

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: 05-6-2903-02

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:

SHORTS, CONDUCTS IN REVERSE DIRECTION

MISSION PHASE:

LO LIFT-OFF
 OO ON-ORBIT
 DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102 COLUMBIA
 103 DISCOVERY
 104 ATLANTIS
 105 ENDEAVOUR

CAUSE:

CONTAMINATION, 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 SHORTED DIODES CANNOT BE DETECTED IN FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

FIRST FAILURE - NO EFFECT. LOSS OF NORMAL ISOLATION BETWEEN TWO CONTROL
 BUSES. SECOND FAILURE - SHORT ON ASSOCIATED CONTROL BUS CAUSES LOSS OF
 ONE PLBM AC BUS IN TWO DIFFERENT MID MOTOR CONTROL ASSEMBLIES.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE
NUMBER: 06-6-2903- 02**

(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 CAUSE 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

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(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. Kimura 7-26-99</u>
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6