FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL HARDWARE
NUMBER: M5-6SS-B019-X

SUBSYSTEM NAME: E - DOCKING SYSTEM
REVISION: 0 DEC, 1996

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	ENERGIA POWER PANEL RSC-E	MC621-0087-0009 SLIYU.468312.001
SRU	:	CIRCUIT BREAKER	Az2-5 (8>3.619.242 TU)

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
PNL A8A3, CIRCUIT BREAKER (8.5 AMPS TRIPPING CURRENT,) APDS (+Ads, +Bds, +Cds) POWER BUS CONTROL

REFERENCE DESIGNATORS: 36V73A8A3F1
36V73A8A3F5
36V73A8A3F9

QUANTITY OF LIKE ITEMS: 3
(THREE)

FUNCTION:
PROVIDE PROTECTION, CONTROL, AND DISTRIBUTION FOR THE APDS CONTROL LOGIC CIRCUITRY BUSES (+Ads, +Bds, +Cds) THESE BUSES ARE PROVIDED TO THE POWER SWITCHING UNIT (PSU.) THE PSU DISTRIBUTES THEM AS +Ш4, +Ш5, AND +Ш8 TO THE DOCKING MECHANISM CONTROL UNIT (DMCU) FOR DOCKING RING MOTOR LOGIC CONTROL. THE PSU ALSO DISTRIBUTES THE BUSES (+Ш4, + Ш5, +Ш8) TO THE LATCH ACTUATOR CONTROL ASSEMBLY (LACU) FOR LOGIC CONTROL OF THE CAPTURE LATCHES. THE (+Ш4, + Ш5, +Ш8) BUSES ARE ALSO DISTRIBUTED TO THE PRESSURIZATION ACTUATOR CONTROL UNITS (PACUs 1 & 2) FOR LOGIC CONTROL OF THE SET HOOKS 1 & 2. ALSO, THESE BUSES ARE PROVIDED TO THE DSCU FOR COMMAND IMPLEMENTATION AND APDS ESSENTIAL AUTOMATIC AND MANUAL FUNCTIONS AND INITIALIZATION OF THE APDS SYSTEM.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: M5-6SS-B019- 02

REVISION# 0 FEBDEC, 1997

SUBSYSTEM NAME: E - DOCKING SYSTEM
LRU: MC621-0067-0009 CRITICALITY OF THIS
ITEM NAME: CIRCUIT BREAKER FAILURE MODE: 1R3

FAILURE MODE:
FAILS CLOSED, FAILS TO OPEN, INADVERTENTLY CLOSES, SHORTS CONTACT TO CONTACT

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR

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) PASS N/A
C) PASS

PASS/FAIL RATIONALE:
A)

B)
~~N/A - AT LEAST TWO REMAINING PATHS ARE DETECTABLE IN FLIGHT.~~

C)

METHOD OF FAULT DETECTION:
PANEL INDICATION *FOR THE APDS LOGIC POWER BUSES (+Ads, +Bds, +Cds)*

MASTER MEAS. LIST NUMBERS: NONE

CORRECTING ACTION:
NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:
INADVERTENT POWER ON COMMAND FOR ONE OF THREE APDS POWER BUSES (+Ads, +Bds, +Cds)

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: M5-6SS-B019- 02

(B) INTERFACING SUBSYSTEM(S):
LOSS OF CAPABILITY TO REMOVE POWER FOR ONE OF THREE APDS *LOGIC* POWER BUSES.

(C) MISSION:
NO EFFECT.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
SHUTTLE OR PMA1 MECHANISM CONTROL: POSSIBLE LOSS OF CREW OR VEHICLE AFTER EIGHT FAILURES.
1, 2) TWO APDS CONTROL PANEL POWER (A8A3) CIRCUIT BREAKERS FAIL CLOSED. 3, 4) TWO APDS CONTROL PANEL POWER (A7BA3) CIRCUIT BREAKERS FAIL CLOSED. 5) ONE OF TWO ASSOCIATED "UNDOCKING" SWITCHES FAILS CLOSED. 6) ONE OF TWO ASSOCIATED "POWER ON" SWITCHES FAILS CLOSED. 7) ONE OF TWO ASSOCIATED "APDS CIRC PROT OFF" SWITCHES FAILS CLOSED. 8) ONE PSU MAIN POWER RPC FAILS ON RESULTING IN ALL HOOKS INADVERTENTLY OPENING. POSSIBLE LOSS OF HABITABLE ENVIRONMENT.

DESIGN CRITICALITY (PRIOR TO OPERATIONAL DOWNGRADE, DESCRIBED IN F):

(F) RATIONALE FOR CRITICALITY CATEGORY DOWNGRADE:
N/A

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS
TIME FROM FAILURE OCCURRENCE TO DETECTION: HOURS
TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: N/A
TIME REQUIRED TO IMPLEMENT CORRECTIVE ACTION LESS THAN TIME TO EFFECT? N/A
RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT: N/A

HAZARDS REPORT NUMBER(S): ORBI 511

HAZARD DESCRIPTION:
LOSS OF PRESSURE IN HABITABLE VOLUME.

- APPROVALS -

PRODUCT ASSURANCE ENGR : M. NIKOLAYEVA :
DESIGN ENGINEER : B. VAKULIN :