FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: M5-6MR-B015-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
REVISION: 1 **OCT, 1995**

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	ENERGIA POWER PANEL RSC-E	MC621-0087-0009 СЛИЮ.468.312.001
SRU	:	PUSH BUTTON SWITCH	PKZ-4 (AGO.360.212.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 "ACTIVE HOOKS FIRING" COMMAND.

REFERENCE DESIGNATORS: 36V73A8A3SB6-B1
36V73A8A3SB6-B2

QUANTITY OF LIKE ITEMS: 2
(TWO)

FUNCTION:
PROVIDE THE "ACTIVE HOOKS FIRING" COMMAND STIMULI TO CLOSE THE APPROPRIATE RELAY COILS IN THE PYROTECHNIC FIRE CONTROL UNIT (PFCU.)

74 ORIGINAL

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: M5-6MR-B016-02

REVISION# 1 SEPT 1, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC621-0067-0009
ITEM NAME: PUSH BUTTON SWITCH

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
FAILS CLOSED (MULTIPLE CONTACTS WITHIN THE ONE SWITCH.) SHORTS TO GROUND

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) FAILS
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FAILURE IS NOT DETECTABLE.
C)

METHOD OF FAULT DETECTION:
NONE.

MASTER MEAS. LIST NUMBERS: NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF SWITCH CONTROL CAPABILITY FOR THE PFCU "ACTIVE HOOKS FIRING" CIRCUITS.

(B) INTERFACING SUBSYSTEM(S):

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: M5-6MR-B015- 02

UNWANTED "ACTIVE HOOKS FIRING" COMMAND TO THE PFCU.

(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 FOUR FAILURES. 1) ONE OF TWO ASSOCIATED SWITCHES FAILS CLOSED. POTENTIAL "ACTIVE HOOKS FIRING" COMMAND TO THE PFCU. 2) ONE RPC FAILS ON (40 AMPS - ANY OF FOUR BUSES) RESULTING IN POWER BEING PROVIDED TO THE PFCU. 3) INTERNAL PFCU CIRCUIT PROTECT OFF RELAY INADVERTENTLY CLOSES AND PROVIDES POWER TO THE PYRO INITIATION BUSES. 4) PYRO LOGIC BUS "B" CIRCUIT BREAKER FAILS CLOSED RESULTING IN AN INADVERTENT PYRO FIRING. POSSIBLE VEHICLE SEPARATION OR LOSS OF HABITABLE VOLUME DUE TO UNWANTED "PYRO FIRE" COMMAND.

DESIGN CRITICALITY (PRIOR TO OPERATIONAL DOWNGRADE, DESCRIBED IN F): 1R3

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

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX C, ENERGIA HARDWARE.

(B) TEST:
REFER TO APPENDIX C, ENERGIA HARDWARE.

PYROTECHNIC CONTROL CIRCUIT OPERATION IS VERIFIED DURING GROUND CHECKOUT. ANY TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
REFER TO APPENDIX C, ENERGIA HARDWARE.

(D) FAILURE HISTORY:
REFER TO APPENDIX C, ENERGIA HARDWARE.

(E) OPERATIONAL USE:
NONE.

- APPROVALS -

PRODUCT ASSURANCE ENGR	M. NIKOLAYEVA	
DESIGN ENGINEER	V. BERKUT	
NASA SS/MA		9/21/95
NASA SUBSYSTEM MANAGER		9/22/95
NASA EPD&C SUBSYSTEM MANAGER		