

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

ERA19FA248

**By
Kyle Garner**

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 an NTSB 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

May 28, 2020

Cockpit Voice Recorder

Group Chairman's Factual Report By Kyle Garner

1. EVENT SUMMARY

Location: Elizabethton, Tennessee
Date: August 15, 2019
Aircraft: Cessna 680A, Registration N8JR
Operator: JRM Air, LLC.
NTSB Number: ERA19FA248

On August 15, 2019, about 15:37 eastern daylight time (EDT), a Textron Aviation Inc. 680A, registration N8JR, was destroyed during a runway excursion after landing at Elizabethton Municipal Airport (0A9), Elizabethton, Tennessee. The flight originated at Statesville Regional Airport (SVH), Statesville, North Carolina. The airline transport-rated pilot and co-pilot were not injured. The three passengers sustained minor injuries. The airplane was registered to JRM Air LLC and operated under the provisions of Title 14 *Code of Federal Regulations (CFR)* Part 91 as a business flight. Day, visual meteorological conditions prevailed, and no flight plan was filed. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group meeting convened on September 25, 2019, and a partial transcript was prepared for the recording (see attached).

2. GROUP

Chairman:	Kyle Garner Aerospace Engineer National Transportation Safety Board
Member:	Dan Morris Manager/Chief Pilot, Engineering Flight Test Textron Aviation
Member:	Todd Gentry Air Safety Investigator Federal Aviation Administration, AVP-100
Member:	Ralph Hicks Investigator-in-Charge (IIC) National Transportation Safety Board

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model:	L-3/Fairchild FA2100
Recorder Serial Number:	001287247

3.1 CVR Carriage Requirements

The accident aircraft was manufactured in 2015 and per federal regulation multiengine aircraft with more than six passenger seats and requiring two pilots manufactured after April 7, 2010, and operated under 14 CFR 91, 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.

3.2 Recorder Description

This model CVR, the L-3/Fairchild FA2100, records a minimum of 120 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).

3.3 Recorder Damage

Upon arrival at the laboratory, it was evident that the exterior of the CVR had sustained severe heat and structural damage. The outer case was removed, and the interior crash-protected case did not appear to have any heat or structural damage (see Figures 1 and 2). The memory board within the crash protected case was checked for heat and structural damage and none was found. The digital audio was successfully downloaded from the non-volatile memory¹ (NVM) using instructions from the manufacturer and NTSB lab equipment.

¹ Non-volatile memory is semiconductor memory that does not require external power for data retention.



Figure 1. CVR upon arrival at NTSB laboratory.

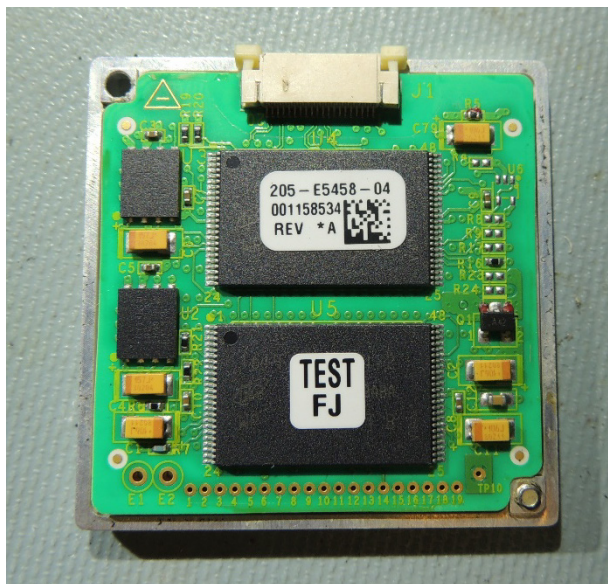


Figure 2. Condition of CVR NVM after removal from the crash-survivable unit.

3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1². Channel number one did not contain any audio information (nor was it required by federal regulations).

² See attached CVR Quality Rating Scale.

Table 1: Audio Quality.

Channel Number	Content/Source	Quality	Duration
1	N/A	N/A	02:04:05
2	HOT-1	Good	02:04:05
3	HOT-2	Good	02:04:05
4	Cockpit Area Microphone	Good	02:04:05

3.5 Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the Textron Aircraft Recording System (AReS). Textron Aviation provided the NTSB with Coordinated Universal Time (UTC) timestamps of key events during the accident flight. Specifically, the UTC timestamps of takeoff from KSVH and the first touchdown at 0A9 were correlated to the same events on the CVR. Once a correlation between the two recorders was established, UTC was then changed to local time, EDT, by subtracting four hours. Therefore, for the rest of this report, all times are referenced as EDT.

3.6 Description of Audio Events

The recording began during the previous flight when the aircraft was descending into KSVH. The recording of the accident flight from KSVH to 0A9 began when the aircraft was powered on at approximately 14:53:39. At 15:19:56 the CAM recorded sounds consistent with takeoff from KSVH. Approximately 8 minutes after takeoff from KSVH the aircraft began a descent into 0A9. The transcript begins approximately 6 minutes after takeoff from 0A9, at 15:26:01. At 15:37:49, the CAM recorded sounds consistent with the first touchdown at 0A9, and the recording ended at 15:38:31, 42 seconds later.

As part of the NTSB's accident investigation process, the flight crew was invited to review the CVR transcript and suggest corrections or additions. They have not responded to the invitation.

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 L-3/Fairchild FA2100-1025 solid-state cockpit voice recorder, serial number 001287247, installed on an JRM Air, LLC. Cessna 680A (N8JR), which crashed during landing at Elizabethton Municipal Airport in Elizabethton, Tennessee.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N8JR
-1	Voice identified as the pilot flying (PF)
-2	Voice identified as the pilot monitoring (PM)
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
[]	Editorial insertion

Note 1: Times are expressed in eastern daylight time (EDT).

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.

Time and
Source

Intra-Aircraft Communication

Time and
Source

Over-the-Air Communication

START OF ACCIDENT FLIGHT RECORDING

14:53:39

START OF TRANSCRIPT

15:26:01

HOT-1 seems like imma go to the right, right up here and get...
to miss that. I don't think there's anything behind that
one. or I might have to go up.

15:26:22

HOT-2 whatever you want to do.

15:26:34

HOT-1 I didn't think we'd get below it.

15:27:56

HOT-2 * do you wanna try to go through that hole over there?
cause we're gonna * *

15:28:00

HOT-1 think that one?

15:28:01

HOT-2 yeah, I think that one, and stay to the-

15:28:03

HOT-1 * on past that one?

15:28:04

HOT-2 I mean I don't know. I mean I just- I don't know if there's
a * * - I can see that hole there.

15:28:08

HOT-1 all right.

15:28:09

HOT-2 what do you think?

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:28:09 HOT-1	let's go that way.		
15:28:10 HOT-2	or we can go- or we can keep goin' and go. I mean I don't- we're supposed to start descent here in just uh-		
15:28:14 HOT-1	here in just a minute.		
15:28:15 HOT-2	I see a hole there.		
15:28:17 HOT-1	got down right there. is that what you was talkin' about?		
15:28:19 HOT-2	yeah you can see the hole, right? that I'm talkin' about?		
15:28:20 HOT-1	yeah.		
15:28:21 HOT-2	yeah, I'll just * * there and you can just maneuver yourself-		
15:28:21 HOT	[sound similar to alert chime]		
15:28:24 HOT-2	its just- * * * comin' in on the * * set up on the base		
15:28:27 HOT-1	exactly.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:28:29 HOT-2	alright, so I'll put-		
15:28:29 HOT-1	I think I can see through it. I'm lookin' through it.		
15:28:32 HOT-2	yeah, I'm lookin' through it too cause I can see the top of that ridgeline down there.		
15:28:34 HOT-1	that's what I think I was lookin' at. I mean that's perfect... that's where we wanna go.		
15:28:37 HOT-2	I'll give you a heading.		
15:28:40 HOT-1	yeah, I'm just- yeah, I'm lookin' out.		
15:28:43 HOT-2	I know. well I'm just tryin' to- I mean to make everything line up is what I'm tryin'. so, if you look inside the cr-		
15:28:48 HOT-1	I understand. I understand. yeah, that's a good thing.		
15:29:02 HOT-2	and I don't think there's anything to that runway is there? it's all to the other runway.		
15:29:05 HOT-1	that's what I was thinkin'. I don't know what that guy was doing.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:29:09 HOT-2	I'm sure he's just doin' a- alright so imma just gonna do ya O-B-F. sound okay?		
15:29:14 HOT-1	yeah that's fine. so, if I do my *		
15:29:19 HOT-?	* is that's what *		
15:29:21 HOT-2	I can't- you can't mess around with it.		
15:29:23 HOT-1	* * * *		
15:29:26 HOT-2	exactly.		
15:29:28 HOT-2	there ya go. just lines you up with the runway.		
15:29:30 HOT-1	all right.		
15:29:45 HOT-?	* * *		
15:29:48 HOT-1	* * just getting down where *		
15:29:58 HOT-1	cause that ridgeline is the one we gotta cross right? Isn't it down the other side *		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:30:02 HOT-2	yeah well this is what I'm tal- * come in right here.		
15:30:05 HOT-1	right.		
15:30:05 HOT-2	and make that le- there's that little gap in there and that leads you right to the-		
15:30:10 HOT-1	dontcha think that's the one we're lookin' at?		
15:30:12 HOT-2	yeah, uh nah I'd have no clue. I don't know.		
15:30:18 HOT-2	imma say no.		
15:30:19 HOT-1	you don't?		
15:30:20 HOT-2	I don't know.		
15:30:22 HOT-1	okay.		
15:30:22 HOT-2	I don't know, I-		
15:30:28 HOT-2	alright imma switch over to Elizabethton.		
15:30:30 HOT-2	[sound similar to radio frequency change]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:30:31 HOT-1	okay.		
15:30:33 HOT-2	I'm goin' to let you keep goin' down so you can see.		
15:30:35 HOT-1	yup, I can see.		
		15:30:44 RDO-2	Elizabethton traffic uh-, Citation eight-Juliet-Romeo is about twenty miles to the uh- southeast inbound for a left base entry runway two four Elizabethton.
15:30:58 HOT-2	yeah, I guess that is the ridgeline cause in the next-		
15:31:01 HOT-1	* * * I think it's in this valley *		
15:31:03 HOT-2	yeah, you're right. it's right in that valley.		
15:31:04 HOT-1	well that's what I was shootin' for, that lowest part right there. and then turn final.		
15:31:18 HOT-1	cause it runs down that valley, don't it?		
15:31:20 HOT-2	so, you got this guy right here.		
15:31:22 HOT-1	he's above us, right?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:31:22 HOT-2	a thousand feet descending.		
15:31:24 HOT-1	wonder where he's goin'?		
15:31:27 HOT-1	he might not be able to see us.		
15:31:35 HOT-1	there's your-, there's your river.		
15:31:38 HOT-2	yup.		
15:31:42 HOT-2	I'm goin' to turn you to the left a little. after * *		
15:31:45 HOT-1	yeah that's fine. I'm plenty * *. I'm clear, I'm clear of them.		
15:31:48 HOT-2	you're above that, aren't you? yeah, I just don't know where he's goin'. I can't tell.		
15:31:53 HOT-1	I've been tryin' to find the airport. I do not see it.		
15:31:55 HOT-2	you don't * *		
15:31:56 HOT	[sound similar to alert tone]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:31:57 HOT-2	yeah, you're not even over it- you're not even over the- in between these ridgelines yet, I mean- it's that one over there.		
15:32:01 HOT-1	that was the one that you gotta get over, right?		
15:32:02 HOT-2	yup.		
15:32:08 HOT-1	yeah.		
15:32:09 HOT-2	I'm sorry * *. wrong way.		
15:32:11 HOT-1	well it wouldn't hurt to slow down.		
15:32:12 HOT-2	[here/there] ya go.		
15:32:12 HOT-2	gonna put altitude, let's put forty five- well I don't know how high that is. let's put- let's put fifty five let's just level off right here. fifty five. to get over that ridgeline. so it doesn't yell at us.		
15:32:22 HOT-1	it's goin' to if you don't.		
		15:32:25 RDO-2	Elizabethton traffic, Citation eight-Juliet-Romeo is fifteen miles southwest setting up for a wide left base runway two six Elizabethton.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:32:38 HOT-2	yeah that guy quit descending, whatever he was doin'.		
15:32:40 HOT-1	yeah, he did.		
15:32:41 HOT-2	there's an airport right there.		
15:32:42 HOT-1	an airport?		
15:32:43 HOT-2	yeah, six alpha four.		
15:32:45 HOT-1	I don't know what that is.		
15:32:46 HOT-2	I don't know either, we'll have to look it up later.		
15:32:51 HOT-1	well we hadn't heard any-		
15:32:52 HOT-2	that's the ridgeline I thought we was goin', oh, way over there.		
15:32:55 HOT-1	yeah.		
15:32:55 HOT-2	we're way far, we're * * twelve mile final .		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:33:16 HOT-2	you're way way out on-		
15:33:18 HOT-1	alright imma start turnin' in.		
		15:33:27 RDO-2	Elizabethton traffic, Citation eight-Juliet-Romeo is uh- on a uh- twelve mile final runway two four, Elizabethton.
15:34:14 HOT-1	it's not that next line, is it?		
15:34:15 HOT-2	no no no, you're comin' on * * you just dogleg. I don't think it's * the next one, do you?		
15:34:20 HOT-1	I don't see it down here.		
15:34:22 HOT-2	well it might be. we might have to climb up *		
15:34:25 HOT-1	I think it is. see how dark it is right there? * * *		
15:34:36 HOT-1	that's that ridge so...		
15:34:37 HOT-2	well I wouldn't turn- I wouldn't turn to the right anymore. I would just climb right where you are.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:34:44 HOT-1	yeah, that's what it was.		
15:34:57 HOT-1	alright, I think I see it over there now. I think I see it. I don't know if that's it or not.		
15:35:07 HOT-1	yeah ** well that's the road *		
15:35:09 HOT-2	I see it. no **		
15:35:10 HOT	terrain, terrain [electronic voice].		
15:35:12 HOT-1	I know, I know.		
15:35:13 HOT	whoop, whoop, pull up [electronic voice].		
15:35:30 HOT-2	you see it, right?		
15:35:31 HOT-1	yeah, I got it.		
		15:35:32 RDO-2	Elizabethton traffic, Citation eight-Juliet-Romeo is in a- uh seven mile final runway two four, Elizabethton.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:35:39 HOT-2	it is twenty four nothin', right? or twenty three nothin', right? yeah, twenty three nothin', yeah that's it. that's it. it's on the chart.		
15:35:42 HOT-1	mmh I didn't look at it.		
		15:36:07 RDO-2	Elizabethton traffic, Citation eight-Juliet-Romeo is in a five mile final runway two four, Elizabethton.
15:36:12 HOT-1	okay flaps one.		
15:36:13 HOT-2	okay, speeds good.		
15:36:17 HOT-2	I can get it if you just tell me.		
15:36:18 HOT-1	a hundred sixty five.		
15:36:27 HOT-1	* come off.		
15:36:28 HOT	auto throttle [electronic voice].		
15:36:29 HOT-1	* slow down.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:36:31 HOT-1	let's go ahead and get the uh- gear down.		
15:36:3 HOT-2	alright, as soon as you slow down I will.		
15:36:36 HOT-1	okay.		
15:36:41 HOT	sink rate [electronic voice].		
15:36:42 HOT-1	I know.		
15:36:49 HOT-2	I can get the gear now.		
15:36:50 HOT-1	alright, gear down.		
15:36:53 HOT-1	and as soon as you can, get flaps two.		
15:36:55 HOT-2	okay, I'll give you flaps two.		
		15:36:57 RDO-2	Elizabethton traffic, Citation eight-Juliet-Romeo is a uh- mile final runway two four.
15:36:59 HOT	caution terrain, caution terrain [electronic voice].		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:37:05 HOT-1	and-		
15:37:09 HOT	caution terrain, caution terrain, terrain, terrain, pull up, pull up, terrain, terrain, pull up, pull up [electronic voice].		
15:37:15 HOT-1	* clear.		
15:37:17 HOT-2	flaps full, I see 'em.		
15:37:23 HOT	five hundred [electronic voice].		
15:37:26 HOT-2	and I don't need to tell ya, we're really fast.		
15:37:29 HOT-1	I'm at idle.		
15:37:32 HOT-1	do I need to go around?		
15:37:33 HOT-2	no.		
15:37:34 HOT-1	I got the speed brakes out.		
15:37:35 HOT-2	well you should get rid of those because we don't wanna get a CAS m- or a thing sent to ya.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:37:41 HOT-1	alright, I'll be on the T-Rs quickly.		
15:37:49 HOT	[sound similar to touchdown].		
15:37:50 HOT-1	sorry.		
15:37:52 HOT-1	damn @ [REDACTED].		
15:37:53 HOT	[sound similar to touchdown].		
15:37:53 HOT	[sound similar to alert chime].		
15:37:55 HOT	[sound similar to three alert double chimes].		
15:38:02 HOT-1	# [REDACTED].		
15:38:03 HOT	[sound similar to touchdown].		
15:38:04 HOT	[sound similar to double alert chime].		
15:38:05 HOT	[sound similar to alert chime].		
15:38:09 HOT-1	hold *, hold *. hang on. hang on.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
15:38:12 HOT	[sound similar to alert chime].		
15:38:14 HOT-?	[sound similar to grunt].		
15:38:15 HOT	[sound similar to ELT].		
15:38:23 HOT	[sound similar to three alert chimes].		
15:38:36 END OF TRANSCRIPT END OF RECORDING			