

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL HARDWARE**  
**NUMBER:05-2B-22100M -X**

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

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**PART DATA**

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	<b>PART NAME</b>	<b>PART NUMBER</b>
	<b>VENDOR NAME</b>	<b>VENDOR NUMBER</b>
LRU	: UHF - ATC TRANSCEIVER (GFE)	8379452

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**  
**UHF - AIR TRAFFIC CONTROL (ATC) TRANSCEIVER (GFE)**

**REFERENCE DESIGNATORS: 83V74A21**

**QUANTITY OF LIKE ITEMS: 1**  
**ONE**

**FUNCTION:**  
 PROVIDES UHF SIMPLEX VOICE COMMUNICATION BETWEEN ORBITER AND GROUND FOR PRELAUNCH, LIFT-OFF, DE-ORBIT, AND LANDING-SAFING. COMMUNICATIONS TO GROUND WILL BE DONE THROUGH A/A CHANNEL. UHF - ATC SYSTEM IS BACKUP TO S-BAND FOR AIR/GROUND COMMUNICATION

**REFERENCE DOCUMENTS: VS70-740119**

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 05-2B-22100M-01

REVISION#: 0 11/14/95

SUBSYSTEM NAME: COMM & TRACK: UHF SPACE COMMUNICATION

LRU: UHF - ATC TRANSCEIVER (GFE)

CRITICALITY OF THIS

ITEM NAME: UHF - ATC TRANSCEIVER (GFE)

FAILURE MODE: 1R3

FUNCTIONAL CRITICALITY/

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

FAILURE MODE:

LOSS OF RF OR AUDIO OUTPUT, ERRONEOUS OUTPUT (GARBLE OUTPUT)

MISSION PHASE:

- PL PRE-LAUNCH
- LO LIFT-OFF
- 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 FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

- A) PASS
- B) PASS
- C) PASS

PASS/FAIL RATIONALE:

A)

B)

C)

CORRECTING ACTION: NONE

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CORRECTING ACTION DESCRIPTION:  
NO CREW ACTION AVAILABLE TO RESTORE UHF COMMUNICATIONS.

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- FAILURE EFFECTS -

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(A) SUBSYSTEM:  
INABILITY TO TRANSMIT/RECEIVE OR INCOMPREHENSIBLE RF NOISE RESULTING IN  
LOSS OF UHF VOICE COMMUNICATION.

(B) INTERFACING SUBSYSTEM(S):  
INABILITY TO TRANSMIT/RECEIVE OR INCOMPREHENSIBLE RF NOISE RESULTING IN  
LOSS OF UHF VOICE COMMUNICATION.

(C) MISSION:  
NO EFFECT - FIRST FAILURE

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

(E) FUNCTIONAL CRITICALITY EFFECTS:  
AFTER THREE FAILURES (THIS TRANSCEIVER AND 2 S-BAND), POSSIBLE LOSS OF  
CREW/VEHICLE DUE TO LOSS OF STATE VECTOR UPDATE.

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- TIME FRAME -

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TIME FROM FAILURE TO CRITICAL EFFECT: MINUTES

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- APPROVALS -

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PRODUCT ASSURANCE ENGR : VAN D. NGUYEN  
DESIGN ENGINEERING : D. Y. YOON

*Van D. Nguyen 8-20-98*  
*D. Y. Yoon 8-20-98*