

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

CEN16MA036

**By
Bill Tuccio, Ph.D.**

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 29, 2016

Cockpit Voice Recorder

Group Chairman's Factual Report
By Bill Tuccio, Ph.D.

1. EVENT SUMMARY

Location: Akron, Ohio
Date: November 10, 2015
Aircraft: British Aerospace HS 125-700A, Registration N237WR
Operator: Execuflight, "Zipline" Flight 1526
NTSB Number: CEN16MA036

On November 10, 2015, about 1452 eastern standard time (EST), Execuflight flight 1526, a British Aerospace HS 125-700A, N237WR, departed controlled flight while on approach to land at the Akron Fulton International Airport (AKR) and impacted a 4-plex apartment building in Akron, Ohio. The pilot, co-pilot, and seven passengers were fatally injured; there were no reported ground injuries. The airplane was destroyed by impact and postimpact fire. The airplane was registered to Rais Group International NC LLC., and operated by Execuflight, as a Title 14 *Code of Federal Regulations* (CFR) Part 135 on-demand charter flight. Instrument meteorological conditions prevailed at the time of the accident, and the flight was operated on an instrument flight rules (IFR) flight plan. The flight originated from Dayton-Wright Brothers Airport (MGY), Dayton, Ohio, at 1413 EST and was destined for AKR. A tape cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group meeting convened on November 17, 2015 and a transcript was prepared for the 30-minute tape recording.

2. GROUP

Chairman: Dr. Bill Tuccio
Aerospace Engineer
NTSB

Member: Adam Gerhardt
Air Safety Investigator
NTSB

Member: Nathan Rohrbaugh
Air Safety Investigator
Federal Aviation Administration

Member: Richard Recker
Chief Flight Test Pilot
Textron Aviation¹

Member: Richard Ruvido
Chief Pilot
Execuflight

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Fairchild GA-100**
Recorder Serial Number: **00044**

3.1 CVR Carriage Requirements

Per federal regulation, a multiengine, turbine-powered airplane having a seating configuration of six passengers or more for which two pilots are required, operating under 14 CFR Part 135, manufactured before 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. The accident aircraft was manufactured in 1979. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes of CVR operation.

3.2 Recorder Description

This model CVR, the Fairchild GA-100, records a minimum of 30 minutes of analog audio on a continuous loop tape in a four-channel format: 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 been exposed to a significant amount of heat. 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 magnetic tape was undamaged, as shown in figure 3. The magnetic tape was retrieved from within the crash-protected case and was successfully read out.

¹ Textron Aviation represented the aircraft manufacturer.

Figure 1. CVR as received.



Figure 2. CVR crash-protected case (opened).



Figure 3. Magnetic tape.



3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1.² Channel number four did not contain any usable audio information (nor was it expected to by federal regulations). The quality of all channels was degraded by a loud tone of approximately 400 Hz and associated harmonics, which resulted in channels one through three having poor quality. For a discussion of CVR maintenance history, see the CVR Maintenance History Factual Report in the public docket.

Table 1: Audio Quality.

Channel Number	Content/Source	Quality	Duration
1	Co-pilot	Poor	30 min
2	CAM	Poor	30 min
3	Pilot	Poor	30 min
4	Unknown	Unusable	30 min

² See attached CVR Quality Rating Scale.

3.5 Timing and Correlation

Timing on the transcript was established by correlating two radio transmissions recorded on the CVR to the same transmissions on the Akron-Canton air traffic control (ATC) west radar recording. Specifically, radio transmissions recorded on the CVR at 0018:13.9 and 0031:20.8 CVR Elapsed Time were aligned with the same transmissions recorded by ATC at 1938:00 and 1950:29 Coordinated Universal Time (UTC). The radio transmissions acted as anchor points for a linear interpolation between the CVR and ATC events. The correlation resulted in an adjustment of CVR playback time by a multiplying factor of 0.95 (a reduction in playback speed). Thereafter, 5 hours was subtracted from UTC to convert to EST. Accordingly, 1420:38.1 was added to the CVR Elapsed Time (after the playback speed was corrected) to convert to EST.

3.6 Description of Audio Events

The accident aircraft, N237WR, was operating under the call-sign Zipline 1526. The recording began at 1420:52 EST, when Zipline 1526 was climbing to 17,000 feet. A review of audio content was consistent with the co-pilot acting as the flying pilot and the pilot acting as the monitoring pilot.

In summary, the attached transcript contains the descent, preparation for the approach, descent, approach, and impact. The recording ended at 1452:35 EST during impact.

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 GA-100 tape cockpit voice recorder, serial number 00044, installed on an Execuflight British Aerospace HS 125-700A (N237WR), which crashed during approach at Akron Fulton International Airport (AKR) in Akron, Ohio.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N237WR
AC-91S	Radio transmissions from aircraft registration ending in 91S
CTR-A	Radio transmission from an undetermined center controller
CTR-CLE	Radio transmission from the Cleveland center controller
CTR-INDY	Radio transmission from the Indianapolis center controller
APR-AKR	Radio transmission from the Akron approach controller
Wx-LHQ	Automated Weather Broadcast from Fairfield County Airport, Lancaster Ohio
Wx-AKR	Automated Weather Broadcast from Akron Fulton International Airport
EGPWS	Enhanced Ground Proximity Warning System
-1	Voice identified as the pilot
-2	Voice identified as the co-pilot
-3	Voice identified as a passenger
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: 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.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:20:52 EST

**START OF RECORDING
START OF TRANSCRIPT**

14:20:54.5

HOT-? ***.

14:21:01.0

HOT-? ***.

14:21:07.6

HOT-1 ***.

14:21:09.4

HOT-2 ***.

14:21:14.7

HOT-2 I-I (was) sayin' this it is going to be direct HUUVR and then
direct destination. right?

14:21:19.2

HOT-1 he doesn't want us to do the rest of the-ehh ***.

14:21:25.2

HOT-2 one (nine) thousand. ***.

14:21:34.7

HOT-? ***.

14:21:51.9

HOT-1 well (so you're) climbing with V-S?

14:21:55.0

HOT-(2) I don't know. I was asking.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:21:56.0
HOT-1

you have no **.

14:21:57.6
HOT-2

right now I. I (fix) it.

14:21:58.6
HOT-1

***.

14:22:00.6
HOT-2

which one?

14:22:01.7
HOT-1

whatever make you feel good. I mean you want to keep climbing with fifteen hundred feet per minute or two hundred and fifty knots.

14:22:04.6
HOT-2

**.

14:22:07.1

CTR-A

Zipline fifteen twenty six contact Indy center one two four point four five. gooday.

14:22:12.7

RDO-1

twenty four (forty) five Zipline fifteen twenty six.

14:22:44.7
HOT-2

we're gonna lev-- (yeah) we're gonna level off now so I'm not worried about that.

14:22:49.4
HOT-(2)

you're going to do. capture.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:22:53.3
HOT-1

***.

14:22:55.9
HOT-?

***.

14:22:58.5
HOT-2

unless you follow it all the time.

14:23:00.8
HOT-1

** I understand what you're saying but I don't want to (ah) follow it.

14:23:03.4
HOT-1

looks like its going to do it whatever it wants to do.

14:23:06.4
HOT-?

***.

14:23:09.6

RDO-1

Center good morning Zipline fifteen twenty six with you out of sixteen thousand three hundred ah for one (seven) thousand.

14:23:16.0

CTR-INDY

Zipline fifteen twenty six Indy Center. Columbus altimeter three zero zero three.

14:23:21.3

RDO-1

three zero zero three. ***.

14:23:27.0
HOT-1

yeah * must. ***. you know. **. like.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:23:32.1

HOT-?

I know. ** too.

14:24:24.3

HOT-1

you can speed it up. a little bit.

14:24:27.5

HOT-?

***.

14:24:35.1

HOT-?

***.

14:24:38.0

HOT-?

***.

14:25:01.5

HOT-?

***.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:24:37.4

CTR-INDY ** my frequency one two four point four five.

14:24:44.7

RDO-1 one two four forty five Zipline fifteen twenty six.

14:24:48.1

CTR-INDY Zipline fifteen twenty six say again.

14:24:51.5

RDO-1 and ah I thought you were talking to me. *. I'll-I'll stay with you one ***.

14:24:55.3

CTR-INDY Zipline fifteen twenty six (thank you).

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:25:14.4

HOT-2

that's another thing I don't under-- I don't understand. we have all these fuel flow indications. but we don't have like a either a fuel pressure or something. * extra (assurances) fuel is actually going **.

14:25:32.8

HOT-1

**.

14:25:34.2

HOT-2

** fuel pressure. will be. will be. *.

14:25:41.2

HOT-1

yeah. *

14:25:43.8

HOT-2

yeah. *.

14:25:54.1

HOT-1

* eight hundred. (just) a fuel pressure.

14:25:55.5

HOT-2

eight hundred probably. but here you-you know.

14:25:59.5

HOT-2

the only thing that you know that the engine is running. so you know that you are good. (otherwise).

14:26:01.4

HOT-1

[chuckle] right.

14:26:06.0

HOT-1

(here) you have radio number one.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:26:08.5
HOT-2

number one is mine.

14:26:56.1
HOT-1

we got ah....we got ah. broken one thousand one hundred. overcast one thousand eight hundred. visibility more than ten miles. (kilometers) I'm sorry.

14:27:11.7
HOT-?

so we got go out **.

14:27:14.1
HOT-2

** do me a favor. put (on) the flight plan the point from the localizer.

14:27:19.0
HOT-2

so we're going to fly it ah eventually hopefully (navigation).

14:27:27.8
HOT-2

** two thousand six hundred. ***. I'll let you brief it to me. **.

14:27:56.0
HOT-?

***.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:26:09.0

Wx-LHQ

visibility one zero. sky condition overcast one thousand one hundred. temperature zero niner Celsius. dewpoint zero seven Celsius. altimeter three zero zero four. remarks. density altitude three hundred. Fairfield County airport Lancaster Ohio. automated weather observation one niner two six zulu. wind two niner zero at zero seven. visibility one zero. sky condition broken one thousand one hundred. overcast one thousand eight hundred. temperature zero niner Celsius. dewpoint zero--.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:28:11.8

HOT-1

okay. we got the weather. overcast so we (gonna be) runway twenty--

14:28:17.2

HOT-2

(breaking out).

14:28:19.2

Wx-LHQ

--information one niner two seven zulu. wind two niner zero at seven. visibility one zero. sky cond--

14:28:23.6

HOT-?

**.

14:28:27.9

HOT-(1)

localizer runway two **.

14:28:32.3

HOT-1

(that's what the) briefing (is).

14:28:37.7

HOT-1

twenty six eighty two.

14:28:43.1

HOT-?

***.

14:28:46.5

HOT-2

so we were listening at ah--

14:28:48.5

HOT-1

we were listening ***.

14:28:53.3

HOT-1

(there) is only one runway we (should) use.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:28:55.0
HOT-2

yeah.

14:28:55.5
HOT-2

I would say localizer by the winds that they have on the forecast it would be runway two. the localizer.

14:29:03.4
HOT-1

why what's the localizer. one one ten?

14:29:09.1
HOT-2

one one zero decimal niner.

14:29:12.7
HOT-1

final course? final course?

14:29:18.7
HOT-1

(is a).

14:29:19.4
HOT-2

***.

14:29:20.9
HOT-1

two...forty...nine.

14:29:30.2

CTR-INDY Zipline fifteen twenty six cross HUUVR niner thousand. Columbus altimeter three zero zero six.

14:29:36.0

RDO-1 HUUVR at niner thousand Zipline fifteen twenty six.

14:29:39.1
HOT-1

HUUVR at (nine thousand) * we are fifty miles out.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:29:44.9

HOT-2

fifty miles to HUUVR and we are doing ah three hundred. ah five miles per minute.

14:29:51.3

HOT-1

if it--

14:29:51.5

HOT-2

four minutes we should lose how much?

14:29:55.3

HOT-1

** at this point. we wanted to cross at (nine) thousand.

14:29:58.8

HOT-2

(nine) thousand feet.

14:30:00.1

HOT-1

yeah.

14:30:00.5

HOT-1

you know what we can (start shallow).

14:30:03.0

HOT-2

yeah. (we'll) start shallow. and put it on the (right). *.

14:30:10.2

HOT-1

then remember. you're not going anywhere.

14:30:14.7

HOT-?

(nine) thousand. right?

14:30:18.5

HOT-1

now ** whatever he wants to do **.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:30:24.3
HOT-?

** press ** look ***.

14:30:32.9
HOT-?

***.

14:30:46.8
HOT-?

*.

14:30:50.0
HOT-?

*** gotta be.

14:30:55.5
HOT-?

***.

14:31:03.3
HOT-?

twenty miles. HUUVR twenty miles. ***.

14:31:13.1
HOT-?

***.

14:31:17.0
HOT-1

oh yeah. we're ***.

14:31:25.5
HOT-?

** you're right ***.

14:31:41.9
HOT-1

so we're going to have a layover here for like three hours *.

14:32:17.6

CTR-INDY Zipline fifteen twenty six contact Cleveland Center one three four point niner.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:32:44.6
HOT-1 (one) (nine) ***.

14:32:54.0
HOT-2 okay so we have the localizer two in there (right?).

14:32:57.3
HOT-2 I mean ah localizer two five. alright.

14:33:00.8
HOT-2 *** we got the inbound. (how's it gonna be). three thousand...

14:33:07.4
HOT-1 (three thousand).

14:33:08.3
HOT-2 ...then can go to twenty three.

14:33:09.1
HOT-2 now we got to change the places. * because ** direct **.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:32:22.5
RDO-1 three four point nine Zipline fifteen twenty six. bye-bye.

14:32:31.0
RDO-1 Cleveland Center good morning. Zipline fifteen twenty six with you one four thousand down to nine thousand.

14:32:36.7
CTR-CLE Zipline fifteen twenty six. Cleveland Center. Akron-Canton altimeter two niner niner five.

14:32:42.1
RDO-1 niner niner five. **.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:33:16.5

CAM-3

you guys know where you're goin'? you know where you're goin'?

14:33:20.5

HOT-1

[laughter]

14:33:21.5

HOT-2

actually. (I'll let) you be here for a couple of minutes. then you gotta go. because there gonna be weather. we cannot be distracted.

14:33:24.9

CAM-3

okay.(you guys). I'm just joking. we're going into Akron-Fulton right?

14:33:31.8

HOT-(1or2)

yep.

14:33:32.9

CAM-3

**.

14:33:38.8

HOT-2

okay. so we go down twenty three. then down to (what's the minimums?).

14:33:44.8

HOT-1

four seventy three.

14:33:46.7

HOT-2

four seventy three.

14:33:48.3

HOT-1

(let's) do four eighty.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:33:52.7

HOT-2

then we're gonna put the missed approach.

14:33:55.1

HOT-1

what's the missed approach?

14:34:02.0

HOT-?

three thousand.

14:34:03.7

HOT-?

okay what we do.

14:34:05.4

HOT-1

climb to three thousand. via two forty three ** outbound ***.

14:34:22.8

HOT-2

alright. so we gotta. we're gonna have to. ***. all we have to do is a go to the eh the missed approach. okay so we go three thousand runway heading *** the radial. ***.

14:34:38.3

HOT-1

*** (RITZS) intersection. ***

14:34:41.5

HOT-?

roger.

14:34:46.4

HOT-2

we gotta get that radial. to go to ***--

14:34:48.5

HOT-1

I'll do that.

14:34:49.3

HOT-1

* that's good. that's good.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:34:51.8
HOT-(1)

that's exactly what we want to do.

14:34:54.2
HOT-2

so two forty nine. three thousand feet. good. then you. then we put the-the eh V-O-R.

14:35:07.2
HOT-1

**.

14:35:09.8
HOT-2

**.

14:35:12.0
HOT-1

**.

14:35:14.5
HOT-2

**.

14:35:15.9
HOT-(1)

* radial there*.

14:35:17.0
HOT-2

go inbound on the-on the three twenty two. which is ah ***.

14:35:28.3
HOT-2

okay?

14:35:29.8
HOT-?

okay I think. **.

14:35:31.0
HOT-?

**.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:35:32.7
HOT-1

(ATIS is)?

14:35:34.2
HOT-2

I gotta. I gotta get **.

14:35:36.1
HOT

[unintelligible discussion between 1 and 2]

14:35:59.6
HOT-2

the overcast is ah is ah ground. from the ground the overcast.
right? so.

14:36:06.2
HOT-2

** from the overcast ah the (minima) is four seventy five. so
we should come out at eight hundred. and we should have
four hundred feet to go to it.

14:36:17.0
HOT-?

(the overcast is ground).

14:36:19.0
HOT-?

(from the ground).

14:36:19.7
HOT-?

**.

14:36:20.3
HOT-?

yeah.

14:36:21.6
HOT-1

no **. the report.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:36:24.1

HOT-2

no no no.

14:36:26.9

HOT-2

*** the minima for this approach fifteen twenty.

14:36:33.3

HOT-2

(unless. unless you're high. fifteen sixty).

14:36:36.2

HOT-2

which is ground. where is the ground. five oh one right? *.

14:36:42.8

HOT-2

now. if the overcast is eight hundred. *.

14:36:43.9

HOT-1

(one thousand to the level).

14:36:45.9

HOT-2

if we had *** overcast. ***. then we have three hundred feet to minimums.

14:36:51.9

HOT-?

**.

14:37:02.6

HOT-?

** you know what I'm sayin'.

14:37:04.9

HOT-?

yeah. *. *. *.

14:37:06.7

HOT-1

the report is. is. ***.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

14:37:09.7

HOT-2

yeah I understand. but we can shoot it. we can shoot because the overcast * reporting * eight hundred. ***.

14:37:19.2

HOT

[unintelligible dialogue between the pilots]

14:37:32.7

HOT-2

the cloud base is from the ground. from the ground do we get minimums for us.

14:37:37.1

HOT-1

still. we get ***.

14:37:38.2

HOT-2

**.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:37:39.2

Wx-AKR

--three seven zulu. wind two four zero at zero eight. visibility one and one (half). sky condition overcast-- [interrupted by pilot 2 responding to radio call] -- Celsius. dewpoint zero niner Celsius altimeter two niner niner-- [interrupted by pilot 2 responding to radio call] -- density altitude niner hundred. Akron Fulton International Airport automated weather observation-- [interrupted by pilot 2 responding to radio call]-- two four zero at zero eight. visibility one and one half mist. sky condition -- [interrupted by pilot 2 responding to radio call]-- altimeter two niner niner five. remarks-- [interrupted by pilot 2 responding to radio call]-- density altitude niner hundred. Akron Fulton International Airport automated weather observation one niner three eight zulu. wind two four zero at zero eight. visibility one and one half mist. sky condition overcast six hundred broken. temperature one one Celsius. dewpoint zero niner Celsius. altimeter two niner niner five. remar--

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:37:44.6
CTR-CLE Zipline fifteen twenty six contact Akron-Canton approach one one eight point six.

14:37:49.1
RDO-2 one one eight point six ahhh Zipline fifteen twenty six.

14:37:59.2
RDO-2 and Akron Approach ah good afternoon. Zipline fifteen twenty one. we are ah (ten) thousand over HUUVR.

14:38:08.9
APR-AKR sorry. I was (on the landline). * that Zipline fifteen twenty six calling?

14:38:12.9
RDO-2 ** over HUUVR nine thousand feet. we are inbound at this time.

14:38:17.4
APR-AKR Zipline fifteen twenty six fly heading zero six five vector localizer two five final approach course (vector). advise (when you have) weather.

14:38:24.9
RDO-2 * heading zero six five for now. we are in the process of copying the weather. ah maintaining nine thousand. Zipline one five two six.

14:38:32.6
APR-AKR Zipline one five two six descend at pilot's discretion. maintain five thousand.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

14:38:44.6
CAM [sound of decreased background noise, similar to power reduction]

14:38:48.8
HOT-? ***.

14:39:17.0
HOT-1 we got. two four zero at eight.

14:39:20.5
HOT-2 (that's what I got).

14:39:22.4
HOT-1 one and half mile visibility. overcast at six hundred.

14:39:26.9
HOT-2 and ah what visibility does this approach want?

14:39:31.8
HOT-1 one and three quarter. ah. (us). one and half.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:38:37.3
RDO-2 P-D five thousand. ah fifteen twenty six. roger.

14:38:41.6
Wx-AKR --density altitude niner hundred. Akron Fulton International Airport automated weather observation one niner three eight zulu. wind two four zero at zero eight. visibility one and one (half) mist. sky condition overcast six hundred *. temperature one one Celsius. dewpoint zero niner Celsius. altimeter two niner niner five.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:39:35.9
HOT-2

* one and. one mile.

14:39:38.8
HOT-1

okay. one and.

14:39:39.8
HOT-2

one and a half.

14:39:40.7
HOT-1

alright we are visibility we got it.

14:39:42.7
HOT-2

and.

14:39:44.4
HOT-1

yeah but overcast six hundred.

14:39:46.6
HOT-2

like I say *** from the ground. and the and the minima is five hundred ground.

14:39:52.6
HOT-1

okay. listen. focus. ** we are going down to five thousand right.

14:39:57.2
HOT-2

yeah.

14:40:01.5
HOT-2

no. let it-let it go.

14:40:03.6
HOT-1

it will be doing whatever they want to do. to support speed or.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:40:08.0

HOT-2

yah. yah. I'm going I'm gonna drive it with the. let me show you now. *.

14:40:13.6

HOT-1

I know what you mean. and now you were doing it to ***. we discussed everything ***.

14:40:25.0

HOT-1

did you do my approach (brief). *** (we gotta go somewhere else right). ***.

14:40:34.2

HOT-1

* if you say that. I might be wrong. I'm not sure.

14:40:37.9

HOT-2

***.

14:40:39.9

HOT-1

I might be wrong. but.

14:40:41.1

HOT-2

(** shoot it).

14:40:44.8

HOT-2

(okay). we're almost there.

14:40:49.2

HOT-1

***.

14:40:51.9

HOT-2

***.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:41:00.1

HOT-1

** . R-NAV or.

14:41:03.0

APR-AKR

* nine one (sierra charlie) ** two two zero. intercept the localizer.

14:41:03.7

HOT-2

localizer. he said we going to do a get. expect the localizer.

14:41:08.8

HOT-2

***. the minima is five hundred and ten. *** minima.

14:41:14.8

HOT-1

localizer?

14:41:15.7

HOT-2

yeah.

14:41:16.0

HOT-1

(good).

14:41:19.4

HOT-1

four eighty. four eighty.

14:41:21.6

HOT-?

* four eighty. four eighty.

14:41:24.9

HOT-2

four seventy three.

14:41:26.5

HOT-2

sure?

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:41:28.4
HOT-2

** four eighty.

14:41:30.4
HOT-?

[grunt].

14:41:32.0
HOT-1

Akron.

14:41:35.7
HOT-1

Akron.

14:41:36.8
HOT-2

yeah. after Akron.

14:41:38.6
HOT-1

fifteen hundred.

14:41:41.1
HOT-2

before Akron we can do maximum twenty three. right? before Akron.

14:41:44.9
HOT-?

**.

14:41:45.1
HOT-1

ten miles before. (should) * go down to...

14:41:48.6
HOT-1

...(we) go down to two thousand three hundred.

14:41:53.2
HOT-2

** . we got. we got. ah direct to (here). **. so. he's gonna vector us. you want to put on the eh the final course.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:41:58.2
HOT-1

**.

14:42:04.3
HOT-2

(three) (six) (two).

14:42:05.6
HOT-1

three six two.

14:42:07.0
HOT-2

what is the name of the (Akron)?

14:42:09.2
HOT-1

* Akron.

14:42:12.8
HOT-?

(uhk) [may be saying AKRON NDB identifier, AK]

14:42:13.8
HOT-1

put in on ** top **.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:42:21.1

APR-AKR * niner one sierra. four miles from the outer marker. maintain (two) thousand till established on the localizer. cleared for the localizer two five approach into Akron Fulton.

14:42:27.7

AC-91S (maintain three thousand till established localizer. ** approach.)

14:42:37.6
HOT-1

put it on. **.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:42:48.4

HOT-1

put (nine) miles.

14:42:51.6

HOT-?

** . yeah this one.

14:42:56.2

HOT-1

*. (ack) [emphasized] (lohm) [emphasized]. ** Akron N-D-B.

14:43:04.8

HOT-1

which is this.

14:43:07.1

HOT-1

and then the airport which is kilo ***.

14:43:18.7

HOT-2

we could have put in the box Akron itself.

14:43:26.7

HOT-?

yeah. *.

14:43:31.5

HOT-1

he's gonna take us around?

14:43:32.9

HOT-2

yeah. obviously. yeah.

14:43:38.6

HOT-2

I see what you did. you put the N-D-B instead * of putting * name * itself.

14:43:44.5

HOT-1

oh I got'chya.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:43:46.7
HOT-2 see what I'm saying.

14:43:48.1
HOT-2 the same point though?

14:43:49.2
HOT-1 uh. (yeah). that's right.

14:43:50.2
HOT-2 the same point. right. yeah.

14:43:52.2
HOT-1 the same one.

14:43:59.8
HOT-1 N-D-B.

14:44:01.0
HOT-2 no. you're gonna need to go to yes. (right there).

14:44:02.9
HOT-2 direct-a to.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:43:44.6
APR-AKR * niner one sierra changed to advisory frequency approved
***.

14:43:52.1
AC-91S ** change to advisory. ** (we'll cancel as soon as we can).

14:43:59.8
APR-AKR (Zipline) * fifteen twenty six reduce speed to two zero zero.
descend and maintain four thousand.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

14:44:15.5
CAM [sound of decreased background sound, similar to power reduction]

14:44:19.8
HOT-1 we're two zero zero.

14:44:21.4
HOT-2 and then we go down to.

14:44:22.2
HOT-1 doing whatever you want to do.

14:44:23.5
HOT-2 I touch.

14:44:24.1
HOT-1 right now. the ***. we have no **.

14:44:51.1
CAM-? select the altitude.

14:44:55.0
CAM [sound of two thumps]

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:44:09.6
APR-AKR Zipline fifteen twenty six reduce speed to two zero zero. descend (now) and maintain four thousand.

14:44:15.6
RDO-1 two zero zero the speed. and four thousand. Zipline fifteen twenty six.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:45:05.5

CAM

[splice in CVR tape]

14:45:16.3

CAM

[sound of ratcheting, similar to rotary dial]

14:45:31.7

HOT-2

three five zero (and) **.

14:45:37.0

CAM

[cough]

14:45:38.5

HOT-2

now he's gonna bring (us) (abeam). the localizer.

14:45:45.8

HOT-?

**.

14:45:47.0

HOT-1

[throat clearing]

14:45:55.3

HOT-2

*** M-S-L.

14:46:04.8

HOT-1

okay.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:45:24.2

APR-AKR Zipline fifteen twenty six turn left ah heading three five zero.

14:45:28.2

RDO-1 left heading three five zero Zipline fifteen twenty six **.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:46:16.9
CAM [sound of decreased noise, similar to power reduction]

14:46:25.5
HOT-1 three six zero on the speed. one seven zero--

14:46:28.7
HOT-2 three six zero on the speed [spoken loudly].

14:46:30.3
HOT-1 ah. * three [chuckle] six. three six zero on the heading. one seven zero on the speed.

14:46:34.4
HOT-2 three six zero confirmed down to three thousand.

14:46:36.7
HOT-1 down to three thousand. he wants one seven zero knots.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:46:05.5
APR-AKR ** Zipline fifteen twenty six we do have another aircraft that's inbound to the airport (that) is slower than you. fly heading of three six zero and reduce speed one seven zero. ** descend and maintain three thousand.

14:46:18.5
RDO-1 down to three thousand. one seven zero on the speed and three five zero Zipline fifteen twenty six.

14:47:09.1
APR-AKR Zipline fifteen twenty six turn left heading two eight zero. intercept the localizer to Akron Fulton.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:47:22.4
HOT-1 alright.

14:47:23.9
HOT-2 where are we.

14:47:25.5
HOT-1 ***.

14:47:26.9
HOT-2 this is the distance from Akron?

14:47:30.0
HOT-1 ***.

14:47:31.6
HOT-2 ***.

14:47:38.7
HOT-1 you got your localizer?

14:47:39.6
HOT-2 two eight zero (heading).

14:47:40.6
HOT-1 (go) two eight zero.

14:47:41.5
HOT-1 but you're never gonna capture.

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:47:15.5
RDO-1 two seven ze-- eh two eight zero. intercept the localizer.
Zipline fifteen twenty six.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:47:43.0
HOT-?

you know.

14:47:47.4
HOT-2

let's see if she's gonna do it though. I will. I till try to. drag every (thing).

14:47:53.9
HOT-2

let's see what she does. okay. just keep me updated on the distance.

14:48:01.6
HOT-2

***.

14:48:08.0
HOT-1

radar altimeter alive.

14:48:10.4
HOT-1

we are like seven miles from Akron ap--

14:48:14.1
CAM-?

[raspy, female voice, unintelligible in background.]

14:48:14.3
CAM-1

oh we got. we got. we got nine degrees pitch up. *. [said with emphasis]

14:48:17.4

APR-AKR Zipline fifteen twenty six * on the approach ***. expect no delay.

14:48:21.6
CAM

[sound of increased noise, similar to power increase]

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:48:25.7
CAM

[sound of thump]

14:48:27.0
CAM

[sound of increased noise, similar to landing gear extension]

14:48:27.2
CAM

[after this point until the end of the recording, the increased noise from the gear obscures portions of the recording; most notably, ATC communications.]

14:48:28.2

RDO-1

okay we'll continue the approach. ah. ***. Zipline fifteen twenty six.

14:48:33.9
HOT-1

did you hear what he say? there is an airplane on the approach. (he is) slower than us. he hasn't cancelled. we don't know if he's on the ground. [said with emphasis]

14:48:34.2
CAM

[sound of click]

14:48:37.7
HOT-2

**.

14:48:41.1
HOT-2

***.

14:48:42.9
HOT-1

you can't. [emphasized]

14:48:44.1
HOT-2

why. [loud]

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:48:44.6

HOT-1

you need to (look). you need to. I mean we were-we were flying like (one thirty nine). nine degrees pitch up.

14:48:50.1

HOT-2

yeah.

14:48:51.6

HOT-2

** speed is one seventy **.

14:48:55.7

HOT-1

** (flaps) ** I know but **.

14:49:09.0

HOT-2

we should (uh)--

14:49:13.6

CAM

[sound of decreased background noise, similar to decrease in airspeed]

14:49:17.7

HOT-?

***.

14:49:20.4

HOT-1

*** you're going one forty ***--.

14:49:22.9

APR-AKR

Zipline fifteen twenty six I got the cancellation here. and you're ah four miles from the outer compass locator. maintain three thousand until established on the localizer *. cleared localizer two five approach *.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:49:41.3
HOT-1 look you're going one twenty. you can't keep decreasing your speed **--

14:49:33.3
RDO-1 (cleared to) localizer two five. (maintain **). Zipline one five two six. **.

14:49:40.4
APR-AKR roger.

14:49:42.7
APR-AKR [unintelligible]

14:49:45.3
HOT-2 no. one tw--. how do you get one twenty? [said with emphasis]

14:49:47.1
HOT-2 ** one twenty five **.

14:49:48.9
HOT-1 v-ref plus (fifteen).

14:49:50.9
HOT-2 (which) is the approach speed.

14:49:53.0
HOT-1 you've (still) got. flaps to go. *

14:49:54.9
HOT-2 and when you put them--

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:49:56.1

HOT-1

that's what I'm saying. if you keep decreasing your speed--.

14:50:00.3

HOT-2

but why?

14:50:02.1

HOT-1

* because we gonna stall. I don't want to sta--

14:50:03.9

HOT-2

how do you--

14:50:05.1

HOT-1

(but in) I-M-C.

14:50:12.5

HOT-1

alright. after Akron. we are down to.

14:50:16.2

HOT-2

minimums.

14:50:17.0

HOT-1

fifteen hundred.

14:50:21.0

HOT-?

***--.

14:50:21.6

APR-AKR

Zipline fifteen twenty six change to advisory frequency approved. report cancelling I-F-R in the air on this frequency. or on the ground via remote.

14:50:29.7

RDO-1

(we'll change on to the advisory frequency) ***.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

14:50:35.8
HOT-?

***.

14:50:50.8
HOT-?

(one) mile.

14:51:00.9
HOT-2

(four) miles. full flaps.

14:51:06.7
HOT-1

gear down. before landing. three lights. one. and.

14:51:13.6
CAM

[sound of decreased background sound, similar to power reduction]

14:51:14.4
HOT-1

(are) we going down to.

14:51:15.7
HOT-2

(to).

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:50:39.8
RDO-1

Akron. Akron traffic. ah Zipline fifteen twenty (six) is a Hawker jet. on the localizer two five we are (Akron position).
**.

14:50:53.9
AC-91S

hey guys. ah we just landed on the loc. and uh broke out right at minimums (right at a) mile.

14:50:58.9
RDO-1

appreciate it.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:51:17.1
HOT-1

*.

14:51:17.4
CAM

[sound of thunk]

14:51:18.2
HOT-2

**.

14:51:25.4
HOT-1

*** speed ***.

14:51:31.3
HOT-2

alright we go to minimums (@).

14:51:32.9
HOT-1

alright.

14:51:36.3
HOT-2

can you check. can you check (if I got) (everything). (ignition).

14:51:39.6
HOT-1

everything is (all set).

14:51:41.2
HOT-1

standby. yaw damper. autopilot. (eh).

14:51:43.9
HOT-1

main air valves.

14:51:44.7
HOT-2

*.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:51:45.2
HOT-1

I'll take care of them.

14:51:46.7
HOT-2

(alright).

14:51:49.4
HOT-1

v-ref. (localizer).

14:51:56.6
HOT-1

on localizer. you're diving. you're diving. don't dive. two thousand feet per minute buddy... [said with emphasis]

14:52:01.8
HOT-2

yeah.

14:52:02.5
HOT-1

...two thousand feet per minu-- don't go two thousand feet per minute. [said with emphasis]

14:52:05.1
HOT-1

you're ** (me there).

14:52:06.4
HOT-1

oh don't.

14:52:07.1
HOT-2

yeah.

14:52:07.3
HOT-1

don't go two thousand feet per minute.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:52:10.2

HOT-1

when you are fifteen hundred feet above the ground. or minimums.

14:52:15.2

CAM

[sound of cyclical sound, similar to windshield wipers; continues until end of recording]

14:52:17.0

HOT-1

ground.

14:52:20.5

HOT-1

keep going.

14:52:22.1

HOT-1

one point one is for the missed approach.

14:52:27.3

HOT-1

okay level off guy. [spoken rapidly]

14:52:27.4

CAM

[sound of rattle, similar to stick shaker]

14:52:28.3

HOT-2

got it.

14:52:30.1

CAM

[sound of rattle, similar to stick shaker]

14:52:31.3

HOT-1

oh #. (focus). [spoken loudly, rapidly]

14:52:32.8

GPWS

pull up.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

14:52:33.6

HOT-1andor2 oh oh oh oh. [said with emphasis]

14:52:34.7

HOT [sound of thunk, similar to impact]

14:52:35.0

HOT [sound of squeal, similar to tape recording electronic artifact]

END OF TRANSCRIPT

END OF RECORDING

14:52:35.4 EST