

**NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594**



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

DCA05MA003

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

January 27, 2005

Cockpit Voice Recorder - 12

Group Chairman's Factual Report

By Anna Cushman

A. EVENT

Location: Jefferson City, Missouri
Date: October 14, 2004, 2215 CDT*
Aircraft: CL-600-2B19, N8396A
Operator: Pinnacle Airlines (d.b.a Northwest Airlink), Flight 3701
NTSB Number: DCA05MA003

B. GROUP

A group was convened on October 18, 2004.

Chairman: Anna Cushman
Aerospace Engineer
National Transportation Safety Board

Member: Capt. Brad Harris
CRJ Instructor
Pinnacle Airlines

Member: Capt. Mark S. Crissman
PCL Assistant Chief Accident Investigator
Air Line Pilots Association

Member: Gregory R. Brand
Manager Flight Operations
GE Aircraft Engines

Member: Jacques Nadeau
Chief Liaison Pilot
Bombardier Aerospace

Member: Eric E. West
Air Safety Investigator
Federal Aviation Administration

* All times are expressed in central daylight time (CDT) unless otherwise noted.

C. SUMMARY

On October 14, 2004, at about 2215 central daylight time, a Bombardier CL-600-2B19, operating as Pinnacle Airlines flight 3701 N8396A (d.b.a. Northwest Airlink), crashed in a residential area in Jefferson City, Missouri, about 2.5 miles south of the Jefferson City, Missouri airport. 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 October 18, 2004 and a transcript was prepared for the 30-minute, 23-second digital recording (see attached).

D. DETAILS OF INVESTIGATION

On October 15, 2004, the NTSB Vehicle Recorder Division's Audio Laboratory received the following CVR:

Recorder Manufacturer/Model: **Fairchild Model A100S**
Recorder Serial Number: **02804**

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 Fairchild Model A100S, 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 30-minute and 23-second recording consisted of four channels of useable audio information. Each channel's audio quality[†] is indicated in the following table:

Channel Number	Source	Quality
1	Other (observer's seat audio panel)	Excellent
2	Flight crew - right seat (Co-Pilot) audio panel	Excellent
3	Flight crew - left seat (Pilot) audio panel	Good
4	Cockpit Area Microphone (CAM)	Fair

Channels 1, 2 and 3 each contained audio information from the aircraft's aural warning system, including the mechanical voice of the crew alert system (CAS); channel 4 (the CAM channel) also recorded aural warnings, but via a cockpit speaker. Notably,

[†] See attached CVR Quality Rating Scale.

channel 1, designated in Federal regulations for the third flight crew audio panel information, contained audio, but because a third flight crew is not required for this aircraft, its source may be determined by the operator (per the documentation, the source was the observer's seat audio panel). The audio on channel 1 did not contain any intercom or radio communications; it only contained the aircraft aural warnings and the CVR's time code signal[‡].

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 radio transmissions that the aircraft made were correlated to the radio transmit microphone key parameter from the FDR. Once a correlation between the two recorders was established, a reference to local time was determined through a correlation between the radar data and the FDR data. More information regarding the correlation may be found in the Group Chairman's Aircraft Performance Study.

Description of Audio Events

The recording began at 2144:44 as the crew discussed the climb to flight level 410. After reaching flight level 410, the crew asked the Kansas City center air traffic controller for a lower altitude at 2154:32. Approximately six seconds later the sound similar to the stick shaker was recorded. This was followed by several aircraft system alerts and warnings. At 2155:23 the crew stated, "We don't have any engines." At 2156:42 the Captain began stating items in the double engine failure checklist. At 2159:24 the Captain stated, "Okay we have power."

At 2159:51 the crew asked the Kansas City center controller for a descent to 13,000 feet. The Captain continued stating items in the double engine failure checklist and continued until 2207:59, at which time he stated, "It's starting. Right engine start." Approximately five seconds later the Captain stated, "We're not getting any N two." At 2208:17 the Captain stated, "Um. Switch," and asked the First Officer to "go to that check pull that check list up."

At 2209:06 the First Officer radioed the center controller stating, "Thirty seven zero one we need direct to any airport. We have a double engine failure." The center controller stated that the aircraft was "cleared direct JEF." At 2211:34 the sound of the morse code identifier for JEF was recorded on CVR audio channel 3. Three seconds later the First Officer asked, "Okay should we try starting her up?" and the Captain replied, "Yeah. Yeah you might as well." At 2212:07 the Captain stated, "We're not getting any N two." At 2214:39 the First Officer radioed the controller and stated, "We're not gonna make the runway. Is there a road?" The recording ended shortly thereafter at 2215:07.

Anna Cushman
Vehicle Recorder Division

[‡] The time code signal, in an FSK (frequency shift key) format, is recorded at a frequency higher than that for voice and generally does not interfere with intelligibility of the voice recording.

CVR Quality Rating Scale

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

Excellent Quality Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other.

Good Quality Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other.

Fair Quality The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information.

Poor Quality Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information.

Unusable Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system.

Transcript of a Fairchild Model A 100S solid-state cockpit voice recorder, serial number 02804, installed on a Pinnacle Airlines (d.b.a Northwest Airlink) CL-600-2B19 (N8396A), which crashed in a residential area in Jefferson City, Missouri, about 2.5 miles south of the Jefferson City, Missouri airport.

LEGEND

CAM	Cockpit area microphone voice or sound source
INT	Flight crew audio panel intercom voice or sound source
CAS	Aircraft's crew alert system mechanical voice sound source
RDO	Radio transmissions from N8396A
CTR-A	Radio transmission from first Kansas City center controller (R29 position) [§]
CTR-B	Radio transmission from second Kansas City center controller (R30 position)
CTR-C	Radio transmission from third Kansas City center controller (R53 position)
-1	Voice identified as the Captain
-2	Voice identified as the First Officer
-?	Voice unidentified
*	Unintelligible word
#	Expletive
...	Pause or interruption
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in central daylight time (CDT).

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.

[§] See Air Traffic Control Group Chairman's Factual Report for more information on controller position.

INTRA-COCKPIT COMMUNICATION

1 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2144:44

START OF RECORDING
START OF TRANSCRIPT

2144:48

CAM [unintelligible conversation]

2145:16

CAM-? *** you got that man.

2145:49

CAM-1 we're riding the green # line there.

2145:51

CAM-2 [sound of laughing] # dude.

2146:09

CAM-1 * Alpha two.

2146:12

CAM-2 is that where we're going?

2146:13

CAM-1 yeah.

2146:16

CAM-1 (where/what) the # is this.

2146:22

CAM-2 is ahh.

INTRA-COCKPIT COMMUNICATION

2 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2146:27

CAM-2

[sound of laughing] look at the # fuel flow man.

2146:30

CAM-1

ah # dude they're both almost a thou- almost under a thousand and (flying/in climb) that's # unreal.

2146:31

CAM-2

[sound of laughing]

2146:36

CAM-1

dude.

2146:37

CAM-2

dude I've seen this thing eat up like four thousand pounds an hour.

2146:39

CAM-1

I know (it).

2146:40

CAM-2

[sound of laughing]

2146:42

CAM-1

ooh. look at that.

2146:44

CAM-1

under two thousand # **... in a climb.

INTRA-COCKPIT COMMUNICATION

3 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2146:49

CAM-2

that # crazy.

2146:57

CAM-1anyway the green line is one point two V-S one so we still
have you know * stall **...

2147:00

CAM-2

I think what you have * one point two seven isn't it?

2147:01

CAM-1

...yeah one two seven right yeah.

2147:06

CAM-?

*.

2147:08

CAM-2

couple of knots.

2147:12

CAM-1

the red line's where it can stall so.

2147:15

CAM-2

three nine oh.

2147:47

CAM

[sound of thumps]

INTRA-COCKPIT COMMUNICATION

4 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2147:49

CAM

[sound of thump]

2147:52

CAM-1

doesn't look much different though.

2147:53

CAM

[sound of laughing]

2147:55

CAM-1

still pretty cool.

2147:58

CAM-2

yeah I'd have to say that yeah.

2148:00

CAM-1

***.

2148:05

CAM

[sound of clunks]

2148:44

CAM-2

man we can do it. forty one it.

2148:46

CAM-?

* baby.

2148:54

CAM-?

**.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2148:57

CAM-2

hundred and eighty knots still cruising at mach point six four.

2148:59

CAM-1

I know dude.

2149:00

CAM-2

[sound of laughing]

2149:04

CAM-?

minute **. two minutes to go.

2149:07

CAM-1

forty thousand baby.

2149:09

CAM-2

come on.

2149:24

CAM-1

look at that cabin altitude man.

2149:25

CAM-2

[sound of laughing]

2149:26

CAM

[sound of tone, similar to altitude alert]

INTRA-COCKPIT COMMUNICATION

6 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2149:27

CAM-1

thousand to go.

2149:28

CAM-1

should be at eight thousand feet moving... slowly (going up).

2149:30

CTR-A

Flagship thirty seven zero one would you like to go direct KASPR.

2149:30

CAM-2

[sound of laughing]

2149:33

CAM-1

sure.

2149:34

CAM-2

* might as well.

2149:36

RDO-2

yeah that'll be great thirty seven zero one direct KASPR.

2149:39

CTR-A

all right cleared direct KASPR ah Flagship thirty seven zero one.

2149:44

RDO-2

thank you sir appreciate that thirty seven zero one going direct KASPR you saved us two minutes.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2149:48

CAM-1

[sound of laughing]

2149:51

CAM

[sound of click]

2150:04

CAM-2

[sound of laughing]

2150:04

CAM-1

that # (crazy/funny).

2150:05

CAM-2

[sound of laughing]

2150:09

CAM-?

**.

2150:28

CAM-2

aw yeah.

2150:30

CAM-?

[sound of whistling]

2150:43

CAM

[sound similar to paper rustling]

2150:59

CAM

[sound similar to paper rustling]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2151:01

CAM-1

I'm saying don't let it get below one seventy eh we're leveling off here anyways so.

2151:18

CAM-2

dang. [sound of laughing] our arrival fuel's supposed to be three point five.

2151:24

CAM-1

* I can't believe that # man that's crazy.

2151:26

CAM-2

[sound of laughing]

2151:27

CAM-1

we've saved a ton of # fuel.

2151:31

CAM-2

#. [sound of laughing]

2151:32

CAM-1

that's what I mean. I'll leave the power up 'til we get... (to level off) ***.

2151:39

CAM-2

we're at V-T.

2151:41

CAM-?

*.

INTRA-COCKPIT COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

2151:49

CAM-1

take a while for the thing to get started up.

2151:51

CAM-2

there's four one oh my man.

2151:53

CAM-2

made it man...

2151:54

CAM-1

yeah...

2151:55

CAM-2

...(five thousand) (feet/complete)...

2151:56

CAM-1

...(five/nine) thousand feet per minute.

2151:56

CAM-2

...(you) can see [sound of laughing]

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

2151:58

CTR-A

Flagship thirty seven zero one contact Kansas City one two five point six seven.

2152:02

RDO-1

twenty five sixty seven you have a good night thirty seven oh one.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2152:04

CAM-2

[sound of laughing] this is * great.

2152:09

RDO-1

Kansas City center good evening Flagship thirty seven zero one four one oh.

2152:12

CTR-B

Flagship thirty seven zero one Kansas City center roger.

2152:12

CAM-2

[sound of laughing]

2152:16

CAM-1you'll get the you'll do the next one to say four one oh. *
yeah baby.

2152:18

CAM

[sound of clunk]

2152:18

CAM-2

[sound of laughing] * four one oh # four one oh.

2152:22

CAM-1

want anything to drink?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2152:24

CAM-2

aw yeah actually I'll take a pepsi.

2152:26

CAM

[sound of clunks]

2152:27

CAM-1

want anything?

2152:28

CAM-2

hmm?

2152:28

CAM-1

you do want?

2152:29

CAM-2

a pepsi if you don't mind.

2152:30

CAM-1

a pepsi? I thought you said a beer man. yeah I'd like one too **.

2152:31

CAM-2

[sound of laughing]

2152:35

CAM-2

is that seal on the liquor cabinet? [sound of laughing]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2152:47

CAM

[sound of click]

2152:49

CAM-?

***. [lower volume]

2153:01

CAM

[sound of click]

2153:07

CAM

[sound of thump]

2153:14

CAM-2#. [sound of laughing] this is the greatest thing no way.
[sound of laughing]

2153:19

CAM-1

you want a can you want a cup we don't have any ice...

2153:20

CAM-2

that's fine.

2153:21

CAM-1

...they're cold as # dude.

2153:23

CAM-2

(yeah that's cool).

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2153:24

CAM-1

accelerating up at all?

2153:26

CAM

[sound of click, similar to soda can opening]

2153:27

CAM-2

[sound of laughing] no man...

2153:28

CAM-1

nothing dude...

2153:28

CAM-2

...it ain't speeding up worth #.

2153:28

CAM-1

...look how high we are.

2153:29

CAM-2

[sound of laughing]

2153:30

CAM-1

this # nose is. look at how nose high we are.

2153:32

CAM-2

I know that's #. dude the # ball's way off man. dude the ball's full off.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2153:39

CAM-1

no #. look at this (ball/bug) dude.

2153:40

CAM-2

it's ***.

2153:42

CAM

[sound of laughing]

2153:42

CTR-B

Flagship thirty seven zero one are you a RJ two hundred?

2153:44

CAM

[sound of clunks]

2153:47

RDO-1

thirty seven zero one that's affirmative.

2153:49

CAM-2

forty four hundred.

2153:50

CTR-B

I've never seen you guys up at forty one there.

2153:51

CAM-2

[sound of laughing]

INTRA-COCKPIT COMMUNICATION

15 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2154:05

CAM-1

thing's losing it...

2154:06

CAM-2

[sound of laughing]

2154:07

CAM-1

...we're losing here. we're gonna be # coming down in a second here dude.

2154:09

CAM-2

[sound of laughing]

2154:10

CAM-1

this thing ain't gonna # hold altitude. is it?

2154:16

CAM-2

it can't man. we # (cruised/greased) up here but it won't stay.

2153:51

RDO-1

yeah we're actually a ah. there's ah. we don't we don't have any passengers on board so we decided to have a little fun and come on up here.

2153:58

CTR-B

I gotcha.

2153:59

RDO-1

this is our actually our service ceiling.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2154:19

CAM-1

yeah that's funny we got up here it won't stay up here.

2154:22

CAM-2

dude it's # losing it. [sound of laughing]

2154:23

CAM-1

yeah.

2154:29

RDO-1

and center thirty seven oh one.

2154:31

CTR-B

go ahead.

2154:32

RDO-1

yeah just as you said it looks like we're not even going to be able to stay up here ah look for maybe ah three nine oh or three seven.

2154:38

CTR-B

Flagship thirty seven oh one stand by.

2154:38

CAM

[sound similar to stick shaker]

2154:39

CAM

[sound similar to auto pilot disconnect]

INTRA-COCKPIT COMMUNICATION

17 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2154:43

CAM-2

what'd he say?

2154:44

CAM-1

I dunno.

2154:45

RDO-1

say again for thirty seven oh one.

2154:47

CAM

[sound similar to stick shaker]

2154:48

CAM

[sound of warbler, similar to stick pusher warning]

2154:49

CAM-1

#.

2154:51

CAM-2

I got it.

2154:52

CAM

[sound similar to stick shaker]

2154:52

CAM

[sound of warbler, similar to stick pusher warning]

INTRA-COCKPIT COMMUNICATION

18 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2154:53

CAM

[sound of tone, similar to altitude alert]

2154:55

CAM

[sound of triple chime, similar to master warning alert]

2154:56

CAM

[sound similar to stick shaker]

2154:56

CAM

[sound of warbler, similar to stick pusher warning]

2154:56

CAM-1

#.

2154:57

CAS

engine oil.

2154:59

CAM-1

#.

2154:59

CAS

engine oil.

2154:53

CTR-B

and Flagship thirty seven zero one. I was off frequency say again?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:00

CAM

[sound of warbler, similar to stick pusher warning, continues for nine seconds]

2155:00

CAM

[sound of increased background noise]

2155:01

CAS

engine oil.

2155:01

CAM-1

come on. come on.

2155:03

CAS

engine oil.

2155:02

CAM

[sound of unidentified chirps]

2155:04

CTR-B

Flagship thirty seven zero one say.

2155:05

CAM

[sound of chime, similar to master caution alert]

2155:06

RDO-1

declaring emergency. stand by.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:07

CAM

[sound of tone, similar to altitude alert]

2155:08

CAM-1

aw #.

2155:09

CAM

[sound of triple chime, similar to master warning alert]

2155:11

CAM

[sound of warbler, similar to stick pusher warning]

2155:11

CAS

engine oil.

2155:12

CAM

[sound similar to decreasing engine RPM]

2155:12

CTR-B

Flagship thirty seven zero one...

2155:13

CAS

engine oil.

2155:14

CTR-B

...descend at pilot's discretion maintain...

2155:15

CAS

engine oil.

INTRA-COCKPIT COMMUNICATION

21 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:17

CAM

[sound of warbler, similar to stick pusher warning]

2155:17

CAS

engine oil.

2155:19

CAS

engine oil.

2155:19

CAM-1

two four zero flight two four zero.

2155:21

CAS

engine oil.

2155:22

CAM-1

the important thing is.

2155:23

CAS

engine oil.

2155:23

CAM-?

we don't have any engines.

2155:24

CAS

engine oil.

2155:15

CTR-B

...flight level two four zero.

INTRA-COCKPIT COMMUNICATION

22 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:25

INT

[channel one, sound of two unidentified beeps]

2155:25

CAM

[sound of increased background noise, similar to air driven generator deployment]

2155:26

CAM

[sound of clunk]

2155:26

CAM-1

#.

2155:26

CAS

engine oil.

2155:28

CAM

[sound of increased background noise, similar to air driven generator operation]

2155:29

CAS

engine oil.

2155:29

CAM-1

A-D-G.

2155:30

CAS

engine oil.

INTRA-COCKPIT COMMUNICATION

23 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:31

CAM-1

pull. pull the handle.

2155:32

CAS

engine oil.

2155:32

CTR-B

everybody standby. Flagship thirty seven zero one the frequency's open.

2155:34

CAS

engine oil.

2155:38

CAM-1

#.

2155:38

CAM-2

* (got deploy/plane). (we got deployment).

2155:39

CAM-1

got the airplane?

2155:39

CAM

[sound of chime, similar to master caution alert]

2155:40

RDO-1

stand by for thirty seven oh one.

INTRA-COCKPIT COMMUNICATION

24 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2155:44

CAM-?

got the A-D-G?

2155:46

CAM-?

got the A-D-G.

2155:53

CAM

[sound of clunks]

2155:57

CAM-1

you gotta be kidding me.

2155:58

CAM

[sound of clunk]

2156:00

CAM-2

all right ahh... (stand by for)/(map light and) dome.

2156:05

CAM

[sound of click]

2156:05

CAM

[sound of chime, similar to passenger seat belt/no smoking sign]

2156:07

CAM-?

#.

INTRA-COCKPIT COMMUNICATION

25 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2156:07

CAM-1

we're still descending aren't we? are we holding altitude?

2156:10

CAM-2

ahh yeah we got it.

2156:11

CAM-1

okay.

2156:12

CAM-2

we've got a little bit of engine (windmill) in one of them.

2156:14

CAM-1

(really)? okay we gotta go to emergency *.

2156:17

CAM-2

we're not holding alt- altitude.

2156:18

CAM-1

we're not?

2156:19

CAM-2

no we're not.

2156:19

CAM-1

okay. ahh flashlights. # (dude).

2156:24

CAM-2

flashlight's in my bag... my bag.

INTRA-COCKPIT COMMUNICATION

26 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2156:26

CAM-1

there's bags all... ** look back here.

2156:30

CAM

[sound of clunk]

2156:33

CAM-1

double engine failure... you holding altitude?

2156:39

CAM-2

ahh no I'm not.

2156:42

CAM-1

okay. continuous ignition on.

2156:45

CAM-1

thrust levers shut off. restart(ed)? shut off.

2156:52

CAM-1

A-D-G power's established. how do you know A-D-G power is established?

2156:56

CAM-2

see select A-C A-D-G.

2156:59

CAM-1

okay then we're gonna' pull. and then you're gonna try stab two trim engage.

INTRA-COCKPIT COMMUNICATION

27 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2157:02

CAM

[sound of triple chime, similar to master warning alert]

2157:04

CAS

cabin pressure.

2157:06

CAM-1

stab trim channel two.

2157:07

CAS

cabin pressure.

2157:08

CAM-1

engaged.

2157:09

CAS

cabin pressure.

2157:09

CAM-1

target airspeed established above flight level three four oh.

2157:11

CAS

cabin pressure.

2157:12

CAM-1

we're below.

2157:13

CAS

cabin pressure.

INTRA-COCKPIT COMMUNICATION

28 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2157:13

CAM-1

point seven Mach.

2157:14

CAM

[sound of tone, similar to gear warning horn, continues until 2200:43]

2157:17

CAM-1

so look for point seven Mach. a hundred eighty.

2157:18

CAM-1

A-D-G. below thirty thousand feet. okay descend below thirty thousand feet.

2157:26

CAM

[sound similar to page turning]

2157:29

CAM-?

okay ***.

2157:36

CAM-1

dude.

2157:46

CAM-2

* # gear's unsafe ***.

2157:52

CAM-1

I'll worry about that later.

INTRA-COCKPIT COMMUNICATION

29 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2157:54

CAM-?

is the gear down or *** unsafe?

2157:58

CAM-1

okay go go descend still.

2158:00

CAM-?

all right.

2158:03

CAM-1

you got a question on (why/what) *.

2158:07

CAM

[sound of clunk]

2158:09

CAM-2

that was a dutch roll I believe.

2158:12

CAM-1

*** it was pulling and pushing...

2158:13

CAM-2

sure.

2158:13

CAM-1

...see the plane start to roll on us.

2158:15

CAM-2

we were descending at two thousand feet per minute.

INTRA-COCKPIT COMMUNICATION

30 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2158:21

CAM-2

we need our oxygen masks.

2158:23

CAM-1

okay as soon as we're abov- below thirty thousand we can start the A-P-U.

2158:30

CAM-?

there you go.

2158:34

CAM

[sound of click]

2158:35

CAM

[sound of chime, similar to master caution alert]

2158:37

CAM-2

go on oxygen?

2158:39

CAM-1

you know what. yeah we need to go on oxygen.

2158:41

CAM

[sound similar to oxygen flow starting in oxygen mask]

2158:52

CAM-?

A-P-U.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2158:52

CAM

[sound of chime, similar to master caution alert]

2159:17

CAM

[sound similar to increased frequency of background noise from air driven generator]

2159:19

CAM

[sound of chime, similar to master caution alert]

2159:21

CAM

[sound similar to oxygen flow in oxygen mask]

2159:23

CAM

[sound of clicks]

2159:24

CAM-1

okay we have power.

2159:25

CAM

[sound of clicks]

2159:33

CAM-1

stow it away.

2159:37

CAM

[sound of clicks]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

2159:44

CAM [sound of chime, similar to master caution alert]

2159:46

CAM [sound of chime, similar to master caution alert]

Time (CDT)

SOURCE**CONTENT**

2159:46

RDO-1 and center Flagship thirty seven oh one.

2159:48

CTR-B Flagship thirty seven oh one go American seven fifty one standby.

2159:51

RDO-1 yeah we're still descending we're gonna need to descend down ah probably lower probably gonna descend down to right now to about thirteen thousand feet is that okay?

2159:58

CTR-B Flagship thirty seven oh one affirmative descend and maintain one three thousand your local altimeter setting is ah... oh stand by.

2200:07

CTR-B two niner six five and ah one three thousand is approved Flagship thirty seven zero one.

2200:12

RDO-1 all right two nine six five thirty seven zero one.

INTRA-COCKPIT COMMUNICATION

33 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2200:17

CAM-1

two nine six five your side.

2200:19

CAM-1

ahh no no no.

2200:22

CAM-2

no no no what do you got... oh heading.

2200:25

CAM-1

yeah.

2200:25

CAM-2

see what you got.

2200:27

CAM-1

yeah yeah it's two nine six five on altimeter setting.

2200:27

CAM-2

okay.

2200:28

CAM-1

when we come through.

2200:30

CAM

[sound similar to page turning]

2200:31

CAM-1

we're gonna have to descend down to ah.

INTRA-COCKPIT COMMUNICATION

34 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2200:33

CAM

[sound similar to page turning]

2200:34

CAM-1

thirteen thousand feet.

2200:35

CAM

[sound similar to page turning]

2200:38

CAM-1th- thirteen okay actually push the nose over. push it over.
let's get above three hundred knots.

2200:43

CAM

[sound of tone, similar to gear warning horn ceases]

2200:46

CAM-2

okay.

2200:47

CAM-1twenty one thousand feet. we need we need... ** check
our airspeed and altitude.

2200:48

CAM-?

three hundred.

2200:57

CTR-Band Flagship ah thirty seven zero one are you able to take
a frequency change at this point?

INTRA-COCKPIT COMMUNICATION

35 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2201:05

CAM-1

I-T-T is ninety degrees Celsius or less. I-T-T is ninety degrees Celsius? no. 'kay it's getting to it. yeah its coming down now.

2201:11

CAM-?

***.

2201:31

CAM-1

I don't think we're gonna need that.

2201:36

CAM-1

* ignition on...

2201:38

CAM-2

yep.

2201:39

CAM-1

...airspeed not less than three hundred knots. you wanna push it up there three hundred knots. altitude loss approximately can be expected from two hundred forty to three hundred knots. I-T-T ninety degrees or less. N two is at least twelve percent... N two...

2201:01

RDO-1

ah thirty seven oh one stand by.

2201:03

CTR-B

roger.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2201:51

CAM-1

...no we're not getting any N two at all. so we're gonna have to. gonna have to go to here. thirteen thousand feet we gotta go down here dude. we're going to use the A-P-U bleed air procedures.

2202:00

CAM

[sound of chime, similar to master caution alert]

2202:04

CAM-?

***.

2202:09

CAM-?

oh #.

2202:10

CAM-1

we need to slow it down. slow the rate of descent down.

2202:14

CAM-1

** target airspeed is established. target airspeed is a hundred ninety knots. hundred and seventy knots. go ahead and pull back to a hundred seventy knots. left and right tenth stage. tenth stage bleeds closed. left and right tenth stage bleeds closed. A-P-U load control valve open. continuous ignition.

2202:31

CAM

[sound of chime, similar to master caution alert]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2202:34

CAM-1

no... keep us going down... oh you know what. actually we can't do that yet.

2202:48

CAM

[sound of clunks]

2202:52

CAM-?

***.

2202:58

CAM-?

the gear?

2202:59

CAM

[sound of clunks]

2203:00

CAM

[sound of clunk]

2203:00

RDO-1

and thirty seven oh one we can change frequency at this time.

2203:06

RDO-1

center thirty seven oh one you there.

2203:09

CTR-B

Flagship thirty seven zero one ah roger I'll have a frequency change for you in just a moment. before I send you what was the nature of your emergency please?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE

CONTENT

Time (CDT)

SOURCE

CONTENT

2203:22

CAM

[sound of chime, similar to master caution alert]

2203:15

RDO-1

ah we had an engine failure up there at altitude it at ah airplane ah went into a stall and one of our engine's failure...

2203:22

RDO-1

...so we're gonna descend down now to start our other engine.

2203:25

CTR-B

okay that's kinda what we were figuring there and ah understand you're controlled flight and ah you're gonna be able to return to normal when you get to lower altitude.

2203:30

RDO-1

ah right now we're not we're- stand by for that. we're descending down to thirteen thousand to start this other engine. we'll tell you.

2203:35

CTR-B

Flagship thirty seven zero one roger. understand controlled flight on a single engine right now and ah I'll go ahead and relay that. you can contact Kansas City center on one three four point five. just advise ah her of your intentions. one three four point five. good day.

2203:50

RDO-1

thirty four five good day.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2204:06

CAM-1

okay (don mask) get on oxygen.

2204:09

CAM

[sound similar to oxygen flow in oxygen mask]

2204:13

INT-1

yeah get on oxygen dude. we're at cabin altitude. I got it. fifteen thousand four hundred. we need to be on oxygen.

2204:26

INT-1

okay it's gonna be from thirteen thousand feet and below target airspeed established it's a hundred seventy knots. left and right tenth bleed will be closed. A-P-U open. continuous ignition check it's on. continuous ignition is on. left or right engine start. let's start number two first. * push. thrust lever at idle. * 'kay yeah th- these are off right now.

2203:52

RDO-1

center Flagship thirty seven zero one's with you ah coming through eighteen thousand for thirteen.

2203:59

CTR-C

Flagship thirty seven zero one Kansas City center roger and advise of any further help you might need.

2204:02

RDO-1

will do thirty seven oh one.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2204:51

INT-1

got another thirteen- three thousand feet to go.

2205:33

INT-1

as soon as we get a thousand you want a hundred and seventy knots like we. that's all we need. so we can pull it up a little bit and slow the rate of descent okay? you with me on this? you clear? you clear? all right we're gonna get this going. don't worry bro. all right? you okay? seriously? all right.

2205:52

INT-1

there you go.

2205:53

INT

[channel three audio ceases through end of recording]

2205:55

INT-1

okay fourteen thousand keep it coming down. don't wanna get too slow on airspeed. look for about a hundred and seventy. it's at least a hundred and seventy. that's your min. thirteen thousand feet okay. right left tenth visually closed.

2206:13

CAM

[sound of tone, similar to gear warning horn]

2206:23

CAM

[sound similar to oxygen mask removal]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE

CONTENT

Time (CDT)

SOURCE

CONTENT

2206:53

CAM-1

back to KASPR?

2206:26

RDO-1

and cent- center thirty seven oh one we're gonna need a little lower ah to start this other engine up so we're gonna go down to about twelve or eleven is that cool?

2206:33

CTR-C

Flagship thirty seven zero one affirmative ah descend and maintain ah you wanna go down to eleven or twelve?

2206:38

RDO-1

ah we'll go down to at least eleven thousand thirty seven oh one.

2206:40

CTR-C

Flagship thirty seven zero one roger descend and maintain one one thousand and just advise you you want to go back to KASPR? do you want to land? what do you want to do?

2206:48

RDO-1

ah just stand by right now we're gonna start this other engine and see make sure if everything's okay.

2206:51

CTR-C

okay.

2206:54

CTR-C

have a lot of choices up ahead Columbia's right up ahead. JEF's up ahead. and they're the best to accommodate you.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2207:01

CAM

[sound of clunk]

2207:02

CAM-1

okay thirteen thousand feet.

2207:04

CAM-1

it says... right left tenth stage closed. they're closed. (A-P-O's/A-P-U isolation's) valve's open. it's open. dude let's check ** ready to start. here goes number one.

2207:17

CAM-1

start. time started.

2207:20

INT

[sound similar to oxygen flow in oxygen mask]

2207:34

INT-1

#.

2207:38

INT-1

let's stop it.

2206:59

RDO-1

roger * thirty seven oh one thank you.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2207:41

INT-1

it says. * right left tenth stage closed. A-P-U L-C valve's open. A-P-U valve's open. right or left tenth stage ah push. right or left engine start push. there goes number two.

2207:59

INT-1

it's starting. right engine start.

2208:04

INT-1

we're not getting any N two.

2208:10

INT-1

aw #.

2208:11

INT

[sound similar to oxygen mask removal]

2208:13

CAM-1

off oxygen.

2208:15

CAM

[sound similar to oxygen mask removal]

2208:17

CAM-1

um. switch.

2208:20

CAM-2

yeah *.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2208:24

CAM

[sound of clunks]

2208:24

CAM-1

put it over there.

2208:26

CAM

[sound of clunks]

2208:30

CAM

[sound of chime, similar to master caution alert]

2208:33

CAM-2

(start switch).

2208:35

CAM-1

hold this.

2208:38

CAM-1

it's still on.

2208:43

CAM-2

you got it?

2208:43

CAM-1

I got it.

2208:46

CAM-?

**.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE

CONTENT

Time (CDT)

SOURCE

CONTENT

2208:49

CAM-1

go to that check pull that check list up.

2208:52

CAM-2

okay.

2208:53

CAM-1

tell her.

2208:55

CAM-1

that's it.

2209:00

CTR-C

Flagship thirty seven zero one what altitude do you want to go down to?

2209:02

CAM-1

tell her we need to get direct to airport neither engine's started right now.

2209:07

CAM

[sound of chime, similar to master caution alert]

2209:06

RDO-2

thirty seven zero one we need direct to any airport. we have a double engine failure.

2209:12

CTR-C

all right you want to go direct to JEF?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2209:14

CAM-1

any airport and closest airport.

2209:15

RDO-2

closest air- air- airport. we're descending fifteen hundred feet per minute we have ah nine thousand five hundred feet left.

2209:21

CTR-C

Flagship thirty seven zero one cleared direct JEF.

2209:23

RDO-2

what is the three letter identifier?

2209:26

CTR-C

J-E-F.

2209:28

RDO-2

K-J-E-F.

2209:32

CAM-1

okay let me see ** start *** both engines.

2209:38

CAM-1

they're closed. tenth stage closed. A-P-U is on.

2209:44

CAM-1

*** getting power.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2209:46

CAM-2

no.

2209:48

CAM-1

*.

2209:49

CAM-2

* right there.

2209:49

CAM-1

power override.

2209:52

CAM-1

** power.

2209:52

CAM-2

okay.

2209:54

CAM-1

let's try this.

2209:56

CAM-2

*.

2210:00

CAM-1

(nah/dead).

2210:05

CAM-1

**. this #. where do we have to go?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2210:06

CAM-2

JEF. J-K-J-E-F.

2210:08

CAM-1

*.

2210:09

CAM-2

right in front of you fifteen miles.

2210:10

CAM

[sound of clicks]

2210:11

CAM-1

seat belt on?

2210:14

CAM

[sound of clunks, similar to crew seat movement]

2210:19

CAM

[sound of clunks]

2210:21

CTR-C

Flagship thirty seven zero one descend at pilot's discretion maintain three thousand they're landing I-L-S runway three zero and...

2210:30

CAM-1

get a frequency. gotta get a frequency.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE

CONTENT

2210:32

CAM-? # *.

Time (CDT)

SOURCE

CONTENT

2210:28

CTR-C ...the winds are two niner zero at six knots.

2210:36

RDO-2 I-L-S three zero. what is the frequency please.

2210:40

CTR-C let me give you the frequency for Mizzou approach is one two four point one.

2210:54

RDO-2 the approach frequency is one two four one or what is the I-L-S frequency?

2210:58

CTR-C let me get you the I-L-S frequency.

2211:00

CAM-1 **.

2211:00

CAM-2 that isn't it.

2211:02

CAM-1 no what is it? say again?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2211:06

CAM

[sound of tone, similar to gear warning horn until 2211:37]

2211:10

CAM-1

ask her... #.

2211:15

CAM-1

(we're in the middle of the) # dark here.

2211:17

CAM-2

yeah we're running.

2211:19

CAM-1

you get her on the radio? talk to her.

2211:20

CTR-C

it's ah one one zero point five.

2211:22

RDO-2

thank you much.

2211:24

CAM-1

one one zero five.

2211:25

CTR-C

Flagship did you get that? one one zero point five.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2211:30

CAM-2

going to green needles?

2211:31

CAM-1

yeah.

2211:33

CAM

[sound of click]

2211:34

INT

[channel three, low volume, morse code identifier for ILS three zero at JEF]

2211:37

CAM-2

okay should we try starting her up?

2211:39

CAM-1

yeah. yeah you might as well. try it dude.

2211:42

CAM-2

* (open).

2211:43

CAM-1

I dunno. #.

2211:27

RDO-2

one one zero five.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2211:44

CAM-2

I dunno if this thing is still starting.

2211:46

CTR-C

Flagship thirty seven zero one M-I-A is twenty seven hundred.

2211:51

RDO-2

roger that thanks.

2211:52

CAM-1

what is M-I-A?

2211:55

CAM-2

(I don't know man). ** # (start).

2211:59

INT

[sound of squeal, similar to microphone feedback]

2212:01

CAM-?

* #.

2212:03

CAM-?

* #.

2212:05

CAM-2

why isn't the # engine going anywhere?

INTRA-COCKPIT COMMUNICATION

53 of 61

AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2212:07

CAM-1

I dunno. we're not getting any N two.

2212:08

INT

[sound of squeal, similar to microphone feedback]

2212:09

CAM-2

we're not?

2212:10

CAM-1left engine oil pressure. for some reason it's shut down.
I-T-T N two.

2212:16

CAM-1

I don't get it either.

2212:19

CAM-1

ask her how we look.

2212:24

CAM-1

ask her how we look.

2212:24

RDO-2

thirty seven zero one. how do we look for the airport?

2212:27

CTR-Cokay the airport is at your twelve o'clock and okay let's
let's...

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2212:31

CAM-1

** here.

2212:32

CTR-C

...make that eleven o'clock... and eight miles...

2212:37

CAM-1

how do we look for the runway?

2212:40

CTR-C

...okay from you it is a three sixty heading.

2212:44

INT

[sound of squeal, similar to microphone feedback]

2212:45

CAM-1

three sixty heading. * turn in now?

2212:51

CTR-C

Flagship thirty seven zero one three sixty heading eight miles.

2212:54

CAM-1

we're turning left.

2212:57

CAM

[sound of clunks]

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2212:59

CAM-1

turn left three sixty heading. are we gonna make this airport? **.

2213:04

CAM

[sound of clunks]

2213:06

CAM-2

* # runway.

2213:07

INT

[sound of squeal, similar to microphone feedback]

2213:09

CAM-1

we don't have the airport in sight. we're heading three six zero now. do you have anything further information.

2213:14

CAM

[sound of clunks]

2213:17

CAM-1

you try yours. I'm not getting in t- through to her.

2213:20

RDO-2

how do we look now three six heading we do not have airport in sight.

2213:24

CTR-C

and keep turning left. it's now about a three fifty heading.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2213:33
CAM-1 where? where?

2213:35
CAM-2 straight ahead.

2213:36
CAM-1 straight ahead. where's the runway?

2213:37
CAM-1 are we lined up for the runway?

2213:28
RDO-2 turning three fifty.

2213:32
RDO-2 I have the beacon in sight...

2213:34
RDO-2 ...twelve o'clock.

2213:36
RDO-2 * head.

2213:36
CTR-C *ship thirty seven zero one roger.

2213:38
RDO-2 I do not see the runway. I have the beacon...

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2213:40

CAM

[sound of tone, similar to gear warning horn]

2213:41

RDO-2

...where is the runway?

2213:44

CAM-1

come on lady.

2213:47

CAM-1

talk to her again.

2213:49

RDO-2

Flagship thirty seven zero one have the beacon twelve o'clock the runway is at heading zero three zero?

2213:55

CTR-C

Flagship thirty seven zero one the beacon is on the far side of the runway.

2213:59

RDO-2

okay I think I have the approach end in.

2214:02

CAM-2

sight. here it is at twelve o'clock right.

2214:03

CAM-1

(right)? where?

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2214:03

CAM-2

straight ahead.

2214:04

CAM-1

straight ahead. we're on the approach?

2214:07

CAM-2

yes.

2214:08

CAM-2

just.

2214:10

CAM-2

turn turn to the right a little bit.

2214:11

CAM-1

turn to the right a little bit?

2214:12

CAM-2

stay right there.

2214:14

CAM-1

right here?

2214:14

CAM-2

yeah.

2214:17

CAM-1

dude we're not gonna make this # thing.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2214:25

CAM-2

think we're okay.

2214:25

CAM

[sound of clicks]

2214:34

CAM-1

where is it? I don't know.

2214:36

CAM-2

we're not gonna make it man we're not gonna make it.

2214:38

CAM-1

is there a road? tell her we're not gonna make this runway.

2214:39

RDO-2

we're not gonna make the runway. is there a road?

2214:43

CAS

too low gear.

2214:46

CAM-1

let's keep the gear up. #. I don't want to go into houses here.

2214:51

CAM-2

road right there.

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2214:52

CAM-1

where?

2214:52

CAM-2

turn turn...

2214:53

CAM-1

turn where?

2214:53

CAM-2

...turn to your left turn to your left.

2214:54

CAS

too low gear.

2214:56

CAM-1

(I see it/I can't).

2214:58

CAS

too low terrain terrain...

2214:59

CAM-1

can't make it.

2215:00

CAS

...whoop whoop pull up. whoop whoop pull up...

INTRA-COCKPIT COMMUNICATION

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AIRCRAFT-TO-GROUND COMMUNICATION

Time (CDT)

SOURCE**CONTENT**

Time (CDT)

SOURCE**CONTENT**

2215:03

CAM-1

aw #. we're gonna hit houses dude.

2215:05

CAS

...whoop whoop pull up.

2215:06

CAM

[sound similar to impacts]

2215:07

END OF TRANSCRIPT**END OF RECORDING**