HEATERS.

(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:

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
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POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO OTHER FAILURES (REDUNDANT DIODE FAILS OPEN RESULTING IN LOSS OF ONE OF TWO HEATERS , LOSS OF REDUNDANT HEATER SYSTEM) DUE TO FUEL (HYDRAZINE) FREEZING AND LINE RUPTURE UPON THAWING.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(B) TEST:

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

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

(C) INSPECTION:

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(D) FAILURE HISTORY:

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(E) OPERATIONAL USE:

PERFORM ON-ORBIT THERMAL CONDITIONING AND/OR OPERATE APU PERIODICALLY TO MAINTAIN GAS GENERATOR AND FUEL PUMP TEMPERATURE.

- APPROVALS -

EDITORIALLY APPROVED
EDITORIALLY APPROVED
TECHNICAL APPROVAL

: RI
: JSC
: VIA CR

[Handwritten Signature]
: 9/1/93
: 556260M