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PRINT DATE: 11/30/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
 NUMBER: 05-6N-2077-X

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER

REVISION : 1 11/30/92

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU :	MODULAR ASSEMBLY	V070-765455
SRU :	RESISTOR	RLR07CS101GS

 - PART DATA -

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 RESISTOR, 5.1K OHM, 0.25W - AUXILIARY POWER UNIT (APU) 1, 2, AND 3
 OVERSPEED AND UNDERSPEED TIME DELAY FOR THE FUEL ISOLATION VALVE CIRCUIT

REFERENCE DESIGNATORS: 54V76A226R1
 : 54V76A226R2
 : 55V76A227R1
 : 55V76A227R2
 : 56V76A228R1
 : 56V76A228R2

QUANTITY OF LIKE ITEMS: 6
 TWO PER APU

FUNCTION:
 PROVIDES THE RESISTANCE REQUIRED FOR THE OVERSPEED AND UNDERSPEED TIME
 DELAY CIRCUIT.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
 NUMBER: 85-6M-2077-0

REVISION: 1 11/30/92

SUBSYSTEM: EPD&C - AUXILIARY POWER
 LRU MODULAR ASSEMBLY
 ITEM NAME: RESISTOR

CRITICALITY OF THIS
 FAILURE MODE: 1R3

FAILURE MODE:
 OPEN

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), 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)

REDUNDANCY SCREEN "B" FAILS IN FLIGHT BECAUSE A FAILED OPEN RESISTOR WILL NOT BE DETECTED UNTIL AN OVERSPEED/UNDERSPEED CONDITION OCCURS (FUNCTIONAL OPERATION OF THE SYSTEM IS NOT AFFECTED UNLESS THERE ARE ADDITIONAL ASSOCIATED FAILURES).

C)

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6N-2077-01

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ABILITY TO AUTOMATICALLY CLOSE THE AFFECTED FUEL ISOLATION VALVE WHEN AN OVERSPEED/UNDERSPEED CONDITION OCCURS.

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT - FIRST FAILURE. REQUIRES THREE FAILURES TO LOSE ABILITY TO CLOSE THE FUEL ISOLATION VALVE.

(C) MISSION:

NO EFFECT - FIRST FAILURE

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

NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR OTHER FAILURES (TWO CONTACT-TO-CONTACT SHORTS IN SWITCH, HDC-4 GROUND DRIVER FAILS "ON", AND A FUEL LEAK) DUE TO LOSS OF ABILITY TO ISOLATE A FUEL LEAK (CLOSING ISOLATION VALVES DOES NOT PREVENT OVERSPEED).

- DISPOSITION RATIONALE -

(A) DESIGN:

REFER TO APPENDIX E, ITEM NO. 2 - RESISTOR

(B) TEST:

REFER TO APPENDIX E, ITEM NO. 2 - RESISTOR

OMRSD: ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

REFER TO APPENDIX E, ITEM NO. 2 - RESISTOR

(D) FAILURE HISTORY:

REFER TO APPENDIX E, ITEM NO. 2 - RESISTOR

(E) OPERATIONAL USE:

NONE

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE

NUMBER: 05-6N-2077-01

- APPROVALS -

P&E MANAGER	:	T. J. EAVENSON	:	<u>K.L. Potts</u> for 12/9/92
PRODUCT ASSURANCE ENGR	:	T. K. KIMURA	:	<u>J. K. Kammer</u> 12/1/92
DESIGN ENGR TEAM LEADER	:	G. M. ANDERSON	:	<u>G. M. Anderson</u> 12-2-92
DESIGN ENGINEERING	:	T. D. NGUYEN	:	<u>T. D. Nguyen</u> 12/11/92
NASA RELIABILITY	:		:	<u>Cliff Williams</u> 2/16/91
NASA SUBSYSTEM MANAGER	:		:	<u>W. J. ...</u> 2-12-93
NASA EPD&C RELIABILITY	:		:	<u>L. D. ...</u> 1-23-93
NASA QUALITY ASSURANCE	:		:	<u>...</u> 1-15-92
NASA EPD&C SUBSYS MGR	:		:	<u>...</u> 1-26-92