

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE  
NUMBER:M5-6SS-0109 -X**

**SUBSYSTEM NAME: ISS DOCKING SYSTEM**

**REVISION: 0 02/27/98**

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**PART DATA**

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	<b>PART NAME VENDOR NAME</b>	<b>PART NUMBER VENDOR NUMBER</b>
LRU	:MID PCA-1	VO70-764400
LRU	:MID PCA-2	VO70-764430
SRU	:REMOTE POWER CONTROLLER	MC450-0017-X200

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**

REMOTE POWER CONTROLLER, TYPE III, CLASS B, 20 AMP - PSU POWER MAIN A AND MAIN B CONTROL CIRCUIT.

**REFERENCE DESIGNATORS:** 40V76A25RPC17  
40V76A26RPC17

**QUANTITY OF LIKE ITEMS:** 2  
TWO

**FUNCTION:**

THE REMOTE POWER CONTROLLERS PROVIDE POWER DISTRIBUTION AND CIRCUIT PROTECTION ACTIVATION OF THE 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-0109-02

REVISION#: 0 02/27/98

SUBSYSTEM NAME: ISS DOCKING SYSTEM

LRU: MID PCA-1 2

ITEM NAME: REMOTE POWER CONTROLLER

CRITICALITY OF THIS

FAILURE MODE: 1R3

## FAILURE MODE:

INADVERTENT OUTPUT, FAILS TO TURN "OFF", FAILS "ON"

MISSION PHASE: OO ON-ORBIT

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

## CAUSE:

A) PIECE PART 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.

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**- FAILURE EFFECTS -**

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**(A) SUBSYSTEM:**

LOSS OF ABILITY TO REMOVE ONE OF THE TWO PSU POWER CIRCUITS WITH THE PSU POWER SWITCH.

**(B) INTERFACING SUBSYSTEM(S):**

ONE PSU POWER CIRCUIT CONTINUOUSLY ENERGIZED.

**(C) MISSION:**

FIRST FAILURE - 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 MAIN POWER RPC FAILS ON.
- 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.

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

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**- TIME FRAME -**

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**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:  
AFTER THE PSU MAIN POWER RPC FAILS ON, THE CREW CAN OPEN THE ASSOCIATED  
PANEL A7A2 SWITCHES TO PREVENT THE HOOKS FROM INADVERTENTLY OPENING.**

**HAZARD REPORT NUMBER(S): ORBI 511**

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

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**- APPROVALS -**

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SS&PAE  
DESIGN ENGINEERING

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*J. Kimura 4-13-98*  
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