

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *

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FATAL COMMUTER PLANE CRASH NEAR *

NOME, ALASKA ON FEBRUARY 6, 2025 *

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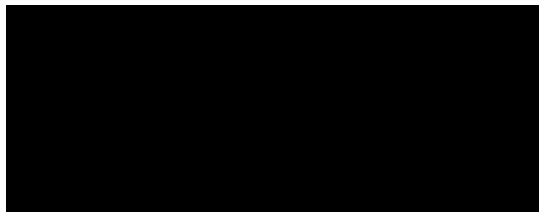
Accident No.: ANC25MA018

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Interview of: NICHOLAS SCHWARTZ, Lead Meteorologist, Alaska
Aviation Weather Unit
National Weather Service

Anchorage, Alaska

Wednesday,
February 12, 2025

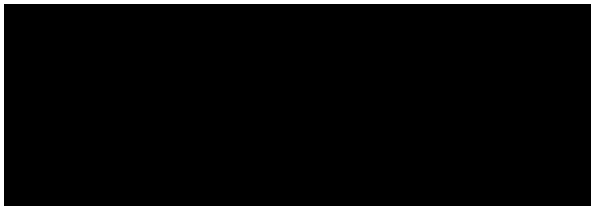


APPEARANCES:

PAUL SUFFERN, Meteorologist/Investigator
National Transportation Safety Board

STARR BLUM, Operational Factors Investigator
National Transportation Safety Board

DAVID KOICHEVAR, Warning Coordination Meteorologist,
Alaska Aviation Weather Unit
National Weather Service
Representing Mr. Schwartz



I N D E X

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I N T E R V I E W

(5:28 p.m.)

MR. SUFFERN: All right, I show the time as 5:28 local time on February 12th, and good -- I guess, good afternoon, my name is Paul Suffern, I am an investigator with the National Transportation Safety Board and my background is meteorology, and we're here today to learn some questions about the weather surrounding it and the whole goal of the NTSB is safety and things there. But the incident that we're going to be talking about today and asking questions on occurred on February 6th, 2025.

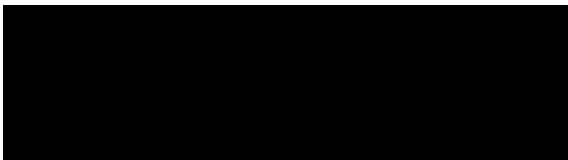
As part of the process, lots of times we ask others that have subject matter expertise to be part of our investigation and so today I have one of my colleagues here, if you want to introduce yourself for the recording.

MS. BLUM: My name is Starr Blum and I'm an operational factors investigator for the NTSB.

MR. SUFFERN: All right, great. Thanks, Starr.

And so we'll have some questions and we'll go back and forth between myself and Starr asking questions there. And as part of the process, as we discussed earlier, you know, that we record the interview. We'll have the transcription made, it will eventually become part of the public docket, the audio will not become part of the public docket. So do you have any questions about the process or anything?

MR. SCHWARTZ: Not at this time, no.



1 MR. SUFFERN: Okay. As we mentioned earlier also, as part of
2 our regulations, you're allowed to have one representative of your
3 choice to attend. Is David who you want to be your
4 representative?

5 MR. SCHWARTZ: Yes.

6 MR. SUFFERN: All right, David, could you spell your first
7 and last name for the recording?

8 MR. KOICHEVAR: Of course. David Koichevar, D-a-v-i-d
9 K-o-c-h-e-v-a-r.

10 MR. SUFFERN: Thanks, David.

11 All right. And so generally, when we do these kind of
12 conversations and discussions, there's typically two rounds, you
13 know, I'll ask some questions and things like that and then Starr
14 will ask some and then me. Some questions she may ask may jog my
15 memory on something else I want to ask and then we'll be done. So
16 do you have any questions before we get started?

17 MR. SCHWARTZ: I don't think so, no.

18 MR. SUFFERN: Okay.

19 INTERVIEW OF NICHOLAS SCHWARTZ

20 BY MR. SUFFERN:

21 Q. All right, Nick, could you tell me your name and then also
22 spell it for the record, please?

23 A. Name is Nicholas Schwartz, spelled, first name,
24 N-i-c-h-o-l-a-s, last name, S-c-h-w-a-r-t-z.

25 Q. All right, thanks, Nick. And just to start off, could you

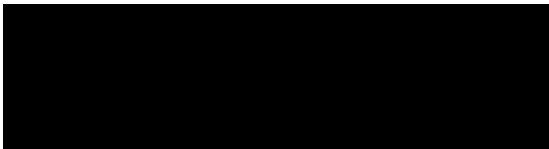
1 give me a brief summary of how you became interested in weather,
2 how -- why did you become a meteorologist?

3 A. I think with many meteorologists that you'll find or come
4 across, many would say it starts when they're very young. I would
5 argue I think my dad had a lot to do with it because he was
6 involved with lawn maintenance and snow removal during the winter
7 months, so his business was naturally weather dependent and so
8 given that he was watching the Weather Channel and local news
9 media, he loved Tom Skilling, for instance. Actually, I kind of
10 wanted to gravitate toward it.

11 Also things that I can think of, I was brontophobic, I had a
12 horrible fear of thunderstorms, I'd always hide in the basement
13 any time an approaching thunderstorm was coming toward our house,
14 I just did not want to be on the upper floor for fear of like
15 lightning going through the window or hitting a tree and landing
16 on the roof or something, so I felt like I had to be bunkered.

17 And maybe those two things early on was having me wanting to
18 kind of understand or pursue how that science worked. I can
19 recall having a bulletin board basically parroting the Weather
20 Channel's extended forecasts that -- when they would issue the
21 local forecast, I'd kind of pair the format that they would do
22 there. I had a bulletin board in our classroom, I think, as early
23 as maybe second or third grade. So this is a very long, long time
24 interest that I've had.

25 Q. Okay, fantastic. That's great. And so stepping through that



1 and then could you tell me a brief background of how you became a
2 -- you're a lead forecaster here at the AAWU, correct?

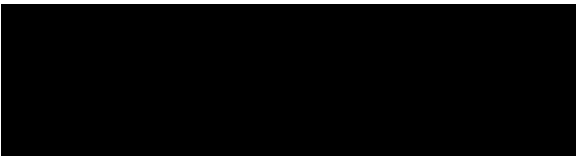
3 A. Correct.

4 Q. Okay. Can you step me through, I guess, from post-high
5 school and how -- step me through kind of how you became a lead
6 forecaster here at the AAWU?

7 A. Okay. So, I mean, I already did very well, as you might
8 suspect, in math and science during high school so, again, given
9 that I actually gravitated toward meteorology, naturally performed
10 well in those fields. For college, I elected to stay in state, so
11 I went to the University of Wisconsin-Milwaukee and their
12 undergrad program there.

13 I believe, unfortunately, after this school year, it's going
14 to become defunct due to a lack of funding and it's been around
15 for a long time, so I think Madison will actually be the only
16 remaining school there, but needless to say, I was glad to be a
17 part of it, did my undergrad there in four years.

18 I actually elected to continue my grad studies there through
19 the graduate program, I got my master's in there. Technically,
20 they didn't have a master's graduate program, but it was in
21 mathematics with a concentration, atmospheric sciences. Kind of
22 concurrently with that program, an alumni from UWM and one of the
23 professors wanted to kind of start up an internship program which
24 would give forecasters real-world operational experience, but yet
25 they were able to kind of do it in house within the general



1 atmosphere program. So they kind of went out and got some real-
2 world clients on board, a couple of electric utilities, the sewage
3 district of Milwaukee, the Lake Express Ferry that runs from
4 Milwaukee to Muskegon, among other -- maybe a few other clients to
5 start off and we were kind of actually providing real-world
6 forecasts and getting actually paid to do it.

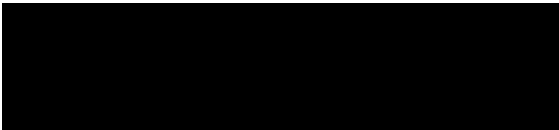
7 And also, it really helped the staff that -- the staff there
8 that were part of that Innovative Weather program, which it was
9 called, that they got them involved in doing decision support
10 services, which is the direction that the Weather Service was
11 heading to or at least starting to at the time when I was going
12 through that particular program from, let's say, '07 to -- oh, it
13 would've been 2010, I think, was my last year there.

14 So was there, finished my graduate degree, I think, in the
15 winter, it was December of 2009. I ended up getting picked up by
16 the National Weather Service in Gaylord, Michigan in late 2010, I
17 think it was December 2010, so stayed there for three and a half
18 years, got dumped on by a ton of lake-effect snow, so that was an
19 interesting experience, got to do a whole bunch of snowmobiling or
20 snow machining as they say up here in Alaska.

21 Q. Um-hum.

22 A. It's a crime to say it otherwise.¹ So that was a whole bunch
23 of fun, it was a great experience there. Elected to pursue a

¹ Note by the interviewee that it is meant to be a joke calling a snowmachine in the state of Alaska a snowmobile.



1 promotion up in Alaska, just because of my natural interest toward
2 it, maybe the extreme weather. Certainly, I wanted to kind of
3 explore more about this area of the country, just because of the
4 beautiful scenery, the fact that it kind of had winter, so it
5 would be kind of -- continue with winter time hobbies such as snow
6 machining or ice fishing or just enjoy the good fishing in
7 general. So I went up there in Fairbanks, I did that for three
8 and a half years, from two thousand -- so it would've been 2014
9 to, I think, 2017 and then I lateraled down here as a general
10 forecaster in October of 2017 and I've been here ever since and
11 was promoted to lead meteorologist, I believe, in 2021, if my
12 memory jives me correctly.

13 Q. Okay, great. You got a lot of different experiences there
14 from different -- excuse me, from different parts of the country.
15 Excuse me, it must've been all the planes I've been on today. So
16 as a forecaster, I guess, specifically as a lead forecaster here
17 at the AAWU, what kind of things, duties do you do during your
18 shift during the day or, I guess, during your shift?

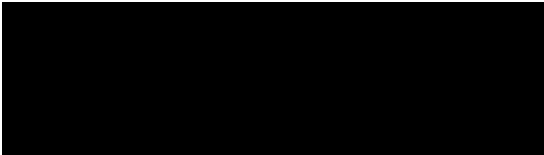
19 A. In terms of the regular shift duties, we have the Aviation
20 Weather Unit here broken up into two different desks, where it's
21 divvied up in terms of like the north desk and the south desk, the
22 north desk basically handling everything north of the Alaska Range
23 and into parts of Southwest Alaska, including the -- kind of,
24 Yukon Delta, Bristol Bay, Kuskokwim Valley general area. They're
25 also -- the north desk, theirs is also responsible for the icing



1 forecast, traditionally. For the south desk, that's usually done
2 by the lead forecaster, but I will say that we've culturally, you
3 know, swapped desks so any in that staff can be comfortable with
4 both desks. But for the south desk forecast, they're doing --
5 pretty much doing the remaining part of our flight information
6 region, so they're handling Southcentral Alaska, southeast, gulf
7 coast region, gulf coast of Alaska region and across, down through
8 the Aleutians into Pribilof Island, Bering Sea area.

9 That desk will typically handle the turbulence forecast,
10 winds, they will also handle usually most SIGMETs, especially
11 particularly turbulence, so they're -- since they're actually
12 doing the turbulence forecasts, and of course, we have a duplicate
13 responsibility as a VAAC, which is kind of -- I could go on and on
14 for that quite a while, but it's one of the nine VAACs around in
15 the world, we have the responsibility for monitoring and tracking
16 volcanic ash and issuing advisories and SIGMETs for that, as
17 necessary.

18 So primarily in terms of forecast-wise, what the lead
19 forecaster will do is work the south desk, but in terms of overall
20 duties, they're also the shift supervisor, so they are -- their
21 primary responsibility is to make sure that deadlines are being
22 met, that every -- the other forecaster or forecasters on shift
23 have the things that they need to kind of complete their job,
24 their responsibility to ensure shifts get filled in case someone
25 calls out on emergency leave, serving as a general mentor since



1 the general forecast crew is -- especially now what we have is
2 relatively -- it's a very new group of people. So all those kind
3 of fit in the realm of a lead forecaster, they're serving as shift
4 lead to make sure that the operations run smoothly.

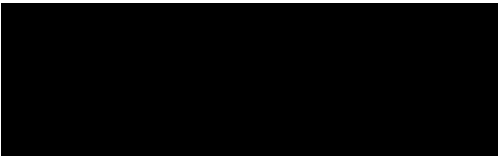
5 Q. Okay. Thanks, that's very helpful. And here at the AAWU do
6 you all have -- do you have eight-hour shifts, ten-hour shifts or
7 it depends on rotations, how does that typically work?

8 A. We are currently working nine-hour shifts.

9 Q. Okay, nine hours, okay. As part of lead forecaster, do you
10 have any of their kind of focal-point duties? I know what it
11 would be for the local office, but I don't know if the AAWU has
12 any particular focal-point duties outside of the regular shifts or
13 anything.

14 A. Traditionally, no, we haven't. With that said, I will say
15 that Nate, who is our science and operations officer, has kind of
16 tasked various staff with kind of -- maybe reining in the forecast
17 processes and how we forecast different things, so icing, you
18 know, some -- a couple forecasters or a forecaster or forecasters
19 were asked to evaluate how they do the icing process. The same
20 thing would be for turbulence, I was asked to kind of give the
21 little convective forecasting procedure to do just to kind of rein
22 in those things. So there's been some improvement there, but
23 traditionally, unlike weather forecast offices, we haven't had
24 traditional focal-point duties here.

25 Q. Okay, okay. That's great background, thanks, Nick, that's



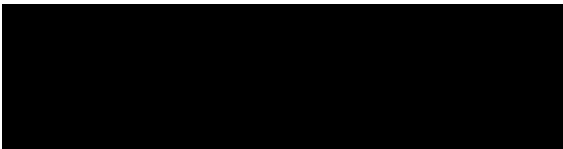
1 very helpful there.

2 A. Um-hum.

3 Q. So stepping more back to the day of the accident, which was,
4 I believe, last Thursday, February 6th, what shift were you
5 working on that day, if you can recall?

6 A. I was working the north desk shift, so I was actually not --
7 I was actually serving as a trainer for someone that was kind of
8 concluding their training on the north desk as a general
9 meteorologist. He was our newest hire, he was kind of getting
10 toward the tail end of his training to a point where he could be
11 on the desk without having a dedicated trainer on shift with him
12 but would probably still need some, you know, supervision from the
13 lead or forecaster in charge to look over products, make sure
14 they're formatted correctly, you know, evaluate if, you know,
15 there needs to be adjustments in icing, the icing forecast and
16 what have you.

17 So I was actually -- he was doing most of the work with
18 substantially less supervision that was needed in his early days
19 here when he came in, in December. So it was mostly hands off for
20 me, but I was kind of just basically sitting and just kind of
21 monitoring his work and once he completed his icing forecast, we
22 kind of went over that together. We can dive more into that in a
23 minute here and then like I said, as he was composing the area
24 forecast, he and I would look them over before we could send them
25 out, just to correct. In many cases, at this point in his



1 training, I think it was his last -- maybe his second to the last
2 training day he had before he was to go solo, you know, it's
3 correcting minor formatting mistakes, going over or reaffirming
4 the meteorology things of that nature. So I was kind of in a
5 training role that day.

6 Q. Okay, okay. That's helpful. And then, so -- so I see you
7 have the graphics from the day, do you need to review those before
8 or do you kind of recall what was issued that day?

9 A. Yeah, I do recall what was issued that day. I did ask Dave
10 here to kind of print off the AIRMETs that went -- that are
11 associated with the area forecast, and I believe this is kind of
12 the first time seeing this.

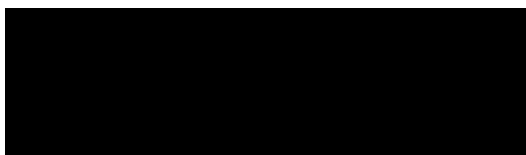
13 Q. Okay.

14 A. I say that because -- because of the time it took for the
15 trainee to kind of -- with me to go over it and correct the
16 errors, I did not have too much of -- enough of time to kind of go
17 over and post-edit the text regarding the AIRMETs for turbulence
18 and icing. We can touch on that a little bit later with more
19 details on that, but yeah, I think I have or can recall everything
20 I need to kind of describe what happened that day.

21 Q. Okay.

22 A. It's still relatively fresh in my memory.

23 Q. Okay, super. And so could you kind of step me through, then,
24 specifically the icing forecast, you know, for the Norton Sound
25 area and western Alaska, you know, the general thinking of what

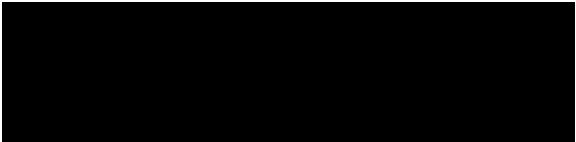


1 was going to happen that day as far as icing was concerned and
2 maybe some tools that you use to help you make that forecast?

3 A. Sure. In terms of the overall pattern, it's been kind of
4 pretty steady state for the last two weeks, the pattern that the
5 west coast of Alaska is experiencing is very similar to what's
6 been going on for the past couple weeks where we've had a large-
7 scale trough sitting over the western Bering and we've had a
8 large-scale ridge sitting over the northern Pacific.

9 That brought basically an abundance of moist southerly flow
10 along with the storm tracks that were kind of racking the eastern
11 Aleutians, Alaska Peninsula, west coast of Alaska area, quite a
12 bit over these past couple weeks. And so they were basically
13 dealing with multiple waves of disturbances, areas of low pressure
14 or fronts that were kind of moving through, bringing rain or snow
15 to part of Alaska. So the 6th was kind of no exception to that.

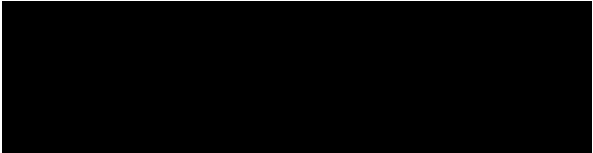
16 What was going on that day, at least what I noted was kind of
17 a weak warm front that was sitting over the northern Bering Sea,
18 kind of parts of -- in the general vicinity of the Yukon-Kuskokwim
19 Delta, slowing moving north over Norton Sound toward the southern
20 Seward Peninsula. Again, the trainee was -- I let him to his own
21 devices to handle the icing forecast and of course, I was going to
22 evaluate to see what he would come up with. He did correctly
23 place an area of icing in terms of what we call isolated moderate
24 icing, which is not AIRMET'd. However, just kind of with
25 experience and looking back at things, I was -- I evaluated that,



1 that had to be kind of changed to at least occasional moderate
2 icing, which is what made it into the forecast, reason being just
3 with my experience looking for icing signatures in particular, I
4 do like to kind of focus on frontal zones, specifically kind of on
5 the back edges of frontal zones or at times maybe the leading
6 edges of frontal zones. Basically, as the whole column of the
7 atmosphere is moistening up, before it completely moistens up and
8 we get kind of more deeper layer moisture where primarily snow or
9 rain and snow is falling, deep saturation to, say, maybe 20 or
10 30,000 feet, we'll kind of get areas of -- areas of suspect icing,
11 I'll describe that, what that is, in a minute, and also kind of on
12 the back edge of fronts.

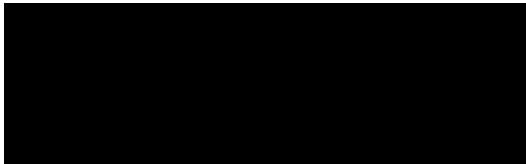
13 And what I like to look for in particular is areas that are
14 experiencing kind of rapid drying or a sufficient area of dry air
15 aloft and an area of saturation or super saturation, especially
16 relative to ice, where the primary or the overall majority of that
17 sounding is kind of laying between -- around, let's say, zero
18 degrees to minus 10 to minus 12 degrees Celsius and that's
19 important because, in terms of the meteorological microphysics,
20 that is -- represents cloud cover because it's saturated, that's
21 comprised primarily of super-cooled liquid water.

22 Once you basically begin to saturate above that layer to like
23 minus 12 and colder, minus 18, minus 20, you have that with the
24 ascent in the background, in my opinion or in my experience, it
25 begins to kind of generate snow, which kind of begins to mitigate



1 the icing threat a little bit because super-cooled water is now
2 growing into ice crystals, the snow is falling, which is helping
3 to kind of sweep out areas of additional super-cooled water
4 through riming processes. So that's kind of the areas I like to
5 focus in on. And what was happening on the back edge of this warm
6 front that has happening again over the northern Bering area, over
7 St. Lawrence Island, Y-K Delta area and then it was moving
8 northward into Norton Sound, was the signature, in fact, that you
9 could argue it's what we kind of call more of a freezing drizzle
10 signature where we had good saturation from the surface all the
11 way to about 8,000 feet where most of that, that I could evaluate,
12 was -- from a temperature perspective, it was around from zero to
13 minus 10. So it was like kind of this classic freezing drizzle,
14 kind of a low-topped cloud, most of it was going to be super-
15 cooled water.

16 I will utilize BUFKIT to look at some soundings in there and
17 I will kind of elect to use the feature of selecting the relative
18 humidity with respect to the ice and kind of just stick within
19 experience any time I'm beginning to see signatures of like super
20 saturation relative to ice of a hundred or over a hundred percent.
21 In BUFKIT, they show like basically hits of deep magenta on -- on
22 the display so to describe, of course, in the scope of an
23 interview without seeing it, but I will make sure that it's
24 checked and, you know, usually when I'm starting to see, you know,
25 these deep magentas indicating hey, we're getting above a hundred



1 percent super saturation relative to ice, we're in that zero to
2 minus 10 range, it's rapidly drying above that, hey, this is a
3 flag for moderate icing. And it doesn't have to be necessarily
4 tied to the surface, you could, of course, have sections of it
5 elevated. In this case, for that particular day, it was from like
6 the cloud bases, you know, 1 to 2,000 feet and the tops of the
7 clouds based on the soundings I was looking at was about 8,000
8 feet. But of course, you can shift that north and south into the
9 column where it doesn't have to be two to eight, it could be five
10 to twelve or seven to sixteen thousand, it all depends on the
11 given meteorological scenario of a particular day.

12 And so this was kind of just, again, one of these classic
13 cases of this post-frontal rapid drying aloft, weakening ascent,
14 type of environment that I was looking at and I had -- basically
15 called Austin over here saying hey, we need to take a look at this
16 and it was basically a training moment for me to say hey, let's
17 take a look at the situation regarding AWIPS, our display that we
18 look at to evaluate observational meteorological data, kind of was
19 able to show and I was looking at 850 to 500 millibar relative
20 humidity at -- with different models that were
21 -- you know, I was looking at the NAM, the GFS, European and
22 Canadian, that was basically showing -- it was basically showing a
23 consensus, which they usually are, given that we're doing short-
24 term forecasting, but that kind of allows me to look at areas
25 where there's maybe deeper layer moisture and kind of it allows me

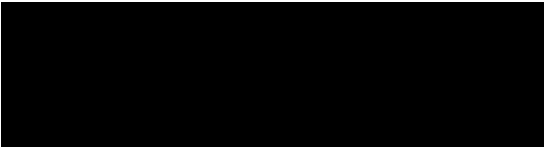


1 to kind of focus on all the potential soundings or BUFKIT
2 soundings that we have available in Alaska, of certain points that
3 I have to kind of look at and evaluate to say hey, you know, a
4 front's going through here, let's look at the post-frontal
5 environment, let's look at the pre-frontal environment, too, you
6 know, are we getting these areas where we're getting, you know,
7 the super saturation in this kind of zero to minus 10, minus 12
8 sweet spot where hey, this cloud is going to be primarily composed
9 of liquid water instead of ice crystals.

10 So with that said, we kind of went over that and I elected to
11 change his forecast, after discussion, from that isolated moderate
12 to the area of occasional moderate that we saw in the images here.
13 It initially started out south of Norton Sound, if I recall
14 correctly, and probably be even south of St. Lawrence Island, so
15 it was still over the northern Bering, south of St. Lawrence
16 Island, it was over the Y-K Delta and it was going to be moving
17 northward with the front. So by the valid time at 0z -- let me
18 pull this up in here.

19 MR. KOCHVAR: It should be in the --

20 MR. SCHWARTZ: Yeah. So yeah, as I recall, here is the first
21 forecast I issued, so just south of St. Lawrence Island, it was
22 primarily sitting eastward into the Y-K Delta. We did, I believe,
23 get a moderate report somewhere in and around Anvik, I'm not sure
24 if it was around Anvik, but somewhere in and around Southwest
25 Alaska, I believe it was from a Cessna 208 of moderate icing, so



1 we did get some verification already before the ALNOT came out or
2 before that plane basically was declared missing. And then,
3 likewise, during the time of the accident we had that trending
4 north, so basically in effect at 0-Zulu, Unalakleet was affected
5 and that was spreading into over Norton Sound, not quite affecting
6 Nome yet, but it was getting close, as you can see in that
7 particular image. I did mention earlier that -- this is kind of
8 the first time me actually kind of glancing at the responsive
9 AIRMETs. What did not come out of -- well, let me back up a
10 little bit. So for the clouds and weather section with our area
11 forecast, those are basically manually typed.

12 For the turbulence and icing section of our area forecast,
13 those are automatically formatted where basically you have
14 computer scripts that are transferring what they are seeing in our
15 gridded forecast that we do in D2D into text. What came out of
16 the text, from what I'm seeing here, is basically there was the
17 AIRMET that came out but it was from Unalakleet southwest and it
18 didn't describe, you know, with the graphics, of it moving north
19 into Norton Sound.

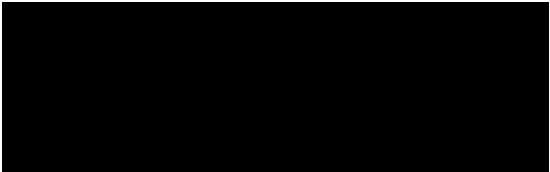
20 So this has kind of been a longstanding problem with the
21 formatting of a few things in this unit and it's not necessarily
22 with this unit, we even had troubles with text formatters in
23 general when I was in Fairbanks, it seems like it's -- it's very
24 hard to create a text formatter to describe what you're trying to
25 portray graphically, it is a huge challenge to do. There is



1 currently, I think, Nate, our science and operation officer, is
2 working on that right now, but it's still -- it takes a lot of
3 work. So many times, time permitting, I'll go in there and post-
4 edit the turbulence and icing AIRMET section as needed to make it
5 more representative with what the graphic is doing. I don't
6 believe everybody's doing that at the Aviation Weather Unit and
7 admittedly to time pending, sometimes I just don't have time to
8 basically get to it.

9 And today was one of these cases where I was shadowing this
10 person, we had to go over and correct his clouds and weather
11 section and to prevent the forecast from going out even more late
12 than it already was, we kind of skipped over that, but I keyed him
13 in, saying hey, be very leery that the text formatters that come
14 out oftentimes will not be representative with what we try to
15 portray graphically.

16 And unfortunately, it looks like, at least text-wise, it was
17 one of these cases where it was basically saying Unalakleet south
18 or Unalakleet southwest, which maybe isn't, I guess, terrible, in
19 hindsight, I should maybe not bash it too much, but that implies
20 if you were to draw a northwest to southeast line through
21 Unalakleet, that line -- southwest would be affected by that
22 icing. So maybe not -- maybe not the best worded in here, but it
23 becomes a little bit nebulous of okay, how much of Norton Sound or
24 Nome, is Nome even going to be affected by that. So that's one
25 deficiency that we have in terms of being able to kind of convey,



1 through formatters, the text with what we're seeing graphically.

2 BY MR. SUFFERN:

3 Q. Okay. And just kind of to, I guess, understand that a little
4 bit more, it sounds like, from the turbulence and icing side, you
5 make a graphic and then text falls from that, that time
6 permitting, you can manually edit.

7 A. Correct.

8 Q. Okay.

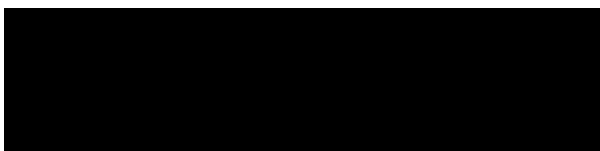
9 A. Yeah.

10 Q. Okay. Using format, okay.

11 A. Yeah. And I encourage people to do it. Again, I do not know
12 if all of the forecasters are doing it, I think many are, I don't
13 know if all of them are doing it. I don't believe I received any
14 guidance from management explicitly telling us to take time and
15 format them. Again, it just kind of -- it's one of these nagging
16 things where, culturally speaking, we're trying to shift to be
17 more in line with the Aviation Weather Center and go into
18 graphics.

19 We're still kind of stuck, I think at the request of the FAA,
20 to kind of continue with the area forecasts and this is kind of an
21 example, I think, of one of those deficiencies of these text
22 forecasts is we have these formatters that spits this out,
23 sometimes it's just not representative both in time and in space.

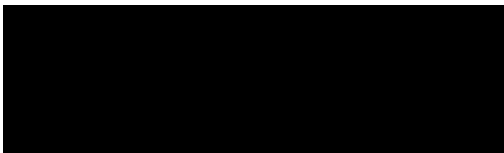
24 Q. Okay. And then just kind of stepping through a little bit
25 more of the icing tools that you use here, I know you mentioned



1 using BUFKIT and you use that, what other kind of tools do you use
2 here or have you seen other people use to make icing forecasts
3 that have been helpful and maybe some things that you wish you
4 had?

5 A. For tools that we use, we have a few tools within our GFE,
6 graphical forecast editing software that we use. I believe, with
7 the trainer's person that was using it, he was looking at
8 primarily -- it was a tool that was looking at NAM data, so it was
9 basically evaluating -- you can set the tool to restrict it in
10 terms of a humidity threshold, a temperature threshold, there's
11 two sliders that you can adjust the temperature, like cut off
12 icing at anything colder than minus 20 and anything warmer than,
13 say, minus five. You could cut off the humidity for anything more
14 dry than like 80 percent or maybe even restrict the degree of
15 atmospheric ascent, things of that nature.

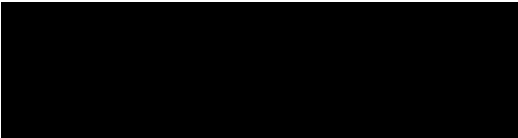
16 So that was kind of his methodology and I think a lot of --
17 quite a lot of other people will use that tool. So it will create
18 basically a coverage area and assign kind of a top and a base to
19 that area that's -- it's seeing the moisture, that kind of can
20 give you at least a starting point for putting in the icing
21 forecasts. What I continue to use is the Icing Product of Alaska,
22 so I still utilize the IPA guidance, at least in terms of
23 formulating the coverage. In terms of utilizing the severity
24 aspect of it, it's very hit and miss for using those grids and I
25 hardly ever use the SLD probabilities in there just because the



1 output that comes from that is very small, very sporadic and
2 spatially, I don't think it provides a more mesoscale, lighter-
3 scale picture of what's going on. It's very, kind of, point based
4 in that particular kind of guidance. So we have tools there that
5 will basically evaluate the Icing Product of Alaska, it will
6 assess the probability of icing of various layers and you can
7 basically have the tool spit out coverage depending on if you have
8 a sufficient probability threshold at a given forecast or where
9 there's probability at a given forecast layer, and I'll kind of
10 use that as a starting point, so it's kind of heavily IPA
11 weighted, of course, being able to evaluate what's going on with
12 the pilot reports, too.

13 I guess I'll cover the observational stuff in a minute, as
14 well, but forecast-wise, I'll look at the IPA and in terms of the
15 severity, it's again just kind of going from experience, looking
16 at, again, kind of a procedure for seven to five hundred millibar
17 moisture saying hey, here's where a frontal system might be, it's
18 moving this way, let's look at what's going on behind it with
19 BUFKIT soundings.

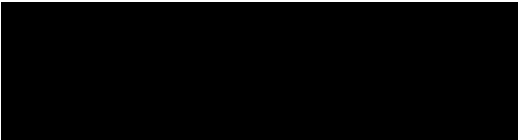
20 We do have other guidance that we had in our legacy software,
21 which is IC4D, that is based on the 40-kilometer NAM, which is
22 kind of getting obsolete, I believe it's kind of getting out
23 there. That's, I believe, the forecasting -- forecast icing
24 product and forecast icing severity. So sometimes I'll jump back
25 in from -- back into our old software and kind of evaluate that



1 stuff, as well. Observationally, obviously PIREPs are a huge part
2 of this. I did mention the fact that we had that one moderate
3 report near Anvik. Kind of -- I looked back at the reports, I
4 think, a day or two ago and I think anything that was coming out
5 of Nome at the time was just light reports, nothing out of
6 Unalakleet and there was kind of, I think, two or maybe three
7 reports around the greater Fairbanks area of light to moderate
8 icing. So PIREPs play a huge part of it. We kind of hit this
9 home, I think we don't get enough.

10 I don't know if it's because just -- there's just no physical
11 planes flying or, you know, icing or bad weather has become such a
12 daily part of pilots' lives that they kind of just, you know,
13 shake it off, "well, I always get moderate icing all the time."
14 But again, I'd be kind of speculating on there, but I will say,
15 non-speculatively, that PIREPs play a huge part in being able to
16 see what's going out there.

17 Other tools, of course, depending on if things are actively
18 going on, we can pull up soundings, for instance, we could've
19 pulled up the Nome RAOB that happened at 0z. I didn't do it at
20 the time, again, just because there was some uncertainty if this
21 event was going to kind of come to fruition, again, we were just
22 basically getting one moderate report out of Southwest Alaska and
23 a couple of other light reports, so I didn't look at that
24 particular sounding at that time, but that's another piece of it,
25 that's another tool that you can use for icing forecasts, is when



1 we get actual observational ground truth of what you're seeing
2 with an actual sounding. Of course, given that we have only a
3 handful of sounding sites in the vast state of Alaska, model data
4 tends to fill in quite a bit of the gaps, as you would imagine.

5 Q. Okay. Are any weather radar or satellite datasets helpful at
6 all or do they just -- like you mentioned the upper-air soundings
7 are so sparsely, is that similar with radar and satellite or are
8 those helpful?

9 A. Yeah. So satellite, too, I'm glad you mentioned that, so
10 we've come a long way in terms of satellite imagery, especially
11 within the last 10 years with GOES imagery, GOES 17 and GOES 18
12 and being able to leverage the reflectance of different channels
13 that the satellite is seeing and kind of being able to look at
14 those channel differences of how much energy the satellite is
15 seeing and manipulate them into color images that we can see to
16 assess what's going on with clouds and weather and all kinds of
17 things. We also use this type of imagery for, as they're called,
18 RGBs, I don't recall what that acronym stands for.

19 MR. KOCHEVAR: Would you like me to help with that?

20 MR. SCHWARTZ: Huh? Yeah.

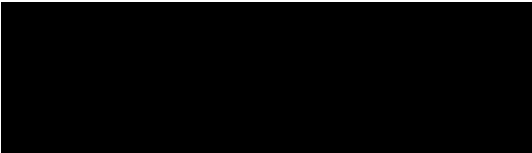
21 MR. KOCHEVAR: Red, green, blue.

22 MR. SCHWARTZ: Just red, green, and blue. Yeah, so red,
23 green, and blue satellite images, which again is just kind of
24 leveraging the different pieces of energy that the satellite is
25 seeing through different channels and showing it as an image. So

1 what's come out of those RGBs is magnificent, it's incredible
2 what's come out. We use RGBs to detect volcanic ash, we will use
3 it when we're seeing, for instance, blowing dust coming out of the
4 Copper River Valley when the wind's pressure gradient is such that
5 it lends itself to those types of conditions. We can use this
6 stuff to basically distinguish snow and ice-covered ground from
7 clouds, primarily water clouds and higher cirrus clouds based on
8 just the shades of colors.

9 For instance, one thing I will get during the day is the day
10 snow-fog RGB, where basically the satellite is seeing ice and
11 snow-covered ground and glaciers is a deeper shades of magenta or
12 red and then any cloud cover where it's seeing liquid gets
13 reflected back as white. And then once you get higher up in the
14 atmosphere where you're getting more cirrus clouds, you'll begin
15 to see the shades of magenta return to those cloud shields.

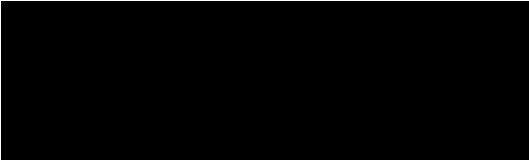
16 So it's nice where you can basically track fronts, it would
17 be like, you know, here's a front that's moving through, you can
18 see where the deep layer of moisture is because you're seeing, you
19 know, the cirrus shield, a well-defined frontal structure on
20 satellite, and then sometimes immediately kind of behind that
21 satellite you can see lingering areas of liquid cloud, again, kind
22 of more of a dry slot post-frontal environment. So it's another
23 very, very useful tool that we can look at, as well, as being able
24 to leverage those RGBs. To answer your question in terms of
25 things that I think we would need, again -- once again, probably



1 something in terms of better guidance for severity, specifically.
2 We don't, as I can recall, really have any useful piece of
3 guidance without having to do some type of intricate manipulation
4 of model data where you're basically looking at multiple different
5 fields that you have to garnish from the menus off of D2D,
6 basically looking at a whole bunch of different model fields
7 simultaneously to evaluate, you know, where are we getting these
8 types of freezing, drizzly/super-saturated or nearly super-
9 saturated soundings that are falling from like zero to minus 10.

10 I think that the coverage aspect of the problem is okay, at
11 least for us to put in, you know, isolated moderate coverage and
12 greater. The severity remains kind of a challenge, in my opinion.
13 The severity guidance in IPA, in my experience, tends to over-
14 blown the nature of the severity, they have that range of one to
15 four where -- or zero to four, zero or one to four, where the
16 light side of the spectrum is like traces and four kind of implies
17 severe icing and it will paint, you know, anywhere where it sees
18 kind of a deep layer of moisture and precipitation as, like, heavy
19 icing, which may or may not be going on.

20 And I have used that guidance kind of off and on, usually
21 depending on just my subjective assessment of the situation. But
22 where it does kind of miss out, I think, is these types of like
23 freezing drizzly soundings, again, not necessarily fixed to the
24 surface, but you can also have these types of layers well off the
25 ground, as well, that, you know, might be -- that aircraft might



1 be subject to. So that type of severity guidance, I think, needs
2 to be improved to at least highlight these types of areas and be
3 able to flag it so a forecaster can say, at least on a wide
4 spatial scale, hey, this might be a problem, you know, especially
5 with our time constraints, there is a lot of real estate to look
6 at for, you know, one person, for one person to evaluate icing
7 over the entire state. So it's easy for things to miss, so I
8 think that would be particularly useful, as well.

9 Like I said, of course, pilot reports are everything. You
10 know, more soundings, but that would be probably unrealistic, you
11 know, you can't just -- it would be unrealistic, a request to, you
12 know, ask for an increased coverage of RAOBs because how could you
13 support the -- that infrastructure in this type of budgetary
14 environment. But, you know, it's just one of the -- in
15 fantasyland, you know, of course that would be another useful
16 aspect. And I'll turn to you, I don't know, any --

17 MR. KOCHVAR: I think the only thing I'll add, you know, you
18 mentioned radar --

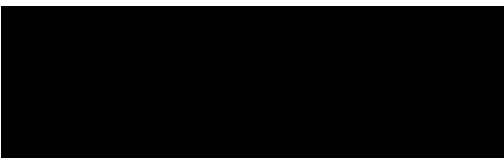
19 (Crosstalk)

20 MR. SCHWARTZ: Yeah, no. Can he -- yeah, can he -- can he
21 talk, I guess, we converse and I guess --

22 MR. KOCHVAR: Yeah.

23 MR. SCHWARTZ: -- maybe I'll regurgitate what he says or
24 something, I don't know how --

25 MR. SUFFERN: Yeah, yeah.



1 MR. KOICHEVAR: You might just want to mention how to use
2 radar for icing to Paul and that was one part that he had asked,
3 as well.

4 MR. SCHWARTZ: Okay. Radar can be a bit tricky because if
5 you think -- we have very sparse radar coverage, basically, over a
6 few select locations. You combine the fact that their minimum
7 angle is .5 degrees and it's very difficult to at least detect
8 stuff at the low levels and really, only what you're looking for
9 is precipitation. You know, this type of super-cooled water may
10 not -- it's just physically probably not big enough, anyway, to
11 have enough reflectance to get a signature back.

12 What I would use radar for, again, kind of evaluating maybe a
13 frontal passage and maybe looking closely to see if there's very
14 weak returns following the front, to evaluate areas of potential
15 freezing drizzle, you know, whether it's at the surface or again
16 aloft where that would be an icing concern. But I'll use radar
17 more on an occasional basis just because the coverage is so
18 sparse. I'm really much a bigger satellite guy, in my opinion.

19 BY MR. SUFFERN:

20 Q. Understand. You got -- the tools that you have in Alaska,
21 you've got to use those, and so for that particular day, was that
22 type of weather unusual for that area in Alaska for February?

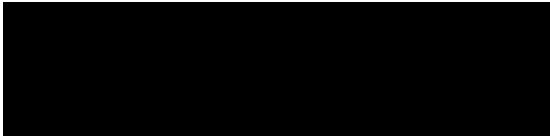
23 A. I would not say so, I don't think so. We're in our cold
24 season, so this lends itself to that, the icing biggest threat
25 area, you know, shifting closer to the ground where lighter

1 aircraft are primarily operating. Of course, during the summer
2 months, the freezing levels go up quite a bit and so that will
3 shift the icing threats pretty high and we're not subject to, you
4 know, Bering Sea storm or northern Pacific storm after storm,
5 which is bringing frontal systems, moisture and what have you to
6 create this icing environment. So not atypical, you know,
7 certainly the PIREPs would reflect that, too. I don't believe we
8 had a severe report that day. We don't really get a lot of severe
9 reports for icing.

10 I kind of joke to other people that I could probably count
11 the number -- in terms of with me being on shift simultaneously
12 with getting a moderate to severe or severe icing report, I could
13 probably, you know, in one year count the number of reports on
14 maybe two to three hands. For sure at least both hands, you know,
15 maybe 10 reports of what icing you come across a year. Maybe, you
16 know, an extra hand to say maybe 10 to 15.

17 We do not get a lot of severe reports in here. Certainly, it
18 is not a daily occurrence. In many cases, I don't believe it's
19 really a weekly occurrence, we could go perhaps multiple weeks or
20 so without a severe report, too. So I would say it's not
21 particularly unusual given the weather regime, a very persistent
22 pattern, but not necessarily unusual.

23 MR. SUFFERN: Okay. Thanks, Nick, that's enough questions I
24 have for right now, I'll throw it over to Starr to see if she has
25 any questions for you.



1 BY MS. BLUM:

2 Q. Fascinating, I love talking to you weather guys. I'm
3 learning a lot, you know, I've flown out of Alaska but not in a
4 light airplane capacity, so I'm familiar with the challenges but
5 only by what I've heard.

6 A. Um-hum.

7 Q. And so actually, I'm learning a lot that -- how much you
8 depend on PIREPs, and so it seems like you're relying on the
9 PIREPs and the pilots are relying on you a lot.

10 A. Um-hum.

11 Q. So I'm surprised that you don't get a lot of PIREPs, you said
12 you don't get a lot. Is that on a daily basis, is that a storm
13 basis, like --

14 A. It can vary how many -- I mean, could it -- it could depend
15 on who's working, necessarily, at like a center or flight service,
16 I don't --

17 MR. KOICHEVAR: Yeah, I mean, I would say, you know, there's
18 certainly the workload of submitting a pilot report, but it's also
19 obviously based on your traffic at the time, too --

20 MR. SCHWARTZ: Yeah.

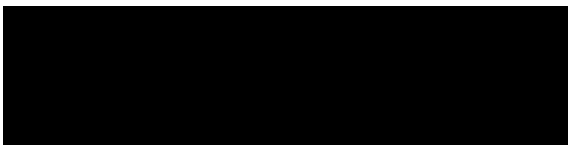
21 MR. KOICHEVAR: -- so I believe that's especially for --

22 BY MS. BLUM:

23 Q. I guess that's my question --

24 A. Yeah, air traffic --

25 Q. -- how does the PIREP get to you?



1 A. So the PIREP will typically be submitted either through air
2 traffic control, usually it's Center here in Anchorage or through
3 one of the Flight Service stations is the two primary sources that
4 we get. So yeah, I would agree with Dave that it is heavily
5 dependent on whether a plane is actually flying there, but yeah,
6 to some degree it's every aircraft coming in and out and then
7 that's experienced ice and reporting it. We do get reports, I'm
8 just wondering how much more we could get.

9 And it's very difficult to kind of tune your personal
10 experiences of hey, do I need to put, you know, moderate icing or
11 moderate to isolated severe icing in this forecast scenario or
12 not, when, you know, you're getting maybe two or three PIREPs for
13 an entire forecast period. I think we have 12-hour periods.
14 AIRMETs go for eight hours, which is an eight-hour AIRMET-able
15 period where you maybe get like three lights or something. So
16 commenting on that, PIREPs in this -- and kind of for icing and
17 turbulence, too, they basically allow us to gauge and tune our
18 process of whether we're under-warning or over-warning.

19 And we tend to issue a lot of occasional moderates in here
20 versus continuous moderates or moderate to isolated severe. I
21 think a lot of that, you know, plays into it, given the lack as --
22 you know, what gets reported as severe. And maybe just -- maybe a
23 general lack of PIREPs in general. So culturally speaking, we
24 kind of don't put a lot of continuous moderate in there. As I can
25 recall, I don't really use it too much, just because well, one,



1 the PIREP issue, but two, another aspect that I haven't talked
2 about yet is we're trying to kind of, like, forecast somewhat for
3 all aircraft types. So if it was just for a lighter aircraft, for
4 a Cessna 208, our forecast process would be probably to over-warn
5 if we focused on that aircraft type and -- or over-warn for the --
6 you know, jets or turboprops that can fly above and then get
7 through it quickly, over-warn for them but maybe be sufficient or
8 under-warn for the -- you know, Cessna 208s and it kind of goes
9 vice versa.

10 If we just were to, you know, wait and sit on a moderate or
11 greater report to come from a jet, which in many cases has hot
12 compressor bleed air blowing out a wing or on the leading edge
13 surfaces, you'd be -- you'd dramatically be under-warning for the
14 turboprops, so it's -- that's another kind of dilemma we get, too,
15 is kind of having to create one product that accounts for all
16 aircraft types.

17 Admittedly, in my opinion, it leans a little bit more toward
18 the props, but you can still have more aircraft a little bit more
19 susceptible to icing than others and maybe it's just for the sheer
20 number of the Cessna 208s that operate out there or it's just
21 their flight characteristics, but usually when -- among the first
22 types of aircraft to report, it's the Cessna 208. In terms of
23 moderate reports, the 208, I think, by far comes in as like the
24 number one aircraft type to report moderate or greater icing. And
25 it could just simply be because that's the main -- main type of



1 aircraft that's operated, especially in Western Alaska or out of
2 Fairbanks, too, to treat the villages. But yeah, kind of say to
3 others that icing's going to start showing up, it seems to hit the
4 208s first and then other turboprops like the Dash 8s or Beech
5 200s, things of that nature, or Beech 1900s, so --

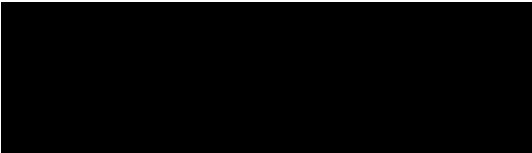
6 Q. Yeah. And the 208s are probably talking to Center or maybe
7 some of the smaller stuff isn't there, in uncontrolled airspace
8 and they're not talking, they're giving pilot reports to each
9 other but maybe they're not reporting it where it gets to you.

10 A. Yeah. And I just don't know, you know what I mean, is it a
11 complacency thing, is it like "oh, this is a run-of-the-mill, you
12 know, quarter inch of ice on my leading surfaces that aren't
13 protected, you know, this happens to me four times a week thing,"
14 whatever, you know, I'll pass it on to other pilots within my
15 outfit but not necessarily on to Flight Service stations or air
16 traffic control. So I just -- yeah, I don't -- we can certainly
17 use more.

18 Q. Yeah, that would be --

19 A. A lot of the pilot reports, and maybe you would agree with
20 this, are very -- and that's just probably based on the sheer
21 amount of traffic are mostly Anchorage centric, mostly Fairbanks
22 centric, mostly Bethel centric, and then to a lesser degree, Nome
23 centric, Kotzebue centric, Barrow centric, you know, Deadhorse
24 centric.

25 MR. KOICHEVAR: Do you mind if I kind of add to that and kind



1 of speak to some of the outreach we've been doing --

2 MS. BLUM: Um-hum.

3 MR. KOICHEVAR: -- with this? So one of the things we've been
4 doing recently is providing pilot training as to how pilot reports
5 are important to aviation forecasting operations to the Alaska
6 Flight Service Training Academy. So we do that every single time
7 they bring in a new crew of trainees, so about quarterly basis we
8 will do a virtual training session with them and talk exactly what
9 Nick just mentioned, in particular for hazards like turbulence and
10 icing, that we really don't have a lot else out there, and trying
11 to really narrow down the importance and getting into understand
12 early how critical this is for our forecast operations.

13 BY MS. BLUM:

14 Q. Fantastic. So I'm not familiar with this chart until we were
15 coming up here. You know, I'm looking at -- do you mind if I --

16 A. Yes.

17 Q. -- take a look just at the legend?

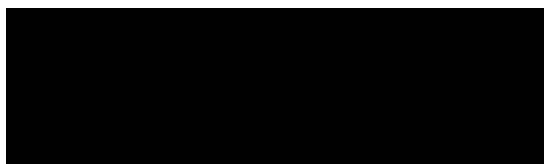
18 A. Yeah, it's here, you can --

19 Q. So we were talking about SLD and the super-cooled liquid,
20 like how would a pilot know, on this chart, is that the red? Is
21 that moderate, isolated severe? How would I know that, you know,
22 I might have freezing drizzle or SLD?

23 A. We don't put out any, I think, SLD specific guidance.

24 Q. Okay.

25 A. Specifically. Now, if there's areas that we're seeing, for

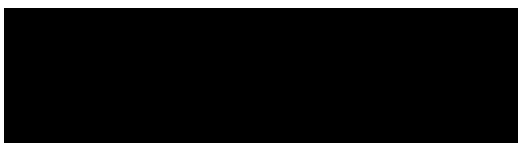


1 instance, confirmed areas of freezing drizzle or freezing rain or
2 based on the pattern, we have high confidence that it's going to
3 happen based on the model forecast situation, we will kind of put
4 moderate to isolated severe in the forecast. Graphically, you
5 would not know if it was just severe rime icing or severe clear
6 icing in freezing drizzle or freezing rain. The AIRMET text would
7 kind of clarify that a little bit, but only suffice to say, as
8 instead of the ICEIC, which means icing in cloud, you could
9 annotate and increase it to that.

10 And I don't know if that's something everyone's been
11 teaching, we've had so much of a massive turnover over these past
12 five years, I do not know for sure if all the staff are familiar
13 with being able to leverage the icing in cloud or in precip part
14 of an AIRMET to let them know that this icing is going to be
15 associated with precipitation versus just in cloud. But that's
16 the only way, I think, we can do it in the text with an AIRMET.
17 With the area forecast, we can spell it out more specifically if
18 there's going to be freezing drizzle or freezing rain in there.

19 Q. Yeah.

20 A. Graphically, it does not portray areas of super, super-large
21 droplets or areas of freezing rain explicitly. Kind of what we'll
22 try to do in there is just, you know, if we have high confidence
23 of moderate -- or high confidence of freezing rain or freezing
24 drizzle, we'll kind of use the moderate to isolated severe many
25 times to highlight that threat, but the specifics can only be



1 really backed up, basically, in the area of forecast text where it
2 kind of more it spells it out, because it's nebulous in the
3 graphics and it's a bit nebulous in the AIRMET bulletin, as well.

4 Q. Do pilots ever talk to you -- like I'm back, like going way
5 back to 1-800-WXBRIEF, you know, back in the day where I got to
6 call and talk to a meteorologist, like in my case it was in North
7 Dakota where I assume this is definitely a problem, do pilots --
8 do you ever interact with pilots?

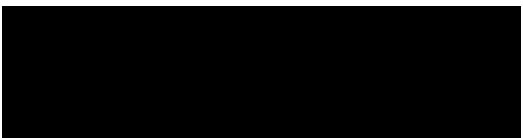
9 A. We have a handful of kind of more frequent callers that we
10 talk about. They're more interested, I think, in clouds and
11 weather flight category, they will ask our opinions for icing,
12 too, but I think most of the calls are directed more toward --
13 that's more kind of a Flight Service centric question in my
14 opinion.

15 Q. Yeah.

16 A. The calls we get are kind of limited to kind of some
17 regulars, of a handful of outfits that, you know, happen to still
18 have our number and, you know, ask the general weather situation,
19 clouds, winds, you know, some icing, too. But unfortunately, we
20 just -- we're under time constraints, especially during the day
21 shift, of being able to basically field calls in a more Flight
22 Service specialist role.

23 Q. Got you.

24 MR. KOCHVAR: Do you mind if I -- so this is actually
25 something we've been doing, as well, in our outreach. So we



1 traveled to Bethel, to Nome, and to Utqiagvik kind of in the fall
2 of last year and actually, when we were at Nome, we talked to
3 Bering Air and then we were actually encouraging operators to
4 reach out and ask if they have any questions about the forecast or
5 kind of, as Nick spoke, you know, it's a few regular folks that
6 call and we're just trying to encourage more of that --

7 MR. SCHWARTZ: Um-hum.

8 MR. KOICHEVAR: -- and make sure they have the right contact
9 information, you know, and -- you know, that they're encouraged to
10 call and ask.

11 MS. BLUM: Okay. Yeah, it sounds like your -- the outreach
12 is --

13 MR. SCHWARTZ: Yeah, I don't believe Grant Aviation is a
14 regular caller, I don't -- I'm speaking of the right outfit of the
15 accident aircraft, right?

16 MR. KOICHEVAR: It was Bering.

17 MR. SCHWARTZ: Oh, Bering, excuse me. Grant --

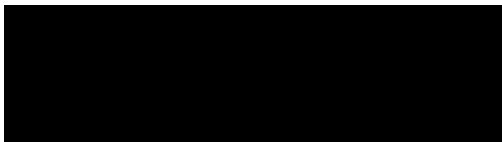
18 MR. KOICHEVAR: That's okay.

19 MR. SCHWARTZ: My apologies. Yeah, so I don't -- I haven't
20 taken a lot of calls or I can't recall speaking to Bering Air too
21 much out there directly, so --

22 MR. SUFFERN: If I could --

23 MS. BLUM: Yeah.

24 MR. SUFFERN: -- just ask -- this is Paul -- just one quick
25 follow-up to what you guys were just speaking. It sounds like you



1 went to Nome and things like that, did you give like a PowerPoint
2 and if so, could we have a copy of the slides or training that you
3 provided?

4 MR. KOICHEVAR: It wasn't that formal, it was kind of more ad
5 hoc. It's a relationship we were trying to establish and grow,
6 and so we weren't doing anything quite that formal yet.

7 MR. SUFFERN: Okay.

8 MR. KOICHEVAR: More just sort of like discussion with their
9 dispatch and --

10 MR. SUFFERN: Okay.

11 MR. KOICHEVAR: -- things like that.

12 MR. SUFFERN: Thank you.

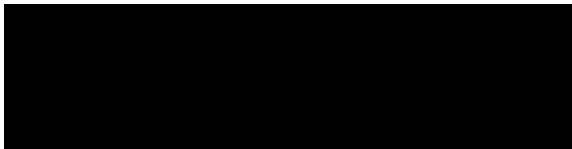
13 BY MS. BLUM:

14 Q. Just more about this chart that I'm not familiar with. So
15 all the colors in the legend that's moderate, would -- if it's
16 light, would that be depicted or --

17 A. Yeah, so that will probably -- I'll try to answer it the best
18 I can, but more specifics would be -- probably should be fielded
19 to Nate Eckstein for tomorrow.

20 Q. Okay.

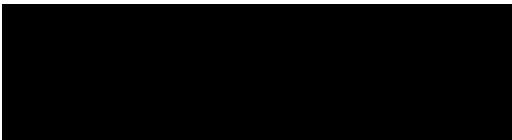
21 A. I'll kind of put what I believe is what it loosely means. So
22 in terms of the isolated moderate category, it's loosely meant as
23 primarily light icing. There might be a handful of aircraft that
24 would experience moderate icing in there, but the idea is the
25 majority of aircraft that fly through that environment will be



1 experiencing light or greater icing, is kind of how that is.
2 Specific percentages, I couldn't tell you. Certainly, the
3 majority is kind of how it's inferred. And again, in the spirit
4 of icing, too, we're also talking about accretion rates, as well,
5 so that's kind of maybe what the icing is centered on, is
6 accretion rates. So isolated moderate icing, you know, in terms
7 of an accretion rate, most aircraft will be experiencing light,
8 maybe a small handful flying through that environment might
9 experience moderate or light to moderate.

10 And then once you get into the moderate or cons moderate,
11 again, we don't have a color to really distinguish between the
12 two, but that just -- it's basically an advisory level type of
13 category, we're talking about AIRMETs now, where in terms of
14 accretion rates, it's -- it becomes a hazard and I think, I don't
15 have -- I don't recall the exact rule, but it's something along
16 the lines of, you know, it is necessary to use icing mitigation
17 equipment but, with that being said, the pilot has to basically
18 egress out of that area for safety concerns. You can't spend too
19 much in there.

20 And of course, moderate isolated severe kind of hints at the
21 potential that, you know, there might be icing worthy of a SIGMET
22 where the icing is so bad that mitigation equipment on aircraft
23 can't necessarily keep up. Anything higher than isolated severe
24 wording, such as an occasional severe wording, gets reserved for
25 SIGMETs. Occasional severe or definite severe, that's in the case



1 where we would issue an icing SIGMET for that. Does that help a
2 little bit or can I elaborate a bit further, because that isolated
3 moderate, I mean, we get a lot of questions, I had questions
4 before of what does that mean --

5 Q. Yeah, it's --

6 A. -- it's a little bit nebulous. Again, Nate could probably
7 add more detail to that tomorrow --

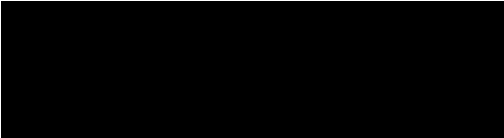
8 Q. Okay.

9 A. -- and have a greater conversation in that realm, but that's
10 kind of basically how I interpret it with the isolated moderate.
11 Then once you're getting into the oranges, it becomes an AIRMET-
12 able type of event of occasional to continuous moderate. And then
13 the red basically meaning, you know, definite or high confidence
14 of continuous moderate icing with a threat for severe icing in
15 that environment, too. And like I said, we'll tend to post that
16 most during freezing precipitation events, freezing drizzle,
17 freezing rain or on an occasional basis where we're getting severe
18 pilot reports. Again, we don't use that red color a lot because
19 we don't get a lot of severe reports throughout the course of a
20 year, so --

21 MS. BLUM: All right. Okay, thank you, those are my
22 questions.

23 MR. SUFFERN: That's all you have? Okay. Well, you asked --
24 Starr, you asked a lot of the questions that I --

25 MS. BLUM: I'm sorry.



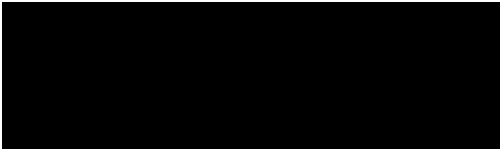
1 MR. SUFFERN: No, that's fantastic. No, no, no. So I think
2 I've only got a couple more. Are you doing okay, Nick, or --

3 MR. SCHWARTZ: Yeah, I'm doing good.

4 BY MR. SUFFERN:

5 Q. Okay, just got a couple more, and you sort of answered this
6 one already, I had a question about what training you received
7 and/or someone new to the AAWU receives as far as icing forecasts
8 and you kind of mentioned that the shift you were on was towards
9 the end of another person's training in that area specific to the
10 AAWU, but are there other -- do you take any, like -- it seems
11 like a lot of it's hands-on, you know, learning from lead
12 forecasters or learning from people that have more experience, are
13 there any other, like, modules when you come to the AAWU, "here's
14 how we forecast icing baseline" and then the next six months is
15 experience, like, can you step me through that?

16 A. Yeah. Again, that's probably a question more suitable for
17 Nate for tomorrow, given he's the science and operations officer.
18 What I will say is I will make sure, at least when I'm training
19 new hires in respect to icing or turbulence, I'll have them go
20 through the Commerce Learning Center modules, so we have one on en
21 route icing, we have one, for instance, of clear air turbulence,
22 we have one for mountain wave-related turbulence, and albeit, I've
23 on numerous occasions sent those links off to the e-mails of new
24 trainees saying hey, when you get some downtime take a look at
25 this module so you can get at least some background and broader

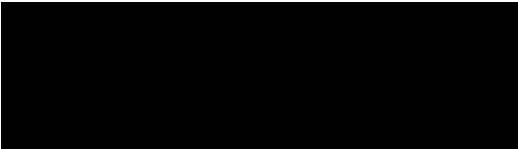


1 scope of things they're trying to pitch at you, like why is the
2 zero to minus 10 area, the area like -- they like to concentrate
3 on so much, things of that nature.

4 Q. So great. And then I think I just got two more, one is what
5 is -- where in the state of Alaska do you find most challenging
6 for forecasting, whether it's -- I guess two questions, one icing
7 specifically, like what's the most challenging part of the state
8 for icing forecasts and then just weather in general, since you
9 work both -- both desks, it sounded like.

10 A. Um-hum. Let me think here. Something that's kind of driving
11 my memory a little bit, starting maybe with the icing forecast,
12 probably any coastal area is a little bit of a challenge, whether
13 it's Southwest Alaska, that Norton Sound region and extending into
14 the gulf coast and Southeast Alaska, that seems to be our primary
15 hot spots. It could be a particular challenge, especially when
16 you're dealing with cases of different precipitation types, strong
17 winds, you have multiple factors going on with one particular
18 system, one particular zone that we do area forecasts for but have
19 as much as eight different AIRMETs in them, as I commented before.

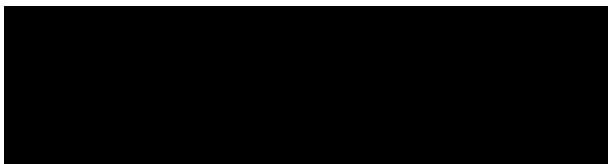
20 So that, in of itself, kind of prevents -- presents a
21 challenge in that you have to evaluate the winds, evaluate clouds
22 and weather, whether it's IFR ceilings and VFR, tops, you know,
23 precipitation, you know, the visibility, what precipitation type
24 is it going to be, is there a threat for freezing precipitation,
25 again, it seems like the Southwest Alaska area seems a bit more



1 prone to that because we'll get, you know, Bering, moderated
2 Bering air, warm air intrusions, or even kind of Chinook type or
3 down-sloping intrusions where we can get warming aloft. So icing
4 in Southwest Alaska can be a bit of a challenge. The Arctic coast
5 can be a little bit of a challenge, too. I mean, I've seen
6 moderate reports come out of a super-saturated layer, again, with
7 respect to ice, that's minus 15 or minus 20, so it's still colder
8 than that, you know, minus 10, zero to minus 10, minus 12-degree
9 range they like to focus on so much. So that area can pose a
10 challenge.

11 Really, any coastal location could be kind of a pain in the
12 butt. Then generally, I think the same thing applies to just
13 forecasting those areas in general. Arctic coast is a big
14 challenge. You know, based on confidence in model data that we
15 get, you know, models will struggle up there in things such as
16 flight category, for instance, timing in and out of things, fog
17 randomly appearing where the guidance isn't the least suggesting
18 it.

19 I think it's gotten quite better over the years, but it's
20 still kind of a challenge, you know, how long something is going
21 to persist when the guidance is trying to, for instance, move
22 things out but the fog is sticking around a bit longer. And like
23 I said, for kind of the west, west coast of Alaska could be a
24 challenge just because you're dealing with systems slamming in
25 there, frontal systems which are bringing the kitchen sink of



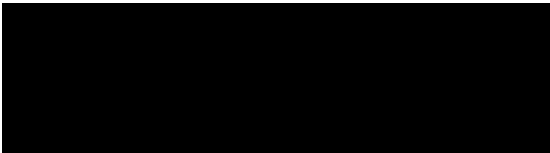
1 weather, whether it's strong surface winds or ceilings and
2 visibilities, precipitation of various types depending on thermal
3 environment. Well, gosh, what else? Obviously turbulence,
4 mechanical turbulence, the icing impact, because there's a frontal
5 zone there. I'd say that my coworkers' fronts are kind of a huge
6 time suck in terms of being able to write² and formulate the FA,
7 just because of the amount of weather elements that are involved
8 with their -- and where the frontal, you know, where the biggest
9 impacts that we see with these frontal zones is basically whether
10 it will be on shore, you know, whether it's the west coast, gulf
11 coast, Southeast Alaska.

12 Granted, the southeast is a little bit easier to do because
13 the zones are a bit smaller, so you can kind of replicate similar
14 or identical text in area forecasts from one to another because
15 the same meteorological situation will apply. But you could still
16 get, you know, much more widely different things going on for
17 parts of Southwest Alaska, Western Alaska, so it's -- it's a
18 challenge.

19 Q. Sounds like it, for sure.

20 A. Yeah. Interior Alaska is a little bit easier because they

² Note by the interviewee: I was trying to say that when writing an Area Forecast for a particular zone that has a front moving through, it can be a huge time suck because of the amount of AIRMETs and weather elements that have to be written or post-edited in them. This is particularly the case when a front is moving onshore which brings a myriad of strong winds, turbulence, icing, low level wind shear, IFR conditions and mountain obscuration



1 don't have as big of a wind aspect. Systems are usually
2 weakening, I mean, we still got mountain wave related turbulence
3 that we may have to deal with. We typically don't see as much
4 moderate icing reports in the interior compared to more coastal or
5 interior Western Alaska locations per se, just because systems are
6 generally weakening, frontal systems kind of get sheared apart
7 when they -- once they move on shore, over the mountains, in my
8 experience, so -- yeah, coastal, coastal's always going to be a
9 pain in the butt, for sure.

10 Q. Yeah.

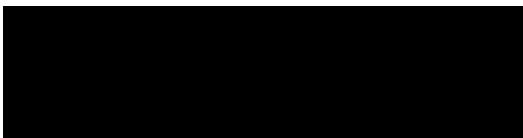
11 A. And would you agree, or any --

12 MR. KOCHVAR: Yeah, you --

13 (Crosstalk)

14 MR. SCHWARTZ: Yeah. Because he's been here way longer than
15 I have, so -- and he obviously served out -- he served in one of
16 the WSOs, so he has a bit more -- he has even more perspective
17 than I do but yeah, any coastal location could be a bear, you
18 know, just because -- especially because now you're having terrain
19 starting to interact with things, even more so than out in the
20 Aleutian zones where things are bit more straightforward.

21 But yeah, it's fronts plowing into the coastal region of
22 Alaska, west coast, gulf coast, panhandle, which is the -- that's
23 where a lot of the time it comes in and being able to kind of
24 generate those types of forecasts and that's probably where the
25 majority of our time is spent if we were to keep track of like --



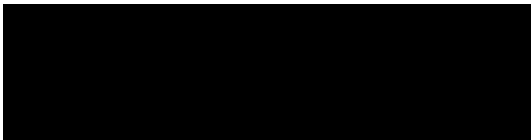
1 if we were to time how long it takes to do area forecasts.

2 Q. Yeah. Well, my last question, unless Starr has any other
3 questions, it's my favorite question to ask, I put you charge for
4 a day, you have infinite money and you could have a magic wand to
5 help you do your job better for any weather tool out there, a
6 computer tool, anything like that, what would that be and what
7 would you like?

8 A. Yeah, it's a tough -- it's a tough one, right? Let me think
9 about that one. Going back to my earlier statement, I would say
10 like getting the things that kind of highlight these areas of like
11 post-frontal moderate icing scenarios would be helpful. Is it the
12 most one that I -- you know, it's on the -- fresh in my memory, so
13 it's the one I can think of right now is better guidance regarding
14 to severity

15 Coverages also could be maybe improved too, but severity, I
16 think, now and being that I said the IPA will tend to over-warn
17 things, we have other things such as the forecast icing product
18 and high forecast icing severity, which is now 40 based, 40-
19 kilometer resolution, so that -- being that it's 40 kilometer just
20 tells you that it's very antiquated, you know, circa late 2000s,
21 early two thousand teens type of data we're looking at here, so
22 you know, 10-plus-year-old datasets.

23 So that's something I'd like to see kind of improved is more
24 better severity guidance that can highlight these freezing drizzle
25 soundings, again, it may not be freezing drizzle at the surface



1 but, you know, these areas where we have good saturation, super
2 saturation, and that's about where we're just dealing with clouds
3 strictly comprising of super-cooled water. So that comes to mind.
4 Are there other tools I could think of? Sure. I mean, magic
5 wand, put soundings up everywhere. Why not?

6 Q. I put you in charge for the day, you got my card, so even
7 after, even after this chat, if you think of anything, you can --

8 A. Five-kilometer soundings. But yeah, in the context that
9 we're discussing ice here, I think that's an area that needs to be
10 improved, especially given the turnover that we've seen in recent
11 years in Alaska, forecasters coming and going, it's difficult to
12 gain an experience base and so I'm using, kind of, my forecasting
13 techniques with icing, icing severity, just kind of based on
14 experience with what I've seen and passing along. But it's
15 difficult when you're -- for a forecaster that's only really up
16 here for two to three years. So if something -- better guidance,
17 maybe that can kind of flag those types of instances would be
18 helpful.

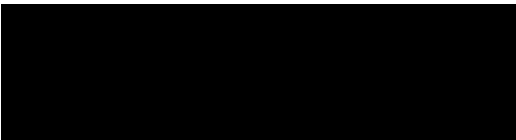
19 MR. SUFFERN: Okay. That's all I have.

20 Starr, do you have any more questions?

21 BY MS. BLUM:

22 Q. Just one to roll with the magic wand. In these times, like
23 I'm wondering, is -- is AI starting to approach into this, in your
24 position and modeling, is AI a part of any of this?

25 A. I can't think of anything off specifics. Again, maybe Dave



1 can bring more insight into that or that would be a question for
2 tomorrow.

3 MS. BLUM: Okay.

4 MR. KOICHEVAR: Yeah, that would be a good question for Nate,
5 actually, tomorrow. I know we're using that in the modeling
6 realm, but he would have the specifics on that.

7 MS. BLUM: Okay.

8 MR. SCHWARTZ: Yeah.

9 MS. BLUM: Thank you.

10 MR. KOICHEVAR: Um-hum.

11 MR. SCHWARTZ: Yeah, I don't know where AI is being used in,
12 again, the modeling realm, too, so --

13 MS. BLUM: Okay, thanks.

14 MR. SUFFERN: All right, I think that's all our questions.
15 Is there anything else that we didn't ask that you wanted us to
16 ask or anything else you want to chat about or are you good?

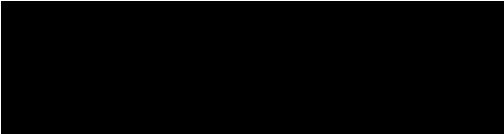
17 MR. SCHWARTZ: Yeah, I don't think I have anything.

18 MR. SUFFERN: Okay. All right, we will go off the record at
19 6:41 p.m. Alaska Standard --

20 (Whereupon, at 6:41 p.m., the interview concluded.)
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CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: FATAL COMMUTER PLANE CRASH NEAR
NOME, ALASKA ON FEBRUARY 6, 2025
Interview of Nicholas Schwartz

ACCIDENT NO.: ANC25MA018

PLACE: Anchorage, Alaska

DATE: February 12, 2025

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been transcribed
to the best of my skill and ability.

