NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

June 8, 2020

Company Pilot Interviews

HUMAN PERFORMANCE

CEN19FA185

This attachment contains transcripts of interviews of the following North Memorial Air Care pilots:

- Peter Schultz – Line Pilot
- Joseph Klatt – Line Pilot, Instructor, and Check Airman
- Ryan Sarvie – Line Pilot, Lead Pilot, Instructor

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *
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NORTH MEMORIAL AIR CARE *
HELICOPTER CRASH NEAR * Accident No.: CEN19FA185
BRAINERD, MINNESOTA *
JUNE 28, 2019 *
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Interview of: PETER SCHULTZ
Pilot

North Memorial Air Dispatch Center
Brooklyn Center, Minnesota

Monday,
July 1, 2019

APPEARANCES:

SATHYA SILVA, Ph.D., Human Performance Investigator
National Transportation Safety Board

MICHAEL FOLKERTS, Investigator in Charge
National Transportation Safety Board

MICHAEL RICHARDS, Senior Meteorologist
National Transportation Safety Board

KATIE ILTEN, Esq.
Fredrickson & Byron
(In-house Counsel for North Memorial Hospital)

I N D E X

I N T E R V I E W

(12:20 p.m.)

DR. SILVA: We're on the record at 12:20 p.m. So I'll just run through a quick introduction and then --

MR. SCHULTZ: Okay.

DR. SILVA: -- see if you have any questions really before we start. But I'm Sathya Silva, I'm a human performance investigator out of NTSB headquarters.

MR. SCHULTZ: Okay.

DR. SILVA: Mike Folkerts is the investigator in charge for the accident, and then Mike Richards here is our meteorologist also --

MR. SCHULTZ: Okay.

DR. SILVA: -- out of headquarters. So we're here to prevent the -- prevent another accident like this from happening again. We're not here to assign blame, liability, anything of that sort.

MR. SCHULTZ: Right.

DR. SILVA: Essentially what will happen with this recording, is we'll send it out for transcription, and then a copy of that transcript will eventually become part of our public docket once the investigative information gets released.

MR. SCHULTZ: Okay.

DR. SILVA: You're entitled to have a representative sit with you. Would you like a representative?

MR. SCHULTZ: Yes, I do.

DR. SILVA: Who is this?
MR. SCHULTZ: And that would be -- you're Amber or --
MS. ILTEN: Katie.
MR. SCHULTZ: Katie. I can't remember --
MS. ILTEN: It's your choice. Okay?
MR. SCHULTZ: Yes.
DR. SILVA: It is your choice.
MR. SCHULTZ: Yes, you may stay.
DR. SILVA: Okay. You're the expert here. There's no right or wrong answers. We're really just trying to get your perspective on the operation, and your experiences here. If you don't understand a question or you don't know the answer, again, feel free to say that. If you need a break also, speak up.
MR. SCHULTZ: Okay.
DR. SILVA: We're -- we should be pretty informal here. Do you have any questions before we start?
MR. SCHULTZ: No. I think we're good.
DR. SILVA: Okay.

INTERVIEW OF PETER SCHULTZ

BY DR. SILVA:

Q. Can you spell your full name for the record please?
A. Yes. Peter, P-e-t-e-r, Michael, M-i-c-h-a-e-l, Schultz, S-c-h-u-l-t-z.
Q. Okay. And you talked a little bit about this already earlier, but can you run through a Cliff Notes version of your

aviation background from when you started flying to what got you here?

A. I started off general aviation, not yet enlisted, but I was a -- did Flight Club, fixed wing first. And that was in 1990, and then I had private through commercial in fixed wing with the instrument rating. And then got accepted to Army flight school in '99, and did military training, was a military pilot for the Idaho National Guard from '99 through 2012.

And then I did -- worked offshore gas and oil with their helicopters, started Gulf of Mexico. Then in 2009, I started working Alaska primarily with the same company, and then -- so I was working both Alaska and the Gulf of Mexico, as needed. Yeah, and that was flying -- and there's -- I obtained my ATP there with that company, type rating the AW139.

And then this job opportunity to get me close to home or get me where I can see my family at least once a day or so versus 14 -- the rotational schedule that Gulf of Mexico had.

Q. Right.

A. I figured -- felt that having an IFR program would be a safer way to fly EMS. So that was when I got accepted in 2012, so I've been flying with North since 2012.

Q. All right. Do you have any other roles in the company outside from lead -- or, sorry -- line pilot?

A. No. None specific or than line pilot. So --

Q. And what base are you with?

A. Bemidji.
Q. Bemidji.
A. Which is the Air Care 5.
Q. Air Care 5. Okay.
A. Yeah. That's --
Q. I'm not familiar with the geography around here. How far is that?
A. It's about 2 hours north of Brainerd.
Q. Two hours north.
A. In driving.
Q. Okay.
A. Yeah.
Q. Okay. How does that commuting work if you're flying at a different base? Are you driving usually to that other base?
A. Yeah, we'll drive to the other base. I think the policy now is if it's more than 2 hours, or right at 2 hours or more, you get a hotel room the day before so we can get our respective rest, especially if it runs light. Because if you -- that's counted as duty time if it's mandatory travel, and if you're picking up, that's mandatory. So --
Q. Okay. Did you -- do you use that option, I guess --
A. Yeah, I do.
Q. -- for the hotels?
A. I was at the -- I worked Brainerd on the same day as the accident. And I did stay at the hotel --

Q. Yeah.
A. -- the night before. So --
Q. Okay.
A. And I've never been questioned about it.
Q. Yeah. Okay. What was your shift like that day?
A. Well, it was kind of slow, because we took a handoff. We had a ride -- was it a nurse or a paramedic? We had a trainee, anyway, that Josh Duda was working with during the day. And she was only 7 to 7, so she wasn't doing a full 24. She was just 7 a.m. to 7 p.m., so he was doing some training with her. And some early morning thunderstorms rolled through.
Q. Okay.
A. And I didn't have any requests -- I wouldn't have taken them anyway at that time -- until later, I had one request. I got the aircraft running, but it was cancelled before I was even --
Q. Oh, okay.
A. -- ready to lift off. So we just pushed it back in the hangar and called it. And that's all I did during the day. I didn't have any reports of any -- the pilot that I took over from, he didn't report any issues with the aircraft to me. The maintenance logbook, I didn't see anything that was of issue. Just a power check due, which is kind of a company policy power check. It's not a -- it's not in the flight manual that says you have to do that.
Q. Okay.

A. And that was the only thing that was coming up that was within my allottable realistic flight time that I would be able to do during the day anyway. So --

Q. What was the handoff like with Tim?

A. Handoff? He showed up, he was dressed casual, probably, I don't -- between 6 -- it was between 6:30 and 6:40. The, you know, the shift changes officially at 7 p.m., and so he was there between 6:30 and 6:40. I just don't remember the exact time, but it was in that time frame. Came to the office, closed the door, getting -- got changed into his work clothes so he could take over for duty.

So, and we just had casual conversation and passed off the -- you know, what I did, which was nothing other than the one engine start without any flights. And, you know, there wasn't -- that's -- and he seemed to be in good spirits and just asked about some family life stuff. And that's about it on that. He seemed, you know, happy go lucky. I certainly didn't expect anything to be -- he seemed well-rested and, you know, in good spirits, so --

I didn't ask about what his day was prior, so I have no clue, you know, what he did before he got to work. I just know that when he got to work he was in good spirits, good shape, and seemed happy and healthy.

Q. Did you get a feel for whether he drove in directly for the shift?

A. I didn't --

Q. Or you didn't talk about that?
A. -- ask, so I don't know.
Q. Okay.
A. So, yeah.
Q. Now the weather that was there at the time of the accident, this ground fog --
A. Yeah.
Q. -- had you experienced that before at Brainerd?
A. Yeah. I've experienced some weird things at Brainerd as far as like what's reporting and what's going on. I've seen it in both directions, where it's worse than it says it is, and I've seen it where it's way better than it says it is. The AWOS is kind of in a spot that kind of gets a little bit misty over the top of it.

So I -- there was a night I was flying back to Bemidji, and I was flying directly over the top of the Brainerd Airport. They were reporting a, I think a mile visibility or something like that, and I'm at 6,000 feet. I could see the entire airport, all of the lights, the entire city of Brainerd. It was way up. It was showing the mud -- you know, I could see a little bit of mist around the AWOS area, ASOS sensor, but realistically, it was pretty dang clear.

But then I've also seen it where it says -- you're doing an instrument approach and it says it's 800 feet ceilings and you don't break out until 600. So, I mean -- and that's at Brainerd,

because --
Q. Right.
A. -- every airport's a little different. That's what I remember of Brainerd. So it's hard to say. I know that the AWOS says one thing, but it not -- I don't know that it necessarily means that that's exactly what's going on.
Q. How often do you fly into Brainerd?
A. Let's see. Well, I take pick-up shifts every once in a while, three or four times a year maybe, or more.
Q. Okay.
A. It depends on what's available. Or it's probably been more times in the last year than most years. But we fly in there probably at least two or three times, if not more, a month.
Q. Okay.
A. Or more, because that is our maintenance base. So if we have some scheduled maintenance that's ahead of time, or even if it's unscheduled and we made MEL-able, we can -- we'll fly in there and get the maintenance done; otherwise, the mechanics come out to us.
Q. I see. So when you come into Brainerd these times, have you ever flown into hard IMC where you're looking at half a mile visibility?
A. Not at Brainerd. I have -- I've experienced that at other airports, but not at Brainerd.
Q. Okay.
A. So, I mean, that's about all I can tell you on that one. I,

you know, I don't know if it was down to less than a half a mile. The helipad -- where the helipad's at and where the runways are, there's not a real good --

MR. RICHARDS: Why don't you show us?

DR. SILVA: Yeah.

MR. SCHULTZ: So there's not a real good way to get from the runways to the helipad. The helipad's down here. Is this a touchscreen?

MR. RICHARDS: Yeah, actually it is.

MR. SCHULTZ: Okay. Well, can I zoom? No. I guess --

MR. RICHARDS: Oh, you're going to actually -- with the Google Earth, you're going to have to -- just -- you want to zoom?

MR. SCHULTZ: Yeah, zoom in a little bit, about three or four steps. Any rate, the helipad's down here on the southwest corner of the field, and there isn't any real good lighting. The helipad's lit --

DR. SILVA: Okay.

MR. SCHULTZ: -- itself, but it's completely separate from -- like once you pass these hangars, there's not really any lighting to go through.

DR. SILVA: Okay.

MR. SCHULTZ: So if you're in poor visibility, I don't know -- I honestly don't know what the best way -- might end up needing to park out here, because I don't know if you can get -- there's not a lot of clearance to ground taxi between these hangars.

A lot of times when we make approaches, if it's the -- every time I've gone there, the visibility's been decent. The ceilings might have been low, but the ceilings -- the visibility, but we'd make near approach and the cut off a lot of times, or if you're coming this -- from on 1-6 here, you might either cut across over here to the -- and it depends on which way the winds are blowing. Or circle and land around this road here down to the helipad, or you, if you can, just kind of cut over.

Might try -- there's no -- the trees are way down over here, so you might just go across the fence and down to the helipad. But there is no real clear-cut best lighted in very poor visibility. Yeah, I hadn't really played that scenario a whole lot out into my head of how to get from either -- whatever runway over to the helipad into the base, which is kind of disconnected. So --

BY DR. SILVA:

Q. Is there an approach you would normally fly into Brainerd? Or you would prefer to fly?

A. It depends on the weather.

Q. Okay.

A. But yeah, they have two ILSs, so if it's poor visibility and -- or low ceilings, I'd prefer the ILSs because it can get, you know -- it's just, it's comforting to have vertical guidance to the runway.

Q. Right.

A. So that's my preference. And actually, that was one thing that Tim did mention, was that when we were -- when I was leaving, he did, now that I think of it, he said he wanted to do a practice ILS because there isn't any ILSs at Siren.

So at the very least, he wanted to do an ILS to come back. Regardless of the weather, he was planning on doing an ILS --

Q. Okay.

A. -- because they don't have it at Siren, so he wanted to get in at least one or two. So that part I do remember him saying.

Q. How would you make a decision between if you were choosing the ILS between the 3-4 ILS and the 2-3 ILS?

A. I would pick just based on winds.

Q. Just winds?

A. Yeah.

Q. Okay.

A. Yeah. Or if there's NOTAMs out.

Q. Okay.

A. I mean, if there's a NOTAM that --

Q. What kind of NOTAMs would make a difference?

A. Anything with the runway lighting or that's going to change my minimums, I'll pick --

Q. Okay.

A. -- whatever's going to give me the lowest.

Q. Okay. How do you like working here?

A. I like working here. I enjoy it. We've got a good group of

people. I can't really complain about the group of people I work with. Weather calls, I've never ever been questioned on a weather call. If I say no, that's it; they -- that's the end of that story. I've never ever been asked about that again.

We can make offers, like, to another base, you know? Like if there's a line of storms that's between me and whatever, and there's a base on the other side, we can offer. Maybe they can do it; can you call them and have them check? But -- or, you know, if somebody's in a better position, they do it. Because it's not always the closest that's the best.

Q. Yeah.

A. So we're allowed to offer other guys, but we're not required to accept a gig, you know. There's like -- they're usually really good about telling you that, hey, the other base has turned it down; can you take it? And then I'll look at it. So --

Q. How would you describe the safety culture?

A. It's gotten -- well, we're getting -- you know, we do have -- it's improved, I'd say.

Q. Okay.

A. I -- with the fact that they don't ever question me on weather decisions and stuff like that, I think that that's a huge factor. That takes a lot of stress off of me. I don't feel pressured. You know, I -- that's about it.

Q. Has that changed? Did you do -- kind of like what --

A. No. That part has not changed.

Q. Okay.
A. I feel like, well, our -- the things that have changed is like little things, like getting more emails and stuff like that of what's going on, say, like there's more cranes or something, or whatever that's going on around hospitals. And our safety guy's for -- I don't know if it's really aviation, more administrative, more of like eyewash station and stuff like that. So --
Q. Have you ever had a safety concern that you voiced to management?
A. I'm trying to think if I have or have not. Well, there was -- no, I -- yeah, well, it was -- no, I can't think of anything.
Q. If you -- let's say you, hypothetically, notice something that you wanted to bring to their attention, how would you go about doing that?
A. I usually -- well, it depends on what it is and what I feel the urgency of it is. If I feel it really urgent, I'll usually send an email jointly to the pilots that could be affected at the same time I send it to management.
Q. Okay.
A. So it's basically a joint email.
Q. I see.
A. That's the way I, that's the I've -- if I have something come up.
Q. Okay. Is there a way for you to anonymously report issues that you know of?

A. There is, but I don't know it off the top of my head. I think that there's a -- pretty sure there's something through our intranet, our company's -- we can look it up.
Q. Okay.
A. So if I can't remember something, I can go through the computer and look it up.
Q. Okay.
A. And if we can't remember, usually somebody will help us, you know. I could go to somebody that I know that isn't involved, and I think that we have enough communication amongst people that we can kind of work it out.
Q. Yeah. If you -- let's say you were asked to describe, like, the local weather in the Brainerd area to a new pilot. What kind of stuff would you relay based on your experience?
A. Well, I think just what we talked about earlier with, you know, the AWOS not always being 100 percent reliable.
Q. Okay.
A. I do feel like Northern Minnesota in general, there is some aft-casting, as I jokingly call it, which is forecasting the current conditions after they've happened.
Q. Okay.
MR. RICHARDS: Yeah. That's --
(Laughter)
BY DR. SILVA:
Q. That's fair.

A. So -- it's hard. The forecasting isn't always very reliable. I have kind of gone to starting to look at infrared satellite at night, or visible satellite during the day, to kind of give me an idea of where thunderstorms might develop ahead, because -- and that works for me. Because what you see on radar has already happened and it doesn't show you what's going to happen. So --

MR. RICHARDS: Can I just clarify? By forecast you mean the TAFs, or what specifically?

MR. SCHULTZ: Yes, TAFs. TAFs is --

MR. RICHARDS: TAFs is what you're talking about?

MR. SCHULTZ: TAFs definitely. And that's Northern Minnesota in general.

BY DR. SILVA:

Q. What does your risk assessment process look like?

A. It's fairly simple. You -- it's set up on our iPad, and I typically fill out the first portions, like my duty date and stuff, those portions at the beginning of my shift. And then I let it linger there until I get a flight. And then I fill out the actual weather at the time of the request, and whether it's a scene and -- and then we add those in. And then that's when I digitally sign it, is at the request time.

So I add the ones that are valid for the -- that also allows me the chance if, like, I feel different on my -- like altered, they call it altered circadian rhythm. So if it's later in the day and I feel like I'm -- okay, well, I can add that on there or,

you know, change that because I haven't digitally signed it yet.
Q. Right.
A. So it just kind of gets me, like, in the loop, but I'll set up a -- for me, I set up an initial manifest and an initial not-completed risk form at the beginning of the day, and then I complete it when I get the request.
Q. Okay.
A. So --
Q. So at the request, is it before you accept the flight or deny the flight?
A. Right. And if I deny a flight -- typically I don't use the request to deny a flight. Or the --
Q. The form?
A. The form. I know what -- when I look at the weather, I know whether it's a go or a no-go.
Q. Okay. I see.
A. If it's a no-go, and I'll just hit the turn-down button. And I'm usually more descriptive, and if I have other weather, I'll write it in mine that says thunderstorms forecasted or whatever. Because we don't have a click for thunderstorms.
Q. I see. Okay.
A. But it says weather unacceptable, and I'll put it in comments.
Q. Okay. I see.
A. Whatever it is.

Q. Yeah.
A. So I'll just do a straight turn-down request for -- or turn-down for the -- for unacceptable weather.
Q. Do you get information on whether a flight has been turned down by somebody else before you get called?
A. I would say 90 percent of the time.
Q. Okay.
A. There's probably times that we don't. But how that plays into my decision making is probably not really --
Q. Okay.
A. -- doesn't make a lot of difference. Especially -- well, say -- it should be the same, at any rate, for me. I'll look a -- I'll take a harder look at it if it's somebody within our own program.
Q. Okay.
A. I'll go, okay, why did they turn it down? Or what's going on and how did I get the request? Because whether it's the pilot referred it, or is it just dispatch bouncing to the next base?
Q. Makes sense. So how do you get information on whether a flight's been turned down before?
A. The primary way is dispatch telling me it's been turned down.
Q. Okay. Do you have another way that you use?
A. There is another way. I don't always use it, but it's weatherturndown.com. On the more poor weather days, I'll usually have it pulled up, though.

Q. Okay.
A. But I can't -- it's not 100 percent reliable because it's not always real time.
DR. SILVA: Okay. Mike, do you have any questions?
BY MR. FOLKERTS:
Q. I was curious. When you shoot an approach, you know, different visibilities, lower visibilities on approach, what's your thought process on ground taxi versus air taxi?
A. I prefer -- well, everybody's -- I guess everybody's different. But if it's, like, less than a half a mile, I would prefer to ground. And it works well, like at Bemidji, where I'm currently out of. Or if I'm going to -- a lot of times, we're going, you're transporting to a hospital like Duluth or Fargo or Grand Forks, where there's -- you're not going back to your base.
And that's where Brainerd's a little unusual, because the base helipad's separated from any of the normal taxiways. Like I can taxi straight from the runways down the taxiway, whether it's hover taxi or whatever, I can get to my hangar in Bemidji no problem.
Q. Right.
A. And that's where Brainerd might be a little bit different than everybody else.
Q. Okay.
A. The rest of the places you can get to pretty easy from the main ramps or main taxiways.

Q. Have you had some experiences where the visibility due to fog surprised you after executing the approach down to, say, 200 feet or so, and then you had some issues after the decision height?
A. Not with this company. I did before.
Q. Oh.
A. Yeah, it was up in Deadhorse, Alaska. They reported -- what did they report? I think it was a quarter mile visibility, or it was right at a quarter, between a half and a quarter.
Q. Okay. Snow?
A. And snow covered. It was real, it went --
Q. (Indiscernible.)
A. Yeah. That one was unusual because the report, the -- and I've never seen this since. They were reporting like a quarter mile of visibility with -- and I'm like -- we're 6 miles out, and I can see all the runway, but it was fuzzy. And you're shooting the approach, and I'm still in the clear, clear skies 100 feet, you could still see the (indiscernible), everything's fuzzy. Once we got below 50 feet, everything disappeared, and you could barely see the next taxi lights. And that was a struggle to get taxied back to the ramp.
Q. Right.
A. About 50 feet, we're clear skies. Below that was, it was terrible. It was hard to taxi. So I have had that experience before. And it was up in Deadhorse, Alaska, and we did have a way to -- we had lights to taxi to, but it was hard to see even when

the taxiway lights would come on. But yeah, that -- I've seen it, but I have not seen it here.

Q. We have the Appareo to download still, but one possibility that we're considering is a gap in the 100 to 200 foot range.

A. Yeah, I've seen some stuff where you kind of see some scattered things that are in between. But yeah, I -- and I have, I mean, I've seen some scattered stuff down low before. But I haven't seen anything more, other than that one instance where it was like clear, clear, clear, and then it went poop right on the ground. And it was crap at the very low altitude. I'd say the visibility was exactly what it says it was once you were below 50 feet, but above 50 feet it was -- I mean, you could see the whole entire runway, it was just fuzzy.

Q. Does the training program and your check rides have weather covered in those?

A. Yeah. They covered them. They cover it, and if the weather is IMC, we've done check rides in IMC before too. It just depends on what it is. But we've done the IFR portion in actual IMC. So --

Q. How about your settling with power training? What -- when do you get that? How does that work in the check rides?

A. I've been doing -- I think we've been doing that about every check ride, so every 6 months or so.

Q. Okay.

A. We get an onset and then we do a recovery.

Q. Okay. Have you ever seen that trained in the simulator, or in a simulator?
A. Yeah, but it was --
Q. How does that work? I mean, how is the value of that, I should say, settling in the simulator?
A. That one's hard to say, because it -- well, the last -- I did it, I think it was, in a 139 simulator and also an AH-64 simulator. And those things can come out of the sky like a rock with the -- if you're at full onset, and it's difficult to get recovered. But, you know, you have to have altitude.
Q. Right.
A. And if you get into it at low altitude, you're going to be hurting pretty bad, you know.
Q. Okay. Did you have more to say on that?
A. No. Just the, I mean, we don't have a simulator --
Q. Right.
A. -- for this aircraft or that --
Q. No, I just wondered, in other simulators, if you --
A. Yeah, I have. And getting --
Q. -- you found that valuable to do settling with power in a sim or if it was not necessarily very representative.
A. I -- it's hard to say. That one's -- because the simulators, I have yet to find one that really feels 100 percent like the aircraft. The 139 was closer, but military aircraft were -- there is definitely some differences between what the aircraft felt when

you're doing training versus what the simulator felt a little bit.

Yeah, I -- that's about all I can tell you on that one. I mean, I don't have a lot. Until we have this simulator finished up and ready to go, I don't know if it would make any difference or not.

Q. It'll be fixed base, so this simulator probably wouldn't be --

A. Right.

Q. -- a realistic scenario. But --

A. No. But we do -- every 6 months we do some onset training.

Q. Okay.

A. So we'll get in initial, and it's at altitude.

Q. Right.

A. So, now -- yeah, it's kind of a controlled, you know, controlled exit. So, yeah, I don't know beyond that part. Of course you don't want to push that issue in the actual aircraft because --

Q. Right.

A. -- that could be -- that's a tough one.

MR. RICHARDS: I just have two questions, or two areas to ask about.

MR. SCHULTZ: Yes.

BY MR. RICHARDS:

Q. So with Brainerd, when we're talking about low visibility, fog, are there trouble spots around the airport? Are there -- on

the field, are there areas where low visibility may be more prevalent than others? Anything you can think of in your mind that sticks out? Not that there should be. I'm just asking.

A. Not that I can recall.

Q. Okay.

A. I mean, I just -- like, I know that one little spot around the AWOS sensor kind of picks up a little bit more.

Q. Okay.

A. So it sometimes reports it lower than what it actually is. So -- and quite a bit.

Q. And that was actually the segue to my other question, which was, given what you've been saying about your experiences with the ASOS reporting at Brainerd, if you hear the Brainerd ASOS is reporting a half mile or a quarter mile, are you -- I mean, are you going to -- do you take that as gospel? Do you take it with a grain of salt? Is there a trust issue here with the ASOS there for you?

A. Well --

Q. How do you -- what do you think about it?

A. What I think about it is, I'm uncertain of it's -- of the validity. It could be right, it could be way off. Will I always use it for the legal approach minimums? Yeah, absolutely. Yes. So that part's no question on that, so I'll leave it on the legal -- use it for my legal decision.

Now whether -- I will be uncertain of how accurate it is.

I'll just kind of plan for the worst and hope for the best.
Q. Any other -- have you heard any other pilots here talking about the Brainerd ASOS or Brainerd weather in general? Anything like that?
A. Nothing different than what I'm telling you on the AWOS site. That's about all I've heard.
Q. There have been other pilots who have talked about --
A. I think there has been other pilots that had said that the AWOS will report sometimes lower than what it is.
Q. Was the accident pilot one of those people? Do you recall?
A. Tim? I don't know, because -- well, I know that he's not talked to me about it for sure because we haven't had a whole lot of pass-downs from each other. I don't know him very well.
Q. Got you.
A. So I haven't worked with him a lot. I've -- maybe a handful of shifts, and I think that might have been the first time I've worked with him out of Brainerd.
Q. Okay.
A. So that part, I couldn't really tell you on that one. And I don't know how many times he's worked there.
MR. RICHARDS: No problem. Thanks. I just wanted to ask.
MR. SCHULTZ: Yeah.
MR. RICHARDS: Okay. Thanks.
BY DR. SILVA:
Q. Regarding settling with power, have you ever experienced that

in any aircraft?
A. Maybe a little onset. Initial training in the Army, we had in a 58, kind of, I felt something was wrong and I just aborted the approach. But honestly, I've not felt the settling with power. Yeah, certainly not in these machines.
Q. Okay.
A. They were usually -- I mean, even in a -- well, yeah, it burns off quite a bit of gas pretty quick too, so -- I haven't had any issues with it. I haven't felt like I'm running out of power.
Q. Have you ever trained this maneuver with foggles or in real IMC or is it just purely a VMC maneuver?
A. That just purely VMC for settling with power. I haven't done that with goggles or foggles, or anything like that.
Q. What -- how would you anticipate that your recovery would change if you didn't have any visuals outside?
A. Well, it'd be like an inadvertent IMC recovery for me, I suppose.
Q. Okay.
A. Because I can't -- you know, I try to plan my -- if I'm IMC, you know, at 55 knots or greater to keep control. Because I think once you get slow and you don't have outside references, things can get dicey. So I like having speed when I'm IMC. Sixty knots or better is what I would really say, because it feels a lot more stable. So --
Q. So when you're doing a missed approach procedure, what does

that procedure look like in terms of airspeeds and profile and things like that?

A. For me, I'm usually above 80 knots on the missed. I'm between 80 to 90, is what I'm usually at, and about 80 to 90 percent power. I feel like if I'm above that, the climb rate's so high it's just -- it doesn't feel comfortable.

Q. Okay.

A. So it sets me up, you know -- I like to be around a little over 1,000 feet a minute. I don't want to be sitting at 70 knots and 2,000-feet-a-minute climb rate just with, you know, max power. That's just uncomfortable when you're IMC. I feel more comfortable and more stable at a little bit faster speed and a little bit less power.

Q. Okay.

A. That's what works for me. And I've flown quite a -- I've flown a few hours in IMC in this thing, and so that works best for me. It helps me keep orientation a lot better. I think if you yank in a whole armload of power, could probably get disorientating. I just focus on keeping the speed and getting the climb rate settled in at a -- make my transitions smooth and slow, and typically that's what gives me -- for me, it gives me a lot better control.

Q. And you said you try and keep it above 60 knots. I think that you said it becomes a little more unstable below that?

A. Yeah.

Q. What do you mean by that?
A. Well, I -- it just, it -- well, one, it's below your VMC speed. And I don't even know how to describe it; it just feels more stable.
Q. Okay. That's okay.
A. Yeah.
Q. I was just trying to get a feel for what you meant by that.
A. It just feels a lot more stable. Yeah.
Q. Okay. In terms of just maintaining your flight profile and everything?
A. Yeah. Everything feels more -- a lot more comfortable and stable, and in control when you're above that speed, and you're not --
DR. SILVA: Okay. Mike, did you have anything else? Mike?
MR. FOLKERTS: No. I appreciate your time. And --
DR. SILVA: Yeah.
MR. FOLKERTS: -- best wishes on the journey.
MR. SCHULTZ: Yeah.
MR. FOLKERTS: It's been a challenge here, right?
DR. SILVA: Right.
MR. SCHULTZ: Right. Yeah.
DR. SILVA: Is there anything you wanted to add that we may not have asked you that might help us here?
MR. SCHULTZ: No. I'm just trying -- you know, I'm trying to place where the aircraft was at on the airfield. And, you know,

I'm sitting here questioning in my mind, I'm like, oh, he's right next to that glide slope antenna in the pictures that they showed on the internet. So --

MR. RICHARDS: Do you want to show it?

MR. FOLKERTS: That's fine.

MR. SCHULTZ: Yeah.

DR. SILVA: I'm going to turn off the recording. We are off the record at 1:04 p.m.

(Whereupon, at 1:04 p.m., the interview was concluded.)

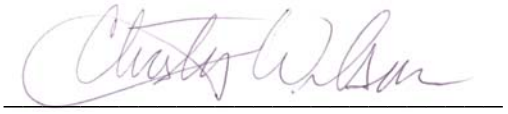
CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	NORTH MEMORIAL AIR CARE HELICOPTER CRASH NEAR BRAINERD, MINNESOTA JUNE 28, 2019 Interview of Peter Schultz
ACCIDENT NO.:	CEN19FA185
PLACE:	Brooklyn Center, Minnesota
DATE:	July 1, 2019

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.



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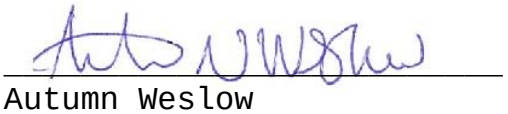

Autumn Weslow
Corrections made 6/5/2020

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *
*
NORTH MEMORIAL AIR CARE *
HELICOPTER CRASH NEAR * Accident No.: CEN19FA185
BRAINERD, MINNESOTA *
JUNE 28, 2019 *
*

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Interview of: JOSEPH KLATT
Pilot

North Memorial Air Dispatch Center
Brooklyn Center, Minnesota

Monday,
July 1, 2019

APPEARANCES:

SATHYA SILVA, Ph.D., Human Performance Investigator
National Transportation Safety Board

MICHAEL FOLKERTS, Investigator in Charge
National Transportation Safety Board

MICHAEL RICHARDS, Senior Meteorologist
National Transportation Safety Board

KATIE ILTEN, Esq.
Fredrickson & Byron
(In-house Counsel for North Memorial Hospital)

I N D E X

I N T E R V I E W

(10:49 a.m.)

DR. SILVA: Okay. All right. We are on the record at 10:49 a.m. So I'll just run through our normal introduction, see if you have any questions before we start, okay?

As Mike mentioned, I'm Sathya Silva. We met earlier. I'm a human performance investigator out of NTSB headquarters. Mike's our investigator in charge for this accident, and Mike number two there, is our -- is a meteorologist specialist.

MR. KLATT: Okay.

DR. SILVA: Also, headquartered -- out in headquarters, but he's local here too. So that's who you're talking to.

We are here for safety. We're not here to assign blame, liability, anything of that sort.

What will happen with this recording is, we'll get it sent out for transcription and a copy of that transcript will eventually become part of our public docket whenever the accident information gets released.

MR. KLATT: Okay.

DR. SILVA: You're the expert here. We want to learn from you. So if there's a question that you don't understand or you don't know, again, feel free to just say that. If you need a break, feel free to speak up. We really just want to get everything that you know from your perspective.

You are entitled to have a representative sit with you.

Would you like to have a representative sit with you?

MR. KLATT: No. That's fine.

DR. SILVA: Okay. Well, Katie --

MR. KLATT: I have one anyway.

DR. SILVA: Yeah. I mean, she's here on behalf of you. So if you --

MR. KLATT: Okay.

DR. SILVA: -- would like to have her, that is your choice.

MR. KLATT: Okay. Then I'll have her --

DR. SILVA: If you do not --

MR. KLATT: No, that's fine. That's fine, yeah.

DR. SILVA: Okay.

MR. KLATT: That's fine.

DR. SILVA: Okay. So I'll start out with a handful of questions, and then we'll go around our virtual table, usually twice, make sure everyone has a chance to ask their questions.

MR. KLATT: Okay.

DR. SILVA: Any questions before we start?

MR. KLATT: No.

INTERVIEW OF JOSEPH KLATT

BY DR. SILVA:

Q. Okay. Can you spell your full name for the record please?

A. Joseph Klatt, J-o-s-e-p-h, K-l-a-t-t.

Q. Perfect. And you started talking about this a little bit before, but can you run through, like a Cliff Notes version of

your background from when you started flying to here today? What got you flying?
A. I started flying helicopters in the Army in 1990; graduated flight school in 1990, flew Cobras, Apaches in the Army for 9 years. Transitioned to the Coast Guard where I flew a H-65 Dolphins for 12 years. Retired in 2000, went to work in Ohio for Mercy St. Vincent Life Flight for 2 years flying Agusta 109s, before I came back here to Minnesota and, 7 years ago, when I started here in North up at Brainerd.
Q. Okay. Do you have an idea of how much total time you have?
A. About 6600 hours in a helicopter.
Q. Estimate in type?
A. About 3,000.
Q. Okay.
A. Yeah. Roughly.
Q. Okay. So in addition to flying the line, what are your other responsibilities here?
A. I'm an instructor and check airman for the company.
Q. And can you run through what your roles and responsibilities are?
A. As instructor, it's my job to assist with the training department in training our aviators. And then when it comes time for our 293/297 check rides, I -- I'm available to give those check rides.
Q. Okay. How long have you been a check airman for the company?

A. Approximately 5 years.
Q. Okay. Do you do ground training as well?
A. Yes. I'll do some ground training.
Q. Okay. Do you train with a simulator here or is it primarily ground and flight?
A. At this time just the -- I just do a lot of the -- mostly flight, some ground, but we haven't gotten -- I haven't gotten introduced to the simulator yet.
Q. Okay. That's understandable. All right. And you mentioned that you have based at Brainerd. Can you describe the local weather patterns out there? If you were going to teach this to someone coming in, what kind of stuff would you brief?
A. Weather, the patterns up there are varied quite a bit. You know, of course in the wintertime, we'll get, you know, cold and clear down to, you know, low ceilings of icing and just kind of nastiness. Summertime we'll get the beautiful weather mixed in with thunderstorms.

In this case, you know, what happened the other night is the fog will roll in at times. We are close to the river and there is some lakes right off the end of the runway, so that could have effect of some of the -- our weather patterns there at the airfield.

Looking out in a wider scope, you know, we have effects from areas south, around Lake Mille Lacs, and up north where the elevation starts getting higher, the weather can tend to be really

crappy up around that Iron Range area, up in that direction.
Q. How often would you say you see weather comparable to what was seen that night in terms of the fog and low visibility?
A. Maybe a couple of times a month --
Q. Okay.
A. -- I think.
Q. Yeah.
A. I would say. Usually after -- I think we had a significant amount of rainfall over the last previous few days, where all of a sudden we'll get the ground fog after that stuff has moved out.
Q. Okay. Are there any other kind of things you would look for in terms of weather that might predict this kind of phenomenon or is it just kind of something that --
A. You know, just --
Q. -- happens?
A. I mean, that's it. You know, just being aware of when you start getting that temperature dew point, getting close after storms have moved out and the air gets cooler, the ground -- you know, we've had a lot of water around the area, you know, so that's going to generate that kind of stuff.
Q. Have you flown into Brainerd in those conditions?
A. Yes.
Q. Okay. How does that look like? What kind of approaches are you flying in?
A. Usually you're flying ILS approaches, full precision

approaches. And the weird thing about Brainerd is numerous times I've gone -- either gone in or come out, when they reported the weather -- one, the other day, a couple of weeks ago they reported the weather was less than VFR, however, it was clear everywhere. And down at the end of the runway was a little layer of fog right over the machine.

I could see the stars. I filed -- climbed out. I could see 50 miles every direction except for that little spot at the end of the runway. And that's kind of the tendency, is you could get one side of the airfield will be clear, and the other side will be kind of socked in. It just, and it's kind -- and it just kind of floats around there. I've watched it be clear, and then all of a sudden just kind of float over top of us, but the other end of the airfield was clear. It's just kind of a weird dynamic which goes on here.

Q. Yeah. When you're coming in and you -- when you have that information, at least from the ASOS, do you have a preferred approach that you fly or route that you would take in, or is it really just --

A. Normally when we come out of the metro --

Q. Yeah.

A. -- we're -- we shoot the approach to 3-4.

Q. Okay.

A. It's straight in for us. We can line up. If we're coming out of Duluth, it's 2-3. If we're coming out of Fargo, it's a

crap shoot whether or not we come around for 3-4 or continue on over and come to 2-3 if the weather's bad.

Q. Okay.

A. So it all depends on which way we come in as to which way we choose.

Q. Are there any situations where you might be coming out of the metro area and decide to fly 2-3 instead of the 3-4 approach?

A. I guess if the -- well, for me, I would set up for 3-4 pretty much all of the time.

Q. Okay.

A. Take in account what the weather says, you know? Yeah, I would pretty -- because it's just convenient. You're lined up. Pretty much as soon as you leave the metro, you're lined up for the approach and you can get yourself set up and shoot the approach.

Q. Okay. And it seems like you all do a lot of flights between the metro area and Brainerd. Can you walk us through what a typical IFR flight would look like from this area up to Brainerd in terms of how you would prepare for it, set up communications with ATC, all -- the whole thing.

A. Okay. Usually if I'm -- you know, if I sense that, you know, the weather's going to be -- you know, if we come down, we can get down VFR, we'd prefer because it's a lot easier. Normally a lot of our flights are going to start out of Crystal heading north just because that's where we can get our fuel.

Q. Okay.
A. So, you know, if I see somewhere up in Brainerd or somewhere en route that the weather may be less than VFR, I'm just going to -- I'm going to fly IFR. I like going IFR. I think it's safe, it's easy. Once you get up there, there's nothing, you know, nothing you're going to hit, run into.

So patients in the hospital, I'll get -- I'll start filing, start looking at my weather, checking the winds, et cetera, getting everything -- you know, because we file with ForeFlight on our iPads. And usually I'll file before I get to Crystal. Now, if we happen to land at -- I'm sorry, before I get to North.
Q. Okay.
A. If we land at North, I'll file right there, check all the weather, check everything, get my flight plan filed from usually Crystal up to Brainerd.
Q. Okay.
A. On the pad there, it's usually, you get ATIS out of Crystal, contact clearance, get the clearance. A lot of times because the hospital is right there inside the surface area, I'll request a takeoff right from there. And usually they're pretty accommodating, would allow us to get out right from the pad.

They'll get us -- they'll give us a clearance, I'll switch over to tower. They'll -- you know, we'll wait for our release, and whichever direction they want us to go, we take off and we start heading north. Usually it's, you know, you start with

tower, they'll switch you over to approach, get a little further north, you go to Minneapolis Center.

I usually fly -- I'll -- usually that direction would be about 5- to 7,000 feet, something -- you know, 5,000 feet or 7,000 feet, using the rules of the road. I'm not one that likes to go high. I'm afraid of heights. I get on a 6-foot ladder and I feel like I'm going to crawl, you know, out of my skin. So, you know, I'll go to 7,000 usually -- or no, 6,000. It's even thousands going that way, 6,000 feet.

We get Center. Once we get up past Princeton, St. Cloud, we get into the other Center, which is the one that's going to be handling us right down to the ground, or close to Brainerd. Figure out what approach I want to use depending on what, you know, weather. You know, if there's -- normally like I said, it's going to be 3-4. Whether I do a GPS -- if the weather's fairly decent, I may do a GPS just for practice, just -- I don't need to necessarily do an ILS all the way down to 200 feet if the ceiling's at 500 or 600, whatever. I may just do a GPS approach for practice.

Get my weather, request the approach, they get us a -- usually I request, you know, to go the initial approach fix right away. As soon as I get in touch with them, I can say, you know, request ILS 3-4 to -- I can't even think of what the marker is. Direct to there, and they usually give me that.

Q. Okay.

A. It kind of helps them out a little bit I think, approach. They don't have to guide us there. I can say, I can just go there now, and then they get us -- we get on course, start descent when we're allowed to, and they clear us to go our advisory frequency. We'll go to advisory, and once I get down on the ground, then I'll cancel with them, and get to our pad.

Q. How do you transition to the pad normally?

A. Usually it's -- if I'm far enough out, I'll cancel IFR -- you know, and it's VMC conditions, I'll cancel and proceed over to the pad. If the weather's really low, I'll go to the runway and then air taxi around. Or I've been in there before where it was, you know, a quarter mile, half mile, quarter mile. I'm not going to take the risk of air taxiing. I'm going to get on the runway and I'll just taxi all the way back. I've taxied between the hangars over there and gone to our pad. It all depends on the weather conditions.

But I'll cancel -- I try to cancel, if the weather's good, cancel out far enough because I'm holding up other traffic if it happens to be coming in. I can -- if I can maintain VMC in the surface area and go down, then I'll do that.

Q. Where in the flight profile would you typically check weather or check the ASOS? Is there --

A. Well, usually, because I'm kind of used to the way they do things, once we get handed off from the one center to the next I'm checking weather right there.

Q. Okay.
A. That's my first -- if we have a pretty stout wind coming out of the south, you know, maybe I want to switch to 2-3 or -- depending on if it's a heavy wind condition. You know, with a helicopter, I'm willing to accept a small tailwind as long as I can -- you know, I feel it's safe to do so.

But I'll check weather right away, as soon as I get checked in with Center, the 118-05, and then I may check it a little bit further. Especially if it starts to deteriorate and I know that it's really low, I'll check it before we get to the initial approach fix because i have to make sure I can do the approach. You know, if I'm not at the initial with weather for the approach, I can't conduct.

So I'll check it one more time before the initial. And then for me, I'm not one to keep checking it because I got a lot of things going on in my mind. Especially if I'm going down to a low altitude, I want to be focused more on that approach and know -- you know, making sure I'm squared away on the way down --
Q. Right.
A. -- instead of listening to frequencies and, you know, the chatter. You know, there's usually never any chatter in the aircraft anyway, but if there is, it's always, okay, guys -- or I turn them off, let them talk. I need to focus on what I'm doing. Because those low -- those lower approaches, for me, you know, it's a lot of headwork to make sure I've got all my, you know, I's

dotted and T's crossed, you know.
Q. Do you recall where that transition to 118-05 typically happens?
A. Usually about -- I think it's whatever that Highway 23, 24 coming between Milaca and St. Cloud, there's a highway right there, and that's usually about where they do the changeover.
Q. Okay. Let's see. And then the other thing I wanted to ask about was settling with power.
A. Okay.
Q. And again, I'm not a rotorcraft person, so can you run through what that means, how it's trained, what you would expect your pilots to do?
A. Basically settling with power, in a nutshell, is settling into your own rotor downwash. Okay? The rotor blades generate lift, that air is pushed downward. As you settle, you start getting air coming up, and as it travels out the rotor disk, now you have less lift. Instead of having this much, you know, three-quarters of the rotor blades providing lift, now you're maybe half. So now you're going to start to settle.
Q. Okay.
A. I've been settling with power twice in an AH-64, heavy -- heavily loaded. And so you need to have zero to near zero forward airspeed. You know, you don't have that fresh air going across the disk. 200 to 100 percent power applied, you've got that -- you know, you're giving some pitch to those blades. And bearing

300 foot from that rate of descent.

If you have all three of those, the chance of getting into that settling with power are pretty high. It's real simple to get out of. Fly it. Fly the aircraft forward, fly it left, fly it right, whatever direction, because as that column of air is going up, you move out of it, and now the blades are going to bite.

(Interruption at the door.)

BY DR. SILVA:

Q. Okay. So that's the expected response is to fly out of it?

A. That's the way we train it is, you know, you get some forward airspeed, left, right, whatever the case might be. And in the cases where I was in settling with power in AH-64, which is a -- an Alpha Model 64 had a lot of power, could do just about anything. A 400-foot hover, we started to settle, and I was in the front seat at the time. I told my back seater, fly forward. And out it went. It was easy. But it was a -- you know, you start to get the -- you get a vibration, you start pulling more power, it makes it worse, and now we're really settling. Just get out of that column of air, get some fresh air over those blades.

Q. How much altitude does it take to kind of recover from a situation like that?

A. If you can recognize it, it's pretty quick.

Q. Okay.

A. It's just a matter of -- like I said, it's just getting that ratio of flying blade versus non-flying blade, get that ratio

better. So if you can recognize it right away, you know, you may lose 50 feet, 100 feet, you know, I don't know. But yeah, it's just a matter of getting some forward movement. You know, one of the first things to get into it is zero or near zero forward airspeed. Get a little forward airspeed. That's all it takes. Get out of that column of air.

Q. So when we talk about recognizing it, what kind of cues are you looking for?

A. You start to get a vibration. You'll start -- and then as you start to feel a descent and you pull more, it's just going to get worse, and the more power you pull, the worse it gets. So that's kind of the feeling that you get. It's just going to start at the vibration, the power's -- and then you'll start getting that descent, and then you start pulling and then it gets worse.

Q. Okay. Do you ever train this in simulated IFR --

A. No.

Q. -- with lack of visuals or --

A. No.

Q. -- anything like that? It's pretty much --

A. That's strictly a VFR maneuver.

Q. Okay.

A. Yeah.

Q. What's that maneuver look like for both training and the check ride? How does that set up?

A. Well, I'll get a guy to -- we start to slow down, get a

little descent going. You know, we'll be a high altitude, 3,000 feet, 4,000 feet, someplace safe where we have plenty of room to recover.

Q. Yeah.

A. You get the guy to start slowing down. Usually I like having a little bit of a tailwind in it because of the -- otherwise, you get a headwind, the blades are biting into clean air. So maybe a little light tailwind, and just have him get to that zero, a little bit of a descent, and you'll start to feel it. And then you have to recover.

Q. Okay. And this is something that every pilot would see in their training?

A. Yes.

Q. Something that --

A. We're required every -- we do it -- we do check rides every 6 months. It's a requirement to do a 293 ride every year.

Q. Right.

A. We do -- and that's the VFR portion. The IFR portion is every 6 months. We do them all together, so a pilot sees that every 6 months.

Q. Okay. What's your interaction or relationship like with the med crew? What does that look like?

A. I think it, for us, it's really good. At our base, it's really good. It's like we're a tight family.

Q. Okay.

A. You know, a bunch of brothers and sisters hanging out working. I think that there's a lot of trust in both sides. You know, they trust us four pilots, and I trust them. I help them; they help me. So it's kind of a -- it is really kind of a nice tight group that we have up there.
Q. Do they bring up any concerns or questions that they may have to you? Is that something that's common?
A. I think the avenue is open, or the door is open for that. I think they feel comfortable to do that.
Q. Okay.
A. But I think we have such a relationship as a crew, that we -- they trust us with the decision making. And I think the four of us are very vocal. We discuss a lot that we do. I'm very -- this is my plan, this is what I think I'm going to do, this is what -- you know, if this doesn't work, this is what we're going to do. I like to talk to them. I feel the more you talk to them, they understand your thought processes and it's not just, you put the cape on, and you put your goggles on and off you go, and they're along for the ride. It's hey, this -- no, this guy knows what he's already thinking. This is what he's thinking, this is what he's going to do, so they trust us in that aspect.
Q. Okay. How is patient information transferred to the crew in terms of -- you know, I'm assuming they have to get ready for whomever you're picking up. How does that work with respect to you and accepting a flight, taking a flight?

A. The normal process is our communication center would contact us, the pilots, and say there is a flight request point A to point B. That's it.
Q. Okay.
A. Or there's a scene call. We know nothing about what's going on or anything. We just know that, okay, we're going to transport from A to B, can we do that? And that's when we check weather, and we look at it and determine, yea we can do it or no we can't, or we need to make this adjustment, or hey, can they bring the patient to here, because we can get out here.
And then once we accept, then they'll say, okay, it's a, whatever the patient condition is, for the whole crew to hear. The whole crew does hear the call come in as far as we have a patient transport from here to here. So they know and they start preparing.
Q. Right.
A. And then they'll transmit the information to us.
Q. Okay. And you find that out after you accept?
A. Yes.
Q. Usually prior to liftoff?
A. Yes. It's usually within minutes of accepting the flight.
Q. Okay. I see. How does this risk assessment process work? How are -- what's that -- when are you filling that out?
A. Well, we have --
Q. What are you using it for?

A. Our risk assessment form is two-part. The first part is just kind of the initial of the day. You know, we asses our risk as far as, okay, is it a day shift; is it a night shift? Are we assigned to that base; are we not assigned to that base? And that gives us a number. You know, what our flight hours are, if we're -- you know, however they generated those numbers as far as a value. I'm not sure how they do it, but we get a value. We look at it before each flight.

Then we look at, okay, what's the conditions of that flight? Is it an IFR flight? Is the ceilings low? Is the visibility low? Is there rain? Is it at night? Is there going to be fueling en route? You know, the whole gamut of different environmental considerations we have from departure, pickup, drop-off, and return. And then it assigns a number.

And if that number's high, you know, then you need to look, okay, am I the right asset? Am I the right -- is there something I can do to reduce that risk, to make it a little bit better for us? For instance, you know, if I -- I think it's -- if the ceiling's less than 1500 feet or 4 miles, you know, that could add a number. Well, but if you want to do it IFR, that lowers your number because it's safer. You're not scud running, you're not over the top of the trees, so it's going to change your value.

You know, I look at it, do I want to fly around, you know, at 1,000 feet when I can just pop up into the clouds? It's comfortable, it's safe, I'm not worrying about -- there's some big

towers around here that, you know, they'll get you if you're not watching. I'd rather climb up to 5,000 feet, 6,000 feet, sit back and relax, and let air traffic control keep an eye on me, shoot my approach, and deliver the patient.

Q. Is the risk assessment something you fill out usually at the beginning of a shift or do you do the -- everything before --

A. Well, every -- the beginning of every shift, you fill out the top portion, which is yourself basically. And then every air ambulance transport fills out a transport flight, fills out the bottom.

So once you complete an entire mission -- we can't say mission in that world, but I'll use it for just the sake of saying it. We complete that mission, we reassess our risk again. We start over again from just like when we began our shift. Fill out the top block waiting for the call to come in, and then look at the weather and those conditions one more time on the next flight. So every time we transport a patient, we're reassessing that risk.

Q. So what happens if your risk goes into the level where you might need approval or discussion?

A. Like I said, I would -- you know, is there a way for me to reduce that risk sitting here at the table? You know, can I go IFR? Yeah? No? Can I maybe have them -- like I said, have the patient transported from this airport down to this spot, and I'll pick them up VFR and then take it? Is there thunderstorms en route? Maybe another base can do it better than I can so I'm not

trying to go through that. You know, hey, ask Air Care 4; maybe they can do it, they're on the south side of the storms. You know, just some ways to -- you sit down and look at it, go, yeah, what can I do to change that? And this is how I'm going to change that and reduce that risk.

Q. Is that done after you accept the flight or before? Where does that get assessed?

A. Usually it's kind of in -- they're, you know, they're going to be kind of the same time --

Q. Okay.

A. -- without necessarily filling out the document. I mean, you're looking at -- when I look at a computer and look at the weather and look at the conditions and what I'm going to do, I'm assessing my risk right there knowing what is on the form. I'm looking, okay, what's my weather? What do I need to do? Do I need to go around this way? What's my obstacles? What's -- you know, if I have a 1,000 foot obstacle in my route of flight and the ceiling's at 1,000 feet, I need to think about something a little bit differently, where I need to go, what I need to do.

So I'm already kind of generating my risk. I'm not necessarily looking at the iPad going, okay, my weather is here, this, and this. I kind of already know that stuff. So then I -- when I go to iPad, I say, yeah, I know my weather's this. I know that, you know, it's a night flight. I'm going to check that, you know. I'm not going to need fuel, so I'm not going to check that.

So, you know, there's already kind of things we do in our minds that we just now transport to -- transfer to the document.

Q. Is that guidance provided by the company or is that kind of just your way of doing things?

A. That's kind of my way. And maybe it's not the right way, but I know what's on that document, what I'm looking for, because I've done this for -- you know, I've been here for 7 years, I know what's on it, what I need to look for, and then what I need to see, and how I'm going to execute --

Q. Right.

A. -- to do this safely.

Q. Does the company provide any guidance in terms of --

A. Oh, sure.

Q. -- preflight? Well, risk --

A. Well, the risk analysis?

Q. Yeah.

A. Yeah. When we bring pilots in, it's, okay, this is our risk assessment. This is what you need to do every time you go out and fly. Take a look at that risk, evaluate it.

You know, and you've got new guys who are -- you know, have -- don't have as many hours in the aircraft or in the area or whatever, so their risk may be a little bit higher. So those are the ones you really -- you key on those guys to start looking at that. Say, okay, take a look at your risk. How can you reduce that if it does pop into yellow? Make some phone calls.

You know, we have a section of pilots, you've got a seven pilots working all at the same time. You know, hey, call somebody. Hey, how can I -- I've had guys call me from other bases. Hey, what do you think I should do? This is what I think, you know, try it this way, try that -- you know, maybe -- or I'll do it. If you can't get to it, I can do it, my numbers are going to be lower because I've been here longer, you know. I know the area more. That kind of thing.

Q. I see. How do you like working for the company?

A. I plan on retiring here.

Q. Okay.

A. I enjoy it. I really -- I mean, I've wanted to be -- my mom worked for Air Care many, many years ago. The guy who convinced me to go in the army was a pilot at Air Care. I'm in Minnesota, where I want to be with family. This is where I want to stay. I like the job. I like the people.

Q. If there was anything you could change, what would it be?

A. I guess -- I'm kind of old school in a way of -- you know, training is important to me. I was a trainer in the Coast Guard. I've trained guys to hoist over -- hoist a rescue swimmer onto a moving vessel at night under goggles. And out of all conditions, that's the worst you could possibly do, when you've got somebody on a hook hanging down below your helicopter in the middle of rigging, moving over water in the dark. So I believe training is extremely important.

And it's -- I believe in, you know, I believe in the standards. You live by the standards because that's what you can fall back on. So I'm very -- I've -- I guess I've come to be known sometimes as the hammer, some -- because I'm very tough in my check rides, extremely tough, because I expect people to be. And I think, you know, if I were to change things, I'd probably just try to work harder on -- I mean, we train to a good level. We train to a nice safe level, but I'm -- I expect a lot more from pilots.

You know, one of the things I always said when I first got here was, we have that medical crew and that patient in our hands, it's our responsibility to be the most professional pilots that you can possibly be. This is your profession and you're responsible for those lives. So, you know, the training program is good, it's real good. I just try to hit it harder, try to hit other areas that people don't think of, to expand your knowledge, get to understand everything, get to understand that aircraft even more.

Q. Yeah.

A. Get to understand those weather patterns. Get to understand how working IFR in the environment, you know, a little bit more in depth.

Q. Right. Okay. On that note, how would you describe the safety culture here?

A. Good. I think the safety culture is real good. I've never

felt pressured to do anything that I didn't want to do. I've always felt like if I said no, the leadership has my back, they understand.

Q. Okay.

A. So as far as that, you know, the safety of flight, and even on the ground side of the -- how -- or the, you know, maintenance or the medical, I think everything is just -- I mean it's awesome. You know? It's just really good safety-wise. Yeah, I don't know if we could get any better safety. I mean, maybe you can, maybe -- there's always room for improvement in every level. But I think we're really good. I think we're really good.

Q. If you had a safety concern, how would you voice that? What does that look like?

A. For me, I'd go right to our chief pilot or the director.

Q. Okay.

A. Just because I have a good relationship.

(Interruption at the door.)

BY DR. SILVA:

Q. Okay. So you would go straight to the --

A. Oh, yes.

Q. -- chief pilot?

A. Yeah, I would -- I mean, we do have safety officers now in place at the bases. We had -- I think we had gone with one safety officer at the time, but, you know, I think we've gone to a larger organization now where one guy is overwhelmed, so now we've

started to develop the small ones. But because of our organization, I think we have a lot more leeway to go direct to the leadership than through the safety channels because we are smaller. Some of the bigger companies, okay, don't call the chief pilot, you've got to call your regional manager, or whatever. Us, we talk to our chief pilot every day, or every couple of days, or the director or whatever. So I just take it right to them.

Q. Yeah.

A. I say, hey, if I -- you know, if there was something, I go right to them directly.

Q. Do you feel like your concerns are heard?

A. Yes.

Q. Okay.

A. Yeah.

Q. Is there a way to anonymously report safety issues?

A. I believe there is, but because I don't do anonymous -- I don't care if my name's attached to something that was unsafe, I mean, a safety-related issue. Put my name on it. I don't have any problem with that. You know, if it's me, you know, yeah, let me know that I'm unsafe. But if I'm going to report something, I'm going to -- I'll just say it like it is and talk to them guys right away.

Q. Okay. And when it comes to IFR training, training IFR, maybe and IMC, how often would you say the pilots are running missed approaches?

A. I don't know.
Q. Okay.
A. To be honest.
Q. Okay.
A. We do have a requirement for pilots to fly a certain amount of approaches every month. Do they execute missed approaches? I don't know.
Q. Okay.
A. Is that something that could be improved? Yeah, probably so. But as far as our people doing that, I don't know. I couldn't give you a number even as a guess.
Q. Okay. So you mention there's training every 6 months?
A. There's evaluations every 6 months.
Q. Oh, they're evaluations every 6 months?
A. Yes.
Q. Okay.
A. For IFR.
Q. What do those evaluations consist of?
A. We do two precision approaches, two non-precision approaches, entering the holding. There's unusual attitude recovery. I'm trying to run through what I do on a check ride off the top of my head without my cheat sheet in front of me. Unusual attitude, there's simulated engine failures with an ILS. There's confined areas, pinnacles, slopes, steep turns. I said unusual attitude. Inadvertent IMC. Pretty much covers just about everything.

Q. Would missed approaches be something --
A. Yes.
Q. -- that that would be seen there?
A. That is something that we do train on that also.
Q. Okay.
A. Or evaluate every 6 months. Yes.
DR. SILVA: Okay. I've been talking for a while. I'm going to pass the buck off. Do you need a break? How are you doing?
MR. KLATT: As long as I got some of this left, I'm good.
DR. SILVA: Okay.
MR. KLATT: I haven't dried out yet.
DR. SILVA: Mike.
MIKE: Good soldier's background. You can hang in there?
MR. KLATT: Um-hum. I took my beatings.
BY MR. FOLKERTS:
Q. What's your thoughts? Could -- would you think it'd be feasible if you had a simulator to do settling with power in the sim?
A. I think it could --
Q. Could that be useful? IMC?
A. You know, a lot of the -- a lot of flying is with feeling, seat of the pants. It's hard to simulate that in a simulator because you don't feel the movement. You know, a seat shaker, sure, but you don't feel your stomach rising up in your body if you're dropping.

Q. Okay.
A. You know, I've done -- you know, in the military, we have simulators for everything, you know, and it's hard to -- even, you know, doing autorotations, it's hard to do an autorotation in the simulator because you don't feel the aircraft.
Q. Okay. He flew the ILS to 2-3. Normally you go to 3-4?
A. Normally I do 3-4. Yeah.
Q. Any thoughts on why that might have occurred, why he chose 2-3?
A. Why he did? My thought is, you know -- like the other night, I flew and it was severe clear for miles except at the airport and certain airports. The fog was -- you could see it developing in the trees. And I click the lights on 30 miles out, full bright, I could see them. Maybe he clicked the lights, didn't see them out there, and said, well, maybe 2-3 was a better way to go in. That's the only thought I had because of the experience I had a week prior.

Yeah, if I don't see the lights when I click it, and I'm in clear blue, yeah, maybe I'm going to go around to a different runway to see if I can see those lights better.
Q. Okay. The forecast was a mile vis.
A. Okay.
Q. What's your thoughts on when you choose to ground taxi versus air taxi when it -- recognizing that the visibility is pretty variable at that airport sometimes?

A. You know what? It's all condition dependent. Coming down on the bottom, you know, if it's a mile visibility and you've got a good ceiling, yeah, maybe an air taxi'd be okay. You get down on the bottom, it's a half mile and you can't see -- you know, where that runway comes in, you know, 2-3 or 3-4, they're off on the -- away from the terminal and all of the lighting, so you're kind of in the darkness over there. If you can't see those lights, yeah, maybe I'd just -- and there's trees, and there's some other obstacles between those runways, those approach ends of those runways and where we need to park, yeah, maybe ground taxi would be the better way to go. Or even hover taxi along the taxiways, you know, at a low hover taxi.

It all depends on what the day is. And for me, that's kind of the way it is. It's can I see on 2 -- on 3-4? Can I see over to my pad? Yep, I can see clear as day over there. No, I can't see it; guess what? I'm going to be -- it's going to be a long drive back home. Just what happens to show up on that runway.

Q. Have you had any situations where what you visually saw you were surprised by in that 100-foot area? Like after -- down toward 100 feet, you were surprised it wasn't as good as you thought visually?

A. Oh, yeah. Yeah, I've had incidences where, you know, you think it's supposed to be good and then it wasn't. I came in on 2-3 once out of Duluth, and it was reporting I think a half mile visibility, and I got down to the decision altitude and I -- nope,

this isn't going to work. And I climbed up, broke out 100 feet off the runway. Everything was severe clear beyond the runway. But because I committed myself to executing the missed approach, I committed and came back around, and did ILS into 3-4, ran into the same fog bank that -- but I was able to see the actual lighting as I came in, had a little bit more visibility and was able to land and taxi in.

Q. Okay. You said you've flown Tim quite a bit earlier?

A. I -- if I remember right, I did some of his flights at the beginning when he first got here. Once they get done here at Crystal, they'll farm them out to usually Ryan and myself, who, you know, we're instructors at the bases. And we'll take the guys out and train with them a little bit in the aircraft. So I've -- you know, to be honest, I don't know how many flights. I know I've had to have at least done one or two with him.

Q. How would you describe his flying expertise?

A. He was a new guy in a new aircraft, you know. It's hard to gauge. I mean, he had the common sense and he had the maturity and -- but, you know, he's learning a new aircraft. It's like driving a new car. It's like, well, this kind of cool stuff and it's different, you know. I was the same way when I started flying the 109. I was like, oh, this is cool. Kind of neat stuff and taking it all in. But as far as, you know, anything safety related, no, I think everything was -- he was doing fine. He was doing real fine.

MR. RICHARDS: So I, this might help with questions (indiscernible) --

MR. KLATT: Okay.

MR. RICHARDS: -- Google, it's Duluth -- or Brainerd.

MR. KLATT: Yep. Yep.

BY MR. RICHARDS:

Q. All right. So I just -- I want to go back to the conversation you were discussing about fog or low visibility around the airport. So you guys park down here?

A. Yeah. We're down at this very far corner down there.

Q. Right down here.

A. Yep.

Q. Okay.

A. Yep.

Q. Do you know where the ASOS is on the field, by chance?

A. I believe it's right up in this area here.

Q. I'm not 100 percent.

A. I believe it's right down in here.

Q. Near the intersection?

A. Yep. Kind of back -- there's a bunch of equipment right down in this area here.

Q. So you were discussing that you can get, you know, you have -- there's a river, there's some lakes around. Where are the trouble spots for lowest visibility? You were referring to those earlier.

A. Right down there.
Q. So you're talking about around runway 3 -- what is that, 3-4?
A. Yep. The approach end of 3-4, approach end of 2-3. It's kind of this area right in here. This is where, when I mentioned that the other -- the one night I took off, it was severe clear, and they were reporting a half mile visibility. And there was a little fog right along here. And when I shot that approach and had to do my missed approach we just talked about, came in this way, broke out, this side of the airport was clear. So a lot of this area down here sees -- tends to see more of the fog.
Q. So when the ASOS is reporting a half mile, whatever, is it common that that limited visibility is restricted to one side of the field as opposed to this area down here? Is that common?
A. As far as in those conditions, yeah. When we start seeing that ground fog kind of thing, I think it's more that side of the airport.
Q. Is there -- just curious, either with you, or have you heard conversation from other pilots, any concern or distrust with ASOS reporting visibility in the sense that what they're -- what the ASOS is reporting may not be applicable to your operation?
A. As far as, are you saying it's wrong?
Q. Saying it's not going to affect what you're going to do.
A. No.
Q. Because you're going to come in here --
A. I'm going to use --

Q. -- and then you're going to go down there, this stuff's over here. I mean --
A. No. I'm going to use what the ASOS says, because I don't know -- I don't know had that whole field been socked in or is it one part of it? I have to use what the machine tells me.
Q. Right.
A. That's what I'm going to use. And I don't think there's anybody out there that says, nah, that machine's wrong, we're just going to shoot the approach. No. I think they believe -- you know, we have to believe what that machine says.
Q. Okay. Earlier in the time period, maybe just before the top of the hour prior the accident time, the ASOS was reporting -- in the remarks was reporting variable quarter mile to 5, which is pretty big to me.
A. Oh, a quarter mile to 5 mile?
Q. Yeah. Quarter mile visibility variable to 5.
A. Okay.
Q. Is that something that's -- does that fit in with the picture that is being painted for Brainerd as far as common visibility goes? I mean, when you hear -- when you see that remark, you hear about that, what are you thinking?
A. I would say that that's -- what's going on is there's a bank of fog moving around somewhere out there, that it's shifting, that it's --
Q. Okay.

A. And I would be like, yeah, I believe it, because I've seen it numerous times where that fog settles and then moves somewhere, and then moves around in some different spot. And next thing you know, you're -- you know, you can see it. You can see it out there just kind of moving.
Q. In your experience, how shallow is that layer normally?
A. Normally it's 100 feet maybe.
Q. 100 feet, and severe clear --
A. Oh, my gosh, yeah. It could be you could see 50 miles, but you could look out there and see that there's this little patch of fog over here or over here, or, you know --
Q. And getting back to a question that Mike was asking, when you're on approach, dark night conditions -- actually, let me step back. Maybe I should zoom out. I'm not really familiar with Brainerd. Take away the runway lights here, take away the airport light -- runway lights here. How dark is it out here?
A. Sporadic lighting from homes in the area. If you take that whole airport and just remove it, it's sporadically lit. Little lights here and there. I mean, you've got the highway running --
Q. It's -- some more stuff down here.
A. I mean, most of the town is off that way.
Q. Yeah.
A. So we're separated by, what, 4 miles --
Q. Yeah.
A. -- from the, from the town to the airport.

Q. So if we're looking at this, you know, 100-foot shallow layer of fog that kind of moves around here and there around this part of the airport, how easy is it to identify it on approach that something like that exists? I mean, can you see it? Or maybe it's a function of the runway lighting or -- I don't know. I -- what's --

A. Well, like I said, the other night when I flew, I lit up the runway as bright as it could be.

Q. Okay.

A. And I had the approach lighting system from 30 miles away.

Q. And it was off, and then you clicked it on to high?

A. I clicked it, yeah. That was -- you know, it was -- well, it was actually early morning. It was 4 in the morning I think I came home out of Rochester.

Q. Okay.

A. And angle lights on, boom, I can see them for miles. And I'm out here somewhere, and I can see it. But then I can also look down and see, yeah, there's some fog. You know, if we had a little bit of illume, you can see the fog in the -- on the ground. So I knew that, well, okay, there's going to be a fog issue at the airport.

Q. When was the last time you operated into Brainerd with a half mile, quarter mile?

A. Well, it was, what, about a week and a half or so ago.

Q. Okay. What was -- which approach did you do? How'd you come

in?
A. I came in 3-4. ILS 3-4.
Q. And then did an air taxi down here or ground taxi around?
A. Pretty much air taxi, because I was clear. I was clear all the way here. I was clear all the way down the approach. I shot the approach just because, you know, at the bottom, you know, it's reporting less than VFR. So I continued on the ILS approach in VMC conditions --
Q. Yeah.
A. -- watching the runway, seeing it right in front of me, and continued on. When I got down about decision altitude, I said, well, I'm just going to go ahead and take it right on over to the pad because it's -- I'm on -- or, you know, inside the runway, inside the perimeter of the fence, I can see clear.
Q. And you were never VMC?
A. Yes. I was VMC the whole time.
Q. Oh, you were VMC? I didn't -- oh, I'm sorry.
A. Yeah.
Q. I didn't know if you were talking about the visibility --
A. The actual --
Q. -- visibility was over here. Or --
A. It was like right here, covered up right there.
Q. Okay. So --
A. There was a wall right here. Well, actually it was right about here, because I couldn't see across the other end of the

runway. But it was clear. It was VMC right here.
Q. I'm sorry. I said VMC. I meant IMC. You were never in IMC --
A. Never IMC.
Q. -- the whole time? So you came in, and before you hit that wall, you just did your air taxi down there, you're all good.
A. Um-hum.
Q. If you would have come in on 2-3, you would have been --
A. I would have been right in the goop.
Q. Okay.
A. Yep.
Q. Okay. And you saw that? Did you see that wall of fog from a ways out? Was that the story you were talking about when you --
A. Yeah.
Q. -- clicked that lighting all the way up?
A. This was, what, 2 weeks ago.
Q. Yeah.
A. Yeah. Came in out of Rochester at 4 o'clock in the morning.
Q. Okay.
A. I left Rochester IFR to go to Brainerd, because I knew the weather was going to be getting bad. Stopped in Princeton because I decided, well, I don't have enough fuel to make it to Brainerd, not be able to break out and try to get back out and try to get back somewhere where the weather's decent. So I stopped in Princeton, topped off the tank. Continued -- I fly IFR out of

Princeton and, yeah, I got to that changeover point where the two centers asked for the ILS direct to, I think it was Pidme (ph.). But I'm still in VMC conditions. I can see --

Q. This was at night, right?

A. It was dusk -- or dawn.

Q. Oh, it was the morning?

A. It was dawn. But it was still technically -- the sun hadn't come up yet.

Q. Got you.

A. I could see Brainerd. I could see Crosby off in the distance. I could see the antennas where I live, north of the airport. But I could see below me, right in the trees in some of those open fields that it was starting to get a little foggy.

Q. Okay.

A. So yeah, then I just lit up the lights, did the ILS 3-4 in VMC conditions all the way down.

Q. Okay. Thanks. Last question, just real quick, is do you -- when you're en route, do you ever use the Garmin for destination weather?

A. Occasionally.

Q. Yeah.

A. A lot of times, I'll, you know, use the iPad. But you could pull weather up in the Garmin or, you know, if you're out far enough, just pull up the weather and listen to it. Especially at higher altitudes I can listen to it. You know, coming down here,

listen to Crystal --
Q. Right.
A. -- from a long ways out at 6,000 feet.
Q. Okay.
A. Can get the -- exactly what they're doing at that airport, what's going on there right now.
Q. What's your -- okay, so if you're en route to -- again, let's use Brainerd, what's your -- you're cruising at 6,000 feet. What's your primary tool for getting destination weather?
A. Once I'm en route? I'm going to pull up the ASOS for Brainerd.
Q. On frequency?
A. Um-hum.
Q. Okay.
A. Yeah.
Q. So Garmin is a, the Garmin is a secondary --
A. Secondary for me. Because, you know, how long does it take for that thing to get updated? You know, is it immediate? Is it -- I need to know what's going on right there.
Q. Yeah.
A. So I'll -- at that altitude I can tune it up and listen and hear what's going on.
MR. RICHARDS: Okay. Thanks a lot. I'm good.
DR. SILVA: I just had a few more. How are you doing? Do you need a break?

MR. KLATT: No, I'm doing good.
DR. SILVA: All right.
MR. FOLKERTS: Soldier.
MR. KLATT: That's right. Soldiering on, moving forward to if possible.
DR. SILVA: On this topic of approaches here --
MR. RICHARDS: Do you want this back?
DR. SILVA: -- we were looking at the -- no, actually it's fine. I've just imprinted that ILS approach chart into my brain.
BY DR. SILVA:
Q. So the ILS 3-4 mentions that you -- it requires an ADF/DME, or radar to fly that approach. If any of those were out, is that something that would factor into your decision to fly that approach?
A. Yeah, I know what you're talking about. And had I been IMC the whole time from 6,000 feet down, yes, I probably would have -- that would have changed my outlook. But I was VMC the entire -- I could have cancelled IFR leaving Princeton, but I elected to stay IFR, one, for practice, and to be able to talk to folks on the radio --
Q. Right.
A. -- and get used to being in the system. Had I been in the goo, yeah, I probably would've changed runways, maybe gone to 2-3.
Q. Yeah. And you mentioned you flew with Tim. Have you interacted with him more recently in terms of --

A. Well, we had a --
Q. -- (indiscernible) or anything?
A. We had a discussion probably about a month or so back regarding aircraft cleanliness.
Q. Okay.
A. I'm kind of a stickler for that. I like their -- you know, I expect their aircraft to be clean. And I -- because we're at Brainerd and we have the maintenance facility, I see all the aircraft come in.
Q. Okay.
A. I picked out one -- I pick up an aircraft which generated an email that, okay, I wanted to address all of the guys junior to me. I'm not going to address the senior guys because they're, you know, they're just kind of set in their ways and how they do it. But I want us junior guys, because we're taking on the company as these older guys retire, to set the standard, set the bar high.

So I said, let's get these aircraft clean. If you know the aircraft are coming in, let's get them washed. Maintainers don't need to wash aircraft. Give them clean, they'll give it back to you clean. So the aircraft out of Siren came in, and it was a little dirty. And the guy who brought it was one of our float pilots. And he said, I wanted you to see the aircraft when I picked it up. Because he picked it up on shift and flew it over. It was a night shift.

And so I sent an email to all the pilots at Siren saying,

hey, you guys, let's take a little pride in your aircraft. It's not the float pilot's responsibility to clean it. Your guys' aircraft, you keep it clean. And Tim responded, you know, he just found out about it, blah, blah, blah. I said, well, let's just make sure that we stay clean. And I went back into records and looked for what -- how long, how much they had flown in the last few days. They did have another float pilot there a couple of days before. And I was like, you know, it's not the float pilot's job to keep it clean. Your guys should do this, you know?

And then that kind of -- and that was it. That ended the discussion. I think their lead pilot got in it, and I just kind of backed off because I'm not going to get into it right now. And then Tim was up at the base the other day, and I just kind of made a joke with him. And so there was really no animosity between us. You know, it's just your standard, you know, not bickering, but just a little disagreement about things. And, you know, we just kind of moved on. And I don't think there -- there's no hatred, no animosity between the two of us as far as I know. At least not from me towards him, you know.

Q. Was there -- do you have an idea of how often he flew out of Brainerd? I know he wasn't based there, but --

A. Yeah, you know, I probably only seen him once in 6 months maybe.

Q. Okay.

A. At least on my shifts. I don't know -- because I don't pay

attention to what -- if I'm not working, I don't look at the schedule to see who's in there.

Q. Okay.

A. He may have come in more than that.

Q. Yeah.

A. But I hadn't seen him as of, you know, working a shift at the base for a while.

DR. SILVA: Okay. Just curious.

Do you have anything else, Mike?

BY MR. FOLKERTS:

Q. I was just curious if you know the -- if you had any ideas with the variability of the fog, the challenges that you had, not just at Brainerd, but other places with variability with fog, any thoughts on a mitigation type of protocols to follow on approaches or so forth just based on the variability of fog and the challenges with noticing it, per se?

A. I mean, we just have to be aware of it. But, you know, you've got to have -- and I don't know, maybe I'm not answering your question, but to be -- to make a decision and make a commitment whether to or not continue. Make -- being conscious -- making that decision well in advance, that if you reach the decision altitude and you don't see, you go away. You climb away and get out of there. You don't, you know, don't try to search for the ground or look for it. I mean, I'm guilty sometimes, you know, is it there? Is it there? Okay, never mind; just go.

You know, we've got to have that -- you've got to commit to following the procedures and getting out of there, getting away from the ground. You know, as far as, you know, it's fog, it's there. It's one of those environmental considerations that we have to look at. And being able to gut check yourself and say I'm not even going to go because I have a feeling or I see a trend that this is going to get worse. It's going to go to an eighth of a mile or -- you know, Duluth is notorious for that, dropping down really, really low.

And there's times, I've seen it, you know, you look at it, you start the shift, you go, yeah, it's going to happen. It's happening. Oh, it's really getting bad. And be able to recognize that and say, you know what, I'm not even going to try that. That's not something I'm even going to --

I've cancelled or turned down flights knowing that, okay that's going to drop even lower. And I'm not willing to play around with -- I don't like going to quarter-mile visibility. I'm not a fan of it, especially, you know, if it's one of those, like, warm fronts socked in, you're punching through the clouds at 6,000 feet all the way to the surface. I'm not a big fan of a quarter, because there's no out. You have no -- you're in it. The fog just rolling in and you're clear VMC above, you know, you have that reference outside still and you can -- well, I mean, this isn't working; I'm breaking off. Come around. yeah, I'm still okay. I can still see what's going on.

Just being able to have that and not try to push yourself in those conditions. I think, I guess --

Q. Okay.

A. -- knowing (indiscernible) --

DR. SILVA: Mike?

BY MR. RICHARDS:

Q. Just the last, just for me, what was the tailwind -- if I heard that correctly, what was the tailwind component for settling with power? How did tailwind factor into either --

A. Well, it's just --

Q. -- getting yourself into it or getting yourself out of it?

A. There's no set number.

Q. Okay. But it's a rule of thumb? Or --

A. It's just my rule of thumb as I practice. Because you can practice into the wind, but then now you're drifting backwards because you can't have -- if you're into the wind, you're producing forward airspeed basically because you're -- the disk, as it sits here, the wind's this way, it's blowing it into clean air. So it's -- you'd have to slow and almost drift backwards to get that air from going forward and keeping the disk clean.

Q. So if you're trying to get yourself into it for training purposes?

A. I'm going to want the tailwind because I can stop and it's going to blow that -- keep that rotor downwash below me as opposed to -- I don't like backing up in a helicopter if I'm --

Q. Right.
A. I mean, I'll do it on the hover taxi, you know, back up. I won't -- I don't like being high. I'm afraid of heights, again. So, you know, backing up in flight isn't comfortable for me.
Q. So if you're trying to avoid settling with power, you'd want to avoid the tailwind component?
A. Yes.
Q. Right? I can infer that from what you're saying?
A. Yes, yes. You want to be -- helicopters inherently fly better in the wind, just like an airplane, keeps that disk in clean air.
MR. RICHARDS: All right. Thank you.
DR. SILVA: Is there anything you want -- else you want to add that we didn't ask you and you think that can help us?
MR. KLATT: No. Not that I can think of.
DR. SILVA: Okay. Well, you have --
MR. KLATT: I mean --
DR. SILVA: Yeah?
MR. KLATT: -- Tim, as far as I know, was, you know -- I didn't have a lot of interaction with him after -- you know, flight-wise, I didn't do any check rides him. But, you know, I think he -- you always hear through the grapevine of a pilot who's substandard or that somebody's afraid to fly with or they don't like flying with them, and I never heard that about Tim. I never had any of their crews -- I never went to Siren very often to

work, but I never heard. It always travels, you know, through the grapevine through the medical side of the house of somebody who's not meeting the standard, or not -- and I never heard that about Tim.

BY MR. RICHARDS:

Q. I'd just like to ask, if it's okay, given what you know about, you know, what the weather was, the approach that was taken, your familiarity with Brainerd, are there any thoughts you have, if you wanted to share, about what you think may have happened or anything that could have contributed? Just to help us, any candid thoughts? Anything?

A. You know, other than, you know, getting to the bottom and not -- and, you know, us pilots, we always speculate. We're always -- we always armchair quarterback everything, you know, what'd this guy do? What'd this guy do?

Q. Right.

A. You know, and in my -- you know, I would look at it and go, how did this happen? And how did he get to there? Did he stop? Did he stop for some reason and get -- all of the sudden, in his stopping, did he punch in the clouds? Because going inadvertent IMC is one of the scariest things you could do. You're visual and, all of a sudden, now you're not. And at a slow airspeed, a helicopter is not very -- I mean, it's stable when you can look outside. It's not stable when you're at a hover with the blinders on. You don't know what that thing's doing. It's moving all over

the place. So, you know, I look at it and go, did he stop for some reason? Did he try to slow down and then punch into a cloud, punch into that fogbank, and now try to get out? I don't know. I mean, that's the only thing I --

Q. Okay. No that's -- insight's helpful. I mean, because we don't do this.

A. Yeah.

Q. What's that normal landing -- your landing light or the aircraft light configuration making an approach?

A. For me, I have my wing lights on, those little sponson lights or taxi and landing lights. I light up as much as I can. And I'll use my forward light when I'm landing into an airport. It'll be maybe down, you know, 20, 30 degrees, kind of pointing forward and down.

Q. If you're in that, and it's dark night, and I don't know what the landing lights would be, and suddenly you cross that wall into IMC, is there an illumination?

A. Oh yeah. Yeah. It's --

Q. I mean, do you go to bright yellow outside of --

A. You go bright white. It's just, everything's white. In the Coast Guard, when we used to hoist in zero wind conditions over the water, we'd get what's called a soup hole. That water keeps circulating around. Now you lose outside reference to everything -- that horizon that you were counting on, it's gone. So you have to rely on what's right down here.

And, you know, you teach guys, look for a bubble, look for a piece of grass, or a weed. You know, if you were -- you go on approach and you punch in, and let's say you don't have ground lights, you don't have that cement below you in sight, a reference point, it's one of those, take the seat up and it -- and your third point of contact, that it just -- now you're freaked, for lack of better term, I guess. For me, it would be, holy crap. I'm zero, near zero forward airspeed, and now I'm in the goo and I can't see anything. What am I going to do? What's my first --

Q. That's when you're punching out and you're going around.

A. That's when -- you know, if I was -- that's why I try to keep that forward speed. If I'm going to slow, say at air taxi, and all of the sudden -- or a hover taxi, and all of the sudden I punch into the clouds and I lose my reference point, my first instinct is to jerk the hell out of this thing, out of the collective to get myself away from the ground. Because you don't -- I mean, you don't know what -- where you're moving. You could be moving now laterally --

Q. Yeah.

A. -- and you don't -- you can't feel it. There's no feeling of that if you just get a nice lateral motion going. It's -- you know, for me, it's get away from the ground as fast and hard as you can.

MR. RICHARDS: Okay. Thank you. Thank you for the insight.

DR. SILVA: If you think of anything else, you have Mike's

and our information there. And then feel free to go through Josh, and he can contact me too.

MR. KLATT: I hope I answered all of your --

DR. SILVA: But we --

MR. FOLKERTS: Yeah. Thank you for that. We appreciate it --

DR. SILVA: Yeah. We really appreciate it.

MR. KLATT: Sure.

MR. FOLKERTS: -- and pitching in.

DR. SILVA: Yeah.

MR. FOLKERTS: Good soldier. You know, only had to have water. That's all you needed.

MR. KLATT: That's all I needed. That's it.

Well, I appreciate it.

DR. SILVA: Yeah.

MR. FOLKERTS: Good job.

DR. SILVA: Thank you for your time.

MR. KLATT: All right. Thank you.

DR. SILVA: Off the record at 11:57.

(Whereupon, at 11:57 a.m., the interview was concluded.)

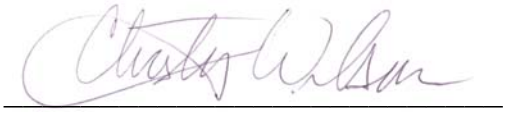
CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	NORTH MEMORIAL AIR CARE HELICOPTER CRASH NEAR BRAINERD, MINNESOTA JUNE 28, 2019 Interview of Joseph Klatt
ACCIDENT NO.:	CEN19FA185
PLACE:	Brooklyn Center, Minnesota
DATE:	July 1, 2019

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.



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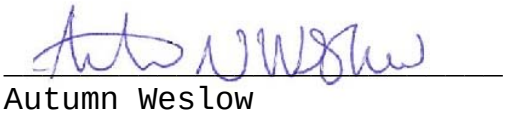

Autumn Weslow
Corrections made 6/5/2020

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

Investigation of:	
NORTH MEMORIAL AIR CARE HELICOPTER CRASH NEAR BRAINERD, MINNESOTA JUNE 28, 2019	Accident No.: CEN19FA185

Interview of: RYAN SARVIE
Pilot

North Memorial Air Dispatch Center
Brooklyn Center, Minnesota

Monday,
July 1, 2019

APPEARANCES:

SATHYA SILVA, Ph.D., Human Performance Investigator
National Transportation Safety Board

MICHAEL FOLKERTS, Investigator in Charge
National Transportation Safety Board

MICHAEL RICHARDS, Senior Meteorologist
National Transportation Safety Board

KATIE ILTEN, Esq.
Fredrickson & Byron
(In-house Counsel for North Memorial Hospital)

I N D E X

I N T E R V I E W

(8:50 a.m.)

DR. SILVA: We're on the record at 8:50. Wonderful.

Well, we did introductions, but I'm Sathya Silva. As Mike mentioned, I'm human performance at headquarters. What we're here today to do is really just get more information about the operation and your experiences here. Keep in mind you're the expert. Anything we ask you -- again, we want everything from your perspective, so keep that in mind. If you don't know the answer to a question or you need clarification, again, feel free to ask for that. Hopefully you understand we're here for safety. We're not here to assign blame, liability, anything of the sort.

What will happen with this recording is we'll send that out for transcription, and a copy of that transcript will eventually become part of our public docket when the accident information gets released.

MR. SARVIE: All right.

DR. SILVA: Let's see here. You are entitled to a representative. Would you like to have a representative?

MR. SARVIE: Yes.

DR. SILVA: Okay. Who is your representative?

MR. SARVIE: Katie, please.

DR. SILVA: Great. So again, I'll start off with a bunch of the questions, and then we'll go around our room, usually twice, just to make sure everyone has a chance to ask questions. And if

you need a break or anything, just let us know.

MR. SARVIE: All right.

DR. SILVA: Do you have anything else you want to add? Okay. Okay. Do you have any questions?

MR. SARVIE: Not yet, no.

DR. SILVA: Okay. Sounds good.

INTERVIEW OF RYAN SARVIE

BY DR. SILVA:

Q. We'll start with the easy stuff. Can you spell your first and last name for the record, please?

A. First name, Ryan, R-Y-A-N; last name is Sarvie, S-A-R-V-I-E.

Q. Okay. And can you run through -- I know you talked to Mike a little bit already, but a brief history of your background from when you started flying to what got you here.

A. I began in the military in 1990. I entered the U.S. Army and I went through basic training, and was moved over to initial entry rotary wing program in late 1990. Began flying UH-1 Hueys in the U.S. Army in March of '91, I believe, is when I started doing my first flights. I went through Army flight school. I went through a phase called multitrack, which was unique at the time. Before becoming a rated aviator in the military, I was tracked into my assigned aircraft. So I was -- once I was done with instruments and advanced instruments, moved into -- from the basic trainer, the Huey into a Blackhawk.

From there, I finished my basic skills, night vision goggles,

advanced combat skills in the Blackhawk. And then I graduated from flight school in the Army and the Blackhawk and transitioned to Fort Campbell, Kentucky to an assault unit. The unit had just gotten back from Desert Storm. It was stationed there for 3 years. I shifted to Korea in the mid-'90s for a year tour, and then I moved to Fort Drum, New York and transitioned out of the Army in 1998.

I was a Blackhawk pilot in '96, I believe it was. I went through the U.S. Army instructor pilot qualification course for UH-60s and was an instructor pilot for my last couple of years with active duty.

Upon departing active duty, I applied for and I received a job with Air Methods Corporation of Englewood, Colorado, assigned to a program called Luke's One in Duluth, Minnesota flying a Bell 222 single pilot IFR. And I had a Bell 206 as a spare backup flying out of the Superior, Wisconsin airport. And I flew with them for just about 2 years, and was picked up with North Memorial in 2000 when they expanded from their aircraft here just based in the Metro to an expansion base in Brainerd, Minnesota.

Began flying with them in September -- I know I was hired in September, I guess. I don't know if I started exactly right away in September, but began flying out of the Brainerd airport when it was temporary until the hangar was built, the permanent hangar we have now. In January 2001, we moved into that. And have been flying with North Memorial at the Brainerd base since then, since

that transition. So yes.
Q. Do you have any other roles in the company?
A. Yes, I'm the base lead pilot. Time frame on that, I guess I'd be guessing on that. Now that I think of it, when Bemidji base opened up would be a better time frame to backtrack it. Our lead pilot, Phil James, transitioned up to Bemidji base, and I took over the role as the lead pilot at the Brainerd base. And I also function as a company instructor pilot for our 135 operation instructor for the company around the same time, I think it was. I'd have to look back at my flight records to see. But I had functioned as a company instructor since then for -- base-wide, for all the bases.
Q. All the bases.
A. Yes.
Q. Can you estimate how long ago that was, order of magnitude?
A. What are we in, 2019? Bemidji must have started around 2010 or '11. So I think it was around there.
Q. Okay, so 10 years? Okay.
A. And I apologize I don't have that time frame, but --
Q. No, that's okay.
A. -- it's easily attainable if you need it.
Q. Sounds good. Just gives us some context.
A. Sure.
Q. So what are your roles and responsibilities, both as a line pilot, lead pilot and an instructor?

A. Well, you got a lot of area to cover there. Line pilot, of course, maintaining the aircraft, day-to-day operations while I'm on shift. At Brainerd, aircraft readiness, cleanliness, maintenance-wise, ensuring it's ready for duty. Obviously checking weather, checking flight conditions for the shift. Any crew considerations, if we have ride-alongs. Training medical folk, if they're riding along. Ensuring all that is safe and acceptable and ready to go every day on shift as a line pilot.

And moving on, I guess -- I apologize if it seems like -- it seems routine, but I guess it's so routine you may want more details. I guess you can ask, but --

Q. We do. Exactly.

A. Moving on to lead pilot, ensuring that the base is ready, the hangar, things are ready to go there. Any kind of communication between operations here in Minneapolis and Crystal Airport are maintained, and disseminating that information to the base pilots if needed, if it didn't come from operations to all of us.

Helping be a liaison for the Brainerd base from the medical staff to the operational staff. If folks at the Brainerd base have a concern about operations, maintenance, equipment, things like that, I try to make myself available, and I'm open to suggestions and trying to answer their questions. And if they want to know why are we doing this or why are we doing that, I try and be a liaison between aviation and medical up there at the direct base level as much as I can be, as far as lead pilot.

As instructor, obviously trying to train, and I see it as mentor oncoming pilots, give them good information on how the program operates that maybe similar or different to where they came from, if they come from another program or a military operation. Obviously FARs, FAR regulations is a huge thing because we have a lot of pilots coming from -- direct out of the military. That's quite a different world, so I'm trying to help educate them as well as myself continuously on Federal Aviation Regulations and what we need to know there.

Aircraft operations, specific aircraft operations, as far as Leonardo aircraft go. Systems, any kind of systems operations, flight operations, local area airspace operations here within the Minneapolis area. The Minnesota, North Dakota, South Dakota and Wisconsin areas we cover, any specific airspace concerns, air traffic control, things of that nature that they need to be trained in, obviously.

And I try to be a resource for them as well, like a contact, if they would rather contact me instead of the operations -- training operations base at Crystal. And I try and give them a perspective from a line operation instead of a book operation or, I guess, the schoolbook operations down there. Try and, you know, give them a realistic thing of what we see with weather out in the field. You know, anything in that, that I can be a resource with. And then assist operations, of course, as needed with any additional training or anything they request.

Q. So are you primarily doing ground training or do you also fly with them in the aircraft?
A. I also fly up in the aircraft. Yes, I do aircraft and ground training. I haven't done a lot of aircraft training as of late. The company has got -- has a gentleman, Jim Shirk, on line as a training officer/director. As far as -- he's running the training program. So anything he needs help -- if he says he needs somebody -- needs me to fly with somebody, that's generally where I'll do my flight training. I haven't done much as of late as far as flying. I did do some annual recurrent classroom training last year, I think, with one of the classes. But yes, I do both when needed, at the request of operations.
Q. Do you have an approximate idea of what your total hours are? Total experience?
A. Yes. Flight time?
Q. Yeah.
A. I have -- on my last insurance closeout, would have been February, I believe it was, it was about 7700 hours total of helicopter time. I do have a single-engine private pilot fixed-wing rating. I'm probably running about 80 hours on that. It's been a while since I've flown any fixed wing. Aircraft specific-wise for our -- for maybe your next question, I'm running about 5000-plus hours in the Agusta/Leonardo.
Let me see. IFR. You're going to want to know that one. Probably I think it was about 600-plus hours.

Q. Actual?
A. Yes. That's on my last closeout.
Q. Speaking of instrument time, can you talk about how you maintain currency and what that looks like, both with respect to you personally as well as within the company?
A. Yeah, we have the currency on the iPads, and on Complete Flight, it has a very nice tracker for it that will flag us red if we're running behind on something that we need to check on. Personally I like to -- everybody, I think, likes to try and exceed that and have -- an advantage at the Brainerd base is we've got multiple good approaches, dual ILSes. I'm sure you guys are very familiar with all that, that you've been looking into.

So I -- generally, I, on our 7 scratch shift, at least one of the flights I'm going to do -- practice ILS coming back into Brainerd. When we're coming back from a flight when we're -- you know, any kind of training, I guess, that we do, a lot of times maintenance, I'll end up checking systems that the mechanics get mad at me for checking because they -- I'm kind of anal on the aircraft, if that helps at all, looking into the instrument systems and making sure everything's working. So I generally don't have a set, this is, you know, a checklist. But personally, I'll end up doing several approaches on my 7-day stretch, 7 -- or 4 days, 3 night stretch, practice approaches into Brainerd on return, because we have it there and it's a great resource for practice and currency.

Far as actual en route time, oftentimes I'll file IFR just coming back from the Metro even when it's VFR conditions because I enjoy it. It keeps me up to speed on air traffic control, you know, communications with air traffic control, receiving clearances, things of that nature, which I like because I'm -- just like anybody else, I know if I've been out of it a while -- in the winter, we have icing restrictions, of course, so we're not flying in any icing. So once the weather warms up when we get more good IFR conditions, I like to file IFR more and get back out there and do it, because I think it helps keep me sharp. So I personally will try and file a lot of times when the time and things permit.

Q. So on these flights that you do file between the Metro area and Brainerd, can you kind of walk us through what a typical flight would look like from when you take off to coming back in here?

A. Well, yeah. How detailed do you want me to get? Because I'm sure you guys want details, how I would do it that would pertain to this situation. From North Memorial, for example, okay, is what obviously is being looked at.

Q. Yeah. So let's sort of -- yeah.

A. What I would do is I -- when the medical crew departs with a patient at North Memorial or if we're there for fuel, whatever, I will look on the iPad using -- ForeFlight is our weather app that we use, the preferred weather app. And I'll look at winds en

route, things of that nature. I probably already have a good idea of what they are, winds aloft and altitude, just because I do like to kind of keep up on where they're at. A lot of folks, like the fixed wingers, think we always operate real low. I look basically for comfort and speed, just like airliners would, both to and from, with and without a patient. I don't want to be in the lower level turbulence if I don't have to. I don't want to be flying a 30-knot headwind if we're -- if I can climb up 3,000 feet more and pick up a calmer, a little bit of a tailwind, I'll do that as far as en route conditions. But at North Memorial, I check all the weather using ForeFlight.

And usually, my route of flight will be direct to Brainerd is how I would fly out. Then I -- after that's all done, I like -- personally, myself, like to use the 1-800 weather brief site, because I have my own personal account there and I have several saved canned flight plans that help me maintain my continuity in my flight plans. So I have one saved from Crystal. I'll file from Crystal even at North Memorial to Brainerd unless the weather's low enough, then we end up at Crystal; we have to stay at Crystal. But if the weather's good VFR here, I'll file out of Crystal and call for my clearance from Crystal Tower, due to the fact that North is right inside the Class Delta airspace. And they're always very accommodating and will get us our clearance out of there.

Through Crystal Tower, depart. Talk to Minneapolis approach,

oftentimes gaining the -- when we get our departure, we'll get our radar vector, climb to -- it would be 2500, sometimes 3,000 to keep us below Class B traffic. And a lot of times, it'll be a northbound heading until we're a few miles north of Crystal. Then they'll turn us on course as we start transiting out of the Class Bravo airspace. And then as I get farther out, they'll give us our -- give me my climb up to requested altitude, which is usually, I think I'll use 6,000 westbound just as my canned stored flight plan.

En route, then, of course, I'll -- if there's any weather, I'll be monitoring that. That can be anywhere from clear, unrestricted vis, of course, or down to really bad if it's at Brainerd. So I'll continuously monitor that, depending on what the weather conditions are. I go direct and -- direct to Brainerd, and then when -- I'll go through Minneapolis Center or Minneapolis Approach, Minneapolis Center, on 121.05. Then on that next sector that controls the Brainerd airport is 118.05. I usually have the weather -- personally myself, I'll listen to the weather prior to being in transition to the last sector on 118.05 that controls the Brainerd airspace. So when I check on, I'll usually let them know I have the 1-minute weather at Brainerd, and I request this approach or whatever approach I may be looking for based on weather conditions or things of that nature.

And then I don't know exactly what else I could tell you there as far as that goes. Go through standard routine of running

through the pre-approach checklists, getting everything taken care of, checking the AWOS weather, listening to that. Multiple times, if the weather is questionable, keeping an eye on that. And then prior to the final approach fix of any of the approaches, I do have the pre-landing checks complete. I have the airport radar or the airport lights turned on via remote control on the 122.7. And have the aircraft configured for landing configuration as per the checklist. I like to do that, especially if it's low weather prior to the final approach fix for any approach, whatever approach I select.

What else can I -- how much more specific do we want to --

Q. Well, actually, let's continue on just a little bit further to get to the hangar. How do you usually transition from an approach to the hangar?

A. Well, it depends on weather, of course. Obviously, VFR weather is generally not a factor if we do the ILS Runway 3-4 or, on a 3-4-0 heading, if we're a couple of miles out or if you look off to the 10, 11 o'clock -- 10 o'clock more so is where the helipad and the helipad lights will be. I have transitioned right off the ILS over to the helipad during certain weather conditions. Honestly I don't -- you might love numbers. I can't give you an exact number of, well, if it's 501, I will not do this; I won't transition over. Obviously it depends on conditions.

Oftentimes, if I'm practicing on ILS, the whole reason I'm practicing it is I like to fly it down to minimums. Then I like

to allow the machine to continue below decision altitude, monitoring the autopilot, as I'm sure you guys will get familiar with or have been -- maintaining the centerline and glide path, and watching -- if it's good weather conditions, watching for it to do its 50-foot level-off down the centerline. And guarding the controls, usually watching them very carefully to see how that aircraft is going to react, being we do have several other, you know, aircraft around. You don't always fly the same one every day, so I like to know kind of their individual -- if there's any little quirks, if one likes to fly left or right of the centerline or has a hard time holding the localizer or things of that nature.

So if I'm honestly practicing, I'll go ahead and fly down to the 50-foot level-off in good weather conditions. And keep in mind, it has to be pretty good weather conditions for me to do that, because what I'll do next is I will practice and execute a practice go-around with the go-around button and, again, guard the controls, watch how the aircraft responds, and practice my instrument monitoring to see for my own self. Because I have -- again, going back to where we had discussed minutes earlier, we have that advantage at Brainerd of the dual ILSes up there, so I like to make sure my equipment's working because -- and I, the medical crews, I've told this before too, I said, it's -- it doesn't matter what books say, what everything says; when it comes down to it, it's myself in the seat, and I want to know how that aircraft is going to work. If the weather decreases or something

surprises us, I want to know how that's going to work, is my personal view on it.

If it's good IFR where I have to do the ILS, usually will fly -- I will fly down to -- and again, I wish I could give you a number; I know that'd be -- your guys' job, it'd be great if we could always have black and white. But if it's -- once I reach a decision altitude on an ILS, for example, there, if I'm not comfortable, if I can't see the hangars or anything, I will generally add minimum hover taxi on the taxiway back to the hangars. And if it's low IFR, half-mile, for example, I'll ground taxi then. I just, I -- you know, I don't want to be caught hovering and it goes from, you know, a half mile to zero, which I -- you as a weather expert know can happen in a matter of a mile or something.

So again, I wish I could give you hardcore numbers of I, you know, won't do this, won't do that, but that's the challenge of our job, is personal --

Q. So what altitudes are usually hovering -- with hover taxiing versus ground taxiing?

A. Hover taxiing, usually 10, 20 feet is what I would do hover taxiing. And then I -- obviously that -- ground taxiing is going to take the parallel to Runway 2-3 down to the hangars and then over to our area there. So yeah, I -- again, it's -- I'd love to give you an answer of, yeah, it's -- I'm always going to be at 10 feet, but it depends on weather conditions, the conditions as we

get there.

Brainerd, just like many airports, I've done an ILS there, and the weather was reporting a half-mile visibility and I can see the hangar in the clear on the west/southwest side of the airport, and the AWOS is on the east side of the airport near the runway intersections for the approaches -- obviously for the primary instrument approach runway, and that's in a fogbank reporting a half mile or whichever way it's looking.

But there's -- you know, those are always -- you guys see it, I'm sure, day in and day out in your investigations. There's varying weather conditions. So I can't really tell you, well, if the AWOS is reporting this, that's what I'm going to do. It's what I see and what I'm comfortable with. And if I don't like it, I'll drive that thing on the ground just like a car all the way over to the hangar on the taxiway just like vehicle if I have to. So yes.

Q. So just so I'm clear, ground taxis, less than 10 feet. Is that a (indiscernible)?

A. Ground taxi is on the ground. The wheels are on the ground and you're driving. Ground taxi.

Q. Oh, okay, okay. Got it.

A. That's ground taxi.

Q. Sorry.

A. Anything with the wheels off the ground is air taxi.

Q. Okay. I understand. And you mentioned local weather.

Particularly for Brainerd, can you describe what you mean by that, what you typically see? If you were to teach that to someone, what are you -- what would you say?

A. Particularly for Brainerd, what people need to know is oftentimes in the fog in evenings, the stagnant air, fog coming in, it collects more on the east side of the airport because of the lakes and the swamp over there. The AWOS, as I said -- you guys know the antenna is out there in the vicinity of the runway intersection. I think it was primarily built and put there for ILS or Runway 2-3 when the airport was initially built, to service a primary instrument runway. And yeah, so that side of the airport tends to fog sooner than the west side because of the swamps, the lake there.

And in the cooling of the evening, that -- with a little wind, that will tend to fog-in quicker. That's where the AWOS reports it. And again, it's -- more often than not, the AWOS are reporting, be reporting lower weather than what's actually at our hangar. Because you asked earlier about how do I get to the hangar. Well, it always depends on what I see when I get to the -- finish executing the approach and what I'm comfortable with.

But yes, there's been many, many times in my years here at Brainerd that I've had to taxi out to the helipad, check the weather as I'm taxiing out, and it'll be sunny in the morning, morning fog type thing, we'll have great sunshine and the weather report will say half-mile visibility. And, you know, you're

kidding me? And have to call for an IFR departure out because the Class Echo is in effect, and they need either a special VFR or IFR to get out of there. And it -- you know, I'm grumbling or, you know, I might -- just like anybody else, might -- man, I don't want to have to do that. But we have to because that's the rules.

And so I have many times had to get an IFR departure out of there, and for that case, that's one of the reasons I like to practice myself personally and why I try and teach guys, hey, if you have these resources when you're coming up to Brainerd for maintenance, things of that nature, file IFR and go out even if it's clear out, because it gets you into the system and keeps you sharp. And in my view, because I think that's what's helped me continue on, and it makes me more comfortable when I have that routine. And so now when it does, I get -- the weather does get crummy quick or you get caught, it's a seamless transition and -- oh, I'm going to have to file and talk to ATC instead of just departing VFR like we sometimes do.

So that's my personal viewpoint. I apologize. I don't remember the rest --

Q. That's okay.

A. -- of your questions after -- if that helps.

Q. Yes, it does. When you're coming in, how often would you say that you encounter that the AWOS is reporting, like, half-mile visibility? Is that a common occurrence that you've encountered?

A. I don't want to say common, but it's not surprising, okay?

It seems like more so in the fall. You know, the later months in the fall when it cools off quickly at night, you get a lot of that fog that builds up. And then the early a.m. hours, things of that nature, it builds up over there quicker and reports at lower sooner. So it's -- you know, I can't really give you a number, a percentage or anything, but it's not uncommon, I guess, is probably the way -- it's not surprising.

After the years I've been here, you guys, it's not surprising that it's like, oh, AWOS is reporting a half-mile. And they step out of the hangar and look, and you can see, you know, just fine, and you can see the sun or the stars and things coming up. It's usually with the formation of fog, the low-level fog and the -- is when it happens, not during weather fronts, things of that nature, thunderstorms moving through. So it's not surprising, I guess is the best answer I can give you. Without giving you stats, I don't know.

Q. Can you -- and do you -- when you're checking the weather, is there anything that you look for that might indicate that you're at risk for this kind of fog?

A. Oh, yeah. Definitely the temperature and dew point spread is what we're always looking at. And then the wind conditions. Lesser wind conditions, zero or calm -- and your calm winds, light winds obviously is conducive to that. I know the lake is over there, the swamp off the end of 2-3 or the lake off -- and the 2-3, it's a known wet area. So yeah, it's -- those are -- that's

primary, what I look at, is -- (indiscernible) we're constantly watching temp and dew point spreads and seeing when that fog may be occurring. So yeah, that's my -- that's what I look at first, so --

Q. So when you're teaching, kind of, local area, do you get into that type of detail for these airports --

A. Absolutely yes.

Q. -- or is it more big picture? Okay.

A. No, absolutely. I do at Brainerd because I know Brainerd and I use Brainerd. I use Duluth. Duluth is another one that I'll, hey, you have to watch -- I'm familiar with them. That's -- as you guys can understand, those are the places I'm familiar with. Superior, Wisconsin, I'm familiar with there. Lake Superior effect. Absolutely when I'm teaching instruments and things like that, here's the places to watch, is -- Duluth more so. Brainerd, this is where it forms around here. Yes, I definitely get into that detail.

Those are the kind of things that I like to teach being out on the line because, again, the books don't teach that from the school perspective and the regs perspective. I like -- hey, when you come to Brainerd, watch out for this. You know, watch out for this when you go to Duluth. You know, this is -- ILS Runway 9 at Duluth is always usually your best option there. It's the farthest from the lake. It's got the bigger lighting system because it's a Cat 2 approach, I think, that the airliners can do

in there. Not that it matters to us, but I tell them that's got the approved runway centerline lighting, the approved approach lighting system. These are all the things they need to be thinking about, is what I tell them when I'm flying with them, yes.

So I get in a lot of detail, I think, and I think a few pilots have even made remarks about I talk too much about that stuff, which -- I got a pretty thick skin from my time, so I just chuckle and laugh. And I kind of feel good about that, because I've had a few friends in the Army that I've talked to for years, and I'll run into them on texts or whatever, and they'll say, hey, you were the one that told me this and I remember that. And so that kind of makes me feel good, so -- that I did get into that much detail with folks.

Q. So do you train in terms of that type of content? Are you seeing every new pilot that comes in, or are there other pilots that --

A. No. No, I am not seeing every new pilot that comes in, no. I see the selected ones when needed, when operations needs the assistance. It is a little more difficult to schedule myself for training due to the fact that I am a line pilot still. I know that's a challenge for operations, and I let them run that because I don't want to get out of my paygrade, as you guys, I'm sure, have heard.

So no, I do not see every new pilot that comes through. But

when I do see them and we do talk shop like that, I'll -- you know, I think that's when people say I get a little longwinded. They're like, oh, I just (indiscernible) that question because I want to get some other things done too, so --

Q. Okay. So when you're coming in or even training this low-weather approach into Brainerd, is there a specific instrument approach that you would suggest flying?

A. Yes. ILS 3-4, definitely. That's one of the things obviously looked at. That one, I -- it's still on the same end of the airport there, but I know the dynamics of that approach, just with the local weather and the local conditions. And that one -- that's typically the one I suggest if it's going to be low weather such as what appears to be the factor that night. For myself, that's what I go for.

Now, of course, wind conditions and things like that always play a factor. But generally, if it's windy enough that it's a concern, that there's enough wind for the approach that I need to be concerned about the direction, there's typically not that much fog or fog isn't that thick. So then I can use 2-3, you know, if it's -- which is just fine as well. I've had no issues with that approach when I chose it. When I've chosen it. But then again, like I said, when the wind is that much of a consideration, there generally isn't that much or that thick a fog, or dense a fog.

Q. So it's primarily wind driven? You would choose -- from what I understand, you're choosing 3-4 and then --

A. 3-4 is -- yes, they'll 3-4 -- majority of the time, I guess, is what I would -- without having facts and studies, I know you guys need, but I -- there's a reason a lot of the runways here are oriented northwest/southeast in Minnesota, because winds are westerly. Southwesterly in the summer more so, northwesterly in winter. So generally, 3-4 with the winds. But if it's reporting more dense fog, if such is the case, I would choose -- you know, and this is hard for me to say, because I don't want to second-guess Tim. You know, and I know that's --

Q. That's okay.

A. -- you guys are trying to avoid that, but I, knowing the area and knowing everything, would choose 3-4 due to the fact that I know there's a likelihood, possibility of that thicker, heavier fog being off to the east side, the right side of the aircraft where the water is, things like that. And I know that oftentimes in the west side, as we spoke of earlier, the west side of the airport a lot of times has better visibility.

Q. So the -- we were just reviewing the approach charts yesterday. So from what we understand on the ILS 3-4, it looks like they had -- it was ADF, DME or radar required.

A. Or radar required, yes.

Q. Yeah. Have you ever flown in there missing any of those components?

A. ADF has been inop before, yes; however, we do have the GPS to suffice for that. Have I flown in there missing any -- all three

of them? No. No, I -- the world is, as Mike I'm sure knows, you all three know, is going via GPS now. And so if we don't have an IFR-capable GPS, we fly VFR. And so as long as we have an IFR-capable GPS to suffice for the DME, the position required there --

Q. So that's what you're --

A. -- will take that, yeah. So no, not -- I mean, not to self-implicate, I wouldn't do it without any one of those. So --

Q. So from what I understand, you use the GPS in lieu of --

A. DME.

Q. -- in lieu of DME.

A. Yeah, but --

Q. Consistently.

A. -- I don't think, personally, Sathya, that I can think of a time where I have gone into the ILS Runway 3-4 without DME. Because we have the DME indicator up there, and that approach has the DME capability; 3-4 does, 2-3 not. So I can't think of a time where I have solely relied on the GPS on that specific approach.

Q. And you said the DME indicator -- where is that kind of on your panel?

A. It is below the comm panel. A small window about -- located one-third to two-thirds between the pilot station. Two-thirds over on the panel how -- is the best way to --

Q. Okay. That's okay. Yeah. Here we go --

A. So I -- that DME indicator -- if I'm primarily using, primarily using the DME, Sathya, I'll display it on the EFIS

myself if I'm using that as a primary. Generally, myself, I'll have the GPS distance up there, having the GPS overlay on the GPS. And it'll have that on the EFIS. But if I'm primarily using the DME -- which again, I don't ever remember not having it and I don't really remember ever going, okay, I have nothing but the DME here, I put it on the EFIS if I had to on that one, so --

Q. I understand. Okay. Can you talk a little bit about the risk assessment process, what that looks like and means to you?

A. Looking on VR iPad on Complete Flight, I guess I -- it's fairly routine. Coming from a military background -- I know Mike knows. I apologize, Sathya, if you said you were military or anything. Military was the forefront pusher on risk assessment, so I was very familiar with it and the tool on how it's used.

Ours is pretty standard and fairly simple to use. It's not a hindrance by any means. It's not -- doesn't make my job more difficult. When I look at it, it does give me some awareness, because I have to remember which blocks I have to look at. I look at my flight time, of course, and whether I'm at my primary base or not at my primary base is the main blocks that I go through and can check pretty routinely pretty quickly.

Then the second, the second portion is the weather, whether it's IFR or precipitation. If it was turned down by another service, of course, things of that nature. And that one, that's the second block, is what generally I have to review prior to takeoff.

I'll have -- my risk assessment process is I'll start a load manifest at the beginning of the day, generally, once I log in. Have my load manifest sitting on the app ready to go with my crew, fuel weight, if I have a rider ride-along. Then I'll put in my flight type, whether it's a scene flight or inter-facility transfer, I'll have that sitting there. And that's ready to go, and then I'll fill out -- pre-fill out my top part of my risk assessment. I have over 500 hours day flight. I'm at my primary base. And the rest I'll leave open and wait for the flight request to come in.

And then, as a flight request comes in, I'll fill out the weather conditions as per the risk assessment, what's needed. If my -- if I see any part of the flight, any one of the three legs, may be IFR, I'll check IFR. If I see any one of the legs has any precipitation on it, including the return leg, I'll check precipitation. And then obviously if it was -- if the flight was turned down by another program, I'll check that block. And review all those prior, and then I'll sign the form. Then I'll go back to my flight manifest and then continue on with my routine of getting the aircraft pulled out. I'll do all that as I'm assessing the weather before I even get in the helicopter.

Q. Okay. How do you know when a flight's been turned down by another service?

A. Our communication center here will communicate that. Let's say they have a flight request to Staples, like Mike had asked.

LifeLink turned down. And then that tells me that I may want to look for some anomaly of the weather that another program might have seen. Some of that, I -- is, if it is LifeLink turndown, it'll cue me in a little bit, but oftentimes, they may have staffing issues where they don't have an aircraft available that's nearby or available, so they have to turn it down and give it to us or -- but those are the -- I don't know those dynamics. So if they tell us, I have to assume that there's some type of weather condition that they're concerned about. So --

Q. So you're getting that information from the comm center?

A. From the communication center, yes. They'll say -- they'll specifically annotate it on the request. They'll say, once -- whether I take it or not, at some point in there, they'll tell me it's a LifeLink turndown. Because that has to be done on the risk assessment fill-out.

Q. And as you talked through your process of filling out portions of it at the beginning of your shift versus before each specific flight, is there guidance from the company on how to fill this out, when to fill this out?

A. There's guidance from the company, yes. Instruction. They've given instruction. Mike Slapninger (ph.), our chief pilot, has put out emails on how he'd like them filled out, any specifics that he's seen, trends of what -- if we're missing things or if we're missing signatures and things like that; yes, he'll give that guidance. Have not received any guidance on this

is when you will fill it out type of thing. You know, we -- I know that I have to have it filled out prior to departure because that's the rules. Obviously it's a rule, but they don't dictate before you do this, you must do that, you know.

Q. So if you have, let's say, a final risk assessment number where you have to get approval, how does that process work?

A. Then I would tell dispatch -- you know, how I would do it is I'd say there'd be a slight delay for flight evaluation and get a hold of Joshua or Michael and have them paged and say, hey, this is a consideration. I either -- if I'm getting a hold of them, I'm comfortable taking the flight, obviously. Because if I'm not comfortable or I think the risk is too high, that's on me. That's part of my job, is to decline that flight.

So yes, it's -- I honestly haven't had one where I've had to -- that I can think of where I've had to contact anybody. Because if it starts getting that high, then that raises red flags for me as well. But I don't recall any that I've had to, but I would not hesitate to tell them there's going to be a delay for departure to ensure I can do the flight and I'm comfortable. So yeah, I would have operations call whoever it is, Joshua or Michael. Page or notify and say, this is what's going on.

Q. Okay. I've been talking for a little bit. How are you doing? Do you need a break?

A. I'm fine, yeah. Yeah, that's fine, Sathya.

DR. SILVA: Mike, do you have any --

MR. FOLKERTS: Yeah, just a couple.

BY MR. FOLKERTS:

Q. Thanks for, thanks for cranking this out with us.

A. Sure. No.

Q. I appreciate it. You talked about the sector switch heading up to Brainerd.

A. Yes, sir.

Q. About how much is that prior to landing, would you estimate?

A. Usually about 15 to 20 minutes, I guess, is best. The sector switch -- the sector antennas for the 121.05 are located at Princeton airport. And that's about 20 minutes out, and it'll be just -- 22 minutes out. It'll be just -- usually just north of Princeton, they'll pass us over to the 121.05 or 118.05, and that's the northern sector. They aren't -- if I go from Brainerd to Bemidji, even though I have a frequency change up to Bemidji, the 134.75, it's the same sector, so I'm familiar.

And I'll -- usually I'll give my request to them. If I know I want a specific request for Brainerd personally, I don't tell the controller on 121.05, the southern sector, because I know he's got to go, hey, this guy wants -- he's got to talk to the next sector. I'll just wait until I talk to Mike, and then I'll say, as I said, I'll -- before I check on with Mike -- say, he's the northern sector, I'll tell him I'd like to have my 1-minute weather at Brainerd, and this is the approach I'd like to do, because that makes his job easier. Because I know as soon as I

check on, he's going to go, good afternoon, here's the weather; do you have the weather and what approach would you like? I like to try and keep his job easier because it makes my job easier.

So typically about 15 to 20 minutes, though, I think, Mike, is where it happens.

Q. Okay. Makes sense.

A. It has happened earlier, of course, and then there has been times coming out of St. Cloud where they'll give you the sector change, I mean, just out of St. Cloud, and you can't quite reach them on 118.05 yet. But typically, 15 to 20 minutes. That's probably a good estimate.

Q. For the ASOS, I realize -- and it's very locational, like you were alluding to earlier. Have you -- in the past weeks, have you noticed any unusual issues with the ASOS or something you go, hey, that thing's not maybe as accurate as you would expect for that location?

A. Maybe in the last few months, we might have had one or two of those times where I spoke to -- if you asked -- where it was reporting lower than what it actually was on the west side of the field.

Q. Based on a fixed location.

A. Yes.

Q. Yeah. Anything for that location that you can remember not being --

A. No. No, to the best of my knowledge, I -- it seems pretty

accurate. There's been -- you know, I have been into other airports where you go, well, that AWOS is way off. You know, and it's obvious. Nothing like that for Brainerd.

Q. Seems like it was running like it should?

A. Yeah, it seems like everything has been well-maintained and working, I mean, as far as I can tell you. It seems accurate on the visibility and things like that as well, so --

Q. Talking about 3-4 versus 2-3, I don't know how much you've looked at this, but do you have any thoughts on why he may have chosen 2-3?

A. Well, no, I don't. Been trying to keep it unbiased. I don't know if that's the first runway, maybe, that ATC recommended for a localizer or an ILS. I don't really know why he would have picked 2-3, to be honest with you. I just was wondering the same thing myself, and sometimes ATC will say, would -- you know, the weather -- maybe in this instance, this isn't what -- you guys want facts, but I -- this could be maybe an instance where the weather decreased. Could I get vectors for an ILS? And they just gave him 2-3. I don't know, you know, and you guys will have tapes.

Q. Okay. And we have not listened to the audio yet, so we're not sure how that stepped through.

A. Yeah, I -- that would be something I would be interested in listening to, because I want to know why did he pick this one over that one. And would it have made a difference? Obviously nobody knows, but I -- in this case, with the obvious decreasing weather,

I want to put the -- stack the deck in my favor. I personally -- and again, knowing the area, been there a little while, of course, I would have gone for a 3-4 myself, is the best I can give you on that one without trying to be too biased or -- I can say that.

Q. Yeah, we had the weather dropping from a mile to a quarter mile 22 minutes before the accident, is what the METAR pushed out. Going from a mile to a quarter mile. I don't know how -- if you've had a chance to see that.

A. I just have got -- glanced at it. And yeah -- and I don't know, I guess, if this is the right venue. I know the historicals we look at have only -- you know, there'll be 15 minutes or 30 minutes spaced, and then when there's changes, there'll be a 10-minute space, because the historicals reported on what we look at or what I've looked up on pads, weather is -- there's space, you know, a lot of space between those when the weather at Duluth, for example, or everything -- I've very rarely seen it go to minus one-quarter at Brainerd, but there are times where, you know, it'll bounce between a half and a quarter mile on the AWOS, but you only see the half on the historicals that I've read. I don't know how -- if you guys have every minute. Do you get every minute?

Q. Yeah.

A. You can get an every-minute recording of that? Okay. Okay, so I have not seen every minute like you guys have access to. So yeah, I do -- I am aware, though, that was -- I did look at the

drop and the weather down to a quarter mile, and that's of greatest concern.

Q. Yeah. Fluid environment, obviously, there. We don't know yet if he was aware of that drop. That's obviously an area of interest as to where the -- where that dropped occurred and how much of the awareness of that. And you've probably seen a photo of the nature of the impact?

A. Honestly, guys, I have been on a media blackout because I -- you know, as things have been going on, I get frustrated. When Katie was up at the airport the other day and we were chatting, I didn't want to get frustrated with the media misinformation and things like that, so I just --

Q. Okay. Well, I can tell you factually it's a very vertical hit. Flat, elevator-type, vertical high descent consistent with, maybe, sinking with power --

A. Settling with power?

Q. Settling with power. Take a step back and -- if you hadn't known the weather had changed to a quarter and you're flying that approach, what's your thoughts on --

A. Flying that approach, 2-3 specifically?

Q. 2-3, yeah. Just what's your thoughts on -- from a risk mitigation standpoint? You don't know it's dropped to a quarter, as to how you -- what might be your thinking through your mind?

A. Well, I -- boy, it's a -- I hate saying, well, I assume this and I assume that. I know you guys don't like that. I'm going to

try --
Q. This is a tricky question. I understand.
A. If I know I have to do an ILS, which obviously that was the case here, I --
Q. There's no forecast for that. It's a mile forecast.
A. Right. Even if it is a mile, I still -- and I'm going to do an ILS, and I know, again, I know the weather was decreasing looking at -- as the night has gone on, it looked -- the forecast had decreased it down to a mile, I think, or something like that.
Q. To a mile. Right.
A. I know that -- and there was low wind conditions, I believe. I didn't -- I don't honestly remember looking at the winds. I would have -- for my risk mitigation, I would have definitely slowed down to category -- 90 knots or less speeds on it, personally. If I -- if it was a good VFR, I've done the ILS faster, and I might do it at 120 or 130 knots.

And again, that's something that I put myself, exposed myself out for trouble, because I -- it could have changed from 5 to 0 real quick. You've seen that, I'm sure, in other places. But knowing my local knowledge of the area, I feel confident those times doing it faster.

If it was VFR in this case, if it's a mile, I am definitely going to be trying to slow down to 90 knots or less because I don't know where that mile is being reported at, as we've talked at. I don't know if I'm going to see -- I'm not guaranteed to see

the helipad or anything at a mile, so I'm going to be focused on the runway and the approach lighting system, things of that nature. Because, you know, once again, that's to a mile. Then I go, well, what if it's a half a mile or -- you know, by the time I get there? So my biggest risk mitigation is going to be to slow the aircraft down, make sure I'm slowed down enough for a Category A speed approach and have my before-landing checks completed before the final approach fix, is what I would do.

Q. And then to get to the 200-foot decision height, you can see reasonably good visually, but you sense some fog visually, but not -- you know how fog is at night --

A. Yeah.

Q. -- it's difficult to necessarily tell for sure. So you're at that 200-foot level. You sense some nature of fog, but not necessarily know how much. And you only know the mile forecast vis. What are you thinking from that 200-foot point to the hangar?

A. From that point, now I'm thinking I want to try and touch down on the earlier part of the runway because I'm going to ground taxi. If it's getting to that point where I start sensing more fog than what I expected and things like that, I'm going to obviously be looking for the runway environment. And then I'm going to be thinking about how I'm going to get to the hangar, and I want to -- personally going to want to try and land on the first third of 3-4 there so I can get to the taxiway to taxi my way to

the hangar that way. Because that's what I'm going to use for navigation of the hangar. I know there's a windsock out there in the sod, and there's the firebase -- the T&R firebase, got buildings there and things. I don't want to be getting tangled up and trying to air taxi -- you had asked about that -- over to our hangar when there's stuff in the way. I'd rather just know the taxiway is clear.

So does that help at all, Mike? I don't --

Q. That's good. That's good. Have you had some situations where it's almost imperceptible if, say, the deck was at 100 feet and you're at 200 looking down at night? Have you had any situations where that fog deck is almost imperceptible visually?

A. I guess I don't know exactly how to answer that. When it's, when it's that bad, I don't try and -- I'm not trying to perceive how thick the fog is at that time. My focus is just to ensure I have the runway environment in sight to land or do the go-around. I haven't -- that said, well, that -- you know, I don't want to -- I'm trying to think. I don't want to pick on you for your question, Mike, but I don't want to --

Q. No, and I know these are --

A. I don't want to --

Q. I tend to ask vague questions. That's my nature, and I apologize for that, but --

A. No, that's okay. I don't, I don't want to --

Q. We're trying to dig into the specific nature of this one.

A. At the, at the point you're asking, I think, I'm concerned more about picking out my runway environment for landing as opposed to, boy, that fog is, you know, 100 feet instead of 200, or you know, that's less than a quarter mile, or anything like that. You know, if I had said anything like that, it would have been after touchdown and I got the runway in sight, because that's such a critical time to -- I'm not a weather assessor at that time. I'm a machine operator. So I'm more concerned about making sure I have the -- I'm in a, in a position to make a safe landing. So does that help any? I don't --

Q. No, that's fine. And I just know that fog is difficult to assess.

A. Well, and I've seen it on the runways, including at Brainerd, where it'll be really bad one spot, really good in another. And you guys are aware of that. I'm sure you've seen that plenty of times, because that's what we have to deal with. But if that helps any. I don't know if it --

Q. What would you think of from a risk mitigation standpoint as a, as a protocol for what type of -- and I'm talking about from the 200-foot point on in. If there is that variability of visibility that you're concerned with, as a pilot, what would be your risk mitigation process to avoid a fog issue?

A. If it's bad enough, the fog is bad enough, for example, I have done quarter-mile approaches. I don't think I have done a quarter-mile approach at Brainerd, if that helps you guys. I have

done them, again, at Duluth, because that is where I have run into it where it's gone quick. And what I have done there, if this helps, is touch down on the runway with some forward speed and ground taxied on the -- off to the parallel and started working my way from there. Because at that, at that point, it's obviously a critical spot of operation. I don't want to be caught losing the runway sight, losing sight of the runway. So once I'm in a safe position to land, and then when it's that low or if there's consideration of variable fog, I'll do a run on landing when it's that low. If it's below 200 feet, such as you say, oftentimes I'll do that because then I can go, okay, I'm on the ground. Now I got to change from flying, and I figure out how I'm getting from one point -- point A to point B on the ground.

Q. Right. Keep your forward speed.

A. Yes. Yeah.

Q. Okay. Have you flown with Tim very often?

A. No. Not very often. I did some of his training when he started here. I don't know how many years ago, at Siren. I don't know that I've flown any IMC with him. I did some of his local area training and aircraft training, and it was -- honestly, when he started so many years ago, I don't recall specifics. He recently in our schedule change was on our shift, however. So when I was on duty, he was on duty. And so for the last several months, been working when he's been on and have seen -- the best I can tell you guys is he's made some conservative decisions, so

this was kind of a shock, obviously, to all of us, as it is. But he was -- made some, you know, conservative decisions that I -- where he just -- we're, you know, just fine with what he was doing. I look at some instrument flights that he's turned down and I might have taken those.

But again, I have a little more experience, and I am -- I don't want to implicate myself here, you guys, obviously, but I would feel comfortable doing some of those that he didn't do. That's his decision. He's more conservative. So yeah, this was a shock that -- I didn't, I didn't foresee him as the type of person to do a quarter-mile ILS approach, really, without some large preparation or, you know, anything like that. So it was a -- yeah, kind of a surprise. A mile, yes, I could see him doing that and looking -- you know, obviously, looks at the forecast, that didn't look unreasonable for an ILS. But things change, obviously, and that's what we have to be ready for and that's where -- talking about the training stuff earlier, I try and let people know, because that's how things go, so --

Q. Well, obviously an area of interest. You know, the quarter was there, because it was in that last 20 minutes, is what we're trying to dig into a little bit.

A. Sure.

Q. Any tweaks in protocols or op specs that you can -- just kind of based on an inadvertent IMC-type scenario that we have here?

A. No. I can't really think of any that I can recommend or say.

I hate to say anything without knowing facts. Of course, the inadvertent IMC, of course, is such a broad range --

Q. And I'm -- sometime post-decision, I -- inadvertent IMC.

A. Explain to me more, please.

Q. So 200 feet, still visual, 100 feet not.

A. Okay. Well, not really, no. If you lose sight of the runway environment, it's a mandatory go-around. You know, missed approach. So no, that -- no changes there, because that is a pilot perspective. As I, as I know, it's -- you have to have -- be in a position to make a safe landing. You have to have the runway, the runway environment, runway centerline stripes, you know, all the lighting listed to touch down minus, of course, the approach lighting system you can follow in. But no, if you lose sight of the runway environment, it's a go-around. That's black and white to me, and it should, it should be for all pilots.

Q. And I can share this factually with you. The flight track from the decision height takes about a 20-degree turn left toward the hangar. So you can kind of see what I'm getting at.

A. I see what you -- yeah, yeah. No, I would, I -- if it's actually a quarter mile there, yeah, no, that's not good. And I wouldn't, obviously, look at that, but -- I wouldn't want to do that, but I see, I see what you're looking at. I see your thought process of what is he thinking. Was he going to beeline to the hangar type of thing, or maybe -- I don't know. But I -- no, if you lose sight of the -- you lose sight of anything, you know,

it's going to be a go-around. It's, like, there's no question.
Q. And this whole line of thinking is not necessarily knowing that 100-foot situation.
A. Sure.
Q. Just visually, or difficulty assessing the 100-foot situation, and you're 200 and thinking, well, this doesn't look so bad; I can head toward the hangar. Because that's my line of thinking on this mitigation strategy for that.
A. Well, for that, I would say just thinking of that -- and personally, if it's a 200-foot ceiling, I have already probably made up in my mind that I'm not air taxiing to the hangar, is how I would do. So that would be the direction I would lean, to say, hey, if you're -- if the ceiling is reporting 200 or less, ground taxiing only, is what maybe I would put in.
Q. That's a little bit what I've been discussing with Josh, is, you know, at what weather level would you just stick with something that's straight ahead out on the runway?
A. Yeah, yeah. If it's a -- if you're at minimums, if you're at 200 or less, I would definitely recommend, yeah, not planning on shortcutting it across the sod. I'd be taxiing -- you know, ground taxiing. I wouldn't be opposed just saying, you know, I'll hover taxi at 10 feet along alpha taxiway. Because we can -- you know, if you hover taxi, we have that option. But personally, whenever I've had low weather conditions like that situation, I'll ground taxi, because I don't want to ping an AWOS antenna, I don't

want to ping a communication antenna or -- I know the taxiway is clear. I've got a centerline to follow, and I try and tend to stack the deck in my favor. So that's what I would do. But yeah, definitely if it's at 200 or less, I would say don't plan on air taxiing anywhere, would be my --

Q. Are you familiar with Tim's violation previously?

A. I am not.

Q. Okay.

A. No.

Q. And it was not of this nature at all. Just came off an IFR clearance.

A. Okay.

Q. I think he was -- I don't know why, but I think he probably got -- needed to get somewhere else and just came off of the IFR clearance without coordinating properly. Not anything of this nature.

A. No. No, I understand. No, I really wasn't aware of that, and I know that's what you guys have to look into. But no, I had not heard that.

BY MR. RICHARDS:

Q. I'm going to go rapid fire with you because I don't want to keep you here forever.

A. That's all right, Mike. I understand, you guys. I'm trying to help you out and --

Q. I think you have --

A. -- I know I have local knowledge. It is my flight.
Q. Yeah, no. Just so I'm clear, you can, you can launch to and operate into Brainerd with quarter-mile visibility, right? Published minimums with half, but our understanding is you can still go in with a quarter.
A. We can go in. Helicopters can reduce visibility to half, not below a quarter, yes. Provided there's not any on the approach chart.
Q. So eighth of a mile, no good. Quarter mile, you're still okay.
A. You're still okay to make the approach.
Q. Okay. But you said you've never done a quarter-mile approach into Brainerd?
A. Not into Brainerd, no. I have into Duluth, and it was in a changing situation where it went from a mile and the lake fog is coming in down to three-quarters, down to half, down to a quarter. And I was already being vectored onto the ILS Runway 9.
Q. So you were put into a situation, in a sense. It wasn't something you had planned on --
A. Yes, I --
Q. -- to try to accomplish.
A. I personally -- and this is me with my experience. I will not take off to someplace with a quarter mile, no. It has -- if I don't have ILS minimums of 200 and a half, I won't plan on going, especially to Duluth, because that's a known area of rapidly

changing weather.
Q. Duluth, not -- Duluth. Okay.
A. Duluth, yes. Brainerd, not as -- I don't know that I have ever launched into Brainerd with a quarter mile. I don't think I ever have.
Q. Okay. So preflight, you said -- and I'm just making sure I understood you correctly. Preflight, you use or you prefer to use ForeFlight for looking at preflight weather?
A. ForeFlight on the iPad, and on the computer when I'm sitting at the desk, I'll have ATsWeather up -- ATs, it (indiscernible).
Q. Yeah.
A. So I'll have that up while I'm at the desk. And I'll, a lot of times, compare it with ForeFlight. I like to --
Q. But you'll file with flight service?
A. I file using the DUATS website or the 1-800 weather brief, because I --
Q. DUATS is gone now.
A. Yeah, it's 1-800 weather brief, because I have a profile there that I like that has my preferred flight plans that I like to put in with preferred altitudes. Yeah, I think it's preferred altitudes that I -- eastbound, westbound, even, altitudes. Q. Okay. So just for -- just to clarify for me, so let's put you on the same flight, again. North Memorial -- was it MY77?
A. Yes.
Q. Up to Brainerd en route. So what are --

A. 6,000's my predetermined.
Q. What's at your disposal for monitoring en route weather to your destination? So Brainerd, in this instance.
A. XM Weather in -- 11-November-Mike has XM Weather on the Garmin530. So I'll monitor that. However, that has a lot of the delays, as it was -- specifically looking at you had, about, like, the AWOS. And you've had the every-minute update. That'll have -- you know, it'll be 15, 30 minute delayed. So that's oftentimes why I'll file up at 6,000, because by then, when I'm getting the sector frequency change, I'll most of the time be able to reach to 126.75 AWOS here. Because that's the one I know is updated by the minute and I know if it's changing.
Q. So let's talk about that. What are the altitudes -- so forgetting that frequency is -- I forgot what it was.
A. 126.775?
Q. Let's see here. You're talking about the Brainerd ASOS?
A. The ASOS, yeah.
Q. Say that again?
A. 126.775?
Q. Correct, yeah. I guess that's probably pretty common for -- yeah.
A. Yeah. Common for me.
Q. Yeah. All right. How high do you have to be and where in order to secure yourself reception on your way up there? You said you like to go up to 6,000 --

A. I like to go up to 6,000 because I can hear it sooner. I can't, I can't guarantee. That's kind of a loaded question, Mike. I can't tell you the mathematical --

Q. Yeah, yeah, yeah.

A. -- you know -- but as far -- I like to go higher out. I am -- honestly, I can't remember the altitude offhand, but at 25 miles out, I think, is when the AWOS are designed, at a certain altitude. They don't always meet that 25 miles off, because if I can't hear it by the time I'm 25 miles out, I'm going, oh, man, this stupid AWOS isn't transmitting right.

That's not the case at Brainerd. It transmits well, from my experience. And if it's changing weather conditions, anywhere I'm going, I like to go up higher, personally, because I want to hear. En route, we can't get anything on the iPad, of course, and the XM Weather is, again, delayed. So my primary focus, Mike, is I want to get up -- if I think there's changing weather conditions or if it's an IFR, I like to go up higher and get that information sooner, personally.

Q. I understand. Okay --

A. So I don't -- I can't give you an altitude --

Q. No, no, no. I just didn't know -- so if you're 4,000 feet, then you're not going to pick it up until you reach a certain point. I didn't know if there were certain -- pilots around here know if there was some interesting thing with the ASOS broadcast or something.

A. Not on that one. I know that if I'm at 4,000, I'm not going to get it as soon as I would at 6,000.
Q. Got you.
A. That's why I prefer to go at 6 or even -- I might go at 8, if it's really --
Q. I just want make sure we weren't missing something specific to that, that's why I asked those --
A. No, I think -- let me give you an example of -- tell me if this is what you're looking for. When we come into Minneapolis talking to Minneapolis approach control, on 121.2, their transmitters are, I believe, on the other side of downtown Minneapolis buildings. And if we're at 4,000 over Princeton and they switch us over to Minneapolis approach, we can't hear them very good there because -- I don't know if it's a location because of the buildings --
Q. But there's nothing like that on the way up to Brainerd.
A. Nothing that I know of on the AWOS Brainerd, no.
Q. There's nothing that would get in the way of getting reception of that.
A. Not that I'm aware of and not that I've experienced.
Q. Perfect. So at some point -- so you're talking to air traffic, you've filed IFR. You're going to get switched over to second sector. At some point, they're going to ask you if you've got the weather. When they ask you that, do you personally ever repeat back the weather that you have to them, or is it more just

a yes, I do?
A. No, I personally have not. As I stated before -- I think it was with Sathya's question. Personally I like to make -- well, and I'll used you for an example -- their job easier. That's why I like to be up at 6,000, because I will listen to the weather on my number two comm, is my typical routine. I'll have the weather, even though I'm on the previous sector. So when I switch over to that sector, I'll say, I have the weather, Brainerd, and this is the approach I would like. But I have not -- no, sir. I have not said I have the --
Q. Okay. So after air traffic is satisfied you have the weather, do you listen to that all the way down?
A. Depending on the conditions, no. If it's decreasing, yes, I have. If I know it's decreasing and it's a concern of mine -- if it's a mile, for example, in this case -- I will definitely check it before the final approach fix. My personal, my personal technique would be that. If it's decreasing, do I check it on the way down? Yes. Because I know that once -- we have to have the quarter mile or -- not cut in half, not below quarter mile, before the final approach fix to begin the approach.
After the final approach fix, we're legal to continue if it goes to zero-zero because we proceeded past the initial -- the final approach fix. So I will listen to that to see if that happened. And I -- if it's changing that quickly, I have, yes, I have done that before on low approaches at Duluth. Duluth is,

again, another --

Q. Notorious.

A. Yes. Where the weather is decreasing, and I want to know if it goes below. If it goes below, even though I'm legal, do I personally want to put myself in that situation? And that's where I might assess to do -- hey, I'm not going to go in there because it's below that. And I have gone into approaches of places where it's gone below a half mile, even though I'm legal to go to a quarter, and I've aborted -- this is me, of course -- aborted the flight, canceled the flight, sent the patient by ground. Because even if I make the approach and land, I can't take off because I need a half-mile visibility to depart. So I'm doing absolutely nobody any good that way. Does that make sense for you, Mike?

Q. Yes, sir.

A. Okay.

Q. Thank you.

A. Does that help?

Q. Yeah, yeah. I'm just trying to -- I'm trying to better my -- educate myself a bit here. So it was interesting you brought up the dew point depression, the temperature/dew point spread as something that you look at. So do you have a critical spread in Celsius that means something to you? You know, like, how do you -- can you describe what you look at when you do that and how it (indiscernible) your decision?

A. Well, if it's within 4 degrees and closing, I go, mental note

to self. Does that make sense?
Q. Yes.
A. If it's married up, I'm going, okay, then I'm -- you pay a little more attention to it, yes.
Q. How about, how about the present -- when you're looking at a weather observation or listening to weather observation? How about the present weather parameter descriptor? Because if you don't have precip and you have lower visibility, you're either going to have something like haze. You're going to have mist.
A. Mist.
Q. You're going to have fog. All else being equal, visibility being the same, ceiling, does -- do you have more concern with fog as opposed to haze or vice versa? Mist? Does the difference -- does having one but not the other present weather mean anything to you? Is that parameter important to you?
A. Yes. Fog is lower visibility, obviously. The report of fog is, I believe -- I have to look, but I believe it's less than five-eighths of a mile. So I -- there's a definite line before it goes mist and fog, according to the METARs, if I'm not incorrect. And I'd have to review, but I know fog is lower than mist.
Q. Does haze give you any concern?
A. Haze, not as much, personally. I think of that as more an obscuration, I guess. But not as much as -- fog is more my key, personally, that if I see fog, then yeah, I'm paying attention.
Q. Personally, if you see really low visibility, "low" meaning

half mile, quarter mile, but it's reporting haze, does that create a conflict to you?
A. Yes. Yeah, still, it doesn't create a conflict, but --
Q. I mean a conflict like a -- go ahead. Sorry.
A. A concern. I think I see where you're looking. It's like, okay, why is that reporting haze as opposed to fog? Yeah, I would be curious as to -- okay, is there smoke? Is there something going on nearby? Yes. I would be wanting to know why is there haze as opposed to fog. But when it comes down to it, I'm going to -- I'll probably go, oh, well, I don't know what it is, but here's the facts, is it's a half mile. It doesn't matter what it's in.
Q. I understand. One other question about observations, just in your opinion. So I mean, these observations are public. They're not secret stuff. At 5:13 Zulu, it was reporting half-mile haze broken at 200. In remarks, there was a visibility -- it said quarter variable 5. That's a pretty big difference, in my opinion.
A. Yeah.
Q. What do you -- I mean, if you're operating into an airport that's reporting quarter variable five, what's going -- what are you perceiving the environment to be?
A. Okay. Well, I can try and give you some local -- what you're looking for there is --
Q. Specific to Brainerd, if you can.

A. Yes. Well, I know that's what you're looking for, is -- I've seen it there, and that's the low ground fog that seems to float around at the end of the runway there sometimes, or it'll be -- the fog will kind of roll in off the lake, and that area over there will be reporting a quarter, half mile. And I can walk out of the hangar at our place over there and look out and see the sun and stars and go, well, obviously that fogbank or whatever is sitting over there and is causing the issue. And if I see quarter variable to five, I know it's floating around there, and now I know I'm going to have to do the ILS. But it may be one of those situations where it floats away when I'm there or floats over when I'm there. So yeah, it sets off a few alarms in my head.

Q. Is this a situation you can be in the soup one second and clear the next and then back in it?

A. Yes. Yes.

Q. About 20 minutes beforehand, the ASOS was reporting clear skies.

A. Okay.

Q. Is that -- I mean, is that a common observation that might be here, where you're getting low visibility, relatively low visibility, but sky condition is clear or sky condition is few?

A. Yeah, we've had -- I've seen that, yeah, where it's been half mile, half mile and clear and step out and look up and see stars, but horizontally, I can't see the highway from our hangar door. So yeah, that has happened there, yes. But I don't want to say

it's common, because it's not -- it doesn't happen a lot, but it's happened up there and I've seen it, you know. Been there a couple years, and so --

Q. Yeah. And explaining this environment, your jaw's not dropping here. I mean, it's --

A. No. No. That is -- I've seen it before. I guess that's the best way to say it. I've seen it before. For what you're looking for. It's not uncommon, no.

Q. Just three more quick questions. How do you guys train on PIREP issuance here?

A. You know, PIREP issuance -- I'll try and talk to coworkers in my perspective. And when I'm training, I'll try and tell them, hey, if you see something that's really bad that wasn't in the forecast, to say it. Because if you're out flying and you see something that wasn't supposed to be there, I probably don't see it either at Base 2 or Base 3 or Base 4. Because they're all looking -- we all look at a lot of the same things. We all have ForeFlight. So if I go out there and see something, I'll tell people -- when I work with them about PIREPs, I'll say, hey, report it. Make sure you report your aircraft type and report it to flight service, because if you just mention it to ATC, it might not get put up on the, on the ForeFlight or on -- adds as a, as a PIREP. You know, they might just remark it.

That's personally what I do when I train guys. I say -- and also, if there's a phenomenon that they're seeing that's keeping

us all grounded for whatever reason, if it's icing but it's clear blue and 22, go out and PIREP negative ice, clear skies, things that might allow me to operate, make sure you report that, and report it to flight service and report it as an actual PIREP in the phrase, because then it will pop up on my screen on ForeFlight. And I can look and go, hey, A109 reported this, so I know it's a reliable report and not a UMA student or something.

Q. Thank you.

A. That's how I do it.

Q. Two quick questions, because I haven't been up to Brainerd. Is there a light on the windsock?

A. Yes.

Q. How many windsocks?

A. Let's see. We have three that I know of: one at the helipad, one centerfield to the south side of Runway 2-3, and one to the right of Runway 2-3 and Runway 3-4 on the northeast side. The windsock, yes, that I look for the most is going to be the one down by 2-3, the approach down there. But honestly, if it's half-mile visibility, I don't, I don't look for the windsock specifically. But yes, the one by the helipad is lit really nice. I know -- I can remember three of them.

Q. So last two questions. Two stupid questions. Can you control the, can you control the lights coming in with clicks?

A. Yes. Yes.

Q. Is that how you do it?

A. Yeah.
Q. How many intensities are there?
A. Three. Three clicks for low, five for medium, seven for high.
Q. Okay, and you can turn them off if you want to.
A. No. Once you --
Q. You can't turn them off?
A. No. Once you click them on, they will stay on at minimum, medium intensity. So if you don't click them on, they're on, I believe, an ultra-low setting, so -- and the approach lighting systems aren't on all the time. But once you turn them on, which is in our -- we have in our checklist airport lighting. They cannot get any lower than the lowest three-click intensity for 15 minutes or whatever it is. And the approach lights stay on.
Q. So the last question. Here's where I'm really going to get myself in trouble. Is there a tailwind limitation or a requirement -- whether it's aircraft-based or just companywide, or maybe it's pilot-specific; I don't know -- for operating into Runway 2-3 in Brainerd? What's the tailwind limitation? Is it --
A. I'm going to get myself in trouble too. We have tailwind charts in our RFM, but it has to be pretty high. Honestly, I can't think of it offhand, that -- for Runway 2-3, that, no, we cannot go into Runway 2-3 specific with this X number of (indiscernible).
Q. Yeah, that's what I was looking at here, is --

A. I don't -- no, I don't have a local limitation for 2-3, no. I guess that my best answer would be no and to tell you that. None that I can think of for 2-3 or 3-4 or anything, so --

MR. RICHARDS: All right. Thanks a lot. I'm going to just pass it back so we can get you out of here.

MR. SARVIE: That's fine.

BY DR. SILVA:

Q. How do you interact with the med crew? What does that relationship look like?

A. I think we have a great crew interaction, in my opinion. I believe that we have a very good rapport with them. I take pride in the fact that they trust me, and that people have brought concerns up to me about the weather. Like, what are you going to do about this, or what are you going to do about that? And then I have had to step back go, oh, I realize there's a concern here. And I'll tell them, well, this, yes, may be a concern, but this is my back-up plan, or I have another idea. Because if I can't explain to them a back-up plan or what I might do if this was this, I feel like I fail, because I was -- you know, being a pilot, you're on your back-up plan, you're already starting to fail, I think. So I will tell them, if they have a concern, my back-up plans or how I perceive that things will go. And if I don't like this, then I've said, well, if I don't see this or it doesn't play out like it works, I'm going to come back.

I think all of our crews up there and, of course, your --

that can be a loaded question, because you can have everybody on both ends, on both ends of the scale. I think I satisfy them well when they have concerns, and I work with them well. I don't think I've had any bad interactions with them, and I'm perfectly comfortable explaining weather and how it affects our operations and limitations and things with them.

And I think I -- personally, I try and help them out a lot. I guess you would say interactions. So not even flying, I'll try and help carry bags or assist them in any way, because they have helped me. I -- turned Duluth, I was flying IFR out of Marshfield with Duluth one time, and I did my walkaround and completely missed the grounding cables still stuck, tied to the 222, or clipped on. Would that have been anything? It may have just pulled off, clipped off and been no big deal. Or it could have clipped off, flipped up in the rotor blades and wrecked everything. So the medic caught that. And I went, jeez, thanks. You know, so an extra set of eyes.

So I try and foster that amongst the crew, and I think they're appreciative of it and they seem open and available for it. And in my, in my opinion, that's the best I can give you. How much more would you like?

Q. Well, is that in your experience as a lead pilot, or specifically your experience interacting with them personally?

A. Both. Both. If I -- I don't believe I've ever had anybody come up to me and say, I don't like the way one of your pilots at

this base is flying or doing this. I've been lucky. I think at Brainerd, we've got a good group. And yes, as a, as a lead pilot, I've had several crewmembers come up to me and ask, you know, how does this work, how does that work? Why is operations doing this? Why, you know -- and I'll try and explain to them. And I feel good about that, because I think they're free to approach me. I don't try and close them off or anything. I think most crews feel that way, to the best of my knowledge.

Q. And you mentioned that, with Tim, you've seen some conservative decisions. Can you provide an example of what kind of context those came in, from what you recall?

A. There was -- yeah. The most recent one was just a few weeks ago. He went on a flight to Ashland. And he ended up coming back and canceling the flight because it was into Duluth. The weather was forecast to be legal for the AirNav Runway 4 approach. The Runway 9 and 2-7 were closed, so both ILSes were out. And even though the weather was legal -- and I don't have the specific numbers. I apologize. But even though it was legal IFR to make a runway -- AirNav Runway 4 approach, he turned it down.

And I, and I thought, you know, well -- he had a ride-along pilot with him, a new pilot riding along. They were up there with this new guy riding. Does he want to be flying something to legal minimums with a new guy riding? I thought, you know, I think he made the right decision. Because you don't want to be putting yourself into that, flying down to minimums on a non-precision

approach with a brand new guy in the left seat who is just learning the ropes. I thought that was an excellent decision. And I thought it was, it was probably better than one I would have made. I would have said, well, we can legally go there. And you know, I'm comfortable. I have a different experience base, of course, in the aircraft and everything. And I was -- you know, he made -- I think he probably made the right decision there. And that was just several weeks ago, so -- yeah.

Q. And we've mentioned settling with power. I'm not a rotorcraft person, so can you kind of explain what that means, and what that means to you when you're --

A. Well, I -- of course, to me, instructing it, I have to have parameters. I have to hear certain things from the pilots of -- you need to have zero or near zero airspeed with the aircraft, be using 20 to 100 percent of the aircraft's available power, and a 300 foot per minute rate of descent or greater, is the check ride -- learning terms that we need to know for the check ride. Those are the things you need to be aware of it. It could be as well as -- high density altitude, things of that nature, also play into effect there.

So for your terms, Sathya, the aircraft -- when it's in-ground effect, which is a lower than 1 3/4 times rotor diameter, the downwash from the airframe -- and you said you were just fixed-wing, Mike? I apologize. I'll try and remember, try and explain it. But you have ground effect in fixed wing, though.

When your in-ground effect is 1 3/4 times rotor diameter disc, which is 36 feet on an Agusta, so roughly 50 feet. Your in-ground effect -- the downwash, it comes down to the ground and gets dissipated, okay? If you're higher than that, it creates a vortex on the outside of the rotor system, they call it. Settling with power is technically called the vortex ring state. So if you're up at a higher altitude and you stop to hover, or you're zero or near zero airspeed using 20 to 100 percent of the power, and you're descending at 300 feet per minute rate of descent or greater, the airflow goes through the rotor system, recirculates back up and comes back through the rotor system. Okay? So you create a vacuum.

DR. SILVA: Just another 10 --

(Interruption at the door.)

MR. SARVIE: So you're creating a similar vacuum. You're creating a downwash, a downflow column of air that you're creating. Now if you descend into it, you start descending at that same rate of the air you're pushing down, now the aircraft needs to use more power, and your angle of attack gets greater. And eventually, you're in -- the air you're creating, you're descending at that same speed as the air you're creating, which can be a couple thousand feet per minute. And the aircraft becomes unstable and shakes a lot.

And the textbook answer that I like to hear people -- when I teach them what to do is establish directional flight, is what I

say. A lot of people say, well, fly out of it. And I say, which way are you going to fly? And they say, well, I'll go forward. Can you go sideways? That will be my loaded questions when I train with them. Can you go sideways? And they'll go, I guess you could, couldn't you? And I'd say, yeah, that was why, whenever I did evaluations in the military, I'd say my answer is always establish directional flight, because there may be trees up ahead of you. There may be an obstacle. Get out of that column of descending air and fly out of it.

So yes, it's -- you're creating a column of descending air, and then you get trapped up in that column of descending air. And you -- no matter how much power you pull out, the more power you pull, the faster you go down. And so you have to get out of that column of descending air and fly out of it and establish some form of directional flight.

BY DR. SILVA:

Q. Okay. So you mentioned in training. Is this purely, kind of, scenario-based ground training or a check ride?

A. No, it's inflight.

Q. You do inflight?

A. It's inflight. I just did my eval and I, we went out and did it. And as a matter of fact, with Jim, our sure guard, check -- one of our check airman training captains. We went out and did it. And we both did it. We did it on time, and he asked about how I like to do it and how I like to train people. And I -- and

once I did one, I said, here is how I like to do it. We have to go up to altitude for safety consideration. And I said, I like to put people in a tailwind. Everybody likes to go and nose into the wind. I said, if you put somebody in a tailwind position with plenty of safety altitude -- we're at several thousand feet up -- you can get into settling with power quicker. Because now they are looking forward and get the aircraft shudder and the shake and then fly out of it. You can even demonstrate the fly left or right. You know, just get out of the column of air. So no, it's -- I just did one, like I said, for my training, yes.

Q. So that's something every pilot should see from a training perspective?

A. I think so, yeah. I enjoy doing it because -- especially newer guys that haven't, maybe, been in this airframe and things like that, or haven't done it before. It can be an unsettling -- no pun intended -- maneuver, because the aircraft shakes, and the dynamics and the stability of it is very unique and very attention-grabbing.

Q. But is it required training?

A. We have it on our check rides, yeah.

Q. Okay. Do you, do you get any information on the status of the patient when you're flying between when you make the decision and anywhere throughout the flight?

A. During the flight, yeah. Yeah, once I make the decision, then we get the patient information after that. I have gotten it

on accident before, and I know the company is working hard on this to make sure we don't get the patient information on our CAD system when getting the page. Sometimes, depending on -- communication center operations will pop up first. And then we'll get a page, and it's right in there in the computer. It might say a trauma or a heart or anything like that. That is not the norm, though. That's not what they're trying to do, even though it's happened. I think it's the CAD system they're working with that has been in error.

So no, everybody, I think, in the communication system is aware to try and not communicate that. And it doesn't, it doesn't happen often where they page on a flight, you know, a flight request for a trauma and X, Y, Z on here. No, it's typically try -- they do try and protect that. So it's -- but it's a challenge because it's going through multiple entities, through communication center, and aviation is like that. So yes.

Q. Okay. So they don't give you that information when you decide to take the flight. When is that information, kind of, passed along to you and the crew?

A. After I accept the flight. That's when it's, when it's acceptable and we've talked to communication folks -- and I don't know what Michael -- how far involved he's been in that. But the -- from as long as I've been here, we've tried to teach communication center that not until I say yes or no to give any patient information, is how we've been trying to do that. And

doing fairly good. The new CAD system has had some hiccups and all with that that, you know, may need to be looked at. I think they are looking at it.

Q. Okay. How would you describe the safety culture here?

A. Improving. I think it's -- in my years here, we have not had a dedicated safety person. And as the program has expanded, it has gotten to be more of a focus. We have -- Jim Shirk was the initial safety director, I guess. I don't know if he's the director, but safety pilot when I came on. Actually I guess it would have been -- Ron Smith was initially made the safety point of contact as an independent safety point of contact, and then it went to Jim. I know they're working -- I just saw the email a few days ago with the safety board consisting of one person from each of the base. So that's a good thing to see, that it's becoming more popular, especially as the program has expanded.

So I think it's improving. Has it been perfect? You know, absolutely not. I don't know what -- I can't define perfect, because I guess I don't know it. I think they're moving in the right direction with it, though. So I would -- in one word, I'd say improving.

Q. If ever you had a safety concern, how would you voice that?

A. To me, we have -- Jim Shirk is available. Matthew was our safety person before that. If it's a serious safety concern that I don't think it's being addressed or -- depending on what level it's at, I have no problems going to Joshua on things that affect

me at Brainerd or anything like that. Because I have been able to do that and have results, positive results, in the past. For me, I have no issues doing that, because I've been here a little while and I don't fear for retaliation much because I know I carry a little bit of weight. I try not to sound arrogant. I know people will listen. So yeah, I -- we have the ASAP system now that safety has been promoting. So if it really got down to the point of that, that nobody was listening, I would have no problem using that ASAP system myself. That's my perspective right now.

Q. And just going back to the settling with power for a second, when you're in the maneuver, what cues are you looking for?

A. Rapid drop and vertical speed, your VSI. Shaking and shuddering of the aircraft is what I like people to feel when we do it because it's a very unnatural feeling. It's somewhat -- it's different than on an approach. You guys, of course, are fixed wing. On an approach, a helicopter has to go through what's called effective translational on departure and approach. 18 to 24 knots, the aircraft transitions from flying to hovering. When you go through this effective translational lift, mostly on approaches, the aircraft will shake. Because it is now -- the forward half of the rotor system is starting to hover, and the rear half is still kind of flying. And it creates its own turbulence, so it'll shake. Oftentimes when we're flying with people, passengers, I'll brief them and say, hey, when we come in to land, it's going to vibrate a bit. That's perfectly normal and

it will smooth out. Don't be afraid or surprised; that's typical. And it vibrates and shakes, but not that -- it can surprise somebody who hasn't been in a helicopter before.

Settling with power shake is very, very unique. It's a lot more violent. It will catch your attention a lot quicker, a lot more. And you'll know something is -- that, hey, something's up. Because the panel will shake, instruments will shake a lot more. And it will catch your attention a lot quicker. So it's a more violent shaking of the aircraft. That's what I like to see -- what I want people to see, besides the zero airspeed and the, and the rapid decrease in your IVSI, is -- the shake is a huge -- because honestly, when we're doing maneuvers and -- we're not always looking at our IVSI. So I like to tell people, the violent shake, if that starts happening, you better start paying attention and doing something quick.

Q. Do you ever train this in IMC at all or is it --

A. No, I have not, honestly.

Q. All visual, okay.

A. No, we'll go to VMC conditions and with sufficient altitude.

Q. Or -- okay.

MR. FOLKERTS: About how much does it take to recover altitude?

MR. SARVIE: Well, it depends on how --

MR. FOLKERTS: Severe.

MR. SARVIE: -- much severe you get it. And I mean, we've

had, you know, 2000 foot per minute rate of descent, and it'll take several hundred feet, you know. And it all depends on your action time and where the winds are headed for. In a tailwind, it takes longer, because now generally the typical response is somebody will try and fly forward out of it, which is human nature. And if you're in a tailwind, you know, you -- the best thing might be to make a left turn and in, you know, a crosswind or something. So it depends on the severity of maneuver, I guess, is probably you would understand the aviation perspective.

FOLKERTS: Anywhere from 100 to 500 range, maybe?

MR. SARVIE: Yeah. Yeah, it's -- it could be more if you're slow to react. Definitely could be more if you're slow to react, if you don't pay attention and you get into it severely with more than a couple thousand feet per minute, yes. So yeah.

BY DR. SILVA:

Q. But you're not -- there's never a case where you've trained with foggles or anything, simulated IMC or --

A. Oh, yeah, yeah. Simulated, yeah. Not actual. Yeah.

Q. Okay. Simulated settling with power?

A. Yeah, in VMC conditions.

Q. In VMC. Yes.

A. Yeah. Yeah, I've done that before. It's not standard, but I've done it before. So yeah, absolutely.

DR. SILVA: Did you have any other questions, Mike?

MR. FOLKERTS: I don't. I just want to thank you for hanging

in there through this, and you did a nice job with the interview.

MR. SARVIE: Well, I understand, like I said, what you guys are trying to do. And I have a lot of the same questions you guys do, so --

DR. SILVA: Did you have anything else, Mike?

MR. RICHARDS: Just one.

BY MR. RICHARDS:

Q. Has air traffic ever provided you -- and I'm not talking about precip. I'm talking about, like, airport weather. Have they ever offered you airport weather unsolicited?

A. Yes. Yeah.

Q. What did that -- what was the circumstances of that look like?

A. This is something we have been asking ourselves. The time -- let's see. The last time I can think of as I was on approach and to St. Cloud doing the ILS, and air traffic control told me the ceiling dropped to 100 as opposed -- the ceilings are down to 100 feet now. And it was already on approach, so I continued. What are your intentions, they said. I'd like to continue the approach. That was at St. Cloud, St. Cloud Tower-specific.

Q. Oh, it was Tower.

A. Yeah, that was Tower. Yeah, that was a Tower --

Q. I should, I should have clarified. I'm talking about center.

A. Center, yes, they have. They'll tell me weather. I have a moderate, heavy and extreme precipitation.

Q. Precip. Okay.
A. Those types of things. Yeah, absolutely. They've given me that before.
Q. Sure.
A. Our aircraft are getting real nice with the XM Weather and onboard weather. Usually I have that information already. But they -- air traffic control has been real good about precip, about saying any moderate, heavy and extreme precipitation at --
Q. But getting ceiling and visibility information unsolicited from center, is that -- it sounds like it would be rare, if at all.
A. I've probably gotten it before, Mike, but I don't recall doing it a lot.
Q. Yeah, that's --
A. Okay? Does that help any?
Q. Yeah. Because you're not like, yes, absolutely, they do it every week.
A. Yeah, no, no. Not that often.
Q. It's not routine, fair to say.
A. No. No. Certain controllers, even after I say I have the 1-minute weather, will still give you altimeter, of course, and everything that they're required. But not -- no, they don't every day, you know, say, hey, this or that. Personally, I know one of the air traffic controllers at center, and when she's on duty, she gives me a lot more because she knows I like a lot more, and

she'll know my type of operation. But that's --
Q. That's perfect. Thanks, man.
A. Okay.
Q. I appreciate it.
DR. SILVA: Do you have anything else you want to add that we didn't ask you?
MR. SARVIE: Not really. I guess I can think of -- I probably should have written down a few things, but I don't know how much more I --
DR. SILVA: That's okay.
MR. SARVIE: -- you can give out. You know, I see where you're looking with your questions, and I appreciate that --
MR. FOLKERTS: Pretty general focus. We're still going to grab the Appareo. We got a lot of information to come in.
MR. SARVIE: You don't have that yet?
MR. FOLKERTS: We don't have the Appareo yet. We don't have the audio yet. So there's a lot of -- we're still in the gathering mode. That gave you the broad idea, right?
MR. SARVIE: Sure. Yeah, no, I appreciate your time. And like I said, I know I'm running beyond, so I don't want to hold you guys up. And I --
MR. RICHARDS: It's your fault we're running late.
MR. SARVIE: Yeah, I know. I probably spoke too much. I appreciate -- Katie, thank you -- hanging out and everything like that.

DR. SILVA: Yeah. If you think of anything else, you can get through to us through Josh --

MR. SARVIE: Josh. Sure.

DR. SILVA: -- or you have my card also, and we can communicate here.

MR. RICHARDS: Thanks for your time, man.

MR. SARVIE: Yeah, thank you.

MR. RICHARDS: I appreciate that.

DR. SILVA: Thank you.

MR. SARVIE Yeah, thank you. Appreciate your work and everything like that. Thanks for doing this for us (indiscernible) and all, hopefully you can get some answers.

DR. SILVA: Exactly. Off the record at 10:42 a.m.

(Whereupon, 10:42 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	NORTH MEMORIAL AIR CARE HELICOPTER CRASH NEAR BRAINERD, MINNESOTA JUNE 28, 2019 Interview of Ryan Sarvie
ACCIDENT NO.:	CEN19FA185
PLACE:	Brooklyn Center, Minnesota
DATE:	July 1, 2019

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.

Eileen Gonzalez
Transcriber

Autumn Weslow
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