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PRINT DATE: 10/26/95

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: M5-6MR-0025-X**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 1 SEP 30, 1995

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: MPCA-1	V070-764400
LRU	: MPCA-2	V070-764430
SRU	: REMOTE POWER CONTROLLER	MC450-0017-X200

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
REMOTE POWER CONTROLLER, TYPE III, CLASS B, 20 AMP - PFCU POWER MN A AND
MN C POWER CIRCUIT.**

**REFERENCE DESIGNATORS: 40V76A25RPC37
40V76A25RPC38
40V76A26RPC18
40V76A26RPC31**

**QUANTITY OF LIKE ITEM: 4
(FOUR)**

**FUNCTION:
THE REMOTE POWER CONTROLLERS PROVIDE POWER DISTRIBUTION AND CIRCUIT
PROTECTION ACTIVATION OF THE PFCU POWER MN A MN C PYROTECHNIC "FIRE"
CIRCUITS.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0025-02**

REVISION# 1 SEP 30, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC450-0017-X200
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: 104 ATLANTIS

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/FAR
C) PASS

PASS/FAIL RATIONALE:
A)

B)
C) TWO REMAINING PATHS DETECTABLE. ~~FIRST FAILURE IS NOT DETECTABLE.~~

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
V53X0797E
V53X0798E
V53X0796E

CORRECTING ACTION:
NONE.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0025-02**

- FAILURE EFFECTS -

(A) SUBSYSTEM:

DEGRADATION OF REDUNDANCY AGAINST INADVERTENT PYROTECHNIC SEPARATION.

(B) INTERFACING SUBSYSTEM(S):

UNWANTED COMMAND - ONE OF TWO PFCU LOGIC AND POWER CIRCUITS ALWAYS ENERGIZED.

(C) MISSION:

NO EFFECT.

(D) CREW, VEHICLE, AND ELEMENT(S):

FIRST FAILURE - NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW OR VEHICLE AFTER FOUR FAILURES. 1) RPC FAILS ON. NO EFFECT. 2) PFCU KQ1 OR KQ2 RELAYS FAIL CLOSED. DEGRADED REDUNDANCY AGAINST PYROTECHNIC SEPARATION. 3) PYRO LOGIC BUS "B" CIRCUIT BREAKER FAILS CLOSED (DETECTABLE.) DEGRADED REDUNDANCY AGAINST PYROTECHNIC SEPARATION. 4) HOOKS PYRO FIRE SWITCH MULTIPLE CONTACT FAILURE. POSSIBLE INADVERTENT SEPARATION.

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS

TIME FROM FAILURE OCCURRENCE TO DETECTION: MINUTES

TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: N/A

TIME REQUIRED TO IMPLEMENT CORRECTIVE ACTION LESS THAN TIME TO EFFECT?
N/A

HAZARDS: DM20HA03(F)

INADVERTENT/ERRONEOUS SEPARATION OF ODS FROM DOCKING MODULE PRIOR TO DOCKING WITH MIR.

- APPROVALS -

PRODUCT ASSURANCE ENGINEERING
DESIGN ENGINEERING

:R. BLACKWELL
:T. NGUYEN

R. Blackwell
T. Nguyen