1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

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6 HESAI TECHNOLOGY CO., LTD.

7 Petitioner

8 V.

9 OUSTER, INC.

10 Patent Owner

11 - - -

12 Case IPR 2023-01456 (US Patent No. 11,178,381)

13 Case IPR 2023-01457 (US Patent No. 11,190,750)

14 Ref. 56432-0092IP2 & 56432-0093IP2

15

16 WEDNESDAY, OCTOBER 9, 2024

17 Oral deposition of JASON A. JANÉT,

18 Ph.D., held in the offices of Fish &

19 Richardson, P.C., 1000 Maine Avenue SW, Suite

20 1000, Washington, D.C., commencing at 9:09

21 a.m., on the above date, before Deborah L.

22 Williams, a Certified Court Reporter.

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24

25 No. 24-142462

CERTIFIED COPY

Exhibit 1041
Hesai v. Ouster
IPR2023-01456

A P P E A R A N C E S :

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I N D E X

WITNESS PAGE NO.

JASON A. JANÉT, Ph.D.

By Mr. Deutsch.....4, 100

By Mr. Lauppe.....94

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E X H I B I T S

NO. DESCRIPTION PAGE MARKED

Exhibit 2018 Document.....95

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JASON A. JANÉT, Ph.D., after having been duly sworn, was examined and testified as follows:

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EXAMINATION

- - -

BY MR. DEUTSCH:

Q. All right. Thank you for being here today, Dr. Janét. To start, I'll note, of course, that our conversation is being transcribed by the court reporter.

To make her job easier and ensure we can obtain an accurate record, it's important not to talk over each other. So I'll ask a question, and then I'll pause for you to answer.

If a question is unclear, just let me know, and I can rephrase or try to clarify. If you don't ask me to clarify, I'll assume that you understood the question.

Is that fair?

A. That's fair.

Q. And if you need a break, of course, just please let me know. We'll try to take

breaks regularly.

Do you understand that you are under oath and giving testimony today as though you were in front of the Patent Trial and Appeal Board?

A. Yes.

Q. Is there any reason that you cannot give truthful and accurate testimony today?

A. No.

Q. To ensure clarity, there's a few terms that we'll use throughout the deposition, a few documents that we'll refer to. So when I use the term '381 patent, I'm referring to US Patent 11,178,381, and I'll give you a copy of that now, which is Exhibit 1001 in IPR 2023-01456. And when I use the term '381 IPR or '381 proceeding, I'm referring to that case, case IPR 2023-01456.

Does that make sense?

A. Yes.

Q. And then, similarly, when I use the term '750 patent, I'm referring to US Patent number 11,190,750, and that is marked as Exhibit 1001 in IPR 2023-01457.

Do you understand?

A. I understand.
Q. And I'll give you a copy of that as well at this time.
A. Thank you.
Q. Dr. Janét, have you ever been deposed before?
A. Yes.
Q. About how many times have you been deposed?
A. I think it's around 50.
Q. And how did you prepare for today's deposition?
A. I reviewed the testimony I provided and my declarations. I reviewed the prior art and, you know, provided other documents, materials considered.
Q. Do you know about how much time you spent preparing?
A. I don't know that I have an accurate measurement. It was certainly hours.
Q. Did you communicate with anybody in the process of preparing for --
A. I did.
Q. -- this deposition?
A. I did.

MR. LAUPPE: Object to the form.
THE WITNESS: And I apologize for talking over you. I communicated with counsel, who's present here.
BY MR. DEUTSCH:
Q. Did you communicate with anyone else?
A. No.
Q. In terms of the documents, I think you mentioned, generally, you may have -- what references you reviewed, but I'll ask, I guess, a slightly different question.
What references did you review in preparation for this deposition?
MR. LAUPPE: Object to form.
THE WITNESS: The references reviewed include the two declarations from myself and the two declarations from Dr. Shanley, the prior art that was alleged to -- well, that's used in this case by Hesai and Dr. Shanley.
And, otherwise, I believe I scanned over the petition, the decision to institute and a couple of other documents that are referenced in my declaration.

BY MR. DEUTSCH:
Q. Were there any documents not referenced in the declaration that you used in preparation for the deposition?
A. No.
Q. Where do you currently work, Dr. Janét?
A. I currently work for Applied Research Associates.
Q. Have you ever done work for Ouster in the past prior to these proceedings?
MR. LAUPPE: Object to form.
THE WITNESS: I believe I've served as an expert witness. I would have to double-check my resume to be sure. I've been involved with 80 or more matters, so I don't remember all of them.
BY MR. DEUTSCH:
Q. Understood. Do you recall when you were contacted to begin work on this matter?
A. I actually don't. For the IPRs, I don't remember a specific date. I'd probably have to go back and take a look at notes.
Q. Do you recall what your next activity was after being contacted by Ouster to

work on this proceeding?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: I don't recall exactly. I assume it had something to do with in reading or catching up on the petition and the decision to institute and the POPR and other relevant documents, of course the prior art, alleged prior art.

BY MR. DEUTSCH:

Q. And then eventually it got to the point of preparing your declaration in these proceedings.

Can you explain the process of preparing your declaration?

MR. LAUPPE: Object to form.

THE WITNESS: Well, the process that I normally follow and I'm sure I followed in this situation is that I initially tried to get familiar with the positions of the parties and, again, reviewing the patents at issue and the alleged prior art and other relevant information and then writing an initial draft that I believe at a minimum lays out my opinions or at least the foundations for those opinions. And then I

send that to counsel and then refine that document in coordination with counsel.

BY MR. DEUTSCH:

Q. So if I understood you correctly, you said you wrote the first draft of your '381 declaration.

A. Correct.

Q. Did anyone else assist you in preparing that first draft of the '381 declaration?

MR. LAUPPE: Object to form.

THE WITNESS: My recollection would be, no, that I was the one that prepared the initial draft.

BY MR. DEUTSCH:

Q. Let's turn to the '381 patent, Exhibit 1001, which you have a copy of in front of you. I'd like to step through the '381 patent a bit and just get an understanding of your view of the '381 patent. Let's start at Figure 1 of the '381 patent.

What does Figure 1 of the '381 patent show?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: I defer, of course, to

my description of this patent in its entirety and, of course, Figure 1 to what's in my declaration, which I don't have in front of me right now.

In its most basic form, Figure 1 provides a graphic or drawing of what's described in a more detailed fashion starting -- well, essentially, in Column 1 but in more detail Column 2 where it says that [as read]:

"As shown in Figure 1, a one-dimensional optical system 100 for collecting distance information within a field includes: a set of illumination sources labeled 110, which is shown at the bottom right of the drawing in Figure 1, arranged along first axis, each illumination source in the set of illumination sources 110 configured to output an illuminating beam of an operating wavelength toward a discrete spot in the field ahead of the illumination source."

That beam shown projecting from the bulk optic 120 on the lower left side of the figure and toward a discrete spot in the

field ahead of the illumination source would be where it intersects with and is reflected off the surface shown on the left side of the figure, Figure 1.

The return or the reflection, as you can see, is shown scattering or diverging as it moves from the reflected surface back to the bulk optic 130 and then passing through an aperture layer labeled 140.

The -- once it passes through the aperture layer, the aperture layer defining the field of view, it passes through a lens array, and then the lens array is labeled 150 and then a light filter labeled 160, and to be more precise with that, an optical filter labeled 160 shown in the figure but not labeled.

Once it passes through the optical filter, it enters and exits from diffusers which within the document are referred to as 180. In fact, Column 2, line 54 -- I'm sorry, line 34 mentions the diffuser, and then once it leaves the diffuser, it then -- the rays reach the set of pixels 170.

There are obviously additional

details in the Figure 1 within the document, but I think that gets the gist across.

BY MR. DEUTSCH:

Q. Yes, thank you. And let's turn to Figure 2, and I have a similar question for Figure 2. What does Figure 2 show?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Figure 2 from Column 1 of the patent says that it's a schematic representation in accordance with one variation of the system. Figure 2 is used for illustrative purposes reviewing the patent to describe, for example, the lower portion of Column 3 around line 61, how the aperture layer is utilized or employed.

Otherwise, I would say any additional clarity as it relates to what I utilized in my declaration, we would probably need to visit my declaration regarding this.

BY MR. DEUTSCH:

Q. Thank you. So in Figure 2, I see two components kind of at the lower right, 111 and 112.

What does component 111 refer to?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, 111 is referred to as a first illumination source.

And what was the other number? 112? I'm sorry.

MR. DEUTSCH: Correct.

THE WITNESS: Just as a quick scan through the '381 patent, and, again, without the support of my declaration in front of me, I don't see where 112 is -- oh, here it is. It's called out on Column 15, line 44 as a second illumination source.

BY MR. DEUTSCH:

Q. Okay. And let's start with 111. I see five lines extending out from 111.

What do those lines depict?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: Just out of curiosity, is this in my declaration?

BY MR. DEUTSCH:

Q. I'm sorry, here's your declaration. It's Exhibit 2009.

A. Is there a particular reference to

Figure 2, particularly those lines, in my declaration?

Q. I don't have a paragraph number, but, please, if there is --

A. What about in Dr. Shanley's? Is there a reference to Figure 2 in Dr. Shanley's declaration on '381?

Q. There's discussion of Figure 2. I guess I'm asking just specifically about the lines that are shown right now and understanding what those five lines are showing.

Coming from 111, it looks like they pass through lens 120 into the field.

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, as you can see, it's not annotated, so the particular intent of those lines, which, again, I do not recall referencing in my declaration but I'm happy to review to be sure, it simply refers to it as an illumination source, but those lines aren't annotated.

BY MR. DEUTSCH:

Q. And if you follow those lines, it

looks like after passing through lines 120. They diverge slightly and then hit a spot in the field; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Can you point me to what you're referring to?

BY MR. DEUTSCH:

Q. Yeah. I'm referring to those five lines in following those from 111 as they travel to the left in the figure, and you'll see the top and bottom of those five lines have arrowheads at that spot in the field.

Do you see that?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Again, if this is in my declaration and we want to discuss my opinions regarding Figure 2, I'm happy to do that, but I'm not seeing five lines with arrows at the ends in the beginning, and you're sort of generally pointing to this. So I see lines. I don't see annotations. I don't see references in the patent as I did a quick review here.

If I did a more thorough review, it would be discussed in my declaration, which I'm happy to focus on.

BY MR. DEUTSCH:

Q. Yeah, please take your time and look at your declaration, if that's helpful.

A. (Witness reviewing document.)

Q. And I can clarify the question further, Dr. Janét.

A. Sure.

Q. I'm just looking for your understanding of what's being emitted from component 111 and what happens to that emission as it interacts with the other components that are found in Figure 2.

MR. LAUPPE: Object to form and scope.

BY MR. DEUTSCH:

Q. And if you haven't taken an opinion on that, you can let me know.

A. So to your, I guess, initial question, my reference to Figure 2 in my declaration, as far as I can tell, is limited to a quote in my discussion about the aperture later, more specifically I think in paragraph

121, which regards the term or the -- let me get my bearings here -- the plurality of pixels has a field of view coincident with an emission of region.

And my understanding of Dr. Shanley's understanding regarding the field of view and the term coincident with, I cite to, I believe, Column 4, lines 15 through 18, and I'm quoting [as read]:

"The aperture layer 140 includes a relatively thin opaque structure coinciding with (for example, arranged along) the focal plane of the bulk image optic 130, as shown in Figures 1 and 2."

As far as I can recall, that is the extent to which I refer to Figure 2. I'm happy to address any other places where you might find that that I don't recall off the top of my head.

So then to your second question of what is -- and I'm paraphrasing, so you can correct me if I'm off here -- what is emanating from component 111; is that correct?

Q. That's a good place to continue, yeah.

A. In Column 5, line 45, it says [as read]:

"Generally, photons projected into the field by the first illumination source 111 illuminate a particular region of a surface (or multiple surfaces) in the field within the field of view of the first sense channel and are reflected (for example scattered) by the surfaces."

So to your question, just from the patent language, photons are projected from the illumination source 111.

Q. And to make sure I'm understanding correctly, so you're saying the lines in Figure 2 are representative of those photons that are projected from the illumination source 111?

MR. LAUPPE: Object to form and scope.

THE WITNESS: I don't believe I'm saying that. I think all I've said is that those lines aren't annotated, and I don't recall off the top of my head using or referring to those lines.

I see that you're trying to bridge that those lines represent the photons, but

I really wasn't asked to opine on that that I recall. I'd defer to my declaration, of course.

BY MR. DEUTSCH:

Q. Do you have an opinion on what happens to those lines as they are reflected by the surface and then returned to the right in Figure 2?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, again, you're mapping those lines to the photons, and I do not see an annotation related to those lines. I simply would refer to, as I mentioned, Column 5, line 45 where it says [as read]:

"Photons projected into the field by the first illumination source 111 illuminate a particular region of a surface (or multiple surfaces) in the field," and it goes on.

BY MR. DEUTSCH:

Q. Again, just in the context of Figure 2, it looks like some of those lines that emanate from 111 pass through what you referred

to as the aperture layer; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: You're referring to which lines?

BY MR. DEUTSCH:

Q. The five lines that extend from emitted 111.

MR. LAUPPE: Same objections.

THE WITNESS: And what was your question? Some of those lines pass through the aperture layer; is that correct?

BY MR. DEUTSCH:

Q. Correct. To be more specific, the aperture layer that's labeled with numeral 140.

MR. LAUPPE: Same objections.

THE WITNESS: Again, I defer to my declaration. I do not recall opining about those lines.

BY MR. DEUTSCH:

Q. So looking at Figure 2, it's not clear to you whether some lines pass through the aperture layer or not.

MR. LAUPPE: Object to form and scope.

THE WITNESS: There are lines that are moving in a variety of directions in this drawing, and these lines are not individually annotated or even collectively annotated, as I can recall.

BY MR. DEUTSCH:

Q. So let's just simplify and take one line and follow it from component 111 until its final.

So starting at 111, do you see the top line of that set of five lines?

MR. LAUPPE: Object to form and scope.

THE WITNESS: I do see a top line moving from this rectangle labeled 111. Whether it's moving from or back towards -- you know, I realize that it's an emitter, but the significance of that line and the direction that it's moving is not clear immediately at 111, but I do see a top line on the left of the rectangle labeled 111.

BY MR. DEUTSCH:

Q. And if you follow that top line to the left in Figure 2, it intersects with a component labeled 120; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Again, I do not recall opining about this in my declaration. I see that there's a top line that is drawn and is either through, above or below -- it's hard to tell because it's a 2D rendering -- the component labeled 120.

BY MR. DEUTSCH:

Q. And if you continue with that line, it angles upwards slightly on the page the way it's drawn and continues to the left where there's an arrowhead and it appears to hit another component; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Assuming it's the same line after exiting or to the left of 120, there is an angled line angled up and with an arrowhead at the top tapered in of whatever is represented on the left side of Figure 2.

BY MR. DEUTSCH:

Q. And then that line continues back to the right and on the page appears to encounter

a component labeled 130; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, if you are moving from left to right, that line actually intersects another line, and so the continuity of that is in question to whether it's a straight path or a divergent path.

Again, I don't recall opining about Figure 2, other than including a reference to -- to it in the citation in paragraph 121 regarding the aperture layer.

BY MR. DEUTSCH:

Q. And then that top line continues through 130 through an opening in aperture layer 140 through component 151.

A. Which top line are you referring to at this point?

MR. LAUPPE: Object to form and scope.

BY MR. DEUTSCH:

Q. The same top line we've been talking about that continues after the arrowhead at component 130.

MR. LAUPPE: Same objections.

THE WITNESS: Again, if there's a place in my declaration that particularly calls out these details where I opine about this, I'm happy to talk about it.

Otherwise, this, as I mentioned before, there is a question as to whether what you were calling the top line to begin with is what continues straight or if there's any sort of exchange of directionality because there's a -- now there's a new top line.

BY MR. DEUTSCH:

Q. To be clear, I'm referring to the line that passes through an opening in aperture layer 140.

Is that the line you were referring to?

MR. LAUPPE: Object to form and scope.

THE WITNESS: You're referring to which line? Because, again, there's now -- there's a top line with an arrowhead that terminates at the aperture layer.

BY MR. DEUTSCH:

Q. Yeah, thank you for being precise in

your answers here.

Do you see aperture layer 140?

A. Yes.

Q. And how many openings are depicted in the aperture layer 140 in Figure 2?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, it would appear there are two openings.

BY MR. DEUTSCH:

Q. And in the top of those two openings, do you see lines passing through that opening?

MR. LAUPPE: Object to form and scope.

THE WITNESS: If you're asking me are there lines in the gap between the upper two rectangles that are hashed and presumably part of 140, because they have a similar appearance, there are three lines that are drawn in that gap.

BY MR. DEUTSCH:

Q. And just to clarify, you don't have an opinion on what the direction of travel is of those lines or what's depicted by those

lines?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Again, this was not something I opined on. I'm happy to go to my declaration.

If you'll notice, there's not an arrow on that -- on several of these lines, but I'm assuming that you're referring to the three that are passing through a gap between the upper two rectangles, but the arrowheads are on opposite sides of objects. In fact, it appears that the -- almost as physical the lines terminate at 151.

BY MR. DEUTSCH:

Q. Now looking at that same gap in 140, if you look just below and to the left, there's a line and an arrowhead that appears to intersect material of 140.

Do you see that?

MR. LAUPPE: Object to form and scope.

THE WITNESS: I think I'm going to stop here. Where in my declaration or Dr. Shanley's declaration is this in-depth

analysis on Figure 2?

BY MR. DEUTSCH:

Q. You did review the '381 patent, correct?

A. I did review the '381 patent, correct. I didn't refer to this, other than, as far as I can recall, with regards to the fact that there exists aperture layers that are used for defining the field of view.

Q. So you don't have an opinion on what Figure 2 of the '381 patent is depicting when it shows some lines emanating from 111 as passing through the aperture layer and at least one line not passing through the aperture layer; is that correct?

MR. LAUPPE: Object to form and scope.

THE WITNESS: As far as I can recall, any analysis of the lines that you are trying to maneuver me through is not in my declaration, and the opinions that I formed in this matter or with regard to this matter are in my declaration.

I also don't recall any detailed analysis by Dr. Shanley about these lines.

Now, I could be wrong on both fronts. If I am, I'm happy to visit where I specifically analyzed these lines that we are analyzing extemporaneously here, but this is kind of verging into hypothetical territory because I didn't really have a reason, I believe, to look at these lines in such detail and form opinions about it.

Again, if this is in my declaration or Dr. Shanley's, I'm happy to look at it, and I can analyze it.

BY MR. DEUTSCH:

Q. So right now sitting here, you don't have an opinion on the field of view of the pixel that corresponds to emitter 111 in Figure 2.

MR. LAUPPE: Object to form and scope.

THE WITNESS: My opinion about the field of view of 111 would be any reference I have to Figure 1. Figure 1 -- again, if I'm wrong, point it to me. But 111 in Figure 1 does not have any lines drawn from it passing through bulk optics and the like.

BY MR. DEUTSCH:

Q. So you didn't consider Figure 2 in your opinion of the field of view of a pixel and its corresponding emitter.

MR. LAUPPE: Object to --

MR. DEUTSCH: Let me rephrase that.

BY MR. DEUTSCH:

Q. Dr. Janét, you didn't consider Figure 2 in your opinion of determining the field of view of a pixel in the '381 system.

MR. LAUPPE: Object to form and scope.

THE WITNESS: To the best of my recollection, my consideration of Figure 2 was limited to what I describe in paragraph 121, which relates to [as read]:

"The aperture layer 140 includes a relatively thin opaque structure coinciding with (for example, arranged along) the focal plane of the bulk imaging optic 130, as shown in Figures 1 and 2."

The thin opaque structure coinciding with the focal plane of the bulk imaging optic, you can see Figure 1 where the focal plane, i.e., the marginal rays, for lack of a better term, converging and that -- and

I'm pointing to aperture layer 140 -- arranged along the focal plane of the bulk imaging optic 130.

So that's the reference. And as far as I can recall off the top of my head -- again, if I'm wrong, I'm happy to visit where else I might be describing or referencing Figure 2. But the extent to which I'm referencing Figure 2 or formed any opinions about Figure 2 is the aperture layer coinciding with the focal plane of the bulk imaging optic 130.

BY MR. DEUTSCH:

Q. So let's talk about the aperture layer. I want to make sure I understand your understanding of aperture layer 140.

Could you tell me again how aperture layer 140 functions in the '381 system shown in Figure 2?

MR. LAUPPE: Object to form and scope.

THE WITNESS: How it functions?

BY MR. DEUTSCH:

Q. I can clarify that.

Maybe I would say what the purpose

of aperture layer 140 is.

MR. LAUPPE: Object to form and scope.

BY MR. DEUTSCH:

Q. If it's helpful, we can talk about the bottom of Column 3 of the '381 patent. At line 60 the paragraph begins [as read]:

"As shown in Figures 1 and 2, the system includes an aperture layer 140," and then continuing at line 65, "wherein each aperture in the set of apertures 144 defines a field of view in the field coincident a discrete spot output by a corresponding illumination source in the set of illumination sources 110."

Do you see that?

A. Yes.

Q. And so, is that what's shown in Figure 4 with the two apertures that you've identified, or is that referring to something else?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, just to fill in the gaps, starting at 61 [as read] :

"As shown in Figures 1 and 2, the system includes an aperture layer 140 coincident the focal plane" -- which was the major point for my reference to Figure 2, as far as I could tell, the only reference to Figure 2 -- "defining a set of apertures 144 in a line array parallel to the axes of the illumination sources, and defining a stop region 146 around the set of apertures 144, wherein each aperture in the set of apertures 144 defines a field of view in the field coincident a discrete spot output by a corresponding illumination source in the set of illumination sources 110, and wherein stop region 146 absorbs and/or reflects light rays reflected from surfaces in the field outside of fields of view defined by the set of apertures 144 and passing through the bulk imaging optic 130."

So just looking at this excerpt as an example, the apertures or the aperture layer defined the field of view outside of which the stop region absorbs and/or reflects light rays that are outside the fields of view.

BY MR. DEUTSCH:
Q. So you don't have an opinion in Figure 2 which lines represent photons within the field of view or outside the field of view of a particular pixel?
MR. LAUPPE: Object to form and scope.
THE WITNESS: I'm sorry, were you asking about Figure 4 or Figure 2? I think that your question originally was about Figure 4.
BY MR. DEUTSCH:
Q. Figure 2.
A. So could you ask that again, please?
Q. Am I understanding correctly that you don't have an opinion regarding Figure 2 as to which lines represent photons within the field of view or outside the field of view of a given pixel?
MR. LAUPPE: Object to form and scope.
THE WITNESS: Again, the extent to which I referenced Figure 2 related to the aperture layer being coincident to I believe the -- the aperture layer coinciding with

the focal plane of the bulk imaging optic 130.

Outside of that, I don't believe I formed any opinions about those lines.

BY MR. DEUTSCH:

Q. What would a person with skill in the art understand those lines to mean in view of the '381 specification?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, I believe that a person with ordinary skill in the art would review the patent for any detailed description about those lines and form an opinion where there are details and specific reference to those lines.

I do not recall in my declaration or Dr. Shanley's where any detailed analysis was and opinions formed from these lines. I'm, of course, happy to review anything specific in either declaration.

BY MR. DEUTSCH:

Q. Understood. That makes sense, you don't recall considering those lines in your analysis to form the opinions in your

declaration.

MR. LAUPPE: Object to form and scope.

THE WITNESS: I'm happy to -- where I formed opinions about those lines, I'm happy to review those with you or whatever Dr. Shanley did.

BY MR. DEUTSCH:

Q. That's all I'm trying to understand, what your opinions are of those lines. If you didn't consider them, that's fine. If you did, I'd like to know what those opinions are.

MR. LAUPPE: Object to form and scope.

BY MR. DEUTSCH:

Q. Does that make sense?

A. I think that you're -- and it might have something to do with how I, as a person with ordinary skill, would interpret what you're saying. So considering versus forming an opinion about seem like two different steps.

I don't recall forming an opinion about those lines, and if I did, I'm more than happy to dive into the details of what I've written or stated, and the same for Dr.

Shanley.

Q. So sitting here right now, you don't have an understanding of what those lines are depicting in Figure 2?

MR. LAUPPE: Object to form and scope.

THE WITNESS: As far as I can recall, I did not form an opinion about those lines, and I do not see specific annotations that would make it easy for somebody reading this patent to know exactly what those lines are intended to represent. And if I or Dr. Shanley did, I'm happy to go into those details.

MR. DEUTSCH: Understood.

Would a break be helpful at this point? I know we've been going about an hour.

THE WITNESS: I'm fine. We can keep going.

BY MR. DEUTSCH:

Q. Let's turn to paragraph 122 of your '381 declaration. In paragraph 122 you cited to the Oxford English Dictionary 1989 for a definition of coincident and, in particular, a

definition as occupying the same place or portion of space; is that correct?

A. That's correct.

Q. And I'm just trying to understand what it means to occupy the same place or portion of space as you're referring to it here?

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. Reading the declaration at paragraph 122, and the definition particularly, the language does not recite occupying only the same space; is that right?

MR. LAUPPE: Object to form and scope.

THE WITNESS: Well, the excerpt from the definition from Exhibit 2011 at 5 is, as I cited it there, occupying the same place or portion of space.

Can I make a correction on that?

It's, quote, occupying the same place or portion of space.

BY MR. DEUTSCH:

Q. So, in your opinion, does that -- let me rephrase that.

Are you suggesting that that means two things need to be exactly in the same place or portion of space in order to be occupying the same place or portion of space as you've used it there?

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. I can clarify that if it's helpful.

A. Uh-huh. Go ahead.

Q. As using that definition in paragraph 122, is it your understanding that if two circles are aligned on a common axis, that would be an example of occupying the same place or portion of space?

MR. LAUPPE: Object to form. Hypothetical. Object also to scope.

THE WITNESS: I fear there might be a few different ways to interpret what you're asking me, so I don't feel I can go into a hypothetical.

If you have an example you can show me or something like that, even then I might be hesitant depending on the variability on interpretation, but...

BY MR. DEUTSCH:

Q. Yeah, and to clarify further, I'm just trying to understand your usage in paragraph 122 and at a high level whether you're saying occupying the same place or portion of space means exactly the same place or portion of space and only the same place or portion of space or if you're suggesting that it means something different.

MR. LAUPPE: Object to form.

THE WITNESS: To add clarity in response to your question, a little further down in paragraph 122 I say [as read]:

"Consistent with this definition, my understanding of the 'each pixel in the plurality of pixels has a field of view coincident with an emission region of a corresponding optical emitter claim language is that it means an emission region of an emitter and a field of view of a corresponding detector occupy substantially the same 'portion of space' in the field."

BY MR. DEUTSCH:

Q. So what do you mean by "substantially the same portion of space in the field"?

MR. LAUPPE: Object to form.

THE WITNESS: Substantially is, at least in part, defined by the '381 patent to mean the vast majority of which or, in fact, in the '381 I believe it can be all of the field of view.

But to add further context, the '381 is concerned with minimizing waste, wasted energy, while at the same time improving or maximizing the signal-to-noise ratio. So considering where those intersect, a person with ordinary skill would take the position -- and this is mentioned several places in my declaration, and I'm happy to visit them individually -- that it occupies the -- you know, substantially the same area or the same portion of space and in doing so in such a manner that you're again minimizing waste, which is to say loss of emitted energy that would be outside that field of view but maximizing a signal-to-noise ratio, which would entail the vast majority or not all of that field of view.

Q. Understood. So when you're citing

to that dictionary in 122, you're not saying that it's exactly the same --

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. -- in order to satisfy that definition, but it could be exactly the same.

MR. LAUPPE: Object to form and scope.

THE WITNESS: I'm simply following the guidance of the '381 patent where it describes occupying substantially the same amount of space in such a manner that you minimize waste and you maximize signal-to-noise ratio.

BY MR. DEUTSCH:

Q. And so in some cases, the area is slightly different while still minimizing ways to maximizing the signal-to-noise ratio?

MR. LAUPPE: Object to form. Hypothetical. Object to scope.

THE WITNESS: The area you're referring to?

BY MR. DEUTSCH:

Q. The area that you were referring to. I was just trying to understand your answer. I

think you said that the '381 patent describes occupying substantially the same amount of space in such a manner that you minimize waste and you maximize signal-and-noise ratio.

So I'm trying to understand if that area, in order to minimize waste and maximize signal-to-noise ratio as you've described it, if you're saying the area is exactly the same or there's some leeway where you're still achieving those functions.

MR. LAUPPE: Object to form and scope.

THE WITNESS: I'm not sure I totally understand your question. First of all, I think you meant signal-to-noise ratio.

MR. DEUTSCH: Correct.

THE WITNESS: And I think if there's a particular part of my declaration where I'm referencing the area you're referencing, just to make sure we're talking about the areas, that probably would be a better place to start.

BY MR. DEUTSCH:

Q. Sure. I think one example is paragraph 110 of your declaration, if I'm

correct -- correct me if I'm wrong -- in particular, the first sentence of paragraph 110.

Do you see that?

A. Yes. Well, you're referring to the beginning of paragraph 110, which has a -- the first sentence that ends at the top of page 55; is that correct?

Q. Correct, it has [as read]:

"...to mean that the field of view of each pixel and the emission region of a corresponding [or paired[optical emitter cover covers substantially the same area in the field."

So that's the area I'm asking about and particularly what your opinion is regarding substantially the same area in the field.

I guess to be more specific, I think you had stated that substantially the same area is intended to minimize waste and maximize the signal-to-noise ratio.

Do I have that right?

MR. LAUPPE: Object to form.

THE WITNESS: So in paragraph 111, among other places, I say [as read]:

"In other words, the '381 patent discloses that the 'discrete spot' or emission region of an illumination source 110 has substantially the same area in the field as an aperture 140."

And I cite [as read]:

"The '381 patent the specification discloses: Because a second aperture 142 in the aperture layer 140 is offset from the first aperture 141 and because the particular region of the surface in the field illuminated via the first illumination source 111 does not (substantially) coincide with the field of view of the second aperture 142." And I go on.

So the term "substantially" comes from the '381 patent.

BY MR. DEUTSCH:

Q. Do you have an opinion on what that means?

MR. LAUPPE: Object to form and scope.

THE WITNESS: As I go on to explain in paragraph 112 that Figure 1 shows light from two illumination sources deflecting off

of different areas in the field and entering into different apertures.

I also point out that [as read]:

"The '381 patent indicates that each emitter's radiation output substantially matches the field of view of its corresponding detector."

I was going to elaborate further, if that's okay.

MR. DEUTSCH: Please.

THE WITNESS: So the discussion about minimizing waste is highlighted in paragraph 113 where I cite to the '381 patent where it discloses [as read]:

"The illumination sources are configured to illuminate substantially only surfaces in the field ahead of the system that can be detected by pixels in the system such that minimal power output by the system (via the illumination sources) is wasted by illuminating surfaces in the field for which the pixels are blind," so hence my brief statement about minimizing waste.

And if I could continue, paragraph 114 talks about how the -- what effectively

is the improved or maximized signal-to-noise ratio [as read]:

"A signal passed into the first lens 151 by the first aperture 141 in the aperture layer 140 can exhibit," with emphasis, "relatively high ratio of light rays originating from the first illumination source 111 to light rays originating from other illumination sources in the system." So it serves to distinguish.

And skipping some content [as read]:

"Each aperture in the aperture layer 140 may pass a relatively high proportion of photons originating from its corresponding illumination source than from other illumination sources in the system; that is, due to the geometry of a particular aperture and its corresponding illumination source."

BY MR. DEUTSCH:

Q. A moment ago you referred to paragraph 112. I'd like to go back to that just for a moment. At the bottom of paragraph 112, you indicate that [as read]:

"The '381 patent indicates that each emitter's radiation output 'substantially'

matches the field of view of its corresponding detector," and then that's followed by a citation to the '381 patent.

Is it your understanding that when it says "substantially matches" that it's excluding exactly matches?

MR. LAUPPE: Object to form and scope.

THE WITNESS: I don't recall making a comparison between those two. If I did, I'm happy to visit that. I'd have to think a little bit more about the specifics of your question, but substantially matching means substantially matching. I also don't recall anywhere in the patent where it talks about whether there's a difference between substantially matching or exactly matching. Again, if it's there, I'm happy to visit it.

BY MR. DEUTSCH:

Q. You say it could include exactly matching and it could include something other than exactly matching.

MR. LAUPPE: Object to form and scope.

THE WITNESS: I don't recall

1 focussing on the term exactly. I don't
2 recall the patent using the term exactly in
3 describing this as well.
4 BY MR. DEUTSCH:
5 Q. So you don't have an opinion if
6 substantially matches encompasses complete or
7 exact match?
8 MR. LAUPPE: Object to form.
9 THE WITNESS: I am happy to visit
10 any place where I considered the term
11 exactly matches. I focused on the term
12 substantially matches and, as far as I can
13 recall, didn't form an opinion to
14 distinguish, compare, contrast those two
15 scenarios.
16 BY MR. DEUTSCH:
17 Q. What is the difference between
18 substantially matches and just matches? In
19 other words, when you say "substantially
20 matches," what does that add versus just saying
21 matches? What are you trying to convey?
22 MR. LAUPPE: Object to form.
23 THE WITNESS: Let me see if I can
24 provide some support.
25 As I previously articulated,

substantially matches within the context of the '381, from my understanding, includes minimizing wasted power and maximizing the signal integrity discrimination or signal-to-noise ratio.

So that would shape a person with ordinary skill's definition of substantially in interpreting this. So if it delivers on those, then -- on both of those, then a person with ordinary skill would understand that the illumination pattern substantially matches the field of view.

MR. DEUTSCH: Let's turn to Retterath.

Let's go off the record.

- - -

(Whereupon, a recess was held.)

- - -

BY MR. DEUTSCH:

Q. Let's talk about the Retterath reference. This is Exhibit 1005. If you could please turn to Figure 6. I understand Figure 6 to show a side view of emitter elements 100 with a macro lens 80; is that correct?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: What did you call 100?
BY MR. DEUTSCH:
Q. Emitter elements. I believe that's the label Retterath gives.
MR. LAUPPE: Same objections.
THE WITNESS: Yes, Retterath defines emitter elements as 100. And then you were asking about 80, which --
BY MR. DEUTSCH:
Q. If it's helpful, I'm referring to the second paragraph of Column 9 that begins "Referring to Figure 6..."
A. Yes, the macro lens 80.
Q. And what does numeral 82 refer to?
A. The sentence with the number 82 reads [as read]:
"The macro lens 80 is configured to diverge to produce a plurality of beams 82 along a multitude of emitter vectors (coincident axes) 120 throughout the device's field view.
Q. And looking at Figure 6, the emitter to the right is labeled with numeral 100; is that correct?
A. Yes, it appears to have a LiDAR line

from the top right flat surface of the right most component labeled 100.

Q. And it looks like there are three emitter elements shown in Figure 6; is that correct?

MR. LAUPPE: Object to form.

THE WITNESS: They have the same appearance. The other two have the same appearance as the one labeled 100.

BY MR. DEUTSCH:

Q. Are you saying those are not emitter elements?

MR. LAUPPE: Object to form.

THE WITNESS: I'm not saying that they're not. The paragraph in Column 9 starting at line 12 says [as read]:

"Referring to Figure 6, a cross section side view of emitter elements 100..."

So one may assume that because the other two look very similar to the one that actually is labeled 100 that they are what constitute the plurality of emitter elements, but it's not labeled 100.

BY MR. DEUTSCH:

Q. Got it. And then in Column 10, the second full paragraph Retterath discusses Figure 10 and says [as read]:

"Referring to Figure 10 a cross section side view of a detector element with a macro detector lens 230 is shown according to an embodiment."

Do you see that?

A. Yes, I see that written there.

Q. So in Figure 10, what does numeral 220 refer to?

A. 220 is defined in Column 10, line 34, as a detector vector.

Q. And I have a similar question to what I just asked regarding Figure 6.

So in Figure 10, it refers to detector elements 200. The right most detector element includes numeral 200 and a wave line to it, and there are two other emitter elements also shown; is that correct?

MR. LAUPPE: Object to form.

THE WITNESS: As stated before, I acknowledge that it pluralizes the term detector elements 200 and that the other two that are not labeled 200 have a similar

appearance to the one on the right that is labeled 200.

BY MR. DEUTSCH:

Q. So are you viewing those as emitter elements 200 as well, or are you viewing those as something else?

MR. LAUPPE: Object to form.

THE WITNESS: Column 10, line 23 says [as read]:

Referring to Figure 10 a cross section side view of a detector element with a macro detector lens 230 is shown according to an embodiment. In embodiments, detector elements 200 comprise a substrate 50, a photoreceptor 224, a bandpass filter layer 226 and a protective layer 228. In other embodiments, light can be received from a diverging field of view at a macro detector lens 230 that directs in-bound light to the surface of detector elements 200."

So the start to the description of Figure 10 refers to a detector element.

Then there's discussion about embodiments. And at the last portion of that paragraph, line 30, Column 10, it

simply describes that [as read]:

"In other embodiments, light can be received from a diverging field of view at a macro detective lens 230 that directs in-bound light to the surface of detector elements 200."

The other two, while similar in appearance, are not labeled 200. It just simply refers in that paragraph to the fact that in other embodiments that there would be plural detector elements.

BY MR. DEUTSCH:

Q. So you're not sure what those other boxes are?

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. I think those three boxes are all referring to detector elements, and I just want to understand if that's your opinion or if you view those as something else.

MR. LAUPPE: Object to form. Scope.

THE WITNESS: All I know from the reading -- and, again, if there's other places that identify those other two things as definitively detector elements, I -- I

would be able to agree there as well. But in this situation, the initial description about Figure 10 in Column 10 starting at line 23 refers to [as read]:

"...a cross section side view of a detector element with a macro detector lens 230 is shown according to an embodiment. In embodiments, detector elements 200 comprise a substrate 50."

I acknowledge they are similar in appearance, but the only thing that's annotated is the one on the bottom right.

BY MR. DEUTSCH:

Q. In view of the similarity of appearance, would a POSITA understand those to be detector elements 200?

MR. LAUPPE: Object to form.

THE WITNESS: I think in these sort of matters, being exacting is really important. POSITA would notice the similarities, may entertain the possibility that they are the same, may not have a reason to believe there's something other but would also recognize that they're not actually labeled.

BY MR. DEUTSCH:

Q. If you flip the page and continue to Figure 11b --

A. Okay.

Q. -- I see numeral 200 in the top left quadrant and numeral 100 in the bottom right quadrant.

Do you see that?

A. I do.

Q. In Figure 11b, what do numerals 100 and 200 refer to?

A. Column 10, starting at line 62 [as read]:

"Referring to Figure 11b a physical device layout according to an embodiment is shown. In embodiments, emitter elements 100 can be arranged in an emitter electro-optical section 248" -- which is shown on the bottom right corner of Figure 11b -- "and detector elements 200 can be arranged in an emitter electro-optical section 246 of device 240."

246 is the upper left-hand corner which provides some containment for what's described as detector elements 200.

Q. And in the following sentence, I see

Retterath indicates [as read]:

"The number of detector elements 200 can be equal to or greater than the number of emitter elements 100."

A. Correct.

Q. Is one of those examples shown in Figure 11b?

MR. LAUPPE: Object to form.

THE WITNESS: So operating under the assumption that because an area in which the emitter elements 100 are contained, specifically that area being 248, and that all of these circles or each of these circles is an emitter element, it would appear that there are 64 emitter elements in the lower right-hand corner of Figure 11b.

Operating the assumption that all of the black dots are detector elements which are contained in the Section 246, it would appear there are 138 detector elements in that Section 246 and called the electro-optical section, if my math is correct.

BY MR. DEUTSCH:

Q. At any rate, the number of detector

elements is greater, assuming we're treating each of those black dots, a detector element as you indicated -- the number of detector elements is greater than the number of emitter elements 100.

A. Operating under those assumptions, 138 detector elements is greater than 64 emitter elements.

MR. LAUPPE: And, sorry, I didn't get to chance to register my object to form.

BY MR. DEUTSCH:

Q. And Retterath also describes examples in which the number of detector elements 200 is equal to the number of emitter elements 100, correct?

MR. LAUPPE: Object to form.

THE WITNESS: Starting at line 66, Column 10, Retterath writes [as read]:

"The number of detector elements 200 can be equal to or greater than the number of emitter elements 100."

BY MR. DEUTSCH:

Q. Is that your answer, or are you looking for more?

A. That was my answer.

Q. And in Figure 11b, looking at the emitter elements 100, I think you described that as an eight-by-eight arrangement; is that correct?

MR. LAUPPE: Object to form.

THE WITNESS: It would appear that contained in the Section 248 of Figure 11b there are eight columns of circles and eight rows of circles.

BY MR. DEUTSCH:

Q. One possible arrangement for the emitter and detector elements of aligned rows and columns; is that right?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: Well, the paragraph related to Figure 11b or the initial discussion about Figure 11b says [as read]:

"Referring to Figure 11b a physical device layout according to an embodiment is shown. In embodiments, emitter elements 100 can be arranged in an emitter electro-optical section 248 and detector elements 200 can be arranged in a detector electro-optical section 246 of device 240."

BY MR. DEUTSCH:

Q. Let's turn to paragraph 157 of your declaration. So at paragraph 157, you cite to a discussion in Retterath beginning at Column 9, line 59, and continuing to line 65. Beginning at line 62 Retterath says [as read]:

"In-bound optical energy that is more than slightly non-parallel to the receive detector vector (coincident axis) 220 will be substantially blocked by the detector waveguide or directed elsewhere by the macro lens."

Is that correct?

A. Starting at line 62, Column 9, is the sentence that I believe you just read. It states [as read]:

"Inbound optical energy that is more than slightly non-parallel to the received detector vector (coincident axis) 220 will be substantially blocked by the detector waveguide or directed elsewhere by the macro lens."

Q. So turning back to paragraph 157, in the first sentence under the annotated figure that you provided, you state [as read]:

"Retterath repeatedly discloses that waveguide material 215 only 'partially reduces in intensity' or 'substantially' blocks light."

When you quote "substantially," is that sentence we just read from Retterath what you're referring to?

MR. LAUPPE: Object to form.

THE WITNESS: If you'll notice the range that I am referring to extends from Column 9, line 59 through Column 10, 14 -- I'm sorry, Column 10, line 17 and among other places.

Starting at line 7 [as read]:

"The detector of detector elements 200 is fabricated to receive light transmitted substantially opposite to the direction detector vector 220 of the waveguide axis. The waveguide detector comprises a substrate 50."

So there's another reference [as read]:

"A waveguide 222 shall be an air gap or shall consist of a material that is substantially transparent to the wavelength of emitted light. The waveguide wall shall consist of a material that is substantially non-reflective for the wavelength or range of wavelengths of the emitted light."

So there are three mentions of the term substantially. One relates to the macro lens. One relates to the detector element. Another relates to the waveguide wall being made of a material that is substantially non-reflective for the wavelength or range of wavelengths of the emitted light.

BY MR. DEUTSCH:

Q. So in that sentence in your declaration at paragraph 157, which are you quoting?

MR. LAUPPE: Object to form.

THE WITNESS: Reading on in paragraph 157 [as read]:

"Indeed, the only light that Retterath indicates that the waveguide material 215 is configured to absorb is 'the wavelength or range of wavelengths of the emitted light.'"

Continuing, "In other words, Retterath's waveguides are only designed to absorb light emitted by the system itself. Retterath does not provide any indication that the waveguide material 215 absorbs or

blocks any other wavelengths of light, stray light from the environment. Indeed, Retterath's disclosure of 'partially' or 'substantially' blocking light indicates that there are wavelengths of light that Retterath's waveguide material 215 lets through."

Continuing, "Since Retterath's waveguide material 215 is partially transparent to certain light, it is my opinion that Retterath's waveguide material does not constitute an 'opaque structure' per claim 7."

And Dr. Shanley seemingly agrees when he testified that, quote, If it's an opaque material, it shouldn't, and if you choose your material right, it shouldn't.

BY MR. DEUTSCH:

Q. So correct me if I'm misunderstanding, at Column 9 when Retterath says, "In-bound optical energy that is more than slightly non-parallel to the receive detector vector (coincident axis) 220 will be substantially blocked by the detector waveguide," you're interpreting that as

excluding completely blocked?

MR. LAUPPE: Object to form.

THE WITNESS: My understanding is that Dr. Shanley is trying to map these waveguides, particularly the material 215, to the opaque material and that if it's substantially blocked by the detector waveguide, as I mentioned, then that does not exclude inherently all light is not opaque.

BY MR. DEUTSCH:

Q. So you're interpreting Retterath when it uses the term substantially to modify blocked, that it's excluding the possibility that it completely blocks inbound optical energy as it's described there?

MR. LAUPPE: Object to form.

THE WITNESS: What I know is that -- and Dr. Shanley agrees -- that the word opaque is not in here, and the best that Dr. Shanley can do in that situation is rely on the term substantially, whether it represents transparency or blocking.

And he also goes on to, as far as I can tell, agree that if it's opaque, it

simply should not let light through.

And this part of the description in Retterath does not indicate that it is stopping light from passing through. It hedges with the term substantially.

BY MR. DEUTSCH:

Q. What do you mean when you say "it hedges with the term substantially"?

MR. LAUPPE: Object to form.

THE WITNESS: Meaning, it falls short of saying that it's opaque.

BY MR. DEUTSCH:

Q. I guess I'm trying to understand how you're understanding substantially, because I hear, if I'm understanding correctly, you're saying that when it uses substantially blocked, it means something different than blocked or completely blocked.

In other words, it excludes being completely blocked, but then in other context when you say substantially, it could mean completely or a little bit different.

MR. LAUPPE: Object to form and scope.

THE WITNESS: I think that you're

conflating a couple things. The '381 patent and the '750 patent provide context for substantially in that it addresses the need to minimize, perhaps eliminate, wasted energy and to maximize the ability to discriminate the signals that are emitted, again, euphemistically maximize the signal-to-noise ratio.

In Retterath, I don't see any similar context. The term substantially is not the same as opaque. Substantially blocking, partially blocking where that might be used, it's not the same as opaque.

BY MR. DEUTSCH:

Q. You had mentioned another instance of substantially in Column 10, particularly lines 14 through 17. It says [as read]:

"The waveguide wall shall consist of a material that is substantially non-reflective for the wavelength or range of wavelengths of the emitted light."

Do you see that?

A. Yes.

Q. And so that sentence is calling out a requirement for the waveguide wall indicating

that it shall consist of material that has a certain characteristic in particular, but it's substantially non-reflective for the wavelength or range of wavelengths of the emitted light.

Does it say anything about other wavelengths?

MR. LAUPPE: Object to form.

THE WITNESS: Well, we just reviewed -- let me back up.

By describing what's allowed and particularly in light of how Dr. Shanley is interpreting this waveguide wall, the -- can you repeat your question just to make sure I'm answering it?

BY MR. DEUTSCH:

Q. Sure. In your paragraph 157, you say that [as read]:

"...the only light that Retterath indicates that the waveguide material 215 is configured to absorb is 'the wavelength or range of wavelengths of the emitted light,'" and that's followed by a citation to Retterath Column 10, lines 14 through 17.

A. Right.

Q. And it sounds like you're saying

that the only light that Retterath -- excuse me, that other wavelengths would not be absorbed by the waveguide wall.

Is that what you're stating with that sentence, or am I misunderstanding?

MR. LAUPPE: Object to form.

THE WITNESS: The following sentence I think answers your questions [as read]:

"In other words, Retterath's waveguides are only designed to absorb light emitted by the system itself. Retterath does not provide any indication that the waveguide material 215 absorbs or blocks any other wavelengths of light, for example, stray light from the environment. Indeed, Retterath's disclosure of 'partially' or 'substantially' blocking light indicates that there are wavelengths of light that Retterath's waveguide material 215 let's through."

BY MR. DEUTSCH:

Q. So I'm understanding, the basis for your understanding that Retterath waveguides are only designed to absorb light emitted by the system itself when the sentence in

Retterath Column 10 that you cite to is simply stating a requirement that it must block certain wavelengths that you state there.

MR. LAUPPE: Objection.

BY MR. DEUTSCH:

Q. It doesn't say in that sentence that it's transmissive to other wavelengths.

MR. LAUPPE: Object to form.

THE WITNESS: I think the only way I can reasonably answer that or add clarity to that is in 158, I mentioned that [as read]:

"Since Retterath's waveguide material 215 is partially transparent to certain light, it is my opinion that Retterath's waveguide material does not constitute an 'opaque structure' per claim 7."

BY MR. DEUTSCH:

Q. I'd like to go back to that sentence where you say, Retterath's waveguides are only designed to absorb light emitted by the system itself.

So if every other wavelength is allowed to pass through material 215, what would a POSITA understand about the functioning

of Retterath's system?
MR. LAUPPE: Object to form. Hypothetical.
BY MR. DEUTSCH:
Q. Would the system work?
MR. LAUPPE: Object to form. Hypothetical. Scope.
THE WITNESS: I don't really know that I can speculate entirely or even partially about that. As I'm sitting here, I don't know where I address that specific scenario in my declaration. I'm happy to visit that.
BY MR. DEUTSCH:
Q. Yeah, I can point you to that.
A. Okay.
Q. In the annotated figure at the top of page 87 in paragraph 157, you have a yellow arrow --
A. Right.
Q. -- passing through the material that's labeled 215.
A. Correct.
Q. So I understand you're saying that that material passes through wavelengths of

light that are not emitted by the system itself.

MR. LAUPPE: Object to form.

THE WITNESS: Well, what I'm saying here is that Retterath -- and we can visit other places where this is mentioned. The top of page 87 [as read]:

"Retterath repeatedly discloses that waveguide material 215 only 'partially reduces in intensity' or 'substantially' blocks light," hence the opinion that it is at least partially transparent and doesn't properly map to being an opaque structure, hence the yellow arrow and yellow-ish annotation "partially transparent."

BY MR. DEUTSCH:

Q. So you're not saying that the yellow arrow represents wavelengths other than the emitted light.

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. I can clarify that question, if it's helpful.

A. It might be. It's hard to say. You can try.

Q. I'm just trying to understand your annotation and, in particular, what wavelengths of light are you suggesting are represented by your yellow arrow that would pass through material 215?

MR. LAUPPE: Object to form.

THE WITNESS: I think just the best way of answering that is in the middle of the paragraph on page 87 [as read]:

"In other words, Retterath's waveguides are only designed to absorb light emitted by the system itself. Retterath does not provide any indication that the waveguide material 215 absorbs or blocks any other wavelengths of light, for example, stray light from the environment. Indeed, Retterath's disclosure of 'partially' or 'substantially' blocking light indicates that there are wavelengths of light that Retterath's waveguide material 215 let's through."

MR. DEUTSCH: Off the record.

- - -

(Whereupon, a recess was held.)

- - -

BY MR. DEUTSCH:

Q. At paragraph 157 again you cited Retterath beginning at Column 9, line 59, and that sentence begins, "In-bound optical energy"?

A. Yes.

Q. Are you interpreting that to include only the emitted optical energy?

MR. LAUPPE: Object to form.

THE WITNESS: I can search for other mentions of this, but Column 3 there is discussion of discriminating between emitters of the particular LiDAR system that those emitters reside on and, quote, similar LiDAR devices.

It also talks about the use of multi-beam emitter sequences and so forth and reducing interference from non-LiDAR devices that are transmitting or reflecting energy at the target detector wavelength.

I understand that that's talking about multi-bit sequences, but it's also an acknowledgement that there is energy that enters the LiDAR system from either other LiDAR devices or non-LiDAR devices.

I can continue looking, but I think that that provides an answer that the light coming -- potentially reaching these detectors isn't only the light that the LiDAR system itself produces. Again, I can continue looking. There are probably other examples that are discussed in here about how light from other sources, other types of light, non-LiDAR emitted light, can pass through the -- pass into the LiDAR system itself and reach the detectors.

BY MR. DEUTSCH:

Q. If I'm understanding correctly, when Retterath refers to in-bound optical energy, there's any number of sources that that energy could be from. It could be the emitters. It could be a different system. It could be just other optical energy in the environment that the system is operating in.

Do I have that correct?

MR. LAUPPE: Object to form.

THE WITNESS: Well, again, Column 3, starting on 15, Retterath mentions that there could be interference from other emitters and other similar LiDAR devices.

BY MR. DEUTSCH:

Q. So are you saying in-bound optical energy is only referring to energy from LiDAR-type systems?

MR. LAUPPE: Object to form.

THE WITNESS: Well, I didn't finish what I was saying.

BY MR. DEUTSCH:

Q. Oh, continue.

A. And it also talks about reducing interference from, quote, non-LiDAR devices that are transmitting or reflecting energy at the target detector wavelength.

Q. I'm not sure I'm understanding if you're saying it would include other optical energy in environments or not.

MR. LAUPPE: Object to form.

THE WITNESS: So one example here -- again, I'm sure as we read we'll find more -- Column 5, line 55, Retterath says [as read]:

"Care must be taken to ensure that signals received by the photoreceptor are reflected light from the desired emitted source."

And then Retterath goes on to provide an example of where there might be two LiDAR units, call them A and B, operating with lasers at the same wavelength have the potential to experience cross talk.

So that's an example of how other LiDAR units can produce light that can enter the LiDAR system.

BY MR. DEUTSCH:

Q. Is that the only thing that can produce light that can enter the LiDAR system?

MR. LAUPPE: Object to form.

THE WITNESS: So I'll repeat that Retterath acknowledges in Column 3 that interference can come from non-LiDAR devices that are transmitting or reflecting energy at the target detector wavelength.

BY MR. DEUTSCH:

Q. Let me take a step back, and I can help clarify the question here. I'm still looking at paragraph 157 of your declaration, and I understand that you're talking about that in-bound optical energy. That's what you're referring to as the basis for light that is partially reduced in intensity or

substantially, as I'm understanding what that light is that you're referring to.

MR. LAUPPE: Object to form.

THE WITNESS: Well, I really feel that the answer to your question is in the same paragraph, that Retterath does not provide any indication that the waveguide material 215 absorbs or blocks any other wavelengths of light, for example, stray light from the environment.

BY MR. DEUTSCH:

Q. And is that because you're excluding stray light from the environment from Retterath's description of in-bound optical energy?

MR. LAUPPE: Object to form.

THE WITNESS: Yeah, not really. I'm not -- I think that if you look at the construction even described in Retterath, the optical energy in the environment, in the field, is not only the light that comes from the emitters, that there is a plethora of other types of optical energy, whether the type is differentiated by the source or the type is differentiated by the wavelength

or other descriptors. And the descriptions, as I recall them, from Retterath, for example, the three types of lenses, the macro lens, which is in Figure 6 and Figure 10, which rejects more on the basis of directionality or incident angle, and then you have the global lens and micro lens that are used to describe Figure 11b. Figure 11b does not describe the macro lens or that it would be used with it. And as best as I can recall, they aren't described as filtering out on the basis of excluding everything but the energy emitted by the LiDAR emitters.

So -- and it's a well-known problem in the field. And, again, I'm confident, as I continue through even Retterath's written description, mentions of other types of noise that light can get into the LiDAR system and that light does not have to strictly be what was emitted by the LiDAR unit itself.

I had another qualifier and that is that if as Retterath is suggesting using the pulse codes -- and I think Borowski does the same thing --

BY MR. DEUTSCH:
Q. Go ahead.
A. Well, if you're filtering out everything but the emitted energy, then you wouldn't need to really use the pulse codes. So it's a de facto acknowledgement that there are other variations of light entering.
Q. A moment ago you indicated that other types of noise and light can get into the LiDAR system. I'd like to understand what you mean by that.
My understanding is there's kind of multiple pathways or ways that light can get into the system including -- through the waveguide opening; is that correct?
MR. LAUPPE: Object to form. Scope.
BY MR. DEUTSCH:
Q. You're not saying the only way light can get in through the LiDAR system is through the waveguide material, correct?
MR. LAUPPE: Same objections.
THE WITNESS: I'm not really following your question, and I don't know that I was asked to or endeavored other paths that light might be taken to get into

the LiDAR unit, particularly to get into the photo detectors.

Aside from what's referenced, my discussions about the alleged prior art obviously with Retterath and Hipp and -- now I'm blanking. I'm going to mispronounce his name. It starts with a G. Grzesik. But aside from opining on those, I did not do an open-ended analysis as to all of the ways light may come in. It's just simply, how does it get to the photo detectors? And, more specifically, how are those photo detectors able to focus only on the emitted light from the paired or corresponding emitter?

So if you can agree that Dr. Shanley pointed to these waveguides and the material that surrounds it 215 as the opaque structure, then that's the basis for my opinions.

BY MR. DEUTSCH:

Q. Let's shift gears and talk about the Weimer reference. This is Exhibit 1008.

If you could turn to Figure 3a.

A. Okay.

Q. What is 318 referring to? One example where 318 appears is at the top of Column 10, beginning at line 2 where Weimer refers to transmit optics 318 and/or receive optics 322.

A. So to provide a little context here, this Figure 3a has a single emitter, has one laser in it, and this is the only figure that has elements 318 and 322 represented here, and the definitions of 318 and 322 are respectively transmit optics and receive optics.

Q. And I see there's an axis labeled direction of flight and cross track.

Do you see that?

A. Yes.

Q. And the axis labeled direction of flight appears to be going vertically on the page, and the axis labeled cross track appears to be going laterally on the page.

A. Right. This is also called a spacecraft, but surprisingly there are trees in view. Anyway, go ahead.

Q. And so looking at that axis and transmit optic 318 and receive optic 322, in Figure 3a, the transmit optic 318 is offset

laterally and aligned vertically with the received optic 322; is that correct?

MR. LAUPPE: Object to form. Scope.

THE WITNESS: The oval forms that are on here, which don't, as far as I can tell, represent an actual shape of a lens, are laid out just like everything else on this image in more of a logical format as opposed to a positional format. And, again, this is a single laser system shown in Figure 3a. That's to say it's not a plurality of optical emitters.

BY MR. DEUTSCH:

Q. Let's turn to the Imai reference. This is Exhibit 1009. Let's turn to paragraph 224 of your declaration, which I believe discusses Imai. In paragraph 224 you indicate that [as read]:

"Imai discloses that the irradiation range of each of its emitters is 'larger' than the 'corresponding light receiving ranges' of the detectors," and you cite Imai at paragraph 101.

Could you read the first sentence of paragraph 101?

A. Yes. It says [as read]:
"The irradiation range of each laser diode or LD is set to be slightly larger than corresponding light receiving ranges of the four photo diodes, PD."
Q. So in paragraph 224 you just said larger. Is there a reason you just said larger and not Imai's description of slightly larger?
MR. LAUPPE: Object to form.
MR. DEUTSCH: I can rephrase.
THE WITNESS: Did I skip that? Did I skip a word?
BY MR. DEUTSCH:
Q. No, I think you read it correctly. I'm referring to the quote in 224.
To rephrase the question, in that sentence in 224, did you mean to say, quote, slightly larger when quoting Imai?
MR. LAUPPE: Object to form. Scope. Argumentative.
THE WITNESS: It's still larger, so there wasn't an intentional omission there, if that's what you're asking.
BY MR. DEUTSCH:
Q. No, no, I'm just trying to get your

understanding of larger versus slightly larger and what that means with respect to your definition of coincident.

MR. LAUPPE: Object to form. Scope.

BY MR. DEUTSCH:

Q. So just to make sure I'm understanding, when you say larger here and you said it's still larger whether it's larger or slightly larger, are you equating larger with slightly larger?

MR. LAUPPE: Object to form.

THE WITNESS: I think I'm merely acknowledging that it's larger, and this is foundational to the subsequent content in my declaration where I point out that while Imai describes a situation where the irradiation range is larger than the light receivable range, there are also embodiments described by Imai that are smaller. And as a person in ordinary skill reading this, it would, consistent with my declaration -- and of course I defer to the details of my declaration -- indicate that Imai is not purposefully having that irradiation range be substantially the same or occupy

substantially the same area given that it tolerates a very broad range of irradiation range area to light receivable range scenarios.

BY MR. DEUTSCH:

Q. Understood. And so that -- you're saying that's the case. Even though Imai describes it being only slightly larger, that because of those factors, it wouldn't be substantially the same area as you're using that phrase?

MR. LAUPPE: Object to form.

THE WITNESS: I'm not really --

MR. DEUTSCH: I can try to clarify.

BY MR. DEUTSCH:

Q. Later in paragraph 224, you indicate that the emission regions of emitters in Imai do not cover substantially the same area in the field as the field of view of their corresponding pixels. And that's because in the preceding sentence, you're indicating that the emitters have a larger irradiation range than the corresponding light ranges of the detectors.

So my question is, even though Imai

is only slightly larger, you're saying that's out of the scope of your substantially the same area as you're interpreting it?

MR. LAUPPE: Object to form.

THE WITNESS: You look, for example, at Figure 5 annotated in my declaration. The difference between the light receivable range and the irradiation range is -- in the context of the '381, the difference is substantial. And the -- even though Imai might use terms like slightly to describe the area -- the excessive amount of area that is illuminated compared to the field of view of the detectors or the offsets or something like that, then one could reasonably conclude that slightly is -- does not put it within range of being substantially the same area.

This is also true if you look, for example, on Figure 7, which is annotated in my declaration, just above paragraph 228. Those don't look substantially similar. In the scenario on the left, that's not covering substantially the same amount of area. It's covering substantially less.

And on the right, it's not covering substantially the same amount of area. It's covering more.

BY MR. DEUTSCH:

Q. Is that the actual size of the detectors?

MR. LAUPPE: Object to form.

THE WITNESS: I think if they're using qualifiers like slightly and then they have examples like this, I would not put this in the -- if that's the definition of slightly, then I know that slightly will lead to waste, for example, what's shown on the right side of Figure 7, Figure 7b or a lower signal-to-noise ratio which would be shown on Figure 7a.

MR. DEUTSCH: Let's shift to the '750 patent.

MR. LAUPPE: Does it make sense to break for lunch before that?

MR. DEUTSCH: Dr. Janét, do you have a preference? Are you okay continuing?

THE WITNESS: I defer to the crowd.

MR. DEUTSCH: Why don't we go off the record.

- - -

(Whereupon, a recess was held.)

- - -

BY MR. DEUTSCH:

Q. Welcome back, Dr. Janét.

A. Thank you.

Q. Let's turn to the '750 declaration. If you could turn to paragraph 122 discussing claim 44, and at paragraph 124 you discuss testimony from Dr. Shanley and his declaration and his cross-examination regarding the threshold distance of Retterath.

And then at 125 you state [as read]:

"It is my opinion that the Retterath-Borowski combination does not satisfy claim 44 of the '750 patent because there is no threshold distance beyond which the fields of view pixels are not overlapping."

In reaching that conclusion, is the discussion in paragraph 124 part of your basis for the conclusion that there's no threshold distance beyond which the fields of view pixels are not overlapping?

MR. LAUPPE: Object to form.

BY MR. DEUTSCH:

Q. I can clarify because the question is really about -- you know, what I'm trying to understand is the importance here ascribing to the testimony you cited regarding a number for the threshold distance.

And so in paragraph 124, you indicated that [as read]:

"Dr. Shanley testified that Retterath is not absolutely designed as an absolute number on it," and continued that, "he can't be certain about what the threshold distance of Retterath is. Further, Dr. Shanley testified that he doesn't believe any patent discloses the threshold distance like claim 44 of the '750 patent requires," and then conclude in 125 that there's no threshold distance beyond which the fields of view of pixels are not overlapping.

And so when you say there is no threshold distance beyond which the fields of view of pixels are not overlapping, that's based on the preceding testimony that you cited in paragraph 124 regarding the lack of an absolute number around threshold distance?

MR. LAUPPE: Object to form.

THE WITNESS: It informs paragraph 125 that Dr. Shanley testified that Retterath is not, quote, absolutely designed as an absolute number on it and then testified that he, quote, does not or doesn't believe any patent discloses a threshold distance like claim 44 of the '750. So just on the basis of Dr. Shanley's opinions and testimony, that certainly informs paragraph 125.

BY MR. DEUTSCH:

Q. Does the '750 patent identify a number for a threshold distance?

MR. LAUPPE: Object to form.

THE WITNESS: Unlike Retterath, the '750 patent describes how a person of ordinary skill would arrive at a number.

BY MR. DEUTSCH:

Q. Can you walk me through that, how a person of ordinary skill would arrive at a number?

MR. LAUPPE: Object to form.

MR. DEUTSCH: And specifically I'm asking, like you said, based on the '750 patent.

THE WITNESS: Right.
MR. LAUPPE: Same objections.
THE WITNESS: Well, I suppose I could.
First and foremost, my opinions are formed on the basis of Dr. Shanley's testimony, and in the absence of him identifying how an absolute number could be derived or an absolute design achieved and the more blanket statement that he doesn't believe that any patent discloses a threshold distance like what's described in claim 44, then paragraph 125 is in many ways an acknowledgement of that, you know, how do you respond to a conclusory statement that doesn't have foundation to it?
If Dr. Shanley expressed how one would derive that threshold on the basis of his interpretation of the '750, that might help with our discussion on this matter, if you have his declaration.
BY MR. DEUTSCH:
Q. Let's take a look at Figure 1 on the '750 patent. Can you identify the threshold distance in Figure 1?

MR. LAUPPE: Object to form. Scope.
THE WITNESS: I'll answer with yes, but I was not asked to provide that, and Dr. Shanley did not provide his interpretation of how he would derive that threshold distance, as far as I can recall.
BY MR. DEUTSCH:
Q. What is -- what is the threshold distance in Figure 1?
MR. LAUPPE: Same objections.
THE WITNESS: The threshold distance is where the fields of view, any two fields of view cease to be overlapping in the field external to the optical imaging system.
BY MR. DEUTSCH:
Q. You'll recall there was a break just before we reconvened here. Did you speak with anyone during the break?
A. Not about the testimony today.
Q. So no discussion about the substance of your testimony?
A. No, not at all.
Q. Did you talk about the mechanics of the deposition process and the sequence of questions from me or Ouster's counsel?

A. No.

MR. DEUTSCH: No further questions at this time.

- - -

EXAMINATION

- - -

BY MR. LAUPPE:

Q. So, Dr. Janét, did you bring anything with you to today's deposition?

A. I did.

Q. And what did you bring with you today?

A. This is a list of things that I would like to correct in my '381 declaration. I believe it's my '381. Yes, it's my '381.

MR. LAUPPE: And I'd like to introduce that as Exhibit 2018 in the '381 IPR.

MR. DEUTSCH: Objection. Scope. Outside the scope of cross-exam.

MR. LAUPPE: Can we introduce this? Can we get that marked with a sticker?

COURT REPORTER: What number was it?

MR. LAUPPE: 2018.

- - -

(Whereupon, the document was marked, for identification purposes, as Exhibit 2018.)

- - -

BY MR. LAUPPE:

Q. And so, Dr. Janét, you said Exhibit 2018 indicates corrections that you would like to make to your declaration in the '381 IPR; is that correct?

A. That's correct.

MR. DEUTSCH: Objection. Scope.

BY MR. LAUPPE:

Q. So what is the first correction that you'd like to make to your '381 declaration?

A. It's just that I think that the reader would be able to understand that -- the intent behind all of these corrections, but there's a reference -- the first one is in regards to paragraph 129 where I previously wrote claim 1(c). That should be restated as claim 1(d).

Q. What is the next correction that you would like to make to your '381 declaration?

A. The next correction is there was a link error apparently when the document was

saved or converted in paragraph 132 where in the document it says, "Section Error! Reference source not found," and just simply clarify that that was previously a link to and was supposed to be written as Section VII.A.

Q. Do you have any other corrections to your '381 declaration?

A. I do.

Q. What's the next correction?

A. The next one is in regards to paragraph 141. Where it says "six other emitters" should be six other detectors.

Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. I do.

Q. What's the next correction you'd like to make?

A. The next one is regarding paragraph 145 where I wrote "claim 1" and meant to write claim 3 twice.

Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. I do.

Q. What's the next correction you'd like to make?

A. In paragraph 156, I, even though I was referring to claim 7, wrote "claim 6" and seek to clarify that as claim 7.

Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. I do.

Q. What's the next correction?

A. In paragraph 190, I'm referring to Weimer but inadvertently wrote an addition of Hipp. So I wanted to change what should have been Weimer to Weimer, not Hipp.

Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. Yes, sir.

Q. What's the next correction?

A. Paragraph 210. Paragraph 210 refers to the G. Ground 1G: Claims 6 through 8, 17 over Retterath, Borowski, Weimer, Hipp and Pacala, but in paragraph 210 I left off one of them. I think I left off Hipp. So I wanted to add Hipp back in. It's obvious that I'm referring to that given the title of that section.

Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. Yes, sir.
Q. What's the next correction?
A. Paragraph 221, I have a similar link error that was not noticed before. It's in bold and it says, "Section Error! Reference source not found," and I was referring to VII.A, So I want to correct that to say Section VII.A
Q. Do you have any other corrections you'd like to make to your '381 declaration?
A. Yes, sir.
Q. What's your next correction?
A. The heading for VIII.J.1.
Q. Do you have a page for that?
A. I'm sorry, I didn't put it in there. It should be page 119.
Q. What's the correction you'd like to make to page 119?
A. It should say, "The Imai-Higashi-Pacala combination does not satisfy 'a bulk imaging optic disposed adjacent to the bulk transmitting optic,' and this is in reference to claim 1(d).
Q. Do you have any other corrections you'd like to make to your '381 declaration?

A. Yes, sir.
Q. What's the next correction?
A. Paragraph 241, same general section, I -- again I'm referring to claim 1(d) but wrote in paragraph 241 claim 1(e) a couple of times, and that should be claim 1(d).
Q. Do you have any other corrections you'd like to make to your '381 declaration?
A. Yes, sir.
Q. What's your next declaration?
A. Again, the heading for Section VIII.J.1(b), which is on the next page, page 120, just in response to -- or just kind of keeping with Dr. Shanley's combinations, it should be, "The Imai-Higashi-Pacala combination does not satisfy 'each pixel in the plurality of pixels has a field of view coincident with an emission region of a corresponding optical emitter' (claim 1(e))."
Q. And are there any other corrections you'd like to make to your '381 declaration?
A. Yes, sir.
Q. What's the next correction?
A. Paragraph 243, same general section, instead of Grzesik, it should be Pacala.

Q. And do you have any other corrections you'd like to make to your '381 declaration?

A. Not that I recall at this point.

MR. LAUPPE: Thank you. No further questions.

MR. DEUTSCH: I just have a couple more questions.

- - -

EXAMINATION

- - -

BY MR. DEUTSCH:

Q. This document that you're reading from labeled Exhibit 2018, is that something you created?

A. Yes. Well, I didn't -- I couldn't print it up. I handwrote it. So during my discussion with counsel yesterday, I brought these to their attention. Since I couldn't print it up where I'm staying, I asked them to do it.

Q. And Counsel mentioned another version of that document.

Are you familiar with that?

A. Another version of the document?

What are you referring to?

Q. A moment ago counsel had mentioned another document that seemed to be similar to Exhibit 2018 but perhaps different.

A. Can you read -- is there testimony you can read exactly so I can understand what you're referring to?

MR. DEUTSCH: I'm asking about that document that you were talking about that's in the bag.

MR. LAUPPE: No further copies of that. I'm sorry we didn't have a copy for you, Craig.

MR. MORTON: That's all I was talking about.

THE WITNESS: Yeah, I really -- I can't fathom what you're asking about.

BY MR. DEUTSCH:

Q. That's all, just that other document that was mentioned earlier in the context of Exhibit 2018.

A. When you say "earlier," what are you referring to? What time frame?

Q. When Exhibit 2018 was handed out.

A. Just a few minutes ago.

Q. Correct.
A. But we can't find it in the testimony where somebody said something about another version?
Q. Correct, that exchange wasn't captured.
A. I mean, I simply don't remember. I can't think of what would be another version either.
MR. DEUTSCH: Understood. No further questions.
- - -
(Witness excused.)
- - -
(Deposition concluded at 1:44 p.m.)
- - -

C E R T I F I C A T E

I do hereby certify that I am a Notary Public in good standing, that the aforesaid testimony was taken before me, pursuant to notice, at the time and place indicated; that said deponent was by me duly sworn to tell the truth, the whole truth, and nothing but the truth; that the testimony of said deponent was correctly recorded in machine shorthand by me and thereafter transcribed under my supervision with computer-aided transcription; that the deposition is a true and correct record of the testimony given by the witness; and that I am neither of counsel nor kin to any party in said action, nor interested in the outcome thereof.

WITNESS my hand and official seal this 16th day of October, 2024.

Deborah L. Williams, CCR, CLR
Notary Public

INSTRUCTIONS TO WITNESS

Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.

After doing so, please sign the errata sheet and date it.

You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition.

It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

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ACKNOWLEDGMENT OF DEPONENT

I, _____, do hereby certify that I have read the foregoing pages __ to ___ and that the same is a correct transcription of the answers given by me to the questions therein propounded, except for the corrections or changes in form or substance, if any, noted in the attached Errata Sheet.

_____ _____

DATE SIGNATURE

Subscribed and sworn to before me this

_____ day of _____, 2024.

My commission expires:

_____

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Notary Public

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