

PAGE: 1

PRINT DATE: 01/13/94

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6N-2013-X**

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

REVISION: 2 01/13/94

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: PANEL R2	V070-730277
SRU	: SWITCH, TOGGLE	ME452-0102-7463

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, 4 POLE 2 POSITION - AUXILIARY POWER UNIT (APU) FUEL TANK ISOLATION VALVE CONTROL

REFERENCE DESIGNATORS: 32V73A2S35
32V73A2S36
32V73A2S37

QUANTITY OF LIKE ITEMS: 3
THREE

FUNCTION:
PROVIDES THE CAPABILITY FOR THE CREW TO REMOTELY CONTROL THE POSITION (OPEN/CLOSE) OF TWO PARALLEL REDUNDANT APU TANK ISOLATION VALVES FOR EACH OF THE THREE AUXILIARY POWER UNITS (APU'S).

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2013-01**

REVISION# 2 01/13/94

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT

LRU: PANEL R2

CRITICALITY OF THIS

PART NAME: SWITCH, TOGGLE

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 POWER TO FUEL TANK ISOLATION VALVES

(B) INTERFACING SUBSYSTEM(S):

LOSS OF TWO REDUNDANT VALVE CONTROL CIRCUITS. LOSS OF ONE APU

(C) MISSION:

ABORT DECISION REQUIRED

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE
NUMBER: 05-6N-2013-01**

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

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

-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 - FUEL ISOLATION VALVE CIRCUIT CHECK WITHOUT BUS DROPS PERFORMED EVERY OMDP. SWITCH IS VERIFIED FUNCTIONAL EACH FLIGHT.

(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.

- APPROVALS -

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

Handwritten signature and date:
1/26/94
556272