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PRINT DATE:11/09/93

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2046-X**

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

REVISION: 2 01/13/94

	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, LUBE - LINE 1, 2,
AND 3 POWER CIRCUITS

REFERENCE DESIGNATORS: 36V73A12A4CR2
36V73A12A5CR2
36V73A12A8CR2

QUANTITY OF LIKE ITEMS: 3
THREE (1 PER APU)

FUNCTION:
TO PROVIDE CONTROL BUS ISOLATION.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2045-01**

REVISION# 2 01/13/94

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: PANEL A12

ITEM NAME: DIODE

CRITICALITY OF THIS

FAILURE MODE: 2R3

FAILURE MODE:

OPEN, FAILS TO CONDUCT

MISSION PHASE:

OO ON-ORBIT

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

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 LUBE OIL LINE HEATER CONTROL
CIRCUITS.

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**LOSS OF REDUNDANCY. LOSS OF REDUNDANT COMMAND TO HDC TYPE 3 OR 4
CIRCUIT DRIVER.**(B) INTERFACING SUBSYSTEM(S):**NO EFFECT - FIRST FAILURE. REDUNDANT CIRCUIT WILL OPERATE TO ENERGIZE THE
SAME HEATER.**(C) MISSION:**

NO EFFECT - FIRST FAILURE

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

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6N-2045-01**

NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:

LOSS OF MISSION AFTER ONE OTHER FAILURE (DIODE OR RESISTOR IN REDUNDANT CIRCUIT FAILS OPEN) WHEN BOTH LUBE OIL LINE HEATERS TO SAME APU CANNOT BE ENERGIZED. ABORT DECISION REQUIRED.

-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 LUBE OIL HEATER CIRCUIT TESTS
PERFORMED EVERY OMDP OR AFTER CIG RETEST.

(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 TO MAINTAIN LUBE OIL TEMPERATURE.

- APPROVALS -

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

Tommy
Spencer Abbey 1/20/94
05-6N-2045-01