FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6-2805 -X

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

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
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 AND 3 DC BUS B POWER CONTROL

REFERENCE DESIGNATORS: 40V76A26RPC22
40V76A26RPC11

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
FOLLOWING A CREW INITIATED COMMAND, EACH REMOTE POWER CONTROLLER (RPC) CONDUCTS DC BUS B POWER TO MIDBODY MOTOR CONTROL ASSEMBLY #1 AND #3 FOR LEFT VENT DOOR 5 MOTOR 2 AND RIGHT VENT DOOR 4/7 MOTOR 2, RESPECTIVELY. THE RPC DESIGN INCORPORATES OVERCURRENT TRIP PROTECTION PLUS TIMED CURRENT LIMITING FOR TRANSIENT CONDITIONS. REMOTE RESET IS ACCOMPLISHED THROUGH CONTROL SIGNAL REMOVAL AND REAPPLICATION.

- APPROVALS -

PAE MANAGER	: K. L. PRESTON	: K. L. Preston 4/21/95
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	:
DESIGN ENGINEERING	: R. L. PHAN	:
NASA EPD&C SUBSYS MGR	:	: for F. ALANIS
NASA SUBSYS MGR	:	: N/A
NASA EPD&C SSMA	:	: 3-19-96
NASA SSMA	:	: N/A

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2805 -1 REV:05/03/88

ASSEMBLY :MID PCA 2,3 CRIT.FUNC: 1R
P/N RI :MC450-0017-1050 CRIT. HDW: 2
P/N VENDOR:
QUANTITY :2
:TWO
:

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X

PHASE(S): PL LO X OO X DO X LS

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

PREPARED BY:			APPROVED BY:	APPROVED BY (NASA):
DES	R	PHILLIPS	DES	SSM
REL	M	HOVE	REL	REL
QE	J	COURSEN	QE	QE

ITEM:
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FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

CAUSE(S):
PIECE PART FAILURE, CONTAMINATION, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION, PROCESSING ANOMALY

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:

(A) LOSS OF ONE OF TWO MAIN DC BUS RELAY LOGIC POWER INPUTS TO THE ASSOCIATED MID MOTOR CONTROL ASSEMBLY.

(B) LOSS OF INTERFACE REDUNDANCY. NO EFFECT FOR FIRST FAILURE - THE REDUNDANT MOTOR CONTROLLED BY A DIFFERENT RPC COMPLETES THE FUNCTION.

(C,D) FIRST FAILURE - NO EFFECT.

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2805 -1 REV:05/03/88

EFFECT(S) ON (CONTINUED):
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/ EHICLE (E)FUNCTIONAL
CRITICALITY EFFECT:

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (LOSS OF REDUNDANT MOTOR OR POWER/CONTROL CIRCUIT) DUE TO INABILITY TO OPEN VENT DOOR DURING DESCENT (RESULTS IN VEHICLE STRUCTURAL DAMAGE DUE TO PRESSURE DIFFERENTIALS). LEFT AND RIGHT VENT DOORS ARE NOT CONSIDERED TO BE REDUNDANT TO EACH OTHER. "B" SCREEN PASSES SINCE THE FAILURE CAN BE DETECTED BY CREW MONITORING MECHANISM OPERATION TIMES OR BY LOSS OF MCA OPERATIONAL STATUS MEASUREMENTS AVAILABLE TO GROUND PERSONNEL.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A,B,C,D) DISPOSITION AND RATIONALE
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(B) GROUND TURNAROUND TEST
VERIFY MCA OPERATIONAL STATUS INDICATORS ARE "ON" (ALL MOTOR CONTROL RELAYS RESET) DURING NO OPERATION OF THE AC MOTOR MECHANISMS. TEST IS PERFORMED FOR ALL FLIGHTS.

(E) OPERATIONAL USE
FOR LOSS OF REDUNDANT VENT DOOR OPEN CAPABILITY, OPEN VENT DOORS PRIOR TO ENTRY.