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PRINT DATE: 09/01/93

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE  
NUMBER: 05-6N-2016-X**

**SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT**

**REVISION: 1 08/30/93**

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	<b>PART NAME VENDOR NAME</b>	<b>PART NUMBER VENDOR NUMBER</b>
LRU	: PANEL R2	V070-730277
SRU	: SWITCH, TOGGLE	ME452-0102-7252

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**PART DATA**

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**

SWITCH, TOGGLE, LEVER LOCK, 2 POLE 2 POSITION, ON/OFF (LEVER LOCKED 'ON' POSITION) - AUXILIARY POWER UNIT (APU) CONTROLLER POWER 1, 2, AND 3

**REFERENCE DESIGNATORS:** 32V73A2S32

32V73A2S33

32V73A2S34

**QUANTITY OF LIKE ITEMS: 3**

THREE

**FUNCTION:**

PROVIDES ON-OFF MANUAL CONTROL OF DUAL POWER TO EACH OF THE THREE APU CONTROLLERS.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE  
NUMBER: 05-6N-2016-02**

REVISION# 1 08/30/83

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)

LRU: PANEL R2

CRITICALITY OF THIS

ITEM NAME: SWITCH, TOGGLE

FAILURE MODE: 1R2

**FAILURE MODE:**

FAILS CLOSED, CONTACT-TO-CONTACT SHORT, POLE-TO-POLE SHORT

**MISSION PHASE:**

OO ON-ORBIT

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

**CAUSE:**

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS  
B) PASS  
C) PASS

**PASS/FAIL RATIONALE:**

A)

B)

C)

**- FAILURE EFFECTS -**

**(A) SUBSYSTEM:**

INABILITY TO REMOVE POWER TO APU CONTROLLER.

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

DEGRADATION OF INTERFACE FUNCTION. A SHORTED SWITCH COMMANDS THE ASSOCIATED RPC ON CONTINUOUSLY - NORMAL OPERATION, NO EFFECT. WHEN THE APU IS NORMALLY NOT OPERATING AND IF THE CONTROLLER FAILS INTERNALLY, THE PULSE CONTROL VALVE COIL COULD BE ENERGIZED "ON" CONTINUOUSLY AND OVERHEAT NONFLOWING HYDRAZINE INDUCING DECOMPOSITION AND VALVE/LINE RUPTURE.

**(C) MISSION:**

FIRST FAILURE - NO EFFECT

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

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE  
NUMBER: 05-6N-2016-02**

FIRST FAILURE - NO EFFECT

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (APU CONTROLLER FAILS INTERNALLY) DUE TO FUEL (HYDRAZINE) DECOMPOSITION AND VALVE/LINE RUPTURE.

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**-DISPOSITION RATIONALE-**

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**(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 - APU 1/2/3 CONTROLLER TEST THROUGH GROUND CONNECTION PERFORMED EVERY FLOW OR AFTER LRU RETEST OF APU ASSEMBLY, AFTER LRU RETEST OF CONTROLLER ASSEMBLY OR AFTER CIG RETEST.

**(C) INSPECTION:**

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

**(D) FAILURE HISTORY:**

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

**(E) OPERATIONAL USE:**

NONE

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**- APPROVALS -**

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EDITORIALLY APPROVED  
EDITORIALLY APPROVED  
TECHNICAL APPROVAL

: RI  
: JSC  
: VIA CR

*[Handwritten signature]* 9/1/93  
*[Handwritten signature]* 9/1/93  
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