FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6WA-2179HB -X

SUBSYSTEM NAME: EPD&C - WATER SPRAY BOILER
REVISION: 0 07/26/94

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	AFT PCA 4, 5, AND 6	VO70-765280
SRU	:	REMOTE POWER CONTROLLER	MC450-0017-3200
SRU	:	REMOTE POWER CONTROLLER	MC450-0017-2200
SRU	:	REMOTE POWER CONTROLLER	MC450-0017-1200

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
REMOTE POWER CONTROLLER, RPC (20 AMPS), WSB CONTROLLER "B".

REFERENCE DESIGNATORS: 54V76A134RPC19
54V76A134RPC20
55V76A135RPC19
55V76A135RPC20
56V76A136RPC19
56V76A136RPC20

QUANTITY OF LIKE ITEMS: 6
SIX

FUNCTION:
THE REMOTE POWER CONTROLLER (RPC) POWERS THE ASSOCIATED WATER SPRAY BOILER (WSB) CONTROLLER "B". WSB CONTROLLER "A" FOR EACH WSB IS POWERED FROM A DIFFERENT MAIN BUS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: 05-6WA-2179HB -02

REVISION# 05/25/95

SUBSYSTEM NAME: EPD&C - WATER SPRAY BOILER
LRU: AFT PCA 4, 5, AND 6
ITEM NAME: REMOTE POWER CONTROLLER

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
INADVERTENT OUTPUT, FAILS ON , FAILS TO TURN OFF

MISSION PHASE:
LO LIFT-OFF
DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 COLUMBIA
103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR
EFFECTIVE FOR WSB INLET LINE ELECTRICAL HEATER MOD ONLY

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

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

PASS/FAIL RATIONALE:
A)

B)
FIRST FAILURE IS NOT DETECTABLE IN FLIGHT SINCE THE OPERATIONAL STATUS OF THESE RPC'S ARE NOT BEING MONITORED. REQUIRES THREE FAILURES BEFORE THE FAILURE IS FLIGHT DETECTABLE. SCREEN "B" IS "N/A" SINCE THE REDUNDANT FUNCTIONAL PATHS ARE TWO FAULT TOLERANT (1R3) AND FAILURE OF TWO OF THE REMAINING PATHS ARE READILY DETECTABLE DURING FLIGHT.

C)

CORRECTING ACTION:
ASCENT: SHUT DOWN AFFECTED APU/HYD SYSTEM AT AN APPROPRIATE TIME BASED ON FLIGHT PHASE AND SYSTEM TEMPERATURES.
ENTRY: SHUT DOWN AFFECTED APU/HYD SYSTEM OR DELAY APU START IF FAILURE IS KNOWN PRIOR TO DEORBIT.

THE FOLLOWING OPERATIONAL USE APPLIES TO NORMAL MISSIONS (NO FAILURES):
SWITCH TO "B" SIDE 24 HOURS AFTER ORBITAL INSERTION.

PAGE: 5 PRINT DATE: 06/01/95

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REMARKS/RECOMMENDATIONS:
NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:
ONE OF TWO SERIES RPC'S IS ENABLED

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT - FIRST FAILURE

(C) MISSION:
NO EFFECT - FIRST FAILURE

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE WITH FOUR FAILURES - (1) THIS FAILURE, (2) RPC FAILURE IN ASSOCIATED CIRCUIT OF SAME SYSTEM RESULTING IN CONTINUOUS ENABLE OF CONTROLLER "B", (3) FAILURE OF "B" CONTROLLER WHICH REQUIRES SWITCHING TO REDUNDANT CONTROLLER RESULTING IN LOSS OF ONE WSB AND ASSOCIATED APU/HYD SYSTEM, AND 4) LOSS OF SECOND APU/HYD SYSTEM.

- APPROVALS -

PRODUCT ASSURANCE ENGR : T. K. KIMURA : T. Kimura 6/1/95
DESIGN ENGINEERING : G. J. SCHWARTZ : [signature] 6-1-95