FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6-2803 -X

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 1 02/06/95

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	MID PCA 1	V070-764400
LRU	:	MID PCA 2	V070-764430
LRU	:	MID PCA 3	V070-764450
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-1050
SRU		CONTROLLER, REMOTE POWER	MC450-0017-2050
SRU		CONTROLLER, REMOTE POWER	MC450-0017-3050
SRU		CONTROLLER, REMOTE POWER	MC450-0017-4050

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, REMOTE POWER, 5 AMP - MID MCA 1, 2 AND 4 DC BUS A, B AND C POWER CONTROL

REFERENCE DESIGNATORS: 40V76A25RPC11
40V76A26RPC10
40V76A26RPC23
40V76A27RPC11

QUANTITY OF LIKE ITEMS: 4
FOUR

FUNCTION:
FOLLOWING A CREW INITIATED COMMAND, EACH REMOTE POWER CONTROLLER (RPC) CONDUCTS THE ASSOCIATED DC BUS A, B OR C POWER TO MIDBODY MOTOR CONTROL ASSEMBLY 1, 2 OR 4 FOR VENT DOOR, PAYLOAD BAY DOOR, KU-BAND ANTENNA DEPLOY/STOW, RADIATOR DEPLOY/LATCH AND REMOTE MANIPULATOR DEPLOY/LATCH MOTORS. THE RPC DESIGN INCORPORATES OVERCURRENT TRIP PROTECTION PLUS TIMED CURRENT LIMITING FOR TRANSIENT CONDITIONS. REMOTE RESET IS ACCOMPLISHED THROUGH CONTROL SIGNAL REMOVAL AND REAPPLICATION.

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- APPROVALS -

PRODUCT ASSURANCE MGR	K. L. PRESTON	K L Preston 4-6-95
PRODUCT ASSURANCE ENGR	N. HAFEZIZADEH	N Hafez
DESIGN ENGINEERING	R. L. PHAN	R Phan
NASA EPD&C SUBSYS MGR		for F Allnutt 3/14/95
NASA SUBSYS MGR		N/A
NASA EPD&C SSMA		3-19-95
NASA SSMA		N/A

PRINT DATE: 07/26/99

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE
NUMBER: 05-6-2803- 02

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: MID PCA 1, 2, 3
ITEM NAME: CONTROLLER, REMOTE POWER

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF"

MISSION PHASE: OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:
PIECE PART FAILURE, CONTAMINATION, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION, 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 MCA OPERATIONAL STATUS MEASUREMENTS ARE NOT DISPLAYED ONBOARD.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
INADVERTENT ENERGIZING OF ONE MCA LOGIC BUS.

(B) INTERFACING SUBSYSTEM(S):
LOSS OF REDUNDANCY TO PROTECT AGAINST INADVERTENT PAYLOAD BAY DOOR CLOSURE.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 05-6-2803- 02

(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 DUE TO INADVERTENT COMMANDING OF PAYLOAD BAY DOOR CLOSURE WITH REMOTE MANIPULATOR SYSTEM OR KU-BAND ANTENNA DEPLOYED VIA THE FOLLOWING SCENARIO:

(1) FAILED "ON" RPC.
(2) FAILURE OF PAYLOAD BAY DOOR ARMING SWITCH CLOSED.
(3) "PSYCHOTIC GPC" RESULTING IN INADVERTENT COMMANDING OF PAYLOAD BAY DOOR CLOSURE.

MAY RESULT IN LOSS OF ABILITY TO CLOSE AND LATCH PAYLOAD BAY DOOR DUE TO DAMAGE CAUSED BY COLLISION WITH DEPLOYED MECHANISMS OR PAYLOADS. INABILITY TO CLOSE AND LATCH PAYLOAD BAY DOORS RESULTS IN A LOSS OF ORBITER VEHICLE STRUCTURAL STIFFNESS AND POSSIBLE STRUCTURAL DAMAGE DUE TO AERODYNAMIC FORCES DURING DESCENT.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(B) TEST:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

GROUND TURNAROUND TEST
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(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	: J. Kamura 7-26-99
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6