FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER: 05-6PG-21228 -X

SUBSYSTEM NAME: EPD&C - COMM. & TRACK
REVISION: 0 01/05/88

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: PNL A1A2	
SRU	: DIODE	JANTXV1N4246

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, PA POWER DIODE, S-BAND POWER AMPLIFIER POWER CONTROL CIRCUIT

REFERENCE DESIGNATORS: 36V73A1A2A18CR13
36V73A1A2A18CR14
36V73A1A2A18CR15
36V73A1A2A18CR16

QUANTITY OF LIKE ITEMS: 4
FOUR

FUNCTION:
IN CASE OF SWITCH FAILURE (S11 OR S12) PREVENTS UNWANTED INPUTS TO THE GCIL COMMAND MODE DRIVERS DUE TO REVERSE LEAKAGE CURRENT FLOW THROUGH THE CONTROL BUS AND INTO THE COMMAND DRIVERS.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE
NUMBER: 05-6PG-21228-02

REVISION#: 1 08/15/97
SUBSYSTEM NAME: EPD&C - C&T: S-BAND COMMUNICATIONS (05-2G)
LRU: PNL A1A2 CRITICALITY OF THIS
ITEM NAME: DIODE FAILURE MODE: 2R3

FAILURE MODE:
FAILS SHORT CIRCUIT (END TO END).

MISSION PHASE:
LO LIFT-OFF
OO ON-ORBIT
DO DE-ORBIT

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

CAUSE:
STRUCTURAL FAILURE, MECHANICAL STRESS, VIBRATION, CONTAMINATION, ELECTRICAL STRESS, THERMAL 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 SCREEN "A" BECAUSE SHORTED DIODES CANNOT BE DETECTED DURING GROUND TURNAROUND TESTING.

B)
N/A FOR SCREEN "B" BECAUSE THE SWITCH FAILURE CAN BE DETECTED BY LOSS OF SWITCH FUNCTION EVEN THOUGH THE SHORTED DIODES CANNOT BE DETECTED DURING FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

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NO EFFECT ON EPDC. LOSS OF PROTECTION FOR GCIL DRIVERS IN CASE OF SWITCH FAILURE. AFTER A SECOND DIODE FAILURE LOSS OF PROTECTION FOR BOTH GCIL POWER AMP POWER CONTROL DRIVERS.

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT

(C) MISSION:
NO EFFECT

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
AFTER THREE FAILURES (TWO DIODES AND ONE SWITCH SHORT TO GROUND), LOSS OF USE OF BOTH POWER AMPS. POSSIBLE LOSS OF PRIME MISSION OBJECTIVE DUE TO LOSS OF TDRS COMMUNICATIONS.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX F, ITEM #3, DIODE.

(B) TEST:
REFER TO APPENDIX F, ITEM #3, DIODE.

GROUND TURNAROUND TEST
NO TESTS ARE AVAILABLE TO DETECT SHORTED DIODES DURING GROUND TURNAROUND.

(C) INSPECTION:
REFER TO APPENDIX F, ITEM #3, DIODE.

(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.

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(E) OPERATIONAL USE:
CREW CAN USE REMAINING POWER AMP TO MAINTAIN TDRS COMMUNICATION

- APPROVALS -

EDITORIALLY APPROVED	: BNA	: J. Kathure 8/18/97
EDITORIALLY APPROVED	: JSC	: Glenn Henrow 9/23/97
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-015_06-5PG