

PAGE 7

PRINT DATE: 02/24/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
 NUMBER: 05-6-2804 -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
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 3 AND 2 DC BUS A AND C POWER
 CONTROL

REFERENCE DESIGNATORS: 40V76A27RPC10
 40V76A25RPC12

QUANTITY OF LIKE ITEMS: 2
 TWO

FUNCTION:
 FOLLOWING A CREW INITIATED COMMAND, EACH REMOTE POWER CONTROLLER
 (RPC) CONDUCTS DC BUS A OR C POWER TO MIDBODY MOTOR CONTROL ASSEMBLY
 #3 AND #2 FOR VENT DOOR, PAYLOAD BAY DOOR LATCH, RADIATOR DEPLOY/LATCH,
 REMOTE MANIPULATOR LATCH AND KU-BAND ANTENNA STOW/DEPLOY 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.

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6-2804 -X

- APPROVALS -

PRODUCT ASSURANCE MGR : K. L. PRESTON
 PRODUCT ASSURANCE ENGR : N. HAFEZIZADEH
 DESIGN ENGINEERING : P. L. PHAN
 NASA EPD&C SUBSYS MGR :
 NASA SUBSYS MGR :
 NASA EPD&C SSMA :
 NASA SSMA :

K. L. Preston 4/14/95
N. Hafezizadeh
P. L. Phan
[Signature] for F. ALVARO 3/14/95
N/A
[Signature] 3-17-95
N/A

FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE

NUMBER: 05-6-2804-02

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL

LRU: MID PCA 1, 2

CRITICALITY OF THIS

ITEM NAME: CONTROLLER, REMOTE POWER

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 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
LATCH OPERATION.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 05-6-2804- 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 LATCH CLOSED WITH PAYLOAD BAY DOORS OPEN VIA THE FOLLOWING SCENARIO:

- (1) FAILED "ON" RPC.
- (2) FAILURE OF PAYLOAD BAY DOOR ARMING SWITCH CLOSED.
- (3) FAILURE (PSYCHOTIC GPC) CAUSING INADVERTENT PAYLOAD BAY DOOR LATCH CLOSURE, RESULTING IN INABILITY TO CLOSE PAYLOAD BAY DOORS.

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:
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.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 05-6-2804-02

(E) OPERATIONAL USE:
NONE

- APPROVALS -

EDITORIALLY APPROVED
TECHNICAL APPROVAL

: BNA
: VIA APPROVAL FORM

: J. Kemura 7-26-99
: 96-CIL-025_05-6