

PAGE: 1

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-0026-02

REVISION# 1 OCT 27, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM  
 LRU: MC455-0134-0003  
 ITEM NAME: GENERAL PURPOSE CONTACTOR

CRITICALITY OF THIS  
 FAILURE MODE: 1R3

## FAILURE MODE:

CLOSED, FAILS TO OPEN, PREMATURELY CLOSES, SHORTS CONTACT-TO-CONTACT

## 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

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

## REDUNDANCY SCREEN

A) PASS  
 B) N/A-FAILS  
 C) PASS

## PASS/FAIL RATIONALE:

A)

B)

TWO REMAINING PATHS DETECTABLE, FIRST FAILURE IS NOT DETECTABLE.

C)

## METHOD OF FAULT DETECTION:

NONE

## MASTER MEAS. LIST NUMBERS:

NONE

## CORRECTING ACTION:

NONE.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE  
NUMBER: M5-6MR-0026-02**

**- FAILURE EFFECTS -**

**(A) SUBSYSTEM:**

DEGRADATION OF REDUNDANCY AGAINST INADVERTENT PYROTECHNIC SEPARATION.

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

UNWANTED COMMAND - ONE OF TWO PFCU PYRO CIRCUIT PROTECT LOGIC 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 FIVE FAILURES. 1) CONTACTOR FAILS CLOSED. NO EFFECT. 2) PYRO PROTECTION OFF SWITCH FAILS CLOSED. DEGRADED REDUNDANCY AGAINST PYROTECHNIC SEPARATION. 3) ASSOCIATED RPC FAILS ON. DEGRADED REDUNDANCY AGAINST PYROTECHNIC SEPARATION. 4) PFCU LOGIC BUS "B" CIRCUIT BREAKER FAILS CLOSED (DETECTABLE.) DEGRADED REDUNDANCY AGAINST PYROTECHNIC SEPARATION. 5) ACTIVE 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*