

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL HARDWARE**

NUMBER: M5-SMR-8016-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 0 OCT, 1995

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	ENERGIA POWER PANEL RSC-E	MC621-0087-0009 CKB>-468-312-001
SRU	PUSH BUTTON SWITCH	PKZ-4 (AGO.380.212.TU)

**PART DATA****EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**

PUSH-BUTTON SWITCHES (TWO DOUBLE POLE SWITCHES UNDER A SINGLE COVER CAP.) TWO POLE. MOMENTARY - APDS "PASSIVE HOOKS FIRING" COMMAND.

REFERENCE DESIGNATORS: 36V73A8A3SB6-B3  
36V73A8A3SB6-B4

QUANTITY OF LIKE ITEMS: 2  
(TWO)

**FUNCTION:**

PROVIDES THE "PASSIVE HOOKS FIRING" COMMAND STIMULI TO CLOSE THE APPROPRIATE RELAY COILS IN THE PYROTECHNIC FIRE CONTROL UNIT (PFCU).

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) 17RC-10> 2601E \_J "P. PYRO FIRING CONTROL UNIT ELECTRICAL



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- FAILURE EFFECTS -

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**(A) SUBSYSTEM:**

LOSS OF SWITCH CONTROL CAPABILITY FOR THE PFCU "PASSIVE HOOKS FIRING" CIRCUITS.

**(B) INTERFACING SUBSYSTEM(S):**

NO EFFECT.

**(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) A GANG OF SIX HOOKS ON THE ORBITER SIDE FAILS TO CLOSE REQUIRING USE OF THE MIR SIDE HOOKS TO COMPLETE THE INTERFACE. 2) A HOOK IN THE MIR SIDE OR THE INTERFACE FAILS TO OPEN RESULTING IN LOSS OF NOMINAL MIR SIDE UNDOCKING CAPABILITY. 3) ONE OF TWO ASSOCIATED "PASSIVE HOOKS FIRING" SWITCHES FAILS OPEN. NO EFFECT. DEGRADED COMMAND IMPLEMENTATION REDUNDANCY. 4) ASSOCIATED SWITCH FAILS OPEN. LOSS OF CAPABILITY TO IMPLEMENT THE "PASSIVE HOOKS FIRING" COMMAND.

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

**(F) RATIONALE FOR CRITICALITY CATEGORY DOWNGRADE:**

NONE. CRITICALITY UNCHANGED. WORKAROUNDS ADD TO REDUNDANCY.  
5) FAILURE OF EVA TO REMOVE 96 BOLTS - LOSS OF ALL UNDOCKING CAPABILITY.

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- TIME FRAME -

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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

RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:

CREW WOULD HAVE SUFFICIENT TIME TO PERFORM EVA.

HAZARDS REPORT NUMBER(S): ORBI 401A

HAZARD DESCRIPTION:

INABILITY TO SEPARATE ORBITER AND MIR.

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- APPROVALS -

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PRODUCT ASSURANCE ENGR  
DESIGN ENGINEER

: M. NIKOLAYEVA  
: B. VAKULIN

*[Handwritten Signature]*

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**ORIGINAL**