

APPENDIX D

TRANSCRIPT OF A SUNDSTRAND V557 COCKPIT VOICE RECORDER SERIAL NO. 1427 REMOVED FROM THE UNITED AIRLINES DC-8 WHICH WAS INVOLVED IN AN ACCIDENT AT PORTLAND, OREGON ON DECEMBER 23, 1978

THE TIME IS IN PACIFIC STANDARD TIME

LEGEND

CAM	Cockpit area microphone voice or sound source
RDO	Radio transmission from
-1	Voice identified as Captain
-2	Voice identified as First Officer
-3	Voice identified as Flight Engineer
-4	Voice identified as off duty Captain
-5	Voice identified as Flight Attendant
-?	Voice unidentified
UNK	Unknown
*	Unintelligible word
#	Nonpertinent word
X	Nonpertinent text
%	Break in continuity
()	Questionable text
(( ))	Editorial insertion
---	Pause
PA	Portland Approach Control
CO	United Company
VHF	VHF Radio
XXX	Nonpertinent aircraft or facility call
PD	Portland Departures
TWR	Portland Tower

INTRA-COCKPIT

AIR-GROUND COMMUNICATIONS

TIME & SOURCE

CONTENT

TIME & SOURCE

CONTENT

CAM-? \*

CAM-1 How you doing (Dory)?

CAM-5 We're ready for your announcement

CAM-5 (Do)you have the signal for not evacuate also the signal for protective position.

1744:41

CAM-5 That's the only things I need from you right now

CAM-1 Okay ah, what would you do? Have you got any suggestions about when to brace? Want to do it on the PA?

1744:50

CAM-5 I---I'll be honest with you, I've never

XXX

had one of these before --- My first  
you know --- \*

CAM-1	All right, what we'll do is we'll have Frostie oh about a couple of minutes before touchdown signal for brace position	1745:00 PA	United one seventy three heavy, turn left heading two two zero
		1745:04 RDO-2	Left two twenty one seventy three heavy
CAM-5	Okay, he'll come on the PA		
CAM-1	and then ah--		
CAM-5	And if you don't want w to evacuate what's are you gonna say		
1745:09			
CAM-1	We'll either use the PA or we'll stand in the door and hollar		
CAM-5	Okay, one or the other, ah we're reseating passengers right now and all the cabin lights are full up.		
CAM-5	Will go take it from there		
CAM-1	All right		
1745:23			
CAM-5	We're ready for your announcement any time		
1745:43			
CAM-3	I can see the red indicators from here, ya know But I can't tell * if there's anything lined up. Cause I only got this thing to shine down there		
CAM-3	*** all the way down		
1746:21			
CAM-3	Last guy to leave has gotta turn the battery external power switch off	XXX	
CAM-?	You're right		
CAM-?	*		
CAM-?	*		
1746:52			
CAM-2	How much fuel we got Frostie?		
CAM-3	Five thousand		
CAM-2	Okay		
1748:00			
CAM-4	Gonna get us a spare flashlight		

CAM-5 Sir?

CAM-4 Gonna get us a spare flashlight

1748:17  
CAM-4 Less than three weeks, three weeks to retirement  
you better get me outta here

CAM-1 Thing to remember is don't worry

CAM-? What?

1748:11  
CAM-1 Thing to remember is don't worry

1748:21  
CAM-4 Yeah

CAM-4 If I might make a suggestion ---  
  
You should put your coats on ---  
  
Both for your protection and so  
you'll be noticed so they'll  
know who you are

1748:30  
CAM-1 Oh that's okay

CAM-4 But if it gets, if it gets hot it  
sure is nice to not have bare arms

1748:40  
CAM-1 Yeah

1748:40  
CAM-1 But if anything goes wrong you just charge  
back there and get your ass off, Okay

CAM-4 Yeah

CAM-4 I told, I told the gal, put me where  
she wants me, I think she wants me at  
a wing exit

CAM-1 Okay fine, thank you

CAM-2 (We better turn around and head west)

1748:54  
CAM-2 Ah, what's the fuel show now, buddy?

1748:40  
PA United one seventy three heavy,  
traffic eleven o'clock five miles  
north bound VFR Code Unknown

RDO-2 Yeah, we've got somebody out  
there

PA 'Kay.

1748:56

CAM-1 Five

CAM-2 Five

CAM-3 (The lights in the fuel pump ---)

1749:00

CAM-1 That's about right, the feed pumps are starting to blink

XXX

CAM-? That lights too big to shine down there

CAM-? Yeah

CAM-? Maybe \* \*

CAM-? You can always get a \*

XXX

PA United one seventy three  
heavy turn left heading  
one six zero

RDO-2 Okay, left one six zero  
You got one seven three  
heavy

1749:45

CAM-? Main gear back there

CAM-? Yeah both of them appear to be down  
and locked \* \*

1749:50

RDO-2 That guy's out there about  
nine thirty, now is that right?

1749:53

PA Say again

1749:55

RD0-2 Ah, traffic's out  
there about nine thirty now?

CAM-? I see him

1749:57

PA Ah no, he's about six o'clock now  
the one that I called earlier, now  
you got another about nine thirty,  
about five miles circling

1750:17

RDO-2 Yeah, I see somebody out there  
with a light on

1750:16  
CAM-1

Okay

CAM-1

Hey, Frostie

CAM-3

Yes, sir

CAM-1

Give us a current card on weight figure about  
another fifteen minutes

1750:30

CAM-3

Fifteen minutes?

XXX

CAM-1

Yeah, give us three or four thousand pounds  
on top of zero fuel weight

CAM-3

Not enough

1750:34

CAM-3

Fifteen minutes is gonna --- really  
run is low on fuel here

1750:35

PA United one seventy  
three heavy continue your  
left turn heading zero five zero

CAM-?

Right

1750:39

RDO-2 Okay, left zero five zero

1750:47

CAM-3

\* okay --- take three thousand pounds,  
ah two hundred and four

XXX

1751:09

CAM-2

Maintenance have anything to say

1751:16

CAM-3

He says I think you guys have done  
everything you can and I said we're  
reluctant to recycle the gear for  
fear something is bent or broken,  
we wont be able to get it down

1751:22

CAM-?

I agree

1751:29

CAM-2 Think we ought to warn these people on the ground

CAM-1 Yeah, will do that right now

1751:35  
CAM-1 Ah call the ramp, give em our passenger count including laps tell em we'll land with about four thousand pounds of fuel and tell them to give that to the fire department, I want United mechanics to check the airplane after we stop, before we taxi

1752:02  
CAM-3 Yes, sir

1752:17  
CAM-1 New numbers thirty four and thirty nine

RDO-3 Seattle er Portland ramp United one seventy three

CO United one seven three Portland, go

RDO-3 United one seven three will be landing, ah in ah little bit and the information I'd like for you to pass on to the fire department for us. We have souls on

PA United one seventy three heavy traffic at twelve o'clock five miles opposite direction two targets

RDO- 3  
Cont'd board one seven two one hundred and seventy two plus five ba; ah lap ah children

RDO-2 Okay, thank you

RDO-3  
Cont'd That would be five infants that's one seventy two plus five Infants and pass It on to the fire department we'll be landing with about four thousand pounds fuel and ah requesting as soon as we stop United mechanics meet the airplane for an inspection prior to taxiing further, go Ahead

CO One seventy three copied it all and I'll relay that on ah we're showing you at the field about zero five does that sound close?

RDO-3 Ah, fuel correct currently about five

		thousand pounds
		CO Ah your ETA for the field about zero five
1753: 30 CAM-3	He wants to know if we'll be landing about five after	
		1753:30 PA One seventy three heavy traffic, two'clock a mile unknown
CAM-1	Yes	
		1753:36 PA One seventy three heavy traffic ten to nine o'clock one half mile altitude unknown
		1753:40 RDO-2 One seven three, thank you
		1753:42 RDO-3 Affirmative about five after
		CO Okay, Portland
		XXX
CAM-?	There's one down there	
CAM-?	Yeah	
1754:01 CAM-1	All done	
CAM-3	Yes, sir	
CAM-3	Ready for the * final descent check final approach, final descent check	1754:08 PA United one seventy three clear of the first traffic now there's another one at eleven o'clock, moving twelve o'clock a mile south southwest bound
CAM-1	Okay	
CAM-1	Do you want to run through the approach descent, yourself?	
CAM-1	So you (don't forget something)	1754:19 PA United one seventy three heavy traffic at twelve o'clock a half a mile
CAM-3	Yes, sir	1754:23 RDO-2 Yeah we got it down below

1754:27  
CAM-2 He's going to have the company call out the equipment?

1754:31  
CAM-1 We'll (call) dispatch in San Francisco and maintenance down there will handle it that way so we don't get it all over local radio The ramp here is going to back it up by getting the crash equipment. How many people and all that? XXX

CAM-1 When we get done back there then I'll tell them what we're going to do, so we don't end up with about a million rubber neckers out there.

1755:04  
CAM-3 Okay, approach descent check is complete

1755:13  
CAM-1 Okay, check the new ATIS is delta

CAM-1 What I need is the wind, really

VHF Portland International Information delta  
Portland weather four thousand five hundred scattered visibility three zero temperature three zero, dew point one three winds three four zero degrees at eight altimeter three zero one six

1755:51  
CAM-1 Wind is three forty at eight

1755:55  
CAM-1 Okay

CAM-1 You want to be sure the flight bags and all that # are stowed \*\*\* fastened, why don't you put all your books in your bag over there, Rod.

1756:53  
CAM-2 How much fuel you got now? XXX

CAM-3 Four, four --- thousand --- in each --- pounds 1757:02 PA One seventy three heavy turn left two eight five

CAM-2 Okay \* 1757:06 RDO-2 Two eight five one seventy three heavy

1757:21  
CAM-1 You might --- you might just take



a walk back through the cabin and  
kinda see how things are going Okay?

1757:30

CAM-1

I don't want to, I don't want to hurry,  
em but I'd like to do it in another oh,  
ten minutes (or so)

CAM-3

Yeah, I'll see if its, --- get us ready

1758:18

CAM-2

If we do indeed --- have to evacuate  
assuming that none of us are  
incapacitated. You're going to take  
care of the shutdown, right.

1758:28

CAM-2

Parking brakes, spoilers and flaps,  
fuel shut off levels, fire handles,  
battery switch and all that \* \*

1758:38

CAM-1

You just haul ass back there and do  
whatever needs doing

CAM-1

I think that Jones is a pretty level  
headed gal, and

1758:45

CAM-2

Pardon?

CAM-1

I think that "A" Stew is a pretty  
level headed gal, and sounds like  
she knows what she's doing and

CAM-1

\* \* been around for a while, I'm  
sure Duke will help out

1800:15

CAM-2

We're not gonna have any antiskid  
protection, either

XXX

1800:24

CAM-1

Well, I think the antiskid is working,  
it's just the lights that ain't working

1800:33

CAM-2

That light go off when you push the  
circuit breaker In?

CAM-1

Yeah

CAM-2

Oh, it did

CAM-1 Yeah XXX

CAM-2 Oh

1800:42  
CAM-1 I won't we much breaking we'll  
just let it roll out easy \* \*

1800:50  
CAM-2 You plan to land as slow as you  
can with the power on?

CAM-1 Ah, I think about ref or thereabouts  
try and hold the nose wheel off, I'm,  
I'm tempted to turn off the automatic  
spoilers to keep it from pitching down, but  
lets try and catch it

1801:12  
PA United one seventy three heavy turn left  
Heading one niner five

1801:15  
RDO-2 Left one niner five one seven three heavy

1801:34  
CAM-3 (You've got) another two or three  
minutes

CAM-1 Okay --- How are the people

1501:39  
CAM-3 Well, they're pretty calm and cool  
ah --- some of em are obviously  
nervous, ah --- but for the most  
part they're taking it in stride ---  
they ---

CAM-3 I ah stopped and reassured a couple  
of them, they seemed a little bit more  
--- more anxious than some of the  
others

1802:08  
CAM-1 Okay, well about two minutes before  
landing that will be about four miles  
out, just pick up the mike --- the  
PA and say assume the brace position

CAM-3 Okay

1802:22  
CAM-3 We got about three on the fuel (and  
that's it)

1802:28  
CAM-1

Okay, on the touch down if the gear folds or something really jumps the track, get those boost pump off so that --- you might even get the valves open.

1802:44

PA United one seventy three heavy did you figure anything out yet about how much longer?

1802:49

RDO-2 Yeah, we, ah, have indication our gear is abnormal it'll be our intention in about five minutes to land on two eight left, we would like the equipment standing by, our indication are the gear is down and locked, we've got our people prepared for an evacuation in the event that should become necessary

1803:14

PA Seventy three heavy, okay advise when you'd like to begin your approach

1803:17

RDO-1 Very well, they've about finished in the cabin --- I'd guess about another three, four, five minutes

1803:23 United one seven three heavy, if you could, ah, give me souls on board and amount of fuel

1803:28  
CAM-3

One seventy two plus, ah

1803:30

RDO-1 One seven two an about four thousand well, make it three thousand pounds of fuel

CAM-3

Plus six laps

PA Thank you

1803:38

RDO-1 Okay, and you can add to that one seventy two plus six laps, infants

CAM-2

I think he wants souls on board, he wants crew members and everything

CAM-3

Ah, that right, he does, doesn't he?

1803:58  
CAM-3

Ah, five, three, eight, nine

CAM-3 Eight, isn't it?

CAM-1 Well, okay

1804:04  
CAM-2 One eighty five

CAM-1 There's one check that we missed

CAM-? What XXX

CAM-1 Checking the gear warning horn

CAM-? \* right

CAM-? right

CAM-1 right

CAM-1 right

1804:44  
CAM-1 How do we do that?

CAM-2 What we gotta do is get us past flaps  
thirty five \*

CAM-1 Thirty five what happens when you close  
the throttles (any idea)?

CAM-2 You can do that too, it'll be one or  
three

1804:59  
CAM-1 Yeah

1805:08  
CAM-2 But we can't tell with that breaker out  
I guess

CAM-3 Yeah

CAM-1 Push the breaker momentarily

CAM-1 Ready?

CAM-3 Yeah

1805:26  
CAM-3 Okay, pull the breaker?

CAM-1 Yeah

1803:35  
CAM-3 Okay, now we won't have the spoiler

pump automatic spoilers

1805:39

CAM-1 Yes we will

CAM-3 The antiskid?

CAM-1 Well, wait a minute, I think the systems totally normal. Indications are what they are because the circuit breakers popped

CAM-3 Yeah

CAM-2 Right

CAM-3 Right

1805:54

CAM-1 Should have antiskid automatic spoilers and all that, we may not get ground shift because of mechanical ground shift problems

1806:04

CAM-1 Well, ah (let's have me) standby the boilers, spoilers anyway if we don't get em, why I can ---

1806:10

CAM-1 I think if we get the antiskid fail light is off we'll-get the automatic spoilers

1806:13

PA United one seven three heavy turn left heading zero five zero

CAM ((Sound of cabin door))

1806:19

CAM-1 How you doing?

1806:21

CAM-5 Well, I think we're ready

RDO-2 Left to zero five zero, United one seventy three heavy

1806:23

PA Roger

CAM-1 Okay

CAM-1 We've reseated, they've assigned helpers and showed people how to open exits and ah,

CAM-1 Okay

CAM-5 We have they've told me they've got able bodied men by the windows

CAM-1 The captain's in the very first row of coach after the galley

CAM-? Any invalids (\* \* pull out windows \*)

1806:34  
CAM-5 He's going to take that that middle galley door its not that far from the window

CAM-? Yeah \* \*

CAM-? \*

CAM-? \*

CAM-1 Okay we're going to go in now, we should be landing in about five minutes

CAM-(3/2) I think you just lost number four buddy, you

CAM-5 Okay, I'll make the five minute announce, announcement, I'll go I'm sitting down now

CAM-2 Better get some cross feeds open there or something

CAM-3 Okay

CAM-5 All righty

1806:46  
CAM-2 We're goin to lose an engine buddy

CAM-1 Why?

1806:49  
CAM-2 We're losing an engine

CAM-5 \* \* \* ((Voice fading out))

CAM-1 Why

1806:52  
CAM-2 Fuel

CAM-2 Open the crossfeeds, man

CAM-1 Open the crossfeeds there or

something ((simultaneous with above))

1806:55

CAM-3 Showing fumes

CAM-2 (Think, maybe we)

CAM-1 Showing a thousand or better

1807:00

CAM-2 I don't think its in there

CAM-3 Showing three thousand isn't it

CAM-1 Okay, it, its a

1807:06

CAM-2 Its flamed out

1807:12

RDO-1 United one seven three would like clearance for an approach into two eight left, now

1807:17

PA United one seventy three heavy, ok, roil out heading zero one zero --- be a vector to the visual runway two eight left and ah, you can report when you have the airport in sight suitable for a visual approach.

1807:25

RDO-1 Very well

1807:27

CAM- 3 We're going to lose number three in a minute too

CAM-1 Well

1807:31

CAM-3 It's showing zero

CAM-1 You got a thousand pounds, you got to

CAM-3 Five thousand in there, buddy, but we lost it

CAM-1 All right

1807:38

CAM-3 Are you getting it back

1807:40

CAM-2 No, number four, you got that crossfeed open?

1807:41

CAM-3 No, I haven't got it open, which one

1807:42

CAM-1 Open em both, # get some fuel in there

CAM-1 Got some fuel pressure?

CAM-3 Yes, sir

1307:48

CAM-1 Rotation now she's coming

1807:32

CAM-1 Okay, watch one and two

CAM-1 We're showing down to zero or a thousand

CAM-3 Yeah

1808:08

CAM-2 Still not getting it

1808:11

CAM-1 Well, open all four crossfeeds

CAM-3 All four?

CAM-1 Yeah

1808:14

CAM:2 All right now, its coming

1808:19

CAM-2 It's going to be # on approach though

CAM-? Yeah

1806:42

CAM-1 You gotta keep em running, Frostie

CAM-3 Yes, sir

1808:45

CAM-2 Get this # on the ground

CAM-3 Yeah

CAM-3 It's showing not very much more fuel

1808:50

RDO-1 United one seven three has got the field in sight now and we'd like an ASR to ten left er two eight left

1808:58

PA Okay, United one seventy three heavy, maintain five thousand



1809:03  
RDO-1 Maintain five

1809:16  
CAM-3 We're down to one on the totalizer

1809:17  
CAM-3 Number two is empty

1809:21  
RDO-1 United ah, one seven three is going to turn  
Toward the airport and come on in

1809:27  
PA Okay now you want to do it on a visual is  
that what you want?

CAM-2 Yeah

1809:32  
RDO-1 Yeah

1809:33  
PA Okay United one seventy three heavy ah  
turn left heading three six zero and verify  
you do have the airport in sight

1809:39  
RDO-2 We do have the airport in sight, one six three  
heavy er, one seven three heavy

1809:42  
PA One seven three heavy is cleared visual  
approach runway two eight left

1809:45  
RDO-2 Cleared visual two eight left

CAM-1 Yeah  
((Sound of spool down))

1809:51  
CAM-2 You want the ILS on there Buddy

CAM-1 Well XXX

CAM-2 It's not going to do you any good now

CAM-1 No, we'll get that # warning thing  
if we do

1810:17  
CAM-1 Ah, reset that circuit breaker  
momentarily, see if we get gear lights

1810:24  
CAM-1 Yeah, the nose gears down

CAM-3 Off

CAM-1 Yeah

1810:33  
CAM-1 About the time you give that brace position

CAM-3 You say now

CAM-1 No, no but when you do push that circuit breaker in

1510:43  
CAM-3 Yes, sir

1810:47  
RDO-1 How far you show us from the field?

1810:51  
PA Ah, Pd call it eighteen flyIng miles

1810:34  
RDO-1 All right

1810:59  
CAM-3 Boy, that fuel sure went to hell all of a sudden, I told you we had four

1811:14  
CAM-1 There's ah, kind of an interstate high --- way type thing along that bank on the river in case we're short

XXX

1812:03  
CAM-? Okay

1812:04  
CAM-1 That's Troutdale over there about six of one half a dozen of the other

1812:22  
CAM-2 Let's take the shortest route to the airport

1812:42  
RDO-1 What's our distance now?

1312:43  
PA Twelve flying miles

1812:48  
CAM-? Well, \* \*

1812:50  
RDO-1 Okay

1812:52  
CAM-1 About three minutes

CAM-1 Four

CAM-? (Yeah) XXX

1813:21  
CAM-3 We've lost two engines guys

CAM-2 Sir?

1813:25  
CAM-3 We just lost two engines, one and two

1813:28  
CAM-2 You got all the pumps on and everything

1813:29  
PA United one seventy three heavy contact  
Portland tower one one eight point seven,  
you're about eight or nlner flying miles from  
the airport

CAM-3 Yep

1813:35  
RDO-2 Okay, eighteen seven

PA Have a good one

1813:38  
CAM-1 They're all going

1813:41  
CAM-1 We can't make Troutdale

1813:43  
CAM-2 We can't make anything

1813:46  
CAM-1 Okay, declare a mayday

1813:50  
RDO-2 Portland tower United one seventy three  
heavy Mayday we're the engines are  
flaming out, we're going down, we're not  
going to be able to make the airport

1313:58  
TWR United one

1814:35

((impact with transmission lines as  
derived from tower tape.))

1313:59

TWR ((end of tape))