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PRINT DATE: 06.12.96

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

NUMBER: M5-6SS-8013-X

SUBSYSTEM NAME: E - DOCKING SYSTEM

REVISION: 0 DEC. 1996

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: ENERGIA POWER PANEL	MC821-0087-0009
	RSC-E	SLIYU.468312.001
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 'PYRO CIRCUIT PROTECTION OFF' COMMAND.

REFERENCE DESIGNATORS: 36V73ABA3SB5-B1
36V73ABA3SB5-B2

QUANTITY OF LIKE ITEMS: 2
(TWO)

FUNCTION:

PROVIDE THE 'PYRO CIRCUIT PROTECTION OFF' COMMAND STIMULI TO CLOSE THE APPROPRIATE CONTACTS IN THE PYROTECHNIC FIRE CONTROL UNIT (PFCU.)

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
 NUMBER: M5-6SS-8019-02

REVISION# 0 FEBDEC, 19976

SUBSYSTEM NAME: E - DOCKING SYSTEM
 LRU: MC621-0087-0009
 ITEM NAME: PUSH BUTTON SWITCH

CRITICALITY OF THIS
 FAILURE MODE: 1R3

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

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) 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:
~~"PYROTECHNIC BUS STATUS (A, B, C)" AND "PYRO CIRCUIT PROTECTION OFF"~~
 INDICATIONS IN THE D&C PANEL AND TELEMETRY.

MASTER MEAS. LIST NUMBERS: V53X0765E
 V53X0766E

CORRECTING ACTION:
 NONE

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE
NUMBER: M5-6SS-8013-02

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF SWITCH CONTROL CAPABILITY FOR THE APDS "PYRO CIRCUIT PROTECTION OFF" CIRCUITS.

(B) INTERFACING SUBSYSTEM(S):

UNWANTED "PYRO CIRCUIT PROTECTION OFF" COMMAND TO THE PFCU.

(C) MISSION:

NO EFFECT.

(D) CREW, VEHICLE, AND ELEMENT(S):

FIRST FAILURE - NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:

SHUTTLE MECHANISM CONTROL: POSSIBLE LOSS OF CREW OR VEHICLE AFTER FIVE FAILURES.

1) ONE OF TWO ASSOCIATED SWITCHES FAILS CLOSED (MULTIPLE CONTACTS.) UNWANTED "PYRO CIRCUIT PROTECTION OFF" COMMAND TO THE PFCU. DEGRADED PROTECTION AGAINST ACCIDENTAL PYROTECHNIC SEPARATION. 2) ONE "ACTIVE" OR "PASSIVE" HOOKS FIRING SWITCH FAILS CLOSED (MULTIPLE CONTACTS.) 3) & 4) TWO OF THREE PYROTECHNIC POWER CIRCUIT BREAKERS FAILS CLOSED. DEGRADED PROTECTION AGAINST ACCIDENTAL PYROTECHNIC SEPARATION. 5) A7A3 PYRO POWER SWITCH FAILS CLOSED (MULTIPLE CONTACTS.) POSSIBLE VEHICLE SEPARATION OR LOSS OF HABITABLE VOLUME DUE TO UNWANTED "PYRO FIRE" COMMAND.

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: HOURS

TIME FROM FAILURE OCCURRENCE TO DETECTION: SECONDS

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

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PRINT DATE: 11.02.97

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE
NUMBER: M5-6SS-B013-02

HAZARDS REPORT NUMBER(S) : ORBI 511

HAZARD DESCRIPTION:
LOSS OF PRESSURE IN HABITABLE VOLUME.

- APPROVALS -

PRODUCT ASSURANCE ENGR
DESIGN ENGINEER

: M. NIKOLAYEVA
: B. YAKULIN

