FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: M5-6MR-0029-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 1 SEP 30, 1995

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	DOCKING SYSTEM POWER PANEL	V82B-730150
SRU	:	DIODE	JANTX1N1188R

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODES, POWER, 35 AMP - PNL A7A3 PNL A, PNL B, AND PNL C BUSES CIRCUITS.

REFERENCE DESIGNATORS: 36V73A7A3CR1
36V73A7A3CR2
36V73A7A3CR3
36V73A7A3CR4
36V73A7A3CR5
36V73A7A3CR6

QUANTITY OF LIKE ITEM: 6
(SIX)

FUNCTION:
THESE DIODES PROVIDE BACK SURGE PROTECTION AND DISTRIBUTION FOR THE MN A, MN B, AND MN C POWER BUSES FROM THE A8A3 PANEL CIRCUITS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0029- 02

REVISION# 1 SEP 30, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: JANTX1N1188R **CRITICALITY OF THIS**
ITEM NAME: DIODE **FAILURE MODE:** 1R3

FAILURE MODE:
SHORT (END TO END)

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. ~~SHORTED DIODE 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-0029-02

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF PNL LOGIC BUS SOURCE ISOLATION.

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT.

(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) DIODE SHORTS END TO END. NO EFFECT. 2) SAME DIODE SHORTS TO STRUCTURE RESULTING IN LOSS OF ONE PNL LOGIC BUS. 3) REDUNDANT CIRCUIT BREAKER FEEDING ONE OF TWO REMAINING PNL LOGIC BUSES FAILS OPEN RESULTING IN LOSS OF PNL POWER REDUNDANCY. 4) ASSOCIATED CB FEEDING THE SAME PNL BUS FAILS OPEN RESULTING IN LOSS OF PANEL CONTROL OF NOMINAL AND PYROTECHNIC UNDOCKING CAPABILITY. USE IFM TO DRIVE HOOKS OPEN THROUGH BREAKOUT BOX. 5) FAILURE OF IFM TO OPEN HOOKS. PERFORM EVA TO REMOVE 96 BOLTS HOLDING DOCKING BASE TO EXTERNAL AIRLOCK. 6) FAILURE OF EVA TO SEPARATE BASE FROM AIRLOCK. 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 : R. Blackwell
DESIGN ENGINEERING :T. NGUYEN : T. Nguyen