

**NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Vehicle Recorder Division
Washington, D.C. 20594**



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

ERA15FA129

**By
Joe Gregor**

WARNING

The reader of this report is cautioned that the transcript of a cockpit voice recorder audio recording is not a precise science but is the best product possible from a Safety Board group investigative effort. The transcript or parts thereof, if taken out of context, could be misleading. The transcript 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 transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

March 1, 2016

Cockpit Voice Recorder

Group Chairman's Factual Report
By Joe Gregor

1. EVENT SUMMARY

Location: Miami, Florida
Date: February 11, 2015
Aircraft: Beechcraft 1900C, Registration YV1674
Operator: Aeropanamericano CA
NTSB Number: ERA15FA129

On February 11, 2015, at 1439 eastern standard time, a Beech 1900C, Venezuelan registration VY1674, registered to and operated by Aeropanamericano, C.A., was destroyed during collision with terrain, following a loss of engine thrust during initial climb from Kendall-Tamiami Executive Airport (KTMB), Miami, Florida. The repositioning flight was conducted under the provisions of 14 *Code of Federal Regulations* Part 91. The cockpit voice recorder (CVR) Group convened on 28 April, 2015 and a transcript was prepared for the 30-minute, 34-second solid state recording (see attached).

2. GROUP

Chairman:	Joseph A. Gregor Electrical Engineer National Transportation Safety Board (NTSB)
Member:	Paul Cox Air Safety Investigator NTSB
Member:	Rafael Manautou Air Safety Investigator Federal Aviation Administration

Member: Ricardo J. Asensio
Air Safety Investigator
Textron Aviation

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Fairchild A-100S**
Recorder Serial Number: **02984**

3.1 CVR Carriage Requirements

Per federal regulation, multiengine aircraft with more than six 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 prior to 1989. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes of recorded information.

3.2 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).

Figure 1. Fairchild A-100S CVR recovered from the Beech 1900C, YV1674.



3.3 Audio Recording Description

Each channel's audio quality is indicated in Table 1.¹ Channel number three did not contain any audio information (nor was it required by federal regulations).

Table 1: Audio Quality.

Channel #	Content/Source	Quality	Duration
1	CAM	Poor	30 min
2	Unknown	Poor	30 min
3	Unknown	Poor	30 min
4	Unknown	Poor	30 min

3.4 Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR). Specifically, ten radio transmissions that the aircraft made were correlated to the radio transmit microphone key parameter from the FDR. Each of the ten radio transmissions acted as an anchor point for a linear interpolation between the remaining CVR events. Once a correlation between the two recorders was established, a reference to local time was determined. Using a partial transcript from the FAA Tamiami Airport Traffic Control Tower the UTC time of the final radio transmission from the accident aircraft was linked to the corresponding CVR event. The CVR and FDR times were offset to reflect the local eastern standard time in use on the date of the accident.

The first 18 minutes, 8 seconds of the recording pertained to ground maintenance operation performed some time prior to the accident flight. The CVR recording included seven instances of electronic noise consistent with a cycling of power to the recorder. Since an unknown amount of time passed for each transitions, no attempt was made to correlate this portion of the recording.

3.5 Description of Audio Events

The first 18 minutes, 8 seconds of the recording pertained to ground maintenance operation performed some time prior to the accident flight. Speech recorded during this portion of the CVR recording was almost entirely in Spanish. The recorded portion of the accident flight began at 1426:19 EST, at the time of the last recorded electronic power transition and continued to the end of the recording at 1439:21 EST. A transcript of the recording follows.

¹ 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:

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.

Transcript of a Fairchild A-100S solid-state cockpit voice recorder, serial number 02984, installed on an Aeropanamericano CA Beechcraft 1900C (YV1674), which crashed after takeoff at Kendall-Tamiami Executive Airport (KTMB) in Miami, Florida.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmission from YV1674
GND	Radio transmission from the KTMB ground controller
TWR	Radio transmission from the KTMB airport tower controller
-1	Voice identified as the pilot
-2	Voice identified as the first officer
-?	Voice unidentified
*	Unintelligible word
[]	Editorial insertion
{ }	English translation from Spanish

Note 1: All times are expressed in eastern standard time (EST).

Note 2: Generally, only radio transmissions to and from the accident aircraft were transcribed.

Note 3: Words shown with excess vowels, letters, or drawn out syllables are a phonetic representation of the words as spoken.

Note 4: A non-pertinent word, where noted, refers to a word not directly related to the operation, control or condition of the aircraft.

<u>TIME and SOURCE</u>	<u>INTRA-COCKPIT COMMUNICATION</u> <u>CONTENT</u>
Unknown	Start of Recording
14:26:54.9	Start of Transcript
14:26:54.9 CAM	[sound similar to electrical power transition].
14:26:55.3 HOT-2	{one zero eight is that what it is?}
14:26:58.7 HOT	*.
14:27:04.2 HOT	[sound similar to voices outside the cockpit].
14:27:06.6 CAM	[sound similar to electronic igniter noise].
14:27:35.2 HOT	[sounds consistent with engine start].
14:27:35.2 HOT	*. [sound similar to main entry door closing].
14:28:45.9 CAM	[sound similar to electronic igniter noise].
14:29:27.9 HOT	[unintelligible crew conversation].
14:31:00.5 HOT	[unintelligible crew conversation].

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION</u> <u>CONTENT</u>
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<u>TIME and SOURCE</u>	<u>INTRA-COCKPIT COMMUNICATION</u> <u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION</u> <u>CONTENT</u>
14:31:52.1 HOT-2	Tamiami ground * * one six seven four we're ready to taxi runway * * spot * *. * zero * *.	14:32:05.8 GND	* yankee victor one six seven four * ground advise * * spot one three.
		14:32:11.8 RDO-2	hold short spot one three.
		14:32:37.2 GND	yankee victor one six seven four runway two seven left taxi via echo remain on this frequency.
		14:32:44.5 RDO-2	via echo runway * * left * * frequency * *.
14:32:53.3 HOT	[unintelligible crew conversation].		
14:33:15.8 HOT	[unintelligible crew conversation].		
		14:34:23.2 GND	yankee victor one six seven four are you gonna complete this runup?
		14:34:27.1 RDO-2	affirmative.
14:34:30.6 HOT-?	* *,		

**TIME
and
SOURCE**

INTRA-COCKPIT COMMUNICATION
CONTENT

14:35:17.2
HOT

[unintelligible crew conversation].

14:36:08.3
HOT-1

{prepare for takeoff now.}

14:36:48.8
CAM

[sound similar to igniter electronic noise].

**TIME
and
SOURCE**

AIR-GROUND COMMUNICATION
CONTENT

14:34:49.1
GND

yankee victor one six seven four monitor the *
frequency one one eight point niner he will call
you when he's ready for you have a good flight.

14:34:56.9
RDO-2

* * one one * *.

14:35:01.3
RDO-2

Tamiami tower * * holding short runway * *.

14:35:06.7
TWR

yankee victor one six seven four Tamiami tower
hold short runway two seven left landing traffic.

14:35:11.5
RDO-2

hold short *.

14:36:44.9
TWR

yankee victor one six seven four Tamiami tower
fly runway heading runway two seven left
cleared for takeoff.

14:36:50.4
RDO-2

fly runway heading cleared for takeoff runway
two seven left.

<u>TIME and SOURCE</u>	<u>INTRA-COCKPIT COMMUNICATION</u> <u>CONTENT</u>
14:37:05.9 HOT-?	* *.
14:37:13.0 HOT-?	* * *.
14:37:22.0 CAM	[sound similar to engine power increase].
14:37:38.4 HOT-2	* alive.
14:37:51.2 HOT-2	V-1.
14:37:52.2 HOT-2	rotate.
14:37:54.6 HOT	[sound similar to decreasing engine sounds].
14:37:56.6 HOT-?	{engine is lost.}
14:38:03.9 CAM	[sound similar to electronic noise].

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION</u> <u>CONTENT</u>
14:38:12.8 RDO-?	* * *.
14:38:18.2 TWR	yankee victor one six four roger ah say intentions (do you wanna go back) around?
14:38:22.6 RDO-?	affirmative.

<u>TIME and SOURCE</u>	<u>INTRA-COCKPIT COMMUNICATION</u> <u>CONTENT</u>
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14:38:25.0 HOT	[sound of gear warning horn].
14:38:29.2 CAM	[sound similar to igniter electronic noise].
14:38:46.8 HOT-1	{what did he say?}
14:38:49.9 HOT-?	*.
14:38:52.0 HOT-?	*.
14:38:56.5 HOT	[unintelligible crew conversation].

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION</u> <u>CONTENT</u>
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14:38:24.0 TWR	one six seven four roger ah if you need to just make a one eighty and come back to the runway.
14:38:29.9 RDO-2	* * *.
14:38:35.4 TWR	yankee victor one six seven four if you need to make left traffic that's fine wind is a right now zero three zero at five.
14:38:44.4 RDO-2	three zero five.

<u>TIME and SOURCE</u>	<u>INTRA-COCKPIT COMMUNICATION</u> <u>CONTENT</u>
14:38:58.9 HOT	[unintelligible EGPWS Warning].
14:39:03.1 HOT	terrain [electronic voice].
14:39:04.4 HOT	[sound similar to stall warning horn].
14:39:04.9 HOT	[unintelligible crew conversation].
14:39:12.9 HOT	terrain, terrain. [electronic voice].
14:39:15.5 HOT-?	[unintelligible exclamation].
14:39:17	End of Transcript
14:39:20	End of Recording

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION</u> <u>CONTENT</u>
14:38:56.8 RDO-?	[unintelligible].
14:39:05.3 TWR	yankee victor one six seven four if you can make it to the runway runway niner right cleared to land.