

National Transportation Safety Board

Office of Research and Engineering

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COCKPIT VOICE RECORDER

Specialist's Factual Report

March 26, 2024

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.

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A. ACCIDENT

Location: Atlanta, Georgia
Date: August 29, 2023
Time: 1831 eastern daylight time (EDT)
2231 coordinated universal time (UTC)
Airplane: Airbus A350-900, N576DZ, Delta Air Lines,

B. COCKPIT VOICE RECORDER SPECIALIST

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C. FEDERAL CARRIAGE REQUIREMENTS

Per federal regulation, turbine engine powered aircraft operating under Title 14 *Code of Federal Regulations (CFR)* Part 121 must be equipped with a cockpit voice recorder (CVR) that records a minimum of the last 2 hours of aircraft operation; this is accomplished by recording over the oldest audio data. The accident aircraft was manufactured in 2019. When the CVR is deactivated or removed from the airplane, it retains only the most recent 2 hours of CVR operation.

D. DETAILS OF THE INVESTIGATION

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

Recorder Manufacturer/Model: L3 FA2100
Part Number: 2100-1227-02
Recorder Serial Number: 001289471

1.0 Recorder Description

This model CVR, the L3 FA2100-1227, records a minimum of 120 minutes of digital audio stored on solid state memory modules. Four channels are recorded: one channel for each flight crew, one channel for a cockpit observer, and one channel for the cockpit area microphone (CAM).

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
1	Observer	Excellent	124 min
2	First Officer	Excellent	124 min
3	Captain	Excellent	124 min
4	Cockpit Area Microphone	Excellent	124 min

1.3 Timing and Correlation

Timing on the CVR events was established from the timecode recorded from the airplane. This timecode is common to the FDR, so both recorders are in sync with each other.

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 at 20:56 UTC² with the aircraft at flight level 400 (40,000 ft). At 21:31 the crew reported occasional light chop to Washington Center. Other aircraft on frequency were similarly offering ride reports of occasional light chop.

At 21:59 with 3 crew members in the flight deck, the crew briefed the arrival to the Atlanta ILS 8 Left approach. The briefing included arrival waypoints, altitudes, runway length and missed approach instructions. They also briefed their plan to clear the runway and taxi to their assigned gate.

At 22:22 the crew discussed the cloud fronts in the vicinity and mentioned that they may need a weather deviation at some point in their descent.

At 22:26 Atlanta Center instructed them to cross waypoint OZZZI at 14,000 feet and 310 knots or higher, which the crew confirmed. The crew then requested a deviation west of course at around waypoint KILRR. The controller directed them to

¹ Appendix A comprises the CVR Quality Rating Scale.

² All times are reported in UTC.

continue heading to OZZZI and advised that the next sector controller could handle their request.

At 22:28 the jump seater called the cabin crew to report that it would be getting bumpy in about 5 minutes so they should begin cleaning the cabin and preparing for arrival.

At 22:30 the controller requested a ride report passing through 17,000 ft prior to handing the flight off to Atlanta Approach. They reported "...its good right now but it's about to get worse. There's a cloud right up here." The crew then completed the approach brief and descent checklist.

At 22:31:15 there was a sudden sound of the flight deck being jostled lasting for about three seconds with an audible reaction from the crew. Immediately afterward one crew member checked in with the Atlanta Approach controller, while the other directed the jump seater to check in with the cabin crew to see how everyone was doing. The flight crew continued with entering their new assigned altitude of 12,000 feet.

The initial report from the cabin crew was that one person was injured during the turbulence and that the crew was tending to them. The crew continued to coordinate with ATC and then advised them that they "hit a pretty good bump over OZZZI". The controller asked them what the degree of turbulence was, and they responded Severe. The jump seater continued to coordinate with other members of the cabin crew, and at 22:32:55 informed the crew that they needed to declare an emergency due to an injured passenger needing assistance on arrival at Atlanta. At 22:33:29 the crew declared a medical emergency to Atlanta Approach reporting one person injured needing paramedics at the gate upon arrival. They also sent a message to dispatch informing the company of the emergency.

The crew continued the approach, coordinating with ATC and completing standard checklists. At 22:38:40 the captain thanked the jump seater for coordinating with the cabin crew and said that there was nothing showing on the radar at the time of the turbulence.

The flight landed at 22:48. During the taxi the crew received an update from the cabin crew informing them of the number of injured passengers and their locations. The parking brake was set at the gate at 22:55. The recording ended at 23:00 when the recorder circuit breaker was pulled.

Submitted by:

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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.