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PRINT DATE: 10/26/95

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE  
NUMBER: M5-6MR-0026-X**

**SUBSYSTEM NAME: ORBITER DOCKING SYSTEM**

**REVISION: 1 SEP 30, 1995**

	<b>PART NAME VENDOR NAME</b>	<b>PART NUMBER VENDOR NUMBER</b>
LRU	: MPCA-1	V070-764400
SRU	: GENERAL PURPOSE CONTACTOR	MC455-0134-0003

**PART DATA**

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:  
CONTACTOR, GENERAL PURPOSE, LATCHING, 125 AMP - PYRO POWER MAIN A +Y  
LOGIC BUS SIGNAL**

**REFERENCE DESIGNATORS: 40V76A25A2K2**

**QUANTITY OF LIKE ITEM: 1  
(ONE)**

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

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE  
NUMBER: M5-6MR-0026- 01**

REVISION# 1 SEP 30, 1995

**SUBSYSTEM NAME: ORBITER DOCKING SYSTEM  
LRU: MC455-0134-0003  
ITEM NAME: GENERAL PURPOSE CONTACTOR****CRITICALITY OF THIS  
FAILURE MODE: 1R3****FAILURE MODE:**OPEN, FAILS TO CONDUCT, INADVERTENTLY OPENS, FAILS TO TRANSFER, SHORT TO  
STRUCTURE**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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

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

**REDUNDANCY SCREEN** A) PASS  
B) N/A  
C) PASS**PASS/FAIL RATIONALE:**

A)

B)

PYROTECHNIC SEPARATION CLASSIFIED AS STAND-BY REDUNDANCY.

C)

**METHOD OF FAULT DETECTION:**

N/A

**MASTER MEAS. LIST NUMBERS:** NONE**CORRECTING ACTION:**

NONE.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE  
NUMBER: M5-6MR-0025-01**

**- FAILURE EFFECTS -**

**(A) SUBSYSTEM:**

LOSS OF CAPABILITY TO ACTIVATE ONE OF THE TWO PFCU FIRE CIRCUITS.

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

DEGRADED REDUNDANCY FOR PYROTECHNIC SEPARATION CAPABILITY. LOSS OF ONE OF TWO +Y LOGIC SIGNALS TO THE PFCU.

**(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 ~~FAILURE~~ ~~THREE~~ FAILURES. 1) CONTACTOR OPENS. DEGRADED REDUNDANCY FOR PYROTECHNIC SEPARATION. 2) FUSE IN THE REDUNDANT CIRCUIT FAILS OPEN. LOSS OF PFCU LOGIC. LOSS OF PYROTECHNIC UNDOCKING CAPABILITY. 3) ONE OF TWELVE HOOKS FAILS TO OPEN (REF. M8-1MR-BM001-04.) LOSS OF CAPABILITY TO IMPLEMENT NOMINAL SEPARATION. LOSS OF NOMINAL AND PYROTECHNIC SEPARATION CAPABILITY. PERFORM EVA TO REMOVE 98 BOLTS HOLDING DOCKING BASE TO EXTERNAL AIRLOCK. 4) FAILURE OF EVA TO REMOVE BOLTS. LOSS OF ALL UNDOCKING CAPABILITY.

**- TIME FRAME -**

**TIME FROM FAILURE TO CRITICAL EFFECT: DAYS**

**TIME FROM FAILURE OCCURRENCE TO DETECTION: MINUTES**

**TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: N/MINUTES**

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

**HAZARDS: DM20HA04(F)0996-18.**

**INABILITY TO SAFELY SEPARATE ORBITER FROM DOCKING MODULE OR MIR.**

**- APPROVALS -**

PRODUCT ASSURANCE ENGINEERING  
PRODUCT ASSURANCE MANAGER

:R. BLACKWELL  
:T. NGLIYEN

*R. Blackwell*  
*T. Ngliyen*