FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE
NUMBER:M5-6SS-0108 -X

SUBSYSTEM NAME: ISS DOCKING SYSTEM

REVISION: 0 02/27/98

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	:PANEL A6A3	V828-730150
SRU	:TOGGLE SWITCH	ME452-0102-7801

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCHES, TOGGLE, 3 POLE 2 POSITION, MAINTAINED ON - PSU POWER MAIN A AND B CONTROL CIRCUIT.

REFERENCE DESIGNATORS: 36V73A7A3S9
36V73A7A3S10

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
THE SWITCHES PROVIDE MANUAL ACTIVATION OF PANEL PSU POWER MAIN A AND MAIN B POWER CIRCUITS.

REFERENCE DOCUMENTS: 1) VS70-953103, INTEGRATED SCHEMATIC - 53G, MAIN A/MAIN B SUPPLY BUS POWER DISTRIBUTION

FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE
NUMBER: M5-6SS-0108-02

REVISION#: 0 02/27/98

SUBSYSTEM NAME: ISS DOCKING SYSTEM
LRU: PANEL A6A3
ITEM NAME: TOGGLE SWITCH

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS CLOSED IN "ON" POSITION, CONTACT-TO-CONTACT SHORT

MISSION PHASE: OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:
103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR

CAUSE:
A) PIECE PART STRUCTURAL FAILURE, B) CONTAMINATION, C) VIBRATION, D) MECHANICAL SHOCK, E) PROCESSING ANOMALY, F) THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

CRITICALITY 1R2 DURING INTACT ABORT ONLY (AVIONICS ONLY)? NO

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

PASS/FAIL RATIONALE:
A)

B)
"B" SCREEN IS N/A SINCE FAILURE OF AT LEAST TWO REMAINING PATHS ARE DETECTABLE IN FLIGHT.

C)

METHOD OF FAULT DETECTION:
THE FAILURE WOULD BE DETECTED DURING SYSTEM POWER DOWN.

MASTER MEAS. LIST NUMBERS:
V53X0777E
V53X0778E
V53X0779E

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V53X0780E
V53X0786E
V53X0787E
V53X0788E
V53X0789E

CORRECTING ACTION: MANUAL

CORRECTING ACTION DESCRIPTION:
CREW CAN OPEN ASSOCIATED PANEL A7A2 SWITCHES.

REMARKS/RECOMMENDATIONS:
EACH PACU IS SUPPLIED WITH POWER BY BOTH MAIN A AND B. ONE MOTOR FOR GROUP 1(2) IS POWERED BY MAIN A AND THE OTHER MOTOR FOR GROUP 1(2) IS POWERED BY MAIN B.

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF SWITCH CONTROL CAPABILITY FOR THE AFFECTED PSU POWER CIRCUIT.

(B) INTERFACING SUBSYSTEM(S):
ONE PSU POWER CIRCUIT CONTINUOUSLY ENERGIZED.

(C) MISSION:
NO EFFECT

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER EIGHT FAILURES:
1) "PSU POWER" SWITCH FAILS CLOSED.
2) ONE OF TWO ASSOCIATED "UNDOCKING" SWITCHES (PANEL A7A2) FAILS CLOSED.
3) ONE OF TWO ASSOCIATED "POWER ON" SWITCHES (PANEL A7A2) FAILS CLOSED.
4) ONE OF TWO ASSOCIATED "APDS CIRC PROT OFF" SWITCHES (PANEL A7A2) FAILS CLOSED.

5,6) TWO "APDS POWER" (PANEL A7A2) CIRCUIT BREAKERS FAILED CLOSED.

7,8) TWO APDS "CONTROL PANEL POWER" (PANEL A7A2) CIRCUIT BREAKERS FAIL CLOSED RESULTING IN ALL HOOKS INADVERTENTLY OPENING. POSSIBLE LOSS OF HABITABLE ENVIRONMENT.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
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- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS

TIME FROM FAILURE OCCURRENCE TO DETECTION: HOURS

TIME FROM DETECTION TO COMPLETED CORRECTING ACTION: HOURS

IS TIME REQUIRED TO IMPLEMENT CORRECTING ACTION LESS THAN TIME TO EFFECT?
YES

RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
TO REMOVE POWER TO THE FAILED CLOSED "PSU POWER" SWITCH, THE CREW CAN OPEN THE ASSOCIATED "UNDOCKING" SWITCH ON PANEL A7A2.

HAZARD REPORT NUMBER(S): ORBI 511

HAZARD(S) DESCRIPTION:
LOSS OF HABITABLE ENVIRONMENT IN ODS/CREW MODULE

- APPROVALS -

SS&PAE	: T. K. KIMURA	T. Kimura 4-13-98
DESIGN ENGINEERING	: C. J. ARROYO	