

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE**  
**NUMBER: M5-6MB-2178-G -X**

**SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC**  
**REVISION: 9 09/09/92**

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**PART DATA**

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	<b>PART NAME</b>	<b>PART NUMBER</b>
	<b>VENDOR NAME</b>	<b>VENDOR NUMBER</b>
LRU	: H2/O2 CONTROL BOXES	V070-764470
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-1030
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-2030
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-3030

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**  
 CONTROLLER, REMOTE POWER (RPC), 3 AMP - LO2 TANKS 1 THRU 9 "TEST" CONTROL CIRCUITS

**REFERENCE DESIGNATORS:** 40V76A141RPC13  
 40V76A142RPC13  
 40V76A143RPC13  
 40V76A144RPC13  
 40V76A217RPC13  
 40V76A218A1RPC13  
 40V76A218A2RPC13  
 40V76A218A3RPC13  
 40V76A218A4RPC13

**QUANTITY OF LIKE ITEMS:**  
 ONE PER H2/O2 CONTROL BOX  
 8 - OV102 TANKS 1-4/5, 8-9  
 4 - OV103 TANKS 1-4  
 4 - OV104 TANKS 1-4  
 5 - OV105 TANKS 1-5

**FUNCTION:**  
 CONTROLS POWER TO CURRENT LEVEL DETECTOR (CLD) "TEST" CIRCUIT.

**FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE**

NUMBER: M5-6MB-2178-G- 02

REVISION#: 10 08/09/96

SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC

LRU: H2/O2 CONTROL BOXES

CRITICALITY OF THIS

ITEM NAME: CONTROLLER, REMOTE POWER

FAILURE MODE: 1R3

**FAILURE MODE:**

INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF"

MISSION PHASE: OO ON-ORBIT

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

**CAUSE:**

PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) N/A
	C) PASS

**PASS/FAIL RATIONALE:**

A)

B)

REDUNDANCY SCREEN B - N/A SINCE POWERED PREFLIGHT TEST BUS AND LOSS OF LO2 TANK HEATERS ARE READILY DETECTABLE.

C)

**- FAILURE EFFECTS -****(A) SUBSYSTEM:**

LOSS OF CURRENT LIMITING REDUNDANCY

**(B) INTERFACING SUBSYSTEM(S):**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE  
NUMBER: M5-6MB-217B-G- 02**

NO EFFECT - FIRST FAILURE. TEST CIRCUIT WILL FUNCTION AS REQUIRED.

**(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 DUE TO THE FOLLOWING SCENARIO: 1) LO2 TANK 1  
RPC 13 FAILS "ON" (NO EFFECT), 2) PREFLIGHT TEST BUS IS POWERED DUE TO AN  
UNRELATED FAILURE - CLD INHABITS TANK HEATER, LOSE USE OF LO2 TANK 1, 3)  
ASSOCIATED CLD CIRCUIT BREAKER FAILS IN "CLOSED" POSITION - CAN NOT RE-  
ENERGIZE LO2 TANK 1 HEATERS, 4) LOSE LO2 TANK 2, AND 5) CENTER MANIFOLD LEAK  
LOSES LO2 TANKS 3 THRU 9.

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**-DISPOSITION RATIONALE-**

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**(A) DESIGN:**  
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

**(B) TEST:**  
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

GROUND TURNAROUND TEST  
FAILED "ON" RPC IS DETECTABLE WHEN PRE-FLIGHT TEST BUS IS ENERGIZED.  
VERIFICATION OF CURRENT LIMITING DETECTOR IN CONJUNCTION WITH HEATER  
FUNCTION IS PERFORMED IN FLIGHT BUT THIS FAILED "ON" RPC CANNOT BE DETECTED  
IN FLIGHT.

**(C) INSPECTION:**  
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

**(D) FAILURE HISTORY:**  
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE**  
**NUMBER: M5-6MB-2178-G- 02**

**(E) OPERATIONAL USE:**  
AFTER SECOND FAILURE, CREW WOULD PLACE AFFECTED TANK HEATER SWITCHES IN THE "OFF" POSITION.

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- APPROVALS -

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

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:96-CIL-012