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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.**

SHUTTLE CRITICAL ITEMS LIST - ORBITER

S05C260M
ATTACHMENT -
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SUBSYSTEM : EPD&C - AUXILIARY PWR FMEA NO 05-6N -2061 -1 REV: 01/07/91

ASSEMBLY : PNL A12
P/N RI : RWR806190FR
P/N VENDOR:
QUANTITY : 12
: TWELVE
:

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL	LO	CO X DO LS

CRIT. FUNC: 12
CRIT. HDW: 2

PREPARED BY: T NGUYEN
DES T NGUYEN
REL T KIMURA
QE W R HIGGINS

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
APPROVED BY: U. M. Sullivan 1-22-91
SSM William J. Scott 2-13-91
REL William J. Scott 2-13-91
QE K. B. Denton 1/28/91
EPDC Rel L. D. Cogan 2-2-91
EPDC SSM William J. Scott 2-13-91

ITEM:
RESISTOR, LIMITING (620 OHM, 2W) - AUXILIARY POWER UNIT (APU) HEATERS, GAS GENERATOR/FUEL PUMP 1, 2, AND 3 POWER CIRCUITS

FUNCTION:
PROVIDES CURRENT LIMITING FOR THE APU GAS GENERATOR/FUEL PUMP HEATER CONTROL CIRCUIT.
36V73A12A10R1, R2, R3;
36V73A12A11R1, R2, R3;
36V73A12A12R1, R2, R3;
36V73A12A13R2, R3, R4

FAILURE MODE:
OPEN

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

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY EFFECT:

(A) LOSS OF CAPABILITY TO CONDUCT CONTROL POWER TO THE HYBRID DRIVERS AND SWITCH SCAN MONITORING CIRCUITS IN THE AFFECTED HEATER CIRCUIT.

(B) LOSS OF ONE OF TWO GAS GENERATOR AND LINE/PUMP/VALVE HEATER SYSTEMS TO ONE APU.

(C,D) NO EFFECT - FIRST FAILURE

(E) LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (RESISTOR OF REDUNDANT HEATER CIRCUIT FAILS OPEN) WHICH RESULTS IN LOSS OF FUEL PUMP/LINE/VALVE HEATERS TO THE SAME APU CAUSING FUEL (HYDRAZINE) FREEZING AND LINE RUPTURE UPON THAWING.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

5050200M
ATTACHMENT -
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SUBSYSTEM :EPD&C - AUXILIARY PWR FMEA NO 05-6N -2061 -1 REV:01/07/91

DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:

(A-D) DISPOSITION AND RATIONALE

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

(B) TEST

APU 1/2/3 HEATER TEST BY COCKPIT COMMAND PERFORMED IN FLIGHT EVERY FLOW OR AFTER CIG RETEST. ADDITIONALLY BOTH 'A' & 'B' GAS GENERATOR/FUEL PUMP HEATER SYSTEMS ARE VERIFIED TO BE FUNCTIONING NOMINALLY PRIOR TO LAUNCH AND AFTER AFT COMPARTMENT CLOSEOUT.

(E) OPERATIONAL USE

FIRST FAILURE - SELECT ALTERNATE HEATER

Young
2-13-91