

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE  
NUMBER: 05-6-2261 -X**

**SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL  
REVISION: 0 05/03/88**

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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	: D&C PANEL R15	V070-730328
SRU	: CIRCUIT BREAKER	MC454-0026-2100

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**  
BREAKER, CIRCUIT, 10 AMP - CONTROL BUS POWER, AB, BC, CA, 1, 2, AND 3

**REFERENCE DESIGNATORS:** 32V73A15CB64  
32V73A15CB63  
32V73A15CB62

**QUANTITY OF LIKE ITEMS:** 3  
THREE, ONE EACH SET AB1, 2, 3, BC1, 2, 3, CA1, 2, 3

**FUNCTION:**  
PROVIDES ADDITIONAL CIRCUIT OVERLOAD PROTECTION BETWEEN EACH MAIN DC BUS (A, B, AND C) ON PANEL R15 AND THE FUSED FEEDERS TO EACH OF NINE CONTROL BUSES ON PANEL R2. 32V73A15CB64 (CONTROL BUS AB 1, 2, AND 3), CB63 (CONTROL BUS CA 1, 2 AND 3) AND CB62 (CONTROL BUS BC 1, 2 AND 3).

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

NUMBER: 05-6-2281-01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION &amp; CONTROL

LRU: D&amp;C PANEL R15

CRITICALITY OF THIS

ITEM NAME: CIRCUIT BREAKER

FAILURE MODE: 1R3

**FAILURE MODE:**

FAILS OPEN, FAILS TO CONDUCT

**MISSION PHASE:**

PL PRE-LAUNCH  
 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 SHOCK, VIBRATION, THERMAL STRESS,  
 CONTAMINATION, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

**REDUNDANCY SCREEN** A) PASS  
 B) FAIL  
 C) PASS

**PASS/FAIL RATIONALE:**

A)

B)

FAILS "B" SCREEN BECAUSE THIRD SOURCE TO A CONTROL BUS IS NOT MONITORED.

C)

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

LOSS OF A REDUNDANT POWER SOURCE TO THREE OF NINE CONTROL BUSES

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

FIRST FAILURE - NO EFFECT. EACH CONTROL BUS IS POWERED FROM THREE MAIN DC BUS SOURCES.

**(C) MISSION:**

FIRST FAILURE - NO EFFECT. LOSS OF ALL THREE CIRCUIT BREAKERS WOULD NOT CAUSE LOSS OF POWER TO ANY CONTROL BUS. CONTROL BUSES ARE REDUNDANTLY POWERED.

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

SAME AS (C)

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO ADDITIONAL FAILURES (AN RPC ON THE SAME CONTROL BUS AND A SHORT TO GROUND ON THE ASSOCIATED CONTROL BUS WHICH CAUSES LOSS OF THAT CONTROL BUS AND TRIPS THE REMAINING RPC ON THE FIRST CONTROL BUS) DUE TO LOSS OF POWER TO TWO OR MORE CONTROL BUSES NECESSARY FOR THE OPERATION OF CRITICAL LOADS.

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**-DISPOSITION RATIONALE-**

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**(A) DESIGN:**

REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

**(B) TEST:**

REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

**GROUND TURNAROUND TEST**

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

**(C) INSPECTION:**

REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

**(D) FAILURE HISTORY:**

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CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE.

**(E) OPERATIONAL USE:  
NONE**

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**- APPROVALS -**

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EDITORIALLY APPROVED	: BNA	: <u>J. Komara 7-26-99</u>
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6