

**NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Vehicle Recorder Division**



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

ERA18FA264

**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

December 5, 2019

Cockpit Voice Recorder

Group Chairman's Factual Report
By Christopher Babcock

1. EVENT SUMMARY

Location: Greenville, South Carolina
Date: September 27, 2018
Aircraft: Dassault Falcon 50, Registration N114TD
Operator: Air American Flight Services, Inc
NTSB Number: ERA18FA264

On September 27, 2018, about 1346 eastern daylight time, a Dassault Falcon 50 business jet, registration N114TD, operated by Air American Flight Services, Inc., was substantially damaged when it overran the departure end of runway 19 during landing at Greenville Downtown Airport (GMU), Greenville, South Carolina. The airline transport pilot (ATP) seated in the left cockpit seat and private pilot seated in the right cockpit seat were fatally injured, and the two passengers received serious injuries. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight that departed St. Pete-Clearwater International Airport (PIE), St. Petersburg-Clearwater, Florida, destined for GMU. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. 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 December 4, 2018, and a transcript was prepared for the 31-minute, 6-second recording (see attached).

2. GROUP

Chairman: Christopher Babcock
Aerospace Engineer
National Transportation Safety Board

Member: Jean-Philippe Bouillon
Accredited Representative
Bureau d'Enquêtes et d'Analyses

Member: Pat Hempen
Air Safety Investigator
Federal Aviation Administration

Member: Franco Nese
Chief Pilot-Flight Operations

Dassault Falcon Jet Corp.

Member: Dave Studtmann
Air Safety Investigator
Honeywell

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Universal CVR-30**
Recorder Serial Number: **6172**

3.1 CVR Carriage Requirements

Per federal regulation, multiengine aircraft with more than six passenger seats and requiring two pilots, manufactured prior to April 7, 2010, and operated under 14 *CFR* 91 or 135, must be equipped with a CVR that records a minimum of the last 30 minutes of aircraft operation. The accident aircraft was manufactured in 1980. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes of CVR operation.

3.2 Recorder Description

This model CVR, the Universal CVR-30, records a minimum of 30 minutes of digital audio stored on solid state memory modules. Four channels are recorded: one channel for each flight crew, one channel for a cockpit observer, and one channel for the cockpit area microphone (CAM).

3.3 Recorder Damage

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

3.4 Audio Recording Description

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

Table 1. Audio Quality.

Channel Number	Content/Source	Quality	Duration (mm:ss)
1	Pilot	Fair	31:06
2	Copilot	Fair	31:06
3	N/A	N/A	31:06
4	CAM	Fair	31:06

¹ See attached CVR Quality Rating Scale.

3.5 Timing and Correlation

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

3.6 Description of Audio Events

The recording and transcript began at 1314:57.9 EDT and cover the descent, approach, landing, and accident sequence. The recording ended at 1346:03.2 EDT.

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 Universal CVR-30 solid-state cockpit voice recorder, serial number 6172, installed on a Dassault Falcon 50 (N114TD), which crashed after overrunning the landing runway at Greenville Downtown Airport in Greenville, South Carolina.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N114TD
ATL	Radio transmission from Atlanta Center controller
APP	Radio transmission from the Greer approach controller
TWR	Radio transmission from the Greenville Downtown Airport tower controller
-1	Voice identified as the pilot in command
-2	Voice identified as the private pilot rated right seat occupant
-A	Voice identified as the first facility controller
-B	Voice identified as the second facility controller
-C	Voice identified as the third facility controller
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in eastern daylight time (EDT).

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

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

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

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1314:57.9	START OF RECORDING START OF TRANSCRIPT		
		1316:15.6 RDO-2	Atlanta Center one one four tango delta is * five three for three five oh.
		1317:14.0 ATL-A	november four tango delta Atlanta. you here?
		1317:16.6 RDO-2	yeah I checked in a minute ago you were busy with somebody.
		1317:19.3 ATL-A	november four tango delta roger. descend and maintain flight level two eight zero.
		1317:23.9 RDO-2	roger down to two eight oh. one one four tango delta.
1317:27.3 HOT-2	two eight oh.		
1317:27.5 HOT-1	twenty eight comin' down.		
1317:48.5 HOT-2	marginal V-F-R. broken fourteen broken nineteen overcast five thousand.		
1317:53.9 HOT-1	alright.		
1317:54.7 HOT-2	three zero zero *.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1318:06.6 HOT-2	two hundred and six.		
1318:07.9 HOT-1	alright.		
1318:12.2 CAM-?	*?		
1318:12.9 CAM-?	hang on.		
1318:14.3 CAM-?	***.		
1318:19.1 HOT-1	the forecast was V-F-R when I looked.		
1318:28.7 HOT-2	still overcast at thirty one hundred but there's no rain.		
1318:31.0 HOT-1	alright well that's good.		
1318:32.1 HOT-2	two hundred at eight.		
1318:34.0 HOT-1	two hundred and eight okay. so they're still using—		
1318:35.4 HOT-2	one nine * runway,		
1318:39.4 HOT-1	one nine.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1318:42.4 CAM-?	*.		
1319:14.2 HOT-1	**.		
1319:48.9 HOT-1	* airport.		
1320:00.5 HOT-1	***.		
		1321:10.9 ATL-A	november four tango delta descend and maintain flight level two four zero.
		1321:14.8 RDO-2	two four zero. one one four tango delta.
1321:17.0 HOT-1	ten to go.		
1321:17.3 CAM-2	that's nice.		
1321:18.6 HOT-1	and *— yeah that direction on the inside.		
1321:22.8 CAM-?	wow.		
1321:24.2 HOT-1	it's been a * project * decoration and uh...the design of it I guess you can say.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1321:35.6 CAM-2	they're gonna *.		
1321:36.9 HOT-1	yeah she did a really good job.		
1321:41.8 HOT-1	yeah on the old G-P-S the thing was so suck * the screen was shot.		
1321:49.1 CAM-2	it sucks.		
1321:54.7 HOT-2	okay listen. so that will pull left on that on regular braking.		
1322:02.5 HOT-1	okay on regular braking so just straighten it out.		
		1322:05.6 ATL-A	november one one four tango delta contact Atlanta Center one two eight point one.
		1322:09.8 RDO-2	twenty eight one for one one four tango delta.
		1322:18.6 RDO-2	Atlanta Center november one one four tango delta three one five for two four oh.
		1322:23.2 ATL-B	november one one four tango delta Atlanta Center. roger.
1322:31.4 CAM-?	*.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1322:44.9 HOT-1	* cabin.		
1322:49.5 HOT-1	* yeah.		
1322:51.4 CAM-2	that's a big boat to pull around.		
1322:55.2 HOT-1	yeah thirty six foot. about sixteen thousand five hundred pounds dry...if I didn't have that hitch it wouldn't be going anywhere.		
1324:13.4 HOT-1	still going to I-R-Q...three miles out.		
1324:20.1 HOT-1	you know where we're going?		
1324:22.6 HOT-?	*.		
		1324:25.5 ATL-B	november four tango delta descend and maintain one one thousand. the Augusta altimeter three zero zero three.
		1324:31.2 RDO-2	one one eleven thousand and three zero zero three. one one four tango delta.
1324:35.8 HOT-1	eleven set. I don't mean to take over that I just— I know your hands are busy.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1324:40.0 HOT-2	nope. eleven thousand feet.		
1324:42.9 HOT-1	three zero zero three. comin' up. *.		
1324:45.0 HOT-?	*.		
1324:46.6 HOT-2	all set.		
1324:48.0 HOT-2	set your side *.		
1324:51.5 HOT-1	perfect.		
1324:52.7 CAM-?	**.	1324:52.7 RDO-2	Atlanta Center one one four tango delta ** for three five oh.
1324:58.2 CAM-?	**.		
1325:01.0 HOT-1	that's okay— that's clearing up.		
1325:03.4 CAM-?	*.		
		1325:11.1 ATL-B	november four tango delta contact Atlanta Center one three five point three five.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		1325:16.3 RDO-2	thirty five thirty five november four tango delta. roger
		1325:19.5 ATL-B	see ya.
		1325:21.4 RDO-2	Atlanta Center one one four tango delta two four eight for one one eleven thousand.
		1325:26.2 ATL-C	one one four tango delta Atlanta Center. Greer altimeter three zero zero five.
		1325:29.5 RDO-2	three zero zero five one one four tango delta.
1325:47.5 HOT-1	it looks like most of that weather is off to the west over there.		
1325:52.0 CAM-2	what's that?		
1325:52.9 HOT-1	most of that weather—		
1325:53.8 HOT-2	yeah.		
1325:54.4 HOT-1	is off to the west over there.		
1325:55.6 HOT-2	yeah we're good here.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1326:38.3 HOT-1	that's readin' high. does that naturally read high?		
1326:42.4 CAM-2	huh?		
1326:43.0 HOT-1	does that naturally read high?		
1326:44.4 HOT-1	okay.		
1327:52.6 CAM-2	thirty ought five.		
1327:53.8 HOT-1	thirty ought five it is.		
1327:57.6 HOT-1	do it out of eighteen? some people do it out of eighteen.		
1328:55.0 HOT-1	* built in to this?		
1328:57.8 HOT-2	what's that?		
1328:58.9 HOT-1	does this box have the approaches * in it or no?		
1329:02.4 HOT-1	beautiful.		
1329:03.4 HOT-2	yup. yup.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1329:17.9 HOT-1	well we're not R-NAV are we?		
1329:23.4 CAM	[sound of 600 Hz tone lasting 0.7 seconds]		
		1329:25.0 ATL-C	four tango delta contact Greer Approach one one eight point eight.
		1329:28.5 RDO-2	one one eight point eight. one one four tango delta.
		1329:37.3 RDO-2	and approach one one four tango delta sixteen thousand for eleven thousand.
		1329:46.7 APP	november one one four tango delta Greer Approach. expect the R-NAV runway one niner approach at Greenville. advise A-TIS victor. descend and maintain one zero thousand ten thousand.
		1329:56.4 RDO-2	down to ten thousand. we have victor at Greenville one one four tango delta we're down to eleven— we're down to ten.
1330:01.8 HOT-1	ten *.		
1330:03.3 HOT-2	*.		
		1330:06.8 APP	november four tango delta reaching one zero thousand turn left heading three two zero vector R-NAV.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		1330:14.9 RDO-2	left turn three two zero at ten thousand vectors for the R-NAV. one one four tango delta.
1330:20.6 HOT-2	three two oh at ten.		
1330:21.1 HOT-1	there's three twenty.		
1330:24.8 HOT-1	*.		
1330:55.7 HOT-1	we're just picking up uh some of their folks?		
1331:00.6 HOT-2	yeah.		
1331:00.8 HOT-1	so I can deal with all that and you can deal with this?		
1331:03.0 HOT-2	uh-huh.		
1331:35.4 HOT-1	try and stay out of that.		
1331:40.5 HOT-2	that be alright.		
1331:46.2 CAM	[sound similar to trim clacker]		
1331:54.8 CAM	[sound of tone]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1332:13.9 CAM-2	alright you didn't find **.		
		1332:16.1 APP	november one one four tango delta descend and maintain six thousand.
		1332:19.7 RDO-2	down to six thousand we're turning three two oh at ten. one one four tango delta.
1332:24.8 HOT-1	down to six.		
1332:27.0 CAM	[sound of click]		
1332:28.4 HOT-1	air brakes. **.		
1332:35.4 CAM	[sound similar to trim clacker]		
1333:13.3 CAM	[sound similar to trim clacker]		
1333:15.0 HOT-1	*.		
1333:47.5 CAM-?	***.		
1334:03.4 HOT-1	alright we're on vectors to * V-O-R...zero zero six on the inbound...about a thousand feet on the altitude. field elevation. and one oh nine set...about six *.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1334:21.8 HOT-2	yup.		
1334:43.1 HOT	[sound of tone]		
1334:43.8 HOT-?	eleven six *.		
		1334:47.8 APP	november four tango delta descend and maintain four thousand.
		1334:51.5 RDO-2	down to four thousand one one four tango delta. **.
1334:58.4 HOT-2	**.		
1335:01.0 HOT-1	yeah.		
1335:04.3 HOT-1	with all that rain they've had.		
1335:17.2 HOT-2	**.		
1335:18.7 HOT-1	huh?		
1335:20.1 CAM	[sound similar to trim clacker]		
1335:20.6 HOT-?	see it? all you can see **.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1335:23.8 HOT-1	alright.		
		1335:27.1 APP	november four tango delta reaching four thousand reduce speed to one eight zero for sequence.
1335:33.1 HOT-1	that's one eighty on the speed.		
		1335:36.2 RDO-2	reduce speed to one eight zero at four thousand.
1335:45.7 HOT-1	coming off the airbrakes.		
1335:53.0 CAM	[sound similar to trim clacker]		
1336:09.8 CAM	[sound similar to trim clacker]		
1336:18.6 HOT-1	* one eighty.		
		1336:35.1 APP	november four tango delta turn right direct DOODD.
		1336:38.9 RDO-2	right turn to what was that for four tango delta?
1336:42.1 CAM	[sound similar to trim clacker]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		1336:42.2 APP	november four tango delta turn right direct DOODD the tee fix for the R-NAV runway one niner approach.
1336:48.0 HOT-1	D-U-D-E?		
1336:51.2 HOT-2	did you hear that?		
1336:52.2 HOT-1	DOODD he said.		
		1336:53.3 RDO-2	okay uh right turn to DOODD for one one four tango delta.
1336:56.7 HOT-1	and I'll need a phonetic on that.		
1337:00.1 HOT-1	go ahead and select slats.		
1337:01.9 HOT-2	slats?		
1337:02.1 HOT-1	please.		
1337:02.5 CAM	[sound similar to flap handle movement]		
1337:06.6 HOT-1	would you get me a spelling on DOODD please?		
1337:09.1 HOT-2	D-O-O-D-D.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1337:10.6 HOT-1	D-O-O— **? *		
1337:24.9 HOT-2	DOODD.		
1337:26.5 HOT-2	no D-O-O-D-D.		
1337:29.4 HOT-1	oh D-O-O-D-D. okay gotcha.		
1337:37.4 HOT-1	D-O-O-D-D.		
1337:39.9 HOT-2	D.		
		1337:40.9 APP	november four tango are you uh direct DOODD?
1337:43.5 HOT-1	uhhh not in the box appears.		
		1337:46.1 RDO-2	uh we entered it in it didn't give us a heading. if you can give us a heading to it?
		1337:50.2 APP	november four tango delta turn right heading zero eight zero and advise uh when able direct DOODD.
		1337:55.6 RDO-2	zero eight zero one one four tango delta.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1337:56.0 HOT-1	*— go ahead.		
1338:01.2 HOT-1	D—		
1338:03.0 CAM	[sound similar to trim clacker]		
1338:09.7 HOT-1	nope D-O-O-D-D.		
1338:14.0 HOT-2	D-O-O-D-D DOODD.		
1338:18.3 HOT-1	D-O-O-D-D. not coming up in the box.		
		1338:39.5 RDO-2	and approach one one four tango delta. we didn't get DOODD to come up in our box. do you have a vector for us?
		1338:45.6 APP	and four tango delta turn right heading zero seven zero.
		1338:51.1 RDO-2	and we are zero seven zero right now. one one four tango delta.
		1339:04.3 APP	november four tango alpha do you have TIVIL?
		1339:08.7 RDO-2	yeah we're looking for it.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1339:17.2 HOT-1	TIVIL I can't even frickin find that.		
		1339:33.6 RDO-2	spelling for TIVIL?
		1339:37.2 APP	november four tango delta. it's tango india victor india lima.
		1339:44.2 RDO-2	tango.
1339:45.3 HOT-1	india victor india.		
		1339:47.0 RDO-2	india. victor. lima india.
		1339:52.4 APP	and four tango delta turn right heading one one zero and expect vectors on to final.
		1339:58.8 RDO-2	right turn one one zero and vectors on to final. thanks.
1340:01.7 HOT-2	one one zero.		
1340:02.4 HOT-1	one one zero coming up.		
1340:03.9 HOT-1	even better let's just do that.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
		1340:41.7 APP	november four tango delta turn right heading one three zero descend and maintain three thousand five hundred.
		1340:47.7 RDO-2	one three zero and down to thirty five hundred. one one four tango delta.
1340:50.7 HOT	[sound of tone similar to altitude deviation]		
1340:51.9 HOT-2	thirty five hundred.		
		1340:52.1 APP	november four tango delta maintain four thousand. sorry about that.
1340:53.7 HOT-1	thirty five hundred set.		
1340:54.9 CAM	[sound of tone similar to altitude deviation]		
		1340:56.1 RDO-2	four thousand no problem. one one four tango delta.
1340:58.5 HOT-1	okay maintain four thousand.		
1340:59.8 CAM	[sound of tone similar to altitude deviation]		
1341:01.2 HOT-2	maintain four thousand.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1341:02.0 HOT-1	gotcha.		
		1341:29.6 APP	november four tango delta one zero miles from G-M-U. turn right heading one six zero. maintain four thousand until established on the localizer— er final approach course. cleared R-NAV runway one nine approach.
		1341:41.8 RDO-2	okay maintain four thousand until established. cleared for the R-NAV one nine approach. one one four tango delta.
1341:46.6 HOT-1	alright * for the one nine approach. **.		
		1341:50.6 RDO-2	one nine approach. sorry.
1341:59.8 HOT-1	do we have a new frequency for that?		
1342:10.5 HOT-2	all I got is the I-L-S for one...I got the R-NAV G-P-S.		
1342:24.0 CAM	[sound similar to flap handle movement]		
1342:24.1 HOT-1	going to twenty.		
1342:25.1 CAM	[sound similar to trim clacker]		
1342:26.3 HOT-2	what's that?		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1342:27.0 HOT-?	*		
1342:28.0 HOT-1	I already set— selected it. flaps twenty.		
1342:38.1 CAM	[sound similar to landing gear warning]		
1342:39.8 HOT-1	landing gear please.		
		1342:46.3 APP	november four tango delta are you established?
		1342:49.0 RDO-2	uh not yet we're just turning in to it.
		1342:54.7 APP	november four tango delta you going to be able to make it down from there?
1342:59.4 HOT-1	uh if I can break out of this cloud real quick and see it.		
		1343:02.2 RDO-2	uh if we can break out of the cloud on the other side of it we'll probably see it.
1343:05.3 HOT-1	what's what's the minimum M-D-A out here?		
1343:08.6 HOT-2	twenty three hundred.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1343:15.3 HOT-2	there you go.		
1343:16.4 HOT-1	where is it? where is it? where is it? where is it?		
1343:18.1 HOT	[sound of tone]		
1343:20.2 HOT-2	is that it?		
1343:22.0 HOT-1	there's a hole here.		
		1343:33.2 APP	four tango delta airport is twelve oh clock five miles.
1343:37.0 CAM	[sound of tone similar to altitude deviation]		
1343:37.1 HOT-1	in sight.		
		1343:38.0 RDO-2	yeah we got the airport. one one four tango delta.
1343:39.1 HOT-1	it's visual.		
1343:41.5 HOT-2	gear?		
		1343:42.0 APP	november four tango contact tower one one niner point niner.

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1343:42.8 HOT-1	please yes.		
1343:45.3 CAM	[sound similar to landing gear extension]		
		1343:46.9 RDO-2	going to tower nineteen nine. one one four tango delta. thanks for your help.
1343:54.0 CAM	[sound of tone]		
		1343:55.1 RDO-2	and tower one one four tango delta twenty five hundred. five out.
		1344:04.0 TWR	november one one four tango delta runway one niner clear to land.
		1344:07.3 RDO-2	one nine clear to land. one one four tango delta. thanks.
1344:10.6 HOT-2	okay.		
1344:11.3 HOT-1	alright.		
1344:17.2 HOT-1	flaps land. we need *.		
1344:18.9 CAM	[sound of three clicks]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1344:19.6 HOT-2	right there?		
1344:21.0 HOT-1	thank you.		
1344:24.3 HOT-?	**.		
1344:25.8 HOT	one thousand. [automated voice]		
1344:26.1 CAM	[sound of tone similar to altitude deviation]		
1344:27.8 HOT-2	okay we got three green. we got pumps on?		
1344:31.4 HOT-2	got lights on?		
1344:32.0 HOT-1	nav lights. yup.		
1344:32.1 HOT-2	lights on. everything's done.		
1344:35.0 HOT-2	autopilot's away.		
1344:36.4 HOT-1	okay.		
1344:37.6 HOT-2	speeds are set.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1344:44.4 HOT-2	you're all good.		
1344:45.5 HOT-1	I'm great.		
1344:47.7 HOT-2	you got your speeds set good.		
1344:57.6 HOT	five hundred. [automated voice]		
1345:02.9 HOT-1	should be about fifty five hundred if I'm not mistaken.		
1345:05.4 HOT	three hundred. [automated voice]		
1345:06.0 HOT-2	four hundred.		
1345:14.0 HOT-1	* just a tad over the VASI.		
1345:14.3 HOT	two hundred. [automated voice]		
1345:18.8 HOT-1	you wouldn't mind getting my airbrakes on touchdown.		
1345:20.7 HOT-2	yes sir.		
1345:21.2 HOT-1	thank you.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1345:21.5 HOT-2	* the first or second *.		
1345:22.3 HOT	one hundred. [automated voice]		
1345:23.5 HOT-1	* if you insist.		
1345:26.1 CAM	[sound similar to trim clacker]		
1345:26.1 HOT	fifty. [automated voice]		
1345:27.3 HOT	thirty. [automated voice]		
1345:28.2 HOT	twenty. [automated voice]		
1345:31.0 HOT	ten. [automated voice]		
1345:33.9 CAM	[sound similar to main gear touchdown] [no sounds consistent with engine rpm increase through the end of the recording]		
1345:34.4 CAM	[sound of two clicks]		
1345:36.3 CAM	[sound of double click]		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1345:37.3 CAM	[sound of click]		
1345:38.7 HOT-1	whoa whoa whoa whoa whoa. where are the brakes? where are the brakes?		
1345:39.8 CAM	[sound of click]		
1345:41.1 CAM	[sound similar to nose gear touchdown]		
1345:41.8 HOT-1	I have no brakes.		
1345:43.3 HOT-1	where are the brakes?		
1345:44.5 HOT-1	no brakes. get on the brakes.		
1345:46.9 HOT-1	get on the brakes.		
1345:48.2 HOT-1	one thousand.		
1345:49.9 HOT-1	get on the # brakes.		
1345:53.2 HOT-1	I have no brakes.		
1345:54.5 HOT-2	no brakes.		

Time and Source	Intra-Aircraft Communication	Time and Source	Over-the-Air Communication
1345:55.2 HOT-1	no brakes.		
1345:56.7 HOT-?	* in the grass.		
1345:58.2 HOT-1	# #.		
1346:00.0 CAM	[sounds of impact]		
1346:03.2 END OF TRANSCRIPT END OF RECORDING			