

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6WD-4090 -X**

SUBSYSTEM NAME: EPD&C - ATCS/FCL

REVISION: 0 12/02/97

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: PANEL L2A1	V070-730273
SRU	:CAPACITOR, 0.15 MF	M83421/01-5177

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

CAPACITOR 0.075MF, ISOLATION VALVE MOTOR PORT (OR STARBOARD), FREON LOOP BYPASS VALVE CONTROL. (NOTE:0.075 MF CAPACITOR IS MADE UP OF TWO SERIES 0.15 MF CAPACITORS)

REFERENCE DESIGNATORS: TB1A1C1,C2,
TB1A2C1,C2,
TB2A1C1,C2,
TB2A2C1,C2

QUANTITY OF LIKE ITEMS: 8

EIGHT
TWO SERIES PAIRS FOR EACH MOTOR FOR STARBOARD AND PORT ISOLATION VALVES.

FUNCTION:
CAPACITORS PROVIDE PROPER PHASE FOR REVERSING MOTORS.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 05-6WD-4090-01

REVISION#: 0 12/02/97

SUBSYSTEM NAME: EPD&C - ATCS/FCL

LRU: TB1

ITEM NAME: CAPACITOR, 0.15 MF

CRITICALITY OF THIS
FAILURE MODE: 1R3FAILURE MODE:
FAILS OPENMISSION PHASE: LO LIFT-OFF
OO ON-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:

A)

B)
CANNOT ISOLATE THE FAIL OPEN OF THIS CAPACITOR WITHOUT USING INTRUSIVE
PROCEDURES.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
NONE FIRST FAILURE.

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

(C) MISSION:
PROBABLE LOSS OF MISSION AFTER 3 FAILURES: (1) CAPACITOR MOTOR ONE STARBOARD ISOLATION VALVE (OR CAPACITOR MOTOR ONE PORT ISOLATION VALVE) FAILS OPEN, (2) CAPACITOR MOTOR TWO STARBOARD ISOLATION VALVE (OR CAPACITOR MOTOR TWO PORT ISOLATION VALVE) FAILS OPEN, AND (3) EXTERNAL LEAK RADIATOR ARRAY STARBOARD (OR PORT) CAUSING LOSS OF ONE COOLANT LOOP.

(D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE LOSS OF CREW/VEHICLE AFTER 4 FAILURES: (1) CAPACITOR MOTOR ONE STARBOARD ISOLATION VALVE (OR CAPACITOR MOTOR ONE PORT ISOLATION VALVE) FAILS OPEN, (2) CAPACITOR MOTOR TWO STARBOARD ISOLATION VALVE (OR CAPACITOR MOTOR TWO PORT ISOLATION VALVE) FAILS OPEN, (3) EXTERNAL LEAK RADIATOR ARRAY STARBOARD (OR PORT) CAUSING LOSS OF ONE COOLANT LOOP AND (4) LOSS OF REDUNDANT COOLANT LOOP CAUSING LOSS OF ALL VEHICLE COOLING.

(E) FUNCTIONAL CRITICALITY EFFECTS:
PROBABLE LOSS OF MISSION AFTER 3 FAILURES: (1) CAPACITOR, MOTOR ONE STARBOARD ISOLATION VALVE (OR CAPACITOR, MOTOR ONE PORT ISOLATION VALVE) FAILS OPEN, (2) CAPACITOR, MOTOR TWO STARBOARD ISOLATION VALVE (OR CAPACITOR, MOTOR TWO PORT ISOLATION VALVE) FAILS OPEN, AND (3) EXTERNAL LEAK RADIATOR ARRAY STARBOARD (OR PORT) CAUSING LOSS OF ONE COOLANT LOOP.
POSSIBLE LOSS OF CREW/VEHICLE AFTER 4 FAILURES: (1) CAPACITOR, MOTOR ONE STARBOARD ISOLATION VALVE (OR CAPACITOR, MOTOR ONE PORT ISOLATION VALVE) FAILS OPEN, (2) CAPACITOR, MOTOR TWO STARBOARD ISOLATION VALVE (OR CAPACITOR, MOTOR TWO PORT ISOLATION VALVE) FAILS OPEN, (3) EXTERNAL LEAK RADIATOR ARRAY STARBOARD (OR PORT) CAUSING LOSS OF ONE COOLANT LOOP, AND (4) LOSS OF REDUNDANT COOLANT LOOP CAUSING LOSS OF ALL VEHICLE COOLING.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX C, ITEM #1 - HYBRID RELAY.

(B) TEST:
REFER TO APPENDIX C, ITEM #1 - HYBRID RELAY.

GROUND TURNAROUND TEST
TOGGLE SWITCH IS VERIFIED PRIOR TO EACH FLIGHT.

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(C) INSPECTION:
REFER TO APPENDIX C, ITEM #1 - HYBRID RELAY.

(D) FAILURE HISTORY:
REFER TO APPENDIX C, ITEM #1 - HYBRID RELAY.

(E) OPERATIONAL USE:
NONE.

- APPROVALS -

SS & PAE MANAGER
SS & PAE ENGINEER
EPD&C ATC
BNA SSM
JSC MOD
BC RDE
USA/Reshiter

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

D.F. Mikula
K.E. Ryan TD
D. Sovereign
R. Phan
Nanette Cerna 11-24-98
Suzanne Little 1-4-99
Off. Attn 11/19/99