

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
 NUMBER: 05-6WC-1002-X

SUBSYSTEM NAME: EPD&C - ATCS:RFCA

REVISION : 2 05/30/90

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU :	PANEL L1A2	V070-730271
SRU :	SWITCH, TOGGLE	ME452-0102-7403

 PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 SWITCH, TOGGLE. RADIATOR FLOW CONTROL.

REFERENCE DESIGNATORS: 31V73A1A2-
 : S26, S27

QUANTITY OF LIKE ITEMS: 2
 (TWO), ONE PER LOOP

FUNCTION:
 SELECTS AND PROVIDES POWER TO A OR B RADIATOR FLOW CONTROLLERS FOR EACH
 FREON LOOP.

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PRINT DATE: 05/30/90

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6WC-1002-01

SUBSYSTEM: EPD&C - ATCS:RFCA
LRU :PANEL L1A2
ITEM NAME: SWITCH, TOGGLE

REVISION# 2 05/30/90 R

CRITICALITY OF THIS
FAILURE MODE:2/2

FAILURE MODE:

FAILS OPEN, PREMATURE OPER, FAILS CLOSED IN THE "OFF" POSITION, POLE-TO-
POLE SHORT

MISSION PHASE:

00 ON-ORBIT
00 DE-ORBIT

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

CAUSE:

PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK,
VIBRATION, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

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

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF RADIATOR FLOW CONTROL ON ONE FREON COOLANT LOOP.

(B) INTERFACING SUBSYSTEM(S):

LOSS OF RADIATOR COOLING FOR THE ASSOCIATED FREON COOLANT LOOP.

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(C) MISSION:
LOSS OF ON-ORBIT COOLING WILL REQUIRE AN EARLY MISSION TERMINATION, A
CRITICALITY 2/2 CONDITION.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
THIS FAILURE (LOSS OF RADIATOR COOLING FOR THE ASSOCIATED FREON COOLANT
LOOP) COMBINED WITH FAILURE OF TWO OF THE REMAINING FOUR SYSTEMS:
-TOPPING EVAPORATOR
-HI-LOAD EVAPORATOR
-FREON COOLANT LOOP
-AMMONIA BOILER
CAN CAUSE LOSS OF ALL ORBITER COOLING, AND MAY CAUSE LOSS OF CREW/
VEHICLE, A CRITICALITY 1R3 (PPP) CONDITION.

- DISPOSITION RATIONALE -

(A) DESIGN:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

■ (B) TEST:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

RADIATOR FLOW CONTROL OPERATIONS ARE VERIFIED IN FLIGHT EVERY FLIGHT AND
DURING GROUND TURNAROUND TEST EVERY FIFTH FLOW.

(C) INSPECTION:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

(D) FAILURE HISTORY:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

(E) OPERATIONAL USE:
ASSOCIATED FREON LOOP RADIATOR WILL BE MANUALLY BYPASSED. ASSOCIATED
FREON PUMP WILL BE TURNED OFF AND VEHICLE POWERDOWN WILL BE PERFORMED.
FREON PUMP REACTIVATED FOR ENTRY.

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- APPROVALS -

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 NASA SUBSYSTEM MANAGER :
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