

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

CEN18LA094

**By
Christopher Babcock**

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

May 14, 2018

Cockpit Voice Recorder

Group Chairman's Factual Report
By Christopher Babcock

1. EVENT SUMMARY

Location: Cleveland, Ohio
Date: February 4, 2018
Aircraft: Hawker Beechcraft 400A, Registration N570TM
Operator: Travel Management, Inc.
NTSB Number: CEN18LA094

On February 4, 2018, about 1924 eastern standard time (EST), a Raytheon (Hawker) 400A airplane, registration N570TM, overran the end of the runway, after landing at the Burke Lakefront Airport (KBKL) Cleveland, Ohio. The two airline transport rated pilots and the two passengers aboard were not injured, and the airplane sustained substantial damage. The airplane was registered to Aircraft Holding Company One, LLC, and operated by Travel Management Company, LLC under the provisions of Title 14 *Code of Federal Regulations* Part 135 as an on-demand air taxi flight. Instrument meteorological conditions prevailed at the time and the flight on an instrument flight rules (IFR) flight plan. The flight originated from the Teterboro Airport, Teterboro, New Jersey about 1804 EST.

A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group meeting convened on April 25, 2018, and a transcript was prepared for the entire 30-minute, 16-second digital recording (see attached).

2. GROUP

Chairman:	Christopher Babcock Aerospace Engineer National Transportation Safety Board
Member:	David Gerlach Air Safety Investigator Federal Aviation Administration
Member:	David L. Upchurch Chief Pilot Travel Management Company, LLC

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Fairchild A-100S**
Recorder Serial Number: **02947**

3.1 CVR Carriage Requirements

Per federal regulation, multiengine, turbine-powered airplanes manufactured prior to April 7, 2010, with six or more passenger seats, requiring two pilots, and operated under 14 CFR 135, 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 2000. 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 A-100S, records a minimum of 30 minutes of digital audio stored on solid state memory modules. Four channels are recorded: one channel for each flight crew, one channel for a cockpit observer, and one channel for the cockpit area microphone (CAM).

3.3 Recorder Damage

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

3.4 Audio Recording Description

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

Table 1. Audio Contents and Quality.

Channel Number	Content/Source	Quality
1	Captain	Excellent
2	First Officer	Excellent
3	Cockpit Area Microphone (CAM)	Excellent
4	NA	NA

3.5 Timing and Correlation

Timing on the partial transcript was established using the time of the accident, as supplied by the Investigator-In-Charge. The relative time of the CVR audio events were offset to reflect the local eastern standard time of the accident.

¹ See attached CVR Quality Rating Scale.

3.6 Description of Audio Events

The recording and transcript began at 1857:06 EST. The recording captured events from two approaches to Burke Lakefront, the landing, and the accident sequence. The recording ended shortly thereafter at 1927:22 EST.

As part of the Safety Board's accident investigation process, the flight crew was invited to review the CVR transcript and suggest corrections or additions, but declined the invitation.

Attachment I

CVR Quality Rating Scale

The levels of recording quality are characterized by the following traits of the cockpit voice recorder information:

Excellent Quality	Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other.
Good Quality	Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other.
Fair Quality	The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information.
Poor Quality	Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information.
Unusable	Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system.

Transcript of a Fairchild A-100S solid-state cockpit voice recorder, serial number 02947, installed on a Travel Management, Inc, Hawker Beechcraft 400A (N570TM), which overran the runway on landing at Burke Lakefront Airport in Cleveland, Ohio.

LEGEND

APP	Cleveland Approach
ARFF5	Airport Rescue Firefighting Vehicle Five
ATIS	Burke Lakefront Airport ATIS
CAM	Cockpit Area Microphone sound source
HOT	Hot microphone
RDO	Radio sound source
TWR	Burke Lakefront Airport Control Tower
-1	Voice identified as the captain
-2	Voice identified as the first officer
-?	Voice unidentified
-A	First identified facility controller
-B	Second identified facility controller
*	Unintelligible word
#	Expletive
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in Eastern Standard Time.

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

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

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

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1857:06.4			
START OF RECORDING			
START OF TRANSCRIPT			
18:57:06.4			
HOT-1	secure left. uh vee speeds N-one A-O-A. ** we got one uh seven twenty nine one point three. we got—		
18:57:14.8			
HOT-2	power set.		
18:57:15.4			
HOT-1	uh we got some uh— let's see what is it— we need like...oh hell I can't remember we got six thousand feet of runway. we need like forty five hundred or something like that so...		
18:57:30.5			
HOT-1	got to be on your game.		
18:57:34.0			
HOT-1	light snow...maybe slippery. [sound of coughing]		
18:57:45.1			
HOT-1	checklist complete.		
		18:57:53.2	
		APP-A	Trailblazer five seventy descend and maintain six thousand.
		18:57:57.7	
		RDO-1	six thousand. Trailblazer five seventy.
18:58:00.2			
HOT-1	six thousand set.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
18:58:01.2 HOT	[sound of repeating tone]		
18:58:01.9 HOT-2	six thousand * set.		
18:59:10.5 HOT-1	you guys done with the lights?		
18:59:17.0 HOT-1	turn them things off.		
18:59:27.3 HOT-2	you really do get grumpy if you don't eat.		
18:59:29.8 HOT-1	I am.		
18:59:30.4 HOT-2	[sound of laughter]		
18:59:31.8 HOT-1	I get really freaking grumpy.		
18:59:43.5 HOT-1	hungry and thirsty.		
18:59:48.0 HOT-2	always a big problem to be thirsty. want some water?		
18:59:51.6 HOT-1	oh ***.		
18:59:52.3 HOT-2	I'm pretty sure this is yours.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
18:59:55.3 HOT-1	I don't mean that kind of thirsty.		
18:59:56.6 HOT-2	huh. oh that's different kind of thirsty.		
18:59:59.6 HOT-1	yup.		
		19:00:28.3 APP-A	Trailblazer five seventy contact Cleveland approach now one two five point three five.
		19:00:33.5 RDO-1	twenty five thirty five. Trailblazer five seventy. good night.
		19:00:36.6 APP-A	good night.
19:00:39.2 HOT-1	[sound of cough]		
		19:00:48.3 RDO-1	and approach good evening. Trailblazer five seventy is uh ten for six with kilo.
19:00:50.9 HOT	[sound of repeating tone]		
		19:00:55.4 APP-B	Trailblazer five seventy Cleveland approach. good evening it is kilo at Lakefront. I think you said it you were a little weak there. expect the I-L-S runway two four right approach circle to runway six left.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:01:03.5 HOT-2	why are they *?		
		19:01:03.8 RDO-1	yes sir. we got kilo and uh what'd you say?
		19:01:08.1 APP-B	Trailblazer five seventy expect the I-L-S runway two four right approach circle to runway six left at Lakefront. we just switched runways there too.
		19:01:13.9 RDO-1	oh okay. um so uh we can expect two four right?
		19:01:18.9 APP-B	no. I-L-S two four circle to runway six left.
		19:01:22.5 RDO-1	okay. two four uh right and circle to six left. Trailblazer five seventy.
19:01:27.8 HOT-2	that doesn't make any sense why they'd do that.		
19:01:33.9 HOT-1	well that's just about dumb.		
19:01:34.2 HOT-2	**.		
19:01:39.6 HOT-1	why are we circling to land to another runway to a tailwind?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:01:58.9 ATIS	—in use circling runway six left. landing departing runway six left six right. notice to airman use caution for birds on around the airport. use caution for cranes ship masts in the harbor. all V-F-R aircraft remain clear of Cleveland's class bravo. advise on initial contact you have information lima.
		19:02:19.2 ATIS	Burke Lakefront Airport information lima. two three five seven zulu observation. wind three four zero one seven gust two five. visibility four. light freezing rain. sky conditions ceiling seven hundred overcast. temperature minus three dewpoint minus four. altimeter two niner eight zero. I-L-S runway two four right approach in use circling runway six left. landing departing runway six left six right. notice to airman use caution for birds on around the airport. use caution for cranes ship masts in the harbor. all V-F-R aircraft remain clear of Cleveland's class bravo. advise on initial contact you have information lima.
19:02:26.2 HOT-1	holy cow.		
19:02:29.0 HOT-2	what?		
19:02:29.7 HOT-1	shhh.		
19:02:33.7 HOT-1	you got one?		
19:02:35.4 HOT-2	yeah.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:02:55.2 APP-B	Trailblazer five seventy fly heading three zero zero.
		19:02:57.5 RDO-2	three zero zero Trailblazer five seventy.
		19:02:59.5 ATIS	Burke Lakefront Airport information lima. two three five seven zulu observation. wind three four zero one seven gust two five. visibility four. light freezing rain. sky conditions ceiling seven hundred overcast. temperature minus three dewpoint minus four. altimeter two niner eight zero. I-L-S runway two four right approach in use circling runway six left. landing departing runway six left six right. notice to airman use caution for birds on around the airport. use caution for cranes ship masts in the harbor. all V-F-R aircraft remain clear of Cleveland's class bravo. advise on initial contact you have information lima.
19:03:36.0 HOT-1	well lima just come up. man what a difference.		
19:03:39.3 HOT-2	what's the difference?		
19:03:40.1 HOT-1	uh three four zero at seventeen. gusts to twenty five. four miles. light freezing rain. seven hundred overcast.		
19:03:44.7 HOT	[sound similar to altitude alert]		
		19:03:47.4 APP-B	Trailblazer five seventy descend and maintain four thousand.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:03:49.6 RDO-1	four thousand. Trailblazer uh five seventy.
19:03:52.1 HOT-2	thanks.		
19:03:53.0 HOT-1	four thousand set. two nine eight zero now is the altimeter setting. wow what in the heck just happened there in Cleveland?		
19:04:03.8 HOT-1	two four right circle to six left.		
19:04:10.4 HOT-1	see what six left has got...nothing.		
19:04:21.0 HOT-1	well that just blows.		
19:04:25.6 HOT-2	what's the point of circling if it's only like a ten degree difference?		
19:04:36.2 HOT-1	oh geez.		
19:04:36.2 HOT-2	it'd be easier just to take it down.		
19:04:38.4 HOT-1	three four zero at seventeen. gusts to twenty five. four. light freezing rain. so the runway is going to be wet. twenty five degree crosswind. #. we're right at the limit there.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:05:02.4 HOT-1	if we go missed we'll just go over to uh Cuyahoga or uh Cleveland Hopkins.		
19:05:07.4 HOT-2	okay.		
19:05:07.9 HOT	[sound similar to altitude alert]		
19:05:10.2 HOT-2	one thousand to go.		
19:05:11.6 HOT-1	[sound of cough] thousand to go.		
19:05:14.1 HOT-2	we got icing.		
		19:05:40.4 APP-B	Trailblazer five seventy new information lima just came out of Lakefront. they're showing three forty at seventeen gusts to two five. visibility is four with light freezing rain and mist. uh ceiling seven hundred overcast. temperature is minus two. dewpoint minus four. altimeter two niner eight zero.
		19:05:54.6 RDO-1	okay. thanks. appreciate it.
19:06:21.5 HOT-2	they gonna give us lower? or what?		
19:06:25.9 HOT-1	uh let's see...		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:06:27.9 APP-B	Trailblazer five seventy fly heading two seven zero intercept the localizer.
		19:06:31.8 RDO-1	two seven zero to intercept the localizer. Trailblazer uh five seventy.
19:06:36.8 HOT-1	uh— [sound of cough] let's see this is going to get us down to— [sound of cough]		
		19:06:48.2 APP-B	Trailblazer five seventy seven miles from TABEY. descend and maintain three thousand until established on the localizer. cleared I-L-S runway two four right approach. circle to land runway six left.
		19:06:56.0 RDO-1	alright down to three thousand. uh two seventy until established. cleared for the I-L-S uh two four right approach. circle to six left. Trailblazer five seventy.
19:07:06.5 HOT	[sound similar to altitude alert]		
		19:07:15.2 APP-B	Trailblazer five seventy fly heading two eight zero until established.
		19:07:17.8 RDO-1	two eight zero for Trailblazer uh five seventy.
19:07:22.3 HOT-1	uh this just gets us down to nine. it's seven hundred		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:07:29.3 HOT-1	I don't even think we're gonna see it.		
19:07:36.8 HOT-1	that a #.		
19:07:45.7 HOT-2	why don't we just ask them for a straight in? say the minimums aren't good enough.		
19:07:49.8 HOT-1	yeah we— we— we'll shoot app— we'll let's see what we got. yeah...Cleveland...we got the— we got the time. we could— maybe get in there.		
19:08:02.7 HOT-2	you mean instead of having to comin' back and do it again?		
19:08:05.9 HOT-1	no.		
19:08:09.3 HOT-2	oh come on. hey you never cleaned up my screen for me.		
19:08:13.9 HOT-1	**.		
19:08:18.9 HOT-2	can you uh—		
		19:08:19.6 APP-B	Trailblazer five seventy contact Lakefront Tower one two four point three.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:08:23.2 RDO-1	twenty four three. we'll see ya.
		19:08:28.7 RDO-2	and Lakefront Trailblazer uh five seventy is I-L-S uh two four right circle six left.
		19:08:35.9 TWR	Trailblazer five seventy. Lakefront Tower. advise field in sight. plan to circle north runway uh six left.
		19:08:42.9 RDO-1	circle north and uh to six left for Trailblazer uh five seventy.
19:08:49.1 HOT-2	can I get ten degrees of flaps?		
19:08:50.7 HOT-1	yeah. speed checks.		
19:08:53.9 HOT-1	that's on. that's off. those are on.		
19:08:56.9 CAM	[sound of click]		
19:08:59.5 CAM	[sound of click]		
19:08:59.7 HOT-2	and flaps twenty gear down.		
19:09:01.4 HOT-1	flaps twenty. gear's comin' down. [sound of throat clearing]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:09:06.1 CAM	[sound similar to landing gear extension]		
19:09:09.0 HOT	[sound similar to autopilot disconnect]		
19:09:14.8 HOT-2	there's no way we're gonna be able to get out.		
		19:09:20.5 TWR	and Trailblazer uh five seventy ops uh operations was on the uh runway approximately twenty minutes ago and advised that they uh were starting to pick up some ice. just traces of it though but that was twenty minutes ago.
19:09:24.4 HOT	[sound similar to altitude alert]		
		19:09:36.6 RDO-1	yeah we got moderate rime now on the descent.
		19:09:40.0 TWR	roger.
19:09:41.8 HOT-1	yeah I don't think we're gonna get there.		
19:09:42.6 HOT-2	we're not gonna make it.		
19:09:43.6 HOT-1	yeah just— yeah just—		
19:09:45.2 HOT-2	he vectored us too close.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:09:45.3 HOT	[sound similar to altitude alert]		
19:09:46.7 HOT-1	yeah go ahead. you can just go on— we'll go around.		
19:09:50.9 HOT-2	we're getting a little close too.		
19:09:52.3 HOT-1	yeah here we go. here's— a little high.		
		19:09:55.2 RDO-1	and tower um—
19:09:56.3 HOT-2	well there we go.		
19:09:57.4 HOT-1	uh you might be able— can you make that or no?		
19:09:58.6 HOT-2	oh yeah. yes.		
19:10:00.7 HOT-1	there it is. got it?		
		19:10:01.8 TWR	five seventy go ahead?
19:10:02.4 HOT-2	*. *.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:10:03.1 RDO-1	uh negative. uh we just popped out at uh bout uh seventeen hundred
19:10:08.0 HOT-2	ask him if we could just go straight in.		
		19:10:09.8 TWR	Trailblazer five seventy uh circle north uh at your discretion. and runway six left clear to land. wind three six zero at two two.
19:10:12.4 HOT-1	alright got to circle.		
		19:10:18.2 RDO-1	okay circle to six left and cleared to land for Trailblazer five seventy.
19:10:26.0 HOT-1	yeah can you keep it in sight?		
19:10:28.3 HOT-2	um-hmm. possible I may have to switch with you if I get too far out.		
19:10:32.4 HOT-1	okay.		
19:10:40.1 HOT-1	I just watch your descent.		
19:10:41.8 HOT-2	yup. trying to keep eleven to twelve hundred.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:10:48.5 HOT-1	you're gonna have to go further out. you're gonna get in too close.		
19:10:50.3 HOT-2	yup.		
19:10:52.0 HOT-1	because the wind's blowing you in.		
19:10:58.5 HOT	five hundred. [automated voice]		
19:11:25.6 HOT-2	okay you can start turning back to the left here.		
19:11:26.9 HOT-1	yeah that's kind of my plan.		
19:11:34.3 HOT-1	you plan on just swinging around that break right here.		
19:11:36.7 HOT-2	yup.		
19:11:37.0 HOT-1	that red light. you should be good.		
19:11:43.2 HOT-1	just watch out for these buildings over here.		
19:11:44.3 HOT	caution obstacle. caution— caution obstacle. caution obstacle. [automated voice]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:11:53.6 HOT	caution obstacle. caution obstacle. [automated voice]		
19:11:55.3 HOT-1	yeah. you— you— you— you were too close. go back to the right. you're not gonna make it. go back to the right.		
19:11:59.2 HOT-2	yeah alright.		
19:12:00.7 HOT	caution obstacle. caution obstacle. [automated voice]		
		19:12:01.5 TWR	three six zero at two two.
19:12:03.9 HOT-1	turn right.		
19:12:05.1 HOT-2	turn right. go missed.		
		19:12:08.0 RDO-1	and tower um uh Trailblazer five seventy we're gonna have to go back out. uh we got in a little bit too close.
		19:12:15.0 TWR	roger Trailblazer uh five seventy. uh execute the uh published missed approach.
		19:12:22.4 RDO-1	published missed for Trailblazer five seventy.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:12:26.2 HOT-2	thanks.		
19:12:29.6 HOT-1	and hit the go around. and...		
		19:12:32.5 RDO-1	could we get a heading? Trailblazer five seventy.
		19:12:34.7 TWR	roger uh five seventy. uh stand by one.
19:12:36.0 HOT	[sound similar to altitude alert]		
		19:12:37.9 RDO-1	alright.
19:12:39.4 HOT-2	** flew right past it.		
19:12:39.8 HOT-1	oh that's just— that's just #.		
19:12:41.7 HOT	[sound similar to power lever horn]		
19:12:45.0 HOT-2	yeah we got to go straight in. there's no other option.		
19:12:47.3 HOT-1	(now we could [or] naw we're good) — I mean the wind—		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:12:48.8 TWR	five seventy uh fly heading three six zero and maintain three thousand.
19:12:52.3 HOT	[sound similar to power lever horn]		
		19:12:52.9 RDO-1	three six zero and uh three thousand. Trailblazer uh five seventy.
19:12:58.6 HOT-1	three six zero.		
19:13:01.2 HOT-2	three thousand.		
19:13:01.8 HOT-1	and three thousand.		
19:13:02.0 HOT-2	**.		
		19:13:10.3 TWR	and Trailblazer uh five seventy uh heading three six zero— correction three five zero. maintain three thousand. contact Cleveland Approach on one two five point three five.
		19:13:22.0 RDO-1	twenty five thirty five uh for Trailblazer five seventy. appreciate your help.
		19:13:26.6 TWR	roger.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:13:28.5 HOT-1	[sound of throat clearing]	19:13:32.2 RDO-1	and approach uh Trailblazer five seventy's back with you on the missed level three thousand. three fif— uh three six zero on the heading.
19:13:39.5 HOT-1	[sound of throat clearing]	19:13:38.9 APP-B	Trailblazer— Trailblazer five seventy departure ident.
19:13:45.2 HOT-2	can take the last of the flaps out.		
19:13:46.9 HOT-1	huh?		
19:13:47.6 HOT-2	ten degrees. * zero.		
		19:14:03.8 APP-B	Trailblazer five seventy. just confirm you're about four west of Lakefront at three thousand.
		19:14:06.9 RDO-1	yes sir.
		19:14:07.7 APP-B	Trailblazer five seventy radar contact. you want us to try the same approach?

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		19:14:10.6 RDO-1	yes sir.
		19:14:11.2 APP-B	Trailblazer five seventy roger. turn right heading zero six zero vectors I-L-S runway two four right approach. circle to land runway six left.
		19:14:16.1 RDO-1	alright uh right turn zero six zero. any chance we could just get uh— uh two four right?
		19:14:21.7 APP-B	I will uh talk to Lakefront Tower about it.
		19:14:23.7 RDO-1	thank you sir.
19:14:23.9 HOT-2	*.		
19:14:34.0 HOT-1	gonna be a hairy approach.		
		19:14:38.2 APP-B	Trailblazer five seventy expect I-L-S approach runway two four right.
		19:14:40.7 RDO-1	approach it. two four right. Trailblazer five seventy.
19:16:07.1 HOT-1	if we have to go missed— if we have to go missed this time we're going to Hopkins.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:16:11.0 HOT-2	okay.		
		19:17:07.2 APP-B	Trailblazer five seventy turn five degrees right.
		19:17:09.4 RDO-1	five right. Trailblazer uh five seventy.
19:17:45.1 HOT-1	what is going on with this stupid # thing?		
19:17:52.5 HOT-1	alright.		
19:17:59.3 HOT-1	one oh nine seventy five seventy five.		
19:18:00.9 HOT-2	did we reactivate the approach?		
		19:18:02.4 APP-B	Trailblazer five seventy turn right heading one five zero.
		19:18:04.8 RDO-1	one five zero right turn. Trailblazer five seventy.
19:18:07.6 HOT-1	huh?		
19:18:07.9 HOT-2	we have to put the approach back in. right now it's still going through the missed.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:18:11.1 HOT-1	it's already in there. I put it in there. put it back in there.		
19:18:18.7 HOT-1	approach is—		
19:18:20.4 HOT-2	yeah I know but it needs to be—		
19:18:22.0 HOT-1	hang on let me put—		
19:18:23.0 HOT-2	TABEY * not—		
19:18:24.8 HOT-1	yeah because we— we didn't come out of—		
		19:18:53.7 APP-B	Trailblazer five seventy. six miles from TABEY. fly heading two two zero. maintain three thousand until established on the localizer. cleared I-L-S runway two four right approach.
		19:18:59.9 RDO-1	two two zero uh and cleared for the I-L-S uh two four right approach. Trailblazer— Trailblazer five seventy.
19:19:06.8 HOT-2	can I get flaps uh ten? approach check.		
19:19:09.8 HOT-1	yeah. flaps ten. it's off. those are on...alright. let's see where you're at. you still got— we're still in the—		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:19:31.7 HOT-1	what in the heck is going on? uh we'll clean this up uh to TABEY.		
19:19:39.5 HOT-2	that's okay. I got the localizer in. I just need to *.		
19:19:42.1 HOT-1	okay.		
19:19:43.8 HOT-1	just trying to get this thing on the ground		
19:19:44.6 HOT-2	can we get flaps ten.		
19:19:46.4 HOT-1	yeah you got flaps ten.		
19:19:47.5 HOT-2	gear down.		
19:19:48.7 HOT-1	want flaps twenty?		
19:19:49.9 HOT-2	oh yeah. sorry flaps twenty. gear down. just trying to get set up a lot better this time.		
19:19:54.6 HOT-1	yup.		
19:19:54.8 CAM	[sound similar to landing gear extension]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:19:56.5 HOT-2	that guy still decided to—		
		19:19:57.5 APP-B	Trailblazer five seventy contact Lakefront Tower one two four point three. goodnight.
19:20:01.4 HOT-1	twenty four three we'll see you. thanks for your help.		
		19:20:03.3 APP-B	no problem.
		19:20:04.9 RDO-1	and tower uh Trailblazer five seventy's back with you on the I-L-S two four right.
		19:20:12.0 TWR	and Trailblazer five seventy Lakefront Tower. runway two four right clear to land. wind zero one zero at two two gusts three zero.
		19:20:19.8 RDO-1	and clear to land two four right. Trail— Trailblazer uh five seventy.
19:20:27.4 HOT-1	alrighty.		
19:20:33.7 HOT-1	got a hell of a lot of ice picking up here.		
19:20:35.7 HOT-2	yup.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:20:45.4 HOT-2	glideslope's intercepted.		
19:20:47.2 HOT-1	huh?		
19:21:09.4 HOT	[sound of decreasing engine power]		
19:21:42.0 HOT-1	no contact on the left.		
19:21:59.8 HOT-1	pop out here in a minute. nine hundred. less than a thousand. minimums.		
19:22:14.7 HOT-2	**.		
19:22:16.5 HOT-1	there's the runway in sight.		
19:22:18.1 HOT-1	twelve oh clock see it?		
19:22:19.1 HOT-2	yup.		
19:22:21.4 HOT-2	you can go flaps thirty.		
		19:22:21.7 TWR	wind check zero two zero at two five.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:22:24.4 HOT	[sound of two mic clicks]		
19:22:24.6 HOT-1	what's that? what's that?		
19:22:25.8 HOT-2	thirty. final items.		
19:22:28.7 HOT-1	final items. flaps are thirty. indicating thirty. air conditioning off. yaw damper to go.		
19:22:34.1 HOT-1	[sound of throat clearing] got twenty seven knot crosswind.		
19:22:38.5 HOT	caution obstacle. caution obstacle. [automated voice]		
19:22:41.6 HOT-2	you can keep yelling at me but I know that we're okay.		
19:22:42.7 HOT	five hundred. [automated voice]		
19:22:45.0 HOT-2	it did this to us last time we came in here.		
19:22:48.0 HOT-1	yeah. lot of # around here.		
		19:22:52.1 TWR	zero one zero at two five.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:23:05.7 HOT-1	probably these big # buildings right over here.		
19:23:15.9 HOT	[sound similar to autopilot disconnect]		
		19:23:16.6 TWR	zero one zero at two five.
19:23:18.6 HOT	[sound of two mic clicks]		
19:23:21.4 HOT-2	mmmm.		
19:23:21.7 HOT-1	get her down.		
19:23:28.7 HOT-2	**.		
19:23:29.5 HOT-1	get her down.		
19:23:31.5 HOT-1	set it down.		
19:23:32.3 HOT-1	get on the brakes.		
19:23:32.5 CAM	[sound of click]		
19:23:34.1 CAM	[sound of click]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:23:34.2 CAM	[sound similar to nose gear touchdown]		
19:23:39.3 HOT-1	come on. get on the brakes.		
19:23:40.4 HOT-2	I am.		
19:23:41.3 CAM	[sound of whistling noise in background]		
19:23:43.1 HOT-1	#.		
19:23:52.0 HOT-1	#.		
19:23:57.1 HOT-1	#.		
19:24:00.0 HOT-1	[sounds of impact]		
19:24:01.1 HOT-2	ahh.		
19:24:02.0 HOT	[sound of tone]		
19:24:02.5 HOT-1	#.		
		19:24:06.9 RDO-1	tower Trailblazer five seventy.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:24:12.2 HOT-1	#.		
19:24:18.9 HOT-1	[sound of two clicks]		
19:24:20.7 HOT-1	#.		
19:24:25.3 CAM	[sound of objects moving around the cockpit]		
19:24:29.5 HOT-1	#.		
19:24:32.6 HOT-1	I knew it.		
		19:24:35.9 TWR	and uh five seventy you up?
19:24:37.3 HOT-1	you guys okay?		
19:24:38.0 CAM-?	yes. we're good.		
19:24:45.0 HOT-1	#.		
		19:24:46.3 TWR	uh Trailblazer five seventy how do you hear?
19:24:53.0 HOT-1	we got to get out of this airplane.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:24:55.9 CAM	[sound of objects moving around the cockpit]		
19:24:56.2 CAM-1	just uh jump out.		
19:25:04.5 CAM-?	#. why? why?		
19:25:13.6 CAM	jump out of the airplane.		
19:25:19.1 HOT	[sound of objects moving around the cockpit]		
19:25:43.6 CAM	[sound similar to main entry door opening]		
		19:25:44.9 TWR	and ARFF tower.
19:25:46.2 CAM	[sound similar to engine shutdown]		
		19:25:51.2 TWR	yes sir. field is yours. alert three.
19:26:04.9 HOT	[sound similar to cabin chime]		
19:26:14.3 CAM-1	#.		
19:26:17.4 CAM-1	you guys okay?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
19:26:18.4 CAM-?	yeah.		
		19:26:19.0 ARFF5	hey @ truck five. am I clear to respond?
19:26:19.0 CAM-1	alright.		
19:26:21.2 CAM-1	we need to get off the airplane.		
		19:26:22.4 TWR	yeah the field's yours.
19:26:23.4 CAM-1	out.		
		19:26:24.8 ARFF5	roger.
		19:26:36.5 TWR	affirm. field is yours.
19:26:43.0 HOT	[sound of tone]		
19:26:48.8 HOT	[sound of tone]		
19:27:06.9 CAM-1	six...*-teen knot tail.		
19:27:10.9 HOT	[sound of tone]		

**Time and
Source**

Intra-Aircraft Communication

**Time and
Source**

Over-the-Air Communication

19:27:22.3

END OF TRANSCRIPT

END OF RECORDING