

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-6S-BRPC3 -X

SUBSYSTEM NAME: EPD&C-DPS&C

REVISION: 4

04/12/96

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: FWD PCA 1	V070-763320
LRU	: FWD PCA 2	V070-763340
LRU	: FWD PCA 3	V070-763360
LRU	: AFT PCA (4, 5, OR 6)	V070-765280
LRU	: CONTROLLER, REMOTE POWER	MC450-0017-2050

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
REMOTE POWER CONTROLLER (RPC), 5 AMPS

REFERENCE DESIGNATORS:

- 56V76A136RPC4
- 56V76A136RPC5
- 56V76A136RPC6
- 81V76A22RPC16
- 81V76A22RPC17
- 81V76A22RPC18
- 82V76A23RPC15
- 82V76A23RPC16
- 82V76A23RPC17
- 82V76A23RPC30
- 82V76A23RPC31
- 83V76A24RPC16
- 83V76A24RPC17
- 83V76A24RPC18
- 83V76A24RPC32
- 54V76A134RPC4
- 54V76A134RPC5
- 54V76A135RPC6
- 55V76A135RPC5
- 54V76A134RPC6

QUANTITY OF LIKE ITEMS: 20
TWENTY (FWD PCA 12, AFT PCA 8)

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FUNCTION:

PROVIDES REMOTE CONTROL POWER SWITCHING OF 28V BUS POWER TO
MULTIPLEXER DEMULTIPLEXER'S (MDM) (FLIGHT FORWARD (FF), FLIGHT AFT (FA) &
PAYLOAD (PL)) IN AVIONICS BAYS 1, 2, & 3.

FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE

NUMBER: 05-6S-BRPC3-01

REVISION#: 4 04/12/96

SUBSYSTEM NAME: EPD&C-DPS&C

LRU: FWD PCA 1

ITEM NAME: CONTROLLER, REMOTE POWER

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:

LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON".

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

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

CAUSE:

PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK,
PROCESSING ANOMALY, THERMAL STRESS.

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) FAIL
	C) PASS

PASS/FAIL RATIONALE:

A)

B)

FAILS SCREEN "B" BECAUSE OUTPUT OF RPC'S ARE NOT INSTRUMENTED.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ONE OF TWO REDUNDANT POWER PATHS TO MDM'S.

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(B) INTERFACING SUBSYSTEM(S):

NO EFFECT ON FIRST FAILURE BECAUSE REDUNDANT POWER CIRCUIT PROVIDES THE REQUIRED POWER.

(C) MISSION:

NO EFFECT FIRST FAILURE.

(D) CREW, VEHICLE, AND ELEMENT(S):

NO EFFECT FIRST FAILURE.

(E) FUNCTIONAL CRITICALITY EFFECTS:

CRITICALITY 1R3 FOR THE FOLLOWING REASONS:

ASCENT:

TWO RPC FAILURES ON SAME TAG OR FA- MDM DURING RTLS TAL, OR AOA ABORT (REF: MDM CIL 05-5-B03-1-1, INABILITY TO OPEN HELIUM AFT FUSELAGE PURGE BLOW DOWN VALVE).

ON-ORBIT/ENTRY:

POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO ADDITIONAL FAILURES (LOSS OF REDUNDANT RPC CAUSING LOSS OF ONE FLIGHT CRITICAL [FC] MDM, AND THE POWER SWITCH FAILS OPEN TO ANOTHER LIKE FC MDM) COULD RESULT IN THE INABILITY TO CONTROL MOTORS AND LATCHES FOR BOTH PAYLOAD BAY DOORS PRECLUDING CLOSURE/LATCHING OPERATIONS REQUIRED FOR REENTRY. (PL1 AND PL2 MDMS). (REF: POWER SWITCH CIL 05-6S-BSW3-01).

-DISPOSITION RATIONALE-

(A) DESIGN:

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

(B) TEST:

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

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

(C) INSPECTION:

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

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(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 DATABASE.

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

(E) OPERATIONAL USE:

FOR CONTINGENCY DEORBIT, ON THE SECOND RELATED FAILURE CAUSING LOSS OF CONTROL OF MOTORS ON THE SAME (RIGHT OR LEFT) PAYLOAD BAY DOOR, COULD PRECLUDE PROPER CLOSING/LATCHING OF THAT DOOR. OTHERWISE SECOND FAILURE CONDITION COULD RESULT IN NOT BEING ABLE TO ENTER SAFELY.

DURING NOMINAL DEORBIT, CONTINGENCY EVA GR PIN KIT IFM MAY BE USED FOR CLOSING/LATCHING DOORS.

- APPROVALS -

EDITORIALY APPROVED

: RJ

EDITORIALY APPROVED

: JSC

TECHNICAL APPROVAL

: VIA APPROVAL FORM

[Handwritten Signature]
[Handwritten Date: 5-2-96]
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