FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6WD-4050 -X

SUBSYSTEM NAME: EPD&C - ATCS/FCL

REVISION: 0 12/02/97

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: PANEL L2A1	V070-730273
SRU	:RESISTOR,5.1K,1/4 W	RLR07C5101GR VENDOR NO

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RESISTOR, AUTOMATIC CONTROL CIRCUIT, FREON LOOP BYPASS VALVE CONTROL SUBSYSTEM.

REFERENCE DESIGNATORS: R23
R24

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
R23 PROVIDES SWITCH SCAN FOR THE AUTOMATIC POSITION OF AUTO/MANUAL SWITCH, S26.
R24 PROVIDES SWITCH SCAN FOR THE MANUAL POSITION OF AUTO/MANUAL SWITCH, S26.

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SUBSYSTEM NAME: EPD&C - ATCS/FCL
LRU: PANEL L2A1
ITEM NAME: RESISTOR

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN, PREMATURE OPEN

MISSION PHASE:
LO LIFT-OFF
OO ON-ORBIT

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

CAUSE:
PIECE PART STRUCTURAL 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)
IMPOSSIBLE TO ISOLATE FAIL OPEN OF INDIVIDUAL RESISTOR WITHOUT USING INTRUSIVE PROCEDURES.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF FEEDBACK STATUS FOR AUTOMATIC OR MANUAL FUNCTION

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(B) INTERFACING SUBSYSTEM(S):
NONE .

(C) MISSION:
POSSIBLE LOSS OF MISSION AFTER 2 FAILURES: (1) FEEDBACK RESISTOR R23 (AUTO FUNCTION) FAILS OPEN OR FEEDBACK RESISTOR R24 (MANUAL FUNCTION) FAILS OPEN CAUSING LOSS OF RADIATOR ISOLATION FUNCTION, (2) EXTERNAL LEAK IN RADIATOR ARRAY CAUSES LOSS OF ONE COOLANT LOOP.

(D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE LOSS OF CREW/VEHICLE AFTER 3 FAILURES: (1) FEEDBACK RESISTOR R23 AUTO FUNCTION FAILS OPEN OR FEEDBACK RESISTOR R24 MANUAL FAILS OPEN, (2) EXTERNAL LEAK IN RADIATOR ARRAY, AND (3) LOSS OF REDUNDANT COOLANT LOOP.

(E) FUNCTIONAL CRITICALITY EFFECTS:
PROBABLE LOSS OF MISSION AFTER 2 FAILURES: (1) FEEDBACK RESISTOR R23 (AUTO FUNCTION) FAILS OPEN OR FEEDBACK RESISTOR R24 (MANUAL FUNCTION) FAILS OPEN, CAUSING LOSS OF ABILITY TO ISOLATE RADIATORS ON ASSOCIATED COOLANT LOOP, (2) EXTERNAL LEAK RADIATOR IN ASSOCIATED LOOP CAUSES LOSS OF THAT COOLANT LOOP SINCE ASSOCIATED RADIATOR ARRAY CANNOT BE ISOLATED, FREON FOR THAT COOLANT LOOP IS LOST THROUGH RADIATOR LEAK. POSSIBLE LOSS OF CREW/VEHICLE AFTER 3 FAILURES: (1) FEEDBACK RESISTOR R23 (AUTO FUNCTION) FAILS OPEN OR FEEDBACK RESISTOR R24 (MANUAL FUNCTION) FAILS OPEN, CAUSING LOSS OF ABILITY TO ISOLATE RADIATORS ON ASSOCIATED COOLANT LOOP, (2) EXTERNAL LEAK RADIATOR IN ASSOCIATED LOOP CAUSES LOSS OF THAT COOLANT LOOP SINCE RADIATOR ARRAY CANNOT BE ISOLATED, FREON FOR THAT COOLANT LOOP IS LOST THROUGH RADIATOR LEAK AND (3) LOSS OF REDUNDANT COOLANT LOOP CAUSES LOSS OF ALL VEHICLE COOLING.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX E ITEM NO. 2, RESISTOR FIXED FILM TYPE-RLR07..

(B) TEST:
REFER TO APPENDIX E, ITEM NO. 2, RESISTOR FIXED FILEM TYPE- RLR07.

(C) INSPECTION:
REFER TO APPENDIX E, ITEM NO. 2, RESISTOR, FIXED FILM TYPE - RLR07.

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(D) FAILURE HISTORY:
REFER TO APPENDIX E, ITEM NO. 2, RESISTOR, FIXED FILM TYPE - RLR07.

(E) OPERATIONAL USE:

- APPROVALS -

SS & PAE MANAGER	: D. F. MIKULA	: D.F. Mikula
SS & PAE ENGINEER	: K. E. RYAN	: K.E. Ryan TLD
EPD&C ATC	: D. SOVEREIGN	: D. Sovereign
BNA SSM	: R. L. PHAN	: R. Phan
JSC MOD	:	: [illegible]
JSC 2DE		Nanette Gerné 11-24-98
		1/16/98