UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD COLORADO

Case No. IPR2018-00190
Patent No: 8,945,287

CONFIDENTIAL DESIGNATIONS PENDING

DEPOSITION OF: GREGORY W. HAGGQUIST, PH.D.
December 5, 2018

VF OUTDOOR, LLC,

Petitioner,

v.

COCONA, INC.,

Patent Owner.

PURSUANT TO NOTICE, the deposition of GREGORY W. HAGGQUIST, PH.D. was taken on behalf of the Petitioner at 1801 California Street, Suite 3300, Denver, Colorado 80202, on December 5, 2018, at 9:02 a.m., before Sandra L. Bray, Registered Diplomate Reporter, Certified Realtime Reporter, and Notary Public within Colorado.

A P P E A R A N C E S

For the Petitioner:
PETER A. GERGELY, ESQ.
KATHLEEN E. OTT, ESQ.
Merchant & Gould P.C.
1800 California Street
Suite 3300
Denver, Colorado 80202

For the Patent Owner:
JASON S. JACKSON, ESQ.
Kutak Rock
The Omaha Building
1650 Farnam Street
Omaha, Nebraska 688102

Also Present:

Indhira Lapuma, Esq.

I N D E X

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WHEREUPON, the following proceedings were taken pursuant to the Federal Rules of Civil Procedure.

* * * * *

(Deposition Exhibit 1 was marked.)

GREGORY W. HAGGQUIST, PH.D.,

having been first duly sworn or affirmed to state the whole truth, testified as follows:

(Deponent's reply to oath: "I do.")

EXAMINATION

BY MR. GERGELY:

Q. Good morning, sir. Please state your name for the record.

A. Gregory Haggquist.

Q. And what do you do for a living?

A. I'm a chemist.

Q. Who is your employer?

A. Cocona.

Q. And how long have you been employed by Cocona?

A. Since the year 2000.

Q. And were you a founder of Cocona?

A. Yes.

Q. And what's your current title?

A. Chief technical officer.

Q. And are you an owner? Do you own shares or member interests?

A. I own shares in the company, yes.

Q. And Cocona is a what? Is it a C corp or an S corp?

A. I believe a C corp.

MR. JACKSON: Peter, can you do a roll call, please?

MR. GERGELY: Sure. Peter Gergely for Petitioner, VF Outdoor, LLC.

MS. LAPUMA: Indhira Lapuma, in-house counsel for VF Outdoor, LLC.

MS. OTT: Kathleen Ott with Merchant & Gould.

MR. JACKSON: Jason Jackson for Cocona. Thank you.

Q. (BY MR. GERGELY) Sir, I've handed you Petitioner's Notice of Deposition of Dr. Gregory Haggquist, labeled Haggquist Deposition Exhibit 1. Have you seen this document before today?

A. No.

Q. In any event, you are here today to testify on behalf of Cocona?

A. Yes.

Q. And you've submitted two declarations in

this IPR matter, correct?

A. Correct.

Q. Let me show you the first one.

(Deposition Exhibit 2 was marked.)

Q. Sir, do you recognize Haggquist Deposition Exhibit 2 as the first declaration you gave in this case?

(The deponent perused the exhibit.)

A. Yes.

Q. And is it accurate?

A. I'm not clear on your question. Is this the deposition I made? Yes, this is the deposition I made.

Q. Just to be clear, it's a declaration. So there's a little bit --

A. Declaration, excuse me.

Q. -- of verbiage difference between the two.

A. Sorry. My legalese isn't very good.

Q. I understand. Did you understand it to be accurate at the time you signed it?

A. Yes.

Q. And did you prepare it on your own or did you have some help?

A. I prepared it, but I did have help.

Q. And was the help legal counsel?

A. Legal counsel.

Q. Did anyone else who wasn't a lawyer give you help on this?

A. No.

Q. And so drawing your attention to Paragraph 8, you say a POSITA -- first of all, is that a person of ordinary skill in the art?

A. Yes.

Q. And you consider yourself to be a POSITA in this field?

A. In the declaration, Paragraph 7, "I have reviewed the '287 Patent and the '359 Application and consider myself a person of ordinary skill in the art with respect to the subject matter of the '287 Patent and the '359 Patent [sic]."

Q. Okay. And then you go on to say that "A POSITA understands that 'active particles' are 'active' because they have the ability to adsorb or trap substances at their surface." Do you see that?

A. Yes.

Q. And that's an accurate statement, right?

A. Yes.

Q. And what do you mean by "surface"?

A. So to determine surface, you have to

understand particle and a particle shape and geometry. So if I give you an example of this building, for example, I was on the outside of the building and all the doors were closed, the surface of that building would be the outside. If I opened up all the windows and opened up all the doors and had porosity, then not only is the outside the surface, but the floor now, the ceiling, and all the walls within the building are the surface.

Q. I think I understand. So it's -- for lack of a description, is it sort of the internal surface?

MR. JACKSON: Object to form.

Q. (BY MR. GERGELY) Say, for example, if the perimeter of the building was considered a surface and then you opened windows and doors, there would be a surface extending, say, into the interior of the perimeter; is that correct?

A. Yes.

Q. Okay. And is that true with respect to activated carbon, that it has these fairly deep pores in it that extend down into the interior of the particle?

MR. JACKSON: Objection; form, foundation.

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A. Activated carbon has a porosity, and that porosity creates surface area.

Q. Okay. And like -- well, for example, take a look at Paragraph 11. You provide a demonstrative trying to demonstrate the difference between absorption and adsorption. Do you see that?

A. Yes.

Q. And you show absorption, you show some particles going into the interior of the particle, and then adsorption, you show those particles adhering to the perimeter, correct?

A. Correct.

Q. But it would be more accurate to show adsorption to show those particles actually beneath the perimeter, correct, in some form or fashion; is that correct?

MR. JACKSON: Objection; form, leading.

A. So the ability to draw a three-dimensional material is difficult. This is just an illustration.

Q. (BY MR. GERGELY) I get that. I understand it's an illustration. That's what I am asking you. There is probably a certain limitation through CAD or whatever other program you're using.

A. Well, I'm just not an artist.

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Q. Got it, got it. But these particles don't stick to the perimeter solely in a porous material. They sometimes go into the actual interior of the particle, correct?

A. If there was a pore structure, yes.

Q. And have you seen more detailed depictions of activated carbon showing these pores extending deep into the interior of the particle?

MR. JACKSON: Objection; form, foundation.

A. May I see the copy of my second declaration?

Q. (BY MR. GERGELY) Yeah, I don't think that has any such cartoon in it, but I'm happy to give you a copy.

A. It does not have a cartoon.

Q. Right. Oh, did you want to see some language in it?

A. Yes.

Q. Just give me a moment, and I'll see if I can find that for you.

MR. GERGELY: So that will be Haggquist 3.

(Deposition Exhibit 3 was marked.)

A. Can you repeat the question, please?

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Q. (BY MR. GERGELY) Yes. Have you seen other depictions of activated carbon which show the pores extending deep below the perimeter of the particle, say deep into the interior?

MR. JACKSON: Objection; form, foundation.

A. So my declarations -- my two declarations don't address that. So I haven't specifically prepared for that, but I'd be happy to answer based on what I recollect, and I have seen pictures of activated carbon using SEMs.

Q. (BY MR. GERGELY) And how far down below the surface do those pores extend typically?

MR. JACKSON: Objection; form, foundation, scope.

A. Again, I do not believe I discuss that in my declaration. Do you have a specific type of activated carbon you'd like to ask about and a specific technical data sheet?

Q. (BY MR. GERGELY) Well, I'm just asking about activated carbon generally.

A. There are a wide range of activated carbons.

Q. Well, on Haggquist 2, could you -- on Paragraph 11, could you draw, for example, what a pore

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would look like of activated carbon? I mean, I'll give you an example. Say Asbury5564.

MR. JACKSON: Objection; form, foundation, scope.

A. So Paragraph 11 on Declaration 2, which is Exhibit Haggquist 3, "To overcome this fatal flaw," we have to look back and refer back to what the fatal flaw was.

Q. (BY MR. GERGELY) No. I'm asking about Haggquist 2, Paragraph 11, the cartoon.

A. Sorry. I was --

MR. JACKSON: Same objections.

A. Declaration 1, Exhibit Haggquist 2, Paragraph 11. "The image below depicts the difference between the surface-active process of adsorption (shown on the right) and the bulk dissolution process of absorption (shown on the left)." And your question is?

Q. Yes. Could you draw next to the adsorption cartoon what some pores actually look like and where those particles may reside once they're adsorbed to those pores?

MR. JACKSON: Objection; scope, form, foundation. It's requesting the witness prepare materials for the deposition, which is improper.

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A. Can I get Application '359?
Q. (BY MR. GERGELY) Sure. Well, let me do this first. I'll show you an example. Maybe this will assist you.
MR. GERGELY: Mark that as Haggquist 4.
(Deposition Exhibit 4 was marked.)
MR. JACKSON: I'm going to object to the introduction of this exhibit. Counsel, is this part of the record in this case? I don't recall.
MR. GERGELY: It's cross-examination.
MR. JACKSON: So it's not in the record in the case?
MR. GERGELY: Correct.
MR. JACKSON: Well, then I'm going to object. It's outside the scope of the testimony. The document was not referenced in the deposition notice per the board rules.
MR. GERGELY: It's cross-examination.
Q. (BY MR. GERGELY) Sir, I'm handing you what's been marked as Haggquist 4. I'd like you to turn to the second page of the document, which shows a depiction of activated carbon. Have you seen that image before?
MR. JACKSON: Object to scope, foundation, form.

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A. This is the first I've seen this document. I haven't prepared on this document. The question is have I seen this particular image?
Q. (BY MR. GERGELY) Yes.
A. This particular image, I am not sure.
Q. Okay. But perhaps you have because it's taken from an article on activated carbon that's well-known. Is that what you were trying to get at?
MR. JACKSON: Objection; scope, form, foundation.
Q. (BY MR. GERGELY) Well, let me back up. Have you seen an image substantially similar to this with respect to activated carbon?
MR. JACKSON: Same objections.
A. Yes, I've seen images like this.
Q. (BY MR. GERGELY) Okay. And is this a fair depiction of activated carbon with respect to the pores and how the particles enter the pores?
MR. JACKSON: Objection; form, scope, foundation.
A. I would say it's a reasonable depiction.
Q. (BY MR. GERGELY) Okay. So the author of this document states that "A proper activated carbon has a number of unique characteristics: a large internal surface area" --

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A. Where are you reading from?
Q. Above the image. Do you see that?
A. Yes.
Q. He or she states, "A proper activated carbon has a number of unique characteristics: a large internal surface area." So going back to your building analogy, do you see the perimeter of the particle at the top where it says "large and small organic molecules"?
MR. JACKSON: Objection, scope.
A. I see the words "large and small organic molecules," that that appears that that could be the outer edge.
Q. (BY MR. GERGELY) Okay. And going back to your analogy, when the window or door is open, that creates a larger internal surface area for the building, or in this case, for the activated carbon, correct?
MR. JACKSON: Object to the scope.
A. Yes.
Q. (BY MR. GERGELY) So the large surface area of activated carbon is attributable to these cracks that go down beyond the edge of the particle, correct?
MR. JACKSON: Objection; scope,

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foundation.
A. Yes.
Q. (BY MR. GERGELY) Okay. And whatever is entering that activated carbon, say, water or some other material, is adhering in some form or fashion to the surface of these cracks, correct?
MR. JACKSON: Objection; form, foundation, scope.
A. Can you define the word "adhering"?
Q. (BY MR. GERGELY) Yeah, I'm not a chemist. Attaching.
A. A chemist wouldn't use either of these words.
Q. Okay. What would they use -- well, maybe you know. I don't know. What is the mechanism of action, say, for example, between water and the internal surface of activated carbon?
MR. JACKSON: Objection; form, foundation.
A. So, again, I'll go back to my two declarations. I do not believe I talk about interaction of a material with surface. We can look at some areas where I do discuss absorption and adsorption. So we can go to Haggquist 2, Paragraph 8, "A POSITA understands that 'active particles' are

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'active' because they have the ability to adsorb or trap substances at their surface, as we discussed what expanded at surface meant. "This surface-active property is the result of a large surface area of an active particle. The large surface area is provided by numerous pores on the surface of an active particle, and it is these pores that provide an active particle with the ability to adsorb substances. Figure 1 of the '359 Patent depicts the porosity of an active particle." So that's why I requested Application '359, to give you my depiction of an active particle. A POSITA understands that some particles naturally have pores, like volcanic rock.

Q. Would that be zeolites, for instance?

A. "And that other particles, such as carbon have to be treated with extreme temperature and an activating agent to create pores to create activated carbon."

Q. Okay. So to your point, it's fair to say that there are some naturally occurring active substances, active particles, and some are engineered, correct?

MR. JACKSON: Objection to form.

A. In Paragraph 9, "some particles naturally have pores," to your point, "like volcanic

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rock." "Other particles such as carbon have to be treated with extreme temperatures," as what you said with the synthetic or some type of a process, "and an activating agent to create pores."

Q. (BY MR. GERGELY) So an example of volcanic rock would be zeolites, right?

A. Some volcanic rock is zeolite, yes.

Q. And, in fact, in your '287 patent and then the '359 application, you actually listed zeolites in the specification and claimed them as active particles, correct?

MR. JACKSON: Objection to form, foundation.

A. Can I see both patent applications, please?

Q. (BY MR. GERGELY) Sure.

MR. GERGELY: Are we up to Haggquist 4?

THE COURT REPORTER: 5.

MR. GERGELY: 5.

(Deposition Exhibit 5 was marked.)

MR. GERGELY: And just to speed this along, why don't we mark this as Haggquist 6?

MR. JACKSON: Do we have a 5? I missed that.

MR. GERGELY: I thought 5 was the '287.

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Did I not give you a copy?

MR. JACKSON: No. I thought you said 4.

(Deposition Exhibit 6 was marked.)

Q. (BY MR. GERGELY) So, sir, for example, on Haggquist 5, drawing your attention to column 4, lines 22 through 27, there's a number of active particles listed there.

A. Yes.

Q. And do you see zeolites?

A. Yes.

Q. So you provided zeolites as an example of an active particle?

A. Yes.

Q. And those are naturally occurring?

A. Some can be. The zeolite family is a rather large and broad definition.

Q. Okay.

A. Some can be synthesized.

Q. So activated carbon, you said, was synthesized, correct?

A. There is a process and step of making activated carbon.

Q. Okay. And how about aluminum oxide, activated aluminum? Is that naturally occurring or is that synthesized as well?

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A. Could be both. Aluminum oxide could be in the form of zeolite. And so I'd draw your attention to the very beginning of the sentence. "Active particles may include, but are not limited to, these materials," and then we would have to go to how I talk about active particles within the document.

Q. Okay. And then silica gel, is that naturally occurring or is that synthesized?

A. Silica gel is silica oxide. Silica gel could be both, but depends on the person you ask, the material that you're looking at.

Q. How about soda ash? Is that naturally occurring or is that synthesized or both?

A. It could be both.

Q. Is the same true with respect to aluminum trihydrate?

A. Do not know.

Q. How about baking soda? Is that natural or is that synthesized?

A. Could be both.

Q. And how about cinoxate?

A. That's synthesized.

Q. And then cinoxate, is that a liquid?

A. No. It could form in crystals.

Q. It's available in liquid form, though,

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correct?

MR. JACKSON: Objection; form, foundation.

A. I didn't -- to go into the details of every single material and their specific -- how they're delivered by every maker, I didn't prepare for that, and it's not listed in my declaration.

Q. (BY MR. GERGELY) How about zinc oxide? Is that natural or is that engineered?

A. Could be both. Zeolites have zinc oxide.

Q. How about titanium dioxide? Is that natural or is that synthesized?

A. It could be both. Titanium dioxide could be in a zeolite form.

Q. And molecular filter type materials, are those engineered or synthesized?

A. Could be both.

Q. And is that also true with respect to other suitable materials?

A. Yes.

Q. Now, when you say that an active particle adsorbs or traps substances, how does it adsorb or trap substances?

A. So I'll go back to declaration of

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Haggquist, Haggquist 2. So on 8, "A POSITA understands that 'active particles' are 'active' because they have the ability to adsorb or trap substances at their surface. This surface-active property is a result of the surface area of the active particles. The large surface area is provided by numerous pores on the surface of the active particle, and it is these pores that provide an active particle with the ability to adsorb."

So Figure 1 of 359 application, which is Exhibit 6, we go to this figure here.

Q. Okay.

A. That's my depiction of the porosity. Pores could be larger. It's just for illustration purposes.

Q. Okay.

A. So the question?

Q. Yes, how did the -- how does the material actually get trapped or adsorbed into those pores? How --

A. Do you have a specific type of material?

Q. Well, let's start with, say, just water, water vapor.

A. Water vapor.

Q. Or water.

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A. Well, what form?

Q. Why don't we say water vapor.

A. Water vapor. Okay. And then, what's the material?

Q. Activated carbon.

A. Okay. Activated carbon. So your question is?

Q. Yes. How does the material get adsorbed or trapped into the pores?

A. Diffusion of the water, a vapor molecule, to the adsorbent and the interaction between the water vapor molecule and the adsorbate.

Q. So there's an adsorbent water interaction and there's also water-water interaction?

A. Your question was referred [sic] to how does a water vapor molecule interact with an activated carbon?

Q. Correct.

A. And I answered that question.

Q. Yes. How does it?

A. Do you have a new question?

Q. How does it interact? Is there some type of binding going on? What causes it to get trapped?

MR. JACKSON: Object to form.

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A. I believe I did not talk about that in my declarations.

Q. (BY MR. GERGELY) Okay. In Paragraph 14 of Haggquist 2, you state, "I have been informed that VF asserts that solid carbon particles such as 'Black Pearls 2000 Carbon Black' are active particles. I disagree." Do you see that?

A. Yes.

Q. And then you say, "A POSITA understands that particulate carbon, often referred to as 'carbon soot' or 'carbon black,' is not surface-active since it has not been processed to create the large number of pores necessary for surface-active chemistry." Do you see that?

A. Correct.

Q. Okay. But carbon black -- I mean, Black Pearls 2000 is a porous material, correct?

MR. JACKSON: Objection; form, foundation.

A. I don't have a comment on that.

Q. (BY MR. GERGELY) You don't know one way or the other?

A. I would say I was informed that VF asserts that a solid carbon particle, such as Black Pearls 2000 Carbon Black, are active particles. I

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disagree.
Q. But you say it doesn't have the large number of pores. And I'm asking you, do you know one way or the other whether carbon black, specifically Black pearl 2000, is a porous material?
A. I didn't make a statement to that effect in my declaration. I haven't prepared that information that you would like. I don't want to speculate.
Q. Well, but you -- in a certain respect, you did speculate here because you came to the conclusion that it does not have a large number of pores, correct?
A. Correct.
Q. Okay. And based on what? You come to that conclusion. And I ask you based on what.
A. There's a reason there's a word called activated carbon, and there's a reason why there's material called carbon black. So they are different, and a large difference is the amount of porosity.
Q. And when you say "amount of porosity," how would you measure that? Would you measure that by pore volume?
MR. JACKSON: Objection; form and foundation, leading.

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A. I would say in my declaration I did not discuss measurements of porosity, and it's out of the scope; and I don't want to speculate.
Q. (BY MR. GERGELY) Well, it is within the scope, and you'll have to answer my questions subject to your counsel's objections. Do you know what the pore volume is of activated carbon?
A. Which one?
Q. Can you give me a range?
MR. JACKSON: Objection, form.
A. I don't want to speculate.
Q. (BY MR. GERGELY) Do you know the pore volume of any activated carbon?
A. Yes.
Q. Which one?
A. I know there are certain activated carbons that have a pore volume of a thousand meters squared per gram.
Q. All right. I just want to make sure we're talking about the same thing because when you're talking about -- what you just said was surface area, correct?
A. Correct.
Q. Okay. So do you equate in your mind surface area with pore volume?

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MR. JACKSON: Objection, form.
Q. (BY MR. GERGELY) I was asking you about pore volume, and you threw out a metric of a thousand meters squared per gram.
A. That's pore volume.
Q. That's pore volume.
A. What units would you like?
Q. Well, I had understood meters squared per gram to be a measurement of surface volume whereas --
A. Ahh. So you want volume?
Q. Correct. Because this is not expressed in three dimensions.
A. Correct.
Q. So if you know. Do you know?
MR. JACKSON: Object to form, scope.
A. Yeah, it's not in my declaration. I haven't prepared for that, so I don't want to speculate.
Q. (BY MR. GERGELY) Well, I'm not asking you to speculate. Do you know the pore volume of any activated carbon?
A. Off the top of my head, no.
Q. Do you know any ranges?
A. Off the top of my head, no.

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Q. Do you know what the surface area of Black pearl 2000 is?
A. Not off the top of my head, no.
Q. Would it surprise you if the surface area of Black pearl 2000 was greater than a thousand meters squared per gram?
MR. JACKSON: Objection; form, foundation, leading.
A. No comment.
Q. (BY MR. GERGELY) Have you ever -- have you undertaken to examine what the surface area of Black pearl 2000 is?
MR. JACKSON: Objection; form, foundation, leading, scope.
A. That particular one, my declaration doesn't discuss it. Did not prepare for that. It's out of the -- don't want to speculate.
(Deposition Exhibit 7 was marked.)
MR. JACKSON: For the record, I'll object to the introduction of this exhibit. To my knowledge, it is not cited or referenced by Dr. Haggquist or the record of this proceeding. It is not identified as an exhibit to Dr. Haggquist's deposition or notice.
Q. (BY MR. GERGELY) Dr. Haggquist, do you

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recognize Haggquist Exhibit 7?

A. It looks like an application to a Chinese -- it may be a declaration. I recognize my C.V. on the back -- or in the middle.

Q. And do you recognize your signature on Page 3?

A. Yes.

Q. Sir, I'll represent to you that this declaration was found in the file history of the '287 prosecution history. I'd like to draw your attention to Paragraph 6. And you state in Paragraph 6, "An active particle is an organic or inorganic material that has the capacity to adsorb or trap substances, including substances that may be a liquid, and/or gas. It is the complex surface area" -- excuse me. "It is the complex surface of the particles, sometimes on the order of 1000 meters squared per gram in surface area, that give the active particles their capacity to adsorb." Do you see that?

A. Yes.

Q. And is that an accurate statement?

MR. JACKSON: Objection, scope.

A. I would like to go to Declaration 1, which is Haggquist 2, Paragraph 8. "Understands that 'active particles' are 'active' because they have the

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ability to adsorb or trap substances at their surface. This surface-active property is the result of the large surface area of the active particles."

This document you introduced, I have not reviewed and I am not prepared to comment on.

Q. Sir, I'm asking you to comment on it. It's from the file history of the '287 patent. And I'm asking you, what I read to you in the first line of Paragraph 6, is that an accurate statement -- actually, the first two sentences?

MR. JACKSON: Object to scope.

A. In my declaration, I did not make a statement on the prosecution history of Patent '287. I have not prepared or looked at the prosecution history of '287.

Q. (BY MR. GERGELY) Well, sir, I'm asking you about this particular statement. I'm not asking you to comment on the prosecution history. I'm asking you, is it accurate that an active particle is either organic or inorganic material that has the capacity to adsorb or trap substances, including substances that may be a liquid and/or gas?

MR. JACKSON: Objection, scope.

A. And I go back to Haggquist 2, Declaration 1, Paragraph 8 --

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Q. (BY MR. GERGELY) Sir, I'm asking you whether this statement in Paragraph 6 is accurate.

MR. JACKSON: Same objection.

A. I would say it's an accurate statement.

Q. (BY MR. GERGELY) Okay. Likewise, is it accurate to say, "It is the complex surface of the particles, sometimes on the order of 1000 meters squared per gram in surface area, that give the active particles their capacity to adsorb"? Do you see that?

A. Yes.

Q. Is that accurate?

MR. JACKSON: Same objection.

A. I would say yes.

Q. (BY MR. GERGELY) And, sir, going down to Paragraph 7, you state, "The term 'active particle' is used throughout the industry to refer to all or any type of active particles comprising an organic or inorganic material which has the capacity to adsorb or trap substances." Do you see that?

A. Yes.

Q. And is that an accurate statement?

MR. JACKSON: Object to form.

A. Again, I haven't reviewed this document in total. You're asking me to extract and make comments on individual statements. I signed this

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document at the time, and I declared that all the above is true and correct. So at the time, I reviewed it. I have not reviewed it at this time. I feel it's incomplete if I continue down this line of questioning on a document I did not have a chance to review.

Q. Well, at the time, you swore under oath under penalties of perjury that that was an accurate statement, correct?

A. And I'm saying at that time and in the review, I'm saying that I agree that I declare the above to be true and correct, but what I'm saying, you're asking me specific questions on specific lines on something I haven't reviewed, and I don't want to give an incomplete or incorrect answer because I haven't reviewed the document and what this was in relation to.

Q. Sir, you also stated, correct, under penalties of perjury, "As all organic or inorganic active particle materials operate similarly by trapping substances in an active particle surface, it is known in the art that an active particle used in an example process or mixture may be replaced by any other active particle to obtain a substantially similar result." Do you see that?

A. Yes, I see what paragraph you're talking

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to.

Q. Okay. And so you stated that under penalties of perjury?

A. I signed this document, yes.

Q. Under penalty of perjury, correct?

A. Correct.

(Deposition Exhibit 8 was marked.)

MR. JACKSON: For the record, I'll object to this exhibit. Dr. Haggquist does not offer -- does not cite nor refer to testimony on this particular document, and it therefore is outside the proper scope of the examination.

MR. GERGELY: Your objections are noted for the record, and I'll note that Dr. Haggquist purports to hold forth on the properties of Black pearl 2000 in his declaration, and this is fair cross-examination.

MR. JACKSON: I'll disagree.

Q. (BY MR. GERGELY) Sir, I've handed you what's been marked as Haggquist 8. Have you reviewed this document in connection with this proceeding? It's of record as VF 1028.

A. I have not reviewed this publication.

Q. Have you reviewed any of the materials that VF submitted with its petition?

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A. I don't know the materials you're referring to.

Q. Any of the documents, for example, the publications and scientific materials.

A. In my declaration, it states what I've talked about, references I reviewed, the '287 patent, and the '359 application.

Q. Okay. Sir, drawing your attention to Page 3 of 6 of the document, do you see the statement that says, "From the viewpoint of tailoring surface properties, BP powder in possession of high surface area and capability to adsorb water offers a better contact with electrolyte ionomer than does VC"? Do you see that?

A. No, I don't. Where is that statement?

Q. On Page 3 of 6 of the document.

A. I'm on Page 3 of 6.

Q. Under Figure 2. Do you see the statement, quote, "From the viewpoint of tailoring surface properties, BP powder in possession of high surface area and capability to adsorb water offers a better contact with electrolyte ionomer than does VC"? Do you see that?

A. I see that.

Q. And, sir, turning your attention to Page 2 of 6 under Paragraph 2.1, do you see that the author defines BP as Black pearl 2000?

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A. Where?

Q. In Paragraph 2.1, do you see --

A. 2.1.

Q. -- do you see where the author defines BP as Black pearl 2000?

A. Yes.

Q. Sir, this author describes Black pearl 2000 as having a high surface area and capability to adsorb water, correct?

MR. JACKSON: Objection; form, scope, foundation, leading.

A. I understand. I haven't reviewed this document. If we're going to pick particular sentences, I'd be happy to say I see the sentence, but I am not going to make comment on the sentence without reviewing the documents and its references. I --

Q. (BY MR. GERGELY) Sir -- please finish. I didn't mean to interrupt.

A. So as I was saying, I have not reviewed this document nor the references in the document, and to answer any questions -- if there's a specific question you want me to answer based on this document, it's going to be very difficult for me to address.

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And I see that Black pearl 2000 is called BP with a surface area of 1,475 meters squared per gram and a particle size of 15 nanometers. No, I don't want to get into specifics or get into it, but there's a lot of information. Any technical paper has a lot of references, and I don't want to be drawn out of context of how to answer this. So this would be very difficult for me to comment anything technically on this.

Q. Are you aware of any scientific reference published at any time available anywhere in the world which says that Black pearl 2000 does not adsorb water?

MR. JACKSON: Objection; form, foundation, scope.

A. I don't know how to answer that question. That's . . .

Q. (BY MR. GERGELY) Same question with respect to surface area. Are you aware of any publication published at any time that says that Black pearl 2000 has a relatively low surface area?

MR. JACKSON: Objection; form, foundation, scope, leading.

A. I have not searched the entire world literature on Black pearl.

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Q. (BY MR. GERGELY) Are you aware of any publication published at any time anywhere in the world that says that Black pearl 2000 has a low pore volume?

MR. JACKSON: Same objections.

A. Again, I have not reviewed all the literature.

Q. (BY MR. GERGELY) And, sir, you will acknowledge in Haggquist 8 the author reported a surface area for Black pearl 2000 of 1475 meters squared per gram. In fact, you called that out in one of your answers, correct?

MR. JACKSON: Same objections.

A. Correct.

Q. (BY MR. GERGELY) And that's higher than the 1000 meters squared per gram that you mentioned in your earlier testimony --

MR. JACKSON: Same objections.

Q. -- with respect to active particles?

MR. JACKSON: I'm sorry. I didn't mean to talk over you. Same objections.

A. I would say that surface area and particle size go hand in hand, comparison of different particle size and surface areas.

MR. GERGELY: This is Haggquist 9.

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(Deposition Exhibit 9 was marked.)

MR. JACKSON: For the record, our objection is I don't believe this document is referenced anywhere in this proceeding. It's not referenced or cited by Dr. Haggquist in his testimony. So it is outside the scope of cross-examination. I'm also not sure what this document is, whether it's authentic, reliable.

Q. (BY MR. GERGELY) Dr. Haggquist, I've handed you what's been marked as Haggquist 9. Do you see this document?

A. Yes.

Q. I draw your attention to Paragraph 3.1, which is on Page 4911. Do you see that?

A. I have not reviewed this document and have not prepared. Any answers would be incomplete, if not -- so Paragraph? Which paragraph?

Q. Paragraph 3.1.

A. 3.1. Section 3.1?

Q. Correct. And do you see where the author states, "Black Pearls 2000 reveals smaller particle size and larger pore volume as compared to Acetylene Black for which" --

A. You're referring to Table 2.

Q. You can refer to Table 2.

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A. I see that they list acetylene black, surface area of 62 meters squared per gram and a particle size of 42 nanometers, and I see that Black Pearls 2000, surface area of 1,501.8 meters squared per gram with a particle size of 15 nanograms.

Q. Which is small, correct?

MR. JACKSON: Objection; form, scope, foundation, leading.

A. How do you define "small"?

Q. (BY MR. GERGELY) Well, in your voice, you put some emphasize on particle size. So I'm asking you to follow up. Why did you emphasize particle size?

MR. JACKSON: Same objections.

A. When you look at surface area, you have to look at particle size.

Q. (BY MR. GERGELY) Okay.

A. Particle size and surface area are tied together.

Q. Okay. And then over to the last column, there's a reference of pore volume of 2.67 centimeters cubed --

A. Cubic centimeters.

Q. -- cubic centimeters per gram. Do you see that?

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A. I see that, yes.

Q. And I was asking you earlier, are you aware of the pore volume of activated carbon?

MR. JACKSON: Object to scope.

A. Yes.

Q. (BY MR. GERGELY) What is it?

A. You asked the question.

Q. Yes. Do you know what it is?

MR. JACKSON: Objection, scope.

A. Off the top of my head, it's not in my declaration. I haven't made a comment based on pore volume of activated carbon. I did not prepare. I don't want to give an incomplete or infactual answer.

Q. (BY MR. GERGELY) Okay. Do you know the pore volume of any activated carbons?

MR. JACKSON: Objection; form, scope.

A. Off the top of my head, you want me to quote a specific number?

Q. (BY MR. GERGELY) Do you know? Do you know?

A. Off the top of my head, no.

Q. But you'll acknowledge this author reports that Black Pearls 2000 is a porous material, correct?

MR. JACKSON: Objection; form, scope,

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leading.
A. I haven't read the whole document.
Q. (BY MR. GERGELY) Okay. Well, if Black Pearls 2000 has a pore volume, by definition it's a porous material, correct?
MR. JACKSON: Objection; form, foundation, scope.
A. Not necessarily.
Q. (BY MR. GERGELY) Do you know what pore volume is?
A. Yes.
Q. What is it?
A. It's a volume that's within a material.
Q. It's the amount of substance that could be held within a particle, correct?
MR. JACKSON: Objection; form, leading.
A. I wouldn't define it that way, no.
Q. (BY MR. GERGELY) How would you define it?
A. Again, in my declaration, I don't go into defining what a pore volume is.
Q. Well, in the '359 application, you had a drawing on the front cover which showed some pores, some cracks in the surface, correct?
A. Correct.

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Q. What would the pore volume be in this case?
MR. JACKSON: Objection, form.
A. I don't want to speculate.
Q. (BY MR. GERGELY) How would you measure it?
A. There's a variety of different methods. In my declaration, I didn't talk about methodology of measuring pore volume.
Q. Is it the actual -- the actual 3D dimension of the pore, the size of that pore? Is that the pore volume?
A. Again, I didn't -- in my declaration, I didn't go through methodologies of measuring pore volume.
Q. Well, for example, in this room, if we were to open the window, would the pore volume of the room be essentially length times width times height --
MR. JACKSON: Objection; form, foundation.
Q. -- of the room, going back to your building analogy?
A. You could measure the volume that way.
Q. (BY MR. GERGELY) And are you aware one way or the other whether activated carbon has a pore volume greater or less than 2.67 cubic centimeters per gram?
MR. JACKSON: Objection to the form, foundation, scope.
A. There's a wide range of activated carbons. In my declaration, I don't talk about pore volume. I didn't prepare to answer those questions. I don't want to speculate.
Q. (BY MR. GERGELY) Are you aware of any?
MR. JACKSON: Same objections.
A. I really don't want to speculate.
Q. (BY MR. GERGELY) I'm not asking you to speculate.
MR. JACKSON: Same objections.
Q. (BY MR. GERGELY) Are you aware of any? Are you aware of any ranges of activated pore volume?
MR. JACKSON: Same objections.
A. Off the top of my head, I don't want to throw a range out. I don't recall a number.
Q. (BY MR. GERGELY) Well, I'm asking you. What's your best recollection?
MR. JACKSON: Same objections.
Q. (BY MR. GERGELY) I'm asking you just for what your best recollection is.
MR. JACKSON: Same objections.

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A. I understand.
Q. (BY MR. GERGELY) I'm sure, given you're a POSITA, you've seen references in papers and data sheets and so forth of pore volume for activated carbon, and I'm asking you what's your best recollection.
MR. JACKSON: Same objections.
A. At this point in time, I cannot recall.
Q. (BY MR. GERGELY) Okay.
THE DEPONENT: I'd like to take a bathroom break, if that's possible.
MR. GERGELY: Let's do it. Take 15?
MR. JACKSON: Sure.
(Recess taken, 10:03 a.m. to 10:22 a.m.)
Q. (BY MR. GERGELY) Sir, going back to Haggquist 3, which is the second declaration of yours.
A. Yes.
Q. Drawing your attention to Paragraph 11, where you're talking about your invention, do you see that?
A. Yes.
Q. Okay. And you state at the end of that paragraph, "There was a balancing act between the ratio of the thicknesses of the print layer and the underlying base material." Do you see that?

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A. "There was a balancing act between the ratio of the thicknesses of the print layer and the underlying base material," yes.

Q. Now, why did you choose the word "print layer"?

A. So I'd like to read the entire Paragraph 11.

Q. Yes.

A. Which is "To overcome this fatal flaw" -- now, we need to understand what the fatal flaw is. So we need to go back to Number 9, which, "Starting in 2009, I started on reinventing waterproof-breathable fabrics. My goal was to improve the functionality of waterproof-breathable membranes. A person skilled in the art at the time recognized that as membrane thickness increases, the diffusion of water vapor is reduced." This is the fatal flaw we're talking about.

Q. And what do you mean by "diffusion"? What does that mean?

A. So diffusion is the movement of water vapor through space.

Q. Okay. Go on. I didn't mean to interrupt.

A. "If I was to add more thickness, say, a second thickness, I had to overcome this negative

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impact," and this negative impact is the addition of thickness, which is stated above. "I wanted to add active particles to a membrane to change the diffusion equation to effectively build up water vapor concentration on the first surface of the membrane, causing more effective water vapor diffusion."

To now bring it back down to the word of the question, "There was a balancing act between the ratio of the thicknesses of the print layer" -- the second thickness, it could be called -- "and the underlying base material," the first thickness."

Q. And then why did you choose the words "print layer," back to my question?

A. My background -- I worked at Lexmark International, which is a printer company. Print is one methodology of adding a second layer. So I was defining a method that we utilized to make the FlashDry product, which we actually printed onto a polyurethane material.

Q. Ahh. So FlashDrys, I had understood you were talking about your intention. So the '287 patent, do any of the examples in the '287 patent rely on a print layer?

A. In the '287 patent -- let me find that. Haggquist Number 5 exhibit. If you go to column 9 --

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I'm not sure -- I think that will reference the page, right? And if you go to line 14, "Membranes were also produced by drawing down the mixture on release paper. These membranes were cured and dried in an oven and then removed the release paper, yielding a self-supporting membrane. This membrane was one mil thick. The activated carbon was protected with Surfynol 485. The activated carbon was subjected to an aqueous slurry including water and Surfynol. This slurry was added to the polyurethane solution, the viscosity of the slurry or mixture of polyurethane and protected carbon was adjusted by adding more water. The carbon was Asbury5564 powdered coconut activated carbon. A cross- linking agent was used to increase the molecular weight of the polyurethane, thereby better enabling the membrane to adhere to the substrate. The mixtures was cast." The word "cast" there is a printing type of methodology.

Q. I see. So how is it cast?

A. It's cast using a 1 mil draw down rod.

Q. So, I mean, what does it look like visually? If I were to look at this from the top, would it actually look like --

A. Ink. It looks like ink, and then it looks like an old printing method where you're

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actually printing it down. However, I'm not creating a pattern. I'm creating what I would consider an all black --

Q. I understand.

A. -- if you would go to a laser printer terminology.

Q. So this is sort of a uniform layer of black material?

A. Printed onto the base material.

Q. Okay.

A. The base material being a cured polyurethane membrane.

Q. Oh, well, yeah, I guess I don't follow you. I had understood from this example that the carbon was mixed into the slurry and then the 1 mil layer was created?

A. No, there was two layers, two thicknesses. The issue that I was faced was the industry was used to specific terms of using the word "layer." So I tried to move in a different direction and tried to use terms such as "thicknesses." So the first thickness was the cured base layer, completely 1 mil. It was 1 mil thick. The second layer, the second thickness was then cast on top of that.

Q. Also 1 mil thick?

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A. No, no. It was actually .4 mil thick, which ends up being a 2.5 ratio.

Q. Okay. But you didn't say that in the patent, correct?

MR. JACKSON: Object to form.

Q. (BY MR. GERGELY) Is that right?

A. Oh, I'm sorry.

Q. I mean, I don't see any reference to .4 in the patent specification.

A. I don't -- I'm not a lawyer. I'm not a patent attorney. I don't want to speculate exactly, but specific words are not directed towards saying the 2.5, but if you do the math.

Q. Well, I'm just asking you to confirm. You'd mentioned this .4 thickness.

A. Uh-huh.

Q. The .4 thickness is not referenced in the disclosure, is it?

A. Not specific, not directly.

Q. Okay. So back to your -- back to your declaration, Haggquist 3, in Paragraph 12, you say, "The solution I devised is outlined in the '287 Patent and is referenced to as the 2.5L technology." Do you see that?

A. Yes.

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Q. Now, you didn't coin that term, correct, 2.5L? That was existing in the industry at the time, correct?

A. Existing --

MR. JACKSON: Form. Proceed.

A. You have to go back to 2005, 2006 time frame, of which I haven't prepared an analysis of that time frame. Today, 2.5 is considered a type. It comes from products called two-layer and three-layer, and so there was a 2L and a 3L in the marketplace. Specifically when the 2.5-layer -- the date, I don't want to speculate as to the date.

Q. (BY MR. GERGELY) Well, sir, I'm asking a different question. You didn't coin that term? That was -- that didn't originate with you, correct?

MR. JACKSON: Objection; form, scope.

A. You know, I didn't prepare to -- my declaration, I don't get into if I invented the term or not. So I am not completely sure. The impact of my research on the industry was dramatic, but I did not go after certain terminology. So the question that you're asking, I'm having a hard time answering without looking at the timing of the whole.

Q. (BY MR. GERGELY) Well, I mean, for example, Apple coined the term "iPhone." Did you coin the term "2.5L" or was that already existing in the industry?

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A. What I do know, what was part of the industry was two-layer and three-layer. So what I'm trying to say, at some point in time 2.5-layer came out.

Q. Well, HyVent by North Face was a 2.5?

A. Yes, they state that, yes.

Q. So that pre-existed your patent, correct?

MR. JACKSON: Objection; form, scope, foundation.

A. I don't want -- you know, HyVent, you know -- in my declaration, Haggquist Number 3, if we -- let's see. It's hard for me to speculate. I don't see in my declaration specifically when a 2.5-layer technology was accepted by the industry. I am not stating that I did or didn't institute the term. It's something that came out because it became hard to understand how are you going to describe this type of product.

Q. (BY MR. GERGELY) So you'll acknowledge that there's a possibility that there were other 2.5 products available before you invented, correct?

A. Oh, yes.

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MR. JACKSON: Objection; form, scope.

Q. (BY MR. GERGELY) All right. So --

A. But I would say when they started coining the term, did they coin the term because of our impact or not, and I don't have an answer to that question.

Q. (BY MR. GERGELY) And in Paragraph 14, you state, "After the application for the '287 Patent was filed and product practicing claim 27 was made" --

A. This is Haggquist 3?

Q. Yes.

A. Haggquist 3, 14?

Q. Yes.

A. All right. I'd just like to get there as you're reading.

Q. Well, you state in Paragraph 13 that "it is the ratio of the thickness of the active-particle print layer to the base layer that provides the key breakthrough in the area of waterproof water-vapor-permeable membranes." Do you see that?

A. Yes, and 13 reads, "The novel features of the 2 1/2 layer technology," a term accepted by the industry, "are presented in claim 27 of the '287 Patent, and include a layer of active particles printed or laminated (a 'second thickness')," in

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parentheses, "on top of a cured base material (the 'first thickness'), with the ratio of the first thickness to the second thickness at 2.5 to 10. It is the ratio of the thickness of the active print layer to the base layer that provides the key breakthrough in the area of waterproof-breathable impermeable membranes. The ratio I invented both increased water vapor transport and broke the first rule in waterproof membranes - by increasing thickness."

Q. Now, sir, in the specification, it never uses the word "ratio," does it?

A. Which specification are you referring to?

Q. The '287 specification.

A. '287. In the '287, in the claims, claim 27, "A water-proof composition comprising a liquid-impermeable breathable cured base material comprising a first thickness; a plurality of active particles in contact with the liquid-impermeable breathable cure based material, the plurality of active particles comprising a second thickness; and wherein, the first thickness comprises a thickness at least 2.5 times larger than the second thickness but less than an order of magnitude" --

Q. Sir, I was asking --

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A. -- "an order of magnitude" -- I understood you -- "larger than the second thickness, the active particles improve the moisture vapor transport capacity and composition" -- "of the composition, and a moisture vapor transmission rate of the water-proof composition comprises from 600 grams per meter squared per day to about 11,000 grams per meter squared per day." This is stated in the claims section, and the 2.5 times larger is a ratio statement.

Your question of in the specification do I specifically use the word "ratio"?

Q. Correct.

A. From my recollection, I did not see the word "ratio" used within the specification.

Q. So, sir, your contention is that in this example, rather than it being a one layer with activated carbon mixed into it, there was an existing base layer of cured polyurethane, and then you made a second layer of activated carbon plus polyurethane and laminated that on top?

A. I wouldn't use the word "lamination." I would use the word "print" in that case.

Q. So your contention is that there was a pre-existing cured layer of polyurethane --

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A. Yes.

Q. -- and then there was a second layer of carbon and polyurethane printed on top?

A. Yes. I would also use the term -- let's see -- "in contact." I would also use that word for that specific example.

Q. Sir, if the criticality of the ratio is so important, why didn't you measure the two thicknesses --

MR. JACKSON: Objection, form and foundation.

Q. -- and disclose them? If the criticality of the ratio was so important with respect to the first and second thicknesses, why didn't you measure them and disclose them?

MR. JACKSON: Objection; form, foundation, leading.

A. I'm not a patent attorney or have an in-depth knowledge of patent law, but we did measure the thicknesses, and if I can bring an example, when we were developing samples for production in our production line, we would cure a base membrane. We would then cut circles out of that membrane, and we would use a micron gauge to measure the thickness of the first thickness.

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Then we would print the technology onto that first thickness, measuring the combination of the first thickness plus the second thickness. The difference between the sum of the first thickness and the second thickness minus the original first thickness gives you the second thickness.

Q. (BY MR. GERGELY) Right. And you're discussing about production years later.

A. Correct.

Q. I'm asking at the time of the invention. If this ratio is the critical breakthrough, as you've stated in your declaration, why then didn't you measure those thicknesses and then disclose them to the world?

MR. JACKSON: Objection; form, foundation, leading.

A. Again, I'm not a patent attorney, and I am not an expert in patent law. However, if you look at the original provisional date filed on May 9th, 2006 and then a publication on -- excuse me -- that provisional was then filed on May 9th, 2007. So I -- we did measure thickness. Within that example that I showed, we talk about the thickness of that base-cured layer, and indirectly, we talk about the thickness of the solution that's added to that material.

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Q. (BY MR. GERGELY) What's a 1 mil draw down rod?

A. It's a rod that produces 1 mil thick of material. You have to look at the solids ratio, and that represents how much solids is going to remain behind. So thus, if you use a 40 percent solids solution and you draw with a 1 mil rod, you end up with .4 mil of a thickness.

Q. Say that again.

A. A 1 mil rod is a rod that produces a 1 mil thick layer of solvent plus solids. The resulting thickness after casting and curing is the percentage of solids. So if you start with 40 percent solids, you end up with 40 percent of that thickness.

Q. And what are the solids?

A. The solids are the active particles and the polymer. What?

Q. 40 percent of what?

A. 40 percent of the solution.

Q. The polymer is what, the polyurethane?

A. Yes. Sorry.

Q. Well, drawing your attention to Figure 3, I see polyurethane 80 grams, carbon 80 grams, and a surfactant of 40 grams. So where is the 40 percent? I don't understand.

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A. The 40 percent is the solution. That information isn't provided in this table.

Q. Okay. Nor is it provided in column 9, correct?

A. Correct.

Q. All right.

A. In column 9, it states -- let me draw your attention to "activated carbon was protected with Surfynol 485. The activated carbon was subjected to aqueous slurry." Aqueous slurry refers to water as a solvent, "which," in the next word, "including water and Surfynol. This slurry was added to the polyurethane solution." So a solution is solvent plus materials.

Q. Sir, going back to your declaration -- this is the second declaration of Haggquist, Page 3, and you state in Paragraph 14, "After the application for the '287 Patent was filed and product practicing claim 27 was made, Cocona shared the novel features of the '287 Patent with TNF." Do you see that?

A. Correct.

Q. And you say, "We showed TNF the first functional print on a membrane that overcomes thickness issues and increases the performance of the membrane." Do you see that?

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A. Correct.

Q. And then 15, you say, "I developed demonstrations and test methods to show the effect of these novel features of claim 27 of the '287 Patent to TNF, including but not limited to the first thickness, second thickness, and active particles," correct? Do you see that?

A. Yes. I'd like to complete Paragraph 14.

Q. Sure.

A. "The resultant 2 1/2-layer provided a dry touch, a more comfortable microclimate, higher effective moisture vapor transport, and a durable 2 1/2-layer laminate."

Q. And was claim 27 issued at the time you made this disclosure to The North Face?

A. So the patent of '287 was issued on February 3rd, 2015.

Q. If -- and when did these -- when was this disclosure made to The North Face? Do you recall what year?

A. The patent -- the provisional patent application was May 9th, 2006. The North Face -- and if I read from Paragraph 16, "TNF loved the product, and agreed to license Cocona's technology, which matured into the '287 Patent. In fact, The North Face

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was enamored enough with Cocona's technology that the '287" -- excuse me, "that TNF launched the FlashDry brand in 2011."

So prior to 2011, The North Face was shown product. We had multiple products that we showed them, multiple technologies.

Q. So do you recall when it was prior to 2011?

A. Somewhere between -- as I state, I developed -- in 14, "After the application for the 2008 [sic] Patent was filed and product practicing claim 27 was made, Cocona shared the novel features of '287 Patent with TNF." So this represents the lower limit, which is the file date of May 2009, 2006. The upper date is FlashDry launched the brand -- excuse me, TNF launched the FlashDry brand in 2011. So between those two times.

Q. But claim 27 wasn't in existence at the time this disclosure was made, correct?

A. The physical claim wasn't in existence, but the technology was.

Q. And when you filed the '287 patent, it said nothing in terms of the claims about ratio of thicknesses, correct?

MR. JACKSON: Objection; form,

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foundation, leading.
A. I do not believe that's in my declaration anywhere. The review of the '287 patent is what I reviewed. I did not review the applications. So I'm not prepared to answer that question, and I don't want to speculate.
MR. GERGELY: What are we up to?
THE COURT REPORTER: 10.
(Deposition Exhibit 10 was marked.)
MR. JACKSON: For the record, I'll object to the exhibit as not cited or referenced in Dr. Haggquist's declaration. Therefore, it's outside the proper scope.
Q. (BY MR. GERGELY) Sir, this is a document of record that was submitted with VF's petition. I'll represent to you that this is the original patent application for '287.
I'd like to direct your attention to claim 28, which is on Page 26 of 34.
A. Yes.
Q. Now, sir, I'll represent to you that Claim 28 eventually became claim 27 when the patent issued. Do you see any reference in claim 28 as filed to any thicknesses or any ratio of thicknesses?
MR. JACKSON: Objection; scope,

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foundation, assumes facts not in evidence.
Q. (BY MR. GERGELY) You can answer.
A. So this document, I have not reviewed the document. I'm not prepared to comment on the document. I do not want to speculate. Further, I'm not a patent attorney or I understand patent law to the extent that a patent attorney would, and the conversion of claims is more of a legal question rather than a technical question. I'd be happy to answer technical questions.
Q. Sir, I'll asking you, does claim 28 makes any reference to thicknesses or ratios?
MR. JACKSON: Same objections.
A. Again, I don't want to make -- or speculate as to when and where the ratio claims came in.
Q. (BY MR. GERGELY) Sir, I'm not asking you that.
A. Okay.
Q. I'm just asking you a simple question. Does claim 28 make any reference to any thicknesses or any ratios?
A. As I read claim 28, there is no reference to a ratio.
MR. JACKSON: What exhibit was that,

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Peter?
MR. GERGELY: That was Haggquist 10, which was VF 1010.
Q. (BY MR. GERGELY) Sir, did you assist the attorneys at Neugeboren O'Dowd with the production of the '287 patent?
MR. JACKSON: Objection; form, scope. I'll caution the witness not to reveal any attorney-client communications, but you can answer the question as to whether you participated with counsel.
A. Yes, I participated with counsel.
Q. (BY MR. GERGELY) Were you reviewing the office actions and assisting them in preparing responses to office actions?
MR. JACKSON: Objection; form, scope. You can answer whether you were reviewing documents.
A. I was reviewing documents.
Q. (BY MR. GERGELY) Were you reviewing office actions and assisting counsel with responding to office actions?
MR. JACKSON: Same caution. You can respond if you worked with counsel, corresponded with counsel, but don't provide any details on communications.
MR. GERGELY: No, I'm not asking what he

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made -- well, let me break it into pieces.
Q. (BY MR. GERGELY) Did you review office actions as they came in for the '287 patent?
A. Yes.
Q. And would you assist counsel in some form or fashion with preparing a response to those office actions?
MR. JACKSON: Objection; form, scope. You can answer whether you assisted. It's a yes or no.
A. Yes.
MR. GERGELY: Are we up to 11?
THE COURT REPORTER: Yes.
(Deposition Exhibit 11 was marked.)
MR. JACKSON: I'm sorry, Peter. I'll object for the record that this document is not referenced or cited by Dr. Haggquist. Dr. Haggquist is not offering any testimony regarding prosecution of the patent or any references to the prosecution history of the patent. So it is outside the proper scope. I'm sorry for interrupting, Peter. Please proceed.
Q. (BY MR. GERGELY) Sir, I've marked this document as Haggquist 11. It's entitled Arguments Submitted with the Filing of a Request for Continued

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Examination. It's of record in the case. And I'll ask you, is this a document you assisted counsel in preparing?

MR. JACKSON: Objection, form and scope. You can answer yes or no, if you recall.

A. I do not recall.

MR. GERGELY: Can we take a short break?

MR. JACKSON: Sure.

(Lunch recess taken, 10:59 a.m. to 12:07 p.m.)

Q. (BY MR. GERGELY) Sir, drawing your attention back to Haggquist 5, which is the '287 patent.

A. '287 patent.

Q. Sir, drawing your attention back to Example 1, which is at the bottom of column 8.

A. Yes.

Q. The specification states that "Polyurethane solutions were combined with protected activated carbon." Do you see that?

A. Yes.

Q. And then it says, "The protected activated carbon was suspended in the polyurethane solution and the mixture was applied to a nylon woven fabric." Do you see that?

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A. Yes.

Q. And then it says, "The mixture was dried and cured in an oven." Do you see that?

A. Yes.

Q. And then it says, "Resulting in a membrane coated on a substrate, the membrane having a thickness of one mil." Do you see that?

A. Yes.

Q. Okay. So in that case, what is the mixture? Is it the polyurethane and the activated carbon?

A. Yes.

Q. Okay. And then the membrane coated on a substrate, is the membrane the polyurethane and the activated carbon mixed together?

A. So repeat your question. I want to be exact here.

Q. So it says, "The mixture was dried and cured in an oven."

A. Yes.

Q. I understand the mixture is the polyurethane --

A. Yes.

Q. -- and the activated carbon?

A. Yes.

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Q. And you say, "Where at least a portion of the protective substance was removed" --

A. Correct.

Q. -- "resulting in a membrane coated on a substrate."

A. Correct.

Q. "The membrane having a thickness of one mil." Do you see that?

A. Yes.

Q. So I'm asking you, what is the membrane in that example? Is that the polyurethane and the activated carbon?

A. Yes.

Q. Okay. And then the substrate, that's the nylon that the membrane is deposited on?

A. Yes.

Q. Okay. So over to the next column, in column 9, it's stated -- you drew my attention to this paragraph before. You said, "Membranes were also produced" --

A. Which line?

Q. Oh, lines 14 through 18.

A. Yes.

Q. So it's stated here, "Membranes were also produced by drawing down the mixture on release

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paper." What's the mixture?

A. It's polyurethane.

Q. What is it mixed with?

A. Water.

Q. You're referring to "the mixture."

A. Water, possibly a cross-linking agent, but it's polymer and water is the mixture.

Q. Okay. Could that paragraph be referring to the more detailed paragraphs that follow? Like, for example, could this paragraph, "Membranes were also produced by drawing down a mixture on release paper" be --

A. "These membranes were cured and dried in an oven and then removed from the release paper yielding a self supporting membrane." So now we have thickness 1.

Q. Right. And I guess what I'm asking you, is it possible that that paragraph refers to the more detailed process that's disclosed in the following two paragraphs?

A. So which two paragraphs?

Q. The one that starts on line 19 and then the one that starts on --

A. Yes.

Q. -- line 28.

A. Yes.
Q. So that is a general description, and then the detailed description follows in the two paragraphs that follow?
A. No. This is a continuation.
Q. Okay. So, sir, do you -- so when you say "the mixture," you're not identifying what the mixture is; is that right?
A. The mixture is the polyurethane and water.
Q. Okay. But that doesn't say that in this patent, correct?
MR. JACKSON: Object to form.
(The deponent perused the exhibit.)
A. So repeat the question, please.
Q. (BY MR. GERGELY) You said the mixture is polyurethane and water.
A. Right.
Q. It doesn't say that in the specification, correct? It just says "the mixture"?
A. In that paragraph, it doesn't say that. It says the mixture was drawn down and formed a self-supporting membrane.
Q. Drawn down how?
A. On a release paper using a draw down

rod.
Q. Was it using a 1 mil draw down rod?
A. No.
Q. What was used?
A. I do not recall what size, but it created a 1 mil membrane thickness.
Q. Do you have any lab notebooks to support that?
MR. JACKSON: Objection; scope, form.
A. That was a long time ago. I can't answer that question with certainty. I'm unsure.
MR. GERGELY: What are we up to?
THE COURT REPORTER: 12.
(Deposition Exhibit 12 was marked.)
MR. GERGELY: First of all, this document is marked highly confidential. So we would agree to protect it under the protective order.
MR. JACKSON: It's AEO. I have to assume it was AEO?
MR. GERGELY: It's up to you. I don't think it's AEO because it's a lab notebook excerpt before the priority book.
MR. JACKSON: Can we provisionally treat it? Because I haven't seen this document.
MR. GERGELY: Okay. Do you want -- do

MR. JACKSON: Would you like to tell your client to come back in?
MR. GERGELY: Oh, yes.
Would you text her or send her an email?
MS. OTT: Yes.
MR. GERGELY: What are we up to? Is it 13?
THE COURT REPORTER: Yes.
(Deposition Exhibit 13 was marked.)
MR. JACKSON: I will object to this exhibit. This is cited in Haggquist -- not discussed in the Haggquist declaration, not identified in his deposition notice.

Q. (BY MR. GERGELY) Sir, is this a response to an office action you assisted in preparing?

MR. JACKSON: Object to scope. Answer yes or no.

A. Yes. I've not reviewed this document. The prosecution history was a long period of time. A lot of information was transferred back and forth. I have not reviewed that information, and I am not prepared to give testimony on any information that is found in these prosecution documents.

(At this time Ms. Lapuma entered the room.)

Q. (BY MR. GERGELY) Sir, drawing your attention to Page 17 of the exhibit -- well, this is of record, this is VF Exhibit 1007, but we've marked it as Haggquist 13. I'd like to draw your attention to Page 17 of that document. Are you with me?

A. Yes. Again, I'll reiterate I'm not going to make any testimony in reference to this document.

Q. Yeah, well, you're under oath, and I'm asking you questions, so you have to answer subject to your counsel's objections.

Sir, did you have input into the statements that are on Page 17?

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MR. JACKSON: Objection to form, scope.
A. Do not recall.
Q. (BY MR. GERGELY) It's stated here, "Applicant has amended independent claims 1, 28, 63 and 68 to include the claim features that the cured base material solution comprises a first thickness and the plurality of active particles comprises a second thickness, with the first thickness being less than an order of magnitude larger than the second thickness." Do you see that?
A. I see that.
Q. And then it states, "Support for these claim amendments may be found at, for example, Paragraph 49, which states that the Example 1 membrane comprises a thickness of about 1 mil, or 25.4 microns," for the first thickness." Do you see that?
A. Yes.
Q. And then it goes on to state, "And Paragraph 50, which states that the activated carbon used in such a membrane comprises Asbury5564 powdered coconut activated carbon." Do you see that?
A. Yes.
Q. So this statement doesn't say anything about having two distinct layers, correct?
MR. JACKSON: Objection, form.

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Q. (BY MR. GERGELY) The activated carbon is used in such a membrane?
MR. JACKSON: Objection to form, foundation, leading.
Q. (BY MR. GERGELY) Is that right?
A. Again, I'm not going to speculate. This document is a rather large document. We're looking at one little section. I haven't reviewed the document. It's not in my declaration. I do not feel prepared to answer this.
Q. (BY MR. GERGELY) Well, let's go to the original application, which we've marked as Haggquist Exhibit 10.
Drawing your attention to Page 20 of 34, specifically Paragraph 49.
A. I don't have a Paragraph 49. Am I in the right?
Q. It's in brackets.
A. Ahh. Yes.
Q. Okay. Do you see where Paragraph 49 says, "Membranes were also produced by drawing down the mixture on release paper. These membranes were cured and dried in an oven and then removed from the release paper yielding a self supporting membrane. This membrane was one mil thick," amount of porosity.

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Do you see that?
A. Yes.
Q. Okay. And do you see how Paragraph 50 then identifies the activated carbon as being Asbury5564?
A. Yes.
Q. So, again, my question to you, drawing your attention back to Haggquist 13, which is the response to the office action, did your counsel state that the activated carbon was used in the membrane that comprises the first thickness?
MR. JACKSON: I'll object to that. Peter, if you can rephrase that. It at least suggests a request for an attorney-client communication. Also object to scope.
MR. GERGELY: No -- if you could just read it back. It didn't ask for communications.
(The last question was read back as follows: "So, again, my question to you, drawing your attention back to Haggquist 13, which is the response to the office action, did your counsel state that the activated carbon was used in the membrane that comprises the first thickness?")
MR. JACKSON: If you mean, Peter, by state in this paper --

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MR. GERGELY: Yes.
MR. JACKSON: -- that's okay.
MR. GERGELY: Yes.
A. Which paper?
Q. (BY MR. GERGELY) Haggquist 13, Page 17, where it's stated --
A. So we used Asbury5564 for many experiments. It was common practice to produce self-supporting membranes of 1 mil thick to perform experimentation. To conclude that the paragraph on Haggquist 13 and the paragraph in Haggquist 10 of line 50 is the exact same samples, I cannot answer that question at this time. It was very common for me to use that particular activated carbon. It was very common for me to make self-supporting membranes. And then I would perform experimentation. It was very common for me to use the ratios of polyurethane weight, activated carbon weight, and Surfynol weight, and I would do so in the same set. So it's very difficult for me to connect one experiment to the other experiment without further investigation and looking at all my notebooks and all the information available.
Q. Well, sir, your attorney specifically referenced Paragraphs 49 and 50. I'm not asking you

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to go beyond that. And did he -- I assume it's a he, Shane Percival. Did he state that the activated carbon is used in the polyurethane membrane which is the first thickness?

A. So --

MR. JACKSON: Let me object to scope. I think it's asked and answered. You're asking about what the document says?

So you can answer as to what the document appears to say.

A. Yeah, I'm not going to comment on a document. I haven't reviewed the entire document, but I can tell you that membranes were made, and the term "membrane," once it's printed, that was consistent with calling it a membrane again. So a membrane could be of one-layer thickness, and then a printed layer, and then we would call it a membrane again.

Q. (BY MR. GERGELY) The Example 1 membrane contains polyurethane, correct?

A. So if you refer to a specific page and paragraph. I assume that you're referring to the patent '287, and I assume you're referring to column 8, Example 1, starting on line 54. Is that what you're referring to?

Q. Actually -- yes, I think I am referring

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to that. If you want to refer to that, that's fine. That's polyurethane, correct?

A. So all the films made in this example are polyurethane, and the print compound that was utilized was also made of polyurethane.

Q. Okay. And your counsel referred to Example 1 membrane as being 1 mil thick, correct?

MR. JACKSON: Objection, scope.

A. Within my -- in '287 of Haggquist 5 --

Q. (BY MR. GERGELY) Well, I'm asking you what he said. I'm asking what he said in response to the office action?

MR. JACKSON: Objection.

A. This membrane is 1 mil thick, and that's stated on lines 17 and 18.

Q. I'm not --

A. Again, this document is a large document. It's a large document I have not reviewed, and there were several documents. It went over a very long period of time. So I really don't want to put testimony against something that I'm not prepared to review and look at.

Q. Well, in any event, your attorney said that the activated carbon was included in that Example 1 membrane, which was 1 mil thick, correct?

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MR. JACKSON: Objection, scope. Is that a question?

A. I don't know if that's correct or not. I'm not sure. I would have to review this paragraph and review what he's trying to say.

Q. (BY MR. GERGELY) And then your attorney goes on to state, "As seen in the attached Product Data Sheet for Asbury5564 powdered coconut activated carbon, the particle size for the Asbury5564 powdered coconut activated carbon comprises about 10 microns (the second thickness)." Do you see that?

A. Yes, I see that.

Q. And why did you choose to equate the particle size of the activated carbon with the second thickness?

MR. JACKSON: Object to scope. I think this is outside the bounds of his testimony. You can ask him about the patent.

MR. GERGELY: Yeah, I disagree. He said that the critical breakthrough in the patent was with respect to these ratios between the first and second thickness. So this goes directly to that issue.

MR. JACKSON: This is not his testimony.

A. This is not my testimony. I don't have a comment. I don't recall what his intent was.

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Q. (BY MR. GERGELY) Well, you assisted him in preparing this document, correct?

MR. JACKSON: Object to scope.

Q. (BY MR. GERGELY) You approved this document before it was filed with the PTO, correct?

MR. JACKSON: Object to scope.

A. You know, it was several years ago. I haven't reviewed it. So . . .

Q. Well, you said that you were reviewing and approving documents.

A. I was reviewing and approving documents.

Q. That were filed with the Patent Office, correct?

A. That was filed with the Patent Office.

Q. So you said this was such a document that you provided assistance to counsel on, correct?

A. I'm not sure if I provided assistance to counsel on this specific document.

Q. Okay. At the outset when I showed you this document, you said that you did. Are you saying now that you're uncertain?

MR. JACKSON: Object to scope.

A. I'm saying that this was a response to office action, and it is like -- is there a way you can go back and say what I said?

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MR. GERGELY: It would be right when Haggquist 13 was identified.
(The testimony on page 76, line 24 to page 77, line 9, was read back as follows:
Question: Sir, is this a response to an office action you assisted in preparing?
Answer: Yes. I've not reviewed this document. The prosecution history was a long period of time. A lot of information was transferred back and forth. I have not reviewed that information, and I am not prepared to" --
THE DEPONENT: Can we stop a second? Repeat his question of what he said when I said yes.
(The testimony on page 76, line 24 to page 77, line 5, were read back as follows:
Question: Sir, is this a response to an office action you assisted in preparing?
Answer: Yes."
Q. (BY MR. GERGELY) Okay. So, sir, first of all, did Asbury5564 have a particle size of 10 microns as represented to the Patent Office?
A. It has a --
MR. JACKSON: Object to scope.
A. It has a range.
Q. (BY MR. GERGELY) Okay. And why was 10

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microns chosen?
MR. JACKSON: Object to scope.
A. Do not recall.
Q. (BY MR. GERGELY) And if you're mixing Asbury5564 and polyurethane together, how do those activated carbon lay down? Do they lay down in a single layer of particles or do they tend to agglomerate?
MR. JACKSON: Object to form.
A. I really can't speculate. I would have to go back and look at more information.
Q. (BY MR. GERGELY) Did you believe you were laying them down in a single layer when you were making this product?
MR. JACKSON: Object to form.
A. I don't recall.
Q. (BY MR. GERGELY) And you're a person of ordinary skill in the art in this field, correct?
A. Yes.
Q. If you are putting activated carbon particles into solution, will they tend to stack up on top of each other?
MR. JACKSON: Object to form.
A. I don't understand.
Q. (BY MR. GERGELY) Well, these particles

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are represented as being 10 microns in diameter, correct?
MR. JACKSON: Object to scope, form.
A. 10 microns is, I think, the upper range of particles.
Q. (BY MR. GERGELY) And when they're put into a polyurethane solution and then the mixture is cured, are those activated particles going to be in a perfect layer of single particles or are they going to stack up on each other?
A. It would depend on the methodology of application.
Q. Well, give me an example.
A. I don't want to postulate. You could do a Langmuir film formation where you do get a molecular layer level.
Q. In this case, did you do -- what's a Langmuir?
A. I don't recall what methodology I used specifically to achieve the films.
Q. What's a -- what did you say, Langmuir?
A. Langmuir.
Q. What's that?
A. That's a type of film formation methodology. That's one example.

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Q. Can you describe that?
A. Off the top of my head, I couldn't get really detailed into it, but it's a methodology of creating a layer or a thickness.
Q. What kind of equipment do you need to perform that process?
A. I don't want to speculate right now.
Q. Well, sir --
A. Have I ever owned equipment like that?
Q. Yes.
A. Yes.
Q. Have you owned equipment like that?
A. Yes.
Q. Did you own it in 2005 --
A. Yes.
Q. -- and 2006? What kind of equipment is it?
A. It's a coating apparatus.
Q. And do you recall if you used that in this case?
A. I do not recall.
Q. Okay. So --
A. You're asking me to go back quite a few years.
Q. And what is -- tell me what this

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Langmuir apparatus looks like.
A. I haven't looked at it in a while. I don't know. It's a film-forming device.
Q. Do you still own it?
A. It's possible it's in our storage somewhere, but I don't think so.
Q. How does it work?
MR. JACKSON: Object to scope.
A. I'm not prepared. It's not in my declaration. I, you know --
Q. (BY MR. GERGELY) I understood that you were using a 1 mil draw down rod to create these films, correct?
A. Yes. You could do the same with a Langmuir system, but, I mean --
Q. Is a 1 mil draw down rod a Langmuir system?
A. No. It depends on what you use. So you're asking me to recall exactly the experimentation. I don't want to speculate on that. I haven't reviewed the information. This is --
Q. Well, you'd mentioned Langmuir. What is --
A. I mentioned that to tell you there are different ways to apply. You asked the question, I

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believe, what methods could you use to apply, and that's --
Q. Right. To create a single layer of particles, and you said --
A. No, no. So that's a single layer of particles, yes.
Q. So you could use Langmuir?
A. To create, and I think I said a monolayer, molecular monolayer.
Q. But in this case, using a 1 mil draw down rod?
A. In the statement in the '287 patent, it states I was using a 1 mil draw down rod.
Q. And can you use a 1 mil draw down rod to create a monolayer of particles?
MR. JACKSON: Object to scope.
A. I don't want to speculate. I guess it's possible, it's not possible. I don't have the answer to that.
Q. (BY MR. GERGELY) Have you ever heard of anyone creating a monolayer with a 1 mil draw down rod?
MR. JACKSON: Object to scope.
A. I don't know. Can't recall.
Q. (BY MR. GERGELY) So you had mentioned

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that you thought this second thickness was .4 microns; is that right?
A. .4 mil.
Q. Oh, .4 mil. And .4 mil is 10 microns, correct?
A. I would have to do the math. Right now, I'm not thinking mathematically. So you could do 25 times .4.
Q. It's 10.16.
A. Uh-huh.
Q. So, sir, back to my question about the monolayer. In order for Asbury5564, which has a 10 micron diameter, to satisfy that ratio of 2.5 to 10, it would have to be laid down in a perfect monolayer, correct?
MR. JACKSON: Objection; form, scope, leading.
A. I don't believe so, no.
Q. (BY MR. GERGELY) Well, if, as you have argued in your deposition, that the first thickness is 1 mil or 25.4 microns and you have a second thickness of 10 microns, wouldn't you have to -- wouldn't you have to lay down the activated carbon particles in a perfect monolayer to achieve that ratio?
A. Not necessarily because --

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MR. JACKSON: Objection to form, scope.
A. Not necessarily, because all the particles aren't 10 microns.
Q. (BY MR. GERGELY) Oh, okay. So -- but you didn't say that in the file history. You said that there were 10 microns.
A. Again --
MR. JACKSON: Objection to form and scope.
A. -- the file history is not something I have reviewed. It's a long prosecution. A lot of documents were passed back and forth. I haven't reviewed them, so I . . .
Q. (BY MR. GERGELY) The file history says that the Asbury5564 data sheet was attached, and I've been unable to find it. Do you recall if that was ever submitted to the PTO?
MR. JACKSON: Object to scope. You can answer.
A. I don't know. It could have been. It might not have been.
Q. (BY MR. GERGELY) Do you recall that issue coming up, that maybe it wasn't submitted to the PTO?
MR. JACKSON: Object to scope.

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A. I don't recall that there was an issue that it wasn't.

Q. (BY MR. GERGELY) Okay. So assuming that the Asbury5564 particles are, in fact, 10 microns, as represented, if they were laid down in anything other than a monolayer, the ratio wouldn't be met, correct?

MR. JACKSON: Objection to scope, form.

A. The Asbury5564 is not all 10 microns. It's a distribution of particle size.

Q. Sir, I'm asking --

A. So if I have 2.5 micron particles and I cast something of 10 microns, you could have two 5-micron particles stacked on top of each other. If I have 2.5 microns, I could have four particles stacked on top of each other. So to determine if it's a monolayer or not a monolayer would be very difficult.

Q. Right. And so what you just explained depends on something that was not stated of record in the file history. Instead, it was stated that the particles were 10 microns. So I'm asking you if you stacked, say, two of those particles on top of each other --

A. Two 10s?

Q. -- yes -- then the ratio wouldn't be

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met, correct?

MR. JACKSON: Objection; form, scope.

A. What ratio?

Q. (BY MR. GERGELY) The ratio of the first to second thickness.

A. Why would that be?

Q. I'm asking you.

MR. JACKSON: Objection.

A. No, I'm asking -- you're asking me it's not met. So please explain how it's not met.

Q. (BY MR. GERGELY) Well, if you had 20 microns, say two particles stacked one on top of the other, and you had a 25.4 micron first thickness, that wouldn't meet the 2.5 ratio, correct?

A. If I --

MR. JACKSON: Objection; form, scope. These are getting twisted hypotheticals.

A. Yeah, I'm lost.

Q. (BY MR. GERGELY) Well, let me try to break it down for you. You've got a first thickness that's 25.4 microns.

A. Uh-huh.

Q. You have a second thickness comprised of Asbury5564 particles.

A. Uh-huh.

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Q. If those are laid down in anything other than a monolayer, say, for example, one particle on top of another creating a 20 micron thickness, the ratio of 20 to 25 would not meet the 2.5 limitation or, rather, 25 to 20?

MR. JACKSON: Objection to form, scope, improper hypothetical.

A. I'm quite confused, so --

Q. (BY MR. GERGELY) What's confusing about that?

A. Because you have to understand the methodology of creating a film, and so without specific information on film formation, viscosity, you know, it's tough to speculate. So you're assuming that you're going to be able to get two particles to stack on each other that are two 10-micron particles.

Q. I mean, isn't that just typically how it goes?

A. No. It's a statistical distribution, right?

Q. Wait a second. So you're saying a monolayer is typically how these particles are laid down, a perfect monolayer of activated particles?

MR. JACKSON: Objection; form, scope.

A. I did not say that. What percentage of

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the particles in Asbury5564 are 10 microns?

Q. (BY MR. GERGELY) Sir, you said they were all 10 microns in the file wrapper.

MR. JACKSON: Objection.

Q. There was no range set forth there.

MR. JACKSON: Objection; scope, form.

A. I wouldn't say all those particles are 10 microns. That's an impossibility.

Q. (BY MR. GERGELY) All right. But that's what the Patent Office was told, and now you're saying in reality it's something different. But that wasn't told to the Patent Office; is that right?

MR. JACKSON: Objection; form, scope.

A. I don't know what was presented to the Patent Office and all the information.

Q. (BY MR. GERGELY) Well, certainly they were told that Asbury5564 was 10 microns, right?

A. Maximum.

MR. JACKSON: Object to the form and scope.

Q. (BY MR. GERGELY) Well, it didn't say maximum. It didn't say anything about maximum or a range, right?

A. Okay.

Q. Is that right?

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A. I don't know. I mean, you're asking me about a document that I haven't reviewed.

Q. Okay. So look at Page 17 and see where it says anything about maximum or ranges.

A. Again --

MR. JACKSON: Object to scope.

A. -- you're asking me to review what is a small portion of a document. If the data sheet was attached -- you're not showing me the data sheet. So on the data sheet, it's going to state a range.

Q. (BY MR. GERGELY) Sir, we ordered the whole file history, and there's no data sheet. Have you ever seen a data sheet?

MR. JACKSON: Object to scope. This is not an examination about the file wrapper.

A. I have seen Asbury5564 data sheets.

THE DEPONENT: I'd like to break for a bathroom break.

MR. GERGELY: Yes. And just to be clear, you're not supposed to discuss your testimony with counsel during breaks.

THE DEPONENT: I haven't.

MR. GERGELY: Good.

MR. JACKSON: I reminded him of that rule.

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MR. GERGELY: Okay. Thanks.

(Recess taken, 12:52 p.m. to 1:01 p.m., after which time Ms. Ott was not present.)

Q. (BY MR. GERGELY) Dr. Haggquist, I'd like to turn your attention back to Haggquist Deposition Exhibit 11, which is -- yeah, there it is. I'd like to turn your attention to the arguments on Paragraph 16.

A. I must be looking at the wrong document.

Q. I think you're looking at the right one.

A. So you're saying --

Q. Exhibit 11. You're on the right one.

A. Page?

Q. 16.

A. Oh, I thought you said Paragraph 16.

Q. So do you see the arguments where the attorney is arguing over the Spijkers reference?

A. Are you -- which paragraph, are you starting "Claim 1 through 27"?

Q. Correct.

A. I see that paragraph.

Q. Okay. And do you see the statement that says, "Additionally, the carbon soot particle disclosed in Spijkers comprises an 'average size of 5 to 40 nanometers'"? Do you see that?

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A. I see that.

Q. And then it goes on to state, "The soot is extremely small in comparison to the Spijkers disclosed membrane 'thickness of 5 to 50 microns'." Do you see that?

A. Yes.

Q. And it states, "Applicant submits that such a small particle size would leave the particles buried deep within the polymer and therefore the particles would not be exposed at the polymer surface." Do you see that?

A. I see that.

Q. And what's the significance of that statement?

MR. JACKSON: I'll object to scope. I'm going to instruct the witness not to answer this question because it entails necessarily discussion of a prior art reference that's not in his testimony and he doesn't talk about the prior art or Spijkers.

MR. GERGELY: But this goes directly to his representation to the PTO that the thickness ratio is the critical breakthrough, so I'm cross-examining him on that.

MR. JACKSON: I'm going to instruct him not to answer a question about the prior art. It's

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not in the scope of his declaration. Spijkers isn't here. We're not talking about it.

MR. GERGELY: You're instructing the --

MR. JACKSON: It's outside the scope.

MR. GERGELY: You can instruct the witness not to answer on issues of privilege, but not on things that are -- that's a nonprivileged question. Are you saying the subject matter is privileged?

MR. JACKSON: No -- well, we'll halt the deposition and call the board so we can determine if this is proper scope. Fair enough?

MR. GERGELY: Sure. I mean, we can do that. Is that how it's going to go? You're going to instruct him not to answer questions --

MR. JACKSON: The board can decide if it's in or out. If they say in, you can ask, but this is far afield from his cross-examination under the trial practice guidelines, limited to the direct examination. This is veering into prior art, discussions of prior art, and he's not offering any testimony on prior art or the file wrapper.

MR. GERGELY: Well, he's actually argued that the critical breakthrough and therefore the patentability is with respect to this thickness ratio, and this passage of the file wrapper -- this is of

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record in the case -- goes directly to that issue.
MR. JACKSON: Call the board.
MR. GERGELY: All right.
MR. JACKSON: I'll send them an email.
MR. GERGELY: Are you going to call? Because I take it you're objecting.
MR. JACKSON: Yes, it's far outside the scope. We'll see what they say.
MR. GERGELY: All right. So do you want to just call right now?
MR. JACKSON: I think we have to send an email first. I don't have the TPB in front of me. Are you familiar with the protocol?
MR. GERGELY: I assume we just call the board.
MR. JACKSON: Okay. Let's get the number.
MR. GERGELY: This is your objection.
MR. JACKSON: Well, it's far outside the scope, Peter. We're talking about --
MR. GERGELY: So the trial practice guide says you can instruct the witness not to answer on privilege issues, not on scope issues.
MR. JACKSON: Call the board and say this is outside --

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MR. GERGELY: To call the board. I think this is interfering with the deposition. So I'd ask you to call the board. It's your objection.
(Pause in the proceedings.)
(Discussion off the record.)
(At this time a call was placed to the Patent Trial and Appeal Board.)
MR. GERGELY: So, Counsel, just for the record, again, I understand you are not allowing the witness to answer questions with respect to Haggquist Exhibit 11, Paragraph -- excuse me, Page 16, which is a document that's of record in the case involving a question about carbon soot even though the witness has submitted a declaration discussing carbon soot, and he has also discussed in his second declaration how the criticality of his invention depends on the ratio between the first and second thickness; is that right?
MR. JACKSON: Yes, for the time being, I'm seeking clarification from the board because this is far outside the scope of admissible cross-examination. This goes to prior art, statements made during prosecution. They're not directly or indirectly discussed in his declaration. This is far outside. We'll return to this issue at the end of the deposition, but while we can, I'd like to get more

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clarification.
MR. GERGELY: Are you instructing the witness not to answer?
MR. JACKSON: For the time being, yes. I'd like to seek clarification from the board. We'll circle back at the end of the deposition and see if we have any guidance.
MR. GERGELY: Well, I'm treating that as an instruction not to answer. It's interfering with the deposition. It's improper.
Q. (BY MR. GERGELY) Sir, back to your -- back to the declaration that was from the file history, Haggquist 7, which is of record.
A. Haggquist 7? That was a declaration?
Q. Oh, I'm sorry. No, I didn't want to ask you about that. Back to your second declaration, which is Haggquist Exhibit 3. Do you have that in front of you?
A. Yes.
Q. In Paragraph 19 -- well, first of all -- well, Paragraph 19 says you provided a sample of an early prototype 2.5L fabric to Cocona's expert in this case. Do you see that?
A. Yes.
Q. Okay. And you said it was made to meet

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the thickness ratio and MVTR range. Do you see that?
A. "This sample was made according to claim 27 with a cured base material of polyurethane and with an applied print layer made of activated carbon and a volcanic mineral. "
Q. And Paragraph 19 doesn't disclose the measurements of those thicknesses, correct?
A. That is correct.
Q. On over to Paragraph 20 on the next page, you also state that you provided a sample to Charles Daniels labeled TNF jacket, and you say, "This sample is made according to claim 27." Do you see that?
A. Yes.
Q. And you say, "It was made to meet the thickness ratio of MVTR range." Do you see that?
A. "An applied print layer made of activated carbon," and which was made to meet the thickness ratio of MVTR range.
Q. And you don't disclose the thicknesses in Paragraph 20, do you?
A. No, I don't.
Q. And Paragraph 21, you state that TNF began using other technology products in 2013. Do you see that?

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A. Yes.
Q. What other technology products were they using?
A. S.Cafe.
Q. S.Cafe?
A. Yes.
Q. As in Sam?
A. Sam, Cafe, with a hyphen.
Q. And who supplied that?
A. You would have to ask TNF.
Q. So they moved away from your certified manufacturers?
A. Your question states complete moval [sic] or partial?
Q. Oh, was it partial?
(The deponent nodded head up and down.)
Q. Yes?
A. Yes.
Q. And you say, "At about the same time, copycat products became available under the FlashDry brand name." Do you see that?
A. Yes.
Q. Is FlashDry still sold today?
A. Yes.
Q. And is there a reason why you haven't

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sued North Face on FlashDry?
MR. JACKSON: Objection, scope.
A. FlashDry is a brand name.
Q. (BY MR. GERGELY) Okay. And you're saying copycat products became available.
A. Yes, the S.Cafe.
Q. Right. And then I'm asking you, why have you not sued The North Face on FlashDry?
MR. JACKSON: Objection, scope.
A. Which FlashDry product?
Q. (BY MR. GERGELY) Any of them.
A. So FlashDry went to knits and wovens.
Q. Okay. I understand. So it's a knit and woven, so it's not a cured base material; is that right?
A. Correct.
Q. Okay. Fair enough. I appreciate that clarification.
A. I'd like to clarify. TNF licensed all our patents, and so not just the '287, but the '287, they couldn't have licensed because it wasn't available. So -- and I think you're thinking all FlashDry is '287, and that is not a correct statement.
Q. All right. So Mr. Bowman was saying yesterday that the brands such as North Face,

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actually, they have a trademark license, correct?
MR. JACKSON: Object to scope.
Q. (BY MR. GERGELY) Is that right?
A. You know, that's not my area of expertise.
Q. Because you just said that they licensed the patents, and I'm saying -- I'm asking, was Bowman correct yesterday or was he off?
A. So my statement -- I shouldn't talk about what's licensed or what's not licensed. That's out of my scope. That's my mistake. What I was trying to clarify to you was not all products are '287.
Q. I understand.
A. Okay.
Q. But at least as of today, Cocona -- Cocona is not enforcing '287 against FlashDry because FlashDry is a woven?
A. Or --
MR. JACKSON: Objection to scope.
A. Or a knit.
Q. (BY MR. GERGELY) Or a knit. All right. I appreciate.
A. It's not a waterproof-breathable laminate.

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Q. I understand.
A. Okay. Go ahead.
Q. So Paragraph 23 references the infringement contentions. Do you see that, Exhibit 1026?
A. Yes.
Q. And did you help prepare those infringement contentions?
A. I helped with Exhibit 1026.
Q. And you approved it before it was served on North Face in litigation?
MR. JACKSON: Objection to the scope.
A. I worked on 1026. I don't know if I have final approval on it. I don't think I have final approval.
MR. GERGELY: What are we up to?
THE COURT REPORTER: 14.
(Deposition Exhibit 14 was marked.)
Q. (BY MR. GERGELY) So I've handed you what's been marked as Exhibit 1026. And in your declaration, you say that "Cocona filed its infringement contentions wherein Cocona shows that VF's DryVent 2.5L products meet all limitations of claim 27, as well as other claims." So you feel that that's an accurate statement?

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A. Yes. "As part of that litigation, Cocona filed its infringement contentions, Exhibit 1026, wherein Cocona shows that the VF's DryVent 2 1/2 layer product meet all limitations of claim 27, as well as other claims."

Q. I'd like to draw your attention to the analytical answers report. It's on Page 20 of 93 of 1026, which we're calling Haggquist 14. Do you have the report?

A. Yes.

Q. Do you see the conclusion where AA concludes, "The North Face ink layer contained silicon based particles (presumably oxide), but these were primarily very fine particles (tens of nanometers in diameter)"? Do you see that?

A. Correct.

Q. And the report goes on to say, "We did not find any abundance of observable carbon based filler particles in the ink layer. This could be interpreted as either the samples contained particles of a size which could not be resolved i.e., less than 5 nanometers in diameter using this technique, or that such particles were not present." Do you see that?

A. Yes.

Q. And, sir, would you agree with me that

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particles that are in tens of nanometers in diameter or less than 5 nanometers in diameter are not active?

MR. JACKSON: Objection; form, scope.

A. I didn't follow your question.

Q. (BY MR. GERGELY) Sir, would you agree with me that particles that are tens of nanometers in diameter or less than 5 nanometers in diameter are not active?

A. You're saying particles that are less than 10 nanometers in diameter are not active?

Q. Well, for example, how about less than 5 nanometers in diameter?

A. I don't have a comment on that.

Q. Well, I had understood that you submitted a declaration that opined that Black Pearls 2000 is too small to be activated, correct?

MR. JACKSON: Objection; form, scope.

Q. (BY MR. GERGELY) And I believe this would be your first declaration, Haggquist 2.

A. Declaration 2 or exhibit Haggquist 2?

Q. Haggquist 2. It's your first declaration.

A. And paragraph?

Q. 14.

A. "I have been informed that VF asserts

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'Black Pearls 2000 Carbon Black' are active particles. I disagree. A POSITA understands that particulate carbon, often referred to as 'carbon soot' or 'carbon black' is not surface-active since it has not been processed to create the large number of pores necessary for surface-active chemistry. As explained in the '359 Application at paragraph 28, a POSITA understands that particle carbon has to be specifically processed, such as by using high temperatures and an activating agent, to create pores for surface activity. See '359 Application at Paragraph 28."

I don't see where 5 nanometers and 10 nanometers are discussed.

Q. Okay. And I think I confused your declaration with the file wrapper, which is why I need to ask you questions about the size of the particles.

MR. GERGELY: Are you still standing on your objection?

MR. JACKSON: I'm sorry? The objection to?

MR. GERGELY: The prior objection where you instructed him not to answer questions about carbon soot?

MR. JACKSON: No, he can answer

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questions about carbon soot, but about discussing prior art references, that's my objection that I wanted clarification from the board on. You can ask him questions about carbon soot.

Q. (BY MR. GERGELY) Is carbon soot large enough to be activated?

MR. JACKSON: Object to scope.

A. I guess I'm not understanding your question. So to create porosity, you need to create walls. If you get down to the molecular limit, all of a sudden now you don't have enough material to create walls. So the question is very generic. So it would be hard for me to answer.

Q. (BY MR. GERGELY) Did you review Daniels' expert report before it was submitted in this case?

A. No.

Q. Did you provide any input to it?

A. No.

Q. I'll represent to you that Daniels said that carbon soot particles are too small to be activated. Would you agree with that?

MR. JACKSON: Object to scope, form, foundation, leading.

A. I wouldn't disagree with that.

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Q. (BY MR. GERGELY) And why wouldn't you disagree with it?

A. It's very difficult to create porosity if you're so small. Now, you're getting down to the size of an atom, and now it goes into this realm that what is a pore and what isn't. It becomes difficult now. Now it's a really -- I would say this is a very difficult subject without a clear-cut answer that we'd like.

Q. (BY MR. GERGELY) How big does a particle have to be to create porosity?

MR. JACKSON: Object to scope.

A. Yeah, I don't have an answer for that. I can state if you're in the micron size range, it's easier to produce porosity.

Q. If you're in the micron range.

A. But --

Q. What about if you're in the tens of nanometers?

A. Yes, so this is where -- I don't know where that cut-off is.

Q. So -- but would you agree with me that particles that are in the tens of nanometer range or than less than 5 nanometers are very small and unlikely to be active?

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MR. JACKSON: Object to scope.

A. It depends on their state.

Q. (BY MR. GERGELY) What does that mean?

A. Well, are they agglomerated? So you could have a primary particle size that's very small, but that primary particle size could build like Legos. Each Lego is a primary particle size. That Lego might be a certain size, but if you put 10, 20, 30, 40 of those Legos together, now I have something larger size.

Q. Okay. So without more information, we don't know?

A. Correct.

Q. Okay. Now, can -- in your view, can an active particle both absorb and adsorb?

A. In the definition, I'd like to draw you to my first declaration, which is Haggquist 2. Paragraph 8, '"Active particles' are 'active' because they have the ability to adsorb or trap substances at their surface. The large surface-active property is a result of a large surface area of the active particle." So you're asking can it do both?

Q. Correct.

A. What's critical is the adsorption portion. '"Active' because they have the ability to adsorb or trap substances at their surface."

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Q. But you don't rule out the possibility that they could absorb, correct?

A. Right.

Q. Because zeolites absorb, right?

A. You know, that depends on what you ask.

Q. Well, I'll tell you --

A. And it depends on which zeolite you're referring to, and I understand that in the Exhibit 1026, KMI, I think we provided this just for some surfaces. I think they're a little confused as to what they're trying to say. I'm not going to argue with them, but generally and some schools of thought state that adsorption requires swelling, and depending on the zeolite, some zeolites might not swell, so then it's a question of what is actually happening. So it can -- is it adsorbing or absorbing?

Q. And a material that swells can, in fact, adsorb? There's nothing about swelling that equates with absorption, correct?

A. Correct, but the process --

MR. JACKSON: Object.

Q. (BY MR. GERGELY) You can answer.

A. -- but the process of absorption can cause swelling because you're adding it to the network.

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Q. Right. But swelling doesn't necessarily equate with absorption. It is something that is consistent with absorption, but simply because something is swelling doesn't mean that it's just absorbing, correct?

A. I don't think it's a yes-or-no answer on that. I don't think -- it depends on who you ask. The word "absorption" is more prevalent in our society than "adsorption." People of all skills confuse the B and the D constantly. So I -- you know, I understand what you're saying, and you want a clear-cut answer. I don't think there is a clear-cut answer, but what I'm trying to say is that an active particle, as in declaration -- if I can find it --

Q. No, I understand. You've already stated it. You don't have to state it again.

MR. JACKSON: Peter, were you able to ask the questions you wanted talking about soot apart from prior art references?

MR. GERGELY: I may have to circle back to it. I don't know.

MR. JACKSON: If you can, you know, you can proceed.

MR. GERGELY: On that question?

MR. JACKSON: Well, no, no, I mean talking about soot, but not about what's in a prior art reference, what is disclosed, these things.

Q. (BY MR. GERGELY) Sir, back to your declaration, which is Haggquist 3, you -- in Paragraph 25, you discussed a press release concerning FlashDry, is that right, or article?

A. Paragraph 25 shows a review of a TNF FlashDry product line technology. Is that what you're referring to?

Q. And you reviewed that article?

A. Yes.

MR. GERGELY: What are we up to?

THE COURT REPORTER: 15.

(Deposition Exhibit 15 was marked.)

Q. (BY MR. GERGELY) Is Haggquist Exhibit 15 the 2014 that's referenced in your declaration?

A. I'm sorry. I was reading something. Say that again.

Q. Is Haggquist 15 the Exhibit 2014 which is referenced in your declaration?

A. I believe it is.

Q. And on Page 3 of 6, there's a depiction of the layers. Do you see that?

A. 3 of 6. Are you referring to this?

Q. Correct. Do you see that?

A. Yes.

Q. And who created that? Did Cocona create that or did North Face create that?

A. I don't know.

Q. Okay. But do you understand what this depicts?

A. I think I know what they're trying to say.

Q. Okay. And so is the black layer, is that the activated carbon?

A. So let's recognize for a second a lot of -- there was a wide range of products that FlashDry had, of which a subset is a waterproof-breathable membrane. The circle here is probably the easiest one to look at.

Q. Yes. I'm asking you about the picture on the left.

A. Yeah, that picture on the left is confusing to me, so . . .

Q. What's confusing?

A. I've got a lot of blue and black, and I'm not sure what's what.

Q. Well, isn't black typically carbon?

[redacted]

[redacted]

Q. Okay. Regardless, it's an activated particle layer?

A. And what I'm trying to get at, this picture, I prefer to talk about this picture, and then we can come back to this picture, if you like. I feel this is an easier one to understand.

Q. Well, the black layer is the activated particle layer, correct?

A. The black and gray in the picture.

Q. The black and the gray?

A. It's -- there's shades. If you ever saw the product, you would understand. It wasn't just pure black.

Q. Well, the green layer is the fabric?

A. The fabric.

Q. Right?

A. The outer fabric.

Q. So that's not part?

A. That's not part.

Q. And the whiteish or bluish layer, that's what?

A. That's a polyurethane layer, no particles.

Q. And the black is the activated particle

layer, correct?

A. Correct. It's the print that goes on top of the mid, the polyurethane.

Q. That doesn't -- just based on visual of what North Face is showing here, that doesn't appear to meet the --

A. Do you think this is an actual representation of the product?

Q. I don't know. You've put it in front of the board. So I'm saying, visually, does this meet this 2.5 to 10 ratio?

A. No, it does not visually, and I think the artist was incorrect, but if the artist created it in that ratio, then they weren't able to bring attention to the critical layer, and I think what they were trying to do was bring attention to this critical layer. If you even look at the spacing, the size -- this is just an artistic representation. If you look at the other circle where you see the fabric, you see the pattern? That is the print layer active. And then you see how thick that membrane layer is. That's a better representation of the product, a better representation. Again, though, you're not going to be able to determine thickness ratios by looking at these images.

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Q. Okay.
A. I would like to bring attention to that. I would like to read Paragraph 25.
Q. I'm sorry. Where are you at?
A. On Haggquist 3, Paragraphs 25 --
Q. Yes, just get --
A. I'd like to read that second part after "FlashDry unveils," the link. "That review states in part, "The porous particles work with your body." I just wanted to bring that out.
Q. Okay. Just give me a minute. I'm trying to find . . .
THE DEPONENT: Can I do a bathroom break then?
MR. GERGELY: Yes, go for it.
THE DEPONENT: Okay.
(Recess taken, 1:41 p.m. to 1:42 p.m.)
MR. GERGELY: So, Jason, I'd like to ask some questions about that document you wouldn't allow him to ask -- you wouldn't allow him to answer on, and then I'll probably be ready to wrap it up. I would suggest that you just allow the examination to continue, and then you move to strike, you move to strike. Otherwise we're going to have to drag him back here; I have to fly out again. There's a lot of

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time and costs associated with that. Plus we have a short window.
MR. JACKSON: Well, is there a way you can ask the question you want without inquiring about a piece of prior art?
MR. GERGELY: Yeah, we don't have to discuss Spijkers, but we have to discuss -- we have to discuss particle sizes.
MR. JACKSON: So you won't -- you don't need to ask questions about what's in and what's not in the Spijkers reference? That's my primary concern.
MR. GERGELY: I mean, I think indirectly, yeah, I have to ask him questions about the 5 to 40 nanometer size particles.
MR. JACKSON: The particle size in connection with Spijkers. What I do want to do is hold off for board guidance if you want to ask him questions about the Spijkers reference.
MR. GERGELY: I'm not asking how it's patentable over Spijkers.
MR. JACKSON: That's my problem. If you want to ask him about what is 5 to 40 nanometers, I'm fine.
MR. GERGELY: It's a technical question.
MR. JACKSON: So if you understand, my

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concern was stop the deposition over prior art.
MR. GERGELY: No, we're not talking about patentability. I'm just talking about -- I want to ask him technical questions about what he said. It's not whether it's patentable over Spijkers. Why don't we take the questions and then you can object, if it's objectionable.
MR. JACKSON: Okay. Take the questions.
Q. (BY MR. GERGELY) All right, sir. Let's go back to Deposition Exhibit 11, Haggquist 11, which is called Arguments Submitted with the Filing of the Request for Continued Examination.
A. Okay.
Q. So it's stated here, "Additionally, the carbon soot particle disclosed in Spijkers comprises an 'average size of 5 to 40 nanometers.'" Do you see that?
A. I'm not on that page.
Q. It's on Page 16.
A. Page 16. So this is a document I have not reviewed. I am not a lawyer or have patent lawyer history or knowledge, and so my ability to answer is going to be limited.
Q. Yeah, I'm not going to ask --
A. I just wanted to preface things.

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Q. I'm not going to ask you any patent law questions. This is more of a technical question.
A. Sure.
Q. So you see the passage that says, "Additionally, the carbon soot particle disclosed in Spijkers comprises an 'average size of 5 to 40 nanometers'"?
A. Yes, I do see that.
Q. And then it's stated, "This soot is extremely small in comparison to the Spijkers disclosed membrane of 5 to 50 microns [sic]."
A. Yes.
Q. Do you see that?
A. Yes.
Q. And then it goes on to state, "Applicant submits that such a small carbon particle size would leave the particles buried deep within the polymer and therefore the particles would not be exposed at the polymer surface." And then I'm asking, what is it about the small size of those particles which would cause them to be buried?
MR. JACKSON: Object to scope, foundation, form.
A. So particle sizes is an interesting statement. Normally if you manufacture a material,

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you are going to get a distribution in size. Rarely -- very rarely you would state it is one particle size.

Primary particle size and functional particle size could be two very different things. I could have a particle, as an example, in Exhibit Haggquist 14 -- I just want to -- am I okay to walk over?

Q. Sure.

A. It's easier than . . .

Q. Yeah, yeah.

A. What would you consider this particle size?

Q. I don't know.

A. Exactly.

Q. I don't know. Sir, yeah, I'm not under oath.

A. I understand that. So what I'm trying to point out is it's very difficult to represent what this is. What I can do is I can do a measurement of that entire plurality of particles, and if I do a measure of plurality of particles, I come out with 4.1 microns. That's 4.1 microns is in the print layer.

Now we need to compare that to the membrane of 33 microns. That falls within the range

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outlined in the '287, claim 27.

Now you've brought up a good question regarding this carbon soot, and your question is why would a very small particle be buried in a very thick polymer.

Q. Right.

A. It's statistical distribution. If I have something really small and something really thick, the likelihood of it being on the surface is extremely low. However, if I have an agglomerate of small particles all together now, all of a sudden, is five -- is the particle 5 nanometers or is it 4 microns.

Q. Let me ask you this. You know, you pulled out Exhibit 1026.

A. Yes.

Q. And why is it that with respect to the thicknesses, the thicknesses weren't averaged at the different measurements? Why were certain measurements --

A. Because that's representative of -- averaging these numbers, how are you going to weight each point, and are you going to measure all over? So there are sections of this membrane that are 33 microns. The issue that they face -- that we faced --

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that analytical answers faced is to measure thicknesses after the fact is extremely difficult. In our manufacturing production, when we measure the thickness of a membrane, we measure the membrane alone. Then we measure the membrane plus thickness too. The laminate, the face fabric introduces error to that. So he's predicting a range of what this membrane is.

Q. Right. So why not just average those measurements?

A. No, it's not representative.

Q. Well, are you saying that cherry-picking one measurement is representative?

MR. JACKSON: Object to form, scope.

A. I'm not cherry-picking anything. We can go look at 10 more samples, 100 more samples. This is a representation of what the membrane is. You have to look at a much bigger sample set. If you want to get an average thickness -- I don't understand what an average thickness is going to give. So there are sections that fall under the range.

MR. GERGELY: All right. All right. We are done. Appreciate your time.

THE DEPONENT: Really?

MR. JACKSON: Peter, I want to clarify

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before you stop.

MR. GERGELY: Sure.

MR. JACKSON: Did the witness answer the questions you were concerned about?

MR. GERGELY: Yeah, I think he did.

MR. JACKSON: Okay. Very good. We'll take a five-minute break and come back.

(Recess taken, 1:51 p.m. to 2:00 p.m.)

MR. JACKSON: This is Jason Jackson, counsel for Cocona, conducting a redirect examination.

EXAMINATION

BY MR. JACKSON:

Q. Dr. Haggquist, please turn your attention to Haggquist Exhibit 5. That's the '287 patent. Please turn your attention to Figure 1 of Exhibit 5. Have you seen this figure before?

A. Yes.

Q. Do you have an understanding of this figure?

A. Yes.

Q. Can you give me your brief understanding of what's happening in this figure?

A. Step 110 is to combine a polyurethane or a polyacrylic solution, provide a based solution. Step 120 is provide active particles. They could be

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protected or unprotected. Mix together the active particles and the base solution together. Apply the mixture to a substrate. The substrate could be a wide range of things, such as a self-supporting membrane.

Then you remove the protected substance from the protective activating carbon -- activating particles if the protectant was used.

Q. Now, there was a lot of discussion today with Mr. Gergely about the first and second thicknesses; is that correct?

A. Yes.

Q. Does Figure 1 disclose two thicknesses?

A. Yes.

MR. GERGELY: Objection, leading.

Q. (BY MR. JACKSON) Does Figure 1 disclose active particles in a solution?

A. Yes.

Q. Where does it disclose that?

A. 130.

Q. Does Figure 1 then disclose putting that solution of active particles onto or in contact with another material?

A. Yes.

Q. Where does it disclose that?

A. 140.

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Q. What does 140 say?

A. 140 says, "Apply mixture," that's referring to mixture in 130, "to a substrate," and the substrate can be a thickness, such as thickness 1.

Q. Okay. Could we measure the physical thickness of the substrate in Step 140 in Figure 1?

A. Before I apply the mixture?

Q. Yes.

A. Yes. If the substrate was a self-supporting membrane, it makes it much easier. So nothing else.

Q. Okay. In Step 130, you see it references active particles in the base solution. Do you see that?

A. Yes.

Q. When those active particles in the base solution are applied to the substrate, does that solution have a physical dimension that we can measure a thickness?

A. When it's in the uncured state?

Q. Sure.

A. That would be -- in the cured state, the solution contains a solvent, say water. And so you generally cure this, and the water evaporates, leaving behind the base material, the base polyurethane or

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polyacrylic plus the active particles and anything else that was solids. The solvent evaporates. Once that happens, then you can measure the thickness of both the substrate and the thickness of the, may I call it, print layer. Subtracting the substrate thickness gives you the thickness of the active particle layer. As an example, one product that we would make, that we would produce, we would produce a 20-micron self-supporting membrane and then print on 4 microns of polymer and active particles as measured after curing.

Q. Okay. So if I understood you correctly, this solution of active particles once it cures has a physical thickness that could be measured?

A. Yes.

Q. So --

A. You could measure it in solution, but I don't know why you would want to.

Q. Would the thickness of this cured active particle solution be one example of the second thickness in claim 27?

A. With the cured version, not the solution version.

Q. And then the thickness of the substrate, is that one example of the first thickness in claim 27?

A. Yes, and an easy example to understand is if you have a self-supporting membrane, that is thickness 1.

Q. I'd like to turn your attention to what's been marked as Haggquist Exhibit 3. This is the second declaration of Dr. Gregory Haggquist.

A. Yes.

Q. Please turn your attention to Paragraph 16.

A. Yes.

Q. How do you know that TNF was practicing the technology of the '287 patent?

A. Because I was there during production of the samples.

Q. And did that -- do those samples incorporate the novel features of the '287 patent?

A. Yes.

MR. GERGELY: Objection, vague.

A. If I can answer, the thickness of the self-sustaining membrane and the thickness of the printed membrane were performed.

Q. (BY MR. JACKSON) Did those samples also have a layer of active particles?

A. The print layer had a layer of -- had

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active particles. I don't want to use the word "layer."

Q. What term would you prefer?

A. Well, I'm sorry. I didn't mean -- so thickness 2 is the binder plus the active particles.

Q. Dr. Haggquist, where is the material covered by the '287 patent manufactured?

A. When?

Q. Now.

A. Raco Textiles, Kolon Global. Raco Textiles has a subcontractor, but it's under Raco Textiles.

Q. Where is Raco Textiles located?

A. Taiwan.

Q. And is it your understanding that the material they manufacture practices claim 27 in the '287 patent?

A. Yes, it's my understanding that they do.

Q. What is that understanding based on?

A. The thickness of the membrane that they used is measured. It's part of a certificate of analysis that verifies the thickness of the membrane. The print layer is produced by a roller, which has a set depth to create dots onto the self-supporting membrane. The print solution slurry or anchor,

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whatever word you would like, is consistently controlled to viscosity and solids percentage.

In our early work, we were able to understand the combination of dot depth solids concentration delivers the right thickness that we target for our product. We further check coat weight, which is the mass per unit area of print that goes on the sample. We also check the moisture vapor transmission rate of the sample and the AATCC 201 drying rate. If the AATCC 201 drying rate is out of the ordinary or out of the statistical distribution that we determined, we recognize immediately something is wrong, and we investigate.

(At this time Ms. Lapuma left the room.)

MR. JACKSON: Thank you, Dr. Haggquist. I have no further questions. We reserve our right to have the witness review and sign the transcript. Pass the witness back, Peter, if you have any further questions.

MR. GERGELY: Yes, just a brief recross.

(At this time Ms. Lapuma entered the room.)

EXAMINATION

BY MR. GERGELY:

Q. Sir, drawing your attention to column 7

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of the '287 patent, which is Haggquist 5.

A. Column?

Q. 7. And, sir, in column 7, lines 10 through 29, there's a distinction drawn between the membrane and the substrate, correct?

A. From 10 to?

Q. 29.

A. 29.

(The deponent perused the exhibit.)

A. So your question?

Q. There's a reference to a substrate, and there's a reference to a membrane, correct?

A. There is a reference to a substrate, and there is a reference to a membrane.

Q. And it states in the paragraph at line 21 to 22, "The cured mixture may be referred to herein as a membrane." Do you see that?

A. Yes.

Q. And that cured mixture is the polyurethane and active particles mixed together, correct?

A. Correct, plus also it could be the -- if it was coated onto a membrane, it would then be a printed membrane.

Q. And, sir, there was a discussion with

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counsel about your manufacturing process and how you have certifications and so forth. None of those documents were provided in this case, correct?

MR. JACKSON: Object to form, scope.

A. It's not in my declaration, no.

MR. GERGELY: Okay. Thank you. Nothing further.

WHEREUPON, the within proceedings were concluded at the approximate hour of 2:15 p.m. on the 5th day of December, 2018.

* * * * *

I, GREGORY W. HAGGQUIST, PH.D., do hereby certify that I have read the above and foregoing deposition and that the same is a true and accurate transcription of my testimony, except for attached amendments, if any.

Amendments attached ( ) Yes ( ) No

_____

GREGORY W. HAGGQUIST, PH.D.

The signature above of GREGORY W. HAGGQUIST, PH.D. was subscribed and sworn to or affirmed before me in the county of _____, state of _____, this _____ day of _____, 2018.

_____

Notary Public

My commission expires:

VF Outdoor, LLC 12/5/18 (sb)

REPORTER'S CERTIFICATE

STATE OF COLORADO)
) ss.
CITY AND COUNTY OF DENVER)

I, SANDRA L. BRAY, Registered Diplomate Reporter, Certified Realtime Reporter, and Notary Public ID 20084001729, State of Colorado, do hereby certify that previous to the commencement of the examination, the said GREGORY W. HAGGQUIST, PH.D. was duly sworn or affirmed by me to testify to the truth in relations to the matters in controversy between the parties hereto; that the said deposition was taken in machine shorthand by me at the time and place aforesaid and was thereafter reduced to typewritten form; that the foregoing is a true transcript of the questions asked, testimony given, and proceedings had.

I further certify that I am not employed by, related to, nor of counsel for any of the parties herein nor otherwise interested in the outcome of this litigation.

IN WITNESS WHEREOF, I have affixed my signature this 6th of December, 2018.

My commission expires January 16, 2020.

__X___ Reading and Signing was requested.
_____ Reading and Signing was waived.
_____ Reading and Signing is not required.

Sandra L Bray

Sandra Bray
Certified Realtime Reporter
Registered Diplomate Reporter

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ERRATA SHEET

DEPONENT'S CHANGES OR CORECTIONS

Deposition of: GREGORY HAGGQUIST

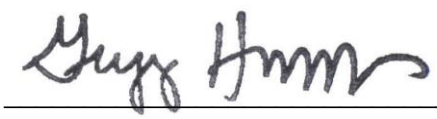
Case Title: VF Outdoor, LLC v. Cocona, Inc.

Date of Deposition: December 5, 2018

I, GREGORY HAGGQUIST, have the following changes or corrections to make to my deposition:

Page:Line	Changes or Corrections	Reasons for Changes or Corrections
9:3	Correction. "I was" should be changed to "if I was"	Corrected answer reflects what deponent said and intended answer
40:5	Correction. Nanograms should be changed to nanometers	Corrected answer reflects what deponent said and intended answer
116:6	Correction. What should be changed to who	Corrected answer reflects what deponent said and intended answer
116:14	Correction. Adsorption should be changed to absorption	Deponent said absorption, not adsorption; corrected answer reflects what deponent said and intended answer

DEPONENT'S SIGNATURE:



GREGORY HAGGQUIST

DATE:_Jan 10, 2019_____

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD COLORADO

Case No. IPR2018-00190
Patent No: 8,945,287

DEPOSITION OF: GREGORY W. HAGGQUIST, PH.D.
December 5, 2018

VF OUTDOOR, LLC,
Petitioner,

v.

COCONA, INC.,
Patent Owner.

A F F I D A V I T

I, Sandra L. Bray, hereby affirm under the penalties of perjury that the contents of the following Affidavit are true and correct and are based on personal knowledge and state as follows:

1. That I am a Court Reporter and Notary Public in and for the State of Colorado and the officer before whom the deposition of Gregory W. Haggquist, Ph.D. was conducted on **December 5, 2018** in the above-entitled matter.

2. That pursuant to the request of counsel, I have reviewed my stenographic notes and back-up audio tapes of the above-referenced proceeding.

3. That after review of my stenographic notes and the back-up audio tapes, I wish the following corrections be noted to the record:

Page 116, line 3 "adsorb" should read "absorb"
Page 116, line 5 "adsorb" should read "absorb"
Page 116, line 20 "adsorbing" should read "absorption"
Page 116, line 25 “calling" should read “cause"
Page 117, line 3 "adsorption" should read "absorption"
Page 117, line 4 "adsorption" should read "absorption"
Page 117, line 5 “adsorbing" should read “absorbing"

* * * *

Affidavit

I DO SOLEMNLY AFFIRM THAT THE CONTENTS OF THE AFOREGOING AFFIDAVIT ARE TRUE AND CORRECT AND ARE BASED ON PERSONAL KNOWLEDGE.

12/27/2018
DATE

Sandra L. Bray

CERTIFICATE OF SERVICE

Notice is hereby given that on the 27th day of December, a copy of the Affidavit of Sandra L. Bray, was sent via email to:

JASON S. JACKSON, ESQ.
KUTAK ROCK
Jason.Jackson@KutakRock.com

PETER A. GERGELY, ESQ.
KATHLEEN E. OTT, ESQ.
MERCHANT & GOULD P.C.
pgergely@merchantgould.com
KOtt@merchantgould.com