FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6-2611 -X

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

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: PANEL MA73C	V070-730383
SRU	: CIRCUIT BREAKER	MC454-0026-2030

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CIRCUIT BREAKER, SINGLE PHASE, 3 AMP - AC1, AC2 AND AC3 BUS FEEDS TO AFT MCA 1, 2 AND 3 (OMS/RCS BUSES)

REFERENCE DESIGNATORS:
85V73A129CB38
85V73A129CB39
85V73A129CB40
85V73A129CB41
85V73A129CB42
85V73A129CB43
85V73A129CB44
85V73A129CB45
85V73A129CB46

QUANTITY OF LIKE ITEMS: 9
NINE

FUNCTION:
PROVIDES INDIVIDUAL PHASE A, B AND C CIRCUIT PROTECTION FOR AC1, AC2 AND AC3 BUSES WHICH FEED RELATED BUSES IN THE AFT MOTOR CONTROL ASSSEMBLIES (MCA'S) 1, 2 AND 3 FOR OMS/RCS MOTOR VALVES. SINGLE PHASE CIRCUIT BREAKERS ALLOW EXTRA REDUNDANCY LEVEL SINCE LOADS WILL OPERATE ON TWO PHASES.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE
NUMBER: 05-6-2611- 01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: PANEL MA73C **CRITICALITY OF THIS**
ITEM NAME: CIRCUIT BREAKER **FAILURE MODE:** 1R3

FAILURE MODE:
FAILS OPEN, FAILS TO CLOSE, FAILS TO CONDUCT

MISSION PHASE:
LO LIFT-OFF
DO DE-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FAILS "B" SCREEN SINCE CIRCUIT BREAKER OPEN IS NOT CONSIDERED DETECTABLE.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF AC POWER TO ONE OF THREE PHASES OF ASSOCIATED OMS/RCS AC BUS.

(B) INTERFACING SUBSYSTEM(S):

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FIRST FAILURE - NO EFFECT. THE OMS/RCS AC MOTOR VALVES WILL OPERATE AS REQUIRED ON TWO PHASES.

(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) AFT RCS LEAK DURING EARLY ASCENT PHASE REQUIRING CLOSURE OF ALL AFT RCS ISOLATION VALVES.
(2,3) FAILURE OF TWO CIRCUIT BREAKERS (OPEN) SUPPLYING AC BUS 3 POWER TO AFT MOTOR CONTROL ASSEMBLY #3 RESULTING IN LOSS OF CAPABILITY TO REOPEN ANY AFT RCS MANIFOLDS TO PROPELLANT FLOW FOR ET/ORB SEPARATION OR ENTRY.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

(B) TEST:
REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

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

(C) INSPECTION:
REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

(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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(E) OPERATIONAL USE:
NONE

- APPROVALS -

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