

PAGE: 1

PRINT DATE: 06/01/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL HARDWARE
NUMBER: 05-6WA-2179HA -X

SUBSYSTEM NAME: EPD&C - WATER SPRAY BOILER

REVISION: 05/25/95

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT PCA 4, 5, AND 6	VO70-785280
SRU	: REMOTE POWER CONTROLLER	MC450-0017-S200
SRU	: REMOTE POWER CONTROLLER	MC450-0017-2200
SRU	: REMOTE POWER CONTROLLER	MC450-0017-1200

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

THE REMOTE POWER CONTROLLER HAS A 20 AMP CURRENT RATING WITH TWO IN SERIES FOR EACH WSB CONTROLLER "A" AND WSB WATER INLET LINE HEATER POWER CIRCUIT.

REFERENCE DESIGNATORS: 54V76A134RPC21
54V76A134RPC22
55V76A135RPC21
55V76A135RPC22
56V76A138RPC21
56V76A138RPC22

QUANTITY OF LIKE ITEMS: 6
SIX - TWO FOR EACH WSB CONTROLLER "A"

FUNCTION:

THE REMOTE POWER CONTROLLER (RPC) POWERS THE ASSOCIATED WATER SPRAY BOILER (WSB) CONTROLLER "A", AND WSB INLET LINE HEATER. CONTROLLER "A" FOR EACH WSB IS POWERED FROM A DIFFERENT MAIN BUS.

PAGE: 4

PRINT DATE: 06/01/95

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

REVISION# 05/25/95

SUBSYSTEM NAME: EPD&C - WATER SPRAY BOILER

LRU: AFT PCA 4, 5, AND 6

CRITICALITY OF THIS
FAILURE MODE: 1R3

ITEM NAME: REMOTE POWER CONTROLLER

FAILURE MODE:

INADEVERTENT 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 APUHYD SYSTEM AT AN APPROPRIATE TIME BASED ON FLIGHT PHASE AND SYSTEM TEMPERATURES.
ENTRY: SHUT DOWN AFFECTED APUHYD 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

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

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 "A", (3) FAILURE OF "A" 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
 DESIGN ENGINEERING : G. J. SCHWARTZ

J. Kimura 6/1/95
G. J. Schwartz 6-1-95