

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE
NUMBER: 05-6WD-4012 -X

SUBSYSTEM NAME: EPD&C - ATCS/FCL

REVISION: 0 12/02/97

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: PANEL 014	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: 33V73A14CB41

QUANTITY OF LIKE ITEMS: 1
 ONE

FUNCTION:
 CB41 SUPPLIES +28V POWER TO THE HYBRID RELAYS AND FEEDBACK CIRCUITS USED TO PROVIDE THE AUTOMATIC FUNCTION OF THE BYPASS FREON LOOP BYPASS SUBSYSTEM.

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

NUMBER: 05-6WD-4012-01

REVISION#: 0 12/02/97

SUBSYSTEM NAME: EPD&C - ATCS/FCL

LRU: PANEL 04

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-ORBITVEHICLE/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) 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 AUTOMATIC RADIATOR ISOLATION IN THE EVENT OF AN
EXTERNAL LEAK IN A RADIATOR ARRAY.

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

NUMBER: 05-6WD-4012-01

(B) INTERFACING SUBSYSTEM(S):

NONE FIRST FAILURE.

(C) MISSION:

PROBABLE LOSS OF MISSION AFTER THREE ASSOCIATED FAILURES: (1) CB41 FAILS OPEN, (2) FAILURE OF MANUAL SWITCHING FUNCTION TO BYPASS RAD FLOW IN TIME, AND (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY.

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

POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR FAILURES: (1) CB41 FAILS OPEN, (2) FAILURE OF SWITCH S27 STARBOARD (OR S28 PORT) TO SWITCH TO RAD BYPASS IN LESS THAN 5 SECONDS, (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY, AND (4) LOSS OF REDUNDANT COOLANT LOOP CAUSING LOSS OF ALL VEHICLE COOLING.

(E) FUNCTIONAL CRITICALITY EFFECTS:

FAILURE SCENARIO FOR CB41

PROBABLE LOSS OF MISSION AFTER THREE FAILURES: (1) CB41 O14 FAILS OPEN CAUSING LOSS OF AUTO FUNCTION TO CONTROL ISOLATION VALVE, (2) TOGGLE SWITCH S27 STARBOARD (OR S28 PORT) FAILS TO SWITCH ISOLATION VALVE TO RAD BYPASS IN LESS THAN 5 SECONDS, AND (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY. POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR FAILURES: (1) CB41 O14 FAILS OPEN CAUSING LOSS OF AUTO FUNCTION TO CONTROL ISOLATION VALVE, (2) TOGGLE SWITCH S27 STARBOARD (OR S28 PORT) FAILS TO SWITCH ISOLATION VALVE TO RAD BYPASS IN LESS THAN 5 SECONDS, (3) EXTERNAL LEAK IN ASSOCIATED RADIATOR ARRAY, AND (4) LOSS OF REDUNDANT COOLANT LOOP CAUSING LOSS OF ALL VEHICLE COOLING.

- APPROVALS -

SS & PAE MANAGER	: D. F. MIKULA
SS & PAE ENGINEER	: K. E. RYAN
EPD&C ATC	: D. SOVEREIGN
BNA SSM	: R. L. PHAN
JSC MOD	:
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