PRINT DATE: 08/24/93

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6VE-2403-X

SUBSYSTEM NAME: EPD&C - ECLSS - WASTE WATER MANAGEMENT
REVISION: 7 06/24/93

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	PANEL ML91C	VS70-733852
SRU	:	SWITCH, TOGGLE	ME452-0102-7201

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE - VACCUM VENT ISOLATION VALVE CONTROL

REFERENCE DESIGNATORS: 80V73A127 S11

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

FUNCTION:
PROVIDES CONTROL (ON/OFF AND POLARITY SELECTION) CAPABILITY FOR OPENING AND CLOSING THE VACUUM VENT ISOLATION VALVE.

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FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6VE-2403-02

REVISION# 7 08/24/93 R

SUBSYSTEM NAME: EPD&C - ECLSS - WASTE WATER MANAGEMENT
LRU: PANEL ML31C
ITEM NAME: SWITCH , TOGGLE

CRITICALITY OF THIS FAILURE MODE: 1R2

FAILURE MODE:
FAILS CLOSED IN THE "CLOSE" POSITION, CONTACT-TO-CONTACT SHORT; FAILS OPEN WHILE VALVE IS IN THE CLOSE POSITION.

MISSION PHASE:
OO DE-ORBIT
DO ON-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

MASTER MEAS. LIST NUMBERS: V62X0207E
: V62X0208E

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF CAPABILITY TO ACTUATE THE VACUUM VENT ISOLATION VALVE TO AN "OPEN" POSITION.

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(B) INTERFACING SUBSYSTEM(S):
LOSS OF H2-SEPARATOR VENTING, LOSS OF RCRS FUNCTION (EDO'S ONLY) DUE TO LACK OF VACUUM NEEDED TO REGENERATE ADSORBENT BEDS, LOSS OF ABILITY TO DE-PRESSURIZE AIRLOCK, LOSS OF WASTE COLLECTOR VENTING.

(C) MISSION:
EARLY TERMINATION OF AN EXTENDED DURATION MISSION DUE TO LOSS OF USE OF RCRS.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
SECOND ASSOCIATED FAILURE - RESTRICTED FLOW OF THE VACUUM BLEED ORIFICE WILL RESULT IN AN EXPLOSIVE MIXTURE OF H2/O2, AND POSSIBLE LOSS OF CREW OR VEHICLE. (CRIT 1R2)

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(B) TEST:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

OMRSD - VACUUM VENT ISOLATION VALVE FUNCTION VERIFIED IN FLIGHT EVERY FLIGHT AND DURING GROUND TURNAROUND TEST EVERY OMDP 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:
DEPRESSURIZE THE AIRLOCK CABIN THROUGH THE OUTER HATCH EQUALIZATION VALVES. CREW CAN ALSO IMPLEMENT IN-FLIGHT MAINTENANCE PROCEDURE TO PREVENT H2 ACCUMULATION, VENTING APPROXIMATELY 3 LBS./HR OVERBOARD FROM VACUUM VENT LINE THROUGH WASTE DUMP NOZZLE.

FOR LOSS OF RCRS FUNCTION, CREW CAN USE CONTINGENCY LIOH CANISTERS.

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- APPROVALS -

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