

National Transportation Safety Board

Office of Research and Engineering

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COCKPIT VOICE RECORDER

Specialist's Factual Report

April 2, 2025

WARNING

The reader of this report is cautioned that the summary of a cockpit voice recorder audio recording is not a precise science but is the best product possible from a National Transportation Safety Board group investigative effort. The summary or parts thereof, if taken out of context, could be misleading. The summary should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the summary as the sole source of information.

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. COCKPIT VOICE RECORDER SPECIALIST	3
C. FEDERAL CARRIAGE REQUIREMENTS.....	3
D. DETAILS OF THE INVESTIGATION	3
1.0 RECORDER DESCRIPTION.....	3
1.1 Recorder Damage	4
1.2 Audio Recording Description.....	4
1.3 Timing and Correlation	4
1.4 Description of Audio Events.....	4
APPENDIX A. CVR QUALITY RATING SCALE.....	7

A. ACCIDENT

Location: Telluride, CO
Date: July 20, 2024
Time: 13:39 Mountain Daylight Time (MDT)
Airplane: Hawker Beechcraft Corp Hawker 900XP, Corporate Air Charters, LLC,
N526FC

B. COCKPIT VOICE RECORDER SPECIALIST

Specialist Olivia Fowler
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C. FEDERAL CARRIAGE REQUIREMENTS

The event aircraft, N526FC, was operating as a Title 14 *Code of Federal Regulations* (CFR) Part 91 flight. The event aircraft was manufactured in 2007 and was operating such that it was required to be equipped with a cockpit voice recorder (CVR) that records a minimum of the last 2 hours of aircraft operation.

D. DETAILS OF THE INVESTIGATION

A CVR group was not convened. The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model:	Universal CVR-120
Part Number:	1603-02-12
Recorder Serial Number:	1832

1.0 Recorder Description

The Universal CVR-120 records a minimum of 120 minutes of digital audio stored on solid-state memory modules. There are four sources of audio input: one channel for each flight crew, one additional channel for a cockpit observer, and one channel for the cockpit area microphone (CAM). The pilot, co-pilot, and observer channels are recorded independently for a minimum of 30 minutes. An additional combined channel comprised of the pilot, co-pilot, and observer channels is recorded for a minimum of 120 minutes. The CAM is recorded on two channels: high-quality audio for a minimum of 30 minutes and lower-quality audio for a minimum of 120 minutes.

1.1 Recorder Damage

Upon arrival at the laboratory, it was evident that the CVR had not sustained any heat or structural damage and the audio information was extracted from the recorder normally, without difficulty.

1.2 Audio Recording Description

Each channel's audio quality is indicated in Table 1.¹

Table 1. Audio Quality.

Channel Number	Content/Source	Quality	Duration (h:mm:ss)
1	Captain	Good	0:31:08
2	Co-pilot	Good	0:31:08
3	Observer	N/A	0:31:08
4	CAM	Fair	0:31:08
5	Combined Channel	Fair	2:06:25
6	CAM	Fair	2:06:25

1.3 Timing and Correlation

Timing on the transcript was established using the time given in the automated weather observing system (AWOS) weather broadcast for Telluride Regional Airport (KTEX), which played continuously for the last 11 minutes of the recording. According to FAA Advisory Circular 150/5220-16E, the real-time clock in the AWOS "should be accurate within 15 seconds each month compared to an official time source".² Because no additional external source was available to validate the time of the CVR Recording, the times presented in this report are approximate. Times in this report are given in local MDT time.

1.4 Description of Audio Events

In agreement with the Investigator-In-Charge, a CVR group did not convene. A summary of events from the CVR follows.

The recording began around 11:51 with the aircraft enroute to Telluride Regional Airport in Telluride, Colorado (KTEX).

At 12:45:48 the crew listened to a portion of AWOS for KTEX. The AWOS broadcast was largely unintelligible due to other transmissions. The pilot informed the center controller that they had the weather for KTEX. Center replied that there was scattered precipitation and light rime icing reported in the area.

¹ Appendix A comprises the CVR Quality Rating Scale.

² FAA Advisory Circular 150/5220-16E: Automated Weather Observing Systems (AWOS) for Non-Federal Applications

The co-pilot asked what the temperature was. The pilot said, "I don't know" and then "I'm not the least bit concerned about icing at minus 23." The crew turned the AWOS on again briefly. AWOS reported winds from 020 deg at 8 knots, broken clouds at 6,000 feet and 8,000 feet, temperature 19 deg F, dewpoint 4 deg F, altimeter 30.57 inHg. After the AWOS was turned off, the pilot asked what the wind was, and the co-pilot did not respond.

At 13:05 the pilot talked about the hold and approach and the co-pilot said, "I'm all sorts of confused".

The crew mentioned it was the copilot's first time going to KTEX and talked about taking photos and videos during the approach. No checklists or briefings were heard on the CVR during the approach to KTEX. Throughout the flight, both crew members communicated on the radio.

At 13:13:43, about 1 minute prior to landing, the pilot asked, "what were the winds here?" the co-pilot responded, "I don't remember."

At 13:14:56 the aircraft landed on runway 9 at KTEX. There was no conversation related to taxi, parking, or shutting down the aircraft.

Around 13:17:35 a non-crew member was heard outside the cockpit telling the crew about an unofficial approach that people had invented for KTEX. He described flying straight east over town to avoid the loop.

At 13:18:50 the pilot mentioned going into the FBO.

Sounds consistent with the flight crew entering the cockpit and preparing the aircraft were heard beginning at 13:35:09. The captain said that they had 8,500 pounds of fuel.

The aircraft started around 13:42:15 and the captain said, "uh oh." At 13:42:20 a horn at approximately 2770 Hz sounded for about 6 seconds. The captain said, "that explains a lot," and mentioned pulling the circuit breaker.

No checklists or conversations related to the operation or configuration of the aircraft were heard during start-up or taxi.

At 13:45:00 the pilot made a radio call to announce that they were departing runway 27 to the west.

The ambient noise increased consistent with increasing engine RPM. At 13:45:40 the pilot said, "power set." The co-pilot said, "[unintelligible], airspeed's alive."

At 13:45:53 a tone at about 420 Hz sounded for about 0.1 seconds, and the co-pilot called out eighty knots.

At 13:45:54 the pilot said, "rotate. stop."

At 13:46:06 the pilot asked, "are you able to rotate?"

At 13:46:11 the co-pilot said an expletive and the sound of ambient noise decreased consistent with decreasing engine RPM.

At 13:46:20 sounds consistent with impact can be heard. AWOS began playing at the time of impact and continued through the remainder of the recording. The AWOS reported approximately wind from 110 deg at 11 knots gusting to 18 knots, sky broken at 9,500 feet and 11,000 feet, altimeter 30.55 inHg, density altitude 11,100 feet.

There was no audible conversation between the crew until 13:47:53. The crew expressed that they could not control or shut down the engines. Around 13:49:30 the ambient noise increased, consistent with opening the aircraft door while the engines were running.

The CVR ended at 13:57:52.

As part of the Safety Board's accident investigation process, the flight crew was invited to review the CVR transcript and suggest corrections or additions. They have not responded to the invitation.

Submitted by:

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Mechanical Engineer – Vehicle Recorder Specialist

APPENDIX A. CVR QUALITY RATING SCALE

The levels of recording quality are characterized by the following traits of the cockpit voice recorder information:

Excellent Quality Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other.

Good Quality Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other.

Fair Quality The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information.

Poor Quality Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information.

Unusable Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system.