

PAGE: 1

PRINT DATE: 09/01/93

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2018-X**

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

REVISION: 1 08/30/93

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT PCA 4, 5, 6	V070-765280
SRU	: DIODE	JANTX1N1188R

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, BLOCKING (35 AMP) - AUXILIARY POWER UNIT (APU) CONTROLLER 1, 2, AND 3
POWER**

REFERENCE DESIGNATORS: OV102:

54V76A134A4CR5
54V76A134A4CR6
55V76A135A4CR5
55V76A135A4CR6
56V76A136A4CR5
56V76A136A4CR6

OV-103 AND SUBS:

54V76A134A2CR5
54V76A134A2CR6
55V76A135A2CR5
55V76A135A2CR6
56V76A136A2CR5
56V76A136A2CR6

**QUANTITY OF LIKE ITEMS: 6
SIX**

FUNCTION:

**PROVIDES MAIN BUS ISOLATION AND CONDUCTS CIRCUIT CURRENT IN REDUNDANT
INPUTS TO APU CONTROLLERS 1, 2, AND 3.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2018-01**

REVISION# 1 08/30/93

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT
LRU: AFT PCA 4, 5, 6
ITEM NAME: DIODE

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:
OPEN, FAILS TO CONDUCT

MISSION PHASE:
PL PRELAUNCH
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 STRESS, VIBRATION), ELECTRICAL STRESS,
THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FIRST FAILURE NOT DETECTABLE BECAUSE THIS APU CIRCUIT IS PARALLEL
REDUNDANT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF REDUNDANT POWER TO APU CONTROLLER.

(B) INTERFACING SUBSYSTEM(S):
LOSS OF INTERFACE REDUNDANCY. THE REDUNDANT CIRCUIT PROVIDES POWER TO
THE APU CONTROLLER.

(C) MISSION:

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE

NUMBER: 05-6N-2018-01

NO EFFECT - FIRST FAILURE. SECOND FAILURE - LOSS OF APU; ABORT DECISION REQUIRED.

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

NO EFFECT - FIRST FAILURE. SECOND FAILURE - LOSS OF APU; ABORT DECISION REQUIRED.

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF VEHICLE AND CREW AFTER TWO OTHER FAILURES (DIODE FAILS OPEN, LOSS OF SECOND APU) DUE TO LOSS OF ELECTRICAL POWER NECESSARY FOR OPERATION OF CRITICAL LOADS.

-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 - APU 1/2/3 CONTROLLER TEST THROUGH GROUND CONNECTION PERFORMED EVERY FLOW OR AFTER LRU RETEST OF APU ASSEMBLY, AFTER LRU RETEST OF CONTROLLER ASSEMBLY OR AFTER CIG RETEST.

(C) INSPECTION:

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

(D) FAILURE HISTORY:

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

(E) OPERATIONAL USE:

NONE

- APPROVALS -

EDITORIALLY APPROVED
EDITORIALLY APPROVED
TECHNICAL APPROVAL

: RI
: JSC
: VIA CR

John 9/1/93
John 9/7/93
:SSD270L