

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-6S-BD102 -X

SUBSYSTEM NAME: EPD&C - DPS&C

REVISION: 2

04/25/86

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: FWD PCA 1	V070-763320
LRU	: FWD PCA 2	V070-763340
LRU	: FWD PCA 3	V070-763360
SRU	: DIODE	JANTX1N1186R

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, ISOLATION, STUD MOUNTED, 35 AMP

REFERENCE DESIGNATORS:

81V76A22CR32	(*IOP #4, FPCA #1)
81V76A22CR33	" " "
81V76A22CR34	" " "
81V76A22CR24	(*IOP #1, FPCA #1)
81V76A22CR25	" " "
81V76A22CR26	" " "
82V76A23CR31	(*IOP #2, FPCA #2)
82V76A23CR32	" " "
82V76A23CR33	" " "
82V76A23CR37	(*IOP #5, FPCA #2)
82V76A23CR38	" " "
82V76A23CR39	" " "
83V76A24CR22	(*IOP #3, FPCA #3)
83V76A24CR23	" " "
83V76A24CR24	" " "

* 5 GPC'S REPLACED 5 IOP'S IN THEIR POSITIONS,
WIRING TO DIODES FOR 5 CPU'S NO CONNECTION.

QUANTITY OF LIKE ITEMS: 15
FIFTEEN IN PCA 1, 2, & 3

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -CFL HARDWARE
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FUNCTION:

PROVIDES ISOLATION BETWEEN MAIN BUSES A, B, AND C IN THE TRIPLE REDUNDANT POWER PATHS TO GENERAL PURPOSE COMPUTER (GPC) UNITS 1 THROUGH 5, AND BACKUP FLIGHT CONTROLLER (BFC) LOGIC.

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 05-65-BD102-04

REVISION#: 1 04/29/96

SUBSYSTEM NAME: EPD&C - DPS&C
 LRU: FWD PCA 1, 2 & 3
 ITEM NAME: DIODE

CRITICALITY OF THIS
 FAILURE MODE: 1R3

FAILURE MODE:

STUD (ANODE) SHORTS TO STRUCTURE (GROUND).

MISSION PHASE: PL PRE-LAUNCH
 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, CONTAMINATION.

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
 B) PASS
 C) PASS

PASS/FAIL RATIONALE:

A)

B)

PASS SCREEN "B" BECAUSE DETECTABLE WHEN SOURCE RPC TRIPS.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: 05-6S-BD102-04**

NO EFFECT FIRST FAILURE (LOSS OF ONE REDUNDANT POWER SOURCE).

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT FIRST FAILURE.

(C) MISSION:
NO EFFECT FIRST FAILURE.

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

PRIMARY AVIONICS SOFTWARE SYSTEM (PASS): NO EFFECT FIRST FAILURE.

BACKUP FLIGHT SYSTEM (BFS) (PRE-ENGAGE): NO EFFECT FIRST FAILURE.

(E) FUNCTIONAL CRITICALITY EFFECTS:
CRITICALITY 1R3 BECAUSE OF THE FOLLOWING:

LOSS OF A GPC FOLLOWING THE SECOND FAILURE (DIODE SHORT TO GROUND FOLLOWED BY A SHORT END-TO-END ON SAME DIODE WILL TRIP THE TWO REMAINING RPC'S TO THAT GPC). DURING ASCENT/ENTRY A GPC LOSS COUPLED WITH AN UNDETECTED FLIGHT CONTROL SYSTEM (FCS) FAILURE COULD RESULT IN TWO HEALTHY PATHS BEING VOTED OUT. THIS COULD RESULT IN A VOTING DILEMMA IN THE FCS (REFERENCE CIL 05-5-B11-1-1 & 05-1-FC6042-1).

-DISPOSITION RATIONALE-

(A) DESIGN:

DELETED DUE TO CRITICALITY DOWNGRADE FROM 1R3 (SCREEN B FAIL) CIL TO A 1R3 "NON-CIL".

(B) TEST:

DELETED DUE TO CRITICALITY DOWNGRADE FROM 1R3 (SCREEN B FAIL) CIL TO A 1R3 "NON-CIL".

(C) INSPECTION:

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE
NUMBER: 05-6S-BDI02-04

DELETED DUE TO CRITICALITY DOWNGRADE FROM 1R3 (SCREEN B FAIL) CIL TO A 1R3 "NON-CIL".

(D) FAILURE HISTORY:

DELETED DUE TO CRITICALITY DOWNGRADE FROM 1R3 (SCREEN B FAIL) CIL TO A 1R3 "NON-CIL".

(E) OPERATIONAL USE:

DELETED DUE TO CRITICALITY DOWNGRADE FROM 1R3 (SCREEN B FAIL) CIL TO A 1R3 "NON-CIL".

- APPROVALS -

EDITORIALLY APPROVED
EDITORIALLY APPROVED
TECHNICAL APPROVAL

: RI
: JSC
: VIA APPROVAL FORM

Paul Gessini
Tom Sandy 7-31-96
96-CIL-013_05-6S