

**NATIONAL TRANSPORTATION SAFETY BOARD**  
Vehicle Recorder Division

April 1, 2019

## **Cockpit Voice Recorder**

**Specialist's Factual Report**  
**By Christopher Babcock**

### **1. EVENT SUMMARY**

Location: Yukon, Oklahoma  
Date: March 18, 2019  
Aircraft: Israel Aerospace Industries Westwind 1124, Registration N4MH  
Operator: Sundance Airport FBO LLC  
NTSB Number: CEN19FA104

On March 18, 2019, at 1537 central daylight time, an Israel Aircraft Industries Westwind 1124, N4MH, impacted terrain near the east side of runway 18 at Sundance Airport (HSD), Yukon, Oklahoma. The airplane was destroyed. Both pilots sustained fatal injuries. The airplane was registered to and operated by Sundance Airport FBO LLC under Title 14 *Code of Federal Regulations* Part 91. The flight was operating on an instrument rules flight plan. Visual meteorological conditions prevailed at the time of the accident. The flight departed from Northwest Florida Beaches International Airport (ECP), Panama City, Florida and was destined to HSD.

A tape cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation.

### **2. GROUP**

A group was not convened.

### **3. DETAILS OF INVESTIGATION**

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Fairchild GA-100**  
Recorder Serial Number: **346**

#### **3.1 CVR Carriage Requirements**

Per federal regulation, turbine multiengine aircraft with six or more passenger seats and requiring two pilots manufactured prior to April 7, 2010, and operated under 14 CFR 91, must be equipped with a CVR that records a minimum of the last 30 minutes of aircraft operation; this is accomplished by recording over the oldest audio data. The accident aircraft was manufactured in 1978. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes.

### 3.2 Recorder Description

This model CVR, the Fairchild GA-100, records a minimum of 30 minutes of analog audio on a continuous loop tape in a four-channel format: one channel for each flight crew, one channel for a cockpit observer, and one channel for the cockpit area microphone (CAM).

### 3.3 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.

### 3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1.<sup>1</sup>

Table 1. Audio Quality.

Channel Number	Content/Source	Quality	Duration (mm:ss)
1	Pilot	Excellent	31:39
2	CAM	Good	31:39
3	Pilot	Excellent	31:39
4	Unknown	Good	31:39

The audio recorded on the CVR did not contain the accident flight. The audio contained a normal approach, landing, taxi, and shutdown at Wiley Post Airport, Oklahoma City, OK. The shutdown at Wiley Post Airport occurred at 26:35 elapsed CVR time (mm:ss). There was no conversation recorded during the last 5 minutes of the CVR recording, however a series of 646 Hz tones was recorded on all four channels of the CVR.

In order to test the CVR, the test switch is depressed on the CVR control unit assembly mounted in the cockpit. The test circuitry applies a 0.8 second 600 Hz tone to the tape on all four channels and the monitor function on the CVR feeds the tone back to the go-no go meter in the control unit to visually indicate a successful test.

### 3.5 Timing and Correlation

During the approach to Wiley Post Airport, the pilots received ATIS information over the aircraft's radios. The ATIS information contained a METAR observation indicating that, at 1753 Zulu time, the winds were from 180° at 10 knots, sky conditions were clear, temperature was 13° C, dewpoint was -4° C, and the altimeter setting was 30.31 inches Hg. A review of historical METAR observations from Wiley Post Airport showed that the most recent METAR that matched the observation broadcast on the ATIS occurred on November 7, 2007.<sup>2</sup> The historical METAR information is available as Attachment 1 to this report on the public docket for this accident. There is no way to determine at what date and time the 646 Hz tones were recorded on the CVR.

<sup>1</sup> See attached CVR Quality Rating Scale.

<sup>2</sup> METAR data accessed through <https://mesonet.agron.iastate.edu/request/download.phtml>

## Attachment I

### CVR Quality Rating Scale

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

<b>Excellent Quality</b>	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.
<b>Good Quality</b>	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.
<b>Fair Quality</b>	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.
<b>Poor Quality</b>	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.
<b>Unusable</b>	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.