

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL HARDWARE
NUMBER: 05-6-2755 -X**

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 1 **07/26/99**

PART DATA

PART NAME	PART NUMBER
VENDOR NAME	VENDOR NUMBER
LRU : MID MCA-3	V070-764550
LRU : MID MCA-3	V070-764630
SRU : RELAY, GENERAL PURPOSE	MC455-0129-0001

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RELAY, GENERAL PURPOSE, 4 POLE - MID MCA 3 THREE-PHASE PLBM AC BUS 2

REFERENCE DESIGNATORS: 40V76A119K65
 40V76A119K77

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
UPON CREW INITIATED SWITCH COMMANDS, THE CONTACTS OF TWO SERIES RELAYS CONNECT MID MOTOR CONTROL ASSEMBLY #3 AC BUS AC2 (PHASE A, B, AND C) TO PAYLOAD BAY MECHANICAL (PLBM) AC BUS 2 FOR PAYLOAD RETENTION LATCH MOTORS.

FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE

NUMBER: 05-6-2755-01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL

LRU: MID MCA-3

CRITICALITY OF THIS

ITEM NAME: RELAY, GENERAL PURPOSE

FAILURE MODE: 1R3

FAILURE MODE:OPEN, FAILS TO CONDUCT, FAILS TO TRANSFER (TO CLOSE), INADVERTENTLY OPENS,
SHORTS TO GROUND (COIL)

MISSION PHASE: OO ON-ORBIT

DO DE-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) PASS
	C) PASS

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**LOSS OF ONE OF TWO SERIES RELAYS CAUSING LOSS OF PLBM AC BUS 2 IN MID MOTOR
CONTROL ASSEMBLY #3. ALSO, FOR SHORT TO GROUND (COIL) ASSOCIATED CIRCUIT
PROTECTION FUSES TO ONE POLE OF THE PAYLOAD BAY MECHANICAL POWER (SYSTEM
2) SWITCH WILL OPEN CAUSING LOSS OF PLBM AC BUS 2 IN MID MOTOR CONTROL
ASSEMBLY #4.

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(B) INTERFACING SUBSYSTEM(S):

LOSS OF REDUNDANCY. ALL CRITICAL FUNCTIONS HAVE REDUNDANT MOTORS POWERED FROM A DIFFERENT AC BUS IN A DIFFERENT MID MOTOR CONTROL ASSEMBLY AND PLBM AC BUS 2 IN MID MOTOR CONTROL ASSEMBLY #4 DOES NOT POWER MOTORS FOR THE SAME CRITICAL FUNCTIONS.

(C) MISSION:

POSSIBLE EARLY MISSION TERMINATION

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

FIRST FAILURE - NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (LOSS OF REDUNDANT MOTOR OR POWER/CONTROL CIRCUIT) DUE TO THE LOSS OF CAPABILITY TO SAFELY LATCH/RELEASE PAYLOADS.

DESIGN CRITICALITY (PRIOR TO DOWNGRADE, DESCRIBED IN (F)):**(F) RATIONALE FOR CRITICALITY DOWNGRADE:**

THE DESIGN CRITICALITY OF 1R2 HAS BEEN DOWNGRADED TO 1R3 AFTER WORKAROUNDS CONSIDERATION (ALLOWED PER CR S050107W) BECAUSE AFTER THE SECOND FAILURE, EVA CAN BE PERFORMED TO MANUALLY LATCH/RELEASE THE PAYLOAD LATCHES.

- APPROVALS -

EDITORIALLY APPROVED
TECHNICAL APPROVAL

: BNA
: VIA APPROVAL FORM

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