

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE  
 NUMBER:05-2A-21949M -X

SUBSYSTEM NAME: COMM & TRACK AUDIO

REVISION: 0 10/03/96

---

PART DATA

---

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: PANEL A1A3	VO70-730347
SRU	: SWITCH, TOGGLE	ME452-0102-7201

---

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

SWITCH, A/G 1 AND A/G 2 (UHF) TOGGLE SWITCH, AIR-TO-GROUND CHANNELS (A/G 1 AND A/G 2) FOR THE UHF COMMUNICATION LINK, DPDT, ON-OFF.

REFERENCE DESIGNATORS: . 36V73A1A3S31  
 36V73A1A3S32

QUANTITY OF LIKE ITEMS: 2  
 TWO, A/G1 AND A/G2

FUNCTION:

D&C MANUAL CONFIGURATION OF THE AUDIO DISTRIBUTION SYSTEM (ADS) VIA THE RIGHT (PLT) AUDIO TERMINAL UNIT (ATU) OR THE MISSION SPECIALIST (MS) ATU. SELECTS THE AUDIO DISTRIBUTION SYSTEM A/G 1 OR A/G 2 CHANNEL FOR TRANSMISSION AND RECEPTION OF VOICE WITH THE SPACE-TO-SPACE ORBITER RADIO (SSOR). REDUNDANCY FOR A/G1 AND A/G2 IS PROVIDED INTERNALLY SIMULTANEOUSLY BY TWO POLES: ONE POLE IS CONNECTED TO THE RIGHT (PLT) ATU AND THE OTHER POLE IS CONNECTED TO MS ATU.

## FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE

NUMBER: 05-2A-21949M-02

REVISION#: 0 10/03/96

SUBSYSTEM NAME: COMM &amp; TRACK: AUDIO

LRU: PANEL A1A3

ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS

FAILURE MODE: 2/2

## FAILURE MODE:

SHORT-TO-CASE (GROUND)

## MISSION PHASE:

LD LIFT-OFF  
 OO ON-ORBIT  
 DO DE-ORBIT

## VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102 COLUMBIA  
 103 DISCOVERY  
 104 ATLANTIS  
 105 ENDEAVOUR  
 AFTER SPACE COMM MODIFICATION

## 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:

SWITCH A/G 1 (S31) OR SWITCH A/G 2 (S32) SHORT-TO-CASE (GROUND) WILL RESULTED  
 IN LOSS OF THE A/A (S33) SINCE ALL THREE SWITCHES SHARE A COMMON LINE. LOSS  
 OF CAPABILITY TO SELECT ANY UHF SSOR AUDIO CHANNEL (LOSS OF UHF).A

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL FAILURE MODE  
NUMBER: 05-2A-21949M-02**

SWITCH A/G 1 (S31) OR SWITCH A/G 2 (S32) SHORT-TO-CASE (GROUND) WILL RESULTED IN LOSS OF THE A/A (S33) SINCE ALL THREE SWITCHES SHARE A COMMON LINE. LOSS OF CAPABILITY TO SELECT ANY UHF SSOR AUDIO CHANNEL (LOSS OF UHF).

**(B) INTERFACING SUBSYSTEM(S):**  
LOSS OF CAPABILITY TO SELECT ANY UHF SSOR AUDIO CHANNEL (LOSS OF UHF).

**(C) MISSION:**  
LOSS OF MISSION IF EVA OR STATION RENDEZVOUS VOICE COMMUNICATION IS REQUIRED.

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

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

---

- TIME FRAME -

---

TIME FROM FAILURE TO CRITICAL EFFECT: MINUTES

---

-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 DATABASE.

## FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE

NUMBER: 05-2A-21949M-02

## (E) OPERATIONAL USE:

FOR SSOR EVA COMM - CREW IS TRAINED TO SAFELY TERMINATE EVA IF MINIMUM  
REQUIRED COMM IS LOST.

FOR SSOR STATION REDEZVOUS - ALTERNATE COMM LINKS WOULD BE USED IF  
AVAILABLE (E.G. RELAY VIA GROUND SITE OR A VHF RADIO LIKE USED FOR SHUTTLE  
MIR).

## - APPROVALS -

PAE MANAGER	:	POLLY STENGER-NGUYEN	<i>Polly Stenger-Nguyen 8/21/98</i>
PRODUCT ASSURANCE ENGR	:	VAN D. NGUYEN	<i>Van Nguyen 8-20-98</i>
DESIGN ENGINEERING	:	D. Y. YOON	<i>D. Y. Yoon 8-20-98</i>
NASA SSMA	:	MIKE PENNEY	<i>Michael Penney 8-26-98</i>
VHF NASA SUBSYSTEM MANAGER	:	MARK A. CHAFFIN	<i>Mark A. Chaffin 8-26-98</i>
NASA MOD	:		<i>Paul K. Harris 8-26-98</i>
USA/SAM	:	KAREN BLUMENTRITT	<i>Karen Blumentritt 8/26/98</i>
Audio NASA SSM	:	EDDIE BURRELL	<i>Eddie Burrell 8-26-98</i>
			<i>Arnie DCE</i>