PAGE: 1 PRINT DATE: 10/26/95

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

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 1 SEP 30, 1995

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	DOCKING SYSTEM POWER PANEL	V828-730150
SRU	:	CIRCUIT BREAKER	MC454-0026-2075

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CIRCUIT BREAKERS, 7.5 AMP - PNL A7A3 PNL A, PNL B, AND PNL C LOGIC BUS CIRCUITS.

REFERENCE DESIGNATORS: 36V73A7A3CB11
36V73A7A3CB12
36V73A7A3CB13
36V73A7A3CB14
36V73A7A3CB15
36V73A7A3CB16

QUANTITY OF LIKE ITEM: 6
(SIX)

FUNCTION:
PROVIDE OVERLOAD PROTECTION TO THE ORBITER MN A (MPCA-1,) MN B (MPCA-2,) AND MN C (MPCA-3) FROM THE PNL A, B, AND C CIRCUITS.

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

REVISION# 1 **OCT 27, 1995**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC454-0026-2075
ITEM NAME: CIRCUIT BREAKER

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT, FAILS TO CLOSE

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 ~~FAILS~~
C) PASS

PASS/FAIL RATIONALE:
A)

B)
TWO REMAINING PATHS DETECTABLE. ~~FIRST FAILURE MASKED BY REDUNDANT POWER SOURCE~~

C)

METHOD OF FAULT DETECTION:
FAILURE WOULD BE DETECTABLE AFTER FAILURE OF THE PARALLEL POWER SOURCE.

MASTER MEAS. LIST NUMBERS: NONE

CORRECTING ACTION:
NONE.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: MS-6MR-0028-01

- FAILURE EFFECTS -

(A) SUBSYSTEM:
DEGRADATION OF REDUNDANCY FOR APDS LOGIC BUS POWER SOURCE.

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT. DEGRADED PNL BUS REDUNDANCY.

(C) MISSION:
NO EFFECT.

(D) CREW, VEHICLE, AND ELEMENT(S):
FIRST FAILURE - NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW VEHICLE AFTER FIVE ~~THREE~~ FAILURES. 1) FIRST CB FAILS OPEN. NO EFFECT. 2) MPCA CONTACTOR FAILS OPEN OR SHORTS TO GROUND RESULTING IN LOSS OF APDS LOGIC REDUNDANCY. 3) ONE OF TWO MAIN LOGIC BUS CIRCUIT BREAKERS OR DIODES IN PNL A7A3 FAILS OPEN RESULTING IN LOSS OF TWO OF THREE APDS LOGIC BUSES. ~~ALL UNDOCKING CAPABILITY.~~ FAILURE OF TWO OF THREE APDS LOGIC BUSES DISABLES NOMINAL AND PYROTECHNIC SEPARATION SYSTEMS CONTROL. USE IFM TO DRIVE HOOKS THROUGH A BREAKOUT BOX. 4) FAILURE OF IFM TO OPEN HOOKS. PERFORM EVA TO REMOVE 96 BOLTS HOLDING DOCKING BASE TO AIRLOCK. 5) 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/A

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

HAZARDS: DM2OHA04(F).
INABILITY TO SAFELY SEPARATE ORBITER FROM DOCKING MODULE OR MIR.

- APPROVALS -

PRODUCT ASSURANCE ENGINEERING :R. BLACKWELL : [signature]
DESIGN ENGINEERING :T. NGUYEN : [signature]