

**NATIONAL TRANSPORTATION SAFETY BOARD**  
Vehicle Recorder Division

September 18, 2017

## **Cockpit Voice Recorder**

**Specialist's Factual Report**  
**By Bill Tuccio, Ph.D.**

### **1. EVENT SUMMARY**

Location: San Juan, Puerto Rico  
Date: September 22, 2016  
Aircraft: Lear 25D, Registration YV1738  
Operator: WMG Techno-Logistic, C.A.  
NTSB Number: ERA16LA323

On September 22, 2016, about 1820 Atlantic standard time, a Learjet 25D, Venezuelan registration YV1738, was substantially damaged during a runway excursion during landing at Fernando Luis Ribas Dominicci Airport (TJIG), San Juan, Puerto Rico. The foreign-certificated pilot, copilot, and one passenger were not injured. The airplane was operated by WMG Techno-Logistic, C.A. under the provisions of 14 *Code of Federal Regulations* Part 91 as a business flight. Day, instrument meteorological conditions prevailed at the time, and an instrument flight rules flight plan was filed. The flight originated from Punta Cana, Dominican Republic (MDPC), about 1730. A solid-state 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 A-100S**  
Recorder Serial Number: **01172**

#### **3.1 Recorder Description**

This model CVR, the Fairchild A-100S, records a minimum of 30 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).

### 3.2 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.

### 3.3 Audio Recording Description

Each channel's audio quality is indicated in Table 1.<sup>1</sup> Channel number four did not contain any audio information (nor was it expected to for this installation).

**Table 1: Audio Quality.**

Channel Number	Content/Source	Quality	Duration
1	Captain	Good	30 min
2	First Officer	Good	30 min
3	CAM	Good	30 min
4	NA	NA	NA

Most of the intracockpit communications were in Spanish. In agreement with the Investigator-in-Charge, no transcript or summary was produced.

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

## 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.