

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-2G-21531 -X

SUBSYSTEM NAME: COMM & TRACK: S-BAND COMMUNICATIONS

REVISION: 0

01/05/88

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: PANEL A1A2	V070-730346
SRU	: SWITCH, TOGGLE	ME452-0102-7201

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 SWITCH NSP DATA XMIT TOGGLE SWITCH, 2 POLE, 2 POSITION, NETWORK SIGNAL
 PROCESSOR (NSP) DATA RATE, DOWNLINK FUNCTION.

REFERENCE DESIGNATORS: 36V73A1A2S18

QUANTITY OF LIKE ITEMS: 1
 ONE TWO SW POLES FOR TWO REDUNDANT CIRCUITS

FUNCTION:
 FOR THE DOWNLINK FUNCTION, SWITCHES S-BAND PM TO HIGH OR LOW DATA RATE
 OPERATION, WHEN THE GCIL IS IN THE PANEL MODE. ONE SWITCH POLE EACH IS
 DEDICATED TO THE HI/LO DATA CIRCUIT OF THE 2 NSP'S.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 05-2G-21531-02

REVISION#: 1 09/15/97

SUBSYSTEM NAME: COMM & TRACK: S-BAND COMMUNICATIONS

LRU: PANEL A1A2

ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS FAILURE MODE: 2/2

FAILURE MODE:

SHORT TO GROUND (INPUT) WORST CASE - CONTAMINANT OR LOOSE PART MOVES AND SEQUENTIALLY SHORTS SEVERAL INPUT TERMINALS TO CASE (GROUND).

MISSION PHASE: LO LIFT-OFF
 OO ON-ORBIT
 DO DE-ORBIT

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)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

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DUE TO THE LOSS OF THE NSP SWITCH BUFFER DRIVERS (REF. FMEA 05- 6PG-21503-1), LOSS OF ALL S-BAND PM DOWNLINK IN GCIL "PANEL" MODE DUE TO LOSS OF THE "NSP ON" SIGNAL TO THE TRANSPONDERS.

(B) INTERFACING SUBSYSTEM(S):

LOSS OF PANEL MODE OPERATION, AND LOSS OF ENCRYPTION PROTECTION OF COMMANDS AND DATA.

(C) MISSION:

POSSIBLE LOSS OF MISSION DUE TO MDF DECISION AFTER LOSS OF "PANEL" "NSP ON" TO TRANSPONDERS, LOSS OF ENCRYPTION PROTECTION OF COMMANDS AND DATA.

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

NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:

LOSS OF "PANEL" "NSP ON" WOULD REDUCE THE MISSION TO MDF. AFTER TWO FAILURES (THIS SWITCH, AND 1 GCIL PNL/CMD SWITCH) LOSS OF BOTH NSP, A NEXT PLS WOULD BE DECLARED.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX A, ITEM #1, TOGGLE SWITCH.

(B) TEST:

REFER TO APPENDIX A, ITEM #1, TOGGLE SWITCH.

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

REFER TO APPENDIX A, ITEM #1, TOGGLE SWITCH.

(D) FAILURE HISTORY:

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.

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(E) OPERATIONAL USE:

NO CREW CORRECTIVE ACTION IS AVAILABLE TO RECOVER ENCRYPTION CAPABILITY.
CREW ACTION IS REQUIRED TO REGAIN S-BAND IN GCIL COMMAND MODE OR TO USE
THE UHF SYSTEM FOR VOICE COMMUNICATIONS.

- APPROVALS -

EDITORIALLY APPROVED	: BNA	: <i>J. Kumura</i> 9/15/97
EDITORIALLY APPROVED	: JSC	: <i>D. Deacon</i> 10/8/99
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-019_05-2G