

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



**GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION
DCA15FA085**

**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

April 21, 2015

Cockpit Voice Recorder

Group Chairman's Factual Report
By Christopher Babcock

1. EVENT SUMMARY

Location: New York, New York
Date: March 5, 2015
Aircraft: Boeing MD-88, Registration N909DL
Operator: Delta Airlines, Flight 1086
NTSB Number: DCA15FA085

On March 5, 2015, about 1102 eastern standard time (EST), a Boeing MD-88, registration N909DL, operating as Delta Airlines flight 1086, was landing on runway 13 at LaGuardia Airport, New York, New York, and exited the left side of the runway, contacted the airport perimeter fence, and came to rest with the airplane nose on an embankment next to Flushing Bay. The 129 passengers received either minor injuries or were not injured, and the 5 crewmembers were not injured. The airplane was substantially damaged. Flight 1086 was a regularly scheduled passenger flight from Hartsfield-Jackson Atlanta International Airport operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 121. Instrument meteorological conditions prevailed, and an instrument flight rules flight plan was filed. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group convened on March 11, 2015, and a transcript was prepared for the final 65 minutes of the 122-minute, 7-second digital recording (see attached).

2. GROUP

Chairman: Christopher Babcock
Aerospace Engineer
National Transportation Safety Board

Member: Patrick A. Hempen
Air Safety Investigator
Federal Aviation Administration

Member: John R. Klinger
Delta Master Executive Council Central Air Safety Vice Chairman
Air Line Pilots Association

Member: Wiley Moore
Senior Safety Pilot
The Boeing Company

Member: Dale Pepper
MD-88/90 Instructor
Delta Airlines

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **L-3/Fairchild FA2100-1020**
Recorder Serial Number: **702**

3.1 CVR Carriage Requirements

Per federal regulation, turbine engine powered aircraft operating under 14 CFR Part 121 must be equipped with a CVR that records a minimum of the last 2 hours of aircraft operation; this is accomplished by recording over the oldest audio data. When the CVR is deactivated or removed from the airplane, it retains only the most recent 2 hours of CVR operation.

3.2 Recorder Description

This model CVR, the L-3/Fairchild FA2100-1020, is a solid state CVR that records 120 minutes of digital audio. Specifically, it contains a 2-channel recording of the last 120 minutes of operation and separately contains 3-channel recording of the last 30 minutes of operation. The 120-minute portion of the recording is comprised of one channel that combines three audio panel sources and a second channel that contains the cockpit area microphone (CAM) source. The 30-minute portion of the recording contains 3 channels of audio information: one channel for each flight crew and one channel for a cockpit observer and interphone.

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

Table 1: Audio Quality.

Channel Number	Content/Source	Quality	Duration (mmm:ss)
1	PA/INT	Excellent	31:03
2	First Officer Audio Panel	Excellent	31:03
3	Captain Audio Panel	Excellent	31:03
4	CAM	Good	122:07
5	Mixed Crew Audio Panel	Excellent	122:07

3.5 Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR). Specifically, the last five radio transmissions

¹ See attached CVR Quality Rating Scale

that the aircraft made were correlated to the radio transmit microphone key parameter from the FDR. Each of the five radio transmissions acted as an anchor point for a linear interpolation between the remaining CVR events. The correlation between CVR elapsed time (CVT ET) and FDR SRN was:

$$\text{CVR ET} = \text{FDR SRN} - 6421 \text{ seconds}$$

Once a correlation between the two recorders was established, a reference to local time was determined using a certified digital audio recording from the FAA New York Approach facility containing an embedded time code referenced to Universal Coordinated Time (UTC). The UTC time of the radio transmissions from the accident aircraft was linked to the corresponding CVR event and the CVR and FDR times were offset to reflect the local eastern standard time of the accident. The correlation between FDR SRN and EST was:

$$\text{EST} = \text{FDR SRN} + 26026.4 \text{ seconds}$$

3.6 Description of Audio Events

The recording began at 9:00:47 am EST prior to the aircraft leaving the gate in Atlanta. A partial transcript was completed from 9:54:52 am EST to 9:59:00 when the crew began discussing the approach to LaGuardia. The full transcript began at 10:05:24 am EST and ended at 11:02:54 am EST just after the aircraft came to rest.

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. They had no substantial comments or additions.

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 an L-3/Fairchild FA2100-1020 solid-state cockpit voice recorder, serial number 702, installed on a Delta Airlines MD-88 (N909DL), which departed the runway during landing at LaGuardia Airport in New York, New York.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmission from Delta flight 1086
INT	Aircraft interphone sound source
ZTL	Radio transmission from Atlanta Center controller
ZDC	Radio transmission from Washington Center controller
NYC	Radio transmission from the New York Approach controller
LGA	Radio transmission from the LaGuardia Tower controller
-1	Voice identified as the captain
-2	Voice identified as the first officer
-3	Voice identified as first flight attendant
-4	Voice identified as second flight attendant
-5	Voice identified as third flight attendant
DL1526	Radio transmission from Delta flight 1526
AA1082	Radio transmission from American flight 1082
MQ3647	Radio transmission from Envoy flight 3647
DL2522	Radio transmission from Delta flight 2522
-A	First identified facility controller
-B	Second identified facility controller
-C	Third identified facility controller
-D	Fourth identified facility controller
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in eastern standard time (EST).

Note 2: Generally, only radio transmissions to and from the accident aircraft were transcribe unless required for context.

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
09:00:47.4	START OF RECORDING		
09:54:51.8	START OF INITIAL APPROACH DISCUSSION		
09:54:51.8	HOT-2	I doubt we'll hear medium poor but we're at our crosswind limitations for that one.	
09:54:57.5	HOT-1	I'm sorry?	
09:54:57.8	HOT-2	I doubt we will hear medium poor but we're out of crosswind limitations on that one.	
09:55:02.7	HOT-1	okay.	
09:55:04.6	HOT-1	you got a field condition report see what it says if you don't mind. thank you.	
09:55:09.8	HOT-2	I do not mind.	
09:55:37.5	HOT-2	oh I actually didn't know this though. crosswind guidelines are not considered limitations. I did not— I was unaware of that.	
09:55:50.6	HOT-1	uh but we do have a contaminated runway limitation.	

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
09:55:54.4 HOT-2	yeah I may be looking at that pretty soon too.		
09:56:47.7 HOT-2	it reads just like ATIS. so no it doesn't shed any light on it.		
09:56:53.4 HOT-1	**.		
		09:57:29.7 ZTL	Delta ten eighty six contact Washington Center one one eight point niner two.
		09:57:33.7 RDO-2	eighteen ninety two. Delta ten eighty six good day.
		09:57:40.6 RDO-2	Washington Center hello Delta ten eighty six checkin' on board three three zero.
		09:57:45.0 ZDC-A	Delta ten eighty six Washington Center roger. flight level three three zero.
09:57:50.7 HOT-1	three three zero.		
09:58:56.1 HOT-2	two hundred pounds ahead at GLOVR.		
09:58:59.6 HOT-1	thanks.		
10:05:24.1	START OF FULL TRANSCRIPT		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:05:24.1 HOT-2	is there such a thing as light freezing fog? and heavy freezing fog? or is it just—		
10:05:30.6 HOT-1	uh I don't think so.		
10:05:31.8 HOT-2	I mean there's— on this chart I'm just looking at a generic type four moderate and light. moderate to light intensity for freezing fog...ice crystals. it says freezing fog ice crystals. moderate to light.		
10:05:50.9 HOT-2	and I'm guessing it's saying snow without the minus we have to use moderate snow because the visibilities of...		
10:05:57.7 HOT-1	correct.		
10:05:58.5 HOT-2	...and quarter mile and such.		
10:05:59.0 HOT-1	well we have to use the visibility chart.		
10:06:02.2 HOT-2	uh I think this one kicks us out when it says below a certain thing you have to go with an approved source if I read that correctly.		
10:06:09.8 HOT-1	okay.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:06:10.5 HOT-2	and— again I can misread anything @ so by— by all means show me.		
		10:06:28.2 ZDC-B	Delta ten eighty six is cleared direct to Patuxent.
		10:06:31.7 RDO-2	direct to Patuxent Delta ten eighty six.
10:06:38.9 HOT-1	alright @ verified Patuxent.		
10:06:41.4 HOT-2	alright very well.		
10:06:50.7 HOT-1	nav captured. direct Patuxent.		
10:06:57.7 HOT-1	anti ice is comin on.		
10:07:04.6 HOT-2	very well good thanks.		
10:07:09.0 HOT-2	yeah right here it says snowfall intensity is a function of prevailing visibility. do not use uh this chart if visibility is being reduced by snow along with another— other forms of obscuration mist fog etcetera.		
10:07:22.5 HOT-1	yeah here's the chart right here.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:07:26.1 HOT-1	visibility is greater than * no. we may have to follow the * yes. no use the snowfall intensity designator approved by the ATIS or whatever.		
10:07:37.5 HOT-2	yeah it says it again here just in different uh a different way.		
10:07:47.5 HOT-2	very well.		
10:08:17.8 HOT-2	this is where I wouldn't mind tablets * when I want to look at the chart I want it to freeze up and reset on me automatically. that's— that's quality manufacture right there.		
10:08:27.5 HOT-1	that's what I'm saying. I think the reliability is going to hurt this thing.		
10:08:31.0 HOT-2	yeah.		
10:08:31.6 HOT-1	because it's gonna get poorer and poorer.		
10:08:33.5 HOT-2	I hope people are re— reporting it yeah. cause that's typical Microsoft. it gets buggier the more you up— you download # on it you know.		
10:08:41.8 HOT-1	yeah I think it was a huge mistake personally but—		
10:08:44.8 HOT-2	yes sir.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:08:45.1 HOT-1	you know all the arrival altitudes check— just like I said I put a hard altitude at DAVYS BRAND and two fifty at KORRY just for planning purposes...		
10:08:54.1 HOT-2	okay.		
10:08:54.5 HOT-1	...ten thousand all hard altitudes.		
10:09:39.2 HOT-1	there it is you know...okay well let's say they say the braking action's fair.		
10:09:50.9 HOT-1	let's just say that for—		
10:09:52.4 HOT-2	we're saying that.		
10:09:53.9 HOT-1	huh?		
10:09:54.5 HOT-2	yes let's say that.		
10:10:01.5 HOT-2	well I realize that I'm supposed to consult my...		
10:10:05.2 HOT-1	uh I was just looking at that.		
10:10:06.1 HOT-2	...my thing there.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:10:35.6 HOT-2	we're at flaps forty and we're gonna call it uh fair you said right?		
10:10:40.6 HOT-1	yeah.		
10:10:42.1 HOT-2	can we call that medium?		
10:10:44.5 HOT-1	yeah.		
10:10:45.3 HOT-2	I like it.		
10:10:51.3 HOT-2	we are gonna land three thousand pounds lighter...make the thirty card yup.		
10:11:05.1 HOT-1	we can't land.		
10:11:10.4 HOT-1	*.		
10:11:12.5 HOT-2	I'll— I'll try to justify one in a second because cause we had to divert because of this situation		
10:11:20.5 HOT-1	I don't think we can even land.		
10:11:22.4 HOT-2	I got uh...maximum autobraking of seventy eight hundred feet.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:11:43.8 HOT-2	think you may be right.		
10:11:55.0 HOT-1	I'll be off for just a minute.		
10:11:56.4 HOT-2	alrighty.		
10:11:56.9 PA-1	ladies and gentlemen from the flight deck just an update. we are level at thirty three thousand feet. we're about uh forty miles from Richmond Virginia. we are two hundred and ninety miles from LaGuardia Airport we anticipate right now touching down at uh ten fifty five and having you at the gate right on time at eleven oh clock. that's provided air traffic control allows us to maintain a uh current speed. we've increased the speed a little bit to try to make up some time. so for now we uh we anticipate an on time arrival in LaGuardia. LaGuardia weather reporting overcast skies uh snow. temperature's right at about uh thirty degrees...		
10:12:10.4 HOT-2	on max manual yeah seventy two.		
10:12:52.0 HOT-1	...or so.		
10:12:53.3 HOT-2	or so. **.		
10:12:55.4 HOT-1	if it's all crosswind like it says it is and if it stays like if it's they say it's anything less than good I— I don't think we're legal to land.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:13:06.1 HOT-2	I generally agree with you. I see seventy two hundred feet for max uh manual braking is what I got at a hundred thirty.		
		10:13:12.6 ZDC-B	Delta ten eighty six contact Washington on uh one two six point eight seven.
10:13:13.2 HOT-1	when have you done max manual braking? when have you practiced it?		
		10:13:18.3 RDO-2	twenty six eighty seven Delta ten eighty six. good day.
10:13:21.6 HOT-1	I will never use that column.		
10:13:22.9 HOT-2	la— last year. hah...in this situation.		
		10:13:28.1 RDO-2	Center hello Delta ten eighty six checking on board level three three zero.
		10:13:31.8 ZDC-C	Delta ten eighty six Washington Center. roger.
10:13:35.6 HOT-2	but as I told the captain like I'm setting max—		
10:13:37.8 HOT-1	he's hanging his— he's hanging his # out if he uses the max manual.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:13:41.7 HOT-2	well it— it worked out because we got it. we did— we did not land in this situation. we got— we got a good report is what we got cause we—		
10:13:48.0 HOT-1	it's a useless column because we— we don't even practice that in the simulator.		
10:13:50.9 HOT-2	yeah. no I know.		
10:13:53.0 HOT-1	I mean you can say— I mean it— it describes it in the book.		
10:13:57.3 HOT-2	yeah.		
10:13:58.3 HOT-1	but I've been on— I been a captain on this for fifteen years and I've never done it. now I've used max autobrake.		
10:14:04.8 HOT-2	yeah.		
10:14:05.3 HOT-1	and they say use max autobrake then transition then max manual braking. #.		
10:14:11.6 HOT-2	yeah.		
10:14:12.6 HOT-1	you're never using that column.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:14:14.7 HOT-2	no I— I tend to agree with you.		
10:14:19.8 HOT-2	I like this one. touchdown speed is v ref forty minus five. so unless you catch that one everyone's already bugging five. you know? now you gotta slow your # down man. this is— this is you got to slow down before you even touch down.		
10:14:34.2 HOT-1	and— and you are going to ILS minimums. so how much runway do we actually have available?		
10:14:43.0 HOT-2	six. right right. here— here's what makes you legal by the way. sea level pressure what do you see? is that two hundred seven feet? or is that—		
10:14:52.2 HOT-1	you know what? I already took that. I already took that but it doesn't make me legal.		
10:14:56.1 HOT-2	it takes you to six point nine. six point nine.		
10:15:00.3 HOT-1	now wait a minute wait a minute. where'd you get six point nine?		
10:15:02.1 HOT-2	you have a hundred and three— you have two hundred and three— no you have a hundred and three feet to spare. what's your problem? [sound of laughter]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:15:07.2 HOT-1	no I've got one thirty max autobrake. I never use the max manual.		
10:15:12.2 HOT-2	well yeah but your saying you don't use max— okay well fine fine fine yeah yeah.		
10:15:14.3 HOT-1	no. seven point eight minus four hundred right?		
10:15:16.4 HOT-2	yeah yeah yeah. yeah yeah yeah.		
10:15:17.7 HOT-1	or three hundred...		
10:15:17.8 HOT-2	uh minus— minus three hundred yeah.		
10:15:18.8 HOT-1	...three hundred. and seven thousand five hundred and I don't even have that in usable runway without flying an ILS.		
10:15:29.6 HOT-2	yeah. that's true. no you don't.		
10:15:35.6 HOT-1	so I'm here to tell you right now if it's less than good we're not landing.		
10:15:39.0 HOT-2	we're going— roger that. I don't blame you one little bit.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:15:44.7 HOT-2	I don't— I don't know. yeah. well it's based on optimism. we got to be an optimist. that's why they dispatched us. but still.		
10:15:55.5 HOT-2	uh and— where's—		
10:15:56.8 HOT-1	I'm gonna text him right now.		
10:15:58.4 HOT-2	yeah. get the braking action.		
10:15:58.6 HOT-1	we need the braking action report.		
10:16:00.9 HOT-2	yeah.		
10:16:06.4 HOT-2	but max autobrake sixty one hundred feet if it's good so we're you know—		
10:16:11.0 HOT-1	only if it's in effect. if it's good we're there.		
10:16:13.8 HOT-2	and then we can only subtract two hundred feet on that one for pressure altitude. **.		
10:17:18.2 HOT-1	they put so much gas on this thing,		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:17:19.8 HOT-2	oh #. the rest of the story is we took off from Atlanta to LaGuardia and uh we ended up holding for forever. every RJ that landed reported uh braking action fair. that's it. that's what they reported. uh we're holding with US Air or United a— a three twenty or something like that and another um eighty eight was with us and um and we— we actually come on a side radio and we all say the same thing 'hey do you guys see the same thing we're seeing?' and they're 'yup. can't land. roger that.' that's what I found. the Airbus has similar limitations that we do so we all divert. we all get gas. we go to divert to Albany. we pick up a # of gas. we come back to LaGuardia. we hold again. hold for— hold for like another hour and a half or something like that. finally an Airbus— different guy— an Airbus decides to make a go for it and uh he lands he reports the braking action good. so we go in right behind him. we land. it was my leg. I flew. it was absolutely a non-event but— but he was the only person that reported good. you know it— it took him to say hey it's good. they were— they were over reporting. and he was right. you know it was fine. there was nothing wrong with— but oh yeah...oh yeah.		
10:18:50.3 HOT-1	no braking action advisory report available. reporting aircraft departing runway four. who the hell cares about *.		
10:18:58.6 HOT-2	right. that's dispatch or is that ATIS? ATIS right? yeah ATIS is saying that.		
10:19:02.1 HOT-1	that's from ATIS.		
10:19:04.6 HOT-2	even though the uh field conditions say the same thing **.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:19:37.2 HOT-1	gonna go back and use the uh lav.		
10:19:40.7 HOT-2	potty. alright.		
10:19:41.8 HOT-1	you need to go back?		
10:19:43.3 HOT-2	no. send that cutie from one b up with that— flight attendants are kind of you know...you know.		
10:19:50.4 HOT-1	no I'm not gonna tell her.		
10:19:52.2 HOT-2	# you're no fun.		
10:19:55.5 HOT-2	gonna tell her about max manual braking.		
10:19:57.4 INT-3	@ one left.		
10:19:58.9 INT-1	@ this is @ I need to come back and take a break whenever you can set it up.		
10:20:02.0 INT-3	okay it should be alright in just a minute. let me call you back.		
10:20:04.5 INT-1	thanks.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:20:07.7 HOT-1	[discussion regarding cockpit access]		
10:20:09.9 HOT-2	very well.		
10:20:11.7 HOT-1	you have the aircraft.		
10:20:12.8 HOT-2	I have the aircraft.		
10:20:13.8 HOT-1	if you change your mind let me know.		
10:20:15.4 HOT-2	I will.		
10:20:31.6 CAM	[sound similar to flight attendant call chime]		
10:20:35.6 INT-1	hello this is @.		
10:20:36.8 INT-3	[discussion regarding cockpit access]		
10:20:38.9 INT-1	okay.		
10:20:39.2 INT-3	alright.		
10:20:40.7 HOT-1	[discussion regarding cockpit access]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:20:41.9 HOT-2	alrighty.		
10:20:46.0 HOT	[sound of oxygen mask momentary operation]		
10:20:53.7 HOT-1	need anything from kitchen?		
10:20:55.7 HOT-2	oh hell no. the way they're cooking?		
10:20:57.9 HOT-1	no I mean drink ice.		
10:20:59.3 HOT-2	yeah I'm good. I'm good. thanks.		
10:21:01.7 HOT-1	I'm putting your hat down here on top of mine **.		
10:21:04.2 HOT-2	okay.		
10:21:06.1 CAM-1	I'll close the door.		
10:21:13.3 CAM	[sound similar to cockpit door closing]		
10:21:14.8 HOT-2	hellooo.		
10:21:17.9 CAM-3	we're actually going to LaGuardia? you said I could give you that look. we're actually going?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:21:22.5 HOT-2	you said— you said you could give me that— who said you could give me that look?		
10:21:24.4 CAM-3	I said I keep giving you the look.		
10:21:26.3 HOT-2	I know you keep giving me the look.		
10:21:27.1 CAM-3	what the hell?		
10:21:28.4 HOT-2	but why?		
10:21:29.6 CAM-3	what the hell?		
10:21:30.5 HOT-2	what are you eating? that looks good.		
10:21:31.9 CAM-3	I don't know. it was in the little snack basket. you want one?		
10:21:34.4 HOT-2	no but you should eat it. it looks good.		
10:21:36.3 CAM	[conversation unintelligible due to radio chatter]		
		10:21:40.3 ZDC-C	Delta ten eighty six cross RIDGY at flight level two seven zero.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:21:45.0	
		RDO-2	cross RIDGY flight level two seven zero. Delta ten eighty six.
10:21:48.6			
HOT-2	uh yeah that's a little loud.		
10:21:55.3			
CAM-3	I was gonna * for a little while.		
10:21:56.9			
HOT-2	yeah yeah okay what do you think? alright.		
10:21:57.9			
CAM-3	**. it's pretty good * cranberry.		
10:22:04.8			
CAM-3	that's pretty decent. right?		
10:22:08.3			
HOT-2	like I love shortbread. **. I don't know. tastes good.		
10:22:15.5			
CAM-3	**. so are we gonna get stuck in LaGuardia?		
10:22:18.4			
HOT-2	oh hell yeah.		
10:22:20.0			
CAM-3	no seriously?		
10:22:21.0			
HOT-2	I don't know. you know—		
10:22:22.4			
CAM-3	you're supposed to know everything. you're the pilot.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:22:23.6 HOT-2	well...hold on.		
10:22:26.8 CAM-3	or is it getting warmer? I feel like it's getting warmer.		
10:22:29.2 HOT-2	you would be incorrect my dear.		
10:22:30.9 CAM-3	I thought it would. I thought you said it was thirty. thirty two— no thirty four.		
10:22:38.1 HOT-2	thirty. minus one now. no it's minus three. it's colder. twenty seven.		
10:22:43.6 CAM-3	I don't want to stay in New York though.		
10:22:46.3 HOT-2	but you might be stuck with us. and look how lucky you'd be.		
10:22:48.1 CAM-3	that would be so much fun.		
10:22:49.1 HOT-2	wouldn't that be lovely?		
10:22:50.0 CAM-3	it would.		
10:22:50.8 HOT-2	who was I telling— I wasn't telling you was I? my uh buddy got stuck in LaGuardia during one of those last snows. forty hours at the Crowne Plaza.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:22:58.5 CAM-3	nuh-uh. **. they would have us at the Roosevelt *.		
10:23:03.6 HOT-2	that would never happen.		
10:23:04.7 CAM-3	**.		
10:23:06.5 HOT-2	I like the Roosevelt. it's okay. it's not a four star.		
10:23:09.5 CAM-3	**.		
10:23:11.3 HOT-2	we don't talk about that. we don't talk about that.		
10:23:14.5 INT-2	this is @.		
10:23:15.3 INT-4	it's @ in the back. would you mind cooling it off back here? it's really warm.		
10:23:20.8 INT-2	cool it off back there. you got it.		
10:23:22.0 INT-5	hello?		
10:23:23.0 INT-2	yup it's cooling down.		
10:23:24.5 INT-4	okay. can't hear a word you just said. I hope you heard me.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:23:27.7 INT-5	hello?		
10:23:29.0 INT-2	yes I did. *.		
10:23:30.9 INT-4	okay thanks.		
10:23:32.8 CAM-3	she's having a flash because it's not. ***.		
10:23:41.3 HOT-2	not— not what else is looking **.		
10:23:46.5 CAM-3	[sound of laughter]		
10:23:47.9 HOT-2	I'm not so confident of you. [sound of laughter]		
10:23:49.8 CAM	[sound of intercom chime]		
10:23:50.4 CAM-3	oh are they ready?		
10:23:51.4 INT-2	hi this is @.		
		10:23:52.9 ZDC-C	Delta ten eighty six at RIDGY maintain a speed of two five zero knots. There's a chance you're gonna have to hold up near Robbinsville.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:23:53.0 INT-1	this is @. *.		
10:23:54.3 INT-2	okay.		
10:23:55.6 CAM-3	you have to potty?		
		10:23:59.8 RDO-2	alright. Chance of holding. Two hundred fifty knots at RIDGY. We'll do that. Delta ten eighty six.
10:24:03.9 HOT-2	I'm good thank you.		
10:24:04.7 CAM-3	okay.		
10:24:05.3 CAM-1	***.		
10:24:06.7 CAM-3	no no no. your fine.		
10:24:08.2 CAM-3	**.		
10:24:09.9 HOT-2	I'm good. I won't be coming out.		
10:24:11.2 CAM-3	okay.		
10:24:15.8 CAM-1	**.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:24:17.8 CAM-1	huh?		
10:24:18.3 CAM-3	**.		
10:24:21.4 CAM	[sound similar to cockpit door closing]		
10:24:21.9 HOT	[sound similar to momentary oxygen mask operation]		
10:24:23.0 HOT-2	so I don't know if you called at the same time the dingbat from the back called or not but uh. Apparently you were stepping on each other and then ATC is naturally calling at the same time. We are um heading downhill because they—		
		10:24:35.3 ZDC-C	Delta ten eighty six contact Washington Center on one two five four five she'll give you an update up ahead there.
10:24:39.4 HOT-1	RIDGY at two seven oh. I see it.		
		10:24:40.9 RDO-2	twenty five forty five. Uh Delta ten eighty six roger we're descending now.
10:24:46.3 HOT-2	yeah it all happened at once there.		
		10:24:49.6 RDO-2	Center hello Delta ten eighty six checkin' on board we're descending out of three three zero for two seven zero and two hundred fifty knots at RIDGY.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:24:56.1 HOT-2	stand by for holding.	10:24:56.5 ZDC-D	Delta ten eighty six Washington Center roger. * currently holding at LaGuardia for the uh runway clean up. I'm gonna call and get an update and see how much longer they're gonna hold. so for now I've got holding instructions. advise when ready to copy.
10:25:08.4 HOT-2	you ready to copy?		
10:25:08.9 HOT-1	yeah.	10:25:09.7 RDO-2	ready to copy Delta ten eighty six.
		10:25:11.4 ZDC-D	Delta ten eighty six clearance limit is Robbinsville. Hold southwest as published. maintain flight level two seven zero. expect further clearance one five five five.
		10:25:24.8 RDO-2	alright uh we'll hold at Robbinsville southwest as published at two seven zero. EFC of fifteen fifty five and we'd like to uh reduce speed now if that's okay. Delta ten eighty six.
10:25:34.7 HOT-1	the clearance limit's Robbinsville.		
10:25:36.9 HOT-2	you can split it whenever you want.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:25:38.4 HOT-1	and they wanted RIDGY at two fifty also?		
10:25:41.8 HOT-2	two hundred fifty knots at RIDGY uh see dih dih if you want— you got that available.		
10:25:47.6 HOT-1	you got those. Thanks.		
10:25:48.4 HOT-2	yup they're on.		
10:25:54.5 HOT-1	I would have told him unable two fifty at RIDGY.		
10:25:56.9 HOT-2	I just— he was just giving it to me left and right so I didn't have a chance to even look.		
10:26:11.9 HOT-2	oh I'm sorry. do you mind if I program this in? I'm sorry I didn't realize **.		
10:26:14.0 HOT-1	no I don't want you to put 'em in. we got— we got— uhh.		
10:26:15.8 CAM	[sound similar to altitude alert]		
10:26:18.7 HOT-1	we got plenty of time.		
10:26:22.1 HOT-2	alright you're captured. It's gonna be a hard one. two seven zero.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:26:24.7 HOT-1	it better capture.		
10:26:27.0 HOT-2	yup it's gonna capture alright.		
10:26:33.4 HOT-1	you gotta be # me.		
10:26:35.4 HOT	[sound similar to altitude alert] altitude. [automated voice] [sound similar to altitude alert]		
10:26:37.6 CAM	[sound similar to stab trim in motion]		
10:26:39.9 HOT	[sound similar to altitude alert] altitude. [automated voice] [sound similar to altitude alert] altitude. [automated voice] [sound similar to altitude alert] altitude. [automated voice]		
10:26:56.1 CAM	[sound similar to stab trim in motion]		
10:26:56.8 HOT-1	come on you #.		
10:27:01.5 CAM	[sound similar to stab trim in motion]		
10:27:08.1 CAM	[sound similar to stab trim in motion]		
10:27:25.5 HOT-1	nice heads up from the dispatcher. the #.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:27:27.9 HOT-2	yeah.		
		10:27:35.2 ZDC-D	Delta ten eighty six you think you'll be able to fly uh ILS to one three?
10:27:38.8 HOT-1	I don't know. what's the— what's the braking action?		
		10:27:41.0 RDO-2	say again for Delta ten eighty six.
		10:27:42.4 ZDC-D	Delta ten eighty six are you able ILS one three into LaGuardia?
		10:27:46.5 RDO-2	uh depends on braking action for delta ten eighty six. do you have reports for us?
		10:27:53.9 ZDC-D	I don't have a braking action right now. um all I'm asking is if you are going to be able to do runway one three into LaGuardia ILS. I'll get the RVR for you momentarily.
10:28:00.9 HOT-2	yeah sure.		
10:28:03.8 HOT-1	yeah if you give us—		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:28:04.7	
		RDO-2	yeah we can certainly do the ILS to one three for Delta ten eighty six unless you know something we don't know but we need uh braking action reports. we're trying to get them from dispatch as well.
		10:28:13.0	
		ZDC-D	roger.
10:28:15.8			
HOT-2	does she know something—		
		10:28:16.3	
		ZDC-D	and Delta ten eighty six descend and maintain flight level two zero zero.
		10:28:20.0	
		RDO-2	descend to flight level two zero zero Delta ten eighty six and uh holding instructions remain the same?
		10:28:25.4	
		ZDC-D	everything remains the same for now. we're in the hold until we come out of hold. that is for planning purposes is what LaGuardia's planning on doing. ILS one three when they open it up.
		10:28:34.1	
		RDO-2	I understand. descending to level two zero zero. Delta ten eighty six.
10:28:37.4			
HOT-1	you know that's un— unexcusable.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:28:48.4 HOT-2	it does— does it not seem to you like everybody's been caught off guard? besides the fact we all knew this was gonna happen.		
10:28:56.6 HOT-1	say again?		
10:28:57.9 HOT-2	said it seems like everybody else is sort of surprised by this. you know we knew the weather was— this is New York. I mean what do you think happens here?		
10:29:28.4 HOT-2	one thirty clean speed two thirty four. we're good on speed. two fifty. okay.		
10:29:41.4 HOT-1	max hold's two ten at Robbinsville. right turns. I don't see any DME published.		
10:29:52.6 HOT-2	* timing *.		
10:29:57.4 HOT-1	well we'll ask for— we'll ask for legs.		
		10:30:00.8 ZDC-D	Delta fifteen twenty six. go ahead sir.
		10:30:02.9 DL1526	yeah we're looking at our gas. we can only hold for maybe twenty more minutes then we'll have to go to JFK...
10:30:03.0 CAM	[sound similar to stab trim in motion]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:30:09.0 HOT-2	she ain't gonna care.		
10:30:15.5 HOT-1	zero six eight inbound. right turns at Robbinsville. two ten max hold between six and fourteen othwerwise we can hold at two fifty. so for now we're okay.		
10:30:33.6 HOT-1	what did he say?		
10:30:35.5 HOT-2	he's got to go. he can't hold.		
10:30:37.6 HOT-1	no no no no no. I'm talking about the dispatcher.		
10:30:38.3 HOT-2	who? this guy?		
10:30:45.9 HOT-1	special...quarter mile...braking advisories in effect. now what did he say?		
10:30:59.1 HOT-1	uplink message...I'll pass the braking action along as soon as I get one.		
10:31:08.0 HOT-1	alright. why didn't you advise us of this earlier? I— I— I don't even want to— I don't even want to talk to him.		
10:31:14.2 HOT-2	don't **.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:31:15.3 HOT-1	they're useless.		
10:31:16.3 HOT-2	they're useless.		
10:31:16.9 HOT-1	okay we're going to two zero zero. it's IAS. it's descending. it's armed...uh our alternate is Albany. Albany right?		
10:31:26.1 HOT-2	and Syracuse yes. both Albany and Syracuse. that's correct.		
10:31:28.9 HOT-1	ummm...		
10:31:50.3 HOT-1	I need to see what the burn is to Albany when you get a chance. when you can tell me.		
10:31:54.7 HOT-2	sure I will tell you right here boss.		
10:32:06.7 HOT-2	alright to Albany—		
		10:32:09.3 ZDC-D	Delta ten eighty six descend and maintain one seven thousand. the altimeter at Philadelphia is three zero one two. one seven thousand.
10:32:15.7 HOT-2	seventeen thousand.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:32:18.0 RDO-2	descend to seven thousand. thirty thirteen on the meter. Delta ten eighty six.
		10:32:21.5 ZDC-D	seventeen. one seven thousand. correct?
10:32:21.7 HOT-1	one seven thousand. descending—		
		10:32:25.0 RDO-2	one seven thousand feet for Delta ten eighty six. correct.
10:32:29.5 HOT-2	oops. alright. Albany? you're gonna burn four thousand pounds.		
10:32:34.8 HOT-1	so that's nine thousand from over uh...there. the burn from Robbinsville to uh LaGuardia is what?		
10:32:58.3 HOT-2	eighteen five to get us there. so that's two zero zero. so basically two thousand pounds.		
10:33:10.2 HOT-1	gonna be eleven...to land with five...check my math.		
10:33:17.6 HOT-2	yeah.		
10:33:24.1 HOT-1	descent checklist. just the altimeter for now.		
10:33:28.6 HOT-2	sure.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:33:31.7 HOT-2	altimeters?		
10:33:32.9 HOT-1	three zero one three. is crosschecked.		
10:33:35.3 HOT-2	thirty thirteen is crosschecked.		
10:33:46.2 HOT-2	alright. going to Albany four thousand pounds.		
10:33:56.8 HOT-2	eighty five...ten five. and you say eleven? what did you— what did you say?		
10:34:01.0 HOT-1	wha— what?		
10:34:02.9 HOT-2	what was your number?		
10:34:03.8 HOT-1	well you gave me uh four thousand pounds to burn.		
10:34:08.6 HOT-2	to get to Albany?		
10:34:10.2 HOT-1	and land with five.		
10:34:10.2 HOT-2	yup.		
10:34:11.8 HOT-1	plus two from Robbinsville gives us eleven.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:34:11.9 HOT-2	land with five.		
10:34:13.8 HOT-2	sure. eleven thousand. I like eleven.		
10:34:16.2 HOT-1	okay?		
10:34:17.7 HOT-1	and Albany is uh ten miles few broken. uh good weather in Albany. that's fine.		
10:34:17.8 HOT-2	call bingo.		
		10:34:23.3 ZDC-D	Delta ten eighty six cross BRAND at eleven thousand. that's one one thousand and that will be your holding altitude over Robbinsville. eleven thousand.
		10:34:31.4 RDO-2	okay cross BRAND at eleven thousand. Delta ten eighty six. and uh—
10:34:35.2 HOT-2	do you want ten mile legs?		
10:34:36.6 HOT-1	yeah ask for ten m—		
		10:34:36.9 RDO-2	requesting ten mile legs on the hold for Delta ten eighty six.
		10:34:40.0 ZDC-D	ten eighty six I need you to hold as published.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:34:42.6 HOT-1	alright.		
		10:34:43.3 RDO-2	as published. ten eighty six.
10:34:46.3 HOT-2	seventeen thousand eleven thousand. cross BRAND at eleven thousand feet.		
10:34:50.2 HOT-1	yeah uh we got it.		
10:34:52.2 HOT-2	yeah...alright.		
10:34:54.9 HOT-1	eleven thousand. if we need to— I'll put drag out. whatever we did. the hold's in there. right turns. hold as published. we'll have to slow to two ten at Robbinsville as well.		
10:35:26.8 HOT-2	why is she asking me if we can do ILS to one three? runway end identifier lights are out of service.		
10:35:33.1 HOT-1	so...		
10:35:40.6 HOT-2	edge markings are obscured.		
10:35:57.9 HOT-?	#.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:36:59.9 HOT-1	BRAND at eleven. two ten for the hold. that's all gonna be in there.		
10:37:05.5 HOT-2	yes sir.		
10:37:06.8 HOT-1	EFC was...		
10:37:09.3 HOT-2	fifteen fifty five.		
10:37:19.0 HOT-1	[sound similar to sigh]		
10:37:30.4 HOT-1	alright we got uh icing here.		
		10:37:31.5 ZDC-D	Delta fifteen twenty six you're now cleared to LaGuardia via the KORRY three. maintain one zero thousand. and uh they're gonna try to work you in as soon as they can. they're still— almost finished with the cleanup.
10:37:34.6 HOT-2	okay.		
10:37:44.4 HOT-2	got a flow light.		
10:37:45.0 HOT-1	what clean up?		
10:37:47.2 HOT-2	flow light in to uh.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:37:49.3 HOT-1	what's that?		
10:37:50.1 HOT-2	got a flow light.		
10:37:50.9 HOT-1	alright. yeah. we'll take care of that in a minute here.		
10:37:55.7 HOT-1	let's go slats extend.		
10:37:57.0 HOT-2	here we go. speed checks. here come slats.		
10:38:18.9 INT-3	@ one left.		
10:38:19.7 INT-1	@ no this is not initial. this is holding. I just uh. we're holding.		
10:38:26.3 INT-3	oh okay. alright are you going to make that announcement or do you want me to?		
10:38:29.1 INT-1	yeah when we get to— no I'll make the announcement. but it's— it's gonna be a while. they're— they're— they're screwing around up here. I'll make the announcement.		
10:38:37.9 INT-3	okay alright.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:39:28.1 HOT-1	RVR of twenty four hundred. flight director or autopilot or HUD dih dih. yeah you see— twenty four hundred RVR. unless the RVR is—		
10:39:40.4 HOT-2	did you hear a report from her yet? I have not.		
10:39:41.8 HOT-1	no. she's— she's—		
10:39:43.1 HOT-2	promised to get back to everybody but she hasn't.		
10:39:44.1 HOT-1	she's— she's just dorkin' it up. they're useless. dispatcher's useless. he should have gave us a head's up they were holding.		
		10:39:51.6 ZDC-D	Delta ten eighty two descend and maintain flight level one niner zero.
10:39:54.1 HOT-2	hold on. that's ten eighty two.		
		10:39:57.4 ZDC-D	uh American— American ten eighty two descend and maintain flight level one niner zero.
		10:40:01.4 AA1082	descend to one niner zero for American ten eighty two. is the holding for run— for plowing?
		10:40:05.3 ZDC-D	it's— it's uh holding for runway cleanup.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:40:08.3	
		AA1082	copy that. do you have an RVR for runway— are they still landing to runway one three?
		10:40:12.5	
		ZDC-D	last re— last we had was uh six thousand.
10:40:15.6			
HOT-2	six thousand.		
10:40:40.7			
HOT-2	okay. that's all that. currently charlie eighteen is our gate.		
10:40:50.9			
HOT-1	okay.		
10:40:52.4			
HOT-2	we keep it that'd be nice.		
		10:41:20.7	
		ZDC-D	Delta ten eighty six descend and maintain one zero thousand. ten thousand.
		10:41:24.6	
		RDO-2	descend to ten thousand. Delta ten eighty six.
10:41:26.7			
HOT-2	okay slow down for your hold as well.		
10:41:27.9			
HOT-1	yup.		
10:41:31.5			
HOT-1	ten thousand		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:41:32.3 HOT-2	ten thousand. altitude's armed.		
		10:42:05.3 ZDC-D	Delta ten eighty six.
10:42:07.5 HOT-1	what?		
		10:42:09.8 ZDC-D	Delta ten eighty six. you're now cleared to LaGuardia via the KORRY three arrival. descend and maintain ten thousand at this time.
10:42:12.0 CAM	[sound similar to altitude alert]		
		10:42:17.1 RDO-2	alright we are cleared to LaGuardia via the KORRY three arrival. descend to ten thousand. Delta ten eighty six.
10:42:21.7 HOT-2	it's turning on you.		
		10:42:22.2 ZDC-D	ten eighty six contact New York Approach one two seven point three. good day.
10:42:23.0 HOT-1	yeah.		
		10:42:26.1 RDO-2	twenty seven three. Delta ten eighty six good day.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:42:33.6 RDO-2	New York Delta ten eighty six checkin' on board ten thousand five hundred for ten thousand via the KORRY three. we have papa.
		10:42:39.3 NYC	Delta ten eighty six New York Approach. altimeter's three zero one three. descend and maintain seven thousand.
		10:42:43.9 RDO-2	thirty thirteen descend to seven thousand. Delta ten eighty six.
10:42:47.3 HOT-1	seven thousand.		
10:42:47.5 HOT-2	seven thousand. altitude's armed. vert speed.		
10:42:49.8 HOT-1	it's descending and armed.		
10:42:51.5 HOT-2	*		
10:42:53.7 HOT-2	alright you want to go through the approach checklist?		
10:42:55.7 HOT-1	no.		
10:42:56.3 HOT-2	er descent checklist I mean.		
10:42:57.3 HOT-1	uh not yet.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:43:06.2	<p>PA-1 ladies and gentlemen they were gonna put us in holding and they just took us out of holding so we're uh back direct to LaGuardia. should be touching down in about twenty minutes or so. flight attendants uh please prepare the cabin uh for arrival. gate charlie eighteen will be our arrival gate. charlie eighteen.</p>		
10:43:40.1	<p>HOT-1 nine for seven. it's armed. we're tracking. let's see. uh ILS one three. eleven dash two. fifteen August twenty eighteen. one oh eight five. one thirty four's the course. it's uh two hundred fourteen feet is the baro. uh we have twenty four hundred RVR's required. braking action of good or better is required. it's a MALSR with a PAPI on the left that's not coincident. we know about the runway avail— we talked about that. missed approach. climb to eight hundred. climbing left turn two thousand outbound LaGuardia zero four three to GREKO. that's in the box we'll be able to nav it up. min safe over the city three thousand. over the water twenty one hundred. flaps forty. maximum autobrake. right turnoff. probably at the end...whiskey or zulu...and uh charlie eighteen's the gate. it's over in here. okay.</p>		
10:44:59.7	<p>HOT-2 yup.</p>		
10:45:00.6	<p>HOT-1 and uh...green pages...three one one three. don't see anything for one three...KORRY...one three autoland procedure not authorized...we're not gonna do an autoland.</p>		
10:45:25.7	<p>HOT-2 no.</p>		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:45:26.3 HOT-1	okay. D ninety...I don't see anything else. okay let's finish the descent checklist.		
10:45:32.6 HOT-2	alright alt—		
10:45:33.0 HOT-1	oh two thirty four...one eighty seven...one fifty eight...one forty five. flaps forty.		
10:45:38.2 CAM	[sound similar to seatbelt sign]		
		10:45:38.4 NYC	Delta fifteen twenty six we just received poor braking action. uh going to be a change of plans. fly heading zero eight zero join LaGuardia two— stand by.
10:45:46.8 HOT-1	alright we can't land with poor. we know that. we saw this coming. man.		
10:45:51.3 HOT-2	yeah that's what I'm saying. they caught everybody by surprise.		
10:45:51.8 HOT-1	and th— this is the dispatch— this is the dispatcher's fault.		
10:45:54.8 HOT-2	that's—		
10:45:55.6 HOT-1	it is.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:45:56.0 HOT-2	for s— I mean ATC and everything.	10:45:56.6 NYC	Envoy thirty six forty seven. turn left heading three two zero. would you be able to take poor braking action?
10:45:56.7 HOT-1	alright. so anyway. if we can do this that's fine.		
10:46:01.7 HOT-2	nope.		
10:46:02.4 HOT-1	nobody. I don't think anybody—	10:46:02.5 MQ3647	stand by thirty six forty seven. zero four zero in the meantime. I mean uh— what was that heading again?
10:46:06.1 HOT-1	when you get a chance tell her we cannot. rest of the descent check.	10:46:08.8 NYC	three two zero.
10:46:09.2 HOT-2	oh yeah. exactly. altimeters?		
10:46:09.9 HOT-1	we have one thirty two. and bug one thirty seven.	10:46:11.3 MQ3647	stand by thirty six forty seven.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:46:13.1 HOT-1	uh three zero one three is crosschecked.		
		10:46:14.3 MQ3647	you have the winds thirty six forty seven?
10:46:16.3 HOT-2	thirty thirteen is crosschecked. minimums?		
		10:46:18.3 NYC	zero three zero at one three.
10:46:20.2 HOT-1	uh...what'd I say. baro for now two fourteen is crosschecked.		
		10:46:23.5 NYC	Delta fifteen twenty six can you take braking action poor?
		10:46:26.9 DL1526	negative.
		10:46:27.3 NYC	okay fly heading zero eight zero. join LaGuardia two two four radial. direct to PROUD and hold at PROUD as published.
10:46:30.8 HOT-2	uh of baro DA of uh two fourteen is crosschecked. landing data?		
		10:46:35.1 DL1526	okay Delta fifteen twenty six zero eight— you know what we just need to go to Hartford. uh Bradley.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:46:41.3 NYC	okay Delta fifteen twenty six. and uh maintain five thousand. just fly heading zero four zero for now.
10:46:46.3 HOT-2	landing data?		
10:46:48.0 HOT-1	flaps forty. v ref one thirty two crosschecked.		
10:46:50.6 HOT-2	flaps forty. ref one thirty two is crosschecked. approach briefing complete. seatbelt sign on. engine synch's off. pressurization panel set. hydraulic panel set. descent checklist complete.		
		10:46:54.6 MQ3647	** thirty six forty seven negative on poor braking action.
10:47:02.1 HOT-1	I'll set up to hold at PROUD for now. let's see...		
		10:47:02.4 NYC	thirty six forty seven. Airbus that uh just rolled out reported braking action good.
10:47:07.7 HOT-2	alright *.		
		10:47:07.8 MQ3647	we can take it then.
		10:47:09.0 NYC	Delta fifteen twenty six did you copy?

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:47:12.1	
		DL1526	uh braking action good is good for us Delta fifteen twenty six. okay we're climbing back to five thousand turning to zero four zero heading.
		10:47:17.6	
		NYC	Delta fifteen twenty six thank you. continue left turn to zero two zero.
10:47:22.0			
HOT-1	we're out of the icing but we'll leave this on. okay?		
10:47:25.0			
HOT-2	okay.		
10:47:26.4			
HOT-1	approach checklist.		
10:47:28.3			
HOT-2	alrighty sir this is—		
10:47:29.3			
HOT-1	descent checklist is complete right?		
10:47:30.2			
HOT-2	yeah this has been on the whole time.		
10:47:31.2			
HOT-1	uh doesn't matter because we're— we're out of it now. so we're fine		
10:47:33.5			
HOT-2	yeah.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:47:33.6 NYC	Delta ten eighty six descend and maintain four thousand. fly heading zero two zero.
		10:47:37.5 RDO-2	descend to four thousand. heading zero two zero. Delta ten eighty six.
10:47:40.8 HOT-2	four thousand. altitude is armed.		
10:47:43.0 HOT-1	four thousand descending and armed.		
10:47:43.4 HOT-2	heading zero two zero.		
10:47:47.1 HOT-2	flight and nav instruments?		
10:47:52.5 HOT-1	verified.		
10:47:53.4 HOT-2	verified. spoilers retracted disarmed. cabin notification?		
10:47:57.6 HOT-1	is complete.		
10:47:59.0 HOT-2	altimeters?		
10:48:01.5 HOT-1	thirty thirteen is last I got.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:48:04.7 HOT-2	thirty thirteen crosschecked.		
10:48:05.3 HOT-1	crosschecked.		
10:48:07.1 HOT-2	approach checklist complete. your speed's creeping up on you if you care.		
10:48:09.7 HOT-1	thank you.		
10:48:33.2 HOT-1	let's see if we were go— let me just check one thing here. Albany we would land with thirteen.		
		10:48:41.0 DL2522	Approach Delta twenty five twenty two. just to reconfirm the braking action at LaGuardia is good?
10:48:44.6 HOT-2	two hundred and forty knots.		
		10:48:45.4 NYC	Delta twenty five twenty two. affirmative. last aircraft to land an Airbus reported braking action good.
10:48:46.5 HOT-1	oops. thank you.		
		10:50:07.2 NYC	Delta ten eighty six maintain two ten or greater.
		10:50:10.3 RDO-2	maintain two ten or greater. Delta ten eighty six.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:50:39.0 CAM	[sound similar to altitude alert]		
10:51:27.2 HOT	[sound similar to IGD I Morse code identifier]		
10:51:34.0 HOT	[sound similar to IGD I Morse code identifier]		
10:51:42.1 HOT	[sound similar to IGD I Morse code identifier]		
10:51:50.9 HOT	[sound similar to IGD I Morse code identifier]		
		10:51:53.9 NYC	Delta ten eighty six turn right heading zero four zero.
10:51:58.5 HOT-1	right heading zero four—		
		10:51:59.0 RDO-2	right heading zero four zero. Delta ten eighty six.
10:52:01.4 HOT-2	good ID both sides.		
10:52:06.0 HOT-1	where is everybody?		
10:52:31.9 HOT-1	I think she's gonna take us—		
10:52:32.9 HOT-2	yeah she's— yeah. yes sir.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:52:41.4 HOT-1	put twenty seven five in here.		
10:52:46.1 HOT-1	two thirty two...one eighty five...one fifty seven...one thirty one— one forty four rather.		
		10:52:50.8 NYC	attention all aircraft. information quebec is now current. advise quebec.
10:52:56.3 HOT-1	thirty one five thirty six		
10:53:03.1 HOT-2	roger. briefed crosschecked.		
10:53:04.4 HOT-1	you #.		
10:53:07.6 HOT-1	I'm gonna have to call and talk— and have a heart to heart with our dispatcher.		
10:53:15.0 HOT-1	if it's not closed then why were we holding?		
		10:53:16.9 NYC	Delta ten eighty six descend and maintain three thousand.
10:53:17.5 HOT-2	yeah.		
10:53:17.7 HOT-1	they were clearing it.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:53:20.2	
		RDO-2	descend to three thousand Delta ten eighty six.
10:53:21.9			
HOT-1	three thousand.		
10:53:22.9			
HOT-2	three thousand. altitude's armed. vert speed.		
10:53:24.9			
HOT-1	it's uh...descending and armed.		
10:53:38.4			
CAM	[sound similar to altitude alert]		
10:54:02.6			
CAM	[sound similar to stab trim in motion]		
10:54:12.4			
HOT-2	we have quebec.		
10:54:24.2			
HOT-1	three zero one two.		
10:54:25.1			
HOT-2	thirty twelve on the meter.		
10:54:26.4			
HOT-1	is crosschecked.		
10:54:27.3			
HOT-2	crosschecked.		
		10:54:37.3	
		NYC	Delta ten eighty six turn left heading three four zero. reduce speed to one eight zero.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:54:41.4 RDO-2	left turn three four zero. slow to a hundred eighty knots. Delta ten eighty six. we have quebec.
		10:54:45.3 NYC	thank you.
10:54:48.7 HOT-1	flaps eleven.		
10:54:50.0 HOT-2	flaps to eleven.		
10:55:33.9 HOT-1	wonder who reported braking action good? that's another concern of mine.		
10:55:37.4 HOT-2	it was United. he said United did.		
10:55:41.7 HOT-1	what kind of airplane was he?		
		10:55:46.6 NYC	Delta ten eighty six turn left heading two niner zero.
		10:55:49.4 RDO-2	left two nine zero. Delta ten eighty six.
10:56:06.0 CAM	[sound similar to stab trim in motion]		
10:56:08.1 INT-3	@ one left.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:56:09.2 INT-1	hey @ it's @ @ make one more swing through the galley and make sure everything is secured.		
10:56:14.8 INT-3	I'm sorry I can barely hear you.		
10:56:16.4 HOT-2	yeah she's # crazy.		
10:56:17.9 INT-1	can you hear me now?		
10:56:19.0 INT-3	yeah.		
10:56:19.4 INT-1	make one more swing through the galley and make sure everything's really battened down. we're gonna be using max autobrakes cause of the snow.		
10:56:25.0 INT-3	okay well we're all strapped down. I mean we've already done our walkthrough.		
10:56:28.3 INT-1	okay.		
10:56:28.8 INT-3	cleaned up everything. we're already in our seats.		
10:56:29.1 INT-1	so long as you're okay. yeah that's fine.		
		10:56:31.4 NYC	Delta ten eighty six turn left heading two five zero.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:56:31.6 INT-3	okay.		
10:56:32.0 INT-1	it'll be a little— it'll be a while before we land but that's fine.		
		10:56:34.3 RDO-2	left turn two five zero. Delta ten eighty six.
10:56:35.4 INT-1	okay.		
10:56:37.3 HOT-2	two fifty on the heading.		
10:56:38.1 HOT-1	two fifty.		
10:56:48.6 HOT-1	quit your whining @.		
10:56:52.9 HOT-2	yeah she's not the sharpest tool.		
10:56:55.4 HOT-1	what's that?		
10:56:56.0 HOT-2	she's not the sharpest one in the shed.		
10:57:10.3 HOT	[sound similar to IGDI Morse code identifier]		
10:57:21.6 HOT-2	it's gonna be awesome when you hear the— the coffee pots come flying out.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:57:30.8 NYC	Delta ten eighty six turn left heading two two zero.
		10:57:33.7 RDO-2	left turn two two zero. Delta ten eighty six.
10:57:36.1 HOT-1	let's go flaps fifteen.		
10:57:37.2 HOT-2	fifteen.		
		10:57:38.3 NYC	attention all aircraft. regional jet reported braking action good.
10:57:41.6 HOT-1	regional.		
10:57:41.9 HOT-2	RJ good.		
		10:57:47.3 NYC	Delta ten eighty six turn left heading one eight zero.
		10:57:49.8 RDO-2	left one eight zero. Delta ten eighty six.
		10:58:18.5 NYC	Delta ten eighty six turn left heading one six zero. join the localizer.
		10:58:22.6 RDO-2	left turn one eight zero. join the localizer. Delta ten eighty six.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:58:25.8 HOT-1	localizer's armed.		
10:58:26.0 HOT-2	approaching inbound course.		
		10:58:41.3 NYC	Delta ten eighty six over PAYMI cleared ILS runway one three approach.
10:58:44.3 HOT-2	locs—		
		10:58:45.1 RDO-2	cleared ILS runway one three approach. Delta ten eighty six.
10:58:48.3 HOT-2	loc is alive and locs captured.		
10:58:50.5 HOT-1	we'll intercept it at three thousand here.		
10:58:53.3 HOT-2	sure. glideslope's alive as well.		
10:58:54.5 HOT-1	let's see...go with a one thirty...		
10:59:05.4 HOT-2	glideslope's captured.		
10:59:06.7 HOT-1	thank you.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
10:59:09.4 HOT-1	let's go gear down.		
10:59:11.0 HOT-2	gear is comin' down.		
		10:59:12.3 NYC	Delta ten eighty six tower one one eight seven. RVR is greater than six thousand. rollout four thousand. have a good day.
10:59:12.3 CAM	[sound similar to landing gear deployment]		
		10:59:17.5 RDO-2	switch to tower Delta ten eighty six. good day.
10:59:24.1 CAM	[sound of click]		
		10:59:24.4 RDO-2	tower Delta ten eighty six joining you ILS runway one three.
10:59:30.1 HOT-1	flaps forty. landing checklist.		
10:59:31.6 HOT-2	speed checks good.		
10:59:32.3 CAM	[sound similar to flap handle movement]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		10:59:34.0 LGA	and Delta ten eighty six LaGuardia Tower. uh winds zero three zero at niner. runway one three cleared to land. braking action reported good by an Airbus and then a regional jet. there will be a departure on runway four prior to your arrival. runway one three RVR touchdown greater than six thousand. rollout three thousand five hundred.
10:59:38.2 CAM	[sound of four clicks]		
10:59:43.9 CAM	[sound similar to stab trim in motion]		
		10:59:51.7 RDO-2	copy all. cleared to land on runway one three. Delta ten eighty six.
10:59:54.4 HOT-1	alright ask him one more time for a wind check. I'm showing a pretty good tailwind here. eleven knots.		
11:00:02.3 HOT-1	when you get a chance.		
11:00:02.9 HOT-2	yeah uh do you mind if we wrap landing checklist?		
11:00:05.0 HOT-1	for landing. got it. go ahead.		
11:00:05.1 CAM	[sound similar to stab trim in motion]		
11:00:06.6 HOT-2	landing gear?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:00:07.5 HOT-1	down three green. pressures and quantities are normal.		
11:00:08.2 HOT-2	down...three green. flaps slats?		
11:00:11.4 HOT-1	I've got forty forty. land.		
11:00:12.6 CAM	[sound of click]		
11:00:13.6 HOT-2	forty forty land. spoilers?		
11:00:15.3 HOT-1	spoilers are armed.		
11:00:16.2 HOT-2	armed. ignitions off. autobrakes are armed. maximum. uh annunciator panel is checked. landing checklist complete.		
11:00:28.6 HOT-2	alright.		
		11:00:31.2 RDO-2	wind check.
		11:00:32.2 LGA	wind zero two zero at one zero.
11:00:33.9 HOT-2	zero two zero at one zero.		
11:00:36.3 HOT-1	geez.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:00:38.7 HOT-1	yeah.		
11:00:40.9 HOT-1	okay.		
11:00:41.2 HOT-2	we're all counting on you. alright.		
11:00:45.1 HOT-1	gear. flaps forty. spoilers. maximum autobrakes and armed.		
11:00:45.1 HOT-2	dim dim dim dim. tail deice is on.		
11:00:50.0 HOT-1	thanks.		
11:00:50.9 CAM	[sound of click]		
11:01:02.6 CAM	one thousand. [automated voice]		
11:01:04.3 HOT-2	cleared to land. missed approach altitude is set.		
11:01:06.6 HOT-1	thanks.		
11:01:11.1 CAM	[sound similar to stab trim in motion]		
11:01:39.3 CAM	five hundred. [automated voice]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:01:39.8 HOT-1	gear. flaps forty. spoilers. maximum brakes.		
11:01:41.2 HOT-2	very well.		
11:01:51.4 HOT-1	approach lights are in sight.		
11:01:53.0 HOT-2	very good.		
11:01:53.5 HOT-1	we're gonna continue.		
11:01:58.8 HOT-1	runway's in sight.		
11:01:59.3 HOT-2	approaching minimums. roger.		
11:02:01.5 HOT-1	everything's off. runway is in sight.		
11:02:08.7 CAM	one hundred. [automated voice]		
11:02:11.6 CAM	fifty. [automated voice]		
11:02:12.6 CAM	forty. [automated voice]		
11:02:13.2 CAM	thirty. [automated voice]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:02:13.8 CAM	twenty. [automated voice]		
11:02:15.0 CAM	ten. [automated voice]		
11:02:15.9 CAM	[sound similar to main gear touchdown]		
11:02:17.9 CAWS	[sound of beep] [CAWS configuration warning]		
11:02:17.9 CAM	[sound of click followed by mechanical noise]		
11:02:18.3 CAWS	[sound of beep] [CAWS configuration warning]		
11:02:18.5 HOT-2	spoilers up.		
11:02:18.9 CAWS	speedbrakes.[automated voice. CAWS configuration warning]		
11:02:19.4 CAM	[sound similar to nose gear touchdown]		
11:02:20.9 HOT-2	two in reverse.		
11:02:22.2 HOT-2	one ten.		
11:02:23.7 HOT-2	out of reverse.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:02:24.5 HOT-2	come out of reverse.		
11:02:25.2 HOT-2	come out of reverse. [louder]		
11:02:27.2 HOT-1	#.		
11:02:27.5 HOT-2	#.		
11:02:27.8 CAM	[rumbling noise increases]		
11:02:28.6 HOT-1	#.		
11:02:29.1 CAM	[sound of rumbling]		
11:02:32.0 CAM	[sounds of increased rumbling noise lasts 19.4 seconds]		
11:02:33.1 CAWS	[sound of CAWS landing gear configuration warning horn lasts until end of recording]		
11:02:40.4 CAM-?	(idle or out of) reverse. (idle or out of) reverse.		
11:02:43.2 CAM	[sound of louder scraping lasting 8.3 seconds]		
		11:02:45.1 LGA	Delta ten eighty six?

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
11:02:47.6	CAM-? #.		
11:02:48.0	CAM-? #.		
11:02:49.4	CAM-? #.		
11:02:51.6	CAM [sound of scraping noise ends]	11:02:51.8	LGA Delta ten eighty six?
11:02:53.5	CAM-? #.		
11:02:54.3	END OF RECORDING END OF TRANSCRIPT		