

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



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

DCA16IA200

**By
Bill Tuccio, Ph.D.**

WARNING

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

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

October 19, 2016

Cockpit Voice Recorder

Group Chairman's Factual Report
By Bill Tuccio, Ph.D.

1. EVENT SUMMARY

Location: Rapid City, South Dakota
Date: July 7, 2016
Aircraft: Airbus A320, Registration N333NW
Operator: Delta Airlines, Inc., Flight 2845
NTSB Number: DCA16IA200

On July 7, 2016, at 2042 mountain daylight time (MDT), Delta flight 2845, an Airbus 320 registration N333NW, landed on runway 13 at Ellsworth Air Force Base (RCA), Rapid City, South Dakota. The flight was a regularly scheduled passenger flight from Minneapolis, Minnesota, with the intended destination of Rapid City Regional Airport (RAP), Rapid City, South Dakota. Visual weather conditions prevailed. There was no damage to the airplane, and no injuries to the 6 crew members and 123 passengers. The aircraft was operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 121 on an instrument flight rules flight plan. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group meeting convened on August 8, 2016, and a transcript was prepared for the 2-hour, 4-minute digital recording (see attached).

2. GROUP

Chairman: Dr. Bill Tuccio
Aerospace Engineer
NTSB

Member: Bob Hendrickson
Senior Air Safety Investigator
Federal Aviation Administration

Member: Captain Michael T. Schilz
Director, Safety Information & Analysis Programs
Air Line Pilots Association, International

Member: Carl G. Lindberg
FOQA Gatekeeper/Flight Safety
Delta Air Lines, Inc.

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Honeywell 6022**
Recorder Serial Number: **CVR120-07037**

3.1 CVR Carriage Requirements

Per federal regulation, turbine engine powered aircraft operating under 14 CFR Part 121 must be equipped with a CVR that records a minimum of the last 2 hours of aircraft operation; this is accomplished by recording over the oldest audio data. When the CVR is deactivated or removed from the airplane, it retains only the most recent 2 hours of CVR operation.

3.2 Recorder Description

This model CVR, the Honeywell 6022, is a solid state CVR that records 120 minutes of digital audio. Specifically, it contains a 2-channel recording of the last 120 minutes of operation and separately contains 3-channel recording of the last 30 minutes of operation. The 120-minute portion of the recording is comprised of one channel that combines three audio panel sources and a second channel that contains the cockpit area microphone (CAM) source. The 30-minute portion of the recording contains 3 channels of audio information: one channel for each flight crew and one channel for a cockpit observer.

3.3 Recorder Damage

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

3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1.¹

Table 1. Audio Quality.

Channel	Content/Source	Quality	Duration
CAM	CAM	Excellent	120 min
MP	Mixed-Audio: Captain, First Officer, Passenger Address System	Excellent	120 min
1	Captain	Excellent	30 min
2	First Officer	Excellent	30 min
3	Passenger Address System	Excellent	30 min

3.5 Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR) for the two flights on the CVR: the event flight and the subsequent reposition flight from RCA to RAP.

¹ See attached CVR Quality Rating Scale.

3.5.1 Event Flight

Four radio transmissions recorded on the CVR at 4244.7, 4366.0, 4412.7, and 4440.9 CVR Elapsed Time (time from the start of the 2-hour recording) were correlated to the radio transmit microphone key parameter for the same transmissions on FDR at 74251.1640625, 74373.1640625, 74419.1640625, and 74448.1640625 (seconds past midnight, MDT). Each of the four radio transmissions acted as an anchor point for a linear interpolation between the CVR and FDR. The interpolation resulted in the following relationship for the event flight:

$$\text{CVR MDT (seconds past midnight)} = \text{CVR Elapsed Time} + 70006.3 \text{ seconds}$$

3.5.2 Reposition Flight

Four radio transmissions recorded on the CVR at 5984.1, 6016.0, 6189.6, 6877.1 CVR Elapsed Time were correlated to the radio transmit microphone key parameter for the same transmissions on FDR at 83546.1640625, 83578.1640625, 83752.1640625, and 84439.1640625 (seconds past midnight, MDT). Each of the four radio transmissions acted as an anchor point for a linear interpolation between the CVR and FDR. The interpolation resulted in the following relationship for the reposition flight:

$$\text{CVR MDT (seconds past midnight)} = \text{CVR Elapsed Time} + 77561.7 \text{ seconds}$$

3.6 Description of Audio Events

The recording began at 1926:46 MDT as the aircraft was departing Minneapolis-St. Paul International Airport (MSP). During the flight from MSP to RCA, the captain was acting as the pilot flying and the first officer acted as the pilot monitoring.

After landing at RCA, at 2052:03 MDT, power was removed from the CVR for about 2 hours. Power was briefly applied to the CVR for about 2 minutes, and then power was again removed from the CVR for about 20 minutes. At 2300:24.9 MDT, power was again applied to the CVR and remained so until the end of the recording. Local time was not determined during the 2-minute power application between known times of 2052:03 MDT and 2300:24.9 MDT.

During the reposition flight from RCA to RAP, the first officer was acting as the pilot flying and the captain acted as the pilot monitoring. The recording ended at 2337 MDT on the ground at RAP.

As part of the Safety Board's accident investigation process, the flight crew was invited to review the CVR transcript and suggest corrections or additions. They declined the invitation.

Attachment I

CVR Quality Rating Scale

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

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

Transcript of a Honeywell 6022 solid-state cockpit voice recorder, serial number CVR120-07037, installed on an Delta Airlines Airbus A320 (N333NW), which landed at the wrong airport in Rapid City, South Dakota.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
INT	Flight crew intercom voice or sound source
RDO	Radio transmissions from N333NW
ATIS	Automatic Terminal Information Service
CTR-DEN	Radio transmission from Denver center controller
CTR-MSP	Radio transmission from Minneapolis center controller
DEP-MSP	Radio transmission from Minneapolis approach controller
APR-RCA	Radio transmission from Ellsworth Air Force Base approach controller
TWR-MSP	Radio transmission from Minneapolis airport tower controller
TWR-RAP	Radio transmission from Rapid City Regional Airport tower controller
TWR-RCA	Radio transmission from Ellsworth Air Force Base tower controller
MISC-AC	Radio transmission from a miscellaneous aircraft
AUTO	A computer generated voice onboard the aircraft
PA	Passenger Address System
-1	Voice identified as the captain
-2	Voice identified as the first officer
-3	Voice identified as any of the flight attendants
-?	Voice unidentified
*	Unintelligible word
#	Expletive
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in mountain daylight time (MDT).

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**
19:26:46.3 MDT
START OF RECORDING
START OF TRANSCRIPT

INTRA-AIRCRAFT CONTENT

19:26:53.7
HOT-1 flaps one.

19:26:55.1
HOT-2 flaps one.

19:26:56.6
HOT-2 switchin' to departure.

19:26:59.0
HOT-2 two three zero heading we're accelerating up to seven thousand.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

19:26:46.5
TWR-MSP Delta twenty eight forty five turn right heading two three zero contact departure.

19:26:49.8
RDO-2 right to two three zero. we're switchin' Delta twenty eight forty five.

19:27:02.4
RDO-2 departure good evening Delta twenty eight forty five climbing through two point five seven thousand on a two three zero heading.

19:27:07.1
DEP-MSP Delta twenty eight forty five Minneapolis Departure radar contact. climb and maintain one seven thousand.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		19:27:13.1 RDO-2	climbing to one seven thousand Delta twenty eight forty five.
19:27:15.8 HOT-1	open seventeen.		
19:27:16.7 HOT-2	open seventeeeeeen.		
19:27:19.8 HOT-1	flaps up.		
19:27:21.5 HOT-2	flaps up.		
19:27:36.2 HOT-1	after takeoff checklist.		
19:27:37.1 HOT-2	workin'.		
19:27:41.9 HOT-2	after takeoff checklist is complete sir.		
19:27:45.2 HOT-2	let's see where do we want to go. okay. I see there.		
		19:28:43.6 DEP-MSP	Delta twenty eight forty five turn right direct HUGIR. climb and maintain one seven thousand.
		19:28:47.2 RDO-2	alright direct HUGIR one seven thousand Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:28:52.3 HOT-2	that's us...we're navin' to HUGIR.		
19:28:56.3 HOT-1	navin' HUGIR.		
19:28:58.0 HOT-1	** [obscured by ATC communication]		
		19:29:09.9 DEP-MSP	Delta twenty eight forty five leaving one zero thousand maintain three zero zero knots for in-trail spacing.
		19:29:15.4 RDO-2	leaving ten thousand three hundred's on the speed Delta twenty eight forty five.
19:29:18.6 HOT-1	three hundred out of ten.		
19:29:20.5 HOT-2	okay.		
19:29:37.0 HOT-2	(well that was)...too much work on the third leg of a day.		
19:29:41.5 HOT-1	it was just # up gettin' out of there.		
19:29:44.7 HOT-1	thanks for all your help.		
19:29:46.7 HOT-2	yeah no sweat. wish I could'a...helped a little earlier.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:29:50.0 HOT-1	well I didn't want'a be directly behind that guy that's why I was kind'a blending into (the pack).		
19:29:54.7 HOT-2	I had a hard time with the water on the tarmac pickin' out the lines. pickin' up the lines.		
19:29:57.5 HOT-1	can't see it.		
19:30:00.7 HOT-2	ready for select speed?		
19:30:02.0 HOT-1	three hundred knots.		
19:30:03.8 HOT-2	there you go.		
19:30:10.6 HOT-1	I don't wanna work you too hard or I'd hand fly this mother # all the way.		
19:30:15.6 HOT-1	autopilot one's on.		
19:30:16.5 HOT-2	sí.		
19:30:20.6 HOT-1	you know she flies just like a helicopter.		
19:30:23.4 HOT-2	Airbus?		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:30:24.1 HOT-1	yeah.		
19:30:24.5 HOT-2	(yeah).		
19:30:25.5 HOT-1	all g loadin'.		
19:30:29.2 HOT-1	if you really want to make a good landing all you gotta do is bring it in a hover.		
19:30:34.0 HOT-1	you gotta throw the dish forward to get it to level up on your. on your hover *** # thing on this airplane.		
19:30:44.1 HOT-1	once you figure out the concept it's like holy #. no #.		
19:30:53.0 HOT-1	okay so once we get to shlep [mispronunciation of SCHEP intersection] what the # we gonna do.		
19:30:55.8 HOT-2	okay I'm going to request direct ABERDEEN when we get higher.		
		19:30:56.6 DEP-MSP	attention all aircraft * correction center weather advisory six zero two for (zero zero two one five) zulu for Minnesota line of broken thunderstorms more information on HIWAS flight service frequencies.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:30:58.7 HOT-1	alright we'll fix all that.		
19:31:01.1 HOT-2	I like that.		
19:31:30.2 PA-3	[Flight attendant standard climb announcement, including seat belt use, Wi-Fi availability, entertainment, etc.]		
		19:31:35.4 DEP-MSP	Delta twenty eight forty five contact Minneapolis Center one three five point zero.
		19:31:40.1 RDO-2	thirty five point zero Delta twenty eight forty five see ya.
		19:31:48.6 RDO-2	Minneapolis Center good evening Delta twenty eight forty five checking (in) of one four thousand one seven thousand.
		19:31:54.0 CTR-MSP	Delta twenty eight forty five Minneapolis Center roger climb and maintain flight level two tree zero.
		19:31:58.0 RDO-2	flight level two three zero Delta twenty eight forty five.
19:32:00.7 HOT-1	open.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
19:32:02.7 HOT-1	two three's good.
19:32:09.5 HOT-2	open twenty tree.
19:32:16.2 HOT-1	(we get to go fast).
19:32:16.7 HOT-2	oh yeah there's nothin' there.
19:32:18.2 HOT-2	* I've played that game.
19:32:27.6 HOT-1	so how long does he need the three hundred knots?
19:32:30.2 HOT-2	I don't know yet.
19:32:33.8 HOT-(2)	**.

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:32:01.9 RDO-2	sir when able when the weather is good we'd like direct ABERDEEN and direct Rapid City please.
19:32:06.0 CTR-MSP	(roger).
19:32:06.9 RDO-2	thank you.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:32:34.6 HOT-(1)	can't do it.		
19:32:37.3 HOT-2	he said in-trail spacing and there is a guy on a nine miles in front of us *.		
19:32:42.8 HOT-2	and there he is.		
19:33:05.2 HOT-1	we're gonna be there on schedule.		
19:33:08.6 HOT-2	thanks for doing that.		
19:33:10.6 HOT-1	doin' what?		
19:33:12.1 HOT-2	the math. I'm over here just lookin' at this departure.		
19:33:15.3 HOT-1	it's not as if we're not busy.		
19:33:16.6 HOT-2	ahhhh what was I lookin' at? where is this thing?		
19:33:19.4 HOT-2	there you go it was two nine nine seven. alright.		
19:33:37.4 HOT-1	okay. climb check.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:33:40.2 HOT-2	climb checklist. altimeters.		
19:33:42.3 HOT-1	standard cross check.		
19:33:43.2 HOT-2	standard cross check. climb checklist (is) complete.		
19:34:13.2 HOT-2	well I guess for now we'll just--		
		19:34:14.4 CTR-MSP	Delta twenty eight forty five contact Minneapolis Center one two eight point six seven.
		19:34:18.3 RDO-2	twenty eight sixty seven Delta twenty eight forty five. goodday.
		19:34:25.2 RDO-2	Minneapolis Center Delta twenty eight forty five.
		19:34:27.3 CTR-MSP	Delta twenty eight forty five go ahead.
		19:34:28.8 RDO-2	sir at twenty point seven (now) for flight level two three zero.
		19:34:32.0 CTR-MSP	Delta twenty eight forty five Minneapolis Center climb and maintain flight level three six zero.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

19:34:57.2
HOT-1 that's F-S-D.

19:34:59.3
HOT-2 okay.

19:35:01.3
HOT-1 open three six. slow to two nine.

19:35:08.3
HOT-1 # blows.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

19:34:35.6
RDO-2 flight level three six zero Delta twenty eight forty five and sir we'll need direct ABERDEEN or Rapid City after SCHEP or something like that.

19:34:41.5
RDO-2 that's where our clearance ends.

19:34:42.4
CTR-MSP --SIOUX FALLS next controller somethin' down the line and reduce to two niner zero knots for (ah).

19:34:49.2
RDO-2 okay we'll slow to two nine and did I hear direct SIOUX FALLS for Delta twenty eight forty five?

19:34:53.3
CTR-MSP Delta twenty eight forty five I'll have that for you shortly.

19:34:55.4
RDO-2 okay thank you.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:35:09.6 HOT-2	[laughter]		
19:35:11.2 HOT-2	ah if you'll just go into heading mode after SCHEP that should keep us on ah. on this.		
19:35:14.9 HOT-1	yep.		
19:35:18.7 HOT-1	that's my plan.		
19:35:20.9 HOT-?	***.		
19:35:32.6 HOT-1	SIOUX FALLS F-S-D.		
19:35:51.1 HOT-1	is F-S-D. (is) that on our flight plan?		
19:35:52.9 HOT-2	no.		
19:36:01.2 HOT-1	puts us way south down by--		
		19:36:03.0 CTR-MSP	Delta twenty eight forty five cleared direct SIOUX FALLS. amend altitude maintain flight level three four zero.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		19:36:08.8 RDO-2	okay cleared direct SIOUX FALLS and we'll climb to three four zero Delta twenty eight forty five.
19:36:13.7 HOT-1	okay we're goin' up to thirty four. open climb. check this. F-S-D abeams. you like it?		
19:36:21.3 HOT-2	I like it.		
19:36:22.2 HOT-1	here we go.		
19:36:24.1 HOT-1	it's gonna get us by that traffic. we'll be able to go fast. we're navin' to SIOUX CITY.		
19:36:29.1 HOT-2	SIOUX FALLS.		
19:36:30.2 HOT-1	SIOUX FALLS.		
19:36:30.8 HOT-2	F-S-D yep and we're navin' there.		
19:36:30.8 HOT-1	yep.		
19:36:37.1 HOT-1	okay. so.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:36:38.7 HOT-2	[laughter] that was jacked up. alright. let me get some weather.		
19:36:42.3 HOT-1	I already did.		
19:36:43.0 HOT-2	oh you got some good weather.		
19:36:43.5 HOT-1	just get. yeah just get the...here it is.		
19:36:49.2 HOT-1	you know what I didn't do?		
19:36:51.1 HOT-2	no.		
19:36:52.1 HOT-1	ahhhhh #. it's hard to get good help around here.		
19:36:55.2 HOT-2	it is.		
19:36:58.6 HOT-1	okay I did that.		
19:37:00.9 HOT-1	that's what I didn't do.		
19:37:03.7 HOT-1	(oh no participating ATIS so **.)		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:37:05.8 HOT-2	(yeah that's where I was going. here it comes.)		
19:37:11.2 HOT-1	okay you- can you handle the radios and I'll make a P-A?		
19:37:14.1 HOT-2	you got it.		
19:37:14.9 HOT-2	I got the radios and the jet.		
19:37:16.6 HOT-1	okay.		
19:37:17.4 HOT-1	I'm off.		
19:37:18.1 HOT-2	o-kayyyy.		
		19:37:18.3 CTR-MSP	Delta twenty eight forty five amend your altitude again climb and maintain flight level three two zero and you can resume normal speed.
		19:37:24.8 RDO-2	okay flight level three two zero now and normal speed Delta twenty eight forty five.
19:37:28.6 HOT-2	got it.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:37:29.3 HOT-1	okay. we're normal speed. thirty two.		
19:37:44.3 PA-1	ladies and gentlemen good evening from the cockpit. ah. welcome aboard Delta's flight twenty eight forty five services to Rapid City. oh we got off the gate uh pretty much on time. however ah we were kind of uh in the middle of ahhh their push back sequence for the airport which took us a little bit more time to get off the uh to get out to the changed runway that we were eventually given. plus ah they gave us what's called a re-route and we're actually headed towards Sioux Falls right now. and it's mainly because of the weather you see off the right hand side of the aircraft. so they've got traffic stacked up. we're gonna take an hour and seventeen minutes is what the computer says. however uhm I think we're gonna be able to go a little bit better than that. I'm working the air traffic control system uh I think we're gonna get in five minutes early ** should be in there about ah oh forty seven local. and they're gonna be puttin' us into gate five...I know you have many choices in your travel plans I certainly appreciate you choosing Delta *** have an opportunity to serve you again in the future.		
19:39:11.2 PA-1	you've got an excellent cabin staff to assist you this evening so if there is anything ***. (so) for now sit back. relax. and enjoy the flight. and once again thanks for choosing Delta.		
19:39:29.1 HOT-1	(I was gonna say # about uh how tired and all that crap. but you know what. I'm so # up I figured not.)		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:39:36.5 HOT-2	[laughter]		
19:39:37.8 HOT-2	gate five.		
19:39:39.4 HOT-1	I got us up guard on two.		
19:39:41.9 HOT-2	thank you.		
19:39:50.5 HOT-2	[sound of two snaps] okay still gate five.		
19:39:52.3 HOT-1	so...how they gonna do this from ah.		
19:39:56.0 HOT-2	[laughter]		
		19:39:57.3 CTR-MSP	Delta twenty eight forty five contact Minneapolis Center one one niner point eight seven.
		19:40:01.9 RDO-2	nineteen eighty seven Delta twenty eight forty five goodday.
19:40:07.0 HOT-1	huh.		
19:40:10.9 HOT-1	I don't know if I double dinged them. but I think I did. but by now it doesn't # matter.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:40:14.5 HOT-2	[laughter]		
		19:40:15.6 RDO-2	Minneapolis Center Delta twenty eight forty five checkin' in (I'm) flight level two eight zero flight level three two zero.
		19:40:21.0 CTR-MSP	Delta twenty eight forty five Minneapolis Center roger.
19:40:23.3 HOT-1	ch'you ever get weather?		
19:40:25.2 HOT-2	(just that).		
19:40:26.4 HOT-1	that's good enough.		
19:40:29.7 HOT-1	so let's see it's sayin'.		
19:40:34.6 HOT-?	** ATIS *.		
19:41:07.8 HOT-1	that traffic ought be gettin' pretty much out of our...hair.		
19:41:22.9 HOT-2	that's what we want right there.		
19:41:26.2 HOT-1	see if you can get that.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:41:27.4 HOT-2	I will.		
		19:41:40.3 RDO-2	Center Delta twenty eight forty five we'd like to request direct Rapid City when able please.
19:41:54.7 HOT-?	***.		
		19:42:07.3 RDO-2	Center Delta twenty eight forty five sir any chance direct Rapid City?
		19:42:10.4 CTR-MSP	Delta twenty eight forty five ah I got some inbounds to Minneapolis I gotta get'chya by and then I'll get ch'ya a short cut here.
		19:42:15.2 RDO-2	thank you.
19:42:16.4 HOT-2	well you got ten minutes.		
19:42:43.2 HOT-2	thirty one * for thirty two.		
19:42:45.0 HOT-1	one day-go.		
19:43:03.4 HOT-2	in the u-two if it got to the dreaded lollipop. it would just start spinning.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:43:08.8 HOT-1	really? [chuckling]		
19:43:09.4 HOT-2	yeah [chuckling] we-we no one ever did it we always thought it just might explode so.		
19:43:15.7 HOT-1	that's funny.		
19:43:22.5 HOT-2	the lollipop of the death. that's what we called it.		
19:43:34.2 HOT-1	well I'm gonna have to let 'em up.		
19:43:36.7 HOT-2	alright I got everything again.		
19:43:38.6 HOT-1	alright.		
19:43:51.3 PA-1	well ladies and gentlemen we've just leveled off at thirty two thousand feet. that's gonna be our ah cruising altitude. for us this evening due to all the air traffic control traffic. I just turned off the seat belt sign you're free to move about the cabin however I do ask *** the weather at Rapid City ** winds are out of the northeast at four miles an hour. ten miles visibility under clear skies. temperature of seventy seven degrees Fahrenheit. and they're tellin' us to plan for gate five.		
19:44:38.6 HOT-1	well that was all # up. it is what it is.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:45:20.9 HOT-1	he's really taking us out of the approach corridor.		
19:45:23.9 HOT-2	[chuckle]		
19:45:24.7 HOT-2	oh. it's interesting because she said--		
19:45:29.0 HOT-2	(you're) cleared the West One bla bla which is the SCHEP eight. and I'm looking at (her)--		
		19:45:33.1 CTR-MSP	Delta twenty eight forty five cleared direct Rapid City Airport.
		19:45:35.9 RDO-2	direct Rapid City Delta twenty eight forty five thank you sir.
19:45:38.8 HOT-2	alright that cleans up all that.		
19:45:41.2 HOT-2	I keep lookin' for something else but I was like I don't know what the hell **.		
19:45:43.3 HOT-1	we're navin' to Rapid City.		
19:45:44.3 HOT-2	(alright) that is bueno.		
19:46:01.6 HOT-2	**.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:46:17.2 HOT-2	we're still-we're still within a hundred of our original course so I'm not going to send anything to dispatch unless you want me to.		
19:46:23.4 HOT-1	nah' I don't see any need.		
19:46:27.1 HOT-1	we're on fuel.		
19:47:23.8 HOT-1	I re-cruised us thirty two.		
19:47:26.3 HOT-2	okay. cool.		
19:47:29.2 HOT-2	alright so we got that. we got that. we're not in range for an ATIS. we got the north runway on there although we're not really sure.		
19:48:01.3 HOT-2	but then we gotta wait for the #.		
19:48:04.0 HOT-1	yep.		
19:48:04.8 HOT-2	before we go to the hotel.		
19:48:05.9 HOT-1	yep.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:48:07.0 HOT-2	and I'll do a little post flight.		
19:49:03.7 HOT-2	how the # are we late? we took off four minutes early. trying to figure out what's goin' on. maybe we're not late...zero...		
19:49:10.2 HOT-1	we're not.		
19:49:10.7 HOT-2	..two four three.		
19:49:14.9 HOT-1	we are not late.		
19:49:16.5 HOT-2	* (showing block out) because of our flightplan. alright.		
19:49:22.0 HOT-2	matter of fact we're a minute early right now.		
19:49:29.2 HOT-2	oh that's good news.		
		19:49:46.4 CTR-MSP	Delta twenty eight forty five climb and maintain flight level three six zero.
		19:49:50.0 RDO-2	flight level three six zero Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:49:55.4 HOT-1	open thirty six.		
		19:49:56.7 MISC-AC	on guard.
19:50:01.3 HOT-2	open thirty six.		
19:50:16.7 HOT-2	I've never flown into Rapid City.		
19:50:18.4 HOT-1	oh really.		
19:50:19.1 HOT-2	this is exciting.		
19:50:31.6 HOT-1	you do have to be careful with ah Eielson. not Eielson. Ellsworth. because their runways kind of align.		
19:50:45.3 HOT-1	but you know what if you just check all your #...		
19:50:47.9 HOT-2	yeah...		
19:50:48.1 HOT-1	...not an issue.		
19:50:48.1 HOT-2	...I (sw*) yeah I.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:50:49.9 HOT-2	I've gotten' much...more comfortable at callin' visual...when I'm...when I have somethin' in sight.		
19:50:55.0 HOT-2	again fly the (goo) you'll get there.		
19:51:14.0 HOT-2	so day after tomorrow. which is the longer day? that one or this one?		
19:51:22.2 HOT-2	ten forty nine. ten thirty. that one is by twenty minutes.		
19:51:31.3 HOT-2	oh we gotta go all the way to Orange County.		
19:51:34.9 HOT-1	yep.		
19:51:40.2 HOT-2	okeydokey.		
19:52:49.6 HOT-1	well I don't really I don't even have time to read my new book.		
19:52:52.8 HOT-2	I know we don't have much time to have to sit here and stare at each other.		
		19:52:56.9 CTR-MSP	** SIGMET ** [obscured by crew intracockpit conversation]

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:52:57.0 HOT-?	** figure out **		
19:52:58.7 HOT-2	** I'm not starvin' ** wouldn't mind a little top off when we get there ** might have to do some walkin' **		
19:53:05.4 HOT-2	Firestone's open till eleven.		
19:53:09.0 HOT-1	how far's that?		
19:53:10.4 HOT-2	you know what it looked like kind'of a walk. because it's all the way through the park and...a half a mile or somethin'.		
19:53:20.1 HOT-2	but there is nothin' else nearby.		
19:53:23.2 HOT-2	one to go.		
19:53:24.7 HOT-1	thirty five. thirty six.		
19:53:33.3 HOT-1	well I was kind'a hopin' the bar would be open.		
19:53:35.4 HOT-2	ah me too uh-huh. I mean I'd like a couple.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:53:39.3 HOT-2	thirty five thirty six.		
19:53:41.8 HOT-1	one to go.		
19:53:42.6 HOT-2	yeah I already said that.		
19:53:59.0 HOT-2	ahhhhh (is this) a Thursday night. okay.		
19:54:04.0 HOT-1	I bet that they'll be somethin' at the hotel.		
19:54:09.4 HOT-2	maybe their hours are wrong. hopefully so.		
19:54:12.0 HOT-1	what ah. what'dya think it is?		
19:54:14.0 HOT-2	well when I looked at it-it said ten o'clock.		
19:54:17.0 HOT-1	but we're going to be there at nine. we'll be in ah we'll be there by nine thirty.		
19:54:20.9 HOT-2	you think?		
19:54:21.5 HOT-1	we could order food and---		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:54:23.1 HOT-2	we gotta wait for everybody to leaveeee. (gotta go) flight attendants.		
19:54:27.6 HOT-1	good point.		
19:54:29.1 HOT-1	well if we can get beer we can always order a pizza.		
19:54:31.5 HOT-2	[chuckle] we can get beer.		
19:54:33.5 HOT-1	I've got some hummus.		
19:54:34.9 HOT-2	I'm sure there's something there we can get a little snack. I'm actually okay.		
19:54:41.3 HOT-2	just play it by ear.		
19:54:42.9 HOT-1	that's all we can do.		
19:54:44.4 HOT-2	yep.		
19:54:47.0 HOT-1	so we're levelling. let's. of course this is all gonna be (gained)--		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:54:49.8 HOT-2	we're levelling. we're going fast.		
19:55:11.8 HOT-2	I don't think I've ever had them give us...a-a reroute like that.		
19:55:21.0 HOT-2	(I have with)-with-with no ending you know. normally there would have been (a) SCHEP then ABERDEEN or something. right. they just gave us a sort'a partial re-route. and off we went. have-have you seen that before?		
19:55:37.5 HOT-1	I have. I mean you could hold them to the fire and say hey I need the rest of my clearance.		
19:55:43.4 HOT-2	** [chuckle].		
19:55:44.8 HOT-1	they know that you know that they're going to do something with it.		
19:55:48.5 HOT-2	uh-huh.		
19:55:49.6 HOT-1	because. that just tells me that their...departure and first center is so # swamped they don't know which end of their # is up.		
19:55:58.6 HOT-2	[chuckle]		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:56:00.1 HOT-(1)	that happens.		
19:56:01.7 HOT-1	definitely in this area because the volume of traffic into this area is un-# real.		
19:56:11.7 HOT-2	see that's funny. I've never felt. I mean it gets busy. but I've never felt like Minneapolis has been a total cluster before.		
19:56:19.3 HOT-2	Detroit can be very cluster-#.		
19:56:24.7 HOT-1	back in the heyday Minneapolis was a lot more than it is. they've taken a lot of pressure off (of em) and thrown it down to Atlanta.		
19:56:32.7 HOT-2	yeah I try to avoid Atlanta (it's chaos). although it's organized chaos.		
19:56:41.3 HOT-1	that's another @ @ thing. I learned at Northwest Airlines. get as far away from Mecca as possible. and Mecca...		
19:56:48.6 HOT-2	[laughter]		
19:56:52.1 HOT-1	...was Minneapolis and now it's Atlanta.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:56:55.8 HOT-1	and ah I'm about as far away as you can get. but you're not doin' too bad.		
19:57:01.8 HOT-2	you know I like the guys in Salt Lake. the chief pilots are good and.		
19:57:02.9 CAM	[sound of gargling tone, similar to flight attendant call to cockpit]		
19:57:06.2 INT-1	engine room.		
19:57:07.3 INT-3	(hey engine room do you have a circuit breaker for the power outlets in first class)?		
19:57:13.9 INT-1	ahhhh ***.		
19:57:15.7 INT-3	[laughter]		
19:57:16.6 INT-1	(you know what. let us look around. I don't think so.)		
19:57:20.5 INT-3	okay.		
19:57:21.5 INT-1	(the ones in the back **).		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
19:57:25.1 INT-3	(I don't have. I don't have any here for it.)
19:57:29.1 INT-(2)	(maybe it is on the CIDS panel).
19:57:30.7 INT-(1)	(isn't there a. is there a circuit breakers in upper aft section of the airplane. that used to be a ***).
19:57:38.9 INT-3	(oh you know what. wait a minute. I've got a T-V-D power control right here. although it's in).
19:57:42.5 INT-(1)	(okay).
19:57:45.3 INT-3	(huh. I'll put that with me but it doesn't light up).
19:57:48.3 INT-(1)	okay.
19:57:49.0 INT-3	(alright I can check in the back that the circuit breaker. I'm sorry. the uh the power outlets only in first class ***).
19:57:56.8 INT-(1)	(** working **).
19:57:57.4 INT-3	(okay. alright. thanks).

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
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<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
19:57:59.2 INT-(1)	see ya.		
19:58:00.5 INT	[sound of clicks, clunks, similar to flight attendant interphone hanging up]		
19:58:01.8 HOT-1	huh.		
19:58:04.4 HOT-2	yeah we don't have any of that crap up here do we?		
19:58:05.3 HOT-1	nope.		
19:58:06.6 HOT-1	we do not [sigh].		
19:58:08.2 HOT-1	and I thought it was on the. at the CIDS panel.		
19:58:12.6 HOT-1	which they have.		
19:58:29.1 HOT-2	Mexican water.		
19:58:32.1 HOT-2	I think I'm done with it.		
19:58:33.2 HOT-1	[chuckle]		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		19:58:51.3 ATIS	...temperature [loud static interrupts reception]...
19:58:57.1 HOT-2	wow they got some range on their ATIS. so I'll be off for a second. you got the radios (sir).		
19:59:01.3 HOT-2	gettin' the aye-tie.		
19:59:05.7 HOT-2	is that cool @?		
19:59:07.1 HOT-1	yep.		
19:59:07.8 HOT-2	alright I'll be right back.		
		19:59:08.8 ATIS	one thousand [loud static interrupts reception]
19:59:20.0 HOT-2	never mind. it was readable. now its unreadable. I'll wait a little while longer.		
19:59:38.5 HOT-1	Rapid City's got a-- it's a really-- pretty nice little airport. it's awfully small. but it's a pretty # nice.		
20:00:29.0 HOT-2	do. do. do. do. do [vocalizing to an unknown tune]		

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

20:01:12.0
HOT-2 uh-huh. so a-four.

20:01:19.4
HOT-1 what's the question?

20:01:20.7
HOT-2 aw I'm just mumbling to myself. I'm lookin' at the uh
where the gates are.

20:01:25.0
HOT-1 we're right off of tango two.

20:01:26.5
HOT-2 alpha four tango two.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

20:00:38.0
CTR-MSP Delta twenty eight forty five contact Minneapolis Center one
two eight point four two.

20:00:42.6
RDO-2 twenty eight forty two Delta twenty eight forty five good night.

20:00:56.0
RDO-2 Minneapolis Center-- [another plane talking on radio]

20:01:05.5
RDO-2 Minneapolis Center good evening Delta twenty eight forty five
flight level three six zero.

20:01:09.2
CTR-MSP Delta twenty eight forty five Minneapolis Center roger.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:01:38.0 HOT-2	ooh it's got some elevation. thirty two hundred feet.		
20:01:55.3 HOT-1	still not as high as we're at [radio interference blocks talk] ** Salt Lake (could) you know that.		
		20:02:00.0 ATIS	[radio interference]
20:02:00.5 HOT-2	no that's not working.		
20:02:04.1 HOT-1	what are you lookin' for?		
20:02:05.2 HOT-2	oh I was just trying the ATIS again. ahh. no bueno.		
20:02:13.2 HOT-2	ahhh where was I at s-s-somewhere not too long ago that had a lot more elevation than I thought.		
20:02:20.1 HOT-2	what's Spokane?		
20:02:23.1 HOT-1	it's in the threes.		
20:02:27.2 HOT-1	what state in the United States has the highest mean or average elevation?		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:02:35.4 HOT-2	er the lower forty eight?		
20:02:37.1 HOT-1	I didn't ask that.		
20:02:38.1 HOT-2	I would say Alaska.		
20:02:38.5 HOT-1	what state?		
20:02:41.0 HOT-2	I would say Alaska.		
20:02:42.3 HOT-1	nope.		
20:02:44.8 HOT-1	Nevada.		
20:02:45.9 HOT-2	wow.		
20:02:48.2 HOT-1	here's one for a beer.		
20:02:49.5 HOT-2	even more than California?		
20:02:51.8 HOT-2	well I guess mean state. yeah I guess you take the whole...alright beer.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:02:56.1 HOT-1	name the states...that are the farthest north. the farthest south. the farthest east. and the farthest west.		
20:03:03.0 HOT-2	[clears throat] okay Hawaii's west. oh noooo. this is a tricky one. Alaska is west.		
20:03:09.2 HOT-2	yeah?		
20:03:11.8 HOT-1	** one.		
20:03:12.3 HOT-2	**.		
20:03:13.2 HOT-2	okay [chuckle] Alaska's west. this is a tricky one. uhm south.		
20:03:25.7 HOT-2	oh I'm not going to get all these.		
20:03:30.5 HOT-2	okay I want to go north Alaska. west Alaska.		
20:03:34.1 HOT-2	south Hawaii. and east is Maine.		
20:03:37.4 HOT-1	man. you were so close.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:03:39.6 HOT-2	was I close?		
20:03:41.2 HOT-1	you were really # close.		
20:03:44.5 HOT-1	farthest north is Alaska.		
20:03:46.6 HOT-2	okay.		
20:03:48.2 HOT-1	farthest south is Hawaii.		
20:03:50.7 HOT-2	okay.		
20:03:52.6 HOT-1	the farthest west is Alaska.		
20:03:55.3 HOT-2	okay.		
20:03:56.5 HOT-1	the farthest east is Alaska.		
20:04:01.8 HOT-2	why does it go across the line? oh you # [chuckling].		
20:04:07.0 HOT-2	oh that's funny.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:04:08.6 HOT-1	nobody gets that one right.		
20:04:15.6 HOT-1	I won't hold you to that one. that's **.		
20:04:16.8 HOT-2	oh I owe you a beer anyways. I got an ice cream cone today.		
20:04:20.5 HOT-2	I think I'm pretty much buyin' beer.		
20:04:21.8 HOT-1	you've been # workin' your # off. you earned it.		
20:04:24.8 HOT-1	alright. so we're gonna go into three two. it's gonna be a visual.		
20:04:30.0 HOT-1	we'll back it up with the I-L-S. we'll descend on theeeee ahhhhh feather.		
20:04:36.8 HOT-1	that ahhhh frequency is one oh nine three.		
20:04:41.1 HOT-1	oh correction the chart's eleven dash one.		
20:04:44.1 HOT-1	two January fifteen.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:04:46.3 HOT-1	frequency's one oh nine three. course's three twenty four. RANCH is thir-- forty six ninety.		
20:04:51.2 HOT-1	decision is at thirty three sixty to land at thirty one sixty.		
20:04:55.8 HOT-1	sa'papi on the left hand side.		
20:04:59.3 HOT-1	missed is in the box.		
20:05:03.6 HOT-1	that's all the way up to fifty five hundred feet.		
20:05:09.6 HOT-1	the runwayyyy issss usable is only seven thousand eight hundred and twenty five feet. we'll use autobrakes (ah) low.		
20:05:18.9 HOT-1	we'll make a left turn off the runway probably at bravo. and then another left turn we'll come all the way back down to ta- I'm guessing we'll come in at tax-tax tango two. and then the gate. five.		
20:05:38.9 HOT-2	okay.		
20:05:40.1 HOT-1	ten seven pages. just caution you about ah Ellsworth.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:05:50.2 HOT-1	we'll be inside of the ah part time uh hours of the tower.		
20:05:58.4 HOT-1	and other than that I think you got everything else.		
20:06:00.7 HOT-2	I got nothing. let me try aye-tie one more time.		
		20:06:03.0 ATIS	[sound of loud radio interference]
20:06:04.1 HOT-2	hundred and eighty miles out.		
20:06:16.0 HOT-2	and that after I do that I'll get us some runway numbers for the lawyers.		
20:06:21.9 HOT-1	alrighty then.		
20:06:24.5 HOT-2	how exciting. how fun.		
20:06:27.2 HOT-2	that's a cool river. what's the name of this river?		
20:06:29.1 HOT-1	the Missouri.		
20:06:30.7 HOT-2	Missouri.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:06:35.6 HOT-1	I think it's the Missouri.		
20:06:37.7 HOT-2	what state ahhh in the lower forty eight--		
20:06:39.8 HOT-1	am I right or wrong?		
20:06:41.0 HOT-2	I don't know.		
20:06:42.8 HOT-1	I have to be right. that's gotta be the # Missouri.		
20:06:55.2 HOT-1	that's Pierre South Dakota.		
20:07:12.4 HOT-1	I was thinkin' that it was supposed to tell us. what's your map say?		
20:07:21.4 HOT-2	yeah you know what I wish they really would put some details like that. like state lines and all that crap.		
20:07:27.5 HOT-2	that would be helpful.		
20:07:29.4 HOT-2	or at least have it as a filter.		
20:07:30.7 HOT-1	oh actually they do put one here...		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:07:35.7 HOT-1	...because...		
20:07:39.4 HOT-1	...that's gotta a line right down the center of it.		
20:07:48.7 HOT-1	that's Pierre.		
20:07:53.3 HOT-1	I wonder if that's the Red River?		
20:07:56.4 HOT-2	that's a big ole' river.		
20:07:58.8 HOT-1	isn't that the-- isn't it the Red River that goes through North Dakota?		
20:08:04.3 HOT-2	I don't know let me get out my Google Map.		
20:08:06.6 HOT-1	well we're real close to Pierre South Dakota.		
20:08:13.1 HOT-1	which is the state capitol.		
20:08:22.4 HOT-2	that is indeed the Missouri River.		
20:08:25.6 HOT-1	that's what I thought.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:08:26.9 HOT-2	and that's Big Bend dam right there.		
20:08:30.4 HOT-1	I think you're right again.		
20:08:32.2 HOT-2	and that's Lake Sharpe up above it.		
20:08:36.2 HOT-2	and the ah Oahe dam is farther up. that'a way.		
20:08:40.5 HOT-1	mm hmm.		
20:08:42.5 HOT-2	I'm (sayin') that.		
20:08:48.0 HOT-2	and we're getting ready to cross into the central time zone.		
20:08:51.2 HOT-1	yessir.		
20:08:56.0 HOT-1	no. we're about to come out of the central and go in the mountain.		
20:08:59.9 HOT-2	you are correct sir.		
20:09:09.6 HOT-2	boy Idaho's time zone's really # up.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:09:11.8 HOT-1	why's that?		
20:09:12.9 HOT-2	does it go this way then this way and this way?		
20:09:15.0 HOT-1	yeah it does as a matter of fact.		
20:09:22.5 HOT-1	Idaho used to be a pretty good place to be. but. down in Boise. there's too many # people now.		
20:09:32.8 HOT-2	oh my gosh. yeah my sister moved there a long time ago. it's crowded.		
20:09:36.4 HOT-1	you go north. McCullan [sic] in cascade is still # nice. guess what? you can't commute it.		
20:09:40.5 HOT-2	**.		
20:09:43.9 HOT-1	Coeur d'Alene which is up by Spokane. well you got Sandpoint.		
20:09:51.5 HOT-1	and that used to be the ah capital of the Aryan Nation.		
20:09:57.1 HOT-1	and ah.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:10:00.1 HOT-1	and between that and *** # up.		
20:10:04.2 HOT-2	[laughter]		
20:10:09.8 HOT-1	not a lot of places that you would just be like yeah this (will work just fine).		
20:10:23.3 HOT-2	yeah if @ and I were smart. I think that's what we're gonna end up doing. we're just gonna hang out in our house for ten years. till we get close. and like we were sayin' maybe maybe get some property.		
20:10:35.4 HOT-1	well I'd put some in your back pocket. you can always sell it.		
20:10:35.8 HOT-2	** yep [yawning].		
20:10:42.3 HOT-1	but if you're even thinking about that Nevada area I'm talking about. you'll be sorry if you wait ten years.		
20:10:49.2 HOT-2	yeah. no we gotta get on it. in fact I wish we would have (done) it five years ago.		
20:10:53.3 HOT-2	it was before Tesla announced the battery thing we were looking at some of those houses on the way to--		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:10:57.1 HOT-1	it only took it up vertical.		
20:10:58.8 HOT-2	yeah.		
20:10:59.5 HOT-2	and if some of those places were four fifty five were really nice. it was like you friggin' owned a camp ground in Tuolumne Meadows. you know with the rocks and trees. it was stunning.		
20:11:06.3 HOT-1	yeah.		
20:11:10.5 HOT-2	and now those are all up seven eight.		
20:11:13.7 HOT-1	but think about this. [clears throat] and I did think about this. of course. I'm three blocks off of a hundred and fifty miles of ski and mountain bike trails. three blocks.		
20:11:29.4 HOT-2	that's pretty cool.		
20:11:31.6 HOT-1	so I'm in a little different thing than you are.		
		20:11:36.3 ATIS	[sound of loud staticky tone]
20:11:37.9 HOT-1	uhm but. I buy this to get old in. right?		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:11:45.3 HOT-(2)	that's the thing.		
20:11:48.3 HOT-1	so. don't get a lot of # acreage. because then you gotta # gotta take care of it.		
20:11:55.1 HOT-2	aw and that's what the beautiful thing about this-this acreage we were looking at. * it's all wild. you know you have the pine trees with the needles. and the rocks. no undergrowth. and that's really sustainable.		
20:12:07.1 HOT-1	yeah.		
20:12:10.3 HOT-2	alright let me try this ATIS now. (it's gonna start workin') and I'll be off for a second.		
		20:12:14.5 ATIS	[staticky] one one Celsius. altimeter two niner niner seven. remarks density altitude four thousand six hundred. Rapid City Regional Airport automated weather observation zero two one one Zulu. wind one five zero at zero four. visibility one zero. sky condition clear. temperature two one Celsius. dewpoint one one Celsius. altimeter two niner niner seven. remarks density altitude four thousand six hundred. Rapid City Regional Airport automated weather observation zero two one two Zulu. wind one five zero at zero four. visibility--
20:13:09.0 HOT-2	I'm back.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:13:10.3 HOT-1	you didn't miss a # thing.		
20:13:12.5 HOT-2	[chuckle]		
20:13:33.2 HOT-2	well interestingly enough. ah it didn't give a runway. it didn't give an ATIS code. and the winds are one five zero at four. so we really have--		
20:13:42.2 HOT-1	that's 'cause it's ASOS.		
20:13:43.7 HOT-2	ASOS. that's exactly right.		
20:13:45.1 HOT-1	one fifty at four.		
20:13:47.4 HOT-1	well.		
20:13:48.2 HOT-2	so it can go either way.		
20:13:53.0 HOT-1	did you say it's one fifty? at four?		
20:13:55.4 HOT-2	one. one five zero at four.		
20:13:58.5 HOT-1	well that's a no # brainer.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:14:01.1 HOT-2	[chuckle]		
20:14:33.5 HOT-1	okay. it'll be a visual runway one four. we can do that.		
20:14:45.7 HOT-1	actually I got it setup for the r-nav. you see that? that's an r-nav.		
20:14:49.5 HOT-2	I do.		
20:14:59.0 HOT-1	we-we can do either one of 'em. we'll get a wind check off of them and...		
20:15:03.2 HOT-1	if we have to we'll just #		
20:15:04.5 HOT-2	yep see where they send us.		
20:15:05.8 HOT-1	come around and # do it.		
20:15:31.6 HOT-2	okay. eighty two hundred feet. so we got five hundred feet of slop here. that'll work.		
20:15:39.7 HOT-1	what'dya got for performance.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:15:41.7 HOT-2	ah that's what I'm saying-saying. you got flaps full. autbrakes low. you got eighty two hundred feet.		
20:15:47.1 HOT-1	and that's for which runway?		
20:15:49.3 HOT-2	one four.		
20:15:53.3 HOT-1	that's just dandy. I'm tempted. to go ahead and just put that # in.		
20:15:58.9 HOT-2	the north one?		
20:16:00.6 HOT-2	or one four.		
20:16:00.8 HOT-1	the runway to one four.		
20:16:05.6 HOT-1	but. the problem is that's back trackin'.		
20:16:12.0 HOT-2	I'm fine with that a four knot tailwind on eighty seven hundred feet.		
20:16:22.6 HOT-1	oh that's not right. thirty eight [sigh] seventy one.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:16:28.9 HOT-1	bottom line it's gonna be a visual anyway.		
20:16:31.2 HOT-2	yeah we'll do what approach tells us to do.		
20:16:36.1 HOT-1	are you satisfied with the briefing or do you need more?		
20:16:38.5 HOT-2	I'm good.		
20:16:39.3 HOT-2	are you happy landing on three two if they give it to us?		
20:16:41.0 HOT-1	I can do either one.		
20:16:44.4 HOT-1	however.		
20:16:44.6 HOT-2	I *.		
20:16:47.0 HOT-1	let's see which would give us the best--		
		20:16:48.8 CTR-MSP	Delta twenty eight forty five descend at pilot's discretion maintain flight level two seven zero.
		20:16:53.7 RDO-2	pilot's discretion down to two seven zero. Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:16:56.9 HOT-1	two seven oh p-d.		
20:16:58.1 HOT-2	two seven.		
20:16:59.4 HOT-1	okay. so.		
20:17:04.1 HOT-1	in reality.		
20:17:09.5 HOT-1	it just doesn't really # matter.		
20:17:11.7 HOT-2	uh-uh.		
20:17:13.5 HOT-2	three two would probably save us a couple minutes but.		
20:17:13.7 HOT-1	but.		
20:17:15.8 HOT-1	what's that?		
20:17:15.8 HOT-2	*.		
20:17:16.8 HOT-2	I'm just saying three two would save us a couple minutes but y-- who cares. you're right. it's about the same.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
20:17:20.5 HOT-1	well it depends on how you look at it.
20:17:22.8 HOT-1	it could from the stand point. it's a straight in.
20:17:29.5 HOT-1	but. it's a way shorter taxi. if you come in on one four.
20:17:35.4 HOT-?	** [low volume]
20:17:37.7 HOT-2	it seems about the middle but yeah I (can) see that.
20:17:40.7 HOT-2	cause we got (oh) t-two yeah is a little bit.
20:17:44.9 HOT-1	you know what we're gonna be talking to tower. we'll get tower winds...
20:17:51.4 HOT-1	and then we'll make a decision. I frankly don't give a #.
20:17:51.7 HOT-2	*...*
20:17:55.9 HOT-2	do what approach tells us to do. I like it.
20:19:07.0 HOT-2	I'm not sure I'm buyin' that descent arrow. uh. I guess we have an eighty (six) (knot) headwind. never mind.

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
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<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:19:16.9 HOT-1	but I've been watching it on the PROG page too.		
20:19:23.3 HOT-2	I was just doin' a three to one and it had us about forty miles short. but like you said I didn't see that big headwind.		
20:21:56.0 HOT-1	I wonder if any of this # gonna turn out.		
20:21:59.8 HOT-2	this might be some pretty lighting.		
20:22:36.7 HOT-1	so I'm gonna split the difference and lead this just a little bit. but you know we got an eighty knot headwind.		
20:22:42.4 HOT-2	yep.		
20:22:48.5 HOT-1	we're p-d (to) twenty seven.		
20:22:50.5 HOT-2	sí.		
20:22:57.0 HOT-1	we're still...		
20:23:02.4 HOT-1	no we're back on # schedule now.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:23:06.8 HOT-1	but. I can pull three-- at least two minutes out of that.		
		20:23:35.2 CTR-MSP	Delta twenty eight forty five contact Denver Center one three three point six seven.
		20:23:40.3 RDO-2	thirty three sixty seven Delta twenty eight forty five goodday.
		20:23:43.2 CTR-MSP	goodday.
		20:23:52.0 RDO-2	Denver Center good evening Delta twenty eight forty five flight level three six zero p-d down to flight level two seven zero.
		20:23:58.8 CTR-DEN	Delta twenty eight forty five Denver Center roger descend at pilot's discretion maintain flight level two four zero.
		20:24:04.4 RDO-2	okay pilot's discretion now down to two four zero Delta twenty eight forty five.
20:24:08.1 HOT-1	two four oh p-d.		
20:24:17.4 HOT-2	[grunt] let me see.		
20:24:24.5 HOT-1	I think this mother # died on me.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
20:24:26.6 HOT-2	dead dead.
20:24:35.4 HOT-1	either that or it's really # dark out there-- there it is.
20:24:50.2 HOT-1	eh I think the # battery's dead. I don't have time to change it. [sound of zzzz, similar to zipper]
20:25:06.8 HOT-1	here (it goes).
20:25:20.9 HOT-2	one seven thousand I'll be off for just a second.
20:25:23.3 HOT-1	managed descent seventeen.

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:25:07.4 RDO-2	Denver Center Delta twenty eight forty five is vacating flight level three six zero.
20:25:11.6 CTR-DEN	Delta twenty eight forty five roger descend and maintain one seven thousand. the Rapid City altimeter two niner niner seven.
20:25:17.4 RDO-2	down to one seven thousand on two nine nine seven. Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:25:27.5 PA-2	ladies and gentlemen from the flight deck we've started our initial ah descent into Rapid City we're showing about seventy five miles out. we should have you on the ground in just about twenty minutes. thanks for flying Delta tonight we do appreciate your business. flight attendants please prepare the cabin for arrival.		
20:25:49.3 HOT-1	I don't think this is gonna' work [straining].		
20:25:59.6 HOT-2	I think it's gonna be too dark down there anyway.		
20:26:02.0 HOT-1	it might be.		
20:26:18.8 HOT	[sound of three beeps]		
20:26:37.5 PA-3	[passenger announcement about onboard Wi-Fi shutting off at 10,000 feet, non-use of cell phones and similar devices, service satisfaction survey, seat belts secure]		
20:27:42.8 HOT-1	hey I'm on my # ² . you can call that out man.		
20:27:46.3 HOT-2	# ² .		

² Slang for vertical deviation indicator.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:27:49.4 HOT-1	you're gonna miss me.		
20:27:50.7 HOT-(2)	[chuckle]		
20:27:54.1 HOT-1	you know here's the deal. back in my day when I first got into the airline business.		
20:27:57.0 HOT-2	ah-huh.		
20:27:59.9 HOT-1	there were a lot of # characters. Vietnam guys I even knew some World War Two guy.		
20:28:04.8 HOT-2	wow.		
20:28:06.9 HOT-1	Korean war guys well they're a different # breed of cat all together.		
20:28:14.0 HOT-1	and everybody smoked. everybody drank.		
20:28:21.7 HOT-1	#.		
20:28:24.1 HOT-1	they were characters.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:28:27.7 HOT-2	(moto feedback then).		
20:28:28.8 HOT-1	and you know what?		
20:28:29.7 HOT-2	what?		
20:28:30.6 HOT-1	they had a lot more fun.		
20:28:32.0 HOT-2	[laughter]		
20:28:33.5 HOT-1	and in reality. from basic pilot skills. they were wayyyy # better.		
20:28:41.4 CAM	[sound of 12 pops, similar to electromagnetic interference]		
20:28:42.6 HOT-1	and you know I kind of told myself I want to be like them. and I kind of modeled myself that way.		
20:28:53.8 HOT-1	you know I try to put in a environment in the cockpit to where the guy wants to work for me. that he feels like he's just as important.		
20:29:03.6 HOT-2	gotta have fun.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:29:05.6 HOT-1	and ah so anyway consequently.		
20:29:11.5 HOT-1	there's not as many of those guys as there used to be.		
		20:29:16.1 CTR-DEN	Delta twenty eight forty five contact Ellsworth Approach one one niner point five.
		20:29:21.0 RDO-2	nineteen five Delta twenty eight forty five goodday sir.
20:29:23.9 HOT-1	I'm sort of Milquetoast compared to some of those guys.		
20:29:26.6 HOT-2	[chuckle]		
20:29:28.6 HOT-1	ahh...and uh.		
20:29:32.5 HOT-2	yeah not as many characters these days. you're right.		
		20:29:37.2 RDO-2	Ellsworth Approach good evening Delta twenty eight forty five out of twenty three point five for flight level one seven zero.
		20:29:44.0 RDO-2	one seven thousand Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:29:47.1 APR-RCA	Delta twenty eight forty five Ellsworth Approach descend and maintain five thousand three hundred expect visual approach runway one four.
		20:29:52.8 RDO-2	down to five thousand three hundred we'll expect a visual to one four Delta twenty eight forty five.
20:29:57.2 HOT-2	that answer's that.		
20:29:59.1 HOT-1	watch this cool # thing.		
20:30:02.1 HOT-1	I pull that. I go here. I go here.		
20:30:08.5 HOT	[sound of 3 clacks, similar to mode change annunciation]		
20:30:09.8 HOT-1	I push this.		
20:30:14.2 HOT-1	and some'#.		
20:30:15.9 HOT-2	[laughter]		
20:30:17.5 HOT-2	that's my fifty percent experience on the secondary.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:30:21.7 HOT-1	did you just notice how that worked? we're navin' to Rapid City and we're descendin'...on the nav-- on a-a managed nav. and we're r-naving to ah-- for we're gonna do the r-nav one four. which just to refresh yah that's eleven dash. er twelve dash two.		
20:30:41.3 HOT-2	(alright) *.		
20:30:54.4 HOT-1	and you know what. because I could prove it to ya'.		
20:30:57.4 HOT-2	prove what to me?		
20:30:58.6 HOT-1	that if you fly the approach for an I-L-S or an R-NAV. in flight path angle.		
20:31:09.6 HOT-2	ah hah.		
20:31:10.0 HOT-1	using the mustache.		
20:31:12.1 HOT-2	ah hah.		
20:31:13.2 HOT-1	you will always make a better landing.		
20:31:15.3 HOT-2	oh.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:31:17.3 HOT-2	but I yeah (you) do my landings outside.		
20:31:21.2 HOT-1	I'm just saying I can prove it. and here's the deal. you're landing at * feet.		
20:31:29.5 HOT-(2)	* stabilized at thousand feet *.		
20:31:33.2 HOT-1	and--		
		20:31:33.2 APR-RCA	Delta twenty eight forty five turn ten degrees right vectors for the visual approach.
		20:31:38.1 RDO-2	ten degrees right Delta twenty eight forty five.
20:31:41.5 HOT-1	ten right. that's when you can't use it *.		
20:31:50.9 HOT-1	so.		
20:31:57.4 HOT-2	let's see how we're doin' on that.		
20:31:59.4 HOT-2	ohhhh not so good.		
20:32:08.8 HOT-1	so I actually need to do some math.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:32:11.0 HOT-2	ah huh.		
20:32:11.7 HOT-1	so were thirty miles out. we ought to be descending better than that.		
20:32:14.1 HOT-2	exactly.		
20:32:15.6 HOT-2	that's what I was thinking about. four thousand feet high at thirty miles out.		
20:32:18.5 HOT-2	but we got 'em turn the corner so we should be okay.		
20:32:25.9 HOT-1	twenty nine ninety seven.		
20:32:31.5 HOT-1	and you set 'em down already?		
20:32:33.0 HOT-2	I did.		
20:32:39.1 HOT-1	descent checklist.		
20:32:39.8 HOT-2	descent checklist. altimeters.		
20:32:42.7 HOT-1	two nine nine seven cross checked.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:32:44.1 HOT-2	two nine nine seven cross checked. minimums.		
20:32:47.3 HOT-1	baro thirty eight seventy one.		
20:32:52.6 HOT-2	ahhh baro thirty eight seventy one. landing data.		
20:32:57.4 HOT-1	full. one thirty five.		
20:32:58.9 HOT-2	full one thirty five. approach briefing is complete. autobrakes are low.		
20:33:03.4 HOT-2	seatbelt sign is on.		
20:33:05.2 HOT-2	descent checklist is complete.		
20:33:08.9 HOT-2	ahhhhh if I may.		
20:33:11.1 HOT-1	please do.		
20:33:12.4 HOT-2	I'll just deselect your I-L-S for ya'.		
20:33:16.1 HOT-1	yeah that will make a difference on the arrival.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:33:18.1 HOT-2	I haven't done it-- what happens when you don't do that?		
20:33:20.6 HOT-1	you get a---		
		20:33:20.9 APR-RCA	Delta twenty eight forty five turn right heading two eight zero.
		20:33:24.0 RDO-2	right to two eight zero Delta twenty eight forty five.
20:33:26.7 HOT-2	want a little p-pos?		
20:33:27.1 HOT-1	*		
20:33:28.4 HOT-1	no.		
20:33:29.0 HOT-2	no?		
20:33:29.5 HOT-1	I don't give a #.		
20:33:30.6 HOT-1	because I'm not gonna do it that way anyway.		
20:33:32.1 HOT-2	okeydokey.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:33:32.8 HOT-1	the fact I'll show you the-- a much better way to do it.		
20:33:35.6 HOT-2	okeydokey.		
20:33:37.3 HOT-2	I'm all ears and eyes.		
20:33:38.7 HOT-1	so if you come here to direct. because they got us on a # heading anyway.		
20:33:43.2 HOT-1	ahhh what's our inbound zodum [sic] and oh-zusef [sic] or what the fer- #?		
20:33:48.3 HOT-1	so they'll probably put us insi- outs-		
20:33:52.1 HOT-1	(we'll) probably be in between ASUVE and ZUDIM.		
20:33:55.1 HOT-1	so let's use ZUDIM.		
20:33:56.7 HOT-1	the inbound course it says is three twenty four.		
20:33:59.9 HOT-1	well some'# it says one forty four here but that's the reciprocal so let's use it. that's gonna draw a straight line.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:34:07.3 HOT-1	okay. so you see that?		
20:34:09.3 HOT-2	sí.		
20:34:10.5 HOT-1	when we roll in. there is a gotch'ya to this. when we roll in for that.		
20:34:19.2 HOT-1	we hit # insert.		
20:34:21.9 HOT-2	(not insert).		
20:34:21.9 HOT-1	(it's magic). no. trust me.		
20:34:24.3 HOT-2	okay.		
20:34:25.4 HOT-1	# insert. because we're navin'.		
20:34:29.3 HOT-1	and so it's gonna take that heading. it's gonna draw a green line.		
20:34:33.6 HOT-2	and that's us.		
20:34:34.4 HOT-1	you got it.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:34:36.4 HOT-1	if you do it this way instead of doing the p-pos. you can never # it up.		
20:34:43.1 HOT-1	it's fact.		
20:34:43.7 HOT-2	fact.		
20:34:44.4 HOT-1	fact.		
20:34:44.8 HOT-2	fact.		
20:34:48.1 HOT-2	oy well it is nice out here. you know what I can't imagine property being outrageously expensive out here.		
20:34:54.6 HOT-1	it's not bad.		
20:34:57.5 HOT-1	okay I just activated the--		
20:34:58.9 PA-3	[flight attendant makes cleared for landing announcement to passengers, stow baggage, laptops, seatbacks, tray tables, seatbelts, armrests]		
20:35:01.4 HOT-1	I just activated the mother#. so let's do an approach checklist.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:35:06.7 APR-RCA	Delta twenty eight forty five turn right heading three zero zero.
		20:35:09.9 RDO-2	right to three zero zero Delta twenty eight forty five.
20:35:18.0 HOT-1	okay we're doing the speed of heat.		
20:35:19.5 HOT-2	*.		
20:35:19.7 HOT-1	so how long does it take to slow down?		
20:35:21.9 HOT-2	ah thirty knots a mile's I heard. (but you can) do better than that though.		
20:35:25.2 HOT-1	[snort] you been listening to somebody on crack.		
20:35:33.9 HOT-2	approach checklist flight and nav instruments.		
20:35:37.6 HOT-1	ahhhhh. just a second I gotta do something important.		
20:35:47.3 HOT-1	because I was in that it ain't gonna # work the way I want it to.		
20:35:51.9 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:35:52.9 HOT-1	okay and flight and nav instruments I got R-NAV one four.		
20:35:59.2 HOT-2	okay. ah R-NAV one four is in there. cabin notification.		
20:36:03.1 HOT-1	it's complete.		
20:36:03.2 HOT-2	I didn't know you did that. alright you did that. okay F-M-S flight phase.		
20:36:06.8 HOT-2	is approach you already did that. and altimeters.		
20:36:12.1 HOT-1	I got twenty nine ninety seven crosschecked.		
20:36:13.9 HOT-2	two nine nine seven crosschecked. approach checklist is complete.		
20:36:26.3 HOT-1	there's the airport.		
20:36:30.1 HOT-2	there it is.		
20:36:51.6 HOT-(1)	open now.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:36:53.0 HOT-1	we can go ahead and put some drag out here. let's go gear down.		
20:36:55.8 HOT-2	gear down comin'.		
20:36:57.0 CAM	[sound of click]		
20:36:58.9 HOT-2	two below-- two forty all good.		
20:36:59.0 CAM	[sound of increased noise, similar to gear extension]		
20:37:08.5 HOT-1	flaps one.		
20:37:09.9 HOT-2	speeds check flaps one.		
20:37:14.5 HOT-1	this be one of those vertical descents.		
20:37:16.6 HOT-2	this is one of them vertically ones.		
		20:37:23.7 APR-RCA	Delta twenty eight forty five turn left heading two three zero.
20:37:28.5 HOT-2	you want to do that?		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
20:37:29.9 HOT-1	not really.
20:37:53.5 HOT-1	flaps two.
20:37:54.8 HOT-2	speeds checkkkk. flaps two.
20:38:10.3 HOT-1	flaps three.
20:38:11.4 HOT-2	flaps three.
20:38:16.5 HOT-(1)	n'ya why isn't she comin' down any faster than that.

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:37:31.0 RDO-2	we'd like to keep our-- we're a little high-- you mind if we keep going out a little bit longer.
20:37:34.4 APR-RCA	Delta forty-- correction Delta twenty eight forty five remain present heading and advise when you'll proceed inbound.
20:37:38.8 RDO-2	okay present heading for now Delta twenty eight forty five thank you.
20:37:41.5 APR-RCA	no problem.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:38:20.5 HOT-(2)	ahh she's gonna dump.		
20:38:34.7 HOT-2	and we're slowin' to approach speed.		
20:38:36.2 HOT-1	yep. annnd I got one set of flaps left to use.		
20:38:36.7 HOT-2	**.		
20:38:39.5 HOT-2	alright.		
20:38:50.9 HOT-2	we're in the hook.		
20:38:52.3 HOT-1	yep.		
20:38:59.2 HOT-1	I'm playin' that hook.		
20:39:04.4 HOT-2	ahhh let me know when we call visual.		
20:39:09.2 HOT-1	well we're kind of tight. but actually it looks good but I'm gonna let it get down just a little bit more.		
20:39:14.2 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:39:14.2 HOT-1	fif-tyyyyyy.		
		20:39:16.6 APR-RCA	Delta twenty eight forty five are you able to accept a left turn at this time?
20:39:19.4 HOT-1	yes.		
		20:39:20.2 RDO-2	yeah we can accept a left turn and the field in sight Delta twenty eight forty five.
		20:39:24.1 APR-RCA	Delta twenty eight forty five cleared visual approach runway one four use caution for Ellsworth Air Force Base located six miles northwest of Rapid City Regional.
		20:39:32.3 RDO-2	okay cleared visual approach runway one four Delta twenty eight forty five.
20:39:35.6 HOT-2	alright you got the right one in sightttt...		
20:39:37.3 HOT-1	God I hope I do. [said in overlap with first officer's turn at talk below]		
20:39:37.4 HOT-2	** in the boxxxx. [said in overlap with captain's turn at talk above]		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:39:39.9 HOT-1	we can go flaps full landing checklist.		
20:39:41.8 HOT-2	flaps full landing checklist.		
20:39:49.0 HOT-2	you did that.		
20:39:49.4 CAM	[sound of 3 clacks, similar to mode change annunciation]		
20:39:52.8 HOT-2	alright there we are.		
20:39:54.4 HOT-2	ahhhhh landing gear.		
20:39:56.4 HOT-1	it is down.		
20:39:57.3 HOT-2	down. flaps.		
20:40:00.3 HOT-1	ahhhhh full full.		
20:40:02.4 HOT-2	full full and spoilers are...		
20:40:04.7 HOT-1	armed.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:40:05.4 HOT-2	armed. landing checklist is complete.		
20:40:07.5 HOT-1	okay you agree that is...		
		20:40:08.1 MISC-AC	** forty eight sixty eight ah five thousand climbing one **. [full transmission was in overlap with intracockpit surrounding talk]
20:40:10.8 HOT-(2)	that is us.		
20:40:11.6 HOT-(1)	and here comes the brick.		
		20:40:13.6 APR-RCA	Lindbergh forty eight fifty eight Ellsworth Departure radar contact.
20:40:15.1 HOT-2	cleared approach.		
		20:40:19.0 RDO-2	and approach Delta twenty eight forty five you want us over to tower sir?
		20:40:22.5 APR-RCA	Delta twenty eight forty five contact Rapid City Tower one two five point eight five. have a good night.
		20:40:26.6 RDO-2	twenty five eighty five you too Delta twenty five eigh-- twenty eight forty five. we'll see ya.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:40:36.3 HOT-1	descent final is armed.		
20:40:40.2 HOT-1	I'd like her to turn in more than she is.		
20:40:43.3 HOT-2	yeah *...		
20:40:43.8 HOT-1	I'm not happy with it.		
20:40:44.4 HOT-2	...we didn't-we didn't catch the hook. yep.		
20:40:44.5 CAM	[sound cavalry charge, similar to autopilot disconnect]		
		20:40:47.2 RDO-2	tower Delta twenty eight forty five runway one four.
20:40:50.9 HOT-1	ahhh---		
		20:40:51.3 TWR-RAP	Delta twenty eight forty five Rapid City Tower good evening. runway one four. wind one three zero at four. cleared to land.
		20:40:55.7 ???	(cleared to land one)--
		20:40:56.6 RDO-2	cleared to land runway one four Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:40:59.0 HOT-1	okay. I don't know if this is good or not. we'll find out.		
20:41:02.0 HOT-2	we'll find out.		
20:41:03.7 HOT-1	get rid of the autopilot-- of the flight directors.		
20:41:05.7 HOT-2	yep. there we go.		
20:41:08.5 HOT-1	and you can set a missed in there for me.		
20:41:08.7 HOT-2	***.		
20:41:16.8 HOT-1	and I don't think we even have a ah [sigh]...PAPI on this side.		
20:41:25.4 HOT-2	okay. one thousand. cleared to land. all green. we're a little steep for v-v-i intentionally. all energy is good.		
20:41:35.9 HOT-2	that looks like a normal glidepath. and we're pretty close to being on speed.		
20:41:42.2 HOT-2	and there's five hundred. runway's yours. little inside of that.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:41:46.6 HOT-1	well that's kind of # up. most # up approach I've made in a while.		
20:41:47.8 HOT-2	(oh).		
20:41:52.9 HOT-2	we're spooled.		
20:41:56.0 AUTO	one hundred.		
20:42:02.1 AUTO	fifty.		
20:42:04.4 AUTO	thirty.		
20:42:05.6 AUTO	twenty.		
20:42:06.1 AUTO	retard.		
20:42:07.1 AUTO	retard.		
20:42:08.4 AUTO	retard.		
20:42:10.5 HOT-2	okay we're on Ellsworth.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:42:12.7 HOT-1	oh #.		
20:42:15.6 CAM	[sound of rumbling, similar to gear on runway]		
20:42:15.7 HOT-(2)	alright.		
20:42:17.3 HOT-(1)	#.		
20:42:19.8 CAM	[sound of increased background noise, similar to thrust reversers]		
20:42:19.8 HOT-(2)	#.		
20:42:21.1 HOT-1	alright. tell 'em.		
20:42:24.0 HOT-1	talk.		
		20:42:24.6 RDO-2	Tower Delta twenty eight forty five we just landed at ah Ellsworth.
20:42:28.2 HOT-(2)	#.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:42:28.8 TWR-RAP	twenty eight forty five I just saw you drop off the radar standby sir.
20:42:38.2 CAM	[sound of background sound decreased, similar to thrust reversers off and aircraft slowing down]		
20:42:39.3 HOT-1	ah man that's not a good thing.		
20:42:46.5 HOT-1	we need Ellsworth Tower.		
20:42:49.5 HOT-1	I'll talk to the folks.		
20:42:54.4 PA-1	well ladies and gentlemen you're not gonna believe this. (It was my leg) and Ellsworth and Rapid City are directly in line. and I just landed at Ellsworth. so we're gonna have to get off the runway come back around and takeoff and go over to Rapid City. first time in my career to do that.		
		20:42:56.9 TWR-RAP	and twenty eight forty five standby sir I'm going to talk to Ellsworth Tower and see where they want ch'ya.
		20:43:00.9 RDO-2	okay thanks we need the Ellsworth Tower frequency * like that Delta twenty eight forty five.
		20:43:07.5 TWR-RAP	one twenty six point zero five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:43:09.4 RDO-2	[sound of two microphone clicks]
		20:43:20.0 RDO-2	Ellsworth Tower Delta twenty eight forty five.
20:43:22.5 HOT-1	okay what's-what-what are we doin'?		
20:43:25.1 HOT-2	we're on their tower frequency now. twenty six forty five.		
		20:43:36.0 RDO-2	Ellsworth Tower Delta twenty eight forty five.
20:43:43.5 HOT-2	mother# @. #.		
20:43:46.1 HOT-1	I # it up man.		
20:43:47.1 HOT-2	nah I didn't help you out.		
20:43:48.9 HOT-2	we talked ourselves to lookin' inside. we were lookin' outside.		
		20:43:53.9 RDO-2	Rapid City Delta twenty eight forty five.
		20:43:57.5 TWR-RAP	twenty eight forty five tower.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:43:58.6 RDO-2	yeah no contact at twenty six forty five.
		20:44:01.8 TWR-RAP	one twenty six point zero five.
		20:44:03.4 RDO-2	thank you.
		20:44:11.4 RDO-2	Ellsworth Tower Delta twenty eight forty five.
		20:44:15.2 TWR-RCA	Delta twenty eight forty five Ellsworth Tower standby.
20:44:23.7 HOT-1	send a message to...		
20:44:25.2 CAM	[sound of gargling tone, similar to flight attendant call to cockpit]		
20:44:27.3 HOT-1	I'll talk to 'em.		
20:44:30.0 INT-1	and go ahead.		
20:44:30.7 INT-3	are you serious or is that a joke?		
20:44:32.9 INT-1	no that's not a joke.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:44:35.6 INT-3	okay.		
20:44:37.1 INT	[sound of many clicks, similar to flight attendant hanging up interphone handset]		
20:44:54.7 HOT-1	sounds to me like he wants us to shut 'em down.		
20:44:56.7 HOT-1	starting the A-P-U.		
20:44:58.8 HOT-2	okay. I'll be right back.		
		20:45:03.2 TWR-RCA	ah Delta aircraft on ah ** positioning on taxiway delta right now. continue to hold your position. give me your call sign please.
		20:45:10.8 RDO-2	that's ah Delta twenty eight forty five sir.
		20:45:14.7 TWR-RCA	Delta twenty eight forty five roger. unfortunately sir we'll need to hold your position our security forces personnel will be responding to ah determine where we're gonna go from here.
		20:45:22.9 RDO-2	okay we'll be standing by for your directions Delta twenty eight forty five.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:45:26.5 RDO-1	and just a question. this is the captain on a Delta's twenty eight forty five. is it possible for us to ah return to the end and go over to Rapid City?
		20:45:36.4 TWR-RCA	unfortunately not sir. ah I'd like to-- I wish it was that simple but it's not going to be. just continue to hold your position. sorry. [sound of tones in background of radio transmission]
		20:45:43.5 RDO-1	okay we've been told to ah go ahead and shut down the engines. we're doing that at this time.
		20:45:48.9 ???	[staticky interference on radio]
		20:45:50.4 (RDO)-1	hold on.
		20:45:51.3 TWR-RCA	[staticky interference] twenty eight forty five roger.
20:45:53.9 HOT-2	and who told us to shut down the engines?		
20:45:55.1 HOT-1	they did.		
20:45:56.1 HOT-2	okay.		
20:45:57.7 HOT-(1)	let's the A-P-U goin'. it's not...		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:45:59.1 HOT-(2)	I'm workin' on it.		
20:45:59.6 HOT-(1)	...alright.		
20:46:01.8 HOT-2	alright let me do an after landing.		
20:46:06.7 HOT-2	flaps [whispering].		
20:46:08.0 HOT-2	spoilers [whispering].		
20:46:12.6 HOT-2	after landing checklist is complete.		
20:46:16.4 HOT-2	A-P-U is spinnin' up.		
20:46:23.9 HOT-2	I sent dispatch a message.		
20:46:27.1 HOT-2	guess we'll keep all this.		
20:46:28.6 HOT-1	I'll call 'em as soon as I can.		
20:46:30.7 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:46:33.3 HOT-2	and I'm not gonna throw away any paperwork.		
20:46:34.2 HOT-1	okay we have an available.		
20:46:36.5 HOT-1	alright you can ah. shutdown checklist. you can shut 'em off.		
20:46:44.5 HOT-2	okay I'm gonna leave the seatbelt sign on.		
20:46:46.8 HOT-1	alright.		
20:46:47.7 HOT-2	I'm gonna leave the beacon on.		
20:46:49.8 HOT-2	or you want to turn that off?		
20:46:50.8 HOT-1	no. ahhh.		
20:46:52.1 HOT-1	shut down the engines first and then we'll d-- we'll do everything standard.		
20:46:55.7 HOT-2	okay so here we go. you ready?		
20:46:57.3 HOT-1	yep.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:47:00.9 CAM	[sound of background electronic sound changes to higher pitch]		
20:47:02.4 CAM	[sound of click, similar to relay click related to APU power coming on line]		
20:47:04.1 HOT-2	beacons off. that's that.		
20:47:06.1 HOT-1	A-P-U bleeds on.		
20:47:09.8 HOT-1	shutdown checklist.		
20:47:11.1 HOT-2	okay.		
20:47:13.8 HOT-2	and shutdown checklist seatbelt sign is on for now. beacon.		
20:47:19.9 HOT-1	it's off.		
20:47:20.8 HOT-2	engine anti-ice.		
20:47:23.6 HOT-1	it's off.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:47:24.5 HOT-2	fuel pumps.		
20:47:26.7 HOT-1	it's off.		
20:47:27.2 HOT-2	yellow electric pump.		
20:47:28.9 HOT-1	off.		
20:47:29.4 HOT-2	engine master switches.		
20:47:32.0 HOT-1	it's off.		
20:47:32.5 HOT-2	transponder.		
20:47:33.6 HOT-1	standing by.		
20:47:35.9 HOT-2	uhhhhhmmmm parking brake.		
20:47:40.3 HOT-1	is on.		
20:47:42.2 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:47:43.4 HOT-2	shutdown checklist is complete. we're waiting on the seatbelt sign. leave that on for now.		
20:47:47.9 HOT-1	and I'll go ahead and...		
20:47:51.5 HOT-1	okay so tower is twenty six oh five?		
20:47:53.8 HOT-2	yeah it's we're on tower right now.		
		20:47:56.3 RDO-1	tower Delta twenty eight forty five.
20:47:59.4 PA-3	[flight attendant makes announcement to passengers updating on status, awaiting further information]		
		20:48:02.4 TWR-RCA	twenty eight forty five tower.
		20:48:04.6 RDO-1	well this probably doesn't happen to you too much. you know. I've been doing this for over thirty years and this is my first time. so I don't. other than I am prior military but ahhh. I'm not exactly sure what the protocol is here.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

20:48:19.2

TWR-RCA

ah sir it's just gonna depend. security forces will come on they're more than likely gonna try and ah talk to you. I'm gonna be with- on the radio with the security forces as well see if we can expedite your departure. and I'm gonna need some information from ya'. and hopefully we can ah get you back in the air and over to Rapid as quickly as possible.

20:48:35.9

RDO-1

excellent I'll ah communicate with our Delta operations and ah. do they wanna hook up or just do it via ah radio?

20:48:44.6

TWR-RCA

I'll find out and let you know sir.

20:48:46.5

RDO-1

ah--

20:48:46.6

TWR-RCA

easiest ah relay in for ya. so standby.

20:48:48.9

RDO-1

because we can certainly do it either way. boy I'm sorry about this. I've never had this happen to me.

20:48:53.3

TWR-RCA

ah it's not the first time it's happened but it is a rare occurrence.

20:48:56.9

RDO-1

okay well. I'm going to put my Air Force copilot in charge he's an enlist-- ah well he's been retired for a while. anyway I'm going to go back and talk to the passengers. he's gonna be communicating out of the cockpit.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		20:49:08.9 TWR-RCA	twenty eight forty five roger.
20:49:11.5 HOT	[sound of airy sound, similar to removal of a headset]		
20:49:17.5 HOT-2	alright you've already talked to passengers so you're gonna give ah dispatch a call?		
20:49:24.0 CAM-1	no I'm gonna talk to the passengers first. I'm gonna get my uhm [sound of 3 beeps] phone bootin up.		
20:49:41.6 CAM-1	okay. [sound of door opening]		
20:50:03.3 PA-1	well ladies and gentlemen. I can't believe this. in over thirty years I've never done anything like this. nice landing. just at the wrong airport. [laughter in background]		
20:50:16.7 PA-1	well here's the deal they just they're in line with each other. and you know when we were working with Minneapolis Center and everything. ahhh they had us setup for runway three two. which is the opposite direction. we got over to uhm.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
20:50:36.0 PA-1	Rapid City Approach which oh that happens to be the Air Force. and they gave us vectors onto this approach sequence. then they cleared us for the visual for runway one four which we landed on. you know I checked my instruments. everything looked good. [laughter]		
20:50:53.7 PA-1	but guess what. so anyway. ah. this is an awful embarrassing moment. ah so we're-we're working with the Air Force right now. of course. you know. it's a security incident. and this does occasionally happen.		
20:51:11.9 PA-1	ah but it's not normal [laughter]. and so the next thing I gotta do is. call Atlanta and tell them how stupid I am. and ah then we're gonna be on our way. but boy.		
20:51:27.3 PA-1	right now. I gotta tell ya. I feel like the thickness of a **.		
		20:51:30.4 TWR-RCA	twenty eight forty five ah tower.
		20:51:32.7 RDO-2	go for Delta twenty eight forty five.

TIME and SOURCE

INTRA-AIRCRAFT CONTENT

TIME and SOURCE

AIR-GROUND COMMUNICATION CONTENT

20:51:35.7
CAM-1 [unintelligible discussion from cabin, captain and passengers]

20:51:48.8
CAM-1 alright. you talkin' to 'em.

20:52:01.4
CAM-1 give me the brief.

20:52:03.2
HOT-2 uh they want us to ask the passengers to lower their shades and dispatch wants you to call them.

20:51:35.0
TWR-RCA

twenty eight forty five if you could instruct all of your passengers to ah go ahead and lower their shades and ah uhm just to prevent uhm visual out the windows. and then in addition to that if you could make visual contact with one of the security forces personnel through ah through your cockpit window maybe and I'm not sure if you can ah open that window at all to talk to 'em [cyclic tone in background of transmission].

20:51:55.2
RDO-2

okay we will do that and uh we'll open the ah right side ah window and we can have a little chit-chat here. standby.

20:52:01.5
TWR-RCA

roger that.

----- time discontinuity ---- power removed/applied from CVR -----

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
22:23:59 ³ CAM	<i>[sound of single chime, similar to master caution]</i>
22:24:05 CAM-1	<i>and. K-R-C-A?</i>
22:24:11.3 HOT-2	<i>ahhhh yes. K-R-C-A.</i>
22:24:26 CAM-1	<i>beautiful.</i>
22:24:27 CAM	<i>[sound of 8 bells, similar to response to takeoff configuration test button activation]</i>
22:24:33 CAM-1	<i>so what'dya find in the brief on that?</i>
22:24:36 HOT-2	<i>uhm. only things we heard is the ah. the big thing there is ah make sure we close out the flight plan. make sure we're making radio calls right base of our position.</i>
22:24:44 HOT-2	<i>and then make sure we use five clicks to turn the runway lights on. and then we ta--</i>

<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
22:24:05 TWR- RCA	<i>Medic One Tower.</i>

³ Times between 22:23:59 MDT and 22:25:23 MDT (content shown in *italics*) are approximate.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>
22:24:48 CAM-1	<i>five clicks to turn on the runway...</i>
22:24:50 HOT-2	<i>yeah. yep. and.</i>
22:24:50 CAM-1	<i>...lights. and announce in the blind our position to landing *.</i>
22:24:54 HOT-2	<i>that's it.</i>
22:24:55 CAM-1	<i>and then to close the flight plannnn we call Ellsworth. don't we?</i>
22:25:01 HOT-2	<i>ah well there's a phone number to call. I'll call that. and then we'll also ask dispatch. so we'll double whammy that thing.</i>
22:25:05 CAM-1	<i>alright. I'm good with all that.</i>
22:25:19 CAM-1	<i>I'm startin' to get a little frustrated with company.</i>
22:25:23 HOT-2	<i>yeah I'm sure they're pissed off at us.</i>

----- time discontinuity ---- power removed/applied from CVR -----

23:00:24.9 HOT-?	<i>start(in) two. [sound of beep] and.</i>
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<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:00:30.6 HOT-?	start two.		
23:00:40.9 HOT-1	is he gonna give us a progressive taxi or we--		
23:00:42.7 HOT-2	yep.		
23:00:43.3 HOT-1	okay.		
23:00:43.8 HOT-2	he's gonna progressive us. and we'll flick * our landings lights when ready to go. after we've got clearance from tower.		
23:01:08.4 HOT-2	I'll tell you what. we'll do all the normal after engine start stuff. we'll set the flaps and then we'll get into the checklist for the fuel. if you're happy with that *?		
23:01:13.7 HOT-1	exactly how I was gonna tell you we're gonna do it.		
23:01:15.1 HOT-2	(okay).		
23:01:20.7 HOT-1	after start checklist when you get a chance.		
23:01:22.6 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:01:31.9 HOT-2	after start checklist. yellow electric pump is off. engine anti-ice.		
23:01:35.8 HOT-1	off.		
23:01:39.2 HOT-2	E-CAM status is checked. after start checklist is complete.		
23:01:42.8 HOT-1	no wave. flaps one.		
23:01:44.7 HOT-2	no wave. flaps to one.		
23:01:47.0 HOT-2	and those are set. okay I'm pullin' up the fuel.		
23:01:50.2 HOT-2	okay if center tank is empty which it is.		
23:01:52.5 HOT-2	cross feed pushbutton. on.		
23:01:55.4 HOT-2	verify me that *.		
23:01:56.3 HOT-1	I agree.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:01:59.3 HOT-2	okay. both tank pumps lighter wing. off. (that would be left side).		
23:02:03.3 HOT-1	(which would be the left).		
23:02:04.8 HOT-2	and those are the w-- you happy with that?		
23:02:05.8 HOT-1	yes I am.		
23:02:10.7 HOT-1	okay.		
23:02:10.7 HOT-2	when fuel is balanced both tank pumps on. cross feed on. so we'll need to keep an eye on that.		
23:02:14.1 CAM	[sound of single chime, similar to master caution]		
23:02:16.5 HOT-1	alright.		
23:02:17.5 HOT-1	so all we're looking for.		
23:02:18.5 HOT-2	ahhh hold on a second. those are the ah.		
23:02:21.8 HOT-2	this is center fuel.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:02:26.4 HOT-1	hit recall.		
23:02:28.2 HOT-2	s'okay.		
23:02:28.9 HOT-2	you're good with that?		
23:02:29.8 HOT-1	I agree.		
23:02:35.4 HOT-1	okay. so we need to turn these two pumps off.		
23:02:43.9 HOT-2	gotch'ya. there we go.		
23:02:50.4 CAM	[sound of single chime, similar to master caution]		
23:02:53.1 HOT-1	okay. we'll read it. engine mode selector to ignition. I'll go ahead and do that.		
23:02:58.8 HOT-1	ahh when left tank fuel required. left tank gravity only. fuel crossfeed off.		
23:03:05.0 HOT-1	okay you'all good with that?		
23:03:06.4 HOT-2	I'm good **.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:03:06.7 HOT-1	** clear that.		
23:03:12.6 HOT-2	still may take a while.		
23:03:14.2 HOT-1	it may.		
23:03:15.5 HOT-1	and we'll have to advise 'em of that.		
23:03:18.9 HOT-1	and we'll keep our fuel up so we can look at it-- well we've gotta do other checks.		
23:03:23.6 HOT-1	uh but we'll advise ground that we're...having to deal with a fuel imbalance also.		
23:03:27.8 HOT-2	alright you ready for a taxi check here before we do anything?		
23:03:29.5 HOT-1	I am.		
23:03:30.4 HOT-2	taxi checklist. flaps.		
23:03:32.7 HOT-1	I got one one one.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:03:35.4 HOT-2	one one and one. takeoff speeds.		
23:03:45.5 HOT-1	one forty six. one forty six. one forty seven.		
23:03:48.1 HOT-2	one forty six. one forty six. one forty seven. thrust.		
23:03:51.9 HOT-1	flex forty eight.		
23:03:53.1 HOT-2	flex forty eight. trim.		
23:03:57.4 HOT-1	twenty ninnnne zero.		
23:04:04.4 HOT-2	twenty ninnnne and zero.		
23:04:11.7 HOT-1	watch your feet.		
23:04:18.6 HOT-1	my tops.		
23:04:27.5 HOT-1	taxi checklist ah or flight controls.		
23:04:29.4 HOT-2	and uhm flight controls.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:04:30.8 HOT-1	checked.		
23:04:31.4 HOT-2	checked. taxi checklist is complete.		
23:04:33.3 HOT-1	okay. I'm going back to fuel.		
23:04:36.3 HOT-1	we are startin' to drop on that one. that's good.		
23:04:39.9 HOT-2	so what did we say we needed at--		
23:04:41.1 HOT-1	four thousand nine hundred.		
23:04:41.3 HOT-2	forty nine hundred pounds?		
23:04:42.7 HOT-2	four thousand nine hundred.		
23:04:44.4 HOT-1	mm hmm.		
23:04:45.9 HOT-2	isn't it a (eight) seventeen?		
23:04:48.7 HOT-2	so after this. keep go ahhh keep watchin' it.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:04:51.6 HOT-1	yep. and ah.		
23:04:52.7 HOT-2	nine hundred. is what they briefed us right?		
23:04:56.1 HOT-1	yeah they briefed us four thousand nine hundred.		
23:04:58.3 HOT-2	okay.		
23:05:01.6 HOT-1	alright. you feel like you're ready to taxi?		
23:05:06.5 HOT-1	I mean I'm taxiing are you ready to go?		
23:05:08.2 HOT-2	yeah yeah (yeah) standby. I'm just makin' sure we got it.		
23:05:11.1 HOT-2	yep I think we're ready.		
23:05:12.5 HOT-1	okay and we're on-- for taxi we're on the Ellsworth thirty dash nine.		
23:05:18.1 HOT-2	we are on Ellsworth thirty dash nine.		
23:05:22.9 HOT-1	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:05:30.8 HOT	[hi pitch electronic squeal]	23:05:22.9 RDO-2	Tower Delta twenty eight forty five we're ready to taxi.
		23:05:35.0 TWR-RCA	Delta twenty eight forty five Ellsworth Tower runway one three taxi via alpha golf. follow me will assist. current weather ah. two two zero at five visibility one zero. sky clear. temperature is one nine. dewpoint eight and altimeter tree zero zero one.
		23:05:51.3 RDO-2	and copy that runway one three via delta alpha golf. we'll follow the follow me. ah keep advised we will need to ah we might be delayed at the departure end for a few moments we need to fix a fuel imbalance. we'll keep you advised.
		23:06:03.5 TWR-RCA	Delta twenty eight forty five copy sir. advise when you're ready. hold short.
		23:06:08.0 RDO-2	wilco.
23:06:16.1 HOT-1	okay.		
23:07:29.8 HOT-1	hundred pounds to go and we're legal.		
23:07:31.0 HOT-2	yeah that'll work.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:07:32.2 HOT-2	once you get it closer to nine hundred but I think we'll alright.		
23:07:35.5 HOT-2	let me do this.		
23:07:41.6 HOT-2	okay release number one okay.		
23:07:51.5 HOT-1	I got twenty five eighty five in the ah...radio number two to activate the lights as soon as we takeoff.		
23:08:00.6 HOT-2	okay you got twenty eight. say that again.		
23:08:04.8 HOT-1	I got twenty five eighty five. tower Rapid City.		
23:08:06.3 CAM	[sound of gargling tone, similar to flight attendant call to cockpit]		
23:08:08.4 HOT-1	I'll activate the lights as soon as we take off.		
23:08:10.1 ?	*.		
23:08:11.0 INT-3	(@) cabin's ready for takeoff.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:08:12.6 INT-2	thanks @.		
23:08:13.2 INT-3	thank you.		
23:08:13.7 INT	[sound of clicks and clacks, similar to flight attendant hanging up interphone]		
23:08:17.8 HOT-1	*.		
23:08:17.9 HOT-2	(six carry) * yeah let's get it closer to eight hundred and that will be legal on the limits.		
23:08:22.0 HOT-1	yep.		
23:08:22.7 HOT-2	we got time for that.		
23:08:25.0 HOT-1	we just don't want to push our ah min fuel much.		
23:08:28.0 HOT-2	no.		
23:08:29.2 HOT-2	okay just confirming that tower frequency is twenty five eighty five.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:08:32.1 HOT-1	twenty five-		
23:08:34.0 HOT-1	affirmative.		
23:08:34.7 HOT-1	I have that in radio number two.		
23:08:35.8 HOT-2	okay gotch'ya.		
23:08:37.1 HOT-1	and that's so that as soon as we get. up I'm gonna activate the lights which is five but- trigger pulls.		
23:08:42.5 HOT-2	okay.		
23:08:43.7 HOT-2	buttons. next frequency is nineteen.		
23:08:47.7 HOT-2	one nineteen-- nineteen five so you got that. alright.		
23:08:48.0 HOT-1	point.		
23:08:50.0 HOT-1	nineteen five on radio one which isssss.		
23:08:53.1 HOT-2	departure.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:08:54.2 HOT-1	is that--		
23:08:54.7 HOT-2	Ellsworth Departure.		
23:08:55.4 HOT-1	Ellsworth Departure okay.		
23:08:57.1 HOT-2	and then we'll go over to the tower frequency. no hurry for that tower one.		
23:09:01.7 HOT-1	well I'd like you to be able to see-- I'd like to have the lit up so you can see where you're going.		
23:09:03.2 HOT-2	yeah. yeah me too.		
23:09:06.6 HOT-1	so I canned all that.		
23:09:06.9 HOT-2	I'll be flying the instruments once we're airborne I'll tell you that.		
23:09:09.7 HOT-1	and I'll also make sure I make all the appropriate ah area...uh...gr-- uh air common...calls. for Rapid City Tow-- uh airport.		
23:09:28.1 HOT-1	mind's a little fried.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:09:29.6 HOT-2	yep.		
23:09:33.3 HOT-1	kay we're four thousand eight hundred and sixty at this point.		
23:09:36.8 HOT-1	anytime you can resume...our ah fuel feed.		
23:09:42.0 HOT-2	alright we'll get there in just a second.		
23:09:44.4 HOT-1	take your time.		
23:09:46.1 HOT-1	we will not rush this leg.		
23:09:48.0 HOT-2	nope.		
23:09:57.1 HOT-2	okay. I see eight hundred pounds...right now.		
23:10:03.3 HOT-1	yeah--		
23:10:03.4 HOT-2	I'm happy with that.		
23:10:04.0 HOT-1	I am happy with that.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:10:05.3 HOT-1	ah reconfigure * fuel *.		
23:10:05.5 HOT-2	okay when fuel is balanced both tank pumps on.		
23:10:10.7 HOT-2	crossfeed off. so that concludes that procedure.		
23:10:15.2 HOT-2	I see runway one three at Ellsworth full length. inside out.		
23:10:20.2 HOT-2	it's gonna be vectors departure. do what they tell us to. initially it's gonna be runway heading.		
23:10:26.0 HOT-2	uhm it's gonna be up to six thousand feet. no speed restrictions. but I'm gonna plan at keeping it at no faster than two ten. alright.		
23:10:33.3 HOT-1	yep.		
23:10:33.5 HOT-2	so we'll leave flaps ah the flaps down.		
23:10:38.7 HOT-2	annnnnddd.		
23:10:41.8 HOT-2	that's what I have for that ah briefing.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:10:44.2 HOT-1	yep we'll take our time.		
23:10:46.3 HOT-1	slowly go around I'll make all those necessary radio calls.		
23:10:50.5 HOT-1	you just fly the damned airplane. if there's anything you need you just let me know.		
23:10:52.1 HOT-2	(sure).		
23:10:55.7 HOT-2	okay. got it.		
23:10:59.9 HOT-2	you ready for a before takin' off?		
23:11:02.1 HOT-1	I think we're close enough. sure before takeoff checklist.		
23:11:04.4 HOT-2	before takeoff checklist. runway position.		
23:11:07.8 HOT-1	ahh I've got one three full length outside. one three inside...		
23:11:12.0 HOT-2	one three full length (runway) one three inside...		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:11:12.9 HOT-1	...no shift.		
23:11:14.2 HOT-2	...no shifts. flaps.		
23:11:17.9 HOT-1	one. one.		
23:11:20.6 HOT-2	one and one. takeoff memo.		
23:11:24.1 HOT-1	it's all green.		
23:11:24.6 HOT-2	all green. brake temps are checked. takeoff briefing.		
23:11:28.2 HOT-1	it's complete.		
23:11:29.0 HOT-2	transponder is R-A-T-A. flight attendants have been notified. acknowledged.		
23:11:33.0 HOT-2	before takeoff checklist is complete.		
23:11:38.0 HOT-2	and when we get airborne we'll run through the checklist methodically but expeditiously.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:11:51.8 HOT-2	and there's two minutes on the motors. we've got our gas. and we've got our weights. you know what did you see the weights that we needed on the told?		
23:11:59.8 HOT-1	I did. we're eight grand.		
23:12:02.4 HOT-2	there they are yep.		
23:12:04.7 HOT-2	all sorts of room there.		
23:12:06.1 HOT-1	fuel checks.		
23:12:12.4 HOT-2	alright you happy for me to let 'em know we're ready to go?		
23:12:14.2 HOT-1	yessir.		
		23:12:15.7 RDO-2	and tower our fuel imbalance is ah fixed Delta twenty eight forty five ready to takeoff for runway one three.
		23:12:21.9 TWR-RCA	Delta twenty eight forty five runway one three line up and wait.

**TIME and
SOURCE**

INTRA-AIRCRAFT CONTENT

23:13:15.5
HOT-2 alright there's heading.

23:13:17.3
HOT-1 I'm not gonna blind him.

**TIME and
SOURCE**

AIR-GROUND COMMUNICATION CONTENT

23:12:25.8
RDO-2 line up and wait runway one three I'm assuming it will be ah
runway heading initially for Delta twenty eight forty five.

23:12:31.9
TWR-RCA twenty eight forty five ah standby we'll get release from
approach and then we'll confirm that.

23:12:37.1
RDO-2 thank you.

23:12:52.6
TWR-RCA Delta twenty eight forty five on departure fly runway heading
climb and maintain six thousand. acknowledge.

23:12:57.7
RDO-2 fly runway heading up to six thousand Delta twenty eight forty
five.

23:13:01.5
TWR-RCA Delta twenty eight forty five wind two five zero at seven
cleared for takeoff.

23:13:07.9
RDO-2 cleared takeoff ah Delta twenty eight forty five runway one
three.

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:13:17.5 HOT-2	six thousand.		
23:13:20.3 HOT-1	okay runway heading six thousand.		
23:13:37.4 HOT-1	we've been cleared for takeoff.		
23:13:38.9 HOT-2	we are cleared for takeoff. we've got time on the motors. we've got gas. and we've got min fuel.		
23:13:49.0 HOT-1	andddd we've been cleared for takeoff. that looks like the end of the runway.		
23:13:56.6 HOT-2	yep there's the green lights. that's it.		
23:14:17.3 HOT-1	your throttles.		
23:14:19.3 HOT-2	okeydokey.		
23:14:30.0 HOT-2	over here.		
23:14:32.8 HOT-?	yeah. [very low volume]		
23:14:34.2 HOT-1	man that's one big-# runway.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:14:35.7 HOT-2	yep.		
23:14:43.0 HOT-1	your aircraft.		
23:14:43.5 HOT-2	I've got it.		
23:14:45.9 CAM	[sound of increased noise, similar to power increase]		
23:14:51.6 HOT-2	flex forty three.		
23:14:52.2 HOT-1	flex...forty three.		
23:14:59.3 HOT-1	eighty. thrust normal.		
23:15:16.6 HOT-1	v-one rotate.		
23:15:19.0 CAM	[sound of low-level thunk, similar to aircraft becoming airborne]		
23:15:23.4 HOT-1	positive rate.		
23:15:24.2 HOT-2	gear up please.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:15:25.0 HOT-1	gear is comin' up.		
23:15:31.8 HOT-2	select heading.		
23:15:34.6 HOT-1	heading selected.		
		23:15:38.6 RDO-1	[sound of 5 radio modulations, similar to 5 clicks on the microphone]
		23:15:39.8 TWR-RCA	Delta twenty eight forty five contact departure ah one one niner point five.
23:15:44.3 HOT-1	nineteen five Delta...twenty eight forty five. [at low volume, similar to a radio call but apparently spoken on the intercom or to a non-selected radio]		
		23:15:48.1 RDO-2	nineteen five we're switching Delta twenty eight--
		23:15:51.3 RDO-1	Delta twenty eight forty five is up nineteen five.
23:15:52.6 CAM	[sound of 3 clacks, similar to mode change annunciation]		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:15:56.5 APR-RCA	Delta twenty eight forty five Ellsworth Departure radar contact. say altitude.
		23:16:00.7 RDO-1	we're out of four thousand six hundred for six thousand.
		23:16:04.0 APR-RCA	Delta twenty eight forty five roger expect the I-L-S runway three two approach.
		23:16:07.3 RDO-1	we'll plan for the I-L-S runway three two approach Delta twenty eight forty five.
23:16:09.7 HOT-2	tell you what...I'm gonna do this right now. and I'm gonna slow-- and keep us at one eighty.		
23:16:13.7 HOT-1	yep.		
23:16:14.3 HOT-1	a-that's. that's fine.		
23:16:16.0 HOT-2	flaps one. one eighty.		
23:16:17.6 HOT-1	we are at flaps one.		
23:16:21.5 HOT-1	I'm gonna go ahead and do checklists anyway.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:16:23.6 HOT-2	yeah (man) after takeoff checklist please.		
23:16:24.9 HOT-1	okay. the flaps are as selected. landing gear is up. and the A-P-U is off.		
23:16:30.4 HOT-1	your climb check. ah altimeters are three double oh one. cross checked.		
23:16:34.8 HOT-1	ah your descent check. altimeters thr-three double oh one. minimums. are ah thirty ah. baro thirty three sixty.		
23:16:45.4 HOT-1	landing data. is ah. flaps full. one hundred and thirty three knots. approach briefing is complete. the autobrakes are low.		
23:17:00.0 HOT-1	and ah the seatbelt sign is still on. your descent checklist is complete.		
23:17:05.6 HOT-1	I'm giving you your approach checklist. you have already activated the approach.		
23:17:10.1 HOT-1	so flight and nav instruments.		
23:17:12.0 HOT-2	verified I-L-S runway three two.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:17:13.8 HOT-1	ver-verified I-L-S runway three two. the cabin notification is complete.		
23:17:19.2 HOT-1	annnd. the F-M-S flight phase is approach. altimeters three double oh one. crosschecked.		
23:17:23.4 HOT-2	three double oh one crosschecked.		
23:17:26.0 HOT-1	standing by with the landing checklist. I'm gonna go ahead and talk on ah two.		
23:17:31.4 HOT-2	okay and I can see the runway off our right hand side now.		
23:17:37.2 HOT-2	looks like I've got runway edge lights on right now. so.		
23:17:39.5 HOT-1	I know I already activated them (for you).		
23:17:40.7 HOT-2	oh you did alright good deal.		
23:17:43.2 HOT-2	so that was a descent check and an approach check? you got 'em both knocked out?		
23:17:46.3 HOT-1	affirmative.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:17:46.7 HOT-2	all checklists complete? okay.		
23:17:52.8 HOT-1	okay I've got the I-L-S to runway three two up with eleven dash one. one oh nine three. that checks.		
23:17:58.3 HOT-2	we've already briefed it all. one oh nine three.		
23:18:01.7 HOT-2	is a set.		
23:18:03.7 HOT-1	okay you can see the runway lights out there?		
23:18:03.8 HOT-2	we got baro thirty three sixty. yeah I can see them out there but we're stayin' I-F-R.		
23:18:08.8 HOT-1	that's fine.		
23:18:09.7 HOT-2	yeah.		
23:18:10.8 HOT-1	alright.		
23:18:11.0 HOT-2	and ahhhh I wouldn't mind a ah fifteen mile final.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:18:16.0 RDO-1	Rapid siri City area traffic Delta twenty eight forty five left downwind for the I-L-S to runway three two ah currently ah six miles ah from the airport.
23:18:35.8 HOT-1	kay I just made one in the blind.		
23:18:40.6 HOT-1	I hope I just made it on the right frequency.		
23:18:42.9 HOT-?	[chuckle]		
23:18:49.8 HOT-1	okay twenty six oh five is.		
23:18:53.8 HOT-1	aw # what have I done here. I may have dumped it--		
23:18:56.9 HOT-2	oh yeah we still gotta be in nineteen we gotta go back to departure frequency.		
23:19:01.4 HOT-1	okay.		
23:19:02.4 HOT-2	naw nineteen ah--		
23:19:03.3 HOT-1	yeah nineteen oh f-		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:19:04.7 RDO-1	and ah Rapid City Ellsworth ah Delta ah twenty eight forty five we're off for just a second ah getting the lights controlling the message in the blind.
		23:19:13.0 APR-RCA	roger.
		23:19:14.1 RDO-1	okay we do have the airport in sight.
23:19:17.2 HOT-2	okay but we want vectors.		
		23:19:18.3 APR-RCA	Delta twenty eight forty five cleared visual approach at Rapid City Regional Airport.
23:19:18.6 HOT-2	*		
		23:19:21.0 RDO-1	okay understood we're cleared for the visual however we would like vectors for the I-L-S to runway three two.
23:19:21.0 HOT-2	sorry.		
		23:19:28.9 APR-RCA	Delta twenty eight forty five roger fly heading ah one five zero now.
		23:19:31.9 RDO-1	heading one five zero Delta twenty eight forty five

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:19:36.0 HOT-2	heading one five zero.		
23:19:38.2 HOT-1	heading one five zero.		
23:19:42.7 HOT-2	okay so all of our checklists are complete. we've got the lights on. we'll click those on again on final.		
23:19:48.4 HOT-2	have we made all the P-A's we need to make?		
23:19:52.8 HOT-1	I'll make one more P-A here in just a second.		
23:19:53.7 HOT-2	thank you.		
23:19:55.1 HOT-1	okay twenty five eighty five is the. oh my battery is going bad on me. wouldn't you know it.		
23:20:03.2 HOT-1	alright ah Rapid City...		
23:20:06.4 HOT-1	...Tower is nineteen decimal five.		
23:20:12.1 HOT-2	n-no the tower frequency is twenty-twenty five eighty five.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:20:13.7 HOT-1	you're right.		
23:20:18.1 HOT-1	twenty five eighty five on two.		
		23:20:23.3 RDO-1	Rapid City area traffic Delta twenty eight forty five is ah on an extended downwind ah for the I-L-S to runway three two currently twelve miles.
23:20:35.7 HOT-1	okay I'm back on one listening on one nineteen decimal five making a P-A.		
23:20:39.9 HOT-2	okay.		
		23:20:40.1 APR-RCA	Delta twenty eight forty five turn right heading two three zero.
		23:20:43.0 RDO-1	right two three zero Delta twenty eight forty five.
23:20:48.1 PA-1	and ladies and gentlemen we're about to turn ah onto the final approach for runway three two. please ensure that your seatbelt is fastened and ah we should be on the ground here in a few minutes. flight attendants approach check.		
23:20:49.1 HOT-2	heading two three zero.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:21:14.2 HOT-1	okay where we at?		
23:21:17.3 HOT-2	ask him for a descent to five thousand please.		
		23:21:20.9 RDO-1	Delta's twenty eight forty five's requesting descent to five thousand.
		23:21:26.5 APR-RCA	Delta twenty eight forty five descend and maintain five thousand three hundred. that's the lowest altitude I can give you.
		23:21:30.7 RDO-1	okay five thousand three hundred we're out of six thousand at this time.
23:21:35.6 HOT-1	okay and we're now to set manage speed do you want to go slower and we'll give--		
23:21:39.4 HOT-2	nope. nope I'm good.		
23:21:41.2 HOT-1	alright. you're fourteen miles so that's fine.		
23:21:41.9 HOT-2	got one eighty (in there).		
23:21:44.8 HOT-2	let's go flaps two please.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:21:46.2 HOT-1	***.	23:21:46.2 APR-RCA	Delta twenty eight forty five seven miles from final approach fix. turn right heading two niner zero. maintain at or above five thousand three hundred till established on localizer. cleared I-L-S runway three two approach.
		23:21:54.1 RDO-1	heading two nine zero. down to five thousand three hundred. cleared for the I-L-S runway three two approach. Delta twenty eight forty five.
23:22:03.8 HOT-1	okay I see ah (open descent down to five thousand three hundred). [obscured by a Medivac flight on the frequency]		
23:22:10.8 HOT-1	(and ah you've got glideslope and localizer are armed). [obscured by a Medivac flight on the frequency]		
23:22:20.0 PA-3	[flight attendant makes before landing announcement]		
23:22:35.3 HOT-2	okay I got the lights. you **-		
23:22:37.0 HOT-1	okay you ca- wanna go managed speed on it whenever you want.		
23:22:39.5 HOT-2	yep.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:22:40.4 HOT-1	because I keep on getting the message on that. just lettin' you know.		
23:22:43.4 HOT-2	slow down a little bit more. how's that.		
23:22:45.1 HOT-1	I like it.		
23:22:49.5 HOT-2	okay loc is active.		
		23:22:50.5 APR-RCA	Delta twenty eight forty five report cancellation of I-F-R this frequency or ** change to advisory frequency approved.
		23:22:56.7 RDO-1	okay we'll change to advisory frequency and uh as soon as we get on the ground we will cancel our I-F-R clearance with you Delta twenty eight forty five.
23:23:09.3 HOT-1	okay I am up on ahhh tower frequency.		
23:23:11.8 HOT-2	*. okay. and you gonna give that one more lean for me please.		
23:23:18.1 HOT-1	you mean. you want me to activate the lights again?		
23:23:19.8 HOT-2	yeah just one more time (will) be good.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:23:21.6 HOT-1	well if I (hit it). alright-- I can do that. but you- we've gotta be careful because that'll also turn 'em off.		
23:23:26.1 HOT-2	okay. I just don't want 'em going off when I'm in the flare.		
23:23:28.2 HOT-1	alright.		
		23:23:30.5 RDO-1	[sound of 5 radio modulations, similar to keying microphone 5 times]
23:23:34.1 HOT-2	kay.		
23:23:35.3 HOT-1	okay. they've been done.		
		23:23:38.3 RDO-1	Rapid City area traffic Delta's twenty eight forty five's on the I-L-S runway three two. eight miles.
		23:23:46.6 APR-RCA	Delta twenty eight forty five your still transmitting on Ellsworth Approach.
		23:23:51.7 RDO-1	sorry about that.
23:23:53.1 HOT-2	gear down please.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:23:53.9 APR-RCA	no problem.
23:23:54.1 CAM	[sound of click]		
23:23:56.0 CAM	[sound of click]		
23:23:56.4 CAM	[sound of thunk and increased noise, similar to gear extension]		
23:23:56.7 HOT-2	flaps three.		
		23:24:00.9 RDO-1	[sound of 5 radio modulations, similar to keying microphone 5 times]
23:24:03.2 HOT-2	flaps full.		
23:24:04.0 HOT-1	there it went.		
23:24:08.2 HOT-2	and a landing checklist.		
23:24:13.7 HOT-1	okay it says here landing gear.		
23:24:15.6 HOT-2	down.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:24:16.1 HOT-1	it is down.		
23:24:18.3 HOT-1	flaps.		
23:24:18.8 HOT-2	full and full.		
23:24:20.0 HOT-1	full. full. spoilers.		
23:24:22.8 HOT-1	are armed.		
23:24:23.7 HOT-2	thank you.		
23:24:24.5 HOT-1	landing checks complete.		
23:24:26.1 HOT-2	okay and we just clicked those on so we should have plenty of time for the lights.		
23:24:27.7 HOT-1	yep.		
23:24:37.6 HOT-2	okay and I'll plan on taxiing (to) the end. alpha two. alpha one (there).		
23:24:40.7 HOT-1	yep.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:24:41.3 RDO-1	Rapid Area traffic Delta's twenty eight forty five. on a five mile final for runway three two.
23:24:54.6 HOT-1	okay I'm gonna talk to ops real quick.		
23:24:58.4 HOT-2	hey stay with me please.		
23:24:59.5 HOT-1	I will.		
23:25:00.1 HOT-2	thanks.		
23:25:01.5 HOT-1	okay you are.		
23:25:04.4 HOT-1	let's see here ahhhh.		
23:25:11.3 HOT-1	five thousand five hundred is the missed. the missed is set. you're managed speed. and your-- E-CAM's all creet...green.		
23:25:16.6 HOT-2	thanks boss.		
23:25:17.1 HOT-1	you have been cleared to land.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:25:20.0 HOT-1	you're one thousand. I-L-- ah cleared to land. all green.		
23:25:25.7 HOT-2	[sound of click] I'm flyin'.		
23:25:26.8 CAM	[sound of cavalry charge, similar to autopilot disconnect]		
23:25:30.0 CAM	[sound of 3 clacks, similar to mode change annunciation]		
23:26:04.8 HOT-1	five hundred.		
23:26:06.1 HOT-2	thank you.		
23:26:18.1 AUTO	one hundred.		
23:26:22.0 AUTO	fifty.		
23:26:24.0 AUTO	thirty.		
23:26:24.9 AUTO	twenty.		
23:26:25.4 AUTO	retard.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:26:26.6 AUTO	retard.		
23:26:31.0 CAM	[sound of rattling, similar to gear on runway]		
23:26:32.9 CAM	[sound of two clicks, similar to thrust lever reduction to reverse detent]		
23:26:33.1 HOT-1	spoilers are up.		
23:26:36.3 CAM	[sound of increased background noise, similar to thrust reverser usage]		
23:26:45.2 HOT-1	eighty.		
23:26:48.0 CAM	[sound of decreased background noise, similar to reduction of thrust reversers]		
23:26:48.2 HOT-1	I have the aircraft.		
23:26:49.4 HOT-2	okay I'm n-not out of reversers yet. there you go. you got it.		
23:26:53.6 HOT-2	you're drivin'		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:26:56.7 HOT-1	okay we're just gonna roll to the end.		
23:26:58.4 HOT-2	okay.		
23:27:0.0 HOT-1	okay you can go ahead and call Ellsworth. close our I-F-R flight plan. I have that on ah radio one.		
23:27:10.4 HOT-2	twenty eight eighty five?		
23:27:12.1 HOT-1	negative. nineteen five.		
23:27:14.6 HOT-2	that's not Ellsworth. that's- [stammers].		
23:27:17.0 HOT-1	nineteen decimal five.		
23:27:17.7 PA-3	[flight attendant starts arrival announcement; acknowledges disruption of schedule; thanks passengers for cooperation and patience; passenger laughter;]		
		23:27:18.8 RDO-2	and Ellsworth Delta twenty eight ah forty five thanks for all your help tonight. we're on the ground at Rapid City. could you close out our flight plan please?

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
		23:27:25.3 APR-RCA	Delta twenty eight forty five I-F-R cancellation received. we'll see ya.
		23:27:28.0 RDO-2	thanks. sorry for the long night guys. we'll see ya'.
23:27:30.5 HOT-1	okay. now you can call operations and let 'em know we're on the ground.		
23:27:33.3 HOT-2	ahhh. I tried callin' 'em before they weren't around.		
23:27:37.7 HOT-2	there's two of 'em here. take your pick.		
23:27:39.1 HOT-1	I'm gonna take alpha one.		
		23:27:41.3 RDO-2	operations. Delta twenty eight forty five's on the ground.
		23:27:59.6 RDO-2	Rapid City Operations Delta twenty eight forty five.
23:28:04.0 HOT-2	nobody home.		
23:28:06.0 HOT-1	might verify that frequency.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:28:07.5 HOT-2	I did. thirty one twenty five. you're just talkin'. Delta ops right?		
23:28:11.0 HOT-1	yep.		
23:28:11.4 HOT-2	yeah. those guys are probably gone.		
23:28:13.3 HOT-1	well who's gonna work the airplane?		
23:28:14.7 HOT-2	uh one thirty one twenty five.		
23:28:18.3 HOT-2	uh just not answering * they're all out there waiting for us I'm guessin'.		
23:28:21.0 HOT-1	could be.		
23:28:23.0 HOT-2	alright I'm not gonna throw any of this crap away.		
23:28:24.8 HOT-1	no-oh we're gonna keep all of our paperwork.		
23:28:31.2 HOT-2	kay after landing checklists.		
23:28:36.2 HOT-2	is complete.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:28:37.0 HOT-1	okay.		
23:28:47.4 HOT-2	okay we're looking for alpha four. er correction tango two.		
23:28:53.5 HOT-1	and we're lookin' for gate five.		
23:29:04.2 HOT-2	just sent a dispatch message on ground K-R-A-P.		
23:29:06.7 HOT-1	okay you see you still got waiting. that.		
23:29:08.6 HOT-2	yep. uhp. thanks.		
23:29:15.8 HOT-1	okay I'm crossing the runway.		
23:29:17.3 HOT-2	kay. clear on the right.		
23:29:24.1 HOT-2	kay so we're lookin' for right turn into tango two for gate five.		
23:29:30.8 HOT-2	alright I see some people out there.		
23:29:55.7 HOT-2	I guess I don't.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:30:00.1 HOT-2	alright. I'm heads down for a second. here comes golf.		
23:30:03.3 HOT-2	golf two okay.		
23:30:03.4 HOT-1	golf two.		
23:30:20.1 HOT-2	okay there's three minutes.		
23:30:24.0 HOT-1	ah we'll leave it like it is now. tango one.		
23:30:24.9 HOT-2	kay.		
23:30:27.0 HOT-1	we could take that. but I think we're better off at tango two.		
23:30:31.6 HOT-2	okay.		
23:30:33.1 HOT-2	tango one sign.		
		23:30:38.5 RDO-2	Operations Delta twenty eight forty five.
23:30:43.1 HOT-1	I got 'em all out there.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:30:44.1 HOT-2	great.		
23:31:28.4 HOT-1	and after landing checklist is complete.		
23:31:29.8 HOT-2	after landing checklist is complete.		
23:31:33.8 CAM	[sound of decreased background noise]		
23:31:59.2 HOT-1	okay you can let 'em up. and you can shut 'em down.		
23:32:09.7 HOT	[sound of beep]		
23:32:11.8 HOT-1	alright. we-we've cleared our-our uhm. we've closed out our I-F-R flight plan.		
23:32:18.6 HOT-2	correct.		
23:32:19.1 PA-3	[flight attendant doors for arrival announcement]		
23:32:20.1 HOT-1	okay and ahh.		
23:32:32.0 HOT-2	okay.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:32:32.6 HOT-1	print that.		
23:32:34.3 HOT-2	that is comin'		
23:32:36.7 HOT-1	we're gonna want to save all the paperwork.		
23:32:44.4 HOT-1	okay. shutdown checklist.		
23:32:49.5 HOT-2	shutdown checklist. seatbelt sign.		
23:32:53.4 HOT-1	it is off.		
23:32:54.5 HOT-2	beacon.		
23:32:55.1 HOT-1	is off.		
23:32:55.6 HOT-2	engine anti-ice.		
23:32:56.5 HOT-1	off.		
23:32:56.9 HOT-2	fuel pumps.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:32:57.7 HOT-1	off.		
23:32:58.2 HOT-2	yellow electric pump.		
23:32:59.1 HOT-1	off.		
23:32:59.5 HOT-2	engine mas switches.		
23:33:01.7 HOT-1	off.		
23:33:02.1 HOT-2	transponder.		
23:33:02.8 HOT-1	standing by.		
23:33:03.3 HOT-2	parking brake.		
23:33:03.9 HOT-1	off.		
23:33:04.9 HOT-2	shutdown checklist is complete.		
23:33:06.8 HOT-1	I better stand out at the # doorway.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:33:10.1 HOT-2	I'm gonna run around outside and do a walk around.		
23:33:11.8 HOT-1	alright.		
23:33:14.6 HOT-2	and then when I come back I'll do the ah shutdown checklist.		
23:33:17.6 HOT-2	or the secure rather.		
23:33:27.5 HOT	[sound of electromagnetic sound, similar to headset disconnect]		
23:33:41.3 CAM-2	and you probably don't want to go to the bathroom [chuckle].		
23:33:45.0 PA-3	[announcement about rental car desks open]		
23:33:47.3 CAM-?	* wondering about the **.		
23:33:55.2 HOT-1	okay.		
23:33:58.3 CAM-1	I'm in the back.		

<u>TIME and SOURCE</u>	<u>INTRA-AIRCRAFT CONTENT</u>	<u>TIME and SOURCE</u>	<u>AIR-GROUND COMMUNICATION CONTENT</u>
23:34:03.6 HOT-1	and we'll have do the ah securing checklist but we won't do that--		
23:34:05.8 HOT-2	yep. I'll do that as s-soon as I get back.		
23:34:17.4 CAM	[sound of unintelligible chatter from cabin]		
23:34:59.5 HOT	[sound of beep]		
23:35:06.5 CAM	[sound of unintelligible chatter from cabin]		
23:37:09.1 CAM	[sound of chime]		
23:37:14.8 CAM	[sound of discontinuity in recording, similar to CVR power cycle]		
23:37:20.6 CAM	[sound of unintelligible voices]		
END OF TRANSCRIPT			
END OF RECORDING			
23:37:54.2 MDT			