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PRINT DATE: 01/12/94

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-GUD-1006-X**

SUBSYSTEM NAME: EPD&C - ECLSS. ARS. RCRS

REVISION: 4 01/12/94

| | PART NAME VENDOR NAME | PART NUMBER VENDOR NUMBER |
|-----|----------------------------------|--------------------------------------|
| LRU | : PANEL MOS1F | V070-730384 |
| SRU | : SWITCH, TOGGLE | ME452-0102-8105 |

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE - RCRS CONTROLLER 1(2) *OPER*/*STBY***

**REFERENCE DESIGNATORS: 80V73A168 S5
80V73A168 S6**

**QUANTITY OF LIKE ITEMS: 2
ONE PER CONTROLLER**

**FUNCTION:
ACTIVATES/DEACTIVATES RCRS THROUGH CONTROLLER 1(2) LOGIC.**

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6UD-1006-02**

REVISION# 4 01/12/94 R

SUBSYSTEM NAME: EPD&C - ECLSS, ARS, RCRS
LRU: PANEL M051F
ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:

FAILS CLOSED, FAILS TO OPEN, CONTACT-TO-CONTACT SHORT IN "OPER" POSITION;
FAILS TO MAKE CONTACT IN THE "STBY" POSITION

MISSION PHASE:

ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: EDO MISSION ONLY
102 COLUMBIA
105 ENDEAVOUR

CAUSE:

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:

A)
ITEM CAN BE TESTED FOR THIS FAILURE MODE DURING GSE TESTING OF THE RCRS
CONTROLLERS THROUGH J3 AND J5 GSE INTERFACE. OMRSD TO BE DECIDED.

B)
FAILS SCREEN B BECAUSE THERE IS NO SWITCH SCAN.

C)
PASSES SCREEN C BECAUSE ALL REDUNDANCIES ARE INDEPENDENTLY
CONNECTED.

MASTER MEAS. LIST NUMBERS: NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:

FIRST FAILURE - NO EFFECT

(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT

(C) MISSION:

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE

NUMBER: 05-6UD-1006-02

FIRST FAILURE - NO EFFECT

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

FIRST FAILURE - NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:

FAILURE TO DISCONNECT EITHER AC OR DC POWER FROM RCRS CONTROLLERS, COMBINED WITH FAILURE OF THE INTERLOCK CIRCUIT, ALLOWS BOTH CONTROLLERS TO BE SIMULTANEOUSLY ACTIVE, RESULTING IN ONE OF TWO POSSIBLE SCENARIOS:

CASE 1) POSSIBLE RAPID DEPRESSURIZATION OF CABIN AIR IN THE EVENT THAT BOTH CYCLE VALVE ACTUATORS BEING POWERED ON BY THE TWO CONTROLLERS, AND POSSIBLY CAUSING AIR CYCLE VALVES AND VACUUM CYCLE VALVES ON THE SAME BED TO OPEN SIMULTANEOUSLY. THIS CAN RESULT IN LOSS OF CREW/VEHICLE.

CASE 2) AC BUSES INTERCONNECTION AT THE RCRS FAN AND/OR COMPRESSOR, TRIPPING UPSTREAM AC CIRCUIT BREAKERS, AND LOSS OF RCRS FUNCTION (REFER TO THE COMPONENT'S FIRST FAILURE MODE, FUNCTIONAL CRITICALITY). THIS SCENARIO REQUIRES ADDITIONAL FAILURE OF SEVERAL OTHER POWER CONTROL DEVICES ON THE PANEL. CRIT: 1R3

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX A, ITEM NO. 5 (A)

(B) TEST:

REFER TO APPENDIX A, ITEM NO. 5 (B)

OMRSD - ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

REFER TO APPENDIX A, ITEM NO. 5 (C)

(D) FAILURE HISTORY:

REFER TO APPENDIX A, ITEM NO. 5 (D)

(E) OPERATIONAL USE:

TO DISABLE FAILED ON ENABLE SWITCH, REMOVE AC AND DC POWER FROM CONTROLLER, THEN SWITCH TO REDUNDANT CONTROLLER, IF REQUIRED.

- APPROVALS -

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

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: 05-6UD-1006-02
: 55027012
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