FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER: 05-6-2757 -X

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 0 05/03/88

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: MID MCA-4	V070-764500
LRU	: MID MCA-4	V070-764640
SRU	: RELAY, GENERAL PURPOSE	MC455-0129-0001

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

REFERENCE DESIGNATORS: 40V76A120K30
40V76A120K42

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
UPON CREW INITIATED SWITCH COMMANDS, THE CONTACTS OF TWO SERIES RELAYS CONNECT MID MOTOR CONTROL ASSEMBLY #4 AC BUS AC3 (PHASE A, B, AND C) TO PAYLOAD BAY MECHANICAL (PLBM) AC BUS 3 FOR FREON RADIATOR DEPLOY/ LATCH AND REMOTE MANIPULATOR DEPLOY/LATCH MOTORS.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE
NUMBER: 05-6-2757-01

REVISION#: 1 07/26/99
SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: MID MCA-4 **CRITICALITY OF THIS**
ITEM NAME: RELAY, GENERAL PURPOSE **FAILURE MODE:** 1R2

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 3 IN MID MOTOR CONTROL ASSEMBLY #4. 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 1 IN MID MOTOR CONTROL ASSEMBLY #3.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE NUMBER: 05-6-2757- 01

(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 1 IN MID MOTOR CONTROL ASSEMBLY #3 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 STOW THE PORT OR STARBOARD FREON RADIATOR (RESULTS IN INABILITY TO CLOSE PAYLOAD BAY DOORS WHICH CAUSE AERODYNAMIC STRUCTURAL DAMAGE DURING ENTRY).

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

(B) TEST:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

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

(C) INSPECTION:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

(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.

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NUMBER: 05-6-2757- 01

(E) OPERATIONAL USE:
CONSIDERATION WILL BE GIVEN TO STOWING MECHANISMS WITH THE LOSS OF REDUNDANCY.

- APPROVALS -

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