

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL HARDWARE
 NUMBER:05-2B-22104M -X

SUBSYSTEM NAME: COMM & TRACK: UHF SPACE COMMUNICATION
 REVISION: 0 11/14/95

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:
 SWITCH, TOGGLE - UHF POWER AMPLIFIER ON/OFF, 3P2P

REFERENCE DESIGNATORS: 33V73A6S10

QUANTITY OF LIKE ITEMS: 1
 ONE

FUNCTION:
 ENABLES UHF 10 WATT POWER AMPLIFIER FOR UHF - ATC TRANCEIVER, AND ENABLES
 5 WATT POWER AMPLIFIER FOR SPACE-TO-SPACE ORBITER RADIO (SSOR).

REFERENCE DOCUMENTS: VS70-740119

FAILURE MODES EFFECTS ANALYSIS FMEA – NON-CIL FAILURE MODE

NUMBER: 05-2B-22104M-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/2/2

FAILURE MODE:

FAILS OPEN, FAILS TO TRANSFER (STUCK IN LOW POWER)

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

1

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)

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CORRECTING ACTION:

CORRECTING ACTION DESCRIPTION:

FOR ATC, LOW POWER RECEPTION MAY BE POSSIBLE BY VEHICLE ORIENTATION.

- FAILURE EFFECTS -

(A) SUBSYSTEM:

POWER AMPLIFIER BYPASSED IN ALL MODES - RF OUTPUT LIMITED TO 0.25 WATT.

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

(B) INTERFACING SUBSYSTEM(S):

POWER AMPLIFIER BYPASSED IN ALL MODES - RF OUTPUT LIMITED TO 0.25 WATT.

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

(C) MISSION:

AIR/GROUND - RANGE TO GROUND STATION LIMITED. WORSE CASE IS LOSS OF UHF DOWNLINK VOICE.

(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:

AFTER THREE FAILURES (THIS SWITCH AND 2 S-BAND), POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF STATE VECTOR UPDATE.

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

-ADDITIONAL DATA-

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FOR ON-ORBIT: 3/3 NNN

(A) SUBSYSTEM:

SPACE-TO-SPACE COMMUNICATION RANGE IS LIMITED TO 1KM. NO EFFECT TO EVA OR STATION RENDEZVOUS COMMUNICATION.

NOTE: CRITICALITY IS BASED ON ASSUMPTION THAT REDUCED COMM RANGE TO 1KM DOES NOT AFFECT RENDEZVOUS.

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT

(C) MISSION:

NO EFFECT

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

NO EFFECT

LOSS OF SWITCH SCAN MEASUREMENT: 3/3 NNN

(A) SUBSYSTEM:

NO EFFECT

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT

(C) MISSION:

NO EFFECT

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

NO EFFECT

- 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