FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL HARDWARE
NUMBER: MS-6MR-0020-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	:	TOGGLE SWITCH	MC452-0102-7801

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCHES, TOGGLE, 3P2P, MAINTAINED ON - PSU POWER MN A AND B CONTROL CIRCUIT.

REFERENCE DESIGNATORS: 36V73A7A3S9
36V73A7A3S10

QUANTITY OF LIKE ITEM: 2
(TWO)

FUNCTION:
THE SWITCHES PROVIDE MANUAL ACTIVATION OF THE PNL PSU MN A AND MN B POWER CIRCUIT.

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 - O&C PANEL A7A3 AFT STATION

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0020- 02

REVISION# 1 **SEP 30, 1995**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC452-0102-7801 **CRITICALITY OF THIS**
ITEM NAME: TOGGLE SWITCH **FAILURE MODE:** 1R3

FAILURE MODE:
FAILS CLOSED IN THE "ON" POSITION, CONTACT TO CONTACT SHORT

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 104 ATLANTIS

CAUSE:
A) STRUCTURAL 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
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FUNCTIONAL CRITICALITY 1R (FOUR FAULT TOLERANT OR GREATER) WITH AT LEAST TWO REMAINING OPERATIONAL STATUS VERIFIED IN FLIGHT.
C)

METHOD OF FAULT DETECTION:
THE FAILURE WOULD BE DETECTED DURING SYSTEM POWER DOWN.

MASTER MEAS. LIST NUMBERS: NONE

CORRECTING ACTION:
NONE

REMARKS/RECOMMENDATIONS:
EACH PACU IS SUPPLIED WITH POWER BY BOTH MAIN A & B, SO ONE MOTOR WILL DRIVE HOOKS 1 & THE OTHER PACU MOTOR WILL DRIVE HOOKS 2.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0020- 02

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF SWITCH CONTROL CAPABILITY FOR ONE OF THE TWO PSU POWER CIRCUITS.

(B) INTERFACING SUBSYSTEM(S):
UNWANTED COMMAND TO PSU POWER CIRCUITS.

(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 EIGHT FAILURES. 1) PSU POWER ON SWITCH FAILS CLOSED. NO EFFECT. 2) INADVERTENT ACTIVATION OF ONE OF THREE HOOKS OPEN DSCU CONTROL SIGNALS - NO EFFECT. 3) INADVERTENT ACTIVATION OF SECOND ASSOCIATED DSCU MOTOR CONTROL SIGNAL. LATENT HOOKS OPEN COMMAND. 4, 5) TWO APDS POWER CIRCUIT BREAKERS IN THE A8A3 PANEL FAIL CLOSED. 6, 7) TWO APDS PANEL POWER CIRCUIT BREAKERS IN THE A8A3 PANEL FAIL CLOSED. 8) ONE APDS POWER ON SWITCH FAILS CLOSED, RESULTING IN INADVERTENT OPENING OF BOTH GANGS OF SIX HOOKS. POSSIBLE LOSS OF HABITABLE ENVIRONMENT.

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS

TIME FROM FAILURE OCCURRENCE TO DETECTION: HOURS

TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: MINUTES

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

HAZARDS: DM2SHA02(F)~~ODS-7~~
LOSS OF PRESSURE IN ODS/DOCKING MODULE HABITABLE VOLUME.

- APPROVALS -

PRODUCT ASSURANCE ENGINEERING :R. BLACKWELL : R. Blackwell
DESIGN ENGINEERING :T. NGUYEN :