FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6-2208 -X

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

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: MDCA 3	V070-764230
SRU	: DIODE	JANTX1N1188R

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, BLOCKING, 35 AMP - TRANSIENT VOLTAGE PROTECTION FOR FUEL CELL 3 STRUCTURE RETURN AND PAYLOAD PRIMARY POWER CONTRACTORS

REFERENCE DESIGNATORS: 40V76A33CR5
40V76A33CR6

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
CONDUCTS MOTOR CURRENT TO THE RETURN BUS AND PROVIDES TRANSIENT VOLTAGE PROTECTION FOR THE FUEL CELL 3 STRUCTURE RETURN AND FUEL CELL 3 TO PAYLOAD PRIMARY POWER CONTACTORS.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE
NUMBER: 05-6-2208- 01

REVISION#: 1 07/26/99
SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: MDCA 3 **CRITICALITY OF THIS**
ITEM NAME: DIODE **FAILURE MODE:** 1R3

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT

MISSION PHASE: OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) FAIL
B) N/A
C) PASS

PASS/FAIL RATIONALE:
A)
FAILS "A" SCREEN SINCE PARALLEL DIODE FAILED OPEN IS NOT DETECTABLE.

B)
"B" SCREEN IS N/A DUE TO STANDBY REDUNDANCY.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF REDUNDANCY FOR FUEL CELL 3 PRIMARY PAYLOAD CONTACTOR OPERATION. THE REDUNDANT DIODE CONDUCTS CURRENT TO GROUND.

(B) INTERFACING SUBSYSTEM(S):

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE NUMBER: 05-6-2208- 01

FIRST FAILURE - NO EFFECT.

(C) MISSION:
FIRST FAILURE - NO EFFECT

(D) CREW, VEHICLE, AND ELEMENT(S):
FIRST FAILURE - NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER FOR OPERATION OF CRITICAL LOADS VIA THE FOLLOWING SCENARIO:

(1,2) LOSS OF BOTH DIODES OPENED FOR THE FUEL CELL 3 TO PAYLOAD MOTOR SWITCH RETURN RESULTING IN LOSS OF ALTERNATE BUS TIE CAPABILITY.
(3,4) LOSS OF FUEL CELLS #1 AND #2.
(5) LOSS OF FUEL CELL #3 TO MAIN DC BUS C POWER CONTACTOR FAILED OPEN RESULTING IN LOSS OF ALL VEHICLE POWER.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX F, ITEM NO. 1 - DIODE, POWER - STUD MOUNTED

(B) TEST:
REFER TO APPENDIX F, ITEM NO. 1 - DIODE, POWER - STUD MOUNTED

GROUND TURNAROUND TEST
NONE

(C) INSPECTION:
REFER TO APPENDIX F, ITEM NO. 1 - DIODE, POWER - STUD MOUNTED

(D) FAILURE HISTORY:
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:

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 05-6-2208-01

NONE

- APPROVALS -

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