FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL HARDWARE
NUMBER: M5-6MR-B017-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
REVISION: 0 **OCT, 1995**

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	ENERGIA POWER PANEL	MC621-0087-0009
	RSC-E	CKB>=468=312=001
SRU	CIRCUIT BREAKER	Az2-3 (8>3.619.242. TU)

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
PNL A8A3. CIRCUIT BREAKER (5.1 AMP TRIPPING CURRENT) - APDS "+A, +<, +B" CONTROL PANEL POWER.

REFERENCE DESIGNATORS: 36V73A8A3F3
36V73A8A3F7
36V73A8A3F11

QUANTITY OF LIKE ITEMS: 3
(THREE)

FUNCTION:
PROVIDE OVERLOAD PROTECTION, CONTROL AND DISTRIBUTION FOR THE CONTROL PANEL POWER BUSES (+A, +<, +B.)

REFERENCE DOCUMENTS:
1) ECN 104-25012A. ODS ELECTRICAL CHANGE NOTICE.
2) CKB>=468312=001 _ I"P. SCHEMATIC DIAGRAM - ANDROGYNOUS PERIPHERAL DOCKING SYSTEM (APDS) CONTROL PANEL PU-APSS SCHEMATIC.
3) 33Y.8212.005."3. APDS CONTROL UNIT ELECTRICAL SCHEMATIC.
4) VS70-953104. ODS INTEGRATED SCHEMATIC.
5) 17RC=10> 2601F_I "P. PYRO FIRING CONTROL UNIT ELECTRICAL

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FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: M5-6MR-B017- 01

REVISION# 0 **OCT, 1995**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC621-0087-0009
ITEM NAME: CIRCUIT BREAKER

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT, INADVERTENTLY OPENS, FAILS TO TRANSFER

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) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

METHOD OF FAULT DETECTION:
TELEMETRY.

MASTER MEAS. LIST NUMBERS:
V53X0758E
V53X0759E
V53X0760E

CORRECTING ACTION:
NONE.

- FAILURE EFFECTS -

(A) SUBSYSTEM:
DEGRADATION FOR REDUNDANCY FOR PROVIDING POWER TO THE PANEL POWER CONTROL BUSES (+A, +C, +B.)

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NUMBER: M5-6MR-B017- 01

(B) INTERFACING SUBSYSTEM(S):
PARTIAL LOSS OF STATUS LIGHT INDICATION DUE TO LOSS OF EITHER BUS +A OR +B.

(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 FIVE FAILURES. 1) ONE OF THREE CIRCUIT BREAKERS FAILS OPEN. NO EFFECT. DEGRADED PANEL POWER BUS REDUNDANCY. 2) ONE OF TWO REMAINING ASSOCIATED CIRCUIT BREAKERS FAILS OPEN. LOSS OF TWO OF THREE PANEL POWER BUSES RESULTING IN LOSS OF NOMINAL ORBITER UNDOCKING CAPABILITY. 3) ONE PYROBOLT FAILS TO INITIATE. LOSS OF CAPABILITY TO IMPLEMENT PYROTECHNIC SEPARATION.

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

(F) RATIONALE FOR CRITICALITY CATEGORY DOWNGRADE:
NONE. CRITICALITY UNCHANGED. WORKAROUNDS ADD TO REDANDANCY.

4) IFM FAILS TO DRIVE THE HOOK MOTORS - LOSS OF CAPABILITY TO SEPARATE USING IFM.
5) 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: HOURS

TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: HOURS

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

RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
CREW WOULD HAVE SUFFICIENT TIME TO PERFORM IFM OR EVA.
HAZARDS REPORT NUMBER(S) : ORBI 401A
HAZARD DESCRIPTION:
INABILITY TO SEPARATE ORBITER AND MIR.

- APPROVALS -

PRODUCT ASSURANCE ENGR : M. NIKOLAYEVA

DESIGN ENGINEER : B. VAKULIN

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