FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL HARDWARE
NUMBER: M5-6MR-0022-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	:	FUSE	MC451-0018-0300

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
FUSE, PLUG-IN, SUB-MINIATURE, 3 AMP - PYRO LOGIC PWR MN A AND MN C CONTROL CIRCUIT.

REFERENCE DESIGNATORS: 36V73A7A3F1
36V73A7A3F2

QUANTITY OF LIKE ITEM: 2
(TWO)

FUNCTION:
PROVIDE DISTRIBUTION AND CIRCUIT PROTECTION FOR THE MN A-ESS 1BC AND THE MN C-ESS 3AB FROM THE RPCs ASSOCIATED WITH THE PFCU PYRO LOGIC CIRCUITS.

REFERENCE DOCUMENTS:
1) ECN 104-25012A. ODS ELECTRICAL CHANGE NOTICE.
2) CKB>=468=312=001 _ J"P. SCHEMATIC DIAGRAM - ANDROGYNOUS PERIPHERAL DOCKING SYSTEM (APDS) CONTROL PANEL PU-APSS SCHEMATIC.
3) V828-733002. SCHEMATIC DIAGRAM - D&C PANEL A7A3 AFT STATION
4) VS70-953104. ODS INTEGRATED SCHEMATIC.
5) 33Y.5212.005. "P. APDS CONTROL UNIT ELECTRICAL SCHEMATIC.
6) 17RC=10> 2601F_J "P. PYRO FIRING CONTROL UNIT ELECTRICAL

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0022- 01

REVISION# 1 **SEP 30, 1995**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC451-0018-0300
ITEM NAME: FUSE

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 104 ATLANTIS

CAUSE:
A) PIECE PART STRUCTURAL FAILURE, B) CONTAMINATION, C) VIBRATION, D) MECHANICAL SHOCK, E) PROCESSING ANOMALY, F) THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT 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 EFFECTS -

(A) SUBSYSTEM:
LOSS OF CAPABILITY TO ACTIVATE ONE OF THE TWO PFCU LOGIC CIRCUITS.

(B) INTERFACING SUBSYSTEM(S):
DEGRADED REDUNDANCY FOR PYROTECHNIC SEPARATION CAPABILITY. LOSS OF ONE OF TWO +Y LOGIC SIGNALS TO THE PFCU.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0022-01

(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~~THREE~~ FAILURES. 1) FUSE OPENS. DEGRADED REDUNDANCY FOR PYROTECHNIC SEPARATION. 2) FUSE IN THE REDUNDANT CIRCUIT FAILS OPEN RESULTING IN LOSS OF PYRO ARMING CIRCUIT CAPABILITY AND THEREFORE LOSS OF PYROTECHNIC UNDOCKING CAPABILITY. 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 96 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: MINUTES

TIME REQUIRED TO IMPLEMENT CORRECTIVE ACTION LESS THAN TIME TO EFFECT?
YES

HAZARDS: DM2OHA04(F) ~~ODS-18~~.
INABILITY TO SAFELY SEPARATE ORBITER FROM DOCKING MODULE OR MIR.

- APPROVALS -

PRODUCT ASSURANCE ENGINEERING :R. BLACKWELL : R Blackwell
PRODUCT ASSURANCE MANAGER :T. NGUYEN : T Nguyen