FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6-2387A -X

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

PART DATA

	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	MC450-0017-1075
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-2075
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-3075
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-4075

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, REMOTE POWER, 7.5 AMP - FUEL CELL/MAIN BUS "OFF" GSE CONTROL

REFERENCE DESIGNATORS: 40V76A25RPC6
40V76A26RPC6
40V76A27RPC6

QUANTITY OF LIKE ITEMS: 3
THREE - ONE PER MID PCA

FUNCTION:
UPON COMMAND FROM A GSE CONTROLLED MULTIPLEXER/DEMULTIPLEXER (MDM), THE RPC CONNECTS PREFLIGHT TEST BUS POWER TO THE ASSOCIATED MOTOR SWITCH FOR OPENING THE FUEL CELL TO MAIN DC BUS POWER CONTACTOR.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE
NUMBER: 05-6-2387A- 02

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: MID PCA 1, 2, 3 **CRITICALITY OF THIS**
ITEM NAME: CONTROLLER, REMOTE POWER **FAILURE MODE:** 1R3

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

MISSION PHASE:
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, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
"B" SCREEN FAILS SINCE THE RPC FAILING "ON" IS NOT DETECTABLE UNTIL THE PRE-FLIGHT TEST BUS IS POWERED.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
DURING PRELAUNCH THE ASSOCIATED FUEL CELL TO MAIN DC BUS POWER CONTACTOR WILL OPEN AND POWER WILL BE LOST TO THE AFFECTED MAIN DC BUS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE NUMBER: 05-6-2387A- 02

NO EFFECT FOR OTHER MISSION PHASES SINCE THE PRE-FLIGHT TEST BUS IS NOT POWERED.

(B) INTERFACING SUBSYSTEM(S):
SAME AS (A)

(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 VIA THE FOLLOWING SCENARIO:

(1) RPC FAILED "ON"
(2,3) ASSOCIATED PRE-FLIGHT TEST BUS POWERED (REQUIRES TWO FAILURES) RESULTS IN THE ASSOCIATED FUEL CELL BEING DISCONNECTED FROM ITS MAIN DC BUS AND, CONSEQUENTLY, LOSS OF THAT MAIN DC BUS IF MAIN DC BUSES ARE NOT TIED.
(4) LOSS OF A SECOND MAIN DC BUS OR POWER CONTACTOR DURING ASCENT OR ENTRY RESULTING IN LOSS OF POWER TO CRITICAL LOADS. FOR THE ON-ORBIT MISSION PHASE AN ADDITIONAL FAILURE RESULTING IN THE LOSS OF THE THIRD MAIN DC BUS OR POWER CONTACTOR IS REQUIRED FOR LOSS OF CREW/VEHICLE.

-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

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 05-6-2387A- 02

(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.

(E) OPERATIONAL USE:
NONE

- APPROVALS -

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