FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6WA-2086HA-X

SUBSYSTEM NAME: EPD&C-WATER SPRAY BOILER
REVISION: 1 07/26/94

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	PANEL R2	V070-730277
SRU	:	RESISTOR	RWR80S1211FR

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RESISTOR IS 1.2K OHMS, 2 W, BETWEEN LOGIC POWER BUS AND PANEL TOGGLE SWITCH FOR WSB CONTROLLER "A" LOGIC CIRCUIT.

REFERENCE DESIGNATORS: 32V73A2A20R1
32V73A2A17R1
32V73A2A21R1
32V73A2A18R1
32V73A2A22R1
32V73A2A19R1

QUANTITY OF LIKE ITEMS: 6
SIX, TWO PER WATER SPRAY BOILER SYSTEM

FUNCTION:
LIMITS LOGIC CIRCUIT CURRENT FOR THE REMOTE POWER CONTROLLER'S (RPC) POWERING CONTROLLER "A" OF WATER SPRAY BOILER SYSTEMS 1, 2 AND 3, AND WSB INLET LINE HEATER.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: 05-6WA-2086HA- 01

REVISION# 05/25/95

SUBSYSTEM NAME: EPD&C-WATER SPRAY BOILER
LRU: PANEL R2 **CRITICALITY OF THIS**
ITEM NAME: RESISTOR **FAILURE MODE: 1R3**

FAILURE MODE:
OPEN

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:
STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN **A) PASS**
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

CORRECTING ACTION:
ASCENT - SHUT DOWN AFFECTED APU/HYD SYSTEM AT AN APPROPRIATE TIME BASED ON FLIGHT PHASE AND SYSTEM TEMPERATURE.
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.

REMARKS/RECOMMENDATIONS:
THIS FAILURE MODE WAS NOT ASSESSED FOR CRITICALITY 1R2 DURING INTACT ABORT ONLY (AVIONICS ONLY) SINCE REDUNDANCY REQUIREMENTS HAVE BEEN MAINTAINED PER NSTS 22206, PARAGRAPH 3.2.C.2.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: 05-6WA-2086HA-01

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF POWER TO CONTROLLER "A" AND INLET WATER LINE HEATER OF ASSOCIATED WATER SPRAY BOILER.

(B) INTERFACING SUBSYSTEM(S):
LOSS OF LINE HEATER WILL CAUSE WSB SPRAY BAR FREEZE UP AND SUBSEQUENT LOSS OF COOLING CAPABILITY, RESULTING IN LOSS OR LIMITED RUN TIME OF ONE APU/HYD SYSTEM. LIMITED RUN TIME MAY NOT ALLOW AFFECTED APU/HYD SYSTEM TO SUPPORT AN ABORT SCENARIO OR HOT APU RESTART FOR IMMEDIATE RETURN.

(C) MISSION:
NO EFFECT - FIRST FAILURE. WSB SPRAY BAR FREEZE-UP SUBLIMATES IN 3 HOURS MAX.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
FUNCTIONAL CRITICALITY EFFECTS FOR OPEN RESISTOR: LOSS OF CONTROLLER "A", AND LINE HEATER. SECOND FAILURE: LOSS OF REDUNDANT CONTROLLER "B" IN SAME WSB WILL CAUSE LOSS OF WSB. THIRD FAILURE: LOSS OF CREW/VEHICLE WITH LOSS OF SECOND APU/HYD SYSTEM.

FUNCTIONAL CRITICALITY EFFECTS FOR LOSS OF HEATER: CRITICALITY 1R2 FOR RTLS, TAL, AOA ABORTS, AND IMMEDIATE RETURN (HOT APU RESTART): LOSS OF WSB DUE TO FREEZING OF SPRAY BAR WILL CAUSE LOSS OF ONE APU/HYD SYSTEM. LOSS OF A SECOND APU/HYD SYSTEM WILL RESULT IN LOSS OF CREW/VEHICLE.

- APPROVALS -

PRODUCT ASSURANCE ENGR : T. K. KIMURA : T. Kimura 6/1/95
DESIGN ENGINEERING : G. J. SCHWARTZ : Mary J. Schwartz 6-1-95