

**NATIONAL TRANSPORTATION SAFETY BOARD**  
Vehicle Recorder Division  
Washington, DC 20594

July 30, 2013

## **Cockpit Voice Recorder**

**Specialist's Factual Report**  
**By Bill Tuccio**

### **1. EVENT**

Location: McMinnville, Oregon  
Date: May 13, 2013  
Aircraft: Lear 35A, N22MS  
Operator: Evergreen International Aviation Inc.  
NTSB Number: WPR13FA227

### **2. GROUP**

A group was not convened.

### **3. SUMMARY**

On May 13, 2013, about 1245 Pacific daylight time (PDT), a Gates Learjet 35A, N22MS, overran the runway during landing at McMinnville Municipal Airport (MMV), McMinnville, Oregon. The airplane was registered to Evergreen Equity Inc., and operated by Evergreen International Aviation Inc., under the provisions of 14 *Code of Federal Regulations* Part 91, as a post-maintenance repositioning flight. The airline transport pilot, commercial rated copilot, and passenger were not injured. The airplane sustained substantial damage to both wings, the forward fuselage, and the pressure vessel during the accident sequence. The cross-country flight departed Grand Junction Regional Airport, Grand Junction, Colorado about 1145 mountain daylight time, with a planned destination of McMinnville. Visual meteorological conditions prevailed at McMinnville, and an instrument flight rules flight plan had been filed. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board's Audio Laboratory for readout.

### **4. DETAILS OF INVESTIGATION**

The NTSB Vehicle Recorder Division's Audio Laboratory received the following CVR:

Recorder Manufacturer/Model: **Universal CVR-30**  
Recorder Serial Number: **231**

#### **4.1. Recorder Description**

Per federal regulation 14 CFR 91.609(h), aircraft manufactured prior to April 7, 2010, 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. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes of CVR operation. This model CVR, the Universal CVR-30, records 30 minutes of digital audio stored in solid-state memory modules. Four channels of audio information are retained: one channel for each flight crew and one channel for the cockpit area microphone (CAM).

#### **4.2. Recorder Damage**

Upon arrival at the audio 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.

#### **4.3. CVR Channels**

The recording consisted of four channels of audio information. One of the channels contained audio information from the intercom system. The quality of this channel was good.<sup>1</sup> One channel contained the cockpit area microphone (CAM) audio information. The quality of this channel was poor. The third channel was unusable. The fourth channel did not contain audio, nor was it required by law to do so.

#### **4.4. Timing and Correlation**

The times used in this report are expressed as local time of the accident (PDT).

Timing of the transcript was aligned with the local accident time as provided by the Investigator-in-Charge (IIC). The IIC indicated the touchdown time of the aircraft was 1244:00 PDT, which was aligned with the sound of touchdown recorded at 0030:25 CVR Elapsed Time (the time from the start of the recording). Accordingly, 1213:35 was added to CVR Elapsed Time to convert to PDT.

#### **4.5. Summary of Recording Contents**

In agreement with the Investigator-In-Charge, a CVR group did not convene and only this summary report was prepared.

The recording began at 1213 when the aircraft was at flight level 280. The pilot-in-command (PIC) was the flying pilot, and the second-in-command (SIC) was the non-flying pilot. The SIC read the MMV weather to the PIC as visibility

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<sup>1</sup> See Attachment I for the CVR Quality Rating Scale

10 miles, few clouds at 2,800 feet, broken clouds at 4,400 feet, and concluded by stating the v-ref landing speed was 119 knots.

At about 1216, air traffic control (ATC) cleared the flight, via a pilot's discretion descent, to 9,000 feet. After receiving this clearance, the PIC discussed vertical descent planning for the descent and the expected arrival via the RAWER intersection to land runway 22 at MMV.

At about 1222, the crew decided they would attempt a coupled ILS approach, and the PIC then asked for the descent checklist. The descent checklist was accomplished in a challenge/response fashion, including items of pressurization, defog, anti-ice off, circuit breakers, fuel balanced, tip fuel tanks empty, wings balanced, fuselage tank empty, hydraulic pressure in the green, emergency air pressure good, and approach briefing. During the descent checklist, the PIC also corrected the v-ref landing speed to 116 knots for the aircraft weight. The PIC then briefed the ILS 22 approach via the RAWER transition to land at MMV.

At about 1228, the SIC initiated the transition checks including items of altimeters set, EBAT, anti-ice on, strobe lights on, pressurization descending, seatbelt and no smoking sign, cross flow off, transfer fill off, fuselage off.

At about 1233, the crew performed the before landing checklist including items of radar altimeter, anti-ice on, v-ref 116 knots, and spoilers retracted.

At about 1235, the aircraft was cleared for the ILS 22 into MMV, crossing RAWER at 3,000 feet. The SIC acknowledged the clearance and then verified the I-MMV localizer station Morse code identifier for both ILS navigational receivers.

At about 1240, the PIC asked for flaps 8 and the SIC acknowledged and set flaps 8. ATC then directed the aircraft to contact MMV advisory frequency.

At 1241:05, the SIC reported a 7 mile final for runway 22 at MMV on the MMV advisory frequency. The PIC then asked for flaps 20, and the SIC acknowledged and set flaps 20. The PIC then noted the autopilot was not working well enough to use it on the approach.

At 1241:40, the PIC asked for gear down and the before landing checks. The SIC acknowledged the gear down request, followed by a sound similar to gear extension. The PIC then said he would turn on the ignitors, followed by a sound similar to ignitors throughout the remainder of the recording and roll out.

At 1241:56, the SIC read the before landing checklist, including items of flaps 20, gear down 3 green, thrust reversers armed, ignitors on, landing lights on, and engine sync.

At 1242:12, the PIC asked for full flaps, and the first officer confirmed full flaps. The crew then completed checklist items of anti-skid, no lights, gear down 3 green, and hydraulic and air pressure good.

At 1242:39, the SIC reported a 3 mile final on MMV advisory frequency.

At 1243:02, an automated voice reported "five hundred."

At 1243:30, the first officer called out "ref" plus 10, "perfect."

From 1243:58 to 1244:00, there were 3 audible clicks recorded on the CAM. At 1244:00, there was a sound of a bump-bump, similar to touchdown.

At 1244:02, there was a sound of a click.

At 1244:06.3, the PIC note the thrust reversers did not come out. The SIC asked if the PIC pulled the thrust reversers all the way back.

At 1244:09.7, there was a sound of a click, as the PIC confirmed he had pulled the thrust reversers all the way back and he would try the thrust reversers again.

At 1244:10.3, the background noise decreased, similar to a reduction in engine power.

At 1244:14.5, the background noise increased, similar to an increase in engine power.

At 1244:19.3, the PIC said, "no. they're sure not workin'."

At 1244:21.4, there was a sound of a click.

At 1244:24.1, there was a sound of a snap.

At 1244:25.2, the PIC noted, "I can hear 'em though."

At 1244:25.6, the background noise decreased, similar to a reduction in engine power.

At 1244:26.6, the SIC noted he had taken his earphone off to hear the engine thrust reversers.

At 1244:28.2, there were 2 or 3 clicks over a 1 second period.

At 1244:29.1, the SIC noted, "I did hear 'em."

At 1244:29.8, the PIC said he would try the thrust reversers again.

At 1244:32.8, the background noise increased, similar to an increase in engine power.

At 1244:36.3, the PIC said, "oh nope. They're they're not workin'."

At 1244:38.2, the SIC asked "you got it?" The PIC replied, "yeah."

At 1244:39.2, the SIC said, "slow'er down."

At 1244:39.7, the PIC said, "yeah. but I-I have to go into here...I have to go in here."

At 1244:42.1, the PIC said, "they didn't go and it gave me power."

At 1244:44.8, the PIC strained while saying "ooohff."

At 1244:45.4, the SIC asked, "what's goin' on?"

At 1244:46.0, the PIC said, "ah ah I gotta get it stopped. I gotta stop."

At 1244:49.4, the PIC said, "oh emergency..."

At 1244:51.1, there was a sound of 3 snaps, followed by the background noise increasing briefly, similar to an increase in engine power.

At 1244:53.3, the PIC said, "emergency brake...okay."

At 1244:54.6, the background noise decreased, similar to a reduction in engine power.

From 1244:56.0 to 1245:01, the crew expressed concern they could not stop before the end of the runway.

At 1245:03.3, the first sound of thunk was recorded, similar to impact. Thunking and rattling sounds continued until 1245:07, when the background sound decreased, similar to the aircraft coming to a stop.

At 1245:10.2, there was a sound of a whining of decreasing intensity, similar to engine shutdown.

The crew then began to evacuate the aircraft, noting they could not stop the aircraft.

At 1245:36.6, the recording ended amidst rustling, similar to movement in the cockpit.

Bill Tuccio  
Vehicle Recorder Division

## Attachment I

### 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.