PRINT DATE: 07/26/99

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6-2658 -X

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 0 05/03/88

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: PANEL R13A2	V070-730338
SRU	: SWITCH, TOGGLE	ME452-0102-7401

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, 4P2P, HERMETICALLY SEALED - PAYLOAD BAY MECHANICAL POWER "ON/OFF" CONTROL

REFERENCE DESIGNATORS: 32V73A13A2S1
32V73A13A2S2

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
PROVIDES THE CREW WITH THE CAPABILILTY TO CONTROL "ON/OFF" ELECTRICAL INPUTS TO PAYLOAD BAY MECHANICAL (PLBM) POWER BUS, SYSTEM 1 AND 2.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE
NUMBER: 05-6-2658- 01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: PANEL R13A2 **CRITICALITY OF THIS**
ITEM NAME: SWITCH, TOGGLE **FAILURE MODE:** 1R2

FAILURE MODE:
FAILS OPEN, PREMATURELY OPENS, SHORTS TO GROUND

MISSION PHASE: OO ON-ORBIT

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

CAUSE:
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)
PASSES "B" SCREEN BECAUSE FAILURE CAN BE DETECTED WHEN USE OF THE PLBM BUS IS REQUIRED.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF REDUNDANCY. LOSS OF PLBM POWER BUSES AC1, AC2 AND AC3 TO MID MCA'S 1 AND 2 OR 3 AND 4.

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(B) INTERFACING SUBSYSTEM(S):
LOSS OF INTERFACE REDUNDANCY. LOSS OF AC POWER FOR ONE OF TWO MOTORS FOR EACH PLBM FUNCTION.

(C) MISSION:
POSSIBLE EARLY MISSION TERMINATION

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
SECOND FAILURE (LOSS OF OTHER PLBM POWER SWITCH) MAY RESULT IN THE LOSS OF THE FOLLOWING PLBM FUNCTIONS - FREON RADIATOR DEPLOY/STOW AND LATCH AND P/L RETENTION LATCHES. POSSIBLE LOSS OF CREW/VEHICLE IF RADIATORS CANNOT BE STOWED. FAILURE TO STOW RADIATORS MAY PRECLUDE SAFE RE-ENTRY DUE TO INABILITY TO CLOSE AND LATCH THE PAYLOAD BAY DOORS. FAILURE TO CLOSE AND LATCH THE PAYLOAD BAY DOORS RESULTS IN A LOSS OF ORBITER VEHICLE STRUCTURAL STIFFNESS AND POSSIBLE STRUCTURAL DAMAGE DUE TO AERODYNAMIC FORCES DURING DESCENT. EVA CAPABILITY EXISTS FOR WORKAROUND OF FAILURE OF PAYLOAD RETENTION LATCHES (CRIT 1R3).

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(B) TEST:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

GROUND TURNAROUND TEST
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(D) FAILURE HISTORY:

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CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE.

(E) OPERATIONAL USE:
CONSIDERATION MAY BE GIVEN TO SECURING MECHANISMS AFTER FIRST FAILURE.

- APPROVALS -

EDITORIALLY APPROVED	: BNA	: J. Kimura 7-26-99
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6