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PRINT DATE: 05/30/90

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE  
NUMBER: 05-6VE-2102-X

SUBSYSTEM NAME: EPD&C - ECLSS - WASTE WATER MANAGEMENT  
REVISION : 2 05/30/90

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU :	PANEL ML31C	VS70-733852
SRU :	SWITCH, TOGGLE	ME452-0102-7105

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:  
SWITCH, TOGGLE - WASTE WATER DUMP ISOLATION VALVE

REFERENCE DESIGNATORS: 80V73A127 S3

QUANTITY OF LIKE ITEMS: 1  
ONE PER VALVE  
ONE PER VEHICLE

FUNCTION:  
PROVIDES POWER CONTROL FOR THE WASTE WATER DUMP ISOLATION VALVE  
ACTUATION.

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FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE  
NUMBER: 05-6VE-2102-01

SUBSYSTEM: EPD&C - ECLSS - WASTE WATER MANAGEMENT  
LRU :PANEL ML31C  
ITEM NAME: SWITCH, TOGGLE  
REVISION# 2 05/30/90 R  
CRITICALITY OF THIS FAILURE MODE:2/2

FAILURE MODE:  
SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED IN "CLOSED"  
POSITION, SHORTS TO GROUND (VALVE CLOSED)

MISSION PHASE:  
00 ON-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) N/A  
B) N/A  
C) N/A

PASS/FAIL RATIONALE:  
A)  
B)  
C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:  
INABILITY TO POWER THE VALVE TO THE 'OPEN' POSITION.

(B) INTERFACING SUBSYSTEM(S):  
INABILITY TO DUMP WASTE WATER.

(C) MISSION:  
MISSION DURATION IS LIMITED BY WASTE WATER TANK STORAGE CAPACITY.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE  
NUMBER: 05-6VE-2102-01

(D) CREW, VEHICLE, AND ELEMENT(S):  
NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:

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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.

VALVE OPERATION IS VERIFIED IN FLIGHT EVERY FLOW.

(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:  
FOR DUMP ISOLATION VALVE FAILED CLOSED, RETURN TO PRIMARY LANDING SITE  
BEFORE THE WASTE TANK BECOMES HARD FILLED.

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- APPROVALS -  
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RELIABILITY ENGINEERING: D. ANVARI  
DESIGN ENGINEERING : J. L. PECK  
DESIGN SUPERVISOR : G. ANDERSON  
QUALITY SUPERVISOR : J. COURSEN  
NASA RELIABILITY :  
NASA SUBSYSTEM MANAGER :  
NASA EPD&C RELIABILITY :  
NASA QUALITY ASSURANCE :  
NASA EPD&C SUBSYS MGR :

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