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

GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

CEN09MA142

By
Christopher Babcock

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
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April 7, 2009

Cockpit Voice Recorder - 12

Group Chairman's Factual Report
By Christopher Babcock

A. EVENT

Location:	Lubbock, Texas
Date:	January 27, 2009, 0437 Central Standard Time (CST)[1]
Aircraft:	Avions de Transport Regional ATR-42-320, N902FX
Operator:	Empire Airlines, Flight 8284
NTSB Number:	CEN09MA142

B. GROUP

A group was convened on February 3, 2009.

Chairman:	Christopher Babcock Aerospace Engineer National Transportation Safety Board
Member:	Donald Flanigin Vice President Customer Support ATR
Member:	Todd Gunther Air Safety Investigator National Transportation Safety Board
Member:	Bob Hendrickson Air Safety Investigator Federal Aviation Administration
Member:	Steve Martini Chief Pilot Empire Airlines
Member:	Guilhem Nicolas Air Safety Investigator Bureau d'Enquêtes et d'Analyses

[1] All times are expressed in local Central Standard Time unless otherwise noted.

C. SUMMARY

On January 27, 2009, at approximately 0437 central standard time (CST), N902FX, an Aerospatiale Avions de Transport Regional ATR-42-320, operating as Empire Airlines flight 8284, sustained substantial damage when it collided with terrain short of the runway while executing the Instrument Landing System (ILS) Runway 17R approach at Lubbock Preston Smith International Airport, Lubbock, Texas. The airline transport pilot rated captain was seriously injured and the commercial rated first officer sustained minor injuries. An instrument flight rules flight plan was filed for the flight that departed Fort Worth Alliance Airport, Fort Worth, Texas, enroute to Lubbock. Instrument meteorological conditions prevailed for the supplemental cargo flight operated under 14 Code of Federal Regulations Part 121. A tape cockpit voice recorder (CVR) was sent to the National Transportation Safety Board's Audio Laboratory for readout. The CVR group meeting convened on February 3, 2009, and a full transcript was prepared for the 30-minute, 43-second digital recording (see attached).

D. DETAILS OF INVESTIGATION

On January 29, 2009, the NTSB Vehicle Recorder Division's Audio Laboratory received the following CVR:

Recorder Manufacturer/Model: **Fairchild Model A-100A**
Recorder Serial Number: **59653**

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 A-100A, records 30 minutes of analog audio on a continuous loop tape in a four-channel format: one channel for each flight crew, one channel for the cockpit area microphone (CAM), and one channel for interphone, public address, or an additional crewmember.

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, 43-second recording consisted of three channels of useable audio information. Each channel's audio quality[2] is indicated in the table. Notably, channel number four did not contain any audio information (nor was it required by Federal regulations). The recording contains events from the flight's cruise, descent, approach, and attempted landing, terminating several minutes after the accident.

[2] See attached CVR Quality Rating Scale.

Table 1 CVR channel contents and quality

Channel	Content/Source	Quality
1	Captain	Excellent
2	First Officer	Excellent
3	CAM	Good
4	None	N/A

Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR). Specifically, the last five radio transmissions that the aircraft made were correlated to the radio transmit microphone key parameter from the FDR. Each of the five radio transmissions acted as an anchor point for a linear interpolation between the remaining CVR events. Using a partial transcript from the FAA air traffic control tower, the UTC time of the final radio transmission from the accident aircraft was linked to the corresponding CVR event. The CVR and FDR times were offset to reflect the local CST of the accident.

Description of Audio Events

The recording and transcript begin at 04:10:52 and cover events from cruise, descent, approach, and accident sequence. The recording ends at 04:41:35.

As part of the Safety Board's accident investigation process, the flight crew was invited to audition the CVR recording and suggest corrections or additions. They have chosen not to audition the recording.

Christopher Babcock
Aerospace Engineer
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 Fairchild Model A-100A tape CVR, serial number 59653, installed on an Empire Airlines ATR-42-320 (N902FX), which crashed during landing at Preston Smith International Airport in Lubbock, TX.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from N902FX
CTR	Radio transmission from Dallas center controller
APR	Radio transmission from the Lubbock approach controller
TWR	Radio transmission from the Lubbock tower controller
OPS	Radio transmission from Lubbock FedEx Operations
TAWS	Terrain Awareness and Warning System sound source
-1	Voice identified as the captain
-2	Voice identified as the first officer
-?	Voice unidentified
*****	Unintelligible word
#	Expletive
@	Non-pertinent word
( )	Questionable insertion
[ ]	Editorial insertion

Note 1: Times are expressed in CST.

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.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:10:52 **START OF RECORDING** **START OF TRANSCRIPT**			
04:13:04 **HOT**	[sound of click]		
		04:14:08 **CTR**	Empire eighty two eighty four.
		04:14:10 **RDO-1**	go ahead.
		04:14:11 **CTR**	Empire eighty two eighty four they said that just about anything in use except for the uh back course. winds are out of the north. eight two six runways are closed uh but I couldn't get a definite answer out of them.
		04:14:27 **RDO-1**	eight and two six are closed?
		04:14:30 **CTR**	Empire eighty two eighty four that's what he said.
04:14:34 **HOT-2**	huh...so that leaves—.		
		04:14:38 **RDO-1**	pretty much leaves the runway three five left.
04:14:40 **HOT-2**	one seven right.		
		04:14:41 **CTR**	Empire eighty two eighty four roger.
04:14:45 **HOT-2**	yeah.		
04:14:45 **HOT-1**	yeah except for he says the winds are out of the north.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:14:48 **HOT-2**	yeah but he said that their back course isn't an option which is the only runway— the only approach for three five.		
04:14:55 **HOT-1**	what's that? oh. that is. oh.		
04:14:59 **HOT-1**	well it looks like one seven left— right is the only thing available then.		
04:15:03 **HOT-2**	that's what it sounded like but he didn't really sound like he uh knew all that much either. [sound of laughter]		
04:15:08 **HOT-1**	yeah.		
04:15:13 **HOT-1**	two ninteen it looks like for the—.		
04:15:17 **HOT-2**	for POLLO.		
04:16:28 **HOT-2**	aw crap.		
04:16:29 **HOT-1**	what?		
04:16:30 **HOT-2**	I uh screwed up. I always do that...RNAV NAV.		
04:18:10 **HOT-2**	alright I guess we can go ahead and start down.		
04:18:12 **HOT-1**	alright.		
		04:18:17 **RDO-1**	Empire eighty two eighty four is vacating uh one four thousand for eight thousand.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:18:22 **CTR**	Empire eighty two eighty four roger.
04:18:43 **HOT-2**	alright so descent checklist.		
04:18:46 **HOT-1**	yup. comin' right up.		
04:18:52 **HOT-1**	uh descent...uh anti-ice is on level three. altimeters three zero one three on the left.		
04:19:00 **HOT-2**	on right.		
04:19:00 **HOT-1**	CCAS is clear. belts and harnesses?		
04:19:04 **HOT-2**	on right.		
04:19:05 **HOT-1**	on the left. descent check complete. approach check. landing lights are on uh cabin altitude is set and looks like it's descending nicely over there. flight instruments and radios?		
04:19:20 **HOT-2**	so you're gonna do this?		
04:19:22 **HOT-1**	want me to do it?		
04:19:23 **HOT-2**	sure.		
04:19:24 **HOT-1**	alright. be mine the ILS we'll get vectors over to it and it's gonna beeee the thirty three card. one oh six is the icing speed...one oh six one twelve...uh twenty three and forty three.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:19:51 **HOT-1**	in the event of a miss it'll be uh climb to thirty seven and a right turn to five hundred feet via the Lubbock one fourteen radial to HYDRO intersection and hold annnd that looks like a parallel entry.		
04:20:17 **HOT-2**	sounds good to me.		
04:20:21 **HOT-1**	climb to thirty seven and a left turn to five out to one fourteen. alright very good. uh questions comments?		
04:20:28 **HOT-2**	acceleration altitude?		
04:20:31 **HOT-1**	uhh.		
04:20:33 **HOT-2**	one seven— where are we? right will be thirty eight eighty.		
04:20:38 **HOT-1**	what is it?		
04:20:39 **HOT-2**	thirty eight eighty.		
04:20:39 **HOT-1**	thirty eight eighty. okay very good.		
04:21:02 **HOT-2**	[sound similar to yawning]		
04:21:19 **HOT-1**	and uh descent approach check is complete.		
04:21:24 **HOT-2**	roger.		
		04:22:06 **CTR**	Empire eighty two eighty four contact Lubbock Approach one one niner point two.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:22:11 **RDO-1**	ninteen two Empire eighty two eighty four good morning.
04:22:16 **HOT**	[sound similar to frequency change tone]		
		04:22:19 **RDO-1**	morning Lubbock Empire eighty two eighty four is out of one zero thousand for eight thousand.
		04:22:25 **APP**	Empire eighty two eighty four Lubbock Approach. [sound of tone]
04:22:29 **HOT-1**	yup. he needs to answer that phone.		
		04:22:32 **APP**	Empire eighty two eighty four Lubbock Approach descend at pilot's discretion maintain six thousand. I haven't had any icing reports. special weather observation at uh one zero zero eight Zulu. wind three five zero at one zero visibility two. light freezing drizzle mist. ceiling five hundred overcast. temperature minus eight dewpoint minus niner. altimeter three zero one two. advise uh braking action advisories are in effect. advise what approach you'd want. runway eight two six is closed.
		04:23:05 **RDO-1**	well that pretty much uh leaves us with one seven right sir.
		04:23:14 **APP**	Empire eighty two eighty four expect ILS runway one seven right.
		04:23:17 **RDO-1**	roger that.
04:23:19 **HOT-1**	uh—.		
04:23:19 **HOT-2**	right.		
04:23:21 **HOT-1**	two miles five hundred feet.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:23:22 **HOT-2**	yeah I can do it then.		
04:23:23 **HOT-1**	yup all yours.		
04:23:24 **HOT-2**	cool.		
04:23:33 **HOT-2**	uh uh did you call—.		
		04:23:33 **APP**	Empire eighty two eighty four mu readings for runway three five left were twenty four twenty five twenty three.
		04:23:40 **RDO-1**	roger.
04:23:48 **HOT-2**	what was that he just said?		
04:23:50 **HOT-1**	RVR?		
04:23:51 **HOT-2**	oh RVR.		
04:23:51 **HOT-1**	did he say RVR reading?		
04:23:54 **HOT-2**	he said something. I— I didn't catch what he said.		
		04:23:58 **APP**	Empire eighty two eighty four fly heading two niner zero vector for the approach.
		04:24:02 **RDO-1**	two nine zero Empire eighty two eighty four and what was that touchdown zone RVR you said again?

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:24:08 **APP**	well RVR's more than six thousand runway one seven right. and the mu readings for runway three five left touchdown twenty four. midpoint uh twenty five. rollout twenty three.
		04:24:21 **RDO-1**	okay very good. I got you now.
04:24:23 **HOT-2**	what is it? m—.		
04:24:24 **HOT-1**	oh it's the braking action yeah.		
04:24:25 **HOT-2**	oh braking action.		
04:24:27 **HOT-2**	I got ya. um.		
04:24:30 **HOT-1**	yeah when we get down there just don't do anything like— just keep it going down the center line of the runway. and don't be touching any brakes and make sure that we get two low pitch stops.		
04:24:39 **HOT-2**	okay.		
04:24:40 **HOT-1**	yeah.		
04:24:43 **HOT-2**	did you call ops yet?		
04:24:45 **HOT-1**	no I didn't. uh they're on thirty one ninety two?		
04:24:49 **HOT-2**	yeah.		
04:24:51 **HOT-2**	that's the normal one isn't it? yeah that's it.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:24:53 **HOT-1**	yeah.		
		04:24:57 **RDO-1**	ops eighty two eighty four is like fifteen minutes out.
		04:25:13 **RDO-1**	Lubbock ops eighty two eighty four.
		04:25:17 **OPS**	go ahead eighty two eighty four this is Lubbock.
04:25:17 **HOT**	[sound similar to altitude alert]		
		04:25:19 **RDO-1**	yup uh we're like fifteen minutes out.
		04:25:22 **OPS**	copy that uh eighty two eighty four. we didn't think you guys were comin' in. uh do you know if you 'll be able to depart?
		04:25:29 **RDO-1**	okay uh part of that is broken and unreadable. say again.
		04:25:34 **OPS**	I said we didn't think you guys were coming in this morning. you know if uh you guys are gonna be able to depart?
		04:25:40 **RDO-1**	you got deicing right?
		04:25:43 **OPS**	yeah ten four.
		04:25:44 **RDO-1**	well we don't know yet. we're gonna have to talk about it when we get on the ground.
		04:25:49 **OPS**	okey doke well we'll see you guys in about fifteen minutes.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:25:52 **RDO-1**	roger that.
04:25:53 **HOT-1**	good grief.		
04:25:54 **HOT-2**	do they have icing?		
04:25:55 **HOT-1**	well she says oh we didn't know that you guys were coming. I'm thinking doesn't— doesn't AFW— I mean didn't I call back the numbers?		
04:25:58 **HOT-2**	[sound of laughter]		
04:26:03 **HOT-2**	yeah...huh...that's great...does that mean we can just go straight to uh Midland? [sound of laughter]		
04:26:14 **HOT-1**	don't we wish.		
04:26:18 **HOT-1**	oh we didn't know you were coming. oh for Gods sake.		
04:26:23 **HOT-2**	exactly.		
04:26:30 **HOT-1**	let's see since we're on a heading we'll go with this. and one oh nine two.		
04:26:37 **HOT-2**	that's the...Midland VOR. so thirteen—.		
04:26:42 **HOT-1**	it is—.		
04:26:43 **HOT-2**	where are we here?		
04:26:45 **HOT-1**	uh it is one oh nine five.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:26:47 **HOT-2**	one oh nine five for the localizer.		
04:26:51 **HOT-1**	there we go.		
04:26:53 **HOT-2**	one oh nine five set.		
04:26:56 **HOT-1**	and we'll put in—. it is—.		
04:27:01 **HOT-2**	POLLO.		
04:27:02 **HOT-1**	it is I-L-B-B.		
04:27:07 **HOT-2**	cool.		
04:27:26 **HOT-1**	it's like four miles or something. five point five. I'll buy that.		
04:27:34 **HOT-1**	let's see— we're oh we're on heading now right?		
04:27:35 **HOT-2**	we're on heading yeah.		
04:27:40 **HOT-1**	and...what is it uh one seventy two.		
04:27:44 **HOT-2**	and.		
04:28:00 **HOT-2**	very good thank you.		
04:28:01 **HOT-1**	you're welcome.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:28:08 **HOT-1**	what was that one burp? was that a big chunk of ice going into one of our quality Pratt & Whitney one hundreds out there?		
04:28:14 **HOT-2**	that's what I'm guessing it was. [sound of laughter]		
04:28:17 **HOT-1**	nice. let's see—.		
04:28:20 **HOT-2**	that was a little strange.		
04:28:21 **HOT-1**	yeah *.		
04:28:51 **HOT-2**	alright.		
04:29:13 **HOT-1**	yeah one of the guys told me one time that he was here in Lubbock and it was snowing.		
04:29:18 **HOT-2**	weird.		
		04:29:35 **APP**	Empire eighty two eighty four dec— descend and maintain five thousand.
		04:29:38 **RDO-1**	five thousand eighty two eighty four.
04:29:43 **HOT-2**	five thousand set.		
04:29:48 **HOT**	[sound similar to altitude alert]		
04:29:51 **HOT-1**	one to go.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:29:52 **HOT-2**	one to go.		
04:30:15 **HOT**	[sound similar to master caution single chime]		
04:30:21 **HOT-1**	wow that was a hell of a change.		
04:30:23 **HOT-2**	no kidding.		
		04:30:35 **APP**	Empire eighty two eighty four turn left heading two six zero.
04:30:36 **HOT**	[sound similar to altitude alert]		
		04:30:38 **RDO-1**	two six zero eighty two eighty four.
04:30:41 **HOT-2**	two six zero...ALT star.		
04:30:48 **HOT-1**	two six zero.		
		04:31:25 **APP**	Empire eighty two eighty four turn right heading two eight zero.
		04:31:29 **RDO-1**	two eight zero eighty two eighty four.
		04:31:33 **APP**	wind change between six and five thousand from the south to the north.
04:31:36 **HOT-2**	hah.		
		04:31:37 **RDO-1**	roger.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:31:39 **RDO-1**	yeah the uh the temperature actually uh dropped uh 'bout eight degrees in that amount of time as well.
		04:31:47 **APP**	yeah you were— you had a— at six thousand you had a south wind blowin' about fifteen degrees to the north and er pushing you off that g— off course that much and when at five thousand it went exactly the opposite.
		04:32:01 **RDO-1**	we concur.
04:32:02 **HOT-2**	[sound of laughter]		
04:32:07 **HOT-2**	my goodness.		
		04:32:19 **RDO-1**	when they sent me down here they said that I would uh I'd find things unusual.
		04:32:24 **APP**	that's— that's west Texas weather for sure.
04:32:27 **HOT-2**	[sound of laughter]		
04:32:51 **HOT-2**	can you ID it for me really quick?		
04:32:53 **HOT-1**	yeah.		
04:32:53 **HOT-2**	thanks.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:33:00 **I-LBB**	[sound of I-LBB morse code identifier]
		04:33:04 **APP**	Empire eighty two eighty four turn seven miles from the outer marker. turn left heading two one zero. maintain five thousand until established on the localizer. cleared ILS runway one seven right approach.
		04:33:13 **RDO-1**	five thousand two ten until established and cleared for the ILS Empire eighty two eighty four.
04:33:19 **HOT-1**	you are cleared for the approach and you are identified.		
04:33:21 **HOT-2**	approach...alright thank you.		
		04:33:26 **I-LBB**	[sound of I-LBB morse code identifier]
04:33:33 **HOT-1**	course alive on the left.		
04:33:35 **HOT-2**	LOC star.		
04:33:35 **HOT-1**	and you're ten miles out. we probably better get this thing uh squared away here.		
04:33:39 **HOT-2**	okay.		
04:33:41 **HOT-1**	annnnd there we go.		
04:33:44 **HOT-2**	alright.		
		04:33:52 **APP**	Empire eighty two eighty four contact tower one two zero point five.

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
		04:33:55 **RDO-1**	twenty point five thanks a lot. we'll see you on the way out.
		04:33:58 **APP**	roger.
04:33:59 **HOT**	[sound similar to frequency change tone]		
		04:34:01 **RDO-1**	Empire eighty two eighty four is uh checkin' in nine out on the localizer inbound.
		04:34:06 **TWR**	Empire eighty two eighty four Lubbock Tower runway one seven right clear to land. winds zero one ze ro at eight.
		04:34:11 **RDO-1**	roger clear to land.
04:34:14 **HOT-2**	alright...go.		
04:34:24 **HOT-2**	flaps fifteen gear down landing check.		
04:34:29 **CAM**	[sound similar to landing gear deployment]		
04:34:33 **HOT-1**	alright awww landing check. start selector is continuous relight. power management is in takeoff. icing AOA is on landing gear confirmed three green.		
04:34:43 **HOT-2**	glideslope star.		
04:34:48 **HOT-2**	confirmed.		
04:34:48 **HOT-1**	uh let's see we should have glideslope star.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:34:52 **HOT-2**	*.		
04:34:52 **HOT-1**	very good...and flaps condition levers to go.		
04:34:58 **HOT**	[sound similar to altitude alert]		
04:34:58 **HOT-2**	alright ah dangit.		
04:35:01 **HOT**	[sound of 0.3 second duration whistle increasing frequency from approximately 835 to 1050 Hz]		
04:35:03 **HOT-2**	what the heck is going on?		
04:35:04 **HOT-1**	you know what? we have no flaps.		
04:35:08 **HOT-2**	aw #.		
04:35:09 **HOT-1**	#.		
		04:35:10 **LB**	[sound similar to outer marker]
04:35:15 **CAM**	[sound of click]		
04:35:16 **HOT-1**	uhh.		
04:35:19 **HOT-2**	*.		
04:35:22 **TAWS**	one thousand.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:35:23 **HOT-2**	okay.		
04:35:28 **HOT-1**	what the hell?		
04:35:30 **HOT**	[sound similar to stall warning and stickshaker lasting 1.1 seconds]		
04:35:31 **HOT-2**	aw #.		
04:35:31 **HOT-1**	yeah don't do that.		
04:35:32 **CAM**	[sound similar to stall warning lasting 0.3 seconds]		
04:35:34 **HOT-2**	alright.		
04:35:36 **HOT-1**	just keep flying the airplane. okay.		
04:35:40 **HOT-2**	should I go around?		
04:35:41 **HOT-1**	no.		
		04:35:41 **TWR**	winds zero one zero at eight.
04:35:43 **HOT-1**	keep descending.		
04:35:44 **HOT-2**	we're getting pretty close here. [straining]		
04:35:45 **HOT-1**	what's that? you want me to finish it?		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:35:47 **HOT-2**	yes please.		
04:35:48 **HOT-1**	okay my airplane.		
04:35:49 **HOT-2**	your controls.		
04:35:50 **HOT-?**	[sound of heavy breathing]		
04:35:52 **HOT-2**	alright you got power.		
04:35:53 **HOT**	[sound similar to altitude alert]		
04:35:58 **TAWS**	five hundred.		
04:36:00 **HOT-1**	aw #.		
04:36:00 **HOT**	[sound similar to stall warning and stickshaker lasting 0.9 seconds]		
04:36:00 **TAWS**	pull up. pull up.		
04:36:02 **HOT-1**	okay.		
04:36:04 **HOT-2**	there's the runway.		
04:36:15 **HOT-2**	alright your—.		
04:36:17 **HOT-1**	max RPM.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:36:17 **HOT-2**	max RPM.		
04:36:19 **CAM**	[sound similar to RPM increase]		
04:36:19 **HOT**	[sound similar to stall warning and stickshaker lasting 0.5 seconds]		
04:36:20 **HOT**	[sound similar to stall warning and stickshaker lasting 5.4 seconds]		
04:36:22 **HOT-2**	oh #.		
04:36:25 **HOT-1**	#.		
04:36:25 **HOT-2**	#. [straining]		
04:36:26 **CAM**	[sound of beep]		
04:36:27 **CAM**	[sound of impact]		
04:36:28 **CAM**	[sound of grinding and scraping]		
04:36:29 **CAM**	[sound similar to stall warning]		
04:36:32 **CAM**	[sound of continuous repetitive chime continues until end of recording]		
04:36:43 **CAM**	[sound similar to occupants moving around in cockpit]		
04:36:45 **HOT-1**	get out of the airplane. get out of the airplane.		

INTRA-AIRCRAFT COMMUNICATION		AIR-GROUND COMMUNICATION	
TIME and SOURCE	**CONTENT**	**TIME and SOURCE**	**CONTENT**
04:36:48 **CAM**	[sound of scraping stops]		
04:36:52 **CAM-1**	go out the— go out the hatch.		
04:37:10 **CAM-1**	there's a fire on the right hand side. go out the left.		
04:37:16 **CAM-1**	no you know what—.		
04:37:17 **CAM-2**	what.		
04:37:17 **CAM-1**	when you get out can you get out—.		
04:37:25 **CAM**	[sound similar to door opening]		
04:37:27 **CAM-1**	*.		
04:41:35 **END OF TRANSCRIPT** **END OF RECORDING**			