

# NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, DC 20594

November 20, 2014

## Cockpit Voice Recorder

### Specialist's Factual Report

By Bill Tuccio, Ph.D.

## 1. EVENT

Location: Jamaica, New York

Date: October 5, 2014

Aircraft: Embraer S.A. EMB-145, N572RP Operated by  
Chautauqua Airlines as Flight 6087

and

Airbus A340, JY-AID Operated by  
Royal Jordanian Airlines as Flight 261

NTSB Number: DCA15FA004AB

## 2. GROUP

A group was not convened.

## 3. SUMMARY

On October 5, 2014, about 1852 eastern daylight time (EDT), at John F. Kennedy International Airport (JFK), Jamaica, New York, Royal Jordanian Airlines ("Jordanian") flight 261, an Airbus A340, registration JY-AID, struck the vertical stabilizer of Chautauqua flight 6087, an EMB-145, N572RP, while taxiing northwest bound on taxiway A. The Embraer S.A. EMB-145 was stationary on taxiway Q. The EMB-145 sustained substantial damage and the A340 sustained minor damage. There were no injuries to the 180 passengers and crewmembers onboard Jordanian Airlines flight 261 or the 48 passengers and crewmembers on board Chautauqua Airlines flight 6087. The A340 was operating under the provisions of 14 *Code of Federal Regulations* Part 129 and the EMB-145 was operating under the provisions of 14 *Code of Federal Regulations* Part 121.

## 4. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following CVRs:

Aircraft: **Chautauqua Airlines, N572RP**  
Recorder Manufacturer/Model: **Honeywell 6022**  
Recorder Serial Number: **06732**

Aircraft: **Jordanian Airlines, JY-AID**  
Recorder Manufacturer/Model: **Honeywell 6022**  
Recorder Serial Number: **13019**

### 4.1. Chautauqua Airlines, N572RP Recorder Description

Per federal regulation 14 CFR 121.359, large turbine engine powered aircraft operating under 14 CFR Part 121 must be equipped with a CVR that records a minimum of the last 2 hours 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 2 hours of CVR operation. This model CVR, the Honeywell 6022, is a solid-state CVR that records 2 hours of digital cockpit audio. The recorded audio data is separated by the Honeywell download software into 2 sets of audio data files: a) a 2-channel recording containing the last 2 hours of recorded events and b) a 4-channel recording containing the last 30 minutes of recorded events. During the 2-hour portion of the recording, one channel contains audio information from the cockpit area microphone (CAM) and the other channel contains a mixture of two audio sources: the captain's audio panel information and the first officer's audio panel information. The 30-minute portion of the recording contains 4 channels of audio data; one channel for each flight crew and one channel for the CAM audio information.

#### 4.1.1. Chautauqua Airlines, N572RP Recorder Damage

Upon arrival at the Vehicle Recorder Division, 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.

#### 4.1.2. Chautauqua Airlines, N572RP CVR Channels

The pertinent part of the recording consisted of two channels of audio information. The quality of these two channels was excellent.<sup>1</sup>

#### 4.1.3. Chautauqua Airlines, N572RP Timing and Correlation

The times used in this report are expressed as local time of the accident, EDT.

---

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

Timing of this summary was established by correlating a radio transmission made by Chautauqua 6087 at 0009:06 CVR Elapsed Time (time from the beginning of the recording) to the same transmission recorded by ATC at 2240:48 UTC. Additionally, 4 hours was subtracted from UTC to convert to EDT. Accordingly, 1831:42 was added to Chautauqua 6087's CVR Elapsed Time to convert to EDT.

## **4.2. Jordanian Airlines, JY-AID Recorder Description**

Per federal regulation 14 CFR 129.24, aircraft operating under 14 CFR Part 129 must be equipped with a CVR that records a minimum of the last 2 hours 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 2 hours of CVR operation. This model CVR, the Honeywell 6022, is a solid-state CVR that records 2 hours of digital cockpit audio. The recorded audio data is separated by the Honeywell download software into 2 sets of audio data files: a) a 2-channel recording containing the last 2 hours of recorded events and b) a 4-channel recording containing the last 30 minutes of recorded events. During the 2-hour portion of the recording, one channel contains audio information from the cockpit area microphone (CAM) and the other channel contains a mixture of two audio sources: the captain's audio panel information and the first officer's audio panel information. The 30-minute portion of the recording contains 4 channels of audio data; one channel for each flight crew and one channel for the CAM audio information.

### **4.2.1. Jordanian Airlines, JY-AID Recorder Damage**

Upon arrival at the Vehicle Recorder Division, 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.

### **4.2.2. Jordanian Airlines, JY-AID CVR Channels**

The pertinent part of the recording consisted of two channels of audio information. One channel contained mixed audio panel content and was excellent. The other channel contained CAM information and the quality of this channel was good. Most of the intra-cockpit discourse on the ground was recorded on the CAM channel rather than the audio panel channel.

### **4.2.3. Jordanian Airlines, JY-AID Timing and Correlation**

The times used in this report are expressed as local time of the accident, EDT.

Timing of this summary was established by correlating a radio transmission made by Chautauqua 6087 at 0029:47.692 CVR Elapsed Time (corresponding to 1901:29.6 EDT; see section 4.1.3 of this report) to the same transmission recorded by Jordanian Airlines Flight 261 at 0130:12.4 CVR Elapsed Time. Accordingly, 1731:17.2 was added to Jordanian 261's CVR Elapsed Time to convert to EDT.

### 4.3. Summary of Recording Contents

In agreement with the Investigator-In-Charge, a CVR group did not convene and only this summary report was prepared. Figure 1 shows a graphical overview of select events on both CVRs; events related to Chautauqua 6087 are shown on the top and events related to Jordanian 261 are shown on the bottom.

Chautauqua 6087 landed on 22R and was told to taxi via Juliet and Alpha to the ramp. When Chautauqua 6087's Lima-Lima taxiway was blocked, ground instructed Chautauqua 6087 to taxi on Alpha and hold short of Quebec taxiway. Chautauqua 6087's crew discussed the location of Mike-Bravo and Quebec taxiways and then decided to move up. Chautauqua 6087's captain then made a passenger announcement about the taxi delay. The collision occurred shortly thereafter.

Jordanian 261 landed on runway 22L and was held short of runway 22R on Juliet. Tower instructed Jordanian 261 to cross runway 22R on Juliet taxiway and proceed onto Alpha taxiway and contact ground. Ground then instructed Jordanian 261 to taxi on Alpha to the ramp. Operations told Jordanian 261 to enter the gate area at taxiway November-Bravo. As Jordanian 261 approached Chautauqua 6087, the crew discussed if they were too close. After Chautauqua 6087 advised ground of the collision, ground instructed Jordanian 261 to hold position.

Figure 1. Select events on both CVRs; times rounded to nearest minute.

Chautauqua 6087	Rollout 22R, Tower: taxi via J, A to ramp	Ops: enter LL taxiway	Tells Ops, holding short of LL	Ground: taxi A, Q, hold short PA; amended to taxi A short Q		Discusses position of taxiways Q, MB	Discuss moving up farther	Passenger announcement taxi delay	Sound of collision	Advises ground of collision
EDT	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852
Jordanian 261					Tower: cross 22R at J, taxi straight ahead to A	Ground: taxi via A to ramp; Ops says enter at NB			Crew discusses being too close	Ground: hold position

Note: In narrative, taxiways are: J is Juliet, A is Alpha, LL is Lima-Lima, Q is Quebec, PA is Papa-Alpha, MB is Mike-Bravo, NB is November-Bravo.

#### 4.3.1. Events as Recorded on Chautauqua Airlines Flight 6087, N572RP's CVR

Chautauqua 6087's recording began at 1831:42 EDT when Chautauqua 6087 was being vectored for landing on runway 22 right at JFK.

At 1843:22 EDT, as Chautauqua 6087 was rolling out after landing on runway 22 right, tower instructed Chautauqua 6087 to exit the runway on taxiway Juliet, continue on taxiway Alpha to the ramp, and monitor ground. Chautauqua 6087's first officer read back the taxi instructions.

At 1844:42 EDT, Chautauqua 6087's first officer called operations to advise they were on the ground for spot Charlie. Operations advised Chautauqua 6087 to enter through taxiway Lima-Lima because taxiway Lima-Alpha was closed. Chautauqua 6087's first officer told the captain about the entry change to Lima-Lima, advising the captain to stop and let other traffic exit at Lima-Lima. Chautauqua 6087's captain responded, verifying the changed entry taxiway with the first officer.

At 1844:56 EDT, Chautauqua 6087's first officer called operations and advised they were holding short of Lima-Lima to allow another aircraft to exit. Operations advised Chautauqua 6087 there were two more aircraft to exit and suggested Chautauqua 6087 contact ground to advise of the delay.

Before Chautauqua 6087's first officer could advise ground of the delay, at 1845:18 EDT, ground asked Chautauqua 6087 if they were waiting for Lima-Lima. Chautauqua 6087's first officer advised ground they were short of Lima-Lima and were waiting for two aircraft to "vacate." Ground told Chautauqua 6087 to hold their position.

At 1845:42 EDT, Chautauqua 6087's captain asked the first officer what spot they were parking at; the first officer replied the spot was Charlie.

At 1845:45 EDT, Ground instructed Chautauqua 6087 to continue "Alpha and Quebec hold short of Papa-Alpha." Chautauqua 6087's first officer read back, "Alpha Quebec hold short Papa-Alpha, Chautauqua sixty eighty seven." Ground then told another aircraft the taxi instruction was not for them and then directed the other aircraft to hold short of Alpha.

At 1845:58 EDT, Chautauqua 6087's captain began to say "Alpha Quebec" on the intercom, as ground amended the taxi instructions to "continue cr-- Alpha hold short of Quebec." Chautauqua 6087's first officer read back, "Alpha short Quebec, Chautauqua sixty eighty seven." On the intercom Chautauqua 6087's first officer said, "Alpha short of Quebec then they'll loop us around to the left." The crew discussed the taxi instructions, while commenting on a ground controller discussion with another aircraft about delays.

At 1847:06 EDT, Chautauqua 6087's crew discussed the location of parking spot Charlie.

At 1847:29 EDT, the Chautauqua 6087's first officer asked the captain an unintelligible question, to which the captain replied "sure." This was followed by the sound of a few clicks and an engine-like whining sound decreasing in intensity and frequency. The crew then discussed a nearby aircraft, noting it appeared to be an Alitalia Boeing 777.

At 1847:59 EDT, Jordanian 261 reported to ground that they were on taxiway Alpha. Ground instructed Jordanian 261 to continue on Alpha to the ramp. Jordanian 261 read this instruction back.

Chautauqua 6087's crew then had the following discussion<sup>2</sup>:

1848:17.8 EDT	First Officer	short...
1848:18.6 EDT	Captain	right here right?
1848:19.3 EDT	First Officer	...Quebec...yeah.
1848:21.1 EDT	First Officer	should be like right here.
1848:24.8 EDT	First Officer	yeah.
1848:24.8 EDT	Captain	well this is Mike-Bravo but Quebec is the next.
1848:28.3 EDT	?	[unintelligible]
1848:29.3 EDT	First Officer	so.
1848:35.5 EDT	Captain	I think ah it's the next one but at least we can't get in trouble for stopping here. just in case. they'll just say pull up.
1848:44.5 EDT	Captain	that would actually get us off Alpha if we went up there.
1848:47.5 EDT	First Officer	alright do it then.
1848:48.6 EDT	Captain	yeah.
1848:51.8 EDT	First Officer	cause' it looks like you're on Quebec as soon as you...start going this way.
1848:58.9 EDT	First Officer	see you're on Quebec right now. right?
1849:01.4 EDT	Captain	well this is Mike-Bravo.
1849:04.6 EDT	First Officer	how about that sign right there. it says you're on Quebec.
1849:07.6 EDT	Captain	yeah. I'll stop short of this. it looks like the hold short bull#.
1849:12.5 EDT	First Officer	'cause that's Bravo.
1849:16.3 EDT	First Officer	well whatever it's not clear.
1849:17.8 EDT	Captain	naw' I'm with yah.
1849:23.3 EDT	Captain	I was thinking he just wanted me off Alpha. but he said Alpha short of Quebec.
1849:30.6 EDT	Captain	he's gonna' come back and be like I told you not to get on Quebec.
1849:38.6 EDT	Captain	oh man.

Chautauqua 6087's crew then began discussing another employee who had recently left the company. At 1850:20 EDT, Chautauqua 6087's captain made a passenger announcement explaining the delay.

At 1851:08.5 EDT, sounds of rustling were recorded as Chautauqua 6087's crew intra-cockpit discourse stopped being recorded on the intercom and were only recorded on the CAM.

At 1851:32.8 EDT, Chautauqua 6087's CAM recorded sounds of rustling and reaction by the crew, similar to a collision. Chautauqua 6087's crew then discussed that another aircraft hit them.

After sounds of rustling, Chautauqua 6087's crew intra-cockpit discourse was again recorded on the intercom. At 1852:01.7 EDT, Chautauqua 6087's captain reported to JFK Ground that they had been hit by the Jordanian aircraft.

---

<sup>2</sup> # is a replacement character for an expletive; editorial comments are enclosed in [square brackets].

After the collision, Chautauqua 6087:

- confirmed with the flight attendant there were no injuries;
- coordinated with ground to inspect the exterior of the airplane;
- informed Chautauqua operations of the collision and arranged a gate;
- made an operationally related cell phone call about the collision;
- discussed the taxi instructions they were given, noting they had written down the taxi instructions and complied with the instructions;
- discussed their long duty day; and
- taxied under their own power to the gate.

By 1934:17 EDT, Chautauqua 6087 resumed taxiing with a ground vehicle escort.

By 1939:43 EDT, Chautauqua 6087 arrived at the gate. Chautauqua operations asked the crew not to open the cabin door until further safety/operational concerns were addressed.

By 2002:40 EDT, Chautauqua 6087's crew opened the aircraft door and began to deplane. After deplaning, the crew made additional phone calls related to the collision.

At 2035:46.3 EDT, power was removed from the CVR.

At an unknown time, the CVR was powered on again for about 30 seconds, recording maintenance personnel discussing pulling the CVR circuit breaker.

#### **4.3.2. Events as Recorded on Jordanian Airlines Flight 261, JY-AID's CVR**

Intra-aircraft communications were in English and Arabic. Select portions of the Arabic discourse were idiomatically translated to English for the purpose of this summary.

Jordanian 261's recording began at about 1817:36 EDT, as the aircraft was descending for landing at JFK.

At about 1836:56 EDT, Jordanian 261 touched down on runway 22L at JFK. As Jordanian 261 was rolling out on runway 22L, tower instructed the aircraft to "turn right here, taxi via Juliet hold short runway two two right." Jordanian 261 read back the instruction.

At 1847:08 EDT, tower instructed Jordanian 261 to "cross runway two two right at Juliet. traffic's two and a half miles out. no delay. straight ahead to Alpha. ground point niner." Jordanian 261 read back in the instruction. Jordanian 261's crew then spoke in English, restating the taxi instructions and confirming left and right was clear.

At 1847:50 EDT, Jordanian 261 switched off of JFK Tower frequency.

At 1847:56 EDT, Jordanian 261 contacted ground saying they were on taxiway Alpha. Ground instructed Jordanian 261 to "taxi Alpha to the ramp." Jordanian 261 read back the instruction.

At 1848:17 EDT, Jordanian 261 contacted ramp control. Ramp control told Jordanian 261 to enter at November-Bravo for Gate 3. Jordanian 261 read back the taxiway entry and gate to operations.

At 1850:39 EDT, Jordanian 261's crew spoke in Arabic about their taxi instructions and entry to the ramp via a taxiway on the right.

Jordanian 261's crew then had the following discussion, in a mix of Arabic and English (where the source language was Arabic, the line is underlined):

1851:05.2 EDT	Captain	<u>this one. correct?</u>
1851:06.8 EDT	First Officer	<u>correct.</u>
1851:09.6 EDT	First Officer	<u>you don't have. [unintelligible]. too close.</u>
1851:14.0 EDT	First Officer	<u>too close.</u>
1851:15.3 EDT	First Officer	captain very close.
1851:17.3 EDT	Captain	is it?
1851:17.7 EDT	First Officer	yes very very close [said with urgency].
1851:18.8 EDT	Captain	I'll taxi at.
1851:20.7 EDT	First Officer	very close.
1851:24.0 EDT	Captain	<u>from my side. I see. I see.</u>
1851:28.3 EDT	Captain	is clear?
1851:35.1 EDT	Captain	clear?
1851:41.0 EDT	??	<u>yes. I see from my side.</u>

At 1852:01.7 EDT, Chautauqua 6087's captain reported to JFK Ground that they had been hit by the Jordanian aircraft. Ground instructed Jordanian 261 to hold position. Jordanian 261 read back in the instruction.

After the collision, Jordanian 261:

- spoke in a mix of Arabic and English,
- spoke with ground to verify any damage to the aircraft and that there were no injuries, and
- coordinated taxiing to the gate.

By 1916:01 EDT, Jordanian 261 resumed their taxi to the gate.

By 1920:34 EDT, Jordanian 261 began the parking checklist in English.

Power was removed from the CVR at 1925:49 EDT.

At unknown time, the CVR was powered on again for about 3 minutes, recording maintenance personnel discussing pulling the CVR circuit breaker.

## 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.