FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER:05-6PH-24805 -X

SUBSYSTEM NAME: EPD&C – GROUND COMMAND INTERFACE LOGIC (GCIL)

REVISION: 1   08/24/97

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	:PANEL C3A7	VO70-730285
SRU	:TOGGLE SWITCH	ME452-0102-7201

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, S-BAND PM CONTROL. TOGGLE SWITCH, 2 POLE 2 POSITION. POSITIONS
ARE CMD, PNL.

REFERENCE DESIGNATORS: 35V73A3A7S9

QUANTITY OF LIKE ITEMS: 1
ONE - 2 POLES PROVIDE DUAL REDUNDANCY

FUNCTION:
ENABLES GROUND (SOFTWARE) CONTROL OF THE S-BAND PM COMMUNICATIONS
SYSTEM BY ENABLING ALL THE GCIL "COMMAND" DRIVERS THAT CONTROL THAT
SYSTEM AND DISABLING THE CORRESPONDING "PANEL" DRIVERS THAT TRANSFER
THE PANEL CONTROL SIGNALS. THIS IS DONE IN THE CMD POSITION BY SENDING
TWO REDUNDANT "COMMAND" DRIVER ENABLE SIGNALS TO THE GCIL.

FAILURE MODES EFFECTS ANALYSIS FMEA — CIL FAILURE MODE
NUMBER: 05-6PH-24805-03

REVISION#:   1   08/24/97
SUBSYSTEM NAME: EPD&C - GROUND COMMAND INTERFACE LOGIC (GCIL)
LRU: PANEL C3A7   CRITICALITY OF THIS
ITEM NAME: TOGGLE SWITCH   FAILURE MODE: 2/2

FAILURE MODE:
FAILS SHORTED TO GROUND, ANY TERMINAL SHORTS TO GROUND

MISSION PHASE: PL   PRE-LAUNCH
                      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? NO

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

PASS/FAIL RATIONALE:
A)

B)

C)

REMARKS/RECOMMENDATIONS:
CORRECTING ACTION PRECLUDES USE OF THE UPLINK BLOCK SWITCH IN THE "BLOCK
ALL" POSITION DURING AOS PERIODS.

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- FAILURE EFFECTS -

(A) SUBSYSTEM:
CATASTROPHIC SWITCH FAILURE RESULTS IN LOSS OF THE TWO REDUNDANT GCIL
POWER CIRCUITS (MAIN BUS CIRCUIT BREAKERS 44, 49 OPEN), WORST CASE. GCIL
DRIVERS FAIL SAFE TO THE PANEL CONTROL MODE.

(B) INTERFACING SUBSYSTEM(S):
COMMAND CAPABILITY LOST FOR PM, FM, TV, KU AND P/L. AFTER THIS ONE FAILURE,
LOSE CAPABILITY TO POWER BOTH NSP'S BY THE GCIL 'COMMAND' MODE. THE NSP'S
CAN ONLY BE ACTIVATED BY THE "PANEL" MODE. ONE ADDITIONAL FAILURE (NSP
ACTIVATE SWITCH) IS REQUIRED BEFORE ALL CAPABILITY IS LOST FOR ACTIVATING
EITHER NSP.

(C) MISSION:
POSSIBLE LOSS OF MISSION DUE TO MINIMUM DURATION FLIGHT DECISION AFTER
LOSS OF "COMMAND" ACTIVATION OF BOTH NSP'S.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
AFTER LOSS OF "COMMAND" ACTIVATION OF BOTH NSP'S THE MISSION WOULD BE
REDUCED TO MDF. IF THE "PANEL" ACTIVATION OF BOTH NSP FAILED, A NEXT PLS
WOULD BE DECLARED.

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

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

(D) FAILURE HISTORY:

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CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE.

(E) OPERATIONAL USE:
NONE NECESSARY. THE REDUNDANT GCIL POWER CIRCUIT AND SWITCH "COMMAND" DRIVER ENABLE SIGNAL PERFORM THE FUNCTION OR THE SYSTEM REVERTS TO "PANEL" CONTROL OF SYSTEM FUNCTIONS.

- APPROVALS -

EDITORIALLY APPROVED   : BNA   *J. Kimura* 8/24/97
EDITORIALLY APPROVED   : JSC   *J. Neary*   9/30/97
TECHNICAL APPROVAL   : VIA APPROVAL FORM   96-CIL-018_05-6PH