NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, DC 20594

January 2, 2013

Cockpit Voice Recorder

Specialist's Summary Report
By Christopher Babcock

1. EVENT

Location:	Macon, Georgia
Date:	September 18, 2012, 1003 Eastern Daylight Time (CDT)[1]
Aircraft:	Hawker Beechcraft Corporation 400
Registration:	N428JD
NTSB Number:	ERA12LA567

2. GROUP

A group was not convened.

3. SUMMARY

On September 18, 2012, a privately operated Hawker Beechcraft Corporation 400, registration N428JD rolled off the departure end of runway 28 and down an embankment during the landing roll at Macon Downtown Airport, Macon, Georgia. The flight was operating under Title 14 Code of Federal Regulations (CFR) Part 91 as a business flight from Charleston International Airport, Charleston, SC. The plane sustained substantial damage and the airline transport rated pilots and one passenger sustained minor injuries. The tape cockpit voice recorder (CVR) from the aircraft was sent to the National Transportation Safety Board's Audio Laboratory for evaluation.

4. DETAILS OF INVESTIGATION

On September 20, 2012, the NTSB Vehicle Recorder Division's Audio Laboratory received the following CVR:

Recorder Manufacturer/Model: **Fairchild GA-100**
Recorder Serial Number: **01572**

4.2. Recorder Description

Per federal regulation, US registered aircraft requiring two pilots and containing six or more passenger seats manufactured prior to April 7, 2010, and operating under

[1] All times are expressed in local EDT, unless otherwise noted

14 CFR Part 91, must be equipped with a CVR that records a minimum of the last 30 minutes of audio data; 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 or 2 hours of aircraft operation, depending on the model.

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

4.3. 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.

4.4. CVR Channels

The recording consisted of four channels of audio information. One of the channels contained good quality audio information from the pilot's and, copilot's microphones.[2] One channel contained fair quality CAM audio information. The signal from the monitoring pilot's microphone was strong. The signal from the flying pilot's microphone was weak. The signal from each microphone was lost when the monitoring pilot made radio transmissions. Incoming audio transmissions were also had a weak signal.

4.5. Timing and Correlation

Timing on the recording was determined by synchronizing the VHF radio transmissions to the aircraft recorded on the CVR with identical transmissions from the air traffic control transcripts prepared by the FAA.

4.6. Summary of Recording Contents

The recording began at 9:37:37 EDT with the aircraft descending toward Macon. It contained events from cruise, descent, landing, and accident sequences. The recording ended at 1008:44 EDT, shortly after the aircraft departed the end of the runway. In agreement with the Investigator-In-Charge (IIC), a CVR group did not convene and a transcript was not prepared, however a summary of key events recorded on the CVR is attached to this report.

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[2] See Attachment I for the 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.

The following is a summary of selected events that occurred during the accident flight along with the timing of those events. All times are in local eastern daylight time.

Time (EDT)	Event
9:37:37	Start of recording
9:39:30	Pilot monitoring (PM) says he ran approach/descent checklist down to engine syncs item
9:42:34	ATC clears N428JD to descend to 11000 feet
9:47:29	ATC clears N428JD to descend to 8000 feet
9:48:44	ATC informs crew rain is over the field and clears N428JD to descend to 4000 feet
9:51:50	PNF reports "moderate" ride
9:52:41	ATC clears N428JD to descend to 3000 feet
9:56:59	ATC clears N428JD to descend to 2200 feet
9:59:52	Crew reports field in sight and is cleared for visual approach
10:00:02	PM continues checklist with syncs off, ignitions are on item
10:00:10	Increase in background noise similar to landing gear extension
10:00:14	Crew cancels IFR
10:00:27	Pilot flying (PF) calls for flaps 20
10:00:37	PM calls three green, no red
10:01:11	PF calls for flaps 30
10:01:38	PM calls winds reported at "other airport" 220 at 4 knots
10:01:50	Sound of several mic clicks
10:02:01	Sound of several mic clicks
10:02:20	Sound of several mic clicks
10:02:41	500 foot automated callout
10:03:11	PM calls "ref and 10"
10:03:19	Sound similar to touchdown
10:03:20	PF calls for speedbrakes, PM confirms
10:03:23	PM calls "hydroplaning"
10:03:26	Sound of increasing engine thrust similar to thrust reverser operation
10:03:42	Sound similar to aircraft exiting runway
10:03:57	Power interruption
+0:01*	Sound of aircraft movement stops
+0:14*	Sounds similar to engine shutdown
+0:49*	PM says he is going to get help
+4:47*	End of recording

* Time of event cannot be determined after power interruption to CVR. Represents elapsed minutes and seconds after power restored to CVR