FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL HARDWARE
NUMBER: M5-6MR-0019-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, 3 AMP - PSU PWR MN A (ESS 1BC) AND PSU PWR MN B (ESS 2CA.)

REFERENCE DESIGNATORS: 36V73A7A3F12
36V73A7A3F13

QUANTITY OF LIKE ITEM: 2
(TWO)

FUNCTION:
PROVIDE OVERLOAD PROTECTION TO THE ORBITER MN A-ESS 1BC, AND THE MN B-ESS 2CA BUSES FROM THE RPCs ASSOCIATED WITH THE APDS PSU POWER ENABLE CIRCUITS.

REFERENCE DOCUMENTS:
1) ECN 104-25012A. ODS ELECTRICAL CHANGE NOTICE.
2) CKB>=468312=001 _ J"P SCHEMATIC DIAGRAM - ANDROGYNOUS PERIPHERAL DOCKING SYSTEM (APDS) CONTROL PANEL PU-APSS SCHEMATIC.
3) 33Y.5212.005."3. APDS CONTROL UNIT ELECTRICAL SCHEMATIC.
4) VS70-953104. ODS INTEGRATED SCHEMATIC.
5) V828-733002. SCHEMATIC DIAGRAM - D&C PANEL A7A3 AFT STATION

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: MS-6MR-0019- 01

REVISION# 1 SEP 30, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC451-0016-0300
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

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

REDUNDANCY SCREEN
A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)
B)
C)

METHOD OF FAULT DETECTION:
TELEMETRY CAN BE USED TO VERIFY POWER FOR THE PSU 20 AMP BUSES. INDICATION IS OBTAINED BY SECONDARY MEANS.

MASTER MEAS. LIST NUMBERS:
V53X0777E
V53X0780E
V53X0786E
V53X0787E
V53X0788E
V53X0789E

CORRECTING ACTION:
NONE

REMARKS/RECOMMENDATIONS:
FAILURE OF THIS CIRCUIT AFFECTS THE PERFORMANCE OF THE ANDROGYNOUS PERIPHERAL DOCKING ASSEMBLY (APDA).

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0019-01

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF ONE OF TWO PSU POWER BUSES.

(B) INTERFACING SUBSYSTEM(S):
DEGRADED APDS PERFORMANCE. INCREASED ACTUATOR OPERATION TIME.

(C) MISSION:
NO EFFECT.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW VEHICLE AFTER ~~FOUR~~THREE FAILURES. 1) FUSE FAILS OPEN. LOSS OF ONE PSU POWER ENABLE CIRCUIT. DEGRADED UNDOCKING CAPABILITY. REDUNDANT PATHS REMAINS OPERATIONAL. 2) FUSE IN OTHER POWER LEG FAILS OPEN. LOSS OF REMAINING PSU POWER ENABLE CIRCUIT. LOSS OF NOMINAL UNDOCKING CAPABILITY. 3) ONE PYROBOLT FAILS TO INITIATE RESULTING IN LOSS OF CAPABILITY TO IMPLEMENT PYROTECHNIC 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 96 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~~MINUTES~~

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

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