

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

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

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**PART DATA**

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	<b>PART NAME</b>	<b>PART NUMBER</b>
	<b>VENDOR NAME</b>	<b>VENDOR NUMBER</b>
LRU	: PANEL R13A2	V070-730338
SRU	: SWITCH, TOGGLE	ME452-0102-7401

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**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 CAPABILITY TO CONTROL "ON/OFF" ELECTRICAL  
INPUTS TO PAYLOAD BAY MECHANICAL (PLBM) POWER BUS, SYSTEM 1 AND 2.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2658 -2 REV:05/03/88

ASSEMBLY :PANEL R13A2 CRIT.FUNC: 1R  
P/N RI :ME452-0102-7401 CRIT. HDW: 2  
F/N VENDOR: VEHICLE 102 103 104  
QUANTITY :2 EFFECTIVITY: X X X  
:TWO PHASE(S): PL LO X GO X DO X LS  
:

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
DES R PHILLIPS DES *[Signature]* SSM *[Signature]*  
REL M HOVE REL *[Signature]* REL *[Signature]*  
QE J COURSEN QE *[Signature]* QE *[Signature]*

ITEM:

SWITCH, TOGGLE, 4P2P, HERMETICALLY SEALED - PAYLOAD BAY MECHANICAL POWER "ON/OFF" CONTROL

FUNCTION:

PROVIDES THE CREW WITH THE CAPABILITY TO CONTROL "ON/OFF" ELECTRICAL INPUTS TO PAYLOAD BAY MECHANICAL (PLBM) POWER BUS, SYSTEM 1 AND 2. 32V73A13A2S1 AND S2

FAILURE MODE:

FAILS CLOSED, PREMATURE CLOSURE, SHORTS INTERNALLY (MULTIPLE CONTACT SETS)

CAUSE(S):

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

EFFECT(S) ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:

- (A) LOSS OF REDUNDANCY - INADVERTENT "ARMING" OF PAYLOAD BAY MECHANICAL BUS AC2 OR AC1/AC3 IN ONE OR MORE MID MCA'S.
- (B) LOSS OF INTERFACE ISOLATION REDUNDANCY.
- (C) POSSIBLE EARLY MISSION TERMINATION.
- (D) FIRST FAILURE - NO EFFECT.
- (E) POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (FAILED "ON" HYBRID RELAY) DUE TO PREMATURE INITIATION OF KU-BAND ANTENNA DEPLOY, RMS DEPLOY, FREON RADIATOR DEPLOY, OR PAYLOAD RELEASE MECHANISMS WITH PAYLOAD BAY DOORS CLOSED.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2658 -2 REV:05/03/88

DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A,B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

1) GROUND TURNAROUND TEST

VERIFY PLBM CONTROL CIRCUITRY. VERIFY MCA OPERATIONAL STATUS  
MEASUREMENTS ARE OFF WHEN PLBM AC BUSES ARE POWERED, AND ON WHEN PLBM  
AC BUSES ARE DE-ENERGIZED. TEST-IS PERFORMED FOR ALL FLIGHTS.

2) OPERATIONAL USE

CONSIDERATION MAY BE GIVEN TO REMOVE LOGIC BUS AND/OR AC BUS POWER  
FROM AFFECTED MOTOR CONTROL ASSEMBLIES FOR ENTRY. AFFECTED VENT DOORS  
WOULD BE OPENED FOR ENTRY.