

**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</b>	<b>PART NUMBER</b>
	<b>VENDOR NAME</b>	<b>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: 05-6-3012-02

REVISION#: 5 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION &amp; CONTROL

LRU: MID PCA 1

CRITICALITY OF THIS

ITEM NAME: DIODE

FAILURE MODE: 1R3

## FAILURE MODE:

SHORT (END-TO-END)

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 1M DURING INTACT ABORT ONLY? NO

## 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)

## - FAILURE EFFECTS -

## (A) SUBSYSTEM:

LOSS OF ISOLATION OF THE GROUND MDM "ON" COMMAND FROM THE CREW-INITIATED  
COMMAND.

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**(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 END TO END, 2) SAME DIODE SHORTS TO STRUCTURE 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 : BNA : J. Kamusa 7-26-99  
TECHNICAL APPROVAL : VIA APPROVAL FORM : 96-CIL-025\_05-8