

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE
 NUMBER:05-2B-22103M -X

SUBSYSTEM NAME: COMM & TRACK: UHF SPACE COMMUNICATION
 REVISION: 0 10/03/96

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: PANEL 06	VO70-730389
SRU	: SWITCH, TOGGLE	ME452-0102-8301

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 TOGGLE SWITCH, UHF TRANSMIT FREQUENCY, 3P2P

REFERENCE DESIGNATORS: 33V73A6S7

QUANTITY OF LIKE ITEMS: 1
 ONE POLE FOR ATC, ONE POLE FOR EVA, ONE POLE SW SCAN

FUNCTION:
 SELECTS 259.7 MHZ OR 295.8 MHZ TRANSMIT FREQUENCY ON THE UHF - ATC
 TRANCEIVER FOR AIR-TO-GROUND OR AIR-TO-AIR COMMUNICATION. SELECTS
 FREQUENCY (414.2 MHZ OR 417.1 MHZ) ON THE SPACE-TO-SPACE ORBITER RADIO
 (SSOR) FOR EVA OR STATION RENDEZVOUS COMMUNICATIONS.

FAILURE MODES EFFECTS ANALYSIS FMEA – NON-CIL FAILURE MODE

NUMBER: 05-2B-22103M-01

REVISION#: 0 11/14/95

SUBSYSTEM NAME: COMM & TRACK: UHF SPACE COMMUNICATION

LRU: PANEL 06

CRITICALITY OF THIS

ITEM NAME: SWITCH, TOGGLE

FAILURE MODE: 1R3

FUNCTIONAL CRITICALITY/

REQUIRED FAULT TOLERANCE/ACHIEVED FAULT TOLERANCE:1R/2/3

FAILURE MODE:

FAILS CLOSED, FAILS TO TRANSFER

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
		AFTER SPACE COMM MODIFICATION

CAUSE:

PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

CRITICALITY 1R2 DURING INTACT ABORT ONLY (AVIONICS ONLY)? NO

REDUNDANCY SCREEN	A) PASS
	B) PASS
	C) PASS

PASS/FAIL RATIONALE:

A)

B)

C)

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: 05-2B-22103M-01**

CORRECTING ACTION: MANUAL

CORRECTING ACTION DESCRIPTION:

FOR ATC, CREW MUST MANUALLY SELECT GUARD T/R. ASCENT POCKET CHECKLIST AND ENTRY POCKET CHECKLIST DIRECT CREW TO SELECT GUARD T/R IF OTHER COMM IS LOST.

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ABILITY TO CHANGE UHF FREQUENCY - LOSS OF REDUNDANT CHANNEL.

(REFER TO "ADDITIONAL DATA" FOR LESS CRITICAL EFFECTS SCENARIOS).

(B) INTERFACING SUBSYSTEM(S):

LOSS OF ABILITY TO CHANGE UHF FREQUENCY - LOSS OF REDUNDANT CHANNEL.

(REFER TO "ADDITIONAL DATA" FOR LESS CRITICAL EFFECTS SCENARIOS).

(C) MISSION:

NO EFFECT - FIRST FAILURE

(REFER TO "ADDITIONAL DATA" FOR LESS CRITICAL EFFECTS SCENARIOS).

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

NO EFFECT - FIRST FAILURE

(REFER TO "ADDITIONAL DATA" FOR LESS CRITICAL EFFECTS SCENARIOS).

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE AFTER 4 FAILURES (THIS SWITCH FAILS CLOSED OR FAILS TO TRANSFER, LOSS OF ACTIVE CHANNEL, AND 2 S-BAND) DUE TO LOSS OF STATE VECTOR UPDATE.

(REFER TO "ADDITIONAL DATA" FOR LESS CRITICAL EFFECTS SCENARIOS).

-ADDITIONAL DATA-

FOR ON-ORBIT: 2R3 PPP

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE
NUMBER: 05-2B-22103M-01**

(A) SUBSYSTEM:

UNABLE TO CHANGE FROM SELECTED FREQUENCY TO ANOTHER FREQUENCY.

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT - FIRST FAILURE

(C) MISSION:

NO EFFECT - FIRST FAILURE

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

NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF MISSION AFTER ONE ADDITIONAL FAILURE (LOSS OF THE ACTIVE CHANNEL) DUE TO LOSS OF EVA COMMUNICATION OR STATION REDEZVOUS.

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: MINUTES

- APPROVALS -

PRODUCT ASSURANCE ENGR : VAN D. NGUYEN
DESIGN ENGINEERING : G. J. SCHWARTZ

Van Nguyen 8-20-98
G. J. Schwartz 8-21-98