

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

DCA18LA285

**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

February 20, 2019

Cockpit Voice Recorder

Group Chairman's Factual Report By Christopher Babcock

1. EVENT SUMMARY

Location: New York, New York
Date: September 6, 2018
Aircraft: Boeing 757-200, Registration N173AN
Operator: American Airlines, Flight 279
NTSB Number: DCA18LA285

On September 6, 2018, at about 1245 eastern daylight time, American Airlines flight 279, a Boeing 757-200, registration N173AN, experienced an in-flight upset while descending into John F. Kennedy International Airport (KJFK), Jamaica, New York. Of the 113 passengers and crew onboard, one flight attendant received serious injuries. The airplane was not damaged. The regularly scheduled international passenger flight was operating under the provisions of Title 14 *Code of Federal Regulations* Part 121 from Edinburgh Airport (EGPH), Edinburgh, Scotland, to New York. 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 October 16, 2018, and a transcript was prepared.

2. GROUP

Chairman:	Christopher Babcock Aerospace Engineer National Transportation Safety Board
Member:	Captain Robert F. Aaron Safety Pilot Boeing
Member:	Captain Michael Boynton B757/767 Fleet Captain American Airlines
Member:	Captain Randy Davenport B757/767 Lead Check Airman American Airlines Pilot Association
Member:	Patrick Lusch Air Safety Investigator Federal Aviation Administration

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **L-3/Fairchild FA2100-1020**
Recorder Serial Number: **000136134**

3.1 CVR Carriage Requirements

Per federal regulation, large 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 4-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 4 channels of audio information: one channel for each flight crew, one channel for a cockpit observer, and one channel for the 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 While the crew communicated with each other through the crew channels, the transcript made use of the CAM channel as crew communications were frequently inaudible due to air traffic control communication with other aircraft.

Table 1. Audio Quality.

Channel Number	Content/Source	Quality	Duration
1	Combined Crew	Excellent	120 min
2	CAM	Excellent	120 min
3	Unknown ^A	Excellent	30 min
4	Unknown ^A	Excellent	30 min
5	Unknown ^A	Excellent	30 min
6	CAM	Excellent	30 min

^A Because there were no crew communications on these channels, it was not possible to determine the source.

¹ See attached CVR Quality Rating Scale.

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 that the aircraft made following the in-flight upset event 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. Once a correlation between the two recorders was established, a reference to UTC time was determined using the UTC time parameter recorded on the FDR.

$$\text{UTC} = \text{CVR Elapsed Time} + 57341.5 \text{ seconds}$$

3.6 Description of Audio Events

The transcript began at 16:38:56 UTC and contained events from the approach, accident sequence, landing, and taxi. The recording ended shortly thereafter at 17:51:40 UTC.

Attachment I

CVR Quality Rating Scale

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

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

Transcript of a L-3/Fairchild FA2100-1020 solid-state cockpit voice recorder, serial number 000136134, installed on an American Airlines Boeing 757 (N173AN), which experienced an in-flight upset on approach to New York, New York.

LEGEND

APP	Transmission from New York Approach controller
BOS	Transmission from Boston Center controller
CAM	Cockpit Area Microphone sound source
GND	Transmission from Kennedy Ground controller
INT	Crew interphone sound source
PA	Public address system sound source
RAMP	Transmission from Terminal Ramp controller
RDO	Aircraft radio sound source
TWR	Transmission from Kennedy Tower controller
-1	Voice identified as the captain
-2	Voice identified as the first officer
-3	Voice identified as the jumpseat occupant/third crewmember
-4	Voice identified as a flight attendant
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
[]	Editorial insertion

Note 1: Times are expressed in Universal Coordinated 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
15:56:06.2	START OF RECORDING		
16:38:56.2	START OF TRANSCRIPT		
		16:38:56.2 BOS	American two seventy nine cross Calverton at one two thousand at two five zero nine— uh two five zero knots. Kennedy altimeter three zero one three.
		16:39:04.1 RDO-2	Calverton at twelve and two fifty speed. American two seven nine.
16:39:10.9	CAM-2 twelve at Calverton.		
16:39:25.0	CAM-1 concur?		
16:39:25.6	CAM-2 yeah.		
16:40:05.5	CAM [sound of chime]		
16:40:07.7	CAM-2 hello? alright? all done?		
16:40:11.3	CAM-1 *.		
16:40:40.5	CAM [sound similar to cockpit door opening]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:40:49.4 CAM-2	how're you doing?		
16:40:50.5 CAM-1	just wake up?		
16:40:51.6 CAM-3	yeah.		
16:40:52.1 CAM	[sound similar to cockpit door closing]		
16:40:55.1 CAM-1	Calverton twelve thousand two hundred fifty knots. landing on two two left. that's it.		
16:41:53.0 CAM-1	gonna go back to VNAV let it all happen.		
16:41:55.3 CAM-3	okay.		
16:41:56.2 CAM-1	probably gonna waffle for a second here until it finds itself.		
16:42:25.6 CAM	[sound of chime]		
16:42:29.2 CAM-1	just as you get all settled in there huh?		
16:42:31.2 CAM-3	going back?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:42:32.0 CAM-1	no.		
16:42:36.1 CAM	[sound similar to cockpit door opening]		
16:42:37.7 CAM-1	I don't have the energy to get up.		
16:42:40.8 CAM	[sound similar to cockpit door closing]		
16:43:17.2 CAM-1	I got the lights on we'll be slowing to two fifty momentarily.		
16:43:21.3 CAM-2	do you want to keeping this on?		
16:43:23.7 CAM-1	no I'm all set thank you. I'm gonna plan on that uh zulu to two two left.		
16:43:29.7 CAM-2	alright.		
16:43:34.5 CAM-2	thirty one * [sound similar to yawn].		
16:43:48.6 CAM-2	they've been doing that V-O-R though right?		
16:43:52.3 CAM-1	huh?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:43:53.0 CAM-2	they've been doing that V-O-R approach.		
16:43:54.6 CAM-1	yeah I'm gonna tell him— when you check in can you do something like 'hey approach this American such and such information india requesting the RNAV zulu' before he gets a chance to say anything. maybe— actually when we came in the other day we did it.		
16:44:08.1 CAM-2	okay.		
16:44:08.5 CAM-1	plan on it.		
16:44:09.2 CAM-2	why do you like that one better?		
16:44:10.7 CAM-1	uh I just want— I want practice because otherwise if we don't do it here on the line the only time you're gonna see it is when you're going out for your checkride. now it's a threat environment.		
16:44:19.6 CAM-2	the V-O-R is the same thing right? same procedure?		
16:44:22.0 CAM-1	yeah but we won't be able to set ten forty five in here. one three four five right?		
16:44:28.5 CAM-2	yeah.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:44:29.0 CAM-1	you won't be able to go down to point two and you won't be able to go down to three hundred sixty one feet. so it's six or one half. having said that I have the V-O-R two two left set up on my thing also just in case you didn't know.		
16:44:40.9 CAM-2	uh.		
16:44:46.4 CAM-1	yeah the only time we do it is down in the schoolhouse.		
16:44:50.7 CAM-2	alright.		
16:44:53.4 CAM-1	all I need outta you *** is 'I hear and obey. I follow.'		
16:44:57.5 CAM-2	[sound of laughter]		
16:45:00.1 CAM-1	the gifted one.		
16:45:03.1 CAM-1	let me uh— let me know when you're ready we'll run the numbers okay?		
		16:45:06.4 BOS	—can two seven nine contact New York Approach one two five point seven.
		16:45:10.8 RDO-2	twenty five seven American two seventy nine. g'day.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:45:17.6 CAM-1	india's the last you got. fifteen fifty one. that's probably old.		
		16:45:22.7 RDO-2	New York American two seven nine's level at one two thousand with india. requesting the RNAV zulu two two left.
		16:45:30.6 APP	American two seventy nine New York Approach expect the RNAV zulu runway two two left after ROBER heading two eight zero. information india is current
		16:45:38.1 RDO-2	after ROBER heading uh two eight zero American uh two seven nine and we have india.
16:45:55.0 CAM-1	wonder why it kicked out like that? thirty thirteen...thirty thirteen and thirty thirteen.		
16:46:18.9 CAM-1	let me know when you're ready and I'll run this.		
16:46:21.2 CAM-2	okay *.		
16:46:23.0 CAM-1	so I got the uh— I got page twenty two twenty two. this is the RNAV R-N-P zulu uh runway twenty two left. one ten forty five.		
16:46:35.9 CAM-2	what's it? one ten forty five?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:46:38.1 CAM-1	yeah.		
16:46:39.3 CAM-1	one ten forty five reset. two twenty four inbound...uh nineteen hundred JIRVA. three sixty one R-N-P is uh two. good weather. no issues going on so we don't need any information from home plate as far as the uh satellite coverage. three hundred sixty one feet. I'll keep it all engaged right down to about four hundred feet and let the system do the whole routine. I'll click it all off there so you're not wondering when he's going to turn this thing off. twelve feet airport— uh thirteen feet airport. touchdown zone's twelve.		
		16:47:15.2 APP	American two seventy nine descend and maintain seven thousand.
		16:47:20.8 RDO-2	seven thousand American two seven nine.
16:47:20.9 CAM-1	seven thousand.		
		16:47:22.5 APP	and if you can give me a good rate through nine thousand.
		16:47:25.5 RDO-2	good rate through nine. American two seven nine.
16:47:27.2 CAM-3	speed. your speed.		
16:47:29.4 CAM-3	speed. [louder]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:47:31.1 CAM-1	oh #.		
16:47:32.2 CAM-3	speed.		
16:47:40.1 CAM-3	push. push it over. get the autopilot off. push it over. [loud]		
16:47:42.7 CAM	[sound of autopilot disconnect]		
16:47:52.0 CAM-1	#.		
16:47:55.2 CAM-1	flight level.		
16:48:00.2 CAM-1	I wonder why that kicked off?		
16:48:11.9 CAM-1	left autopilot's engaged.		
16:48:25.5 CAM-1	we'll talk about that on the ground guys.		
		16:48:46.8 APP	American two seventy nine descend and maintain five thousand.
		16:48:50.4 RDO-2	five thousand American two seventy nine.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:48:52.6 CAM-1	five thousand set.		
16:49:03.4 CAM-1	straight ahead to three thousand on the missed approach. anybody else have anything else for this approach?		
16:49:26.4 CAM-2	now do you—		
16:49:30.2 INT-1	hey @. Captain @ here. uh good time to make our final P-A?		
16:49:36.6 CAM-2	there you go.		
16:49:38.2 INT-1	uh the airplane got slow so we had to speed up real quick and they asked us to descend at the same time. the autopilot— autopilot kicked off.		
16:49:49.5 INT-1	really?		
16:49:51.4 INT-1	oh. oh. okay. I'll talk to you on the ground. bye bye.		
16:49:58.5 CAM-1	somebody I think the flight attendant went down in the back.		
16:50:01.7 CAM-2	she alright?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:50:02.6 CAM-1	we'll find out when we get on the ground.		
16:50:04.4 CAM-1	I'm off the headset for a second.		
16:50:12.2 PA-1	ladies and gentlemen this is the captain speaking. we'll be landing in about fifteen minutes. right now the weather is as you see it outside the uh aircraft. thirty one degrees Celsius eighty eight degrees Fahrenheit. seatbelt sign is on right now so if you're up please head to your seats and stay there for the remainder of the flight. flight attendants please prepare for landing.		
16:50:29.9 CAM-2	six five.		
16:50:32.1 CAM-1	okay.		
		16:50:55.2 APP	American two seventy nine proceed direct TUSTE.
		16:50:58.1 RDO-2	direct uh TUSTE American two seven nine.
16:50:58.5 CAM	[sound of chime]		
16:51:03.9 CAM-1	how's TUSTE look?		
16:51:05.8 CAM-2	uh looks good.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:51:15.2 CAM-3	get an ambulance. there are flight attendants on the ground in the back.		
16:51:19.8 CAM-1	okay. would you do me a favor uh make that phone call? set him up on the frequency here please.		
16:51:27.5 CAM-2	okay.		
16:51:28.6 CAM-2	do that with uh these guys? with approach?		
16:51:31.2 CAM-1	no no. do this— uh call the ramp.		
16:51:35.6 CAM-2	I'm off.		
		16:51:46.6 APP	American two seventy nine descend and maintain four thousand.
		16:51:48.3 RDO-2	ramp uh American two seven nine.
		16:51:51.5 RAMP	two seven nine go.
16:51:53.1 CAM-1	no let him take care of that.	16:51:53.7 APP	American two seven nine—

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		16:51:57.3 RDO-1	down to four thousand American uh two seventy nine.
16:51:58.7 CAM-2	there at—		
16:51:59.7 CAM-1	let— let uh @ take care of that.		
16:52:01.6 CAM-2	okay.		
		16:52:05.2 APP	American two seventy nine I have stepped on you. just to verify four thousand.
		16:52:09.0 RDO-2	going down to four thousand American two seven nine.
		16:52:10.2 RAMP	two seven nine go ahead.
16:52:13.4 CAM-2	four thousand.		
		16:52:14.3 RDO-3	[unintelligible radio transmission. stepped on by other radio traffic]
		16:52:25.9 RAMP	okay paramedics. and do you happen to know which flight attendants * because we also have to get ahold of flight services.
		16:52:30.6 RDO-3	okay I'll get that for you.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:52:32.4 CAM-2	altimeters?	16:52:32.5 RAMP	okay we'll call in the meantime. uh any bleeding or anything like that going on?
16:52:36.1 CAM-2	altimeters.		
16:52:37.0 CAM-1	three zero one two crosschecked.		
		16:52:38.6 RAMP	thank you.
16:52:39.5 CAM-2	three zero one three crosschecked.		
16:52:40.6 CAM-2	M-C-P radios?		
16:52:42.1 CAM-1	five for four uh leave that alone right now okay.		
16:52:46.2 CAM-2	flight instruments and bugs? what do you want for landing uh?		
16:52:52.2 CAM-1	one twenty seven...and um—		
16:52:58.7 CAM-2	sixty five.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:53:00.2 CAM-1	sixty five. yup.		
16:53:05.4 CAM-1	three hundred sixty one feet.		
16:53:07.0 CAM-2	set crosschecked?		
16:53:07.7 CAM-1	set and crosschecked.		
16:53:09.0 CAM-2	seatbelt non smoking signs?		
16:53:09.4 CAM	[sound of chime]		
16:53:10.1 CAM-1	on.		
16:53:11.3 CAM-2	autobrakes?		
16:53:13.8 CAM-1	autobrakes are uh two.		
		16:54:19.4 APP	American two seventy nine is three from TUSTE. cross TUSTE at or above three thousand cleared RNAV zulu runway two two left approach.
16:54:19.5 CAM-1	manual.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:54:25.3 CAM-2	that for us?		
16:54:28.2 CAM-1	I didn't hear it.		
		16:54:29.3 APP	can you read it back?
		16:54:47.6 APP	American two seventy nine is two miles from TUSTE. cross TUSTE at or above three thousand cleared RNAV zulu runway two two left approach.
		16:54:54.7 RDO-2	TUSTE at three thousand. cleared for the RNAV zulu runway two two left approach American two seven nine.
16:55:01.2 CAM-1	below two forty flaps one please.		
16:55:04.9 CAM-2	verified.		
16:55:06.2 CAM	[sound similar to flap handle]		
16:55:15.3 CAM-1	we're crossed. LNAV VNAV intervene.		
16:55:27.5 CAM-1	prog page two for me please. we need to get this down here *.		
16:55:36.8 CAM-2	yup.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:55:47.1 CAM-1	below two twenty flaps five please.		
16:55:50.7 CAM-2	verified.		
16:55:51.7 CAM	[sound similar to flap handle]		
16:55:53.4 CAM-1	I came out of VNAV for a moment. I'm going to wait til we get down back on— on okay. LNAV's back on. okay?		
16:56:00.9 CAM-2	yup.		
		16:56:06.7 RDO-3	ramp two seven nine.
		16:56:09.1 RAMP	two seven nine go ahead sir.
		16:56:11.1 RDO-3	yeah no bleeding and maybe a possible fracture on a leg. ***.
16:56:16.6 CAM	[sound of triple chime]		
16:56:17.3 CAM-1	why is it doing it?		
16:56:21.5 CAM-1	gear down please.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:56:22.9 CAM	[sound of landing gear handle and landing gear extension]		
16:56:24.0 CAM-1	less than uh one ninety five— uh cancel that. flaps fifteen please.		
		16:56:25.9 RAMP	uh two seven nine I copy all that. possible fracture three flight attendants and the passengers will remain seated. you don't happen to know which flight attendants they are do you?
16:56:27.6 CAM-2	verified.		
16:56:28.4 CAM	[sound similar to flap handle]		
16:56:29.8 PA-4	[mostly unintelligible PA announcement from flight attendant asking passengers to remain seated once the plane arrives at the gate to allow paramedics to board]		
		16:56:39.6 APP	American two seventy nine maintain a hundred eighty knots or greater until five DME. contact tower one one niner point one.
		16:56:44.4 RDO-3	[names of injured flight attendants provided to RAMP]
		16:56:45.1 RDO-2	one eighty or greater five DME and nineteen one. American two seven nine.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		16:56:50.4 RAMP	uh copy all that we've called the paramedics in the meantime copy.
16:56:50.7 CAM-1	I've got everything turned off. we're too high.		
16:57:00.7 CAM-1	looking for nineteen hundred feet at the next point. okay?		
16:57:03.8 CAM-2	okay.		
16:57:06.5 CAM	twenty five hundred. [automated voice]		
16:57:07.8 CAM-1	less than one ninety five flaps twenty please.		
16:57:10.5 CAM-2	verified.		
16:57:11.7 CAM	[sound similar to flap handle]		
16:57:18.9 CAM-?	[sound of sigh]		
16:57:21.5 CAM-1	do me a favor. cycle all the stuff put it back on please.		
16:57:24.7 CAM-2	alright.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:57:24.8 CAM-1	I want to be nineteen hundred here at JIRVA.		
16:57:27.9 CAM-2	nineteen?		
16:57:28.7 CAM-1	ya. see right here nineteen hundred?		
16:57:30.8 CAM-2	yup.		
16:57:33.2 CAM-2	do you want the autopilot back on?		
16:57:34.9 CAM-1	uh less than one ninety flaps twenty five please. yes.		
16:57:38.6 CAM-2	verified.		
16:57:40.0 CAM	[sound similar to flap handle]		
16:57:43.6 CAM-2	speedbrake. speedbrake.		
16:57:43.6 CAM	[sound of configuration warning]		
16:57:49.6 CAM-1	autopilot's on.		
16:57:52.6 CAM-2	the autothrust is off do you want that on?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:57:54.0 CAM-1	cycle it off cycle it back on.		
16:57:58.0 CAM-2	it's not on.		
16:57:59.4 CAM-1	okay I'll take care of it.		
16:58:17.8 CAM-2	M-C-P radios?		
16:58:20.6 CAM-1	nineteen hundred yeah set that please.		
16:58:26.1 CAM-2	gear?		
		16:58:26.9 TWR	American two seven nine you up yet?
16:58:27.2 CAM-1	down.		
		16:58:28.5 RDO-2	two seventy nine's with you uh VO— RN— R-N-P zulu two two left.
		16:58:32.0 TWR	American two seventy nine Kennedy Tower roger. runway two two left cleared to land.
		16:58:35.1 RDO-2	clear to land two two left American two seven nine.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:58:37.6 CAM-2	there's the runway.		
16:58:38.2 CAM-1	I got it.		
16:58:39.5 CAM-2	spoilers?		
16:58:40.2 CAM	[sound similar to spoiler handle]		
16:58:40.8 CAM-1	armed.		
16:58:42.2 CAM-2	flaps?		
16:58:44.2 CAM-1	twenty five.		
16:58:45.0 CAM-2	twenty five.		
16:58:46.9 CAM-2	cleared for the approach. cleared to land.		
16:58:49.0 CAM-1	set the final approach speed please.		
16:59:02.5 CAM	one thousand. [automated voice]		
16:59:04.4 CAM-1	stable.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
16:59:36.9 CAM-2	you want these flight directors off?		
16:59:38.4 CAM-1	turn 'em off.		
16:59:52.9 CAM	five hundred. [automated voice]		
16:59:54.9 CAM-1	stable. target sinking. sinking a thousand.		
17:00:21.9 CAM	one hundred. [automated voice]		
17:00:25.5 CAM	fifty. [automated voice]		
17:00:26.5 CAM	forty. [automated voice]		
17:00:27.6 CAM	thirty. [automated voice]		
17:00:28.8 CAM	twenty. [automated voice]		
17:00:30.1 CAM	ten. [automated voice]		
17:00:34.4 CAM	[sound similar to spoiler handle]		
17:00:35.8 CAM-2	deployed.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:00:39.7 CAM	[sound similar to nose gear touchdown]		
17:00:51.7 CAM-2	eighty.		
17:00:53.5 CAM-2	autobrakes are off.		
17:00:58.5 CAM-2	sixty.		
		17:00:58.9 TWR	American two seventy nine exit on juliet ground point niner.
		17:01:02.4 RDO-2	juliet ground point niner. American two seven nine.
		17:01:33.5 RDO-2	American two seven nine is with you on juliet.
		17:01:36.6 GND	American two seventy nine cross two two right at juliet straight ahead on alpha.
		17:01:39.6 RDO-2	cross uh two two right at juliet straight ahead on alpha. American two seven nine.
17:01:43.5 CAM-1	checklist when you get a chance please.		
		17:01:45.3 RDO-3	uh two seven nine.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:01:45.5 CAM	[sound similar to flap handle movement]		
		17:01:50.5 RAMP	American two seven nine go ahead with the last part of that message I'm sorry I missed it.
		17:01:59.4 RAMP	okay copy that yes. the gate is open for you gate thirty five. just call approaching november charlie.
		17:02:02.6 RDO-3	thirty five we'll call you november charlie. is the ambulance there please?
17:02:17.4 CAM-2	clear right. clear to cross.		
17:02:18.9 CAM-1	clear left.		
17:02:23.7 CAM-3	thirty five. november charlie.		
17:02:26.7 CAM-1	okay.		
		17:02:28.0 RDO-3	**.
		17:02:32.5 RAMP	two seven nine we did advise Port Authority. um I know they usually send an officer first to assess the situation and they call for paramedics if they deem it necessary. they've been advised and then um ground and thirty five.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		17:02:43.1 RDO-3	yeah we definitely need the paramedics *. could you please uh expedite that and not have the uh officer make that call.
17:02:54.3 CAM-2	after landing taxi check complete.		
17:02:59.8 CAM-1	thank you.		
17:03:02.8 CAM-1	@?		
17:03:03.5 CAM-3	yeah?		
17:03:04.7 CAM-1	uh has anybody asked— anybody asked you what happened? what caused it or anything?		
17:03:10.8 CAM-3	no.		
17:03:11.3 CAM-1	okay. if anybody asks first thing we need to do is the three of us need to understand what took place. so let's wait til we get there we'll talk about it. I'll ask for your— what you saw. I'll ask for what you see. what I saw. at least so we're all on the same sheet of music. good or bad at least we're all on the same sheet.		
17:03:28.6 CAM-3	yeah we got to get there. I guess she's really hurting.		
17:03:32.8 CAM-1	what's that?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:03:33.4 CAM-3	she's really hurting.		
17:03:34.7 CAM-1	and what's you— what's your point?		
17:03:36.4 CAM-3	just that we need to get—		
17:03:37.8 CAM-1	the reason I'm going slow is that I don't want to bounce them over the runway.		
17:03:40.1 CAM-3	okay.		
17:03:42.0 CAM-3	they said they— I called the ramp they said they're bringing an officer first. I told them we want the paramedics and the ambulance.		
17:03:47.6 CAM-1	they're bringing a what? oh.		
17:03:49.0 CAM-3	they— the Port Authority makes the decision.		
17:03:52.9 CAM-1	what did they— what did they tell you— what's going on what happened as far as—		
17:03:55.6 CAM-3	three girls in the back hit the ceiling.		
		17:04:02.5 RDO-3	ramp two seven nine?

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		17:04:04.8 RAMP	two seven nine go ahead.
		17:04:06.1 RDO-3	copy that ***.
		17:04:10.9 RAMP	no sir. two seven nine yes I did copy that but unfortunately we can't uh no we can't make them uh in other words bring an ambulance or whatever. they make like I said their procedure is that an officer he or she they're— they're all trained E-M-Ts. they assess the situation and they deem it necessary if there's like whether an ambulance is needed or whatever the case is so. we advised them of possible fractures and they copied and said they'd be there.
17:04:36.4 CAM-3	alright they're saying they won't put the ambulance there— you caught that?		
17:04:39.6 CAM-1	yeah I did.		
17:04:47.4 CAM-1	do me a favor. call back to @ tell her exactly what you just said— and what they just told you okay?		
17:04:58.8 CAM-1	if she wants to know what happened tell her we'll talk to her on the ground— uh when we get to the gate.		
17:05:02.6 INT-3	hey @ we're on our way in. uh I talked to them and they won't bring the uh * Port Authority * trained paramedics **...yes...correct. all the passengers were there any problems there? okay		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:05:45.0 CAM-3	she understands **.		
17:05:46.9 CAM-1	alright listen I'm— I am now partially calmed down. when we get in there there's a lot of # that's going to happen. if it's all right with you I'd like to hear what happened right now because when we get in there people are going to be knocking on the door expecting us to come out. are you okay with telling me what you saw and what happened?		
17:06:07.0 CAM-3	uh I got back in I saw your airspeed coming down I started yelling airspeed and then I—		
17:06:12.2 CAM-1	were you— back up for a second. when you came back in from your break?		
17:06:15.3 CAM-3	from the break and then when you started uh briefing the approach— you were briefing—		
17:06:20.2 CAM-1	cause you were already— you were already in here in your seat when we were doing the briefing.		
17:06:24.6 CAM-3	you were in the descent at that point.		
17:06:26.2 CAM-1	so you— I— just to let you know I'm trying to figure out how we got slow when we had everything set up up here and the autopilot on. that's why it's a surprise to me.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:06:36.7 CAM-3	alright.		
17:06:36.9 CAM-1	okay so anyway we're doing the approach— we're doing uh the approach. you said 'watch your airspeed' and then you told me to do something. did you say push the nose over?		
		17:06:44.0 RAMP	and uh two seven nine?
17:06:48.5 CAM-3	yeah.		
17:06:48.9 CAM-1	okay. so anyway		
17:06:50.7 CAM-3	they're calling. ramp is calling.		
		17:06:52.6 RDO-3	two seven nine go ahead.
		17:06:54.0 RAMP	yeah two seven nine if it make you feel any— um the Port Authority did dispatch an ambulance so they're at the gate waiting.
		17:07:00.1 RDO-3	thank you.
17:07:01.3 CAM-1	tell @ please.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:07:12.4 INT-3	hey @ we will have an ambulance.		
17:07:17.9 CAM-1	okay. uh what else did you see? I— I did not see a blinker for speed. for slow speed. I did not see any blinker for slow speed. did anybody else see that?		
17:07:29.8 CAM-2	nope.		
17:07:30.2 CAM-1	okay so anyways you said that— I clicked everything off and tried to get— and tried to get— pick up some speed. push the power up. anything else you want to add on right now?		
17:07:42.6 CAM-3	uh no. just I think when you pushed it over to get that speed back it you know—		
17:07:49.2 CAM-1	and I tried— you know— when you said that I remember saying to myself be careful how much— you know be careful what you're doing here in my head. @?		
17:08:00.0 CAM-2	um I noticed at one point we were at twelve thousand one hundred it wasn't— it wasn't going down to twelve thousand. I mean I—		
17:08:08.2 CAM-1	yeah. uh and I put down flight level change to bring us down that last hundred and fifty feet. but everything was still engaged. that's what I'm trying to figure out how we got slow.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:08:22.7 CAM-1	nobody— nobody saw anything to indicate why that would have happened?		
17:08:26.5 CAM-2	**.		
17:08:26.9 CAM-1	I didn't turn anything off. I didn't turn anything off until we got in that # just now on the approach.		
17:08:38.2 CAM-1	for all these years no problems.		
17:08:55.1 CAM-1	it did kick off then apparently at some point. it must have.		
17:08:58.7 CAM-2	I— was it this that kicked off?		
17:09:00.7 CAM-1	no no. you eventually swapped— you changed that at some point but all— everything— we didn't hit any buttons to turn anything off.		
17:09:12.2 CAM-1	cleared in? cleared in guy?		
		17:09:17.6 RDO-3	and uh two seven nine cleared in?
		17:09:20.4 RAMP	affirmative two seven nine. cleared in november charlie gate thirty five. good day sir.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		17:09:24.6 RDO-3	okay thanks. thanks for your help.
17:09:25.5 CAM-1	@ you got anything to add on?		
17:09:28.5 CAM-2	no I mean all that happened when we were briefing the approach I know. clear right.		
17:09:56.0 CAM-1	I will tell both of you...and warn you guys don't talk to anybody about this until the union is involved.		
17:10:06.6 CAM-3	alright.		
17:10:06.9 CAM-1	if you do you do it at— you do it at everybody's peril. all three of us.		
17:10:10.7 CAM-2	alright.		
17:10:16.1 CAM-1	do me a favor uh never mind...@? you got the— you got the A-P-A number? or can you get it or you got it right here? do me a favor. the second we chock in call the union. okay? because we don't want to be talking to anybody without the union uh with us. we wouldn't be doing anybody any favors. like I said it falls where it falls but we want to make sure all the protections are in order.		
17:10:48.2 CAM-1	clear my side.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:10:52.3 CAM-2	and clear on the right side		
17:11:23.2 CAM-1	we need to wait until the wheels come up on top here.		
17:11:57.0 CAM	[sound similar to parking brake]		
17:11:58.1 CAM-1	@ when you call up I think if it's an incident it's number two. uh park. off. gonna leave that on. it's running. shut 'em down.		
17:12:13.5 CAM	[sound of chime]		
17:12:20.6 CAM-1	checklist.		
17:12:21.7 CAM-2	parking brake?		
17:12:23.4 CAM-1	park.		
17:12:24.1 CAM-2	seatbelt sign?		
17:12:24.9 CAM-1	it's still on.		
17:12:25.9 CAM-2	A-P-U? external power?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:12:27.1 CAM-1	it's on.		
17:12:27.5 CAM-2	isolation switch?		
17:12:28.7 CAM-1	on.		
17:12:29.3 CAM-2	fuel control switches?		
17:12:29.9 CAM-1	cutoff.		
17:12:30.3 CAM-2	red anti-collision light?		
17:12:31.0 CAM-1	it's off.		
17:12:31.4 CAM-2	hydraulic panel?		
17:12:32.1 CAM-1	set.		
17:12:32.6 CAM-2	emergency lights?		
17:12:33.7 CAM-1	off.		
17:12:34.2 CAM-2	fuel pumps?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:12:35.3 CAM-1	off.		
17:12:36.1 CAM-2	engine anti-ice?		
17:12:37.5 CAM-1	off.		
17:12:37.8 CAM-2	window heat?		
17:12:38.9 CAM-1	off.		
17:12:40.0 CAM-2	packs?		
17:12:40.7 CAM-1	auto.		
17:12:41.2 CAM-2	EICAS?		
		17:12:46.7 RAMP	uh two seven nine from ramp?
		17:12:50.6 RDO-3	two seven nine go ahead.
		17:12:52.5 RAMP	two seven nine do you have a moment for a quick question?
17:12:54.9 CAM-1	ask em what is it.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		17:12:56.6 RDO-3	uh what is it?
		17:12:57.9 RAMP	yeah we just need to know was it severe turbulence I guess.
17:13:01.6 CAM-1	no.		
		17:13:02.7 RDO-3	negative.
		17:13:04.7 RAMP	okay copy um anything you can elaborate on or...
17:13:08.4 CAM-1	no.		
		17:13:09.3 RDO-3	uh not at this time.
		17:13:11.1 RAMP	oh okay copy.
17:13:12.4 CAM-1	okay what else you got there?		
17:13:15.1 CAM-2	I-R-U?		
17:13:19.0 CAM-1	um checked and off.		
17:13:24.6 CAM-2	transponder?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:13:25.6 CAM-1	standby.		
17:13:26.2 CAM-2	arrival report?		
17:13:30.3 CAM-1	I'll let you take care of that.		
17:13:31.5 CAM-2	log books?		
17:13:32.7 CAM-1	um yes.		
17:13:38.9 CAM-2	parking check complete.		
17:13:39.9 CAM-?	* complete.		
17:13:46.7 CAM	[sounds similar to seat track moving]		
17:13:52.1 CAM-?	***.		
17:13:55.5 CAM-1	well I hate to do this but I guess I'm gonna open the door and see what's going on.		
17:13:59.7 CAM-3	yes hello.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:14:04.2 CAM-3	okay...okay. uh yes uh. F-B. F-O-B. flight two seven nine...still hear me? arrived at ** flight attendant injured...I'd like to have an A-P-A representative.		
17:14:37.5 CAM	[sound of unintelligible background conversation]		
17:16:10.4 CAM-?	*.		
17:16:34.7 CAM	[sound of unintelligible background conversation]		
17:16:53.8 CAM-?	hello?		
17:17:04.3 CAM-?	yes.		
17:17:13.6 CAM-3	uh here. put the captain on? * safety guy for American.		
17:17:19.6 CAM-1	***. hey @ one of you do it? we're all trying to just—hello? @ here.		
17:17:36.1 CAM-1	please. please call them right now. let me give you my cell phone have them call me immediately. okay. uh this is @ last name spelled @. my number [phone number]. hello yeah did you copy that telephone number? okay my number is [phone number]. hello? never mind I'll take care of it. I'll call them back.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:18:23.1 CAM-1	**.		
17:18:44.0 CAM-3	hello? hello? hi. yeah here's the captain.		
17:18:51.4 CAM-1	I'm gonna— tell him— who's that? hello? yeah [phone number]...[employee number]...okay. thank you. bye bye. thank you.		
17:19:33.8 CAM-1	listen when I get that person. we'll get @ in here and um get everybody on the head— everybody on the speakerphone. everybody can hear what everybody has to say.		
17:20:14.0 CAM-1	@ let me know if— if they— if they're taking the girls off or they come by okay so I can stand up.		
17:20:21.0 CAM-2	okay.		
17:20:54.4 CAM-1	***.		
17:21:11.7 CAM-1	they're all— they're all in the back there.		
17:21:19.8 CAM-?	***.		
17:21:44.6 CAM-?	yup.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:22:50.6 CAM-?	pilots? yeah they're gone.		
17:22:52.6 CAM-?	yes.		
17:22:57.1 CAM-?	hey @?		
17:22:57.4 CAM-1	yeah?		
17:22:58.2 CAM-?	it's the—		
17:22:59.5 CAM-?	* pilots down here.		
17:23:02.1 CAM-?	chief pilot here **.		
17:23:04.3 CAM-1	I don't mind answering questions or anybody being truthful but we don't want to do that without our union rep. it's just— nobody's here to do you any favors.		
17:23:08.1 CAM-2	yup. no no no.		
17:23:15.0 CAM-2	no I understand.		
17:23:17.0 CAM-1	so...um...		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:23:22.9 CAM-?	***.		
17:23:29.1 CAM-1	hey what buttons? did you **.		
17:23:31.0 CAM-2	[numbers] [jet bridge code]		
17:23:35.6 CAM-1	yeah that'll be fine.		
17:23:43.5 CAM-1	numbers again? numbers again?		
17:23:46.3 CAM-2	[numbers].		
17:23:47.3 CAM-1	same time? then [numbers]		
17:23:47.9 CAM-2	then [numbers]		
17:23:49.9 CAM-1	[numbers].		
17:25:13.5 CAM-?	***.		
17:25:34.1 CAM-1	@ how's that sound? local enough?		
17:25:38.8 CAM-1	it's @ isn't it? he's the local--		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:25:42.6 CAM-2	everything is like— we're not sure if there's a problem with the airplane—		
17:25:47.0 CAM-3	that needs— no that needs to be written up.		
17:25:52.3 CAM-1	it's @. he's our local guy isn't he?		
17:25:55.9 CAM-2	@. I know a guy who *.		
17:26:00.5 CAM-1	I'll just call him. @.		
17:26:11.7 CAM-?	so they're transporting.		
17:26:15.4 CAM-1	thank you.		
17:26:17.5 CAM-1	no he's not— got a weird phone line for him.		
17:26:22.9 CAM-1	are you looking up on— on the web— or one of you guys look up and get the other guy's name. I can't remember his name I think I have it on the phone *.		
17:26:38.2 CAM-1	three hundred *.		
17:27:38.5 CAM-?	I got **.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:28:10.8 CAM-1	I wonder if he can get down here **.		
17:31:55.0 CAM-?	*** maintenance. can I pick up the logbook please?		
17:36:16.9 CAM-1	and uh about seven ***.		
17:43:31.1 CAM	[sound of unintelligible background conversation]		
17:45:09.4 CAM	[sound of unintelligible background conversation]		
17:50:12.7 CAM-1	tell me exactly **. @? ***.		
17:50:37.0 CAM-1	**.		
17:50:59.0 CAM-1	okay. I've got the guys coming down. we're gonna pull the circuit breaker. ** I thought it was so obvious but I'm not * right now. ** hold on. do me a favor. where's the C-V-R? where's the— the tape? I looked up there I didn't see anything. I don't have my glasses. so I thought it was collared too . I thought it was white also. okay after we do that what else do you want? okay now here's a question on— and— oh okay I see what you're talking about. I thought you meant about the event. okay so we write that up and then—		
17:51:16.2 CAM-2	*.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
17:51:34.6 CAM	[sound of unintelligible background conversation]		
17:51:39.5 CAM	[sound similar to circuit breaker being pulled and power interruption]		
17:51:39.5 END OF TRANSCRIPT			
[power was reapplied to the CVR for an additional 8 minutes and 28 seconds at some point after the circuit breaker was pulled]			
END OF RECORDING			