

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE  
NUMBER: 05-6-3012 -X**

**SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL  
REVISION: 8 07/26/99**

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**PART DATA**

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	<b>PART NAME VENDOR NAME</b>	<b>PART NUMBER VENDOR NUMBER</b>
LRU	: MID PCA 1	V070-764400
LRU	: MID PCA 2	V070-764430
SRU	: DIODE	JANTX1N1204RA

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**  
DIODE, ISOLATION, 12 AMP - GROUND MDM "ON" CONTROL CIRCUIT FOR MAIN DC BUS ("A" OR "B") TO PALLET POWER CONTACTOR

**REFERENCE DESIGNATORS:** 40V76A25CR10  
40V76A26CR9

**QUANTITY OF LIKE ITEMS:** 2  
TWO; ONE PER POWER CONTACTOR CONTROL CIRCUIT, TWO POWER CONTACTORS

**FUNCTION:**  
PROVIDES ISOLATION FROM CREW COMMANDS AND CONNECTS GROUND "ON" COMMANDS VIA THE MDM-CONTROLLED RPC IN THE CONTROL CIRCUIT OF THE PALLET POWER CONTACTOR.

**FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE**  
**NUMBER: 05-6-3012-03**

**REVISION#: 8 07/26/99**

**SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL**  
**LRU: MID PCA 1**  
**ITEM NAME: DIODE**

**CRITICALITY OF THIS FAILURE MODE: 1R3**

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**FAILURE MODE:**  
**SHORT TO STRUCTURE (GROUND)**

**MISSION PHASE: OO ON-ORBIT**

**VEHICLE/PAYLOAD/KIT EFFECTIVITY:**

EDO	MISSION ONLY
102	COLUMBIA
105	ENDEAVOUR

**CAUSE:**

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

**CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO**

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**REDUNDANCY SCREEN**

A) PASS
B) N/A
C) PASS

**PASS/FAIL RATIONALE:**

A)

B)

"B" SCREEN IS "N/A" BECAUSE FAILURE OF AT LEAST TWO REMAINING PATHS IS READILY  
 DETECTABLE DURING FLIGHT.

C)

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**- FAILURE EFFECTS -**

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**(A) SUBSYSTEM:**

LOSS OF ABILITY TO CONDUCT GROUND MDM COMMANDS TO CLOSE THE AFFECTED  
 PALLET POWER CONTACTOR.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE  
NUMBER: 05-6-3012-03****(B) INTERFACING SUBSYSTEM(S):**  
NO EFFECT - FIRST FAILURE**(C) MISSION:**  
NO EFFECT - FIRST FAILURE**(D) CREW, VEHICLE, AND ELEMENT(S):**  
NO EFFECT**(E) FUNCTIONAL CRITICALITY EFFECTS:**  
POSSIBLE LOSS OF CREW/VEHICLE AFTER EIGHT FAILURES: 1) DIODE SHORTS TO STRUCTURE, 2) SAME DIODE SHORTS END TO END CAUSING THE INABILITY TO CLOSE AFFECTED PALLET POWER CONTACTOR RESULTING IN LOSS OF ONE OF THE TWO MAIN BUS SOURCES TO THE PALLET, 3) REDUNDANT PALLET POWER CONTACTOR FAILS TO CONDUCT CAUSING THE INABILITY TO ENERGIZE ALL PALLET TANK HEATERS, RESULTING IN THE LOSS OF PALLET CRYOGENICS, 4) THROUGH 8) LOSS OF ORBITER LH2 (OR LO2) TANKS 1, 2, 3, 4, AND 5.

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**- APPROVALS -**

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EDITORIALLY APPROVED  
TECHNICAL APPROVAL: BNA  
: VIA APPROVAL FORM: J. Kamura 7-26-99  
: 96-CIL-025\_05-6