

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL HARDWARE
NUMBER:M5-6SS-0115 -X****SUBSYSTEM NAME: ISS DOCKING SYSTEM****REVISION: 0 02/27/98**

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	:MID PCA-3	VO70-764450
SRU	:REMOTE POWER CONTROLLER	MC450-0017-X200

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
REMOTE POWER CONTROLLER, 20 AMP - PYRO POWER MAIN A +Y2 LOGIC BUS SIGNAL.

REFERENCE DESIGNATORS: 40V76A27RPC39

QUANTITY OF LIKE ITEMS: 1
ONE

FUNCTION:
THE REMOTE POWER CONTROLLER PROVIDES POWER DISTRIBUTION AND
ACTIVATION FOR ONE OF THE TWO LOGIC BUSES IN THE PFCU.

REFERENCE DOCUMENTS: 1) VS70-953103, INTEGRATED SCHEMATIC - 53PA, PFCU
POWER DISTRIBUTION CONTROL CIRCUIT

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: M5-6SS-0115-02

REVISION#: 0 02/27/98

SUBSYSTEM NAME: ISS DOCKING SYSTEM

LRU: MID PCA-3

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)

N/A - PYROTECHNIC SEPARATION IS CLASSIFIED AS STANDBY REDUNDANCY.

C)

METHOD OF FAULT DETECTION:

TELEMETRY CAN BE USED TO VERIFY POWER ON OR OFF FOR THE PSU 20 AMP BUSES. "PYROTECHNIC BUS STATUS (AP, BP, AND CP)" AND "PYRO CIRCUIT PROTECT CIRCUIT OFF" INDICATIONS IN THE APDS D&C PANEL.

MASTER MEAS. LIST NUMBERS:	V53X0765E
	V53X0766E

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
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V53X0797E
 V53X0798E
 V53X0796E

CORRECTING ACTION: NONE

CORRECTING ACTION DESCRIPTION:

DESIGN FAULT TOLERANCE: "PYRO CIRCUIT PROTECTION OFF" SWITCHES PROVIDE REDUNDANCY AGAINST INADVERTENT PYROTECHNIC SEPARATION.

- FAILURE EFFECTS -

(A) SUBSYSTEM:

DEGRADATION OF REDUNDANCY AGAINST INADVERTENT PYROTECHNIC SEPARATION.

(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT

(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 SIX FAILURES:

- 1) RPC FAILS "ON".
- 2) ONE OF TWO "PYRO CIRCUIT PROTECTION OFF" SWITCHES FAILS CLOSED (MULTIPLE CONTACTS) - UNWANTED "PYRO CIRCUIT PROTECTION OFF" COMMAND TO THE PFCU. DEGRADED PROTECTION AGAINST ACCIDENTAL PYROTECHNIC SEPARATION.
- 3) ONE RPC IN THE PYRO POWER CIRCUITRY FAILS ON.
- 4,5) TWO OF THREE PYROTECHNIC POWER CIRCUIT BREAKERS FAILS CLOSED.
- 6) ONE "ACTIVE" OR "PASSIVE" HOOKS FIRING SWITCH FAILS CLOSED (MULTIPLE CONTACTS). POSSIBLE VEHICLE SEPARATION OR LOSS OF HABITABLE VOLUME DUE TO UNWANTED PYRO "FIRE" COMMAND.

- TIME FRAME -

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
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TIME FROM FAILURE TO CRITICAL EFFECT: DAYS

TIME FROM FAILURE OCCURRENCE TO DETECTION: MINUTES

TIME FROM DETECTION TO COMPLETED CORRECTING ACTION: N/A

**IS TIME REQUIRED TO IMPLEMENT CORRECTING ACTION LESS THAN TIME TO EFFECT?
N/A**

**RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
THE CREW CAN KEEP OPEN THE ASSOCIATED "PYRO CIRCUIT PROTECTION OFF"
SWITCH OR PYROTECHNIC POWER CIRCUIT BREAKER AS PROTECTION AGAINST
ACCIDENTAL PYROTECHNIC SEPARATION.**

HAZARD REPORT NUMBER(S): ORBI 511

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

- APPROVALS -

SS&PAE
DESIGN ENGINEERING

: T. K. KIMURA
: C. J. ARROYO

J. Kimura 4-13-98
C. J. Arroyo