FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6MA-2001 -X

SUBSYSTEM NAME: EPD&C - ELEC PWR GENERATION:FUEL CELL (04-1A)
REVISION: 0 02/12/88

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: PANEL L4	V070-730273
SRU	: CIRCUIT BREAKER	MC454-0026-2030

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CIRCUIT BREAKER, SINGLE PHASE, 3 AMP, THERMAL - FCP NO. 1, 2, 3

REFERENCE DESIGNATORS:
31V73A4CB65
31V73A4CB66
31V73A4CB67
31V73A4CB68
31V73A4CB69
31V73A4CB70
31V73A4CB71
31V73A4CB72
31V73A4CB73

QUANTITY OF LIKE ITEMS: 9
THREE PER FCP

FUNCTION:
WHEN CLOSED, ALL THREE SINGLE PHASE CIRCUIT BREAKERS WILL CONNECT THE THREE PHASE AC POWER TO FUEL CELL POWER PLANT NO. 1, 2, AND 3 RELAYS FOR PUMP MOTOR OPERATION. WILL OPEN UP AND PROTECT AC BUSES IN CASE OF OVERCURRENT.

FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE
NUMBER: 05-6MA-2001- 04

REVISION#: 1 08/09/96
SUBSYSTEM NAME: EPD&C - ELEC PWR GENERATION:FUEL CELL (04-1A)
LRU: PANEL L4
ITEM NAME: CIRCUIT BREAKER
CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS CLOSED, CAN NOT BE PULLED OPEN MECHANICALLY

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 STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) N/A
C) PASS

PASS/FAIL RATIONALE:
A)

B)
REDUNDANCY SCREEN B - N/A SINCE CIRCUIT BREAKER IS CONSIDERED STANDBY REDUNDANT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF ABILITY TO ISOLATE A FUEL CELL PUMP PACKAGE SINGLE PHASE FROM A SHORTED AC BUS. NO EFFECT FIRST FAILURE. SECOND FAILURE (SHORT ON ASSOCIATED BUS) MAY RESULT IN LOSS OF ASSOCIATED FUEL CELL, IF THE SHORT

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RESULTS IN TRIPPING ONE OR BOTH OF THE REMAINING CIRCUIT BREAKERS IN THE THREE PHASE ARRAY.

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

(C) MISSION:
NO EFFECT

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE DUE TO UNRELATED LOSS OF ADDITIONAL FUEL CELLS. (A SINGLE FUEL CELL RETURN FROM ORBIT IS VIABLE PROVIDING NECESSARY BUS CONFIGURATION IS ACCOMPLISHED.)

-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
FCP PERFORMANCE VERIFIED DURING PRELAUNCH OPERATIONS. CIRCUIT BREAKER OPERATION VERIFIED DURING EACH GROUND TURNAROUND.

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

(D) FAILURE HISTORY:
REFER TO APPENDIX D, ITEM NO. 1 - CIRCUIT BREAKER

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NUMBER: 05-6MA-2001- 04

(E) OPERATIONAL USE:
NO CREW ACTION AFTER FAILURE.

- APPROVALS -

EDITORIALLY APPROVED	: RI	: Wayne E. Hennig 8/12/96
EDITORIALLY APPROVED	: JSC	: Tom Leary 9-6-96
TECHNICAL APPROVAL	: VIA JSC	: 96-CIL-012