

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER: 05-6-2903 -X

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

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: PANEL R13A2	V070-730338
SRU	: DIODE	JANTXV1N5551

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 DIODE, ISOLATION, 3 AMP - PAYLOAD BAY MECH BUS POWER CONTROL CIRCUIT

REFERENCE DESIGNATORS: 32V73A13A2A4CR1
 32V73A13A2A4CR2
 32V73A13A2A4CR3
 32V73A13A2A4CR4
 32V73A13A2A5CR1
 32V73A13A2A5CR2
 32V73A13A2A5CR3
 32V73A13A2A5CR4

QUANTITY OF LIKE ITEMS: 8
 EIGHT

FUNCTION:
 ISOLATES INPUTS FROM TWO CONTROL BUSES FOR COIL POWER TO THE ASSOCIATED ENABLING RELAYS WHICH CONNECT THE AC 3-PHASE POWER TO THE PAYLOAD BAY MECHANICAL (PLBM) 3-PHASE AC BUSES, PLBM AC BUS 1 AND PLBM AC BUS 3 FOR FREON RADIATOR DEPLOY/LATCH, REMOTE MANIPULATOR LATCH, AND KU-BAND DEPLOY/STOW MOTORS.

FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE

NUMBER: 05-6-2903- 01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL

LRU: PANEL R13A2

ITEM NAME: DIODE

CRITICALITY OF THIS

FAILURE MODE: 1R3

FAILURE MODE:

OPENS. FAILS TO CONDUCT

MISSION PHASE:

LO	LIFT-OFF
OO	ON-ORBIT
DO	DE-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) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:

A)

B)

FAILS "B" SCREEN BECAUSE FAILURE IS MASKED BY REDUNDANT POWER FEEDS.

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**FIRST FAILURE - NO EFFECT. LOSS OF ONE OF TWO DIODES SUPPLYING SERIES
RELAYS. SECOND FAILURE - REDUNDANT DIODE (OPEN) CAUSES LOSS OF ONE PLBM AC
BUS IN TWO DIFFERENT MID MOTOR CONTROL ASSEMBLIES.

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(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT. SECOND FAILURE - LOSS OF ABILITY TO SUPPLY AC POWER TO ONE OF TWO MOTORS FOR FREON RADIATOR DEPLOY/STOW/LATCH/RELEASE. NO EFFECT - ALL CRITICAL FUNCTIONS HAVE REDUNDANT MOTORS POWERED FROM A DIFFERENT AC BUS IN A DIFFERENT MID MOTOR CONTROL ASSEMBLY.

(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 AFTER THIRD FAILURE (LOSS OF REDUNDANT MOTOR OR POWER/CONTROL CIRCUIT) DUE TO THE LOSS OF CAPABILITY TO STOW THE PORT OR STARBOARD FREON RADIATOR (RESULTS IN INABILITY TO CLOSE PAYLOAD BAY DOORS WHICH CAUSES AERODYNAMIC STRUCTURAL DAMAGE DURING ENTRY) OR INABILITY TO SAFELY LATCH/RELEASE PAYLOADS.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(B) TEST:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

GROUND TURNAROUND TEST
NONE IDENTIFIED

(C) INSPECTION:

REFER TO APPENDIX F, ITEM NO. 4 - DIODE

(D) FAILURE HISTORY:

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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:
NONE

- APPROVALS -

EDITORIALLY APPROVED	: BNA	: <u>J. Kemura 7-26-99</u>
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6