

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

DCA15MA029

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

WARNING

The reader of this report is cautioned that the transcription 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
Washington, D.C. 20594

April 29, 2015

Cockpit Voice Recorder

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

A. EVENT

Location: Gaithersburg, Maryland
Date: December 8, 2014
Aircraft: Embraer S.A. EMB-500
Registration: N100EQ
Operator: Sage Aviation LLC.
NTSB Number: DCA15MA029

B. GROUP

A group was convened on December 16, 2014.

Chairman: Dr. Bill Tuccio
Aerospace Engineer
National Transportation Safety Board

Member: Pat Hempen
Air Safety Investigator
Federal Aviation Administration

Member: Dan Ramirez
Air Safety Specialist
Embraer Aircraft Holding, Inc.

C. SUMMARY

On December 8, 2014, about 1041 Eastern Standard Time (EST), an Embraer S.A. EMB-500 (Phenom 100), N100EQ, impacted terrain and houses about 0.75 miles short of runway 14 while on approach to Montgomery County Airpark (GAI), Gaithersburg, Maryland. The airline transport rated pilot and two passengers were fatally injured as well as three persons on the ground. The airplane was destroyed during the impact and ensuing fire. Marginal visual meteorological conditions prevailed at the time and the flight was operating on an instrument flight rules (IFR) flight plan. The airplane was registered to and operated by Sage Aviation LLC., of Chapel Hill, North Carolina, under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. The flight originated from Horace Williams Airport (IGX), Chapel Hill,

North Carolina, with GAI as its intended destination. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for readout. The CVR group meeting convened and a full transcript was prepared of the entire 2-hour and 4-minute digital recording (see attached).

D. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **L-3/Fairchild FA2100-1020**

Recorder Serial Number: **600192**

Recorder Description

Per federal regulation, the aircraft was not required to be equipped with a CVR; however, it was 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 recorder, the L-3 FA2100-3083, is a combination solid-state CVR/flight data recorder (FDR) that records 2 hours of high quality, 4-channel digital cockpit audio and a minimum of 25 hours of digital flight data*. The recorded audio data is separated and decompressed from the flight data by the L-3 download software into four, 2-hour electronic files. The resulting files contain one file of audio information from the cockpit area microphone (CAM), another with the captain's audio panel hot microphone information, the third with first officer's audio panel hot mike information, and a fourth with the observer position audio information (if applicable to the installation).

Recorder Damage

Upon arrival at the audio laboratory, it was evident that the recorder had not sustained any heat or structural damage and the audio information was extracted from the recorder normally, without difficulty.

Audio Recording Description

The 2-hour 4-minute recording consisted of four channels of audio information. Each channel's audio quality[†] is indicated in Table 1. Channel D contained no audio information, nor was it expected to for this installation.

Table 1: Audio Quality

Channel Number	Content/Source	Quality
A	Passenger	Excellent
B	Pilot	Excellent
C	CAM	Excellent
D	Not Used	NA

* See the FDR Specialist's Factual Report available in the public docket for this accident.

† See attached CVR Quality Rating Scale.

Timing and Correlation

The transcript contains events from two different flights: (1) a prior flight on November 24, 2014, and (2) the accident flight on December 8, 2014. Timing of the transcript for each flight was performed differently, as described in the following sections.

Prior Flight

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR). Specifically, radio transmissions that the aircraft made at 3143.7, 3148.1, 3204.1, and 3429.8 seconds CVR Elapsed Time were correlated to the radio transmit microphone key parameter from the FDR for the same radio transmissions at 636354.4, 636358.4, 636414.4, and 636640.4 FDR subframe reference number (SRN). Each of the radio transmissions acted as an anchor point for a linear interpolation between the CVR and FDR events. This interpolation resulted in the following relationship: 3430.7 seconds CVR Elapsed Time = 636640.4 FDR SRN.

Once a correlation between the two recorders was established, a reference to local time was determined based on FDR recorded GPS time of: FDR SRN 636691.418 = 2030:25.0[‡] Zulu on November 24, 2014. Subtracting 5 hours to convert from Zulu to EST, resulted in the following relationship: CVR EST = CVR Elapsed Time + 1432:23.249.

Accident Flight

Timing on the transcript was established by correlating the timed air traffic control (ATC) recording from the BARIN sector to a common CVR radio transmission. Specifically, the pilot's utterance of the word "seven" in the transmission, "and approach one hundred echo quebec is with you on the way down to seven," at 1518:49 Zulu corresponded to the same utterance recorded on the CVR at 6067.20 CVR Elapsed Time (time from the beginning of the recording). Based on this information, and applying an offset of 5 hours to convert from Zulu to EST, 0837:41.8 was added to CVR Elapsed Time to convert to EST.

Alignment of the CVR to the FDR was established by correlating radio transmission common to the CVR and FDR. Specifically, radio transmissions that the aircraft made at 7245.0, 7257.4, 7284.8, and 7383.3 CVR Elapsed Time were correlated to the radio transmit microphone key parameter from the FDR for the same radio transmissions at 640451.367, 640463.367, 640491.367, and 640589.367 FDR SRN. Each of the radio transmissions acted as an anchor point for a linear interpolation between the CVR and FDR events. This interpolation resulted in the following relationship: FDR SRN = CVR Elapsed Time + 633205.90.

Applying the above relationships for the accident flight, FDR EST = FDR SRN - 602144.10.

Description of Audio Events

The CVR recorded two flights: the first was on November 24, 2014 and the second was the accident flight on December 8, 2014. Both flights were transcribed by the CVR group and are attached.

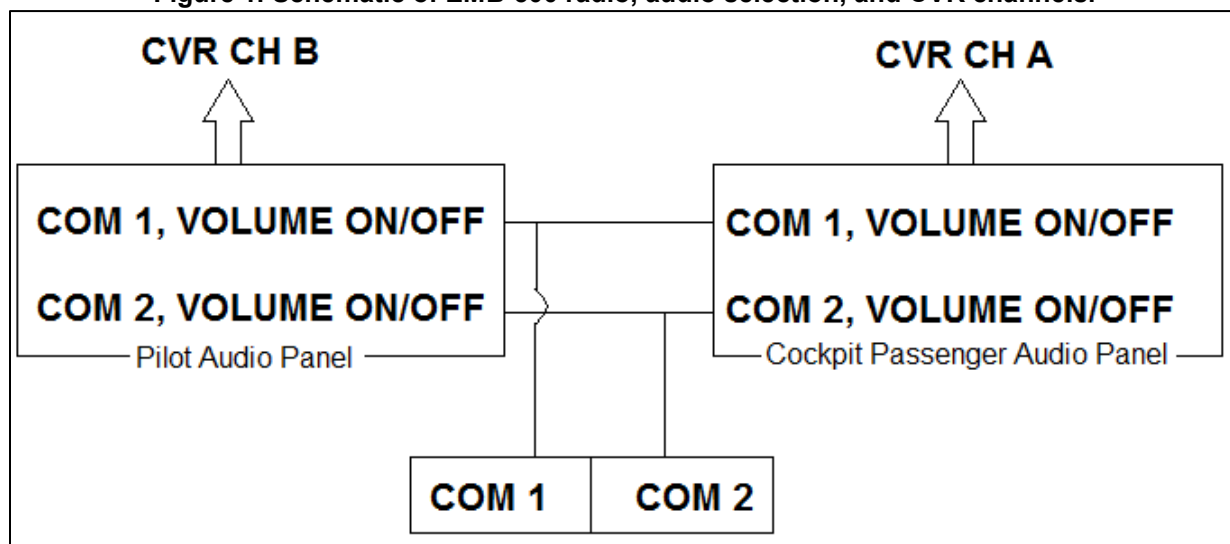
[‡] Time is HHMM:SS.t, where HH is hours, MM is minutes, SS is seconds, and t is tenths of a second.

The recording of the first flight began while the aircraft was enroute to IGX. Two registration numbers were used by the pilot on the first flight. During the IFR flight plan portion of the flight, the pilot used registration N820JT; after cancelling the IFR flight plan and thereafter communicating on common traffic advisory frequency (CTAF) at IGX, the pilot used registration N100EQ.

The recording of the second flight (the accident flight) captured the entire flight from IGX to GAI.

The EMB-500 allows each front seat cockpit occupant to select audio sources as well as the volume of selected audio sources. Figure 1 shows a simplified schematic of the communication radios 1 and 2 (“COM 1” and “COM 2”, respectively), the audio selection panel, and the CVR recording channels from table 1.[§] The CVR does not record which communication radio was the source of a transmission; rather, the particular CVR channel merges all audio (e.g., sounds, spoken voices, COM 1, COM 2, selected navigation radios) into one audio stream.

Figure 1. Schematic of EMB-500 radio, audio selection, and CVR channels.



During both flights, radio communications were recorded on each CVR channel and thus heard by the pilot and/or cockpit passenger; however, the transcript format may make it difficult for the reader to discern which communications were recorded on which channel. Editorial comments are added to aid the reader in keeping track of which radio communications were recorded on which channel.

[§] For a full discussion of cockpit audio selections, see Nevile, M. “Beyond the Black Box: Talk-in-Interaction in the Airline Cockpit.” Ashgate: Burlington, VT (2004).

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 an L-3/Fairchild FA2100-3083 solid-state voice and data recorder, serial number 600192, installed on an Embraer S.A. EMB-500 (Phenom 100), N100EQ, which crashed during approach to the Montgomery County Airpark (GAI), Gaithersburg, Maryland.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N100EQ
APR-POT	Radio transmission from a Potomac Approach controller
APR-RDU	Radio transmission from a Raleigh Approach controller
CTR-JAX	Radio transmission from a Jacksonville Center controller
CTR-WAS	Radio transmission from a Washington Center controller
AWU	Aural Warning Unit
EICAS	Engine Instrument Crew Alerting System
AWOS	Automated Weather Observing System
-GAI	at Montgomery County Airpark, Gaithersburg, Maryland
-IGX	at Horace Williams Airport, Chapel Hill, North Carolina
ATIS-RDU	Automatic Terminal Information Service at Raleigh Durham Airport
UNICOM	Aeronautical advisory station (as defined in 47 CFR 87.213)
CTAF	Common Traffic Advisory Frequency
-1	Voice identified as the accident pilot
-2	Voice identified as the cockpit passenger on the accident flight
-3	Voice identified as the cabin passenger on the accident flight
-4	Voice identified as the cockpit passenger on the flight prior to accident flight
-CHA	Content recorded on CVR channel A (cockpit passenger channel)
-CHB	Content recorded on CVR channel B (pilot's channel)
-ACn	Transmission from another aircraft (where n is replaced with an integer number to uniquely identify the other aircraft)
-?	Voice unidentified
*	Unintelligible word
#	Expletive
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in eastern daylight 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.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
00:00:00	CVR Elapsed Time, 14:32:42.9 EST, November 24, 2014		
	START OF RECORDING		
	START OF TRANSCRIPT		
14:32:42.9			
HOT-4	inaccurate to that. that doesn't.		
14:32:45.0			
HOT-1	what d'ya--what does that mean?		
14:32:46.2			
HOT-4	well.		
14:32:47.0			
HOT-4	it's.		
14:32:48.6			
HOT-4	I don't know which one's more accurate. this doesn't follow this.		
14:32:51.6			
HOT-1	this. what does that mean?		
14:32:53.3			
HOT-4	well. this one's showin' that we're on the ocean. this one shows like we're on land.		
14:32:59.1			
HOT-4	and there was like a peninsula. so I was lookin' for a peninsula. there was no--		
14:33:03.5			
HOT-1	ah. it shows us right off the coast.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:33:07.7 HOT-4	no. so we're not--		
14:33:07.9 HOT-1	oh. this is looking at. this is looking ahead. this is looking down.		
14:33:11.1 HOT-4	oh. I see. I see. okay.		
		14:33:30.2 RDO-1	and eight two zero juliet tango ah you know we're we're looking for higher and I noticed there is some traffic behind us that's very slowly gaining on us. is that good for you? or we can go to the side to get up or we can give you a fairly quick up rate another three thousand.
		14:33:42.9 CTR-JAX	and whoever was talkin' you just blocked my clearance here [controller continues talking to another aircraft]
		14:34:00.2 CTR-JAX	alright who was that calling for higher? is it eight two zero juliet tango?
		14:34:02.9 RDO-1	yeah. affirmative.
		14:34:04.2 CTR-JAX	okay. I have your flight plan sir. like you said traffic is overtaking you at twenty-nine. I'm not talking to him yet.
		14:34:08.4 RDO-1	oh I see. okay. thanks.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:34:11.2 HOT-1	man. it's gonna' take forever. might as well slow down.		
14:34:13.8 CAM	[for this prior flight, during the cruise and cruise descent portion of the flight, power changes and knob twists are not documented. reader is referred to the FDR.]		
		14:34:31.5 CTR-JAX	Embraer eight two zero juliet tango turn fifteen degrees to the left. vector for your climb.
		14:34:35.5 RDO-1	fifteen left for the climb. one hundred-- sorry ah eight two zero juliet tango.
14:34:43.6 HOT-1	yeah. good.		
14:35:58.8 HOT-1	boy.		
		14:36:28.3 CTR-JAX	Embraer eight two zero juliet tango climb and maintain flight level two eight zero.
		14:36:32.0 RDO-1	okay two eight zero. and do you want us to make this turn at VIYAP or just keep goin' here.

PRIOR FLIGHT – NOVEMBER 24, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

14:36:57.8

HOT [sound of c-chord, similar to altitude alerter]

14:36:35.8

CTR-JAX

negative sir. you're on an assigned vector for your climb. maintain your present heading.

14:36:39.4

RDO-1

okay. two eight zero. up to two eight zero. and ah current heading for eight two zero juliet tango.

14:37:30.6

CTR-JAX

Embraer eight two zero juliet tango climb and maintain flight level three five zero and I have routing when you are ready to copy.

14:37:35.7

RDO-1

okay. three five zero for eight two zero juliet tango and go ahead with your routing.

14:37:39.6

CTR-JAX

november eight two zero juliet tango cleared to Raleigh via direct Columbia charlie alpha echo and the BUZZY SIX arrival.

14:37:45.4

RDO-1

okay. Columbia BUZZY SIX. eight two zero juliet tango.

14:38:12.9

RDO-1

and eight two zero juliet tango ah do we want us to go Columbia now or maintain heading.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		14:38:17.1 CTR-JAX	you were cleared direct Columbia and the BUZZY SIX arrival. november eight two zero juliet tango.
		14:38:22.6 RDO-1	okay. just wanted to be clear. thank you.
14:39:44.9 HOT-4	what's this CAS @?		
14:39:46.6 HOT-1	what?		
14:39:48.3 HOT-1	yeah. I know. I just turned it on.		
14:39:50.2 HOT-4	oh.		
14:40:23.4 HOT-4	we're not really climbin'.		
14:40:26.9 HOT-1	okay.		
14:40:52.9 HOT-1	only twenty five knots of ah tailwind here.		
		14:41:12.1 CTR-JAX	november eight two zero juliet tango converging traffic eight o'clock six miles northwest bound descending out of ah thirty-eight for thirty-seven. an Airbus.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		14:41:19.1 RDO-1	okay. eight two zero juliet tango we're I-M-C at the moment. we're lookin'.
14:41:58.8 HOT-4	it's uncomfortable.		
14:42:24.2 HOT-1	there he is.		
14:42:27.6 HOT-4	ah this guy's the closer one.		
14:42:29.8 HOT-1	he's well above us.		
14:42:44.3 HOT-4	really?		
14:42:47.2 HOT	[sound of c-chord, similar to altitude alerter]		
14:43:03.8 HOT-1	what?		
14:43:05.6 HOT-1	I ah see him.		
14:43:07.8 HOT-4	[chuckle]		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:43:08.7 HOT-1	twenty six hundred feet above.		
14:43:10.3 HOT-4	oh.		
		14:43:32.5 RDO-1	and eight two zero juliet tango we'll be happy to take three five zero as a final today.
		14:43:37.0 CTR-JAX	roger. I'll show it.
14:44:19.4 HOT-4	what?		
14:44:20.8 HOT-4	ah nothin' we're just goin'. slow I guess.		
14:44:23.5 HOT-1	yep.		
14:45:15.2 HOT-1	wow. ninety knots from the left.		
14:45:19.1 HOT-1	that's ah ninety-four knots.		
14:45:22.4 HOT-1	not exactly a tailwind though.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:46:43.4 HOT-4	didn't we--		
		14:46:43.7 CTR-JAX	november eight two zero juliet tango contact JAX center one three four point niner seven.
		14:46:48.6 RDO-1	thirty four ninety seven for eight two zero juliet tango. thanks a lot for your help.
14:46:56.3 HOT-1	that guy's a little short.		
		14:46:58.6 RDO-1	ah good evening center. eight two zero juliet tango is with you three five zero and we're looking for direct TENNI if possible.
		14:47:06.1 CTR-JAX	alright two zero juliet tango Jacksonville Center roggerrr proceed as requested.
		14:47:13.1 RDO-1	thank you. direct TENNI eight two zero juliet tango.
14:47:16.8 HOT-1	yes. now we're really gonna be movin' much faster. very exciting.		
14:47:24.9 HOT-1	you nervous.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:47:26.7 HOT-4	no.		
14:47:28.6 HOT-4	I mean I don't I don't like not seeing.		
14:47:31.2 HOT-1	I yeah I know. it's hard not seeing.		
14:47:32.3 HOT-4	I'm not I'm not nervous about this. I'm I'm I'm more nervous about the come down.		
14:47:36.3 HOT-1	about what?		
14:47:37.0 HOT-4	coming down.		
14:47:37.8 HOT-1	well. we could listen to the weather. let's see what Raleigh is.		
14:47:50.4 HOT	[static]		
14:47:58.8 HOT-1	wh-- why don't you listen to what the weather is.		
14:48:01.2 HOT-1	(you you) want to listen to this guy.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:48:04.3 HOT-1	do you want to listen to what the weather is?		
14:48:05.5 HOT-4	what what's the---		
14:48:07.8 HOT-1	don't forget you got another. strap. crotch strap.		
14:48:11.2 HOT-4	oh.		
14:48:12.7 HOT-4	what's the weather. at. what's the ah.		
14:48:23.6 HOT-1	what?		
14:48:24.7 HOT-4	what's the ah. eh--		
14:48:26.3 HOT-1	it's it's in there right now. all you need to do is turn it on.		
14:48:29.2 HOT-1	and (release).		
14:48:29.5 HOT-4	* which one is it.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:48:30.7 HOT-1	it's twenty three eight.		
14:48:34.3 HOT-1	say you want to turn on squelch though.		
14:48:37.4 HOT	[static on HOT-4's channel]		
14:48:48.4 HOT-4	no.		
14:49:22.0 HOT-1	can you hear anything? I can't quite make it out.		
14:49:23.5 HOT-4	a little bit. yeah.		
14:49:25.4 HOT-1	(you) can wait a few minutes if you want.		
		14:49:32.2 ATIS-RDU	[RDU ATIS faintly audible only on HOT-4's channel]
		14:50:43.0 CTR-JAX	november zero zero juliet tango cleared direct (to) TENNI intersection.
		14:50:48.4 RDO-1	ah okay. dah direct TENNI we were actually cleared there before and that's where we're headed for ah zero juliet tango.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		14:50:53.8 CTR-JAX	okay.
		14:51:07.4 ATIS-RDU	[Only on HOT-4's channel]...Raleigh Durham International Airport ATIS information Whiskey....
14:51:15.1 HOT-1	there we go. fifty * fifty-six knot tailwind. a hundred and one knots.		
		14:51:26.3 ATIS-RDU	[Only on HOT-4's channel]...Raleigh Durham International Airport ATIS information X-ray. one niner five one Zulu wind two one zero at one zero gust two-two. visibility one zero. few clouds at two thousand five hundred. * nine thousand broken. one two thousand broken. temperature two-two. dewpoint one-six. altimeter two niner seven seven. simultaneous I-L-S approaches in use runway two three left two three right. notices to airman...[continues with NOTAMS and continues to play]
		14:52:03.8 ATIS-RDU	[RDU ATIS begins on HOT-1's channel]
		14:52:04.9 CTR-JAX	attention all aircraft SIGMET * fifty-four, fifty -five, fifty -seven valid until twenty one fifty-five Zulu. available on HIWAS flight watch * flight service.
14:52:56.8 HOT-1	see if we can get ah Chapel Hill.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:52:58.8 HOT-4	did you hear that?		
14:52:59.9 HOT-4	two-ten at ten. gust to twenty-two.		
14:53:00.4 HOT-1	yeah. (yeah).		
		14:53:03.2 AWOS-IGX	[AWOS for Horice Williams airport (IGX) begins to play on HOT-1's and HOT-4's channel, static in transmission]...Horice Williams Airport automated weather observation one niner five six zulu. winds variable at zero four peak gust one five. visibility one zero. sky condition broken one zero thousand. ***.
		14:53:46.8 AWOS-IGX	[AWOS IGX stops on HOT-1's channel]
14:53:53.3 HOT-4	hear that?		
14:53:54.7 HOT-1	no I didn't hear it.		
14:53:55.9 HOT-4	ah variable zero four gusts at fifteen.		
14:53:58.3 HOT-1	what's variable zero four?		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:54:00.0 HOT-4	I don't know.		
14:54:01.0 HOT-1	wind. wind.		
14:54:01.4 HOT-4	the wind is variable at zero four. ten miles. broken one thousand.		
14:54:06.1 HOT-1	okay. we're good.		
		14:54:08.6 AWOS-IGX	[AWOS IGX continues to play on HOT-4's channel]
		14:54:42.6 AWOS-IGX	[AWOS IGX begins to play on HOT-1's channel]...sky condition broken one zero thousand...
14:55:36.4 HOT-1	ten thousand. not one thousand.		
14:55:37.4 HOT-4	ten thousand. sorry.		
14:55:38.8 HOT-1	big difference.		
14:55:42.7 HOT-1	kay. variable at zero three.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:55:46.8 HOT-4	gusting fifteen. visibility ten. broken ten thousand. yeah.		
14:55:48.4 HOT-1	yeah.		
		14:55:51.5 ATIS-RDU	[ATIS RDU begins to play on both HOT-1 and HOT-4's channels - still information X-ray. after about 30 seconds, only on HOT-4's channel][ATIS on both channels makes it difficult to hear ATC transmissions.]
		14:56:30.1 ATIS-RDU	[ATIS stops playing on HOT-1's channel]
14:58:23.2 HOT-1	what's the wind at ah Raleigh?		
14:58:26.6 HOT-4	two ten at ten. twenty two gusting.		
14:58:30.0 HOT-1	ten at ten. what does that mean?		
14:58:31.8 HOT-4	two ten at ten.		
14:58:33.6 HOT-1	two ten.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:58:34.5 HOT-4	two ten.		
14:58:35.5 HOT-1	okay.		
14:58:44.0 HOT-1	sooo.		
14:58:47.9 HOT-1	listen to what it is at Chapel Hill because if it is two ten we'll g- land on two seven.		
		14:58:52.6 ATIS-RDU	[ATIS RDU begins on HOT-1's channel]
14:58:56.8 HOT-4	well it was zero three at Horice Williams.		
14:59:00.1 HOT-1	it was variable.		
14:59:01.1 HOT-4	variable at zero three gust *.		
		14:59:01.6 AWOS-IGX	[AWOS IGX begins to play on both HOT-1 and HOT-4's channels]
14:59:02.1 HOT-1	yeah.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
14:59:03.3 HOT-1	yeah.		
14:59:14.1 HOT-1	which runway are they using at Raleigh.		
14:59:17.7 HOT-4	I didn't take it. I think. earlier they said I-L-S twenty three left. twenty three right.		
14:59:23.4 HOT-1	okay.		
		14:59:31.4 AWOS-IGX	...wind variable at zero six...
14:59:39.0 HOT-1	see variable at zero six. now there are no gusts.		
14:59:44.6 HOT-1	we'll plan on runway nine.		
14:59:57.4 HOT-4	well. let's wait till we're a little closer.		
15:00:23.7 HOT-1	wow. nice.		
		15:00:37.7 AWOS-IGX	[AWOS IGX ends on HOT-1's channel]

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:02:04.8 CTR-JAX	november zero juliet tango cross TENNI intersection at and maintain flight level two three zero.
		15:02:11.0 RDO-1	TENNI at two three zero. eight two zero juliet tango.
		15:03:01.4 AWOS-IGX	[AWOS IGX has continued to play on HOT-4's channel] Horace Williams Airport automated weather observation two zero zero two zulu wind missing. visibility one zero. sky condition few two thousand eight hundred. broken one zero thousand. temperature two three Celsius. dewpoint one six...
15:03:22.5 HOT-4	winds are missing.		
15:03:24.6 HOT-1	winds are missing?		
15:03:26.1 HOT-4	said winds missing.		
15:03:26.5 HOT-1	at Chapel Hill?		
15:03:27.4 HOT-4	yep.		
15:03:27.9 HOT-1	I think. ah okay. I think we got. it sounds like it's very light. so.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:03:33.9 HOT-1	so we can. the other thing you can do is check Raleigh.		
15:03:36.6 HOT-1	see the thing that's complicated about Chapel Hill is when you get down below that tree line. the wind pretty much dies down.		
15:03:51.1 HOT-4	is uhm. one two three point eight Raleigh?		
15:03:54.6 HOT-1	yah.		
		15:03:57.8 ATIS-RDU	[ATIS RDU Information X-ray starts playing HOT-4's channel]
15:04:21.5 HOT-4	two ten at ten. twenty two gusting. ten miles. same as it's been for--		
15:04:26.2 HOT-1	wh-- where is that?		
15:04:27.6 HOT-4	Raleigh.		
15:04:28.4 HOT-1	is where?		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:04:29.1 HOT-4	two ten at ten.		
15:04:31.9 HOT-1	at ten gusting--		
15:04:32.6 HOT-4	twenty. gusting to twenty two.		
15:04:34.7 HOT-4	ten miles visibility. few clouds at twenty five hundred. nine thousand broken. twelve thousand broken.		
15:04:37.6 AWU	vertical track. [vertical correction warning]		
15:04:40.1 HOT-1	it's weird that it's so. ah it seems so the winds...		
15:04:41.7 HOT-1	...seems so light at Chapel Hill.		
15:04:41.7 HOT-4	different. yep.		
15:04:44.6 HOT-4	yep.		
		15:04:50.5 AWOS-IGX	[ATIS switches from RDU to AWOS at IGX on HOT-4's channel]...wind missing.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:04:50.9 HOT-4	let me see if I can. yeah. wind is missing. at Horace Wililams.		
15:04:54.4 HOT-1	well when it's variable they don't give you direction. because it's variable.		
15:04:57.7 HOT-4	well it says missing.		
15:04:59.6 HOT-1	oh really.		
15:05:00.6 HOT-4	it says missing.		
15:05:01.7 HOT-1	okay.		
		15:05:18.6 CTR-JAX	november zero juliet tango just to verify you did copy TENNI at twenty three correct?
		15:05:22.7 RDO-1	ah that's affirmative. ah for zero juliet tango. we're just getting ready to start down.
		15:05:26.0 CTR-JAX	alright. thanks.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:05:57.0 AWOS-IGX	[AWOS IGX begins on HOT-1's channel] ...zero five zulu. wind missing. visibility one zero...
15:06:02.6 HOT-1	that's weird.		
15:06:04.0 HOT-4	yeah.		
		15:06:23.1 AWOS -IGX	[AWOS IGX ends on HOT-1's channel]
15:06:31.5 HOT-1	pretty good groundspeed. four hundred and fifty-eight knots.		
		15:06:59.8 AWOS-IGX	[AWOS IGX only on HOT-4's channel] ...Horace Williams Airport automated weather observation two zero zero six Zulu. wind one eight zero at zero seven. visibility one zero. sky condition few two thousand nine hundred. broken one zero thousand. temperature two-two Celsius. dewpoint one six...
15:07:23.8 HOT-4	one eighty at seven.		
15:07:26.0 HOT-1	wh wh what does that mean?		
15:07:28.6 HOT-1	what airport?		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:07:28.9 HOT-4	ah the winds coming at one eighty.		
15:07:30.7 HOT-1	what. what airport?		
15:07:31.0 HOT-4	seven knots. at Horace Williams.		
15:07:33.4 HOT-1	one eight zero?		
15:07:34.5 HOT-4	one eight zero at seven.		
15:07:36.8 HOT-4	knots.		
15:07:39.1 HOT-1	huh. it's seven knots. that's hardly anything.		
15:07:47.6 HOT-4	[chuckle]. now it's variable at zero six.		
15:07:52.1 HOT-1	okay.		
15:08:47.6 HOT-4	let me get ah. so you get (it)?		
		15:08:55.6 AWOS-IGX	...wind variable at zero five. visibility one zero...

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:09:00.4 HOT-4	variable at zero five. zero six.		
15:09:02.6 HOT-4	visibility ten.		
15:09:03.5 HOT-1	sorry.		
15:09:04.7 HOT-4	let me check.		
		15:09:06.1 ATIS-RDU	[AWOS IGX switches to ATIS RDU Information X-ray on HOT-4's channel]
15:09:08.8 HOT-4	I'll check R-D-U again.		
15:09:15.8 HOT-1	yeah big dog. Sage don't you want to look out the dog window here?		
15:10:16.7 HOT	[sound of c-chord, similar to altitude alerter]		
15:10:25.3 HOT-4	you gotta'. you gotta'.		
15:10:27.7 HOT-1	a what?		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:10:29.4 HOT-4	traffic.		
15:10:29.8 HOT-1	traffic. kay.		
15:10:32.1 HOT-1	it's like thirty miles away.		
15:10:41.0 HOT-1	boy this is rough.		
15:11:07.8 HOT	[static on HOT-1's channel]		
15:11:42.3 HOT-4	alright can you turn off your squelch?		
		15:11:54.1 RDO-1	a center ah eight two zero juliet tango we're getting a lot of interference here. and just wanted to make sure you weren't looking for us.
		15:12:08.7 CTR-JAX	november eight two zero juliet tango you need contact Washington Center one three five point two sir.
		15:12:13.9 RDO-1	thirty five two for a hundred juliet-- sorry ah eight two zero juliet tango thanks.
15:12:19.7 HOT-1	one thirty two point what?		

PRIOR FLIGHT – NOVEMBER 24, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

15:12:22.7
HOT-4 (what?)

15:12:33.5
RDO-1 ah-and say again frequency for eight two zero juliet tango.

15:12:36.6
CTR-JAX thirty five point two.

15:12:39.0
RDO-1 thirty five two for hundred--sorry eight two zero juliet tango. thanks.

15:12:42.8
CTR-JAX have a good one [continues to another aircraft].

15:12:47.2
RDO-1 and center ah eight two zero juliet tango is with you at two three oh.

15:13:25.0
RDO-1 eight two zero juliet tango is with you at two three oh.

15:13:40.8
RDO-1 eight two zero juliet tango is with you at two three oh.

15:13:43.6
CTR-WAS eight two zero juliet tango Washington Center. roger.

15:13:48.2
HOT-1 okay.

15:13:53.8
CAM [static-like sound begins, similar to precipitation]

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:13:59.5 HOT-1	rain. cool.		
		15:14:15.5 CTR-WAS	zero juliet tango cross ** at ** flight level one (nine) zero.
		15:14:21.9 RDO-1	a eight two zero juliet tango I'm sorry. there is a lot of interference. say again.
		15:14:25.4 CTR-WAS	zero juliet tango descend and maintain flight level one niner zero.
		15:14:27.9 RDO-1	one nine oh. okay. a eight two zero juliet tango.
		15:14:42.5 AWOS-IGX	[by this time, ATIS RDU switches to AWOS IGX on HOT-4's channel]
15:15:30.1 HOT-1	see we got a little teeny bit of ice? see the wings?		
15:15:33.1 HOT-4	yes.		
		15:15:52.8 CTR-WAS	zero juliet tango turn twenty degrees right. vector in trail.
		15:15:57.8 RDO-1	alright. twenty right ah for ah zero juliet tango roger.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:16:08.4 RDO-1	and ah zero juliet tango I'm sorry. could you say again the altitude you want us down to?
		15:16:12.4 CTR-WAS	down to flight level one niner zero. twenty degrees right.
		15:16:15.1 RDO-1	okay. twenty right. down to one nine oh. eight hundred juliet. ah zero juliet tango.
		15:16:36.0 EICAS	[sound of chime, similar to Engine Instrument Crew Alerting System (EICAS) message]
		15:16:43.3 AWOS-IGX	[AWOS IGX has been playing on HOT-4's channel]...wind variable at zero six...
15:17:02.6 HOT-4	it said one nine-- wind one ninety at four. and then variable at six. so I guess it's just changing its mind.		
15:17:10.9 HOT-1	at which airport are we talking about?		
15:17:11.8 HOT-4	ah Horace Williams.		
15:17:13.0 HOT-1	ninety at four?		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:17:14.3 HOT-4	it says one [emphasis] ninety. at four. and then variable at oh six.		
15:17:18.9 HOT	[sound of c-chord, similar to altitude alerter]		
		15:17:19.3 AWOS-IGX	[AWOS IGX has been playing on HOT-4's channel]...wind variable at zero six...
15:17:21.6 HOT-4	variable at zero six.		
15:17:23.5 HOT-1	so if it's one nine zero...		
15:17:26.1 HOT-4	and then six.		
15:17:27.9 HOT-4	it keeps ch- shifting.		
15:17:28.3 HOT-1	(okay) one nine.		
		15:17:30.6 CTR-WAS	zero juliet tango cleared direct *.
15:17:31.5 HOT-4	and then variable. yeah.		

PRIOR FLIGHT – NOVEMBER 24, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

15:17:33.8
RDO-1 ah zero juliet tango. actually we are going to change our destination to Chapel Hill if we could. could we go direct (FICA)?

15:17:41.3
CTR-WAS okay you wanna' do now. you want to do what now sir?

15:17:43.9
RDO-1 we're going to change our destination to Chapel Hill. india golf x-ray.

15:17:48.4
CTR-WAS alright standby.

15:17:50.4
RDO-1 thanks a lot.

15:17:53.2
CTR-WAS and ah zero juliet tango. cleared direct BUZZY and then direct destination.

15:17:54.7
AWOS-IGX [AWOS IGX has been playing on HOT-4's channel]...wind one eight zero at zero--

15:17:57.3
RDO-1 okay BUZZY destination. ah zero juliet tango. thanks a lot.

15:18:00.6
CTR-WAS and [stammer] correction zero juliet tango *** descend and maintain one two twelve thousand. Raleigh altimeter two nine seven seven.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:18:03.4 HOT-4	now it's one eight zero.		
15:18:08.3 HOT	[sound of c-chord, similar to altitude alerter]		
		15:18:09.4 RDO-1	okay. down to twelve. ah zero juliet tango.
		15:18:30.9 AWOS-IGX	[AWOS IGX has been playing on HOT-4's channel]...wind one eight zero at zero seven...
15:19:03.7 HOT-4	one eighty at seven.		
15:19:05.1 HOT-1	okay.		
		15:19:28.3 CTR-WAS	zero juliet tango you're cleared direct destination.
		15:19:31.3 RDO-1	okay direct destination. zero juliet tango. thanks.
		15:19:47.4 CTR-WAS	zero juliet tango contact Raleigh approach one two eight point three. you have a good afternoon sir.
		15:19:51.8 RDO-1	twenty eight point three for zero juliet tango and thanks very much for your help. we really appreciate it.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:20:11.0 ATIS-RDU	[AWOS IGX switches to ATIS RDU Information X-ray on HOT-4's channel]
15:20:21.2 HOT-1	what's the altimeter. two nine seven six?		
15:20:27.9 HOT-4	okay Raleigh is two ten at ten with gusting twenty two. ah here it's saying one eighty at oh seven or variable at oh six.		
15:20:35.4 HOT-1	okay so which runway do you think we should use?		
15:20:40.0 HOT-4	one eighty.		
15:20:43.1 HOT-4	ahh uhhm.		
15:20:45.5 HOT-4	which is closer? one eighty to two seventy is ninety. ninety and...		
15:20:50.5 HOT-1	five it's **--so it's one eighty or what is it?		
15:20:51.0 HOT-4	it would be ninety nine **--.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:20:53.3 HOT-1	one twenty.		
15:20:53.5 HOT-4	one eighty.		
15:20:54.4 HOT-4	yeah.		
15:20:54.8 HOT-1	one eighty. one eighty or what?		
15:20:56.6 HOT-4	two twent-- [stammer] R-D-U is two twenty.		
15:20:57.4 HOT-1	or two twenty.		
15:20:58.9 HOT-1	okay so. we'll do is go straight into there and we'll go over and just do a visual.		
15:21:29.3 HOT	[sound of c-chord, similar to altitude alerter]		
		15:21:34.6 CTR-WAS	eight two zero juliet tango. center.
		15:21:38.1 RDO-1	eight two zero juliet tango go ahead.

PRIOR FLIGHT – NOVEMBER 24, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

15:21:45.9
RDO-1 zero juliet tango.

15:21:51.5
RDO-1 and approach ah eight two zero juliet tango is with ya'.

15:22:03.6
RDO-1 approach eight two zero juliet tango.

15:22:06.1
APR-RDU november eight two zero juliet tango Raleigh. ahhh say intentions.

15:22:10.3
RDO-1 yeah. sorry. we're going to go direct Chapel Hill for a visual if that's okay with you.

15:22:14.4
APR-RDU zero juliet tango roger. ah descend and maintain eight thousand. contact approach one three two point three five.

15:22:21.5
RDO-1 thirty two thirty five and ahhh down to eight thousand. ah zero juliet tango.

15:22:44.4
RDO-1 and (approach) ah eight two zero juliet tango is with you out of ah eleven eight for eight thousand.

15:22:49.7
APR-RDU eight two zero juliet tango Raleigh Approach. I guess center forgot you. descend and maintain three thousand. Chapel Airport is one o'clock and twelve miles.

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:22:57.6 RDO-1	okay. I think we got it in sight. we'll stick with you for a minute. ah we'll just plan on a visual. thanks.
		15:23:02.3 APR-RDU	ah zero juliet tango let me know when you see it.
15:23:07.0 HOT-1	nine.		
15:23:23.5 HOT-4	so @.		
15:23:24.3 HOT-1	what.		
15:23:24.8 HOT-4	missing in Chapel Hill...		
15:23:26.3 HOT-1	okay...		
15:23:26.4 HOT-4	...winds...		
15:23:26.9 HOT-1	...okay...		
15:23:27.0 HOT-4	...R-D-U two ten at ten.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:23:28.6 HOT-1	okay so we're going to plan on two seven.		
15:23:30.8 HOT-1	we're going to go straight to the airport and entering a right downwind. so we're trying to get down. we're on idle right now and we gotta' get down to eight thousand feet.		
15:23:40.2 HOT-1	so that's about two minutes away. (so) four thousand feet.		
15:23:43.8 HOT-1	ah-wh-er-ah-ya-wer-ya.		
15:23:54.3 HOT-1	lights on. [exhale]		
15:24:01.8 HOT-1	kay. so I'm going to put this back to Chapel Hill...		
15:24:06.7 HOT	[sound of c-chord, similar to altitude alerter]		
15:24:08.5 HOT-1	...Unicom. I'm gonna...		
15:24:09.8 HOT-4	oh that is Chapel Hill we're gonna--		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:24:11.1 HOT-1	I know...		
15:24:11.1 HOT-4	we're going to go straight over it.		
15:24:11.7 HOT-1	...I know [with emphasis].		
15:24:12.3 HOT-4	oh.		
15:24:13.2 HOT-1	[chuckle]		
15:24:14.4 HOT-1	(I-you) see the airport?		
15:24:15.4 HOT-4	yeah.		
15:24:16.2 HOT-4	it's right underneath us.		
15:24:17.7 HOT-4	**--.		
15:24:17.8 HOT-1	oh. I see it. yah. yah.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:24:20.5 RDO-1	and ah approach ah eight two zero ah juliet tango we have the airport in sight. we're gonna' go ahead and cancel with you now. thanks a lot for your help.
		15:24:27.4 APR-RDU	ah zero juliet tango roger. only traffic I show is about a mile final from the east. * one two zero zero. radar services terminated. change to advisory frequency approved.
		15:24:28.7 AWU	autopilot. [similar to autopilot disconnect]
		15:24:35.1 RDO-1	okay. thanks for your help.
		15:24:36.7 APR-RDU	roger.
		15:24:40.3 RDO-1	and Chapel Hill Traffic. anybody there?
15:24:42.5 HOT	[sound of c-chord, similar to altitude alerter][sound of c-chord, similar to altitude alerter]		
		15:24:42.8 CTAF-AC7	***.
		15:24:44.6 AWU	altitude. [similar to altitude correction warning]

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		15:24:46.9 RDO-1	ah say again for Chapel Hill.
		15:24:48.4 CTAF-AC7	Cheyenne short final two seven Chapel Hill.
		15:24:51.3 RDO-1	okay great. we're ah we're gonna' be swinging into the pattern. we'll let chy'a know.
15:24:55.4 HOT-1	oh I don't see the airport. do you. oh it's off to the right.		
15:24:57.9 HOT-4	yeah. it's-it's right here.		
15:24:59.8 HOT-4	*.		
15:24:59.9 HOT-1	it's right here. so right here doesn't help me.		
15:25:01.1 HOT-4	two o'clock.		
15:25:02.8 HOT-1	kay.		
15:25:03.3 HOT-4	ah we're just going over the uhm the edge of it. the end of it.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:25:06.6 HOT-1	the edge of it.		
15:25:09.1 HOT-1	okay so we're at sixty seven hundred.		
		15:25:25.7 CTAF-AC7	[Cheyenne CTAF-AC7 communicates with Unicom]
		15:25:40.9 CTAF-AC7	and traffic inbound to Chapel Hill you have a Cheyenne back taxiing on the runway. I'll call you when I'm clear. Chapel Hill.
		15:25:47.3 RDO-1	okay. it shouldn't be a problem. we're still about five out.
		15:25:53.3 CTAF-AC7	* it (got) a little crazy comin' over the **.
		15:25:56.4 RDO-1	yeah. I was curious about that. is the wind favoring two three or stir five.
		15:25:60.0 AWOS-IGX	[CTAF frequency on HOT-1's channel switches to AWOS-IGX during the wind-related transmission just made.]
15:26:02.8 AWU	sink rate.		
15:26:04.9 HOT-4	ah.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:26:07.2 HOT-1	where's the airport?		
15:26:08.0 AWU	sink rate.		
15:26:10.1 HOT-4	ah over there I think.		
15:26:17.1 HOT-1	uhm.		
15:26:19.7 HOT-1	kay. I need to. you switched frequencies and I was talking to that guy.		
15:26:22.2 HOT-4	oh I'm so sorry.		
15:26:23.7 HOT-1	okay. kay I-I-I I've got the wind. that's all I need right now. and now I just wanna' get setup.		
15:26:50.1 HOT-1	ah let's see.		
15:27:03.2 AWU	flight director. [similar to flight director disconnect]		
15:27:06.5 HOT-1	okay.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:27:08.4 HOT-1	so. [exhale]. how far are we past the airport?		
15:27:12.3 HOT-4	ah quite a ways. we're in Durham. [chuckle]		
15:27:14.9 HOT-1	alright.		
15:27:18.5 HOT-1	[mumbling, unintelligible].		
15:27:19.8 HOT-4	ah we don't want to get too close to that building we've--		
15:27:22.8 HOT-1	[chuckle] okay. I was planning scaring the # out of the people who were there [chuckling].		
15:27:36.0 HOT-4	just what's (at). uhhh.		
15:27:39.6 HOT-4	you have to be a thousand feet above. right?		
15:27:42.1 HOT-1	yeah. we're okay.		
15:27:44.6 HOT-1	pattern is about a thousand so.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:27:58.6 HOT-1	[inhale] #.		
15:28:01.9 HOT-1	[rustling] can you take that off?		
15:28:06.8 HOT-1	no. no. take-take that white thing off. I need to use it.		
15:28:09.9 HOT-1	I need to use it. not you.		
15:28:11.6 HOT	[sound of rustling]		
15:28:15.8 HOT-4	#. we're going down @. [chuckle]		
15:28:30.7 HOT-4	think I see it.		
15:28:32.3 HOT-1	there it is.		
15:28:41.4 HOT-4	you see it?		
15:28:42.2 HOT-1	yep.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:28:46.1 AWU	landing gear. landing gear. landing gear. landing gear. [similar to landing configuration disagreement]		
15:29:22.5 HOT-1	okay. I see the VASI's.		
		15:29:27.6 APR-RDU	[APR-RDU on HOT-4's channel (and also on HOT-1's channel, similar to playing on speaker)]
15:29:31.1 HOT-1	can you turn that off.		
		15:29:32.2 APR-RDU	[APR-RDU stops]
15:29:32.2 HOT-4	what?		
		15:29:33.0 RDO-1	and Chapel Hill uh uh Phenom one hundred echo quebec is two mile final two seven.
15:30:01.9 AWU	five hundred.		
15:30:34.1 CAM	[sound of thunk, similar to touchdown]		
15:31:22.9 HOT-1	thank you.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:31:30.6 HOT-4	where does this go?		
15:31:31.8 HOT-1	it's back in here.		
15:31:56.3 HOT-1	I'm just trying to see the windsock.		
15:31:59.9 HOT-1	yeah we definitely chose the right runway.		
15:32:24.0 HOT-4	wonder whether those were our locked brakes. uhm. [laughter]		
15:32:27.2 HOT-1	what.		
15:32:27.7 HOT-4	[laughter]. there's uhm you know ah skid marks.		
15:32:31.8 HOT-1	oh really.		
15:32:32.4 HOT-4	and I wondered whether it was ours. [chuckle]		
15:32:34.3 HOT-1	might be.		

PRIOR FLIGHT – NOVEMBER 24, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
15:33:11.9 CAM	[sound of decreased engine noise, similar to engine spool down]		
15:33:17.1 CAM	[sound of numerous clicks and snaps]		
15:33:17.7 HOT-4	okay.		
15:33:29.1 HOT-4	it was gusty?		
15:33:30.7 HOT-1	yeah. it was gusty.		
15:33:33.2 HOT-1	seventeen hundred and twenty five pounds. good.		
END OF PRIOR FLIGHT TRANSCRIPT			
END OF PRIOR FLIGHT RECORDING			
15:33:33.2 EST			

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
01:01:20 CVR Elapsed Time, 09:39:02.6 EST, December 8, 2014			
START OF ACCIDENT FLIGHT RECORDING			
START OF ACCIDENT FLIGHT TRANSCRIPT			

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:39:02.6 CAM	[power cycle to CVR, start of accident flight recording, December 8, 2014]		
09:39:03.5 HOT-CHA	[sound of tone for .7 seconds, similar to system response to battery switch on]		
09:39:04.2 HOT-CHB	[sound of tone for .7 seconds, similar to system response to battery switch on]		
09:39:04.7 CAM	[sound of tone for 1.2 seconds, similar to system response to battery switch on]		
09:39:06.1 CAM	[sound of multiple clicks and switches]		
09:39:24.6 HOT-CHA	[sound of rustling]		
		09:39:31.6 RDO	[sound of first air traffic control radio reception on channels A and B]
09:39:46.6 AWU	aural warning okay.		
09:39:51.3 CAM	[change in background sound, similar to engine start sequence]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:39:54.6 CAM	[increase in background sound, similar to engine start and spool up (about 37 seconds)]		
09:40:00.5 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
09:40:37.6 HOT	TAWS system test okay.		
09:41:39.3 HOT	[sound of increased airflow, similar to pressure regulator shutoff valve (PRSOV) valve opening]		
09:42:04.0 CAM	[increase in background sound, similar to engine start and spool up (about 24 seconds)]		
09:42:17.2 HOT-2	hey you got a headset?		
09:42:19.5 HOT	[sound of rustling]		
09:42:35.2 AWU	fire. fire. [sound of three chimes, similar to engine fire warning] [similar to fire protection test]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:42:41.5 AWU	stall stall.stall stall.stall stall.stall stall.[sound of click, similar to stick pusher] stall stall.stall stall. [similar to stall protection test]		
		09:43:59.8 RDO-1	Chapel Hill traffic ah Phenom one hundred echo quebec back taxi two seven.
09:44:14.1 CAM	[sound of changes in engine power, similar to taxi, continue until takeoff]		
		09:44:50.0 RDO-2	and Chapel Hill traffic Phenom one hundred echo quebec is departing the active two seven.
09:44:55.9 CAM-?	you ready @.		
09:44:57.4 HOT-3	***.		
09:45:08.5 CAM	[sound of increased noise, similar to power increase for takeoff]		
09:45:10.5 HOT-1	set [exhale].		
09:45:12.5 HOT-1	T-U. A-T-Rs armed.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:45:18.3 HOT	[sound of rattling (about 15 seconds)]		
09:45:30.7 HOT-1	v-one.		
09:45:38.8 CAM	[sound of multiple clicks]		
09:45:50.4 CAM	[sound of change in airflow, similar to end of landing gear retraction]		
09:45:52.5 HOT	[sound of click-click, similar to flap handle]		
		09:46:16.1 RDO-1	and departure Phenom one hundred echo quebec is with you off of Chapel Hill.
		09:46:20.5 APR-RDU	Phenom one zero zero echo quebec Raleigh Departure squawk four six two zero. maintain V-F-R. Raleigh altimeter three zero four two.
		09:46:28.1 RDO-1	one hundred echo quebec you got it.
09:46:38.7 HOT-1	yeah. unusually bumpy.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:46:40.4 HOT-2	yeah. usually * this * corridor is not the greatest along in here. but. my flying experience.		
09:46:47.0 HOT-1	do you--have you flown?		
09:46:48.5 HOT-2	not...		
09:46:48.9 HOT-1	do you fly at all?		
09:46:49.7 HOT-2	...not in this small of a plane but no I'm just talking about just generally in ah...		
		09:46:53.9 APR-RDU	Phenom * echo quebec say altitude leaving.
09:46:54.0 HOT-2	...commercial flights.		
09:46:55.7 HOT-1	yeah.		
09:46:56.2 HOT-2	a good sh. a good bit between here and D-C is usually...kind of bumpy.		
09:47:01.9 HOT-1	yyyyeap.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		09:47:03.2 APR-RDU	november zero echo quebec radar contact two and a half north of Chapel Hill. say altitude leaving.
09:47:06.2 HOT-2	when I lived in.		
		09:47:08.2 RDO-1	hundred echo quebec is out of three point six.
		09:47:10.7 APR-RDU	november zero echo quebec cleared to Gaithersburg airport via Gordonsville as filed climb and maintain one two thousand.
		09:47:16.7 RDO-1	okay. cleared to Gaithersburg via Gordonsville as filed. up to twelve one hundred echo quebec thanks.
09:47:19.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
09:47:28.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
09:47:32.4 AWU	autopilot. [similar to autopilot disconnect]		
09:47:33.3 HOT-1	oh.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:47:37.1 HOT-1	oh man [low volume, exhaling].		
09:47:48.4 HOT-2	nice.		
09:47:49.5 HOT-1	I love this feeling.		
09:47:50.9 HOT-2	oh yeah.		
09:47:55.0 HOT-2	yeah the place that was really bumpy was Baltimore to Cleveland. when I lived in Cleveland it was really bumpy..		
09:48:00.4 HOT-1	it's hard to tell you know the weather is so variable at different times.		
09:48:16.9 HOT	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		09:48:44.4 APR-RDU	november zero echo quebec contact Washington Center one three five point two.
		09:48:48.6 RDO-1	thirty five two for a hundred echo quebec. thanks for your help. bye-bye.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		09:48:51.3 APR-RDU	bye-bye.
		09:48:53.4 RDO-1	good morning Washington one hundred echo quebec is with you out of eight point six for twelve.
		09:48:58.2 CTR-WAS	november one zero zero echo quebec Washington Center good morning. climb and maintain flight level two two zero.
09:49:02.5 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		09:49:02.9 RDO-1	two two zero one hundred echo quebec thanks.
09:51:00.5 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		09:51:20.0 CTR-WAS	november one zero zero echo quebec cleared direct LURAY intersection that's lima uniform romeo alpha yankee direct Martinsburg. rest of route remains unchanged.
		09:51:29.5 RDO-1	okay. LURAY Martinsburg one hundred echo quebec. thanks.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		09:52:50.7 CTR-WAS	november one zero zero echo quebec contact Washington Center one two four point zero five.
		09:52:55.2 RDO-1	twenty four zero five for (a) hundred echo quebec. thanks for you help. bye-bye.
		09:52:58.1 CTR-WAS	good day.
		09:53:00.9 RDO-1	good morning Washington one hundred echo quebec is with you out of seventeen four for two two oh.
		09:53:05.4 CTR-WAS	november one zero zero echo quebec Washington Center roger.
09:54:51.9 HOT	[sound of c-chord, similar to altitude alerter]		
09:56:32.8 HOT-?	[sound of sneeze or cough]		
09:56:42.2 HOT-1	you warm enough?		
09:56:44.1 HOT-2	huh?		
09:56:44.6 HOT-1	you warm enough?		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:56:45.3 HOT-2	yeah. I'm warm enough.		
09:56:46.4 HOT-1	you warm enough @?		
09:56:48.6 HOT-1	okay. sorry we don't have a stewardess today.		
09:56:50.3 HOT-2	[sound of two coughs or sneeze]		
09:57:30.2 HOT-1	this is a really nice airplane cause all this stuff's so automated.		
09:57:33.0 HOT-2	yeah. I see they took us out a little west.		
09:57:37.0 HOT-1	yeah. yeah.		
09:57:37.4 HOT-2	yeah.		
09:57:39.2 HOT-1	it's weird you know there's a restricted area around here. and because of that -- see if we can.		
09:57:47.3 HOT-1	yeah.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:57:57.0 HOT-1	this is Dulles and National.		
09:57:58.8 HOT-2	yeah.		
09:57:59.3 HOT-1	so they kind of take you around the side.		
09:58:06.3 HOT-1	wow it's rough.		
		09:58:10.9 RDO-1	and a hundred echo quebec ah can we get two four zero it's ah a little bumpy down here.
		09:58:16.8 RDO-1	if it's any better up there.
		09:58:20.2 CTR-WAS	november one zero zero echo quebec ah climb and maintain flight level two three zero.
		09:58:24.5 RDO-1	okay. two three zero. thank you.
09:58:33.6 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
09:58:35.5 HOT	[sound of c-chord, similar to altitude alerter]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:58:45.7 HOT-2or3	so how long you--		
		09:58:46.2 CTR-WAS	november one hundred echo quebec contact Washington Center one two one point six seven.
		09:58:50.6 RDO-1	twenty one sixty seven for a hundred echo quebec. thanks.
		09:58:57.7 RDO-1	and Washington one hundred echo quebec is with you out of twenty two six for two three oh.
		09:59:04.3 CTR-WAS	november one zero zero echo quebec Washington Center roger.
09:59:22.2 HOT-1	not a whole lot better up here. usually when you get above the clouds. uhm. gets a lot. a lot nicer.		
09:59:24.0 CAM	[sound of three or four clicks]		
09:59:28.3 CAM	[change in ambient noise, to a slight electronic hum]		
09:59:29.4 HOT-2	yeah.		
09:59:44.4 HOT-2or3	* front comin' this direction tomorrow.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
09:59:48.2 HOT-2	he said there's there's a front comin' this direction tomorrow so that could be part of it.		
09:59:51.2 HOT-1	oh. oh.		
09:59:53.1 HOT-1	yeah. it's supposed to be rainin' when we're leaving.		
10:00:15.6 HOT-2	yeah looks like we're in the clouds too.		
10:00:17.6 HOT-1	yeah.		
10:00:32.4 CAM	[sound of two or three clicks]		
10:01:35.6 HOT	[Person 1 ** starts conversation "so you got a feeling for how this thing is going to go tomorrow." Person 1 and 2 then talk about prospective meeting, technical details such as life tables, CMC, PH levels, and experiments. (conversation lasts about 1-minute 38-seconds)]		
10:02:55.0 CAM	[sound of click]		

** As indicated in legend, Person 1 refers to the accident pilot, Person 2 refers to the cockpit passenger on the accident flight.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:03:38.1 HOT-1	[continues discussion about parties to business meeting. stops talking mid-sentence when CTR-WAS begins transmission.]		
		10:03:46.5 CTR-WAS	november one zero zero echo quebec descend and maintain one three thousand. the * altimeter three zero five four.
		10:03:52.4 RDO-1	okay. ah can we made that P-D do you think it's a little bit smoother up here than it was down below. pretty bumpy.
		10:03:58.1 CTR-WAS	november one hundred echo quebec cross LURAY at one three thousand.
		10:04:01.9 RDO-1	LURAY at one three thousand one hundred echo quebec.
10:04:07.1 HOT-1	ahh. errr. ahhh...		
		10:04:14.2 AWOS-CHA at GAI	[faint AWOS audible on CHA (Person 2's channel) and continues until frequency changed at 10:27:38]
10:04:40.0 HOT-1	oh. actually.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:04:47.0 CTR-WAS	november one hundred quebec echo quebec. next sector has approved LURAY at fifteen thousand. amend altitude cross LURAY at one five thousand.
		10:04:52.9 RDO-1	okay I appreciate that. fifteen at LURAY ah one hundred echo quebec.
10:05:09.4 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
10:05:25.1 HOT-1	so I don't you know [stammer] much about this stuff? about this? but this is really. you know these systems are really nice. like. they told us to cross at a certain altitude. so this will calculate. so when we get to there it will actually start the airplane down so we'll cross that right at fifteen thousand.		
10:05:39.9 HOT-2	okay.		
10:05:41.2 HOT-1	and ah--		
10:05:41.2 HOT-2	yeh I knew that's what they were sayin' but...		
10:05:43.3 HOT-1	yeah.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:05:43.3 HOT-2	...thirteen would have been. the way the we was goin' I agree with you. fifteen was better than thirteen crossing it if we can....		
10:05:50.3 HOT-1	one of the other thing is you know. these engines are you know jets are realllly efficient up high when you go down low you just burn lots of fuel and you don't go very fast so...		
10:05:55.7 HOT-2	oh yeah.		
10:05:58.1 HOT-1	...I'm trying to stay up as long as I can.		
10:05:60.0 HOT-1	usually what happens is when we get up around here they'll-they'll take us directly to Gaithersburg. and it's a little bit shorter.		
10:06:18.8 HOT	[Person 2 resumes the business conversation from about 5 minutes ago. Both Person 1 and 2 talk about the business practices of the meeting attendees, raising funds for spermicide, rationale for requiring a prescription for the spermicide under development, and submission of documents. (conversation lasts about 58 seconds)]		
10:07:05.3 CAM	[decrease in background sound, similar to power reduction (occurs in last 15 seconds of business discussion)]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:07:21.9 HOT-1	boy this is rough.		
10:07:24.5 HOT-2	yeah this is. this this I would agree with yah.		
10:07:43.0 HOT-1	well you see where the wind is moving. it's kind of from this side.		
10:07:45.7 HOT-2	mm hmm.		
10:07:46.8 HOT-1	that's...		
10:07:47.8 HOT-2	yeah. yep.		
10:07:48.5 HOT-1	usually the weather moves up the coast like that. hard to know though. you do get a lot of weird uh. things.		
10:08:03.4 CAM	[increase in background sound, continues for about 25 seconds]		
10:08:12.7 HOT-1	so I'm trying to figure out whether this is cold. that's that's definitely cold.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:08:27.9 CAM	[decrease in background sound]		
10:08:28.5 HOT-1	turn that off that's too cold for me. okay that's.		
		10:08:44.6 AWOS-CHB at GAI	[AWOS begins at low volume CHB (Person 1's channel) and continues until 10:10:03]
10:10:35.6 AWU	vertical track. [similar to vertical track correction warning]		
10:11:33.3 CAM	[reduction in background sound, similar to throttle reduction]		
10:11:53.8 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:12:24.1 CTR-WAS	november one zero zero echo quebec contact Washington Center one three three point two.
		10:12:27.8 RDO-1	thirty three two for a hundred echo quebec. thanks.
10:12:43.9 CAM	[reduction in background sound, similar to throttle reduction]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:12:45.5 RDO-1	one hundred echo quebec is with you out of ah twenty point nine for fifteen.
		10:12:53.8 CTR-WAS	november one zero zero echo quebec Washington Center roger. expedite your descent ah your expecting fifty-five miles southwest of Martinsburg at niner thousand.
		10:13:03.6 RDO-1	fifty-five west [emphasis on west] of Martinsburg at ah nine. is that correct? you want us to put that in as a restriction?
		10:13:08.8 CTR-WAS	november zero echo quebec your expecting ah fifty-five miles southwest of Martinsburg at niner thousand.
		10:13:14.1 RDO-1	okay we'll expect that one hundred echo quebec.
		10:14:09.3 AWOS-CHB at GAI	[AWOS begins at low volume CHB (Person 1's channel) and continues until 10:23:23]
10:14:12.5 HOT-1	wow a lot of traffic.		
10:14:14.4 HOT-2	yeah.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:14:44.5 CTR-WAS	november one hundred echo quebec cross five-five miles southwest of Martinsburg at and maintain niner thousand.
		10:14:49.2 RDO-1	fifty-five west of Martinsburg at nine one hundred echo quebec.
10:15:15.4 HOT	[sound of c-chord, similar to altitude alerter]		
10:16:00.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:16:38.3 RDO-1	and one hundred echo quebec you gave us a restriction which was a little bit difficult to get. but I just wanted to let you know we are on the way down.
10:16:56.6 CAM	[slight increase in background noise, similar to throttle increase]		
10:17:03.2 HOT-?	***.		
10:17:55.9 CAM	[slight decrease in background noise, similar to throttle decrease]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:18:32.7 CTR-WAS	november one zero zero echo quebec descend and maintain seven thousand.
		10:18:35.7 RDO-1	seven thousand one hundred echo quebec.
		10:18:37.9 CTR-WAS	* echo quebec contact Potomac Approach one two zero point four five. good day.
10:18:38.8 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:18:41.6 RDO-1	two zero. two zero point four five one hundred echo quebec.
		10:18:46.7 RDO-1	and approach one hundred echo quebec is with you on the way down to seven.
		10:18:49.6 APR-POT	* one zero zero echo quebec Potomac Approach roger. Dulles altimeter three zero five eight. descend and maintain five thousand.
10:18:50.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:18:56.4 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:18:56.5 RDO-1	five thousand one hundred echo quebec.
		10:19:08.7 APR-POT	(Phenom) one zero zero echo quebec how did they file you to Gaithersburg?
		10:19:12.3 RDO-1	uhm Martinsburg uhm Westminster direct.
		10:19:48.5 APR-POT	* zero quebec good rate down through ah nine thousand please. [static in APR-POT radio call]
		10:19:53.9 RDO-1	one hundred echo quebec say again (please).
		10:19:56.4 APR-POT	Phenom zero echo quebec good rate through niner thousand please.
		10:20:01.3 RDO-1	alright expedite through nine. was that correct for (one) hundred echo quebec?
		10:20:04.2 APR-POT	Phenom zero echo quebec affirmative. no delay through nine descend and maintain five thousand.

ACCIDENT FLIGHT – DECEMBER 8, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

10:21:06.2
HOT-2 * alright.

10:20:08.3
RDO-1 okay we'll expedite through nine down to five one hundred echo quebec.

10:20:47.1
AWOS-GAI [AWOS continues, louder on both channels]

10:21:07.1
AWOS-CHB at GAI [AWOS louder on CH-B (Person 1's channel)]

10:21:15.0
APR-POT ["november one zero zero echo quebec" only recorded on CH-A (Person 2's channel)] [transmission continues on both channels A and B] contact approach one two six point one.

10:21:23.6
APR-POT Phenom zero echo quebec contact approach one two six point one--one two six point one for Phenom zero echo quebec.

10:21:31.1
RDO-1 twenty. one twenty six point one for a hundred echo quebec. thanks.

10:21:38.6
RDO-1 and approach one hundred echo quebec is with you out of eight point two for five.

ACCIDENT FLIGHT – DECEMBER 8, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

10:21:41.8 AWOS-GAI	[AWOS has been playing at increasing volume on CH-A and CH-B] weather observation one five two one zulu. weather. wind zero seven zero at five. visibility more than one zero. sky condition few clouds at two thousand three hundred...
10:21:55.4 APR-POT	november ah one hundred echo quebec Dulles Altimeter is three zero five eight. verify you have the weather and say approach request.
10:22:02.5 RDO-1	ah hundred echo quebec we do. could we get the G-P-S one four and we'll circle to land three two.
10:22:06.9 APR-POT	(okay) expect that.
10:22:15.8 RDO-1	no actually well why don't we just do the-the G-P-S 14 to begin with. one hundred echo quebec.
10:22:21.3 APR-POT	alright.
10:23:00.2 AWOS-GAI	[AWOS volume increases notably on CH-B (Person 1's channel)] S-F-R-A rules are in effect. do not squawk twelve hundred at anytime. deer and birds have been seen on the airfield. fly over Gaithersburg airport at two thousand feet. runway three two is right hand pattern.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:23:22.7 AWOS-GAI	Montgomery County Airpark * automated weather observation one five two three zulu. weather. wind zero seven zero [volume increases] at six. visibility more than one zero. sky condition two thousand one hundred scattered. ceiling three thousand overcast. temperature minus one Celsius. dewpoint minus niner Celsius. altimeter [volume lowers on CH-B (Person 1's channel)]. [AWOS stops on CH-B, continues on CH-A]
10:23:24.1 HOT	[sound of c-chord, similar to altitude alerter]		
10:23:47.0 HOT-1	alright.		
10:23:52.2 HOT-1	[sound of exhale]		
		10:24:10.3 RDO-1	and ah (one) hundred echo quebec if you'de ah if we could get BEGKA direct ah when you're able that would be great. thanks.
		10:24:18.6 APR-POT	november zero echo quebec roger. fly heading ah zero six zero for now.
		10:24:22.3 RDO-1	zero six zero. one hundred echo quebec.
		10:26:21.7 APR-POT	* zero echo quebec fly heading zero eight zero.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:26:24.2 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:26:24.6 RDO-1	zero eight zero. one hundred echo quebec.
		10:27:38.3 AWOS-GAI	[AWOS plays again at higher volume (both channels)] Montgomery County Airpark automated weather observation one five two seven zulu. weather. wind zero six zero at six. visibility more than one zero. sky condition few clouds at two thousand one hundred. ceiling three thousand overcast. temperature minus one Celsius. dewpoint minus eight Celsius. altimeter three zero six one. remarks S-F-R-A rules are--- [AWOS stops on both channels]
		10:28:27.4 APR-POT	zero echo quebec proceed direct BEGKA. descend and maintain four thousand.
10:28:30.8 CAM	[sound of click]		
		10:28:31.0 RDO-1	direct BEGKA down to four one hundred echo quebec. thanks.
10:28:33.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:28:41.2 CTAF	[CTAF transmissions begin on both CH-A (Person 2) and CH-B (Person 1) until end of recording. Additionally, APR-POT is also on both channels (simultaneous with CTAF) until CH-B ends APR-POT at 10:34:43 (CH-A receives APR-POT until end of recording)]
		10:28:42.0 CTAF-AC1	one five echo do you copy?
10:28:43.9 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:28:46.0 CTAF-AC2	hey this is five echo. what's up?
		10:28:48.0 CTAF-AC1	***.
		10:28:50.7 CTAF-AC2	ah it looks like it's switchin' between straight down one four and across. so I'd say just use one four if you don't mind.
		10:28:58.5 CTAF-AC1	okay.
10:29:02.0 HOT	[sound of c-chord, similar to altitude alerter]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:29:08.7 CTAF-AC2	we're gonna' be full stop on all of ours. so if you (ever want to switch to that).
		10:29:13.7 CTAF-AC1	no. we are leaving.
		10:29:15.1 CTAF-AC2	(copy).
		10:29:21.8 RDO-1	Montgomery Traffic ah Phenom one hundred echo quebec is out twenty five. we'll be ah on the G-P-S ah fourteen approach.
10:29:34.6 HOT	[sound of click]		
		10:29:44.3 APR-POT	november zero echo quebec descend and maintain three thousand.
		10:29:47.8 RDO-1	three thousand one hundred echo quebec.
10:29:48.0 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
10:30:22.0 HOT	[sound of c-chord, similar to altitude alerter]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:30:43.9 CAM	[sound of click]		
10:31:11.2 HOT-1	ground. I see ground.		
10:31:13.8 HOT-2	yep.		
		10:31:20.6 APR-POT	november zero echo quebec. one one miles from BEGKA cross BEGKA at three thousand. cleared R-NAV G-P-S one four approach Gaithersburg.
		10:31:28.5 RDO-1	BEGKA at one three thousand. cleared for the approach. one hundred echo quebec.
10:34:42.0 CAM	[sound of click]		
10:34:57.5 CAM	[decrease in background sound, similar to throttle decrease]		
		10:35:03.1 CTAF-AC3	Montgomery Traffic november five two six three two departing runway one four Montgomery.
		10:35:13.0 RDO-1	Montgomery Traffic ah Phenom one hundred echo quebec is ten out we're just starting G-P-S one four approach.

ACCIDENT FLIGHT – DECEMBER 8, 2014

TIME and
SOURCE

INTRA-AIRCRAFT CONTENT

TIME and
SOURCE

AIR-GROUND COMMUNICATION CONTENT

10:35:22.7 CTAF-AC2	hey aircraft on (the) G-P-S. ** any precip out there?
10:35:31.3 CH-B	[APR-POT volume lower's on Person 1's radio]
10:35:33.9 RDO-1	Montgomery's a hundred echo quebec. you call us?
10:35:37.4 CTAF-AC2	ah yeah. just ah seein' if you got. we're on the ground here. seein' if you're gettin' any precip out there.
10:35:40.8 APR-POT	[this transmission was only recorded on CH-A (Person 2)] november zero echo quebec advise cancellation of IFR on this frequency on the air or ** ground.
10:35:42.5 RDO-1	ah we're kind of in and out of the clouds here.
10:35:45.0 CTAF-AC2	roger.
10:35:47.0 RDO-1	and that's at three thousand.
10:35:49.4 CTAF-AC2	roger.
10:36:02.8 CTAF-AC2	Tiger you gonna turn in here?

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:36:15.1 CTAF-AC2	Tiger are you comin' in here?
		10:36:21.6 CTAF-AC4	* a Tobago.
		10:36:23.7 CTAF-AC2	my mistake. Tobago are you comin' in here?
		10:36:28.4 RDO-1	if you're talkin' to Phenom one hundred echo quebec. we are.
		10:36:35.0 CTAF-AC2	not for you. tryin' to coordinate on the ground here.
		10:36:50.4 CTAF-AC3	* six three two. crosswind one four Montgomery.
		10:37:15.8 CTAF-AC3	Montgomery Traffic five two six three two turning downwind one four Montgomery.
10:37:32.8 CAM	[increase in background sound, similar to throttle increase]		
10:37:44.4 CAM	[increase in background sound, similar to throttle increase]		
10:38:12.1 CAM	[slight decrease in background sound, similar to throttle decrease]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:38:18.2 CAM	[slight decrease in background sound, similar to throttle decrease]		
		10:38:20.2 APR-POT	november one zero quebec you still with me?
		10:38:22.9 RDO-1	one hundred echo quebec sure are.
		10:38:24.4 APR-POT	sorry. what was your response to cancelling?
		10:38:26.8 RDO-1	ah we're I-M-C at the moment. but we should be ah we should be clear in just a minute or two. we'll let you know.
		10:38:32.3 APR-POT	** quebec roger. that's fine. change to advisory frequency approved. * remain * squawk until landing. and do not forget to cancel.
10:38:33.8 HOT	[sound of c-chord, similar to altitude alerter] [sound of c-chord, similar to altitude alerter]		
10:38:35.9 AWU	altitude. [similar to altitude correction warning]		
10:38:38.1 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:38:39.2 RDO-1	okay. hundred echo quebec.
10:38:47.9 CAM	[sound of rotary dial, similar to altitude and/or heading and/or course knob movement]		
		10:38:50.9 CTAF-AC2	Montgomery Traffic five two one five echo departing runway one four. Montgomery Traffic.
10:38:53.8 CAM	[slight decrease in background sound, similar to throttle decrease]		
		10:39:01.2 CTAF-AC2	(@) use caution. numerous birds in the vicinity of the runway.
		10:39:04.9 CTAF-(AC3)	in sight.
		10:39:06.6 RDO-1	and Montgomery one hundred echo quebec is now at seven miles straight in one four.
		10:39:10.7 CTAF-AC3	Montgomery Traffic five two six three two is turning base one four Montgomery.
10:39:13.9 CAM	[slight decrease in background sound, similar to throttle decrease]		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:39:14.7 CAM	[sound of two clicks]		
10:39:21.6 HOT-1	kay. so your job is to find the airport.		
10:39:24.2 HOT-2	[laughter]. uh huh.		
10:39:26.1 HOT-1	just look straight ahead and say airport in sight [chuckling].		
		10:39:29.3 CTAF-(AC2)	hey @ watch out for birds in the vicinity of ah one four.
		10:39:33.4 CTAF-AC1	okay. thanks.
		10:39:34.7 CTAF-(AC2)	(roger).
10:39:35.4 HOT-1	we're still ah two point two about five seven miles out. so.		
		10:39:35.5 CTAF-AC1	***.
		10:39:41.3 CTAF-AC1	how is it?
		10:39:42.3 CTAF-???	yeah man.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:39:46.5 CTAF-AC1	who?
		10:39:47.3 CTAF-AC5	(@).
		10:39:48.1 CTAF-AC1	hey what's up.
		10:39:49.9 CTAF-AC5	I'm good. (what are you doin?)
10:39:50.2 CAM	[sound of background static (about 49 seconds in duration)]		
		10:39:52.7 CTAF-AC1	(sleeping.)
		10:39:54.0 CTAF-???	[laughter]
		10:39:59.3 CTAF-AC3	Montgomery Traffic five two six three two is final one four Montgomery.
10:40:03.4 HOT-2	snow.		
		10:40:05.0 RDO-1	and Montgomery Traffic Phenom one hundred echo quebec is six out straight in one four.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:40:10.6 HOT-1	wow there's snow.		
10:40:12.0 HOT-2	yeah.		
10:40:12.8 HOT-1	who else.		
		10:40:14.7 CTAF-(AC5)	alright (@) talk to you later.
		10:40:16.5 CTAF-AC1	okay. take care.
		10:40:17.9 CTAF-(AC5)	bye-bye.
		10:40:19.8 CTAF-AC2	Montgomery Traffic five two one five echo turning crosswind runway one four Montgomery Traffic.
		10:40:28.7 CTAF-AC6	Montgomery Unicom zero zero lima.
		10:40:32.9 CTAF-UNICOM at GAI	zero zero lima go ahead.
10:40:34.2 HOT-(2)	I think I got it.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:40:34.3 CTAF-AC6	yeah. we got an unusual amount of birds out here on one four ***. bring out the cannon.
10:40:37.1 HOT-(2)	oh I see it. I see it. yep.		
10:40:37.1 HOT-(1)	there it is.		
10:40:38.9 HOT-(1)	straight ahead.		
10:40:39.1 CAM	[sound of click]		
10:40:39.7 HOT-(2)	yeah.		
		10:40:42.0 CTAF-UNICOM at GAI	yeah I'll get Lawnguy out there to do it for you.
		10:40:43.8 CTAF-AC6	hey thanks.
		10:40:45.1 RDO-1	and Montgomery Traffic Phenom one hundred echo quebec is now three out straight in one four.

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:40:53.6 CAM	[sound of multiple clicks]		
		10:41:02.7 CTAF-AC2	Montgomery Traffic five two one five echo turning downwind runway one four Montgomery Traffic.
10:41:04.7 CAM	[reduction in background sound, similar to throttle decrease]		
10:41:20.1 CAM	[slight increase in background sound, similar to throttle increase]		
		10:41:23.2 CTAF-AC1	@ are you ah leaving the ah pattern?
10:41:23.9 AWU	five hundred.		
		10:41:30.0 CTAF-AC1	@ do you copy?
10:41:31.5 CAM	[increase in background sound, similar to throttle increase]		
		10:41:31.5 CTAF-AC2	one more time.
		10:41:32.5 CTAF-AC1	are you leaving the traffic pattern?

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:41:34.5 CTAF-AC2	ah we're gonna' go up to twenty five hundred feet ***.
10:41:35.5 CAM	[CTAF communications begin being transmitted over the speaker]		
10:41:35.9 AWU	stall. stall.		
10:41:37.2 CAM	[increase in background sound, similar to throttle increase]		
		10:41:37.9 CTAF-???	***.
10:41:38.6 AWU	stall. [sound of clunk (on CAM)] stall.		
		10:41:39.5 CTAF-AC1	something is coming in.
10:41:41.2 AWU	stall. [sound of clunk (on CAM)] stall.		
		10:41:43.4 CTAF-AC2	what are you talkin' about. the weather?
10:41:44.0 AWU	stall. stall.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		10:41:44.9 CTAF-AC1	*
		10:41:46.6 CTAF-AC2	okay. we'll ah play it by ear.
10:41:46.7 AWU	stall. stall.		
10:41:48.4 HOT-(2)	oh no.		
10:41:49.3 HOT-(1)	whoa.		
10:41:49.4 AWU	stall. stall.		
10:41:50.6 HOT-(1)	whoa.		
10:41:51.1 HOT-?	[loud inhale and exhale]		
10:41:52.1 AWU	stall. stall.		
10:41:54.0 CAM-?	[unintelligible exclamation]		
10:41:54.8 AWU	stall.		

ACCIDENT FLIGHT – DECEMBER 8, 2014

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
10:41:55.2 CAM-?	[unintelligible exclamation]		
10:41:55.4 CAM	[sound of loud noise, similar to impact]		
END OF TRANSCRIPT END OF RECORDING 10:41:55.7 EST			