

Flight 1894
December 1, 2001
Voice Transcriptions*
IMPROVE-2

PH: This is University of Washington Flight 1894, 1 December 2001. Onboard are Hobbs, Rangno, Wilson, Salazar, McMillen, Sutherland and Eric. This is an IMPROVE-2 research flight. We'll be doing a profile, the standard vertical profile for IMPROVE-2 over the Oregon Cascades in post-frontal conditions. The P-3 took off about 5 min before us and should be supporting us in those measurements.

3:11 PM

AR: It was raining just before take off. I didn't actually see what happened on take off. I saw they were using the wipers. I didn't see where cloud base was. We're now ascending through the cloud deck here. Frontal passage was a little before take off probably, judging from the satellite imagery I saw, and it will be a front somewhat like the one we saw on Wednesday with very little temperature contrast as it went by. Example Astoria, Wednesday the temperature continued to rise after the supposed front went through the Cascades.

TW: I'm having some software problems. I'm going to see what's happening here. I don't know why it's taking a long time to boot up, but it is.

3:13 PM

TW: I've got to figure out why it's going so slow.

AR: Flying in precipitation, no cloud detail evident.

3:14 PM

AR: We've picked up a trace of it looks like clear icing.

PH: No 2-DC.

3:17 PM

PH: Just got a few problems with the computer at the moment. Things are coming up slowly and no 2-D, but Tom is working on it.

* AR = Art Rangno, EC = Eric Cooper, KM = Ken McMillen, LS = Larry Sutherland, PH = Peter Hobbs,
TW = Tom Wilson, VS = Vidal Salazar

3:19 PM

AR: Just gotten back to the bubble. We've broken out. It looks like weak cumulonimbus anvils back behind the tail, all to the west side of the aircraft. We're going to be heading into a cumulonimbus anvil with a stratiform outtrigger here at 650 mb. We're just entering that now. No cumulus turrets eminent. Very porous, ragged-looking cloud. It doesn't look like the drop concentrations are going to be very high, probably tens.

3:20 PM

PH: We've got 2-D now. I think that was our usual problem of a few minutes after take off we don't get the 2-D and then it switches in for some reason.

3:21 PM

PH: Good HVPS. We've got FSSP liquid water and PVM, but the PVM is not working right, similar to the last flight. In fact, it may be worse than on the last flight.

AR: Which one, Peter?

PH: PVM. The FSSP is okay.

AR: Right. I've got the colors changed. Cyan is blue.

PH: PVM is blue, FSSP is yellow, and J-W red.

AR: PVM is called cyan here. It must be a blue trace.

PH: Right. I'm not getting any J-W at all. Just some noise right at the beginning and then it packed up.

AR: Right.

3:22 PM

PH: What about the 1-DC?

AR: It doesn't appear to be working.

3:23 PM

AR: I'll give you an update on that as we come into some more particles here just ahead.

TW: I'm a little worried about this hard drive. I have an extra one. We can keep running with the one we've got or we can switch it out.

PH: About how long does it take to switch out?

TW: It doesn't take more than a minute or two.

PH: Any risk?

TW: Risk as in I'll need to shut down the system.

PH: Any risk that in switching that we'll have other problems?

TW: I don't think so.

PH: Okay, let's switch.

TW: Okay.

PH: So we take everything down?

TW: Yes. You should probably shut down your stuff.

AR: Okay. Copied shut down computer. Shutting down computer now. I'll let you know when it's powered down.

3:24 PM

PH: I'm powered down.

AR: We're clear in the back now, powered down. Vidal, did you hear that? Is your computer down?

VS: One minute.

TW: You don't need to shut it all the way down. You probably just want to close the apps.

PH: I might as well try to take care of this now while we've got time.

AR: Full moon now visible off the horizon off the right wing as the cloud tops have lowered here.

VS: The computer is down.

PH: Hello, Larry.

LS: Go ahead, Peter.

PH: Just making sure I've got contact.

LS: Okay, we have.

3:26 PM

PH: Art, does this look like a good altitude to go in?

AR: We're at what, 11,000 ft to 12,000 ft?

PH: Let me check. I don't know.

AR: I lost track. I think we were about 12,000 ft when I last looked, but I don't know whether we're still climbing or not.

PH: Larry?

LS: Go ahead, Peter.

PH: What's our altitude?

LS: We're at 15,000 ft right now and we're climbing to 17,000 ft.

PH: We don't need to climb.

LS: We've got some clouds ahead we would like to get on top there, Peter, to stay out of the ice.

PH: Okay.

AR: There are higher clouds ahead, Peter, and they do extend over the Cascades. Of course, I can't see all the way to where we're going, but, yes, I think we should probably climb up.

PH: Okay. We're going to 17,000 ft.

AR: Roger. I didn't catch that. We should be plenty high for those clouds down there, I would guess, because I was looking at the satellite imagery and they should be dropping drastically between about now and say 10 a.m. certainly. So I think 17,000 ft would be on top.

LS: What's your altimeter?

TW: You can fire it up.

PH: You're on my line, Larry.

LS: Okay.

3:28 PM

PH: That looks better.

TW: Yes, I think the hard drive was bad or something. Lucky I brought an extra one.

PH: Always carry an extra one, maybe an extra two.

TW: I think the mere fact that it's onboard gives it problems, so I had to bring too many along. I think just getting rattled around and shaken a lot is not good for it.

PH: How much do they cost?

TW: Under \$100 probably a piece. I could bring two. Actually some of these other nodes I could probably place in.

PH: Considering the cost of a flight, bring two on board.

AR: Right.

3:29 PM

TW: We'll still be able to use that data we collected thought.

PH: Okay. We're in clear air, so it's a good time to zero the liquid water meters.

3:30 PM

VS: I'm having a little bit of problem with the CCN, so we haven't been taking CCN data.

PH: You're working on it?

VS: Yes, I'm going to clean it and see if that helps.

PH: Okay. We're still getting random counts on the 1-DC. It's going up to 100s on occasions. If it doesn't work on this flight, Art, I think we should see if we can get the 1-DP in there.

AR: Roger.

3:31 PM

PH: We've got a 50 knot wind essentially straight at us.

3:32 PM

PH: That 1-DC is going up to 400s now.

TW: Art, you got that phone message from Don, right?

AR: Affirmative. He indicated he thought he had fixed it. We are in some particles here.

PH: But not that many.

AR: Why am I not seeing the 2-D trigger? It seems to be stuck. The last time I have for 2-D image is 15:28. I'm going to close this window and restart. Also, Tom, I wasn't able to bring up any text data. I restarted that window many times and nothing came.

TW: Hold on.

PH: I've got text data okay.

TW: I know. I was hearing that, but it never came up back here and my 2-D data is from several minutes ago.

PH: My 2-D data is the same, 15:28. It was working okay before we powered down.

3:34 PM

PH: FSSP-100 spectrum looks okay, although we are getting some counts in channel 1 going up to about 100 counts. The rest of the spectrum looks reasonable. On the LAP-200, which is the 1-DC, in clear air here now and still counting. Those counts are in zero.

3:36 PM

TW: According to the display on CNC-1 it needs filling already.

PH: I don't know. It's not leaking out somewhere, is it?

TW: I don't know. I'll turn off that message and have it just run.

PH: We'll soon find out what the counts look like.

TW: Right now, I think it's just stopped giving output now that it gives that message. I'll turn off the message so it gives output.

PH: Okay.

3:39 PM

AR: Tom, we should be getting particles here. We're not getting anything either in the 2-D or the HVPS.

TW: I'll try and restart them.

AR: And you're right, my problem is gone. I thought for a minute it might be the one, but I'll have to reconstruct it for the text data.

TW: Let me know when you're done and I'll make a backup of that particular one.

AR: Roger.

PH: The most important things at the moment are the 2-D and the HVPS.

VS: I'm also having problems with the CCN, but I'm still working on it.

PH: Still working on it, okay.

VS: Yes.

PH: It's amazing how these gremlins take hold overnight.

3:46 PM

TW: I can cycle power on the 2-D. I'll probably need to restart the CPI because it's going to cycle power on that probe.

PH: Okay. We need to do that. Do you want the CPI switched off?

AR: I'm going to come over and turn that off.

3:47 PM

PH: Hello, Larry.

3:48 PM

EC: Go ahead, Peter.

PH: Is that Larry?

EC: No, it's Eric.

PH: Eric, did we do a little descent back to the north then.

EC: Yes, we lost our airspeed indicator and then it came back.

PH: Okay.

TW: I don't like the look of this 2-D right now.

PH: It was working fine before we changed the hard drive.

TW: That shouldn't have had anything to do with it, but I can double check.

AR: Could you see it or laser powers, Tom, at some point?

TW: For the 2-D?

AR: Right.

TW: There's no way for me to see the laser power.

AR: I thought Don had an indication on one of the windows up there.

TW: Not that I'm aware of. I don't think there's anyway to know. Now maybe with the HVPS, but definitely not with the 2-D.

3:49 PM

AR: HVPS is working now.

PH: HVPS is working?

AR: Yes. It came to life after Tom recycled the power.

PH: Did you hear that, Tom? The HVPS is working.

TW: Okay.

3:50 PM

PH: Wasted a bit of time there. They started to head back toward the hangar because

they lost their true airspeed and now it's come back up, so they're heading back south again toward the Columbia.

AR: HVPS died again. We're in clear air right now. Wait until we come into some particles maybe it will jump back to life.

PH: Yes.

3:51 PM

TW: Is the HVPS still looking good?

AR: It was out for a minute and now the image looks clear. It looks good.

TW: We had this 2-D problem once before where it just gives out blank strips and then, I think, Don reseated all the cards and I don't know if something maybe popped loose on landing last time or something possibly.

PH: Because it was up.

TW: The J-W is up and it drops out, so maybe something got loose.

PH: I'm wondering if the plane was in that hangar overnight. I'm not sure if the hangar is heated.

TW: I think the laser is firing just because, I mean, at least it's on because it is triggering.

3:53 PM

AR: I've hardly made any observations here. I've been struggling to get my computer laptop back here in its original configuration after we had to exchange the hard drive. It lost the data file that I had that specified what parameters were going to be in the text file and they were all aerosol types. So I'm trying to get that back and it's a very tedious process because of the plane bouncing around here a little bit and moving the cursor onto the proper windows.

3:54 PM

PH: Larry or Eric.

EC: Go ahead.

PH: I'm going to give you a start point where we want to head for now.

3:55 PM

EC: Go ahead, Peter.

PH: It's 43°43.2'/123°28.2'.

EC: What 43.2'/123°28.2'?

PH: I'll say again, 43°43.2'/123°28.2'.

EC: Okay. We'll put that in.

PH: We want to start at 16,000 ft.

3:56 PM

PH: Eric?

EC: Go ahead.

PH: So when we get to that point I gave you, we'll be heading from that point to the northeast at 16,000 ft.

EC: Okay.

PH: Do you have our diagram up there on page 40 of our vertical cross-section?

EC: Yes, affirmative.

PH: So you can see instead of being up at 22,000 ft for the first leg, we're starting at 16,000 ft.

EC: Okay.

3:57 PM

PH: Any luck with the 2-DC?

TW: I've reset it.

EC: You want to go there now, right, Peter?

PH: Yes. Head straight there as quickly as we can.

TW: I've reset it about six or seven times and nothing has popped up. I can keep doing it.

AR: It looks better now to me.

TW: The 2-DC?

AR: Yes.

TW: Maybe it kicked in.

AR: I think so. I think when we hit some particles we will see it start to activate and that's maybe 2 or 3 min ahead. We're coming into some anvil-type ice cloud.

TW: That's good that we actually see something on that thing.

PH: Art, I want them to head directly to our starting point, so don't divert them.

AR: Yes, I'm not going to say anything. I'm back here trying to reconstruct my text data.

PH: Running behind schedule here.

AR: It's just very amorphous kind of anvil cloud out there. There are no centers of activity at least immediately ahead just ice, just going in. Well actually now the plane is tilted down there in some turbulence. I can see some cumulus tops that we'll go into first, so we'll have a little liquid water to look at too.

PH: The 1-DC has gone quiet on clear air here. It may be a good sign.

AR: Absolutely.

3:59 PM

TW: I don't know enough. We have enough liquid in the CNC-2. I mean the liquid light is on, which means it is not empty. I do notice water running up the tubes and I don't know enough about pressure and these instruments.

PH: Maybe with the plane pressurized we've got some problems.

TW: Yes, because on the ground I was actually getting readings on CNC-2, so I don't know.

PH: No, because when we were unpressurized on the west side of the Cascades on the last flight, we were getting good CNC-1 measurements. Then we subsequently pressurized again as we headed east and on the other side of the mountains and that's when we lost our CNC-1.

4:00 PM

PH: I just saw a rogue count on the 1-DC. Generally it's pretty quiet in clear air.

AR: Yep, and here come the clouds here, raggedy tops actually just a few seconds ahead. Raggedy tops sometimes mean a little bumpiness. Notice it's been bumpier here in clear air on this ferry leg than on either of the previous two.

PH: Getting some activity on the 2-DC. No images.

4:01 PM

TW: Now this could be a fact of going too fast actually on the 2-DC now.

PH: That's right. I've told them to go as fast as possible. So don't panic, just leave it the way it is. I want to get on station.

AR: Good point, Tom.

4:02 PM

PH: We're still getting some rogue counts on the 1-DC, although maybe we're in something. Are we in something here, Art?

AR: I'm sorry. I'm still fiddling with my laptop. I've hardly had a chance to look out the window. Yes, we are in something.

PH: So the 1-DC is counting something here.

AR: It looks pretty good because in the previous flights when this problem started it was counting in clear air the whole time of the flight and there was clear air.

PH: Notice on the FSSP-100 we're still getting counts of about 100 on the first channel.

AR: I haven't checked the spectrum.

PH: The rest of the spectrum looks good.

AR: If channel 1 exceeds the other channels in peak concentration, then that's bad. If it's enhanced, what the Gaussian distribution is higher in concentration, that's a good spectrum.

PH: Well it's becoming comparable to the peak.

4:04 PM

VS: I'm not having very good luck with the CCN, so I'm going to try to troubleshoot the problem and see what I can do.

PH: Okay. That channel 1 on the FSSP-100 is exceeding the peak in the spectrum. It probably needs attention again.

AR: Yes. I'll take a look at it here in just a second, Peter. I'm still trying to get my file back into shape I can work with.

TW: Do you need any help, Art?

AR: No, it's just a little turbulence in getting the cursor on the right part of the window. It's all mechanical.

4:05 PM

PH: Eric?

EC: Go ahead.

PH: ETA to our starting point?

EC: 31 min.

PH: Thank you.

AR: I'm back in the bubble now. I've got my text file out where I can found out our temperatures and so forth at flight level. I do see we're flying in ice cloud. I see the sun off to the left.

4:07 PM

AR: There is also more headwind than we saw on that Wednesday flight that had the strongest headwind until now. It's indicating 215 at 120 to 130 knots and that's a little bit higher than the MM5 was predicting from last night, but not that old. A nice breakout there this ice cloud.

PH: Bad news. They've lost their true airspeed up front. They're going to have to turn around and go back.

AR: Rubbish.

PH: Yes. Just when everything is setting up very nicely. There's always some problem. We're reading a true airspeed of 170. He says he can't use that.

AR: Roger.

PH: It's too high anyway.

AR: Yes.

TW: I've modified the 2-D code so that it will always be a max of 125 meters per second even if we're going faster. So I think the probe might like that a little better.

AR: Yes, I think you're right. I see now we have particles that are squashed as that would certainly be the case because they're going by faster.

TW: Right. At least it will give us that. What I did was I maxed it out at 125 and the particles will get squashed rather than no particles at all.

AR: Right. Good thinking there, Tom.

TW: I think when I put in a meter per second over 125 it like wraps around to a low true airspeed, like to a really low and that's why it gets all garbled.

AR: Roger. Peter, this isn't something they can land at Salem and fix, is it?

TW: He's on the radio.

AR: Ken, do you have to go all the way back to Paine Field or can we land somewhere nearby and check this out?

KM: No, there's no way to check it out. We're going to have to have an instrument man work on it.

AR: Okay. Thanks.

KM: Peter, do you have your cell phone back there?

TW: He is on the radio right now. I have a cell phone. Are you talking about the Iridium?

KM: I'd like somebody maybe to call the hangar and tell Cal to see if he can lineup an instrument person to work on our co-pilots airspeed indicator. It's probably the heat.

TW: I'm sure he could probably radio the people and have them call. My cell phone does not pick up anything up here.

AR: What brand do you have?

TW: Voicestream, which doesn't pickup anywhere it seems like.

AR: That's right. Consumer Report recommends AT&T, the big guy.

TW: That's what I had, but then Patti went out and bought a phone without consulting me.

AR: Hey, I know that. I know about that sort of stuff.

TW: She got smoozed and suckered into the wrong phone. Peter's been on the radio. I'll tell him to call when he's off the radio. Peter?

4:11 PM

PH: Yes, Tom.

TW: Ken was wondering if you could maybe talk to the people on the radio or call on the phone and ask them to have an instrument guy ready at the hangar.

PH: Yes, okay. Eric?

KM: Go ahead, Peter.

PH: Do you have an estimate as to how long it might take on the ground to fix your problem?

KM: No, we don't. It could be real simple or it could be all weekend.

PH: Okay.

4:12 PM

AR: Well, we're certainly getting back in a hurry with the 120 knot tailwind.

4:13 PM

PH: Ken?

4:14 PM

PH: Ken or Eric?

KM: Go ahead, Peter.

PH: I've asked them to call the hangar to let them know we're returning. Is the trouble with the true airspeed? Is that the problem?

KM: No, it's with the co-pilot's airspeed indicator.

PH: The co-pilot's airspeed indicator. Okay.

KM: It very well could be what's called the POE that's on it. It goes out when we get in the clouds.

PH: Okay.

4:15 PM

TW: Art, I've backed up your track data, so hopefully this won't happen again.

AR: Thank you.

PH: Did we get the 2-DC and the HVPS and everything up, working.

AR: The 2-DC is stuck again. It's not recording the ice crystals that are out there as indicated by the HVPS. We're exiting that area though now I see as I climb back into the bubble. So it's going to have some clear air for a while and then more ice in maybe 2 to 3 min. It does seem to be working overall. I'm not sure what happened here in the last couple of minutes.

4:17 PM

PH: Ken?

KM: Go.

PH: Was someone going to remain at the hangar throughout the flight?

KM: Yes, Cal will be there.

PH: Okay. They will give him a call and pass on the message.

4:18 PM

PH: When we land we will just have to hang around until we get some forecast as to how long it's going to take to fix their problem, and also what the IMPROVE-2 coordinator wants to do, if he wants to see if we can get up again or not. Just stick around until I give you the word.

4:20 PM

AR: Tom?

TW: Yes.

AR: I noticed the reverse flow raw is +23.6 and ridge mach raw is -20 something. Is there a problem? Is one of the true airspeeds causing the problem, some default number do you think?

TW: I'll check.

4:21 PM

TW: Is this a recent phenomenon or is this all flight, Art?

AR: I've only noticed it recently after I was resetting my text parameters, so it may have been there longer than what I've just noted.

4:22 PM

PH: Ken?

KM: Go.

PH: Do you think it could be ice in your peto tube?

KM: Yes, it could be.

PH: Would it be worthwhile descending and seeing if we could melt it off?

KM: Yes, but it would start working as soon as we came out of the cloud, so when near the clouds it stopped again. I don't know, there might be a lot of moisture in there and the heat isn't working properly, although the indications up here are that the heat is working.

PH: Okay.

AR: At least since we took off we haven't collected much ice that I can see back here looking at this Pilewskie rod. Maybe it is the rain that got in there or something before we took off and then, as you were saying, maybe it's frozen. The petos couldn't take care of it, although not a bad idea.

PH: Ken, do you know if the hangar that the plane was in last night was heated or not?

KM: It was in a hangar last night.

PH: But was the hangar heated?

KM: Yes.

PH: Okay.

AR: All I'm saying is that when it rolled outside that hangar with the rain really pouring down maybe some water got into the peto tube at that point in the half hour or so it was outside. Then maybe we took off with that in there and then, of course, it froze on the way as soon as we climbed up to the freezing level in the first couple of minutes and now it's a block of ice that the heater isn't able to overcome. So descending and going in some warm air I didn't think was a bad idea, Peter.

TW: Art, the voltage reading from the t-stat is very high. It's like 4 volts, which is going to be a high temperature. I don't know what's going on there. I'll have to talk to Don about that one.

AR: Thanks for checking.

PH: Ken?

KM: Go.

PH: Would you be willing to give it a try and descend, stay down there about 15 min, then come up again and see if it goes out again in cloud?

KM: We're in the process of descending right now. We'll see what happens when we go through the freezing level.

4:26 PM

PH: Ken?

KM: Go.

PH: I don't know if you heard what Art said, did you?

KM: No, I didn't.

PH: He said it might be due to the fact that when the plane was pushed out in that heavy rain on the runway, a lot of water may have got in there and then that froze up when we took off.

KM: Yes, but we turn the peto heat on right after start and that should cook out any water that's in there almost immediately.

PH: Yes, I would think so.

AR: Okay. Thanks for the info.

TW: Yes, I wonder if that problem is related to the t-stat. Is it right up by the front there too?

AR: It's on the other side. There are two virtually identical peto tubes and one is on the co-pilot's side and one is on the pilot's side.

TW: Because it's reading 10 volts, which is 83°C.

AR: Right. Wow. It sounds like something has happened to that.

TW: It sounds like a definite wiring problem up there or something, or it got fried.

PH: They've had their heater blasting on.

TW: Don't they usually have that on all the time?

PH: I think they do, yes. Maybe that's the operating temperature.

TW: No, I can see the voltage and the voltage is maxed out. It's 10 volts to the max.

VS: The CN counter has not been working for periods of time and then just comes up with a filling display.

TW: Is that the middle one?

VS: The top one.

TW: I'll leave that to you.

VS: My CCN for the voltage is too low. I don't understand why.

PH: If I get that information that you just said about the temperature on the peto to Calvin when we land, it will give him somewhere to look at.

TW: I don't know is that temperature from the peto, do you know, Art?

AR: Which one?

TW: T-stat is from the peto, right, and t-stat is from the reverse flow, right?

AR: No, it's a separate device for the Rosemount, another little probe right by the reverse flow.

PH: But does our t-stat anything to do with the pilot's, anything to do with the cockpit at all?

AR: No.

PH: No, it has nothing to do with that. It's an independent system.

TW: You're talking about t-stat, right?

AR: Yes, that would be the Rosemount, the reverse flow, and the reverse flow is independent as well.

PH: So we don't have any readout of what their peto tube is doing, do we, on the co-pilot's side?

TW: I don't know if the Shadin, I don't know what side the Shadin works from.

4:29 PM

PH: The t-stat is all off now.

TW: Yes, it is too.

PH: 85.

AR: Right, that's what we've been talking about. At least that's what I was talking about to Tom.

TW: That's what I was talking about too, the reverse flow.

AR: Oh.

TW: The Shadin static temperature looks pretty good. It's -9.

PH: Why should we suddenly lose reverse flow? That's a reliable temperature. Why should everything happen because the plane was pushed out overnight.

TW: It's almost like we've got some giant power surge in here because a lot of things broke. Our hard drive was funky, you know, the true airspeed is all screwed up now, I mean the reverse flow, his CCN thing, the laser power is not working.

AR: Yes.

4:30 PM

AR: Tom, do we have an extra laptop?

TW: We've got the one in the station right behind Peter.

AR: There are so many windows that I should be looking at that I can barely keep track of this stuff. I was just wondering, I mean it would be a computational excess, but I think another one back here would be useful.

TW: We can do that. I can probably set it up now if we're not too close to getting home.

AR: We'll probably have some time on the ground. Why don't we just wait until then?

TW: Okay.

4:31 PM

PH: We're not picking up any 2-D images again.

AR: It seems to be firing anyway.

PH: It's maybe the speed problem again.

AR: Right. I think Tom was addressing that so that you'd get images. They just wouldn't be in correct proportion or perspective. I'm getting images here now.

TW: I restarted the application.

AR: It looks good now. The HVPS is dead.

PH: This is remarkable that everything goes like this.

TW: The HVPS is dead or isn't reading.

AR: It's not indicating any particles. There's no windows flashing by or particles flashing by.

TW: Thank you.

4:33 PM

AR: We just popped out of that ice cloud back there, so we're not going to get anything here for a few minutes.

PH: They're obviously not going to descend, Art, because we're still at 10,000 ft. They're going to go in and land.

AR: Right. There are some clouds ahead. We'll have a chance to check that HVPS out again.

TW: Now occasionally the HVPS will kind of go dead for awhile while it tries to realize what part of the field of view there is blocked and what is not. It kind of does like a light reading.

AR: Okay. You think that might be what's happening now?

TW: I think if we got overloaded earlier then it might do that.

AR: Overloaded by particles or electrically?

TW: Overloaded with particles, like if something got on the window there.

4:39 PM

AR: Going into some ice cloud now. We should see lots going on. The HVPS remains silent and I'll come up and look at the CPI.

PH: The CPI is triggering.

4:45 PM

TW: I guess we should start moving to the back.

AR: I think he's going to have to come around the other way, so there are still a couple of minutes. He's going to land with the wind. Also, now that we're getting above freezing, I wonder if anything has improved in that regard, that true airspeed thing.

PH: By the way, we did have a very heavy landing on the last flight. It could have shaken a few things up.

AR: Yes, I'm guessing we might get another one here because there is probably going to be a bit of a crosswind.

PH: Except Ken is in the left set so it should be okay.

AR: I'm leaving the bubble and I'll be incommunicado now.

TW: Are you shutting down the CPI?

4:47 PM

END OF TAPE

Summary of UW Flight 1894

PH: To summarize, we didn't get to the IMPROVE-2 research area because of a problem with the co-pilot's airspeed indicator. We've just turned around south of the Columbia River and are now headed back to Paine Field. We're over the southern part of the Puget Sound. The P-3 was up. The decision was to let the P-3 continue flying and try to serve the role of both planes. We'll see whether or not it's of any value for us to try to get in the air again today, assuming we can fix the problem in the cabin. Art, do you want to add something on the summary. You can say something about the weather at least.

AR: This was pretty much going to be virtually an identical case in terms of the upper level pattern and surface pattern to the one we flew on Wednesday. So I was kind of looking forward to getting down there and seeing if there was any differences, and whether we had really nailed this collision-coalescence process and the occurrence of low droplet concentrations. So I'm kind of disappointed. We traversed a number of dying ember cumulonimbus clouds that as they came inland lost their warm bottoms, of course, getting away for the ocean and essentially tend to fall apart and end up being mainly glaciated and lacking in turrets but having a residual shelf clouds. So we did get some sample of that. The CPI seemed to be working pretty well at the times I looked at it, but that was kind of a minimal amount of time. The HVPS is in and out as per usual. The 2-D...

PH: Art, could you bring up the CPI now so we see again as we come into land whether it's working or not?

AR: Yes. That's a good point. I will do that. Let's see. The FSSP spectrum, as Peter pointed out, although it was mainly in ice crystals when I was looking at it, did appear to have too many counts in the first channel. That maybe needs some attention. That generally is an alignment situation.

4:37 PM

PH: I might add that we got some activity on the J-W on this flight. It's below the FSSP and generally below the PVM as well, but at least it appears to be alive. The PVM was generally below the FSSP in the liquid water.

4:40 PM

PH: One good piece of news is the CPI is working better than it has on previous flights. On the other hand the HVPS has been in and out. I also note that we're not seeing in real-time display here the frequent noise blips on the temperature that Art was concerned about from the last flight. The PMS 2-DC is working as we go through cloud here.

4:41 PM

PH: Also I don't know when it happened, but sometime during the flight the t-stat suddenly went out and is now recording like 85°C or something like that. It was working at the beginning of the flight.

TW: For the record I tried to bypass the VCR character generator because Art was saying there were random characters appearing on the video tape. So hopefully that doesn't occur at this time.

PH: Do we have video tape recording this time?

TW: It's recording, but there were characters blocking the screen a little bit on previous flights. So I'm going to check to see if that has been fixed.

PH: Did we have video on all of the previous flights?

AR: Yes. I did check. I checked the last flight actually.

PH: But no date and time?

AR: That's affirmative and the image is impacted by having characters blinking in front of the cloud scene.

PH: Do we have date time today on the video?

TW: No. That's a pretty big job to get that working again.

PH: That's certainly not top priority. But if you've got time down the line, do it. I notice that although the J-W came in for awhile back there about 15 min ago. It's now out again, not giving any readings.

4:45 PM

PH: This is a disappointing day. Everything was setup ideally timewise, and the P-3 is on station and we had to return. C'est la vie!