

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6-2904-X**

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION AND CONTROL

REVISION: 1 03/22/94

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT PCA 4,5,6	VO70-765280
SRU	: DIODE, 35 AMP	JANTX1N1188R

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, ISOLATION, 35A - MEC 1 AND 2 INPUT POWER**

**REFERENCE DESIGNATORS: 54V76A134A2CR45
55V76A135A2CR45
56V76A136A2CR45
56V76A136A2CR46**

**QUANTITY OF LIKE ITEMS: 4
FOUR**

**FUNCTION:
ISOLATES THE MAIN DC BUS FEEDERS TO THE MASTER EVENTS CONTROLLERS
(MEC'S) 1 AND 2 POWER SUPPLY TWO INPUTS.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6-2904-02**

REVISION# 1 03/22/94

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION AND CONTROL

LRU: AFT PCA 4,5,6

CRITICALITY OF THIS

ITEM NAME: DIODE, 35 AMP

FAILURE MODE: 1R3

FAILURE MODE:

SHORT (END TO END)

MISSION PHASE:

LO LIFT-OFF

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

CAUSE:

STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), THERMAL STRESS,
CONTAMINATION, ELECTRICAL STRESS, 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 SHORTED DIODES ARE NOT DETECTABLE IN FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ISOLATION BETWEEN MEC POWER FEEDERS.

(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT.

(C) MISSION:

FIRST FAILURE - NO EFFECT.

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

FIRST FAILURE - NO EFFECT.

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(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE ADDITIONAL FAILURES:

- (1) SHORT TO STRUCTURE (GROUND) ON SAME DIODE - LOSS OF REDUNDANCY (CORE B) FOR POWERING ONE OF TWO MASTER EVENTS CONTROLLERS.
- (2) LOSS OF CORE A ON SAME MEC RESULTING IN LOSS OF CRITICAL FUNCTIONS CONTROLLED BY THIS MEC (SRB IGNITION, SRB SEPARATION OR ET/ORB SEPARATION)
- (3) LOSS OF THE REDUNDANT INITIATOR FIRED BY THE OTHER MEC.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX F, ITEM NO. 1 - DIODE, STUD-MOUNTED

(B) TEST:

REFER TO APPENDIX F, ITEM NO. 1 - DIODE, STUD-MOUNTED

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

REFER TO APPENDIX F, ITEM NO. 1 - DIODE, STUD-MOUNTED

(D) FAILURE HISTORY:

FAILURE HISTORY IS TRACKED IN THE PRACA SYSTEM.

(E) OPERATIONAL USE:

NONE

- APPROVALS -

PAE MANAGER : K. PRESTON
 PRODUCT ASSURANCE ENGR : T. KIMURA
 DESIGN ENGINEERING : J. GULSBY
 NASA SSMA :
 NASA SUBSYSTEM MANAGER :

K. Preston 3/29/94
T. Kimura 3/22/94
J. Gulsby 3/29/94
J. R. ... 6/20/94
Trish M. ... 6/20/94