

PAGE: 1

PRINT DATE: 01/13/94

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2061-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	: RESISTOR	RWR80N6190FR

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RESISTOR, LIMITING (620 OHM, 2W) - AUXILIARY POWER UNIT (APU) HEATERS, GAS
GENERATOR/FUEL PUMP 1, 2 AND 3 POWER CIRCUITS**

REFERENCE DESIGNATORS: 36V73A12A10R1
36V73A12A10R2
36V73A12A10R3
36V73A12A11R1
36V73A12A11R2
36V73A12A11R3
36V73A12A12R1
36V73A12A12R2
36V73A12A12R3
36V73A12A13R2
36V73A12A13R3
36V73A12A13R4

**QUANTITY OF LIKE ITEMS: 12
TWELVE**

**FUNCTION:
PROVIDES CURRENT LIMITING FOR THE APU GAS GENERATOR/FUEL PUMP HEATER
CONTROL CIRCUIT.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2061-02**

REVISION# 2 01/13/94

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: PANEL A12

ITEM NAME: RESISTOR

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:
SHORT (END TO END)

MISSION PHASE:
OO ON-ORBIT

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

CAUSE:
STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), CONTAMINATION,
ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) FAIL
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:

A)
FIRST FAILURE NOT DETECTABLE DURING GROUND TURNAROUND BECAUSE THE
RESISTANCE OF THE RESISTOR CANNOT BE VERIFIED.

B)
FIRST FAILURE NOT DETECTABLE IN FLIGHT SINCE THE PARALLEL REDUNDANT
POWER SOURCE CIRCUITS ARE STILL INTACT BUT WITH DECREASED RESISTANCE IN
ONE OF THE SOURCES.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF CURRENT LIMITING CAPABILITY IN THE HEATER CONTROL CIRCUIT.

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

(C) MISSION:
NO EFFECT - FIRST FAILURE

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

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6N-2081-02**

(E) FUNCTIONAL CRITICALITY EFFECTS:

LOSS OF CREW/VEHICLE AFTER TWO OTHER FAILURES (ASSOCIATED DIODE SHORTS, ASSOCIATED CONTROL BUS SHORTS TO GROUND) WHICH RESULTS IN LOSS OF GAS GENERATOR AND FUEL PUMP HEATERS TO THE SAME APU CAUSING FUEL (HYDRAZINE) FREEZING AND LINE RUPTURE UPON THAWING.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND

(B) TEST:

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND

GROUND TURNAROUND TEST - NO OMRS

(C) INSPECTION:

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND

(D) FAILURE HISTORY:

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND

(E) OPERATIONAL USE:

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

- APPROVALS -

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

[Handwritten Signature]
: *[Handwritten Signature]* 1/20/94
: GRB/CS 3502/0177