FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6WA-2051H-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	:	SWITCH, TOGGLE	ME452-0102-7303

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, 3 POLE, 3 POSITION, "APU/HYD BOILER CNTLR/HTR"

REFERENCE DESIGNATORS: 32V73A2S41
32V73A2S42
32V73A2S43

QUANTITY OF LIKE ITEMS: 3
THREE

FUNCTION:
PROVIDES POWER TRANSFER CONTROL FOR THE WATER SPRAY BOILER (WSB) CONTROLLERS AND RESPECTIVE HEATERS (WATER TANK, SPRAY BOILER AND STEAM OUTLET HEATERS ON CONTROLLERS "A" AND "B", AND INLET LINE HEATER ON CONTROLLER "A" ONLY) FOR WSB NO'S 1, 2 AND 3.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: 05-6WA-2051H-02

REVISION# 05/25/95

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

FAILURE MODE:
PREMATURE CLOSURE, INTERNAL SHORTS, INADVERTENT CLOSURE

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)
SCREEN IS N/A SINCE CLOSED IS THE NORMAL SWITCH POSITION WHEN THE WSB IS IN USE. THIS FAILURE WILL NOT BE DETECTED UNTIL THE SWITCH IS TRANSFERRED FROM POSITION "A" TO "B" (OR "B" TO "A") AND IT IS DETERMINED THAT THE SWITCHED "ON" CONTROLLER IS NOT POWERED.

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.

REMARKS/RECOMMENDATIONS:
NONE

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NUMBER: 05-6WA-2051H-02

- FAILURE EFFECTS -

(A) SUBSYSTEM:
SWITCH CONTACTS 1 AND 2 (OR 3 AND 4) FAILED CLOSED WILL CAUSE A CONTINUOUS ENABLE OF ONE OF TWO SERIES REMOTE POWER CONTROLLERS (RPC'S), RPC 22 (RPC 19), FOR CONTROLLER "A" ("B") AND LOSS OF ABILITY TO ENABLE ONE OF TWO SERIES RPC'S: RPC 19 (RPC 22) FOR CONTROLLER "B" ("A").

(B) INTERFACING SUBSYSTEM(S):
LOSS OF ABILITY TO SWITCH FROM CONTROLLER "A" TO "B" ("B" TO "A").

(C) MISSION:
NO EFFECT - FIRST FAILURE

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW AND VEHICLE AFTER THREE FAILURES: 1) THIS FAILURE RESULTING IN THE CONTINUOUS ENABLE OF RPC 22 (RPC 19) OF CONTROLLER "A" ("B") AND THE LOSS OF ABILITY TO ENABLE RPC 19 (RPC 22) OF CONTROLLER "B" ("A")), (2) CONTROLLER "A" ("B") FAILURE WHICH REQUIRES SWITCHING TO REDUNDANT CONTROLLER (LOSS OF WSB), AND (3) LOSS OF SECOND APU/HYDRAULIC SUBSYSTEM.

- APPROVALS -

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