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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-2016-01**

REVISION# 1 08/30/93

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: PANEL R2

ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS  
FAILURE MODE: 1R2

**FAILURE MODE:**  
FAILS OPEN, SHORT-TO-CASE (GROUND)

**MISSION PHASE:**  
PL PRELAUNCH  
LO LIFT-OFF  
OO ON-ORBIT  
DO DE-ORBIT  
LS LANDING SAFING

**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? YES**  
RTLS RETURN TO LANDING SITE  
AOA ABORT ONCE AROUND  
TAL TRANS ATLANTIC LANDING

**REDUNDANCY SCREEN** A) PASS  
B) PASS  
C) PASS

**PASS/FAIL RATIONALE:**  
A)  
B)  
C)

**- FAILURE EFFECTS -**

**(A) SUBSYSTEM:**  
LOSS OF APU CONTROLLER POWER

**(B) INTERFACING SUBSYSTEM(S):**  
LOSS OF APU

**(C) MISSION:**  
ABORT DECISION REQUIRED - SHUTDOWN OF ONE OF THREE APU'S

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE  
NUMBER: 05-6N-2016-01**

**(D) CREW, VEHICLE, AND ELEMENT(S):**  
NO EFFECT ON LOSS OF FIRST APU

**(E) FUNCTIONAL CRITICALITY EFFECTS:**  
POSSIBLE LOSS OF CREW/VEHICLE AFTER LOSS OF SECOND APU. CRIT 1 FOR SSME-INDUCED RTLS, AOA, TAL, DUE TO THE POSSIBLE ADDITIONAL LOSS OF ASSOCIATED APU/HYDRAULICS AND MAIN ENGINES.

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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:**  
REMAINING APU'S COMMANDED TO HIGH SPEED AND AUTOMATIC SHUTDOWN IS INHIBITED TO PROTECT AGAINST NEXT FAILURE.

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**- APPROVALS -**

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EDITORIALLY APPROVED : RI  
EDITORIALLY APPROVED : JSC  
TECHNICAL APPROVAL : VIA CR

*Handwritten signature and date: 9/3/93*  
:SS0276L