

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

CEN12LA066

**By
Bill Tuccio**

WARNING

The reader of this report is cautioned that the transcription of a cockpit voice recorder audio recording is not a precise science but is the best product possible from a Safety Board group investigative effort. The transcript or parts thereof, if taken out of context, could be misleading. The transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

December 12, 2011

Cockpit Voice Recorder - 12

Group Chairman's Factual Report By Bill Tuccio

A. EVENT

Location: Flint, Michigan
Date: November 16, 2011, 0940 Eastern Standard Time (EST) *
Aircraft: Piaggio P180, N168SL
Operator: Avantair, Flight 168
NTSB Number: CEN12LA066

B. GROUP

A group was convened on November 23, 2011.

Chairman: Bill Tuccio
National Transportation Safety Board

Member: Gari S. Kohlhof
Director of Pilot Training
Avantair

Member: Paolo Ferreri
Vice President Worldwide Customer Support
Piaggio Aero Industries, S.p.A.

Member: Guiseppe Caldarelli
Chief of Airworthiness
Piaggio Aero Industries, S.p.A.

Member: Thomas A. Berthe
Service Investigator
Pratt & Whitney Canada

* All times are expressed in EST, unless otherwise noted.

C. SUMMARY

On November 16, 2011, approximately 0940 eastern standard time (EST), a Piaggio Aero Industries S.p.A. P180 airplane, N168SL, operated as Avantair flight 168, impacted terrain during landing at the Bishop International Airport (FNT), Flint, Michigan. The captain, first officer, and two passengers sustained minor injuries. The airplane, which was owned by Avantair, Inc., Clearwater, Florida, sustained substantial damage. The flight was being conducted under 14 Code of Federal Regulations Part 91 subpart K. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed. The airplane departed the Detroit Metropolitan Wayne County Airport, Detroit, Michigan, approximately 0905, and was destined for the West Bend Municipal Airport, West Bend, Wisconsin. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board's Audio Laboratory for readout. The CVR group meeting convened on November 23, 2011 and a partial transcript was prepared for the last 24 minutes, 2 seconds of the 31-minute, 4-second digital recording (see attached).

D. DETAILS OF INVESTIGATION

On November 18, 2011 the NTSB Vehicle Recorder Division's Audio Laboratory received the following CVR:

Recorder Manufacturer/Model: **L-3/Fairchild FA2100-1010**
Recorder Serial Number: **000330603**

Recorder Description

Per Federal regulation, CVRs record a minimum of the last 30 minutes 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 30 minutes of CVR operation. This model CVR, the L-3/Fairchild FA2100-1010, records 30 minutes of digital audio stored in solid-state memory modules. Four channels of audio information are retained: one channel for each flight crew and one channel for the cockpit area microphone (CAM).

Recorder Damage

Upon arrival at the audio 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.

Audio Recording Description

The 31-minute recording consisted of three channels of useable audio information. Each channel's audio quality[†] is indicated in Table 1. Notably, channel number four did not contain any audio information (nor was it required by Federal regulations).

[†] See attached CVR Quality Rating Scale.

Table 1: Audio Quality

Channel Number	Content/Source	Quality
1	Captain	Excellent
2	First Officer	Excellent
3	CAM	Fair
4	N/A	N/A

Timing and Correlation

Timing on the transcript was established by correlating the air traffic control (ATC) recording transmission time to the corresponding CVR event. Specifically, CVR radio transmissions from N168SL were linked to the corresponding ATC transmissions at 1429:26 UTC, 1429:55 UTC, 1430:09 UTC, and 1430:18 UTC. All CVR events were offset to reflect the local EDT of the accident. This correlation resulted in adding 0919:03.720 to CVR elapsed time to convert to EDT.

Description of Audio Events

The recording began at 0919:04 as the aircraft was climbing to cruise altitude. The transcript began at 0926:06 and continued through the end of the recording at 0950:03. The accident occurred at about 0940. The period from 0940 until the end of the recording records the emergency response and evacuation.

As part of the Safety Board's accident investigation process, the flight crew was invited to review the CVR audio and transcript and suggest corrections or additions. On December 6, 2011 both the captain and first officer performed the review with group member Gari Kohlhof in attendance. Both crewmembers agreed the transmission at 0927:30.5, "what did you do?" was by HOT-2 rather than HOT-1. All other comments from the crew review were related to the context of their cockpit discourse:

- The captain stated regarding the transmission made at 0927:21.7: "All radios were off at this time--dual generator failure."
- The first officer had the following comments:
 - Regarding 0926:06.8, "that's what it was doing the other day too;" the first officer stated, "[There was a] previous left throttle cable issue in YYZ for maintenance."
 - Regarding the groan at 0926:50.5, the first officer stated, "Trying to pull on throttle. Stuck full forward."
 - Regarding the sequence from 0927:21.7 to 0927:30.5, the first officer stated: (a) "all screens went blank, dual generator failure;" (b) "trying to transmit, everything off (screens, radio);" (c) "captain reset right generator."
 - Regarding 0938:02.3, "one of ours is way off and I think it's yours;" the first officer stated, "Gyro's off by 55 degrees."

Bill Tuccio
Vehicle Recorder Division

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 FA2100-1010 solid-state cockpit voice recorder, serial number 000330603, installed on an Avontair Piaggio P180 (N168SL), which crashed during landing at the Bishop International Airport in Flint, Michigan.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N168SL
CTR-A	Radio transmission from first Cleveland center controller
CTR-B	Radio transmission from second Cleveland center controller
APR	Radio transmission from the Flint approach controller
TWR	Radio transmission from the Flint airport tower controller
ARFF	Airport Rescue and Firefighting
EGPWS	Enhanced Ground Proximity Warning System
-1	Voice identified as the captain
-2	Voice identified as the first officer
-3	Voice identified as a passenger
-?	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 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 CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:19:03.7
START OF RECORDING

09:26:05.8
START OF TRANSCRIPT

09:26:05.8
HOT-? (switch)

09:26:06.8
HOT-2 that's what it was doing the other day too.

09:26:08.8
HOT-1 it wouldn't go forward either?

09:26:10.4
HOT-2 no [low volume].

09:26:13.5
HOT-1 I mean that's a loss of power right there. I can't go past ninety-five percent at twenty two thousand feet.

09:26:19.9
HOT [sound of cyclical high pitch tone, similar to over torque warning, continues for 51.938 seconds]

09:26:20.8
HOT-1 oh #.

09:26:23.7
HOT-1 [sigh]

09:26:23.9
HOT-2 okay. okay.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:26:26.5
HOT-1 that's not good.

09:26:29.9
HOT-1 #.

09:26:35.5
HOT-1 [sigh]

09:26:40.1
HOT-1 switch.

09:26:43.5
HOT-1 [sigh]

09:26:45.3
HOT-1 we gotta' shut it down #.

09:26:50.5
HOT-1 [groan, similar physical exertion]

09:26:55.5
HOT-1 oh #.

09:27:05.5
CAM [sound of decreasing frequency/noise, similar to engine winding down]

09:27:05.8
HOT-1 alright declare the emergency.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:27:11.9
HOT [sound of cyclical high pitch tone that started 51.938 seconds ago ends]

09:27:12.7
HOT-1 go ahead and declare the emergency.

09:27:18.7
HOT [sound of mid-level tone, similar to autopilot disconnect]

09:27:21.7
HOT-2 [not transmitting on radio, heard in background] ah we've lost the left engine *** [sound of modulation, similar to click on transmit switch].

09:27:29.7
HOT [sound of single high pitch tone]

09:27:30.5
HOT-1 what did you do?

09:27:31.4
HOT [sound of single mid level tone]

09:27:32.2
HOT-? #.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:27:14.9
RDO-2 and Avantair one sixty eight we need to declare an emergency.

09:27:18.2
CTR-A Avantair one sixty eight roger and what's the ah nature and do you need lower.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:27:37.5
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:27:48.7
HOT-1 run through the checklist please. make sure that it's secured.

09:27:51.0
HOT-2 okay.

09:27:53.1
HOT-2 ah engine flight.

09:27:54.9
HOT-1 in flight.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:27:32.7
CTR-A Avantair one sixty eight what's the nature of your emergency and do you need lower.

09:27:36.5
RDO-2 ah we lost our left engine and yes we need lower.

09:27:39.1
CTR-A Avantair one sixty eight descend and maintain flight level one eight zero I'll have lower for you in just a moment.

09:27:43.2
RDO-2 okay down to one eight zero Avantair one sixty eight.

09:27:43.3
RDO [radio transmission of commercial aircraft trying to reach a Navy aircraft]

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:27:55.8

HOT-2 power levers idle.

09:27:56.2

HOT-1 ahh.

09:27:57.5

HOT-1 say that again I can't hear ya.

09:27:58.5

HOT-2 power level.

09:28:00.1

HOT-1 unable idle but continue.

09:28:02.2

HOT-2 condition lever.

09:28:03.3

HOT-1 cut-off.

09:28:04.3

HOT-2 firewall...closed.

09:28:06.0

HOT-1 close it please.

09:28:07.0

HOT-2 fuel pump.

09:28:07.7

HOT-1 close it please.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:28:09.2
HOT-2 ignition switch.

09:28:10.0
HOT-1 close the firewall please.

09:28:11.7
HOT-2 oh I'm sorry.

09:28:12.9
HOT-2 left side.

09:28:13.8
HOT-1 I concur. agree.

09:28:24.9
HOT-1 looks like we're over Flint.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:28:15.8
CTR-A Avantair one sixty eight descend and maintain one two thousand. Lansing altimeter is two niner niner two.

09:28:21.3
RDO-2 okay down to one two thousand and two niner niner two. Avantair one sixty eight.

09:28:25.2
CTR-A Avantair one sixty eight do you want to proceed on your present course or do you need to go someplace else?

09:28:30.5
RDO-2 ahhh we're going to need to go to Flint...or Grand Rapids.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:28:33.8
HOT-1 looks like Flint's better.

09:28:51.5
HOT-1 [sigh]

09:28:52.0
HOT-1 #' eh continue with the checklist please.

09:28:55.1
HOT-2 okay...ah...ignition switch.

09:28:58.6
HOT-1 ah. go ahead and shut it off.

09:29:04.0
HOT-1 or what does it say?

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:28:33.9
CTR-A Avantair one sixty eight roger. ahhh cleared to the Grand Rapids airport via direct. maintain one two thousand.

09:28:41.1
RDO-2 okay actually the captain wants to go into Flint.

09:28:43.9
CTR-A Avantair one sixty eight roger. fly your ah present heading for now and descend and maintain one two thousand.

09:28:49.6
RDO-2 okay present heading and one two thousand Avantair one sixty eight.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:29:06.3
HOT-2 ahhh...generator off.

09:29:34.9
HOT-2 which direction you want to turn?

09:29:35.8
HOT-1 which what?

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:29:08.2
CTR-A Avantair one sixty eight contact the ah Cleveland center one two six point seven five. they'll have a turn back to Flint for ya.

09:29:15.0
RDO-2 one two six seven five Avantair one six eight.

09:29:17.5
CTR-A Avantair one six eight tell them which ah direction you want to turn when you talk to them.

09:29:21.6
RDO-2 okay will do Avantair one sixty eight.

09:29:26.2
RDO-2 and Cleveland center Avantair one sixty eight ahh in an emergency ah going back to Flint and ahh we'd like which direction--

09:29:36.0
CTR-B Avantair one sixty eight (tell us) what was that last part?

09:29:38.8
RDO-2 ahh we're gonna need a turn back to Flint ahh as we get lower.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:29:43.3
HOT [sound of low pitch tone, similar to gear aural warning]

09:29:45.0
HOT-2 okay left generator

09:29:52.1
HOT-2 uhm.

09:29:54.1
HOT-2 what you want?

09:29:54.8
HOT-1 left.

09:29:57.3
HOT-2 bleed air.

09:29:58.0
HOT-1 off.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:29:45.6
CTR-B Avantair one sixty eight cleared direct Flint.

09:29:49.0
RDO-2 direct Flint Avantair one sixty eight.

09:29:52.2
CTR-B is it gonna be a left or right turn?

09:29:55.2
RDO-2 left turn please.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:30:01.7
HOT-2 ah fire extinguisher button. push. we don't need that.

09:30:03.8
HOT-1 not required.

09:30:05.0
HOT-2 rotary test switch. fire. **.

09:30:07.1
HOT-1 not required.

09:30:11.6
HOT-2 right.

09:30:17.3
HOT-1 eleven set.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:30:06.5
CTR-B Avantair one sixty eight descend and maintain one one thousand.

09:30:08.9
RDO-2 down to one one thousand. Avantair one sixty eight.

09:30:14.4
CTR-B Avantair one sixty eight contact Flint approach one one eight point eight.

09:30:18.0
RDO-2 one one eight point eight. so long.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:30:20.8
HOT-1 [sigh] # unbelievable.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:30:25.7
RDO-2 Flint approach Avantair one sixty eight ahhh in an emergency
ahh coming back to Flint.

09:30:31.6
APR Avantair one sixty eight Flint approach. ah say ah the ah ah
nature of the emergency. the number of people on board. and
your intentions at Flint.

09:30:40.6
RDO-2 ah yes we lost the left engine. there's four souls on board. an ah
we'll be landing normal at ah Flint. what's the recommended
runway?

09:30:48.4
APR Avantair one sixty eight we're doing visual approaches to
runway two seven today. the current wind is three zero zero at
one five. altimeter two niner niner one.

09:30:57.0
RDO-2 two niner niner one. visual two seven Avantair one sixty eight.

09:31:00.4
APR Avantair one sixty eight descend and maintain four thousand
and ah how much ah fuel do you have remaining?

09:31:07.4
RDO-2 ahhhh fifteen hundred pounds.

09:31:10.2
APR fifteen hundred pounds (rog) thank you.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:31:11.7

HOT-1 wanna look back there and let 'em know we're landing elsewhere for now.

09:31:15.7

HOT-2 guys we're ah landing at Flint we lost our left engine [in background, directed at passengers]

09:31:18.9

HOT-3 yeah I could tell something happened.

09:31:20.3

HOT-2 yah.

09:31:21.8

HOT-1 alright. [sigh]. back with me on the checklist here and continue.

09:31:26.0

HOT-2 okay ahhh electric load monitor.

09:31:29.5

HOT-1 check.

09:31:30.3

HOT-2 fuel crossfeed. consider.

09:31:32.0

HOT-1 ahh right now it looks like...okay for now continue.

09:31:34.4

HOT-2 err...land as soon as practical.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:31:36.9

HOT-1 okay go ahead and throw in ahhh...what runway are they using...whatever they are using.

09:31:39.9

HOT-2 two seven. two seven.

09:31:49.3

HOT-1 two seven.

09:31:51.0

HOT-2 yep.

09:31:55.2

HOT-1 alright continue I see the airport. don't call it yet.

09:31:58.1

HOT-2 nope...nope nope.

09:32:03.6

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:32:04.9

HOT-2 ahhh what is it F...whoa careful.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:31:40.3

APR Avantair one sixty eight when you're out of your turn the airport will be at your twelve o'clock and about one three miles ah report it in sight.

09:31:47.3

RDO-2 okay will do Avantair one sixty eight.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:32:08.0

HOT-2 F-N-T.

09:32:09.8

HOT-1 yeah.

09:32:12.1

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:32:14.8

HOT [sound of low pitch tone, similar to gear aural warning]

09:32:28.5

HOT-2 zero eight zero (buddy). where are you going?

09:32:34.9

HOT-1 alright I like it.

09:32:37.9

HOT-1 autopilot on.

09:32:39.2

HOT-2 alright autopilot engaged.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:32:15.6

APR and Avantair one sixty eight fly heading zero eight zero.

09:32:19.1

RDO-2 zero eight zero Avantair one sixty eight.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:32:48.7
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:32:57.0
HOT-1 three thousand set.

09:32:59.5
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:33:40.9
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:33:51.4
HOT-1 sorry about that. looking elsewhere.

09:33:53.6
HOT-1 ah if you get it all in there go ahead and give me a single engine descent checklist please.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:32:49.5
APR Avantair one sixty eight descend and maintain three thousand.

09:32:53.0
RDO-2 down to three thousand. Avantair one sixty eight.

09:33:45.8
APR Avantair one sixty eight turn right heading zero niner zero.

09:33:48.6
RDO-2 right zero nine zero Avantair one sixty eight.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:33:57.5

HOT-2 okay.

09:34:01.0

HOT-2 alright single engine descent. altimeters.

09:34:05.5

HOT-1 set.

09:34:05.9

HOT-2 recog light.

09:34:07.1

HOT-1 it's on.

09:34:08.1

HOT-2 ah windshield heat.

09:34:09.5

HOT-1 turn it off please.

09:34:12.7

HOT [sound of switch]

09:34:13.5

HOT-2 windshield heat is off.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:34:14.2

APR Avantair one sixty eight the airport's at your one to two o'clock and five miles.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:34:21.5
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:34:43.9
HOT-2 you got the field over here?

09:34:44.7
HOT-1 in sight.

09:34:45.6
HOT-2 okay. ah ATIS and F-B-O if able.

09:34:48.7
HOT-1 not required.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:34:19.8
RDO-2 ah we've got the airport. Avantair one sixty eight. ah we're going to make ah circle around for two seven.

09:34:26.0
APR Avantair one sixty eight it's cleared for the visual approach runway two seven. I just want to verify ah you'll be landing two seven you're eastbound at this time so you're just gonna' continue the downwind little bit for two seven setup.

09:34:35.9
RDO-2 ah yes sir.

09:34:37.2
APR Avantair one sixty eight roger let me know when you're turning your base.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:34:49.4
HOT-2 single engine approach. inoperative engine secured.

09:34:52.3
HOT-1 secured.

09:34:53.3
HOT-2 condition levers max R-P-M.

09:34:55.3
HOT-1 max R-P-M.

09:34:56.1
HOT-2 F-M-(A)-S avionics...set.

09:34:56.9
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:34:58.9
HOT-1 ahhh. set.

09:35:00.9
HOT-2 ahhh. approach brief.

09:35:03.5
HOT-1 visual two seven. I don't know what turn off. I have no idea. you pull out a chart when we get on the ground if you like.

09:35:09.1
HOT-1 uhohm. flaps mid. ref one thirty.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:35:13.2

HOT-2 okay. going to turn here or ah?

09:35:14.6

HOT-1 ah not yet. give me a few more feet to descend here.

09:35:16.9

HOT-2 okay.

09:35:17.7

HOT-1 continue.

09:35:18.4

HOT-2 auto feather.

09:35:19.8

HOT-1 off.

09:35:20.5

HOT-2 prop sync.

09:35:21.4

HOT-1 off.

09:35:22.5

HOT-2 seat belt sign.

09:35:23.4

HOT-1 on.

09:35:24.3

HOT-2 E-F-B's.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:35:25.4
HOT-1 secured.

09:35:27.7
HOT-2 okay.

09:35:32.1
HOT-1 # piece of #.

09:35:34.4
HOT-2 I eeh should'uv told you that. [laughter]

09:35:37.1
HOT-1 single engine ahh approach checklist please. did we do that?

09:35:39.9
HOT-2 we just did that sir.

09:35:40.6
HOT-1 okay.

09:35:41.1
HOT-1 thank you.

09:35:42.2
HOT-1 thought that was the descent.

09:35:43.4
HOT-2 nope we went right into the approach.

09:35:44.5
HOT-1 sounds good.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:35:52.4

HOT-2 I wouldn't go too far out...it's way back here.

09:35:55.8

HOT-1 okay.

09:35:58.8

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:36:06.8

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:36:23.4

HOT [sound of high pitch tone, similar to altitude alert]

09:36:24.9

HOT-2 thousand to go.

09:36:26.2

HOT-1 four descending three thousand. we're in the left turn to base...let him know. I think he wanted to know.

09:36:32.6

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:36:33.2

HOT-2 we're not turnin' base.

09:36:34.9

HOT-1 what are we turning?

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:36:39.1
HOT-1 two seven. right?

09:36:41.5
HOT-2 that's runway nine.

09:36:42.8
HOT-1 uuhhh.

09:36:47.1
HOT-1 my bearings are all #ed up. is this set to two seven?

09:36:49.5
HOT-2 yeah.

09:36:59.2
HOT-1 so two seven's pointing that way. correct? back me up.

09:37:01.7
HOT-2 yep.

09:37:02.2
HOT-1 okay.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:36:52.5
APR Avantair one sixty eight contact tower one two six point three
and you have a good day.

09:36:55.9
RDO-2 one two six point three. thanks.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:37:06.9
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:37:10.1
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:37:21.5
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:37:36.2
HOT-2 that's weird I don't have ah.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:37:06.1
TWR --F-A-A echo roger we do have an emergency in progress. I just want to keep the runways open.

09:37:11.4
RDO-2 and ah Flint tower Avantair one sixty eight ah we're ah...[sound of high pitch tone, similar to altitude alerter]...to the north for runway two seven and an emergency.

09:37:20.5
TWR Avantair one sixty eight Flint tower runway two seven cleared to land. wind two niner zero at one five.

09:37:25.2
RDO-2 two niner zero at one five Avantair one sixty...[stammer]...eight.

09:37:31.5
TWR F-A-A echo. roger.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:37:44.2
HOT-2 watch your speed.

09:37:48.5
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

09:37:50.0
HOT-2 got the runway?

09:37:52.0
HOT-1 as long as it's two seven pointing that way. I got the runway.

09:37:54.1
HOT-2 [laughter].

09:37:55.8
HOT-2 yeah there's three zero.

09:37:57.3
HOT-2 oh wow that's another thing. that's why it's all # up.

09:38:02.3
HOT-2 one of ours is way off and I think it's yours.

09:38:04.5
HOT-1 ahhh. okay.

09:38:10.5
HOT-1 ahhhhh. this is what the sim is for huh.

09:38:13.0
HOT-2 yep.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:38:50.9

HOT-2 yeh that's uh...we are # up. that's two seven.

09:38:53.3

HOT-1 so we're facing we're facing one eight zero now? so this is southbound?

09:38:56.5

HOT-2 yeh.

09:38:56.8

HOT [sound of high pitch tone, similar to altitude alert]

09:38:59.6

HOT-2 turn..turn left.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:38:29.1

TWR Avantair one sixty eight do you have the airport in sight?

09:38:31.9

RDO-2 ah yes ma'am ah now we're just noticing our gyros are ah messed too our ... are we ah on base for two seven?

09:38:41.2

TWR Rescue forty ah four can you ah proceed to alpha taxiway. I need to open up both runways in case he needs to land one eight.

09:38:58.7

TWR Rescue forty four ground.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:39:06.7
HOT-1 one eight zero you can't even trust this # thing.

09:39:17.2
HOT-1 gear down. flaps mid. before landing checks.

09:39:19.1
CAM [sound of increased noise, similar to landing gear extension]

09:39:24.0
HOT-1 (before landing) checklist. before single engine checklist.

09:39:26.2
HOT-2 yep.

09:39:26.9
HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion]

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:39:03.2
TWR Rescue forty three can you get the other vehicle off the runway please?

09:39:08.4
TWR Avantair one sixty eight cleared to land any runway.

09:39:11.9
RDO-2 alright thank you ah one sixty eight. ah we're takin' this one here. we're turnin' now base to final.

09:39:17.3
TWR Rescue forty four proceed to alpha taxiway and hold short of two seven and one eight at alpha taxiway.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:39:28.1
HOT-2 landing gear.

09:39:28.6
HOT-1 down three green.

09:39:36.0
HOT-2 ahh...lan...hydraulic pressure.

09:39:37.9
HOT-1 it's checked.

09:39:38.7
HOT-2 condition levers.

09:39:39.9
HOT-1 they're set.

09:39:42.2
HOT-2 flaps.

09:39:42.8
HOT-1 mid.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:39:28.4
TWR wind two niner zero at one eight.

09:39:32.0
RDO-2 two niner zero at one eight Avantair one sixty eight.

09:39:38.9
ARFF Flint ground ** you want us two seven then if he's landing ah one eight?

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:39:44.7
HOT-2 landing light.

09:39:46.1
HOT-1 flaps mid.

09:39:47.1
HOT-2 and autopilot.

09:39:48.4
HOT-1 flaps mid.

09:39:50.7
HOT-2 **

09:39:50.8
EGPWS five hundred.

09:39:51.6
HOT-1 flaps mid.

09:39:53.4
HOT-2 flaps mid.

09:39:54.0
HOT-1 thank you.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:39:43.9
TWR [stammer] for the rescue vehicles I am not sure what runway he is going to be able to land. just remain clear of all the runways. he has been given a clearance to land on any runway.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:40:01.0

HOT-1 correcting.

09:40:21.2

CAM [sound of muffled chirp, similar to touchdown]

09:40:21.9

CAM [sound of bump, similar to touchdown]

09:40:22.6

CAM [sound of muffled chirp, similar to touchdown]

09:40:23.1

HOT [sound of repeated, rapid clicking/clacking, similar to trim in motion lasting for 6.7 seconds]

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:39:55.4

TWR Rescue forty three if you need to make the one eighty and go to the east access that's approved.

09:39:59.9

ARFF copy.

09:40:24.9

TWR Rescue forty three and forty four you can proceed on runway one eight.

09:40:29.9

ARFF Forty three and forty four copy. proceeding on one eight. @ go ahead and follow them down.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:40:30.2

CAM [sound of decreasing noise frequency, similar to props in beta/reverse]

09:40:32.5

HOT-? awe #.

09:40:34.0

CAM [sound of screech, similar to tires skidding]

09:40:34.3

HOT #.

09:40:34.9

CAM [sound of rumble, similar to crash]

09:40:35.0

HOT [sound of loud snap]

09:40:36.4

CAM [increased sound of rumble, scraping, similar to crash]

09:40:41.4

CAM [rapid decrease in noise, similar to motion stopping]

09:40:43.3

HOT #.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:40:44.5

TWR Forty four expedite to the ah aircraft vehicle crash vehicle he's flipped over. expedite [stammer] expedite to the to the veh-- [stammer] err the aircraft.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:40:44.8

CAM [sound of muffled movement and voices]

09:40:53.4

CAM [moan]

09:40:54.9

CAM awe #.

09:40:57.6

CAM you guys alright?

09:41:04.1

CAM [moans]

09:41:23.1

CAM [sound of decreased engine noise]

09:41:27.3

HOT [sound of electrical spike]

09:41:28.1

HOT [sound of two mid level tones, similar to cockpit warning]

09:41:30.8

CAM you guys alright?

09:41:45.3

CAM are you guys okay?

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:41:02.6

TWR [coordinating crash and rescue, clearing crash and rescue to cross runway 18]

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:41:46.9
CAM i've been better.

09:41:48.0
CAM #.

09:41:50.4
CAM [moan]

09:41:54.0
CAM should we come out?

09:41:56.8
CAM seat belts off.

09:42:00.3
CAM [sound of motor, similar to vehicle movement outside aircraft
continues on and off until end of recording]

09:42:12.6
CAM [sound of increased external engine noise, similar to vehicle
outside aircraft]

09:42:52.3
CAM oh my God.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

09:41:49.1
TWR [advises airport is closed]

09:43:16.4
TWR [advises rescue workers airport is closed and rescue vehicles
can proceed at discretion]

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

09:43:17.4

CAM [sound of rescue worker asking about injuries to arm, leg]

09:45:03.1

CAM [sound of external increased engine noise and rain like noise,
similar to liquid spray on exterior of aircraft]

09:48:52.9

CAM [sound of external increased engine noise and rain like noise,
similar to liquid spray on exterior of aircraft]

END OF TRANSCRIPT

END OF RECORDING

09:50:07.3

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT