

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL HARDWARE

NUMBER: 05-6WD-4011 -X

SUBSYSTEM NAME: EPD&C - ATCS/FCL

REVISION: 0 12/02/97

PART DATA

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

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

CIRCUIT BREAKER (3 AMP), FREON LOOP BYPASS VALVE CONTROL SUBSYSTEM.

REFERENCE DESIGNATORS: 31V73A4CB138

QUANTITY OF LIKE ITEMS: 1
ONE**FUNCTION:**

CB 138 PROVIDES SINGLE-PHASE AC POWER TO MOTOR TWO OF THE TWO REDUNDANT MOTORS USED TO ACTUATE THE PORT AND STARBOARD ISOLATION VALVES.

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

NUMBER: 05-6WD-4011-01

REVISION#: 0 12/02/97

SUBSYSTEM NAME: EPD&C - ATCS/FCL

LRU: PANEL L4

ITEM NAME: CIRCUIT BREAKER

CRITICALITY OF THIS

FAILURE MODE: 1R3

FAILURE MODE:

FAILS OPEN, FAILS TO CONDUCT, FAILS TO CLOSE

MISSION PHASE:OO ON-ORBIT
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 SCREENA) PASS
B) N/A
C) PASS**PASS/FAIL RATIONALE:**

A)

B)

NSTS 22206 PARAGRAPH 3.4.4.A.2 STATES: CB'S, SWITCHES, RELIEF VALVES, ETC.
CONSIDERED STANDBY REDUNDANT THEREFORE SCREEN B IS N/A.

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**

AFTER FIRST FAILURE LOSS OF ISOLATION VALVE MOTOR REDUNDANCY.

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE
NUMBER: 05-6WD-4011- 01

(B) INTERFACING SUBSYSTEM(S):
NONE FIRST FAILURE.

(C) MISSION:
PROBABLE LOSS OF MISSION AFTER 3 FAILURES: (1) CB138 FAILS OPEN, (2) CB 137 FAILS OPEN CAUSING LOSS OF ABILITY OF ISOLATION VALVE TO TO TO RAD BYPASS, AND (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY.

(D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR ASSOCIATED FAILURES: (1) CB138 FAILS OPEN, (2) CB137 FAILS OPEN CAUSING LOSS OF ABILITY OF ISOLATION VALVE TO GOT TO RAD BYPASS, (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY, AND (4) LOSS OF REDUNDANT COOLANT LOOP.

(E) FUNCTIONAL CRITICALITY EFFECTS:
FAILURE SCENARIO FOR CB138
PROBABLE LOSS OF MISSION AFTER 3 FAILURES: (1) CB138 FAILS OPEN, (2) CB137 FAILS OPEN CAUSING LOSS OF ABILITY OF ISOLATION VALVE TO GO TO RAD BYPASS, AND (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY. POSSIBLE LOSS OF CREW/VEHICLE AFTER 4 FAILURES: (1) CB138 FAILS OPEN, (2) CB137 FAILS OPEN CAUSING LOSS OF ABILITY OF ISOLATION VALVE TO GO TO RAD BYPASS, AND (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY, AND (4) LOSS OF REDUNDANT COOLANT LOOP CAUSING LOSS OF ALL VEHICLE COOLING.

- APPROVALS -

SS & PAE MANAGER
SS & PAE ENGINEER
EPD&C ATC
BNA SSM
JSC MOD
JSC RDE

: D. F. MIKULA
: K. E. RYAN
: D. SOVEREIGN
: R. L. PHAN
:

D.F. Mikula
K.E. Ryan TLD
D. Sovereign
R. Phan
[Signature]

Neptune Center 11-24-98

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Suzanne Rente
[Signature] 1/10/99