EXHIBIT 36

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS - WACO DIVISION

DEMARAY LLC, : Plaintiff, : v. : Civil Action No. 6:20-cv-00634-ADA
INTEL CORPORATION, : Defendant. :
AND ALL RELATED ACTIONS. :

Videotaped Deposition of ALEXANDER DAVID GLEW, PH.D.
Conducted Virtually
Tuesday, March 2, 2021
10:02 a.m. PST

Job No.: 356406
Pages: 1 - 306
Reported By: Rhonda Norberg, CSR No. 9265, CCRR No. 185

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Videotaped Deposition of ALEXANDER DAVID GLEW, PH.D., conducted virtually.

Pursuant to notice, before Rhonda Norberg, Certified Shorthand Reporter No. 9265, CCRR No. 185 in and for the State of California.

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LAWRENCE WALLACE - VIDEOCONFERENCE TECH
JEREMY DINEEN, VIDEOGRAPHER

I N D E X

WITNESS: ALEXANDER DAVID GLEW, PH.D.

EXHIBITS

I N D E X

WITNESS: ALEXANDER DAVID GLEW, PH.D.

EXHIBITS

P R O C E E D I N G S

THE VIDEOGRAPHER: Here begins Disk Number 1 in the videotaped deposition of Alexander D. Glew, Ph.D., in the U.S. District Court for the Western District of Texas, Waco Division, matters of Demaray LLC v. Intel Corporation, Case Number 6:20-cv-00634-ADA, and Demaray LLC v. Samsung Electronics, et al., Case Number 6:20-cv-00636-ADA.

Today's date is March 2nd, 2021. The time on the video monitor is 10:03 a.m. Pacific. The videographer today is Jeremy Dineen representing Planet Depos. This video deposition is taking place remotely.

Would counsel please voice-identify themselves and state whom they represent.

MR. OU: Good morning. Philip Ou from Paul Hastings on behalf of Intel and Samsung, and with me from, also, Paul Hastings are Joseph Rumpler and Alex Rhim.

MR. WELLS: Maclain Wells of Irell & Manella on behalf of Demaray LLC.

MS. SPECHT: Claire Specht from WilmerHale on behalf of Intel Corporation.

MR. DORMAN: Christian Dorman from

Desmarais LLP on behalf of Samsung.

THE VIDEOGRAPHER: The court reporter today is Rhonda Norberg, representing Planet Depos.

Would the reporter please swear in the witness.

ALEXANDER DAVID GLEW, PH.D.,
having been first duly sworn by the reporter,
was examined and testified as follows:

EXAMINATION

BY MR. OU:

Q Good morning, Dr. Glew. My name is Philip Ou from Paul Hastings representing both Intel and Samsung. I apologize. I'm not going to have my camera on today. I've got some kids running around in the background. So bear with me; and, certainly, if you need me to repeat a question, please do so.

Can you please state your name for the record?

A Alexander David Glew, G-l-e-w.

Q And could you please provide your address?

A Business or home?

Q Business.

A 240 Pamela Drive, Mountain View, California

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94040.
Q And, Dr. Glew, you understand that you're under oath today?
A Yes, I do.
Q Okay. Have you had your deposition taken before?
A Yes, I have.
Q Approximately how many times?
A Approximately 50 times.
Q Did you say 50, meaning 5-0?
A Yes, approximately 5-0.
Q And have you ever testified in a trial before a jury?
I'm sorry, Dr. Glew. I didn't hear your audio.
Your answer?
A Yes, I have.
Q Okay. And how many times have you testified at a trial in front of a jury?
A Less than ten, I think. Probably eight, roughly.
Q Okay. It's fair to say that you're familiar with the deposition process and the ground rules that, usually, the participants understand in depositions?

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A I would say generally, yes.
Q Okay. Well, let me just go over a couple of them since we are doing a deposition by video Zoom.
I'm going to do my best not to talk over you; so if you can do your best to listen to my question, let me finish my question, I'll also do my best to let you finish your answer.
Is that understood?
A Yes, I understand.
Q And if you need to take a break, just let me know. I just ask that any pending question, you answer it before we take a break.
Is that okay?
A That's fine, yes.
Q Okay. And if I ask a question and you don't ask me to clarify the question, can we assume that you understood my question?
A I understand that's the normal practice.
Q Okay. And so if you don't understand my question, will you ask me to clarify? Or otherwise, we can assume that you understood my question?
A If I think I understand your question, I will probably not ask you to clarify it. If I don't understand your question, I will ask you to clarify

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it.
Q Okay. Great.
And is there any reason why you can't give complete and truthful answers to our questions today?
A Not that I know of, no.
Q Okay. When was the last time you had your deposition taken?
A I had a couple last year. I want to say fall, late fall, maybe.
Q Okay. And have you ever had your deposition taken -- sorry. Let me strike that question.
Have all of your depositions been in the context of patent litigation or depositions involving patents, for example, before the PTAB?
A No.
Q Okay. Without getting -- I don't need the details, but outside of the patent context, what other types of cases have you provided expert testimony in?
A I provided expert -- now, are you talking about just depositions or at trial?
Q Depositions.
A Okay. I provided testimony regarding other

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technology matters. For example, semiconductor fabrication facility issues relating to, for example, fires or accidents, as well as breach of contract on semiconductor equipment.
Most of it's been semiconductor or tech related, not always patents.
Q Understood. Thanks for that clarification.
In terms of semiconductor fabrication issues, does that require you to actually go onsite to either a client or the other side's fab and inspect things?
Is that part of your consulting services that you've done in the past?
A I have inspected fabs, yes.
Q Okay. And fair to say just from your experience working in the industry you have general familiarity as to how fabs operate?
A I would say generally, yes, based on my experience.
Q Okay. I want to ask you about your preparation for your deposition. I don't want to get into the substance of discussions you've had with -- with counsel.
Can you generally describe what you did to -- to prepare for your deposition today?

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A I read my declaration and the patents and some of the related documents in my declaration.
Q Okay. Did you speak with anyone in preparation for your deposition?
A Yes.
MR. WELLS: I'll caution the witness not to divulge the contents of any attorney/client communications, but he can answer.
MR. OU: I think you answered yes.
Q Who did you speak with, Dr. Glew, to prepare for your deposition?
A I spoke with Mr. Wells.
Q Anyone else?
A No, not that I recall.
Q Okay. How about to prepare your declaration that you submitted?
Did you speak with anyone to prepare your claim construction declaration?
A Yes, I -- I had discussions with other people also.
Q Who did you speak with to prepare your claim construction declaration?
MR. WELLS: I'll caution the witness not to divulge the contents of any communications, but he can identify the persons with whom he's worked in

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preparing his declaration.
THE WITNESS: I believe I spoke with Darish Huynh, Esquire, a colleague of Mr. Wells.
BY MR. OU:
Q Anyone else?
A Not that I recall off the top of my head.
Q Okay. So you didn't speak with Dr. Ernest Demaray, who is a principal of Demaray LLC and one of the named inventors on the patents-in-suit?
A No, I did not.
Q Okay. Do you know Dr. Demaray?
A No, I do not.
Q Okay. You've never spoken with him before?
A I don't recall speaking with him. I don't think he was -- interviewed me when this matter started, but I don't recall speaking with him, no.
Q Okay. So to -- let me just make sure I got that right.
In preparing your declaration or for your deposition, you did not have a conversation with Dr. Demaray; is that right?
A No, I do not recall speaking with Dr. Demaray.
Q In preparing your declaration or your --

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for the deposition, did you speak to any of the other named inventors for the patents-in-suit?
A No, I did not speak with the named inventors of the patent-in-suit.
Q Okay. Other than speaking with Mr. Wells and his colleague, Mr. Huynh, you didn't speak with anyone else in preparation for your declaration or for today's deposition; is that right?
A That is correct that I spoke with those two regarding my declaration and preparation for the deposition.
Q Can you generally describe how you first got involved with these cases?
MR. WELLS: Again, I'll caution the witness not to divulge the contents of any communications with attorneys, but you can generally answer the question.
THE WITNESS: The law firm contacted me and asked me about the cases or the patents.
BY MR. OU:
Q And -- and approximately when was that reach-out?
A In the last -- I -- my recollection off the top of my head is the latter half of last year.
Q Okay. And was it Mr. Wells or someone else

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at Irell & Manella?
A My recollection is that it was Mr. Wells.
Q And so I understand that you -- you've submitted a claim construction declaration in support of Demaray's claim construction positions, right?
A Yes, I have submitted a declaration on the claim construction issues.
Q Is your scope of engagement with Demaray LLC limited to claim construction issues?
MR. WELLS: Objection; scope.
THE WITNESS: They will determine what the scope of my work is. Thus far I have worked on the claim construction issues and some IPRs.
BY MR. OU:
Q Okay. Anything else other than claim construction issues and IPRs?
MR. WELLS: Objection; asked and answered.
THE WITNESS: Not thus far.
MR. OU: Okay. And I understand you're here to testify about your claim construction declaration, and that's what I'm going to be asking about, but let me just make sure I understand the scope of your -- of your representation and work.
Q Other than working on your claim

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construction declaration and some IPRs, have you done any other work for Demaray LLC that relates to the patents-in-suit?
MR. WELLS: Objection; vague, asked and answered.
THE WITNESS: I did look at material on computers provided by the defendants. I'm not sure how to characterize the scope of that work.
MR. OU: Okay. My -- my understanding is you -- you've reviewed some process recipe information, some BKMs, or best known documents, provided by Applied Materials.
Q Is that right?
MR. WELLS: Objection; scope.
THE WITNESS: I have two computers. I believe one is for Applied Materials and I think one was for Samsung.
BY MR. OU:
Q Okay. You -- does your review of that information inform in any way your claim construction positions that you've provided in this case?
A Excuse me. Let me see.
One is -- one is an Intel computer. I'm sorry. One is -- yes. Okay.

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Go on. Sorry?
Q Yeah, let me reask my question.
Does -- does -- does your review and analysis of those technical materials of Applied, Intel, and Samsung inform your claim construction positions that you have provided in this case or these cases?
MR. WELLS: Objection; scope.
THE WITNESS: I've reviewed the material. I wouldn't characterize it that I've analyzed the material yet. It's just sort of data at this point waiting for -- waiting for analysis at some -- with respect to a question or two that might be posed to me.
I don't recall citing it in my declaration that I relied on it for that. If you could point me to where I did -- but I don't recall it being a -- I don't recall relying on it for my declaration on claim construction.
BY MR. OU:
Q Okay. So you -- you did not consider the materials that you reviewed on those computers from Applied, Intel, and Samsung informing your claim construction position that you've provided in these cases?

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MR. WELLS: Objection; asked and answered, scope.
THE WITNESS: I looked at the material. I would characterize it as collected data or information. I don't recall that I cited to it as relying on it in my claim construction. If you could point me to where I cite to documents therefrom, I'd be happy to discuss that.
MR. OU: I -- I'm not saying that you -- you did. I was just asking whether or not you considered those materials in -- in forming your claim construction positions. It sounds like your answer is no.
Q Is that -- do I understand your testimony correct?
MR. WELLS: Objection; asked and answered, beyond the scope.
THE WITNESS: I did not rely on them for my report. I'm not -- I don't -- I haven't really analyzed the information yet. As I said, I've basically collected data and it's just sort of waiting for an analysis and eventual conclusions regarding whether it's meaningful or relevant to any of the points of inquiry.
Yeah, I did not -- I don't recall relying

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on it for my declaration.
MR. OU: Okay. I want to talk about the preparation of your declaration.
Q When did you begin preparing it? And just for a data point, I believe it was submitted to the court on February 16th.
A What do you mean by "preparing"? Do you mean preparing as in reading materials for it, or do you mean preparing in another context?
Q Sure.
Let's start with when did you begin reading materials to prepare for your claim construction declaration?
A Early on when I started in the case, I was provided with the patents and other documents and file history, so I reviewed the patents, I would say, almost immediately when I started on the case, so that would have been a number of months ago.
File history over time has relevance to specific issues; other documents, more recently as they were provided to me. So it's sort of extended out over a period of time, the reading of the materials for it.
Q Okay. Fair enough.
And in terms of the actual drafting of your

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declaration, did you draft a declaration yourself or did you draft it in -- working with your counsel at Irell?

A I drafted a declaration. I did a review with counselors at Irell.

Q Okay. But this is not a situation where the lawyers draft it first and then you provided your input and edited it?

A The declaration is my draft. I've drafted enough documents I have sort of a -- I would say kind of a template for things, background and all that stuff that's largely already written, and --

Q Okay. Fair enough. I -- it does look very specific. I like that you put your picture on the first page of the -- I've never seen that in a declaration before, so that's refreshing to see.

A Well, I write both legal and nonlegal documents so sometimes I perhaps make my documents look a little less -- more engineering-like, less legal. But --

Q Got it. Makes sense.

Dr. Glew, as I was asking you a question, it looked like you were flipping through some documents in front of you. I just want to make sure -- do you have certain documents in hardcopy

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with you?

A Yes.

I have the declaration and both patents.

Q Okay. Any other documents?

A No.

Not hardcopy.

Q And the -- the hardcopy documents that you have, any notes on them, or are they clean copies?

A They're clean copies I printed this morning.

Q Okay. Very good.

Well, if -- if there are other documents that I'm going to show you throughout the day, if you need a -- if you need a hardcopy and you need to print them, you're more than welcome to. Just, you know, make sure that we're aware of what you have in front of you that's not shown on the screen.

Is that okay?

A Yeah, that's fine.

Q Okay.

A Yeah, I have a high-speed printer outside my office so I can print.

MR. OU: Okay. Since you have your declaration in front of you, let's first mark that as Exhibit 1.

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Lawrence, could -- could you publish Exhibit 1 in the chat and we can mark that as Exhibit 1?

Dr. Glew, I know you have a copy in front of you as well. You're welcome to download the electronic copy one if you need to.

(Exhibit No. 1 was marked for identification by the videoconference technician; attached hereto.)

THE VIDEOCONFERENCE TECHNICIAN: Exhibit 1 is now in the chat for everyone to open.

MR. OU: So, Dr. Glew, we've marked as Exhibit 1 -- this is the declaration that you submitted in support of Demaray's claim construction positions dated February 16th, 2021.

Q Do you recognize this document?

A Hang on. Let me -- I mean, I recognize the document I had printed. I'm trying to figure out where to download this thing to so I can find it without losing it.

Q Yeah. And just for logistics, Dr. Glew, it might be easier if you like open a folder on -- on your desktop and just, you know, whenever we publish an exhibit, just, you know, drag it in or save it

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there so that if we have to refer back to it, you can just go to it in the -- in the folder. That usually works best.

A All right.

Okay. This looks familiar, yes.

Q Okay. Let me -- let me just start over for -- for the record.

So, Dr. Glew, we've marked as Exhibit 1 -- this is your February 16, 2021 declaration submitted in support of Demaray's claim construction positions.

Do you recognize this document?

A Yes.

Q Okay. And is -- is this a declaration that you submitted?

A Yes, it is.

Q And is it correct that the totality of your claim construction positions thus far are contained in this declaration?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: This is a summary of the opinions I had at the time I wrote it.

MR. OU: Okay. Let me -- let me, maybe, ask the question this way first.

Q Is there anything in your declaration that

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you're intending to either correct or supplement today on the record?

A I'm not intending to correct anything at this point in time.

As for supplementing, this is, you know, a document of limited length so I could certainly elaborate a bit on a few of the points, but I don't have plans at this point to augment an opinion.

Q Okay. Yeah, and -- and that's fine if you're, you know, providing more context of -- of your opinions. I just want to make sure that there's no changed opinions or corrections in this document that we should be aware of and -- and discuss at the outset.

Is that fair?

A I -- I guess that's fair. I don't have any terms that I'm going to be changing -- I don't have in mind any changes or augmentation of claim term definitions at this point in time.

Q And no other corrections that you need to make on the record right now to the declaration you submitted?

A As I sit here now, off the top of my head, I don't know of any corrections that I would like to make.

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Q Okay. Can you turn with me to Paragraph 8? Let me know when you're there.

A I'm there.

Q Okay. And before we get started, just a little bit of nomenclature.

If I refer to the patents-in-suit, will you understand that I'm referring to the two asserted patents, U.S. Patent Number 7,544,276 and U.S. Patent Number 7,381,657?

A Yes, I can assume that.

Q And then I might refer to one specific patent shorthand by the last three numbers, and you'll understand what I'm referring to?

A Yes.

I may do the same.

Q Okay. Great.

And one other point of clarification. I might refer to Dr. Ernest Demaray, the individual and the inventor. If I refer to him, I'll refer to him as Dr. Demaray. If I just say "Demaray," I'll be referring to the entity, Demaray LLC.

Does that make sense?

A Yes.

Q Okay. So looking at Paragraph 8, I wanted to ask you -- in the first sentence, you said "In

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forming my opinions, I have considered the specifications of the patents at issue, including the respective abstract figures in the claim language as would have been understood by a person of ordinary skill in the art, or a POSITA."

And then the next sentence, you say "I have also reviewed the file histories and other materials cited in this report."

A Yes.

Q And I wanted to clarify with you, were you intending to draw a distinction between what you considered and what you reviewed?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: No, I was not exactly distinguishing in an explicit way.

When it comes to the two -- the -- the file histories, I would have reviewed the file histories with more attention to the relevant areas. They tend to be very -- very long.

BY MR. OU:

Q Okay. So is it your testimony that you -- in forming your claim construction opinions, you considered the -- the patents, the specifications, as well as the relevant portions of the file histories and other materials in this report?

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I just want to understand what is the scope of materials that you actually considered.

MR. WELLS: Objection; misstates testimony.

THE WITNESS: I considered the documents that I've cited to. I would have spent more time on ones that are more relevant and less times on ones that are -- that I spend less time discussing, probably. Obviously, the patents are front and center.

Certain portions of the file history are, you know, very important, potentially. Other things like, you know, the -- how much money the patentee -- the patent applicant owes the file hist- -- the patent office isn't really useful or relevant to my analysis.

BY MR. OU:

Q When -- when you refer to the file histories of the '276 patent and the '657 patent, are you including the file history of the parent application?

Is that something that you reviewed as well?

A Hmm.

I don't recall off the top of my head citing to the parent file history. If you want to

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direct me toward a portion of my declaration where I did, I'd be happy to review that.

Q Okay. I am -- I'm just -- I'm trying to understand, you know, what was the extent of your review of the file history.

And so in Paragraph 8, it says that you reviewed the file histories of just the asserted patents, and it sounds like you're not sure if you reviewed the file history of the parent sitting here today.

MR. WELLS: Objection; misstates testimony.

THE WITNESS: My recollection as I sit here today is that I cited to the file histories of the patents-in-suit. I don't recall citing to the parent file history.

MR. OU: Right.

And so, Doctor, my question is a little different.

Q It's did you review the parent file history or the file history of the parent applications for the patents-in-suit in forming your claim construction opinions?

A As I sit here -- sit here today, I don't recall reviewing the parent application or citing to it.

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Q Okay. In forming your claim construction positions and opinions, did you review any of the prior art that was before the PTO during the prosecution of the patents-in-suit, meaning specifically the art that the applicants were trying to overcome during prosecution?

A In the context of the -- this declaration?

Q Are you asking me to clarify my question, Dr. Glew? I wasn't sure.

A Yes, please. Yes.

Q Okay. Sure.

In the context of preparing your claim construction declaration and forming your opinions as to what a person of ordinary skill in the art would understand the relevant claim terms to mean, did you review any of the cited prior art in the file history of the patents-in-suit?

And specifically the art that the applicants sought to overcome during prosecution.

A I reviewed material of that nature, prior art, in the context of the IPR work I did. I did not cite to it generally in my declaration on claim construction.

Q Okay. So in -- in forming your claim construction opinions as to what one of ordinary

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skill in the art would understand the claim terms to mean, did you review any of the prior art cited in the file history to understand what art the applicants were trying to overcome in its responses to rejections from the patent office?

MR. WELLS: Objection; asked and answered.

THE WITNESS: I reviewed prior art in the context of the IPR work I did. I don't believe I cited to prior art or used that in my analysis of the claim terms.

If you can point me to somewhere in the declaration where I cited to prior art, I'd be happy to review that.

MR. OU: Well, I didn't see it in your declaration, and so that's why I was asking the question. So I'll ask it again just to make sure that I understand your testimony correctly.

Q In preparing and forming your claim construction positions that you submitted in these cases, did you review or analyze any of the cited prior art in the file histories of the patents-in-suit or its parents?

MR. WELLS: Objection; asked and answered.

THE WITNESS: I reviewed prior art in the context of the work I did for the IPRs and discussed

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it in the IPR responses. I -- however, I did not cite to that -- to the prior art, to the best of my recollection, in my declaration that is before me now.

MR. OU: Okay. My -- my answer was a little -- my question was a little different.

Q My question was, did you review any of the prior art or consider any of that prior art in forming your claim construction positions that you put forward in your declaration?

MR. WELLS: Objection; asked and answered twice now.

THE WITNESS: I reviewed prior art in the context of my work on IPR responses. I did not rely upon prior art, to the best of my recollection, in the claim construction declaration that I wrote that is before me now.

BY MR. OU:

Q When you say you didn't rely on the prior art, are you drawing the distinction between relying on the prior art or -- and considering the prior art?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: As I stated, you know, I saw prior art and read it in the context of the IPR. I

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did not rely on it for the declaration on claim construction. I didn't find it necessary for the opinions I was giving.
BY MR. OU:
Q Why is it that you did not find the -- the prior art that was overcome in the file history necessary for the claim construction positions that you're rendering?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: Well, we would have to look at each claim term to answer that question, and as we go to a claim term, I can go through my reasoning of why I gave what opinion I gave on that claim term.
BY MR. OU:
Q Okay. But sitting here today, for each of the claim terms that you provided an opinion on, you didn't believe that the prior art cited in the file histories was relevant to forming your opinions as to what a particular claim term meant?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: I think it would be a better representation of what I believed to say that it wasn't necessary to cite to prior art in the opinions I gave. It wasn't necessary as support to

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the opinions I gave in this declaration.
MR. OU: Right.
Q And so my -- my question was -- and it sounds like the answer is no, but just tell me if I'm wrong, is in forming your claim construction opinions, did you review the prior art cited in the file histories?
MR. WELLS: Objection; asked and answered and misstates testimony.
THE WITNESS: Just to be clear, I did review the prior art in the context of the IPRs.
However, in the context of the declaration on claim construction before me today, I did not rely on the prior art. I didn't find it necessary to support the opinions that I gave.
BY MR. OU:
Q Now, when you say that you -- you reviewed the prior art in the context of the IPRs, are you saying that you reviewed all of the cited prior art that was overcome by the applicants in the file history or you reviewed just prior art that was submitted as a part of the IPRs?
MR. WELLS: Objection; scope.
THE WITNESS: I haven't prepared for testimony on the IPRs today. I'd have to go back

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and look at what I had reviewed and had not reviewed.
MR. OU: Okay. Yeah, and -- and -- and that's part of the -- the issue, Dr. Glew.
Q I'm asking you in forming your opinions in the claim construction, which is what you're here to testify about, did you review and consider any -- any of the cited prior art?
MR. WELLS: Objection; asked and answered four times.
THE WITNESS: Just to be clear, I did review prior art in the context of the IPRs.
However, in the context of the claim construction declaration before me today, I did not rely on prior art in supporting the opinions I gave. I'd be happy to go through any specific claim term or opinion I gave on that and shed more light on it.
MR. OU: Yeah, I'm going to ask it one more time, Dr. Glew. So I'm going to ask you to try to really pay attention to the questions I'm asking.
Q In the context of your claim construction declaration, did you review and consider any of the prior art cited in the file history, yes or no?
MR. WELLS: Objection; asked and answered five times.

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MR. OU: And, Maclain, if you can keep your speaking objections just to asked and answered or your objections, I'd appreciate it. I don't need you to give a running tally of the questions I'm asking. They're different questions.
MR. WELLS: They're not different questions. You've asked him the same question, he's given you his answer. You -- my objection stands.
MR. OU: So, Doctor, I'm going to ask the question again just so that we have a clean record and you have my question in hand. I'm not asking you whether or not you relied on prior art in supporting your claim construction positions. Okay?
Q I'm asking you, in the context of preparing your claim construction declaration, did you review and consider the prior art that's cited in the file history, yes or no?
MR. WELLS: Objection; asked and answered repeatedly.
THE WITNESS: Could you repeat the last portion of that question, or the entire question, your -- your --
MR. OU: Sure. Yeah, and I'll give you the full context so you understand what I'm not asking you. Okay? I'm not asking you whether or not you

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relied on any of the prior art in support of your claim construction positions.
Q I'm asking you in the context of preparing your claim construction declaration, did you review and consider the prior art that's cited in the file history, yes or no?
MR. WELLS: Objection; asked and answered repeatedly.
THE WITNESS: I reviewed and considered the prior art in the context of the IPR responses that I gave. I didn't rely on or feel it necessary to rely on the prior art in the opinions that I gave in the claim construction declaration before me now.
BY MR. OU:
Q Okay. So you did not review and consider the prior art in the context of your claim construction declaration; do I have that right?
MR. WELLS: Objection; misstates testimony.
THE WITNESS: I reviewed and analyzed prior art in the context of the IPRs.
In the context of the claim construction declaration before me now, I did not feel it was necessary to use or rely on the prior art.
BY MR. OU:
Q But is it your testimony that you did

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review and consider the prior art in the file history in forming your claim construction positions in this case?
MR. WELLS: Objection; misstates testimony, asked and answered.
THE WITNESS: Could you repeat the question?
MR. OU: Yeah.
Q Is it your testimony that you did review and consider the prior art in the file histories in forming your claim construction positions in this case?
MR. WELLS: Objection; misstates testimony, asked and answered.
THE WITNESS: I reviewed the file history and prior art in the -- excuse me.
I reviewed the prior art in the context of the IPR responses I gave. I didn't feel it was necessary to rely on or use the prior art in the claim construction opinions I gave in the declaration that's before me today.
MR. OU: Dr. Glew, I apologize. I was -- my audio got disconnected, so -- let me just review your last answer.
MR. WELLS: And, Phil, it looks like

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somebody just joined at a (510) number. Can we identify who that is?
MR. OU: That's -- that's my cell phone number.
MR. WELLS: Oh, okay. Sorry.
MR. OU: Dr. Glew, about 20 minutes ago, I had asked you whether or not you had reviewed the file history of the parent application to the patents-in-suit, and I just wanted to clarify your testimony that you gave.
Q To the best that you can recall, did you review and consider the file history of the parent application to the patents-in-suit?
MR. WELLS: Objection; asked and answered.
THE WITNESS: As I sit here now, I recall reviewing the file histories of the two patents. I don't recall the parent application. I would have to go back and double-check on that. I don't recall citing to it in the declaration.
BY MR. OU:
Q Okay. And in forming your claim construction positions, did you review any declarations from the named inventors of the patents-in-suit?
A There was commentary back and forth between

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the patent office and the inventors in the file histories. I don't recall a declaration -- a recent declaration that I relied on in writing my declaration on claim construction.
Q So I'm -- I'm not talking about back -- back and forth between the patent office and the inventors of the patents-in-suit in, for example, like office actions or interviews.
Are you generally familiar with the patent prosecution process?
A Generally.
I did file one patent myself.
Q There you go.
So I'm -- so I'm not -- I'm not talking about office actions or -- or interviews.
I'm -- I'm asking whether or not -- in forming your claim construction positions, whether or not there were any declarations from any of the named inventors that you also reviewed and considered.
MR. WELLS: Objection; vague and ambiguous.
MR. OU: And, Dr. Glew, just because your counsel made a "vague and ambiguous" question [sic], I just want to make sure that you understand my question. Okay?

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I'm not talking about any office actions or interview summaries or interviews with the PTO and the named inventors; I'm asking you whether or not -- in forming your claim construction positions in this case, whether you reviewed any sworn declarations from any of the named inventors.
Q Do you understand what I'm asking you?
MR. WELLS: Objection -- sorry. Objection; vague and ambiguous.
Are you talking about declarations that are part of the file history or some separate declaration? That's -- that's why I objected.
MR. OU: Either. Just any declarations from the named inventors.
THE WITNESS: I relied on --
BY MR. OU:
Q So, Dr. Glew --
A I relied on --
Q Yeah, Dr. Glew -- sorry. Let me just reask my question so that I've got a clean record.
In forming your opinions in -- in forming your claim construction positions in this case, did you review and consider any declarations from any of the named inventors?
MR. WELLS: Objection; vague and ambiguous.

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THE WITNESS: I relied on statements and any declarations that would have existed in the file history. I did not -- I don't recall relying on any recent declarations by the named inventors.
BY MR. OU:
Q Okay. Which, if any, declarations in the file history did you review and consider in forming your claim construction positions?
A Well, I don't recall all of them off the top of my head. Anything that I explicitly relied on in the file history is in my declaration.
You know, off the top of my head, whether it's a response to an office action or a -- or a declaration is not as clear to me without looking at -- at the document itself.
Q So sitting here today, do you even know whether or not there is a declaration from any of the named inventors in the file history that you considered?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: My -- my general recollection is that there was a declaration or two in the file history. You know, whether it's a declaration in the file history or a response to an office action, it's, you know, just something I reviewed as part of

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the file history.
BY MR. OU:
Q Okay. But can you tell me anything about the declaration that you think that you're recalling that you reviewed as part of the file history?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: Without looking at the relevant portion of the file history, I can't, off the top of my head, recall the different -- the statements that were potentially from responses to office actions or declarations in the file history. I'd have to see the document.
MR. OU: Okay. Understood; and I'm not trying to, you know, make this a memory test. I'm just wondering whether or not you have any recollection of reviewing a -- a declaration submitted in the -- in the prosecution of the patents-in-suit by any of the named inventors.
MR. WELLS: Objection --
BY MR. OU:
Q Do you have any recollection of reviewing such a declaration?
MR. WELLS: Objection; asked and answered.
THE WITNESS: It is kind of a memory test. Off the top of my head, I don't recall

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whether the statements in the file history were made in the context of responding to an office action or rejection or whether that was a declaration. That's starting to be a little more detailed than I'm going to remember without the document in front of me.
MR. OU: Okay. Fair enough.
Let me direct you back to your declaration. We were looking at Paragraph 8, and the last sentence, and from -- as I understand your testimony, it is the things that you considered in forming your claim construction positions are the patents-in-suit, at least portions of the file histories of the patents-in-suit, and then you also referenced other materials cited in this report.
Q Do you see that?
A Yes.
Q Okay. Are there -- is -- is the totality of the materials that you considered just the ones that are cited in this report or are there others?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: What I -- it's sort of boilerplate language I use frequently, which is -- and the materials cited in this report. Obviously, if I cited to a document in this report, I used it.
It's common practice sometimes with longer

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reports to have a list of documents reviewed, but sometimes things don't make it into the list of documents reviewed. But if I'm discussing a document, obviously, I read the document.

MR. OU: Sure.

Q And -- and you didn't include like a -- a separate list of materials considered in your declaration, right?

A No.

This was a rather short one.

Q Okay. Let me give you more context of what I'm trying to understand.

In the next paragraph, in the first sentence, you state "I have also relied on my personal knowledge and professional experience in designing and developing equipment for semiconductor manufacturing and on the documents and information referenced in this report."

Do you see that?

A Yes.

Q So -- so tell me if I'm understanding that sentence correctly.

You, obviously, have personal and professional experience that you think is relevant to forming your claim construction positions, and so

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you relied on that as well as the documents and information cited in -- in the report; is that right?

A These are things I also relied upon, yes.

Q Okay. And then going to the next sentence, you say "I am also aware of information generally available to and relied upon by persons of ordinary skill in the art at the relevant time, including, for example, textbooks, manuals, technical papers and articles, as well as commercially available systems."

That's what you stated in the next sentence, right?

A Yes.

Q And so what I'm trying to understand is, are there -- is there information that you say was generally available to a person of ordinary skill in the art such as textbooks, manuals, technical papers, articles, commercially available systems, that you specifically considered in forming your claim construction positions?

A Could you repeat that last clause? That --

Q -- that you considered in forming your claim construction positions.

So are there any textbooks, manuals,

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technical papers, and articles or commercially available systems -- and -- and setting aside what you've -- what you've specifically cited to in your declaration, are there any of those materials that you've considered in forming your claim construction positions?

A I think it would be fair to say that in this paragraph, I'm describing that I'm aware of systems in literature over a period of time and have experience personally and professionally.

I didn't necessarily cite to this stuff, rely on it explicitly in the declaration; but I'm generally aware of information that would have existed at the time.

Q And that information that you would have been generally available -- or, I'm sorry. Let me re- -- start over.

The information that you would have been generally aware of, that's all information that you considered in forming your claim construction positions?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: I think it's fair to say that my personal knowledge and professional experience comes into play in the opinions that I give. You

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know, over decades of practice, I've read and seen a lot of material; some of it, you know, at the time of the invention.

These would all come into play in my general knowledge in the area. I didn't explicitly rely on them in the declaration, but they are part of my experience.

MR. OU: Okay. And -- and, Dr. Glew, I'm -- I'm going to preface the next question as I'm not intending to try to ask about your opinions that you gave in the context of the IPRs.

But you have already told me that you did review an amount of material in preparing your positions in those IPRs.

Q Is that right?

A I'm sorry. You're -- you said something material?

Q Right.

I believe earlier you testified that there's material that you reviewed and considered in forming your opinions in the IPRs; is that right?

A Yes.

MR. WELLS: Objection; scope.

THE WITNESS: Oh, sorry. I reviewed material in the context of the IPRs.

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BY MR. OU:
Q And -- and so did you separate out in your mind the material that you reviewed in the context of the IPRs when you were forming your opinions as to claim construction in this case?
MR. WELLS: Objection; vague and ambiguous and scope.
THE WITNESS: When I perform a claim construction analysis, I certainly focus principally on the patent itself and the file history.
MR. OU: I'm sorry, Dr. Glew.
Q Is that -- was that your answer to the question? I wasn't sure if you were done or you were thinking still.
A Yeah, I was trying to recall the rest of the question.
Q Yeah, so let -- let me try to flesh this out for you a little bit. Okay?
In your declaration, you've noted that there are materials such as textbooks, manuals, technical papers and articles, commercially available systems that would have been generally available to a person of ordinary skill in the art, right?
A Yes, that's generally what I said in

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Paragraph 9.
Q And -- and is it fair to say that there's some amount of that type of material, whether textbooks, manuals, technical papers, articles, or commercially available systems, that you would have reviewed in the context of forming your opinions in the IPRs?
MR. WELLS: Objection; scope.
And, Counsel, if we're going -- if you're going to start asking him questions on the IPRs and his processes there, we can go to the court. This is not a proxy for an IPR deposition.
MR. OU: Maclain, I'm not intending to ask him about his IPR opinions. I'm trying to understand what materials he relied on or considered in forming his declaration. He doesn't have a list of materials considered, so I'm trying to understand --
And maybe this will help you, Dr. Glew. I'm trying to understand whether or not materials that you reviewed in the context of IPRs, you also considered in forming your claim construction positions. You either did that or you completely separated them out.
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(Mr. Ou and Mr. Wells speak simultaneously.)
MR. OU: Yeah, let me finish, Maclain.
You either considered them or you -- or you separated them out and you didn't consider them. I'm just trying to understand which one it is.
Q Does my question make sense?
MR. WELLS: Go ahead. I didn't mean to interrupt you. Go ahead. Sorry.
Are you done, Phil?
MR. OU: Yes, I'm done.
MR. WELLS: Objection; asked and answered repeatedly. You're asking the witness whether he forgot information? He said he didn't rely upon the IPR materials. It's not cited in his declaration. He's made it clear.
MR. OU: I'm not saying "rely," I'm asking him did he consider it.
So, Dr. Glew, let me ask the question again so hopefully you can understand my question and try to answer it so we can move on.
Q My question is, the textbooks, manuals, technical papers, articles, and commercially available systems that you may have reviewed in terms -- in preparing your IPR positions, did you

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consider those materials in forming your claim construction positions in this case?
MR. WELLS: Objection. First, it -- you're misstating what's said in the declaration; and second, regarding your -- the second part of your question, asked and answered repeatedly.
THE WITNESS: I reviewed certain materials in the context of the IPRs. I did not rely on those materials -- for example, prior art -- in my opinion in the declaration on claim construction that is before me today.
With respect to my personal knowledge and professional experience that I discuss in Paragraph 9 of this declaration on claim construction, I have written that, you know -- I'm -- I relied on that, and I further have written that I'm aware of other information that was generally available to me at the time of the invention; textbooks, manuals, papers.
I'm aware in that I know they exist and I have, in the past, reviewed them. I didn't necessarily --
MR. OU: Okay.
THE WITNESS: -- explicitly rely on them in this declaration.

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BY MR. OU:
Q Did you consider any textbooks, manuals, technical papers, articles, or commercially available systems other than what is specifically cited to in your declaration in forming your claim construction positions?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: I think it would be fair to say that information that I reviewed in the past, books, articles, pieces of equipment, color and inform my understanding of this industry and the issues before us now.
I did not explicitly rely on a specific piece of art unless I mentioned it in this declaration.
BY MR. OU:
Q And -- and you also didn't intentionally exclude or forget any of that information that you previously considered or reviewed in forming your claim construction positions; is that fair?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: I'm not sure what you mean by "exclude or forget information."
MR. OU: Yeah, I was trying to use something that your -- a term your counsel used.

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Let me try to frame it one more time for you, and then we can move on, so, hopefully, you can understand my question.
Q Did you limit what you considered in preparing your claim construction positions in this case to solely the documents that are explicitly cited to or referenced in your declaration?
Meaning you ignored other materials that you may have reviewed in the past, whether for the IPRs or for some other context?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: I did not explicitly ignore or forget information I'm aware of. I relied on information that was sufficient to support my position in this declaration on claim construction. There may be other support.
It wasn't necessary that I rely on or mention everything I've seen in a 30-plus year career, but that I have sufficient bases for the opinions that I gave.
BY MR. OU:
Q Dr. Glew, are you familiar with a term that's referred to as "extrinsic evidence"? Extrinsic as opposed to intrinsic -- intrinsic evidence?

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A Generally, yes.
Q Okay. And I'm -- I'm not intending to ask you about legal processes. What I'm trying to understand is, are you familiar with, in the process of claim construction, the parties have to exchange the identification of -- of extrinsic evidence that they may rely on in support of their claim construction position?
Are you familiar with that?
A Generally, yes.
Q Okay. In forming your claim construction positions, did you rely on the extrinsic evidence that Demaray LLC submitted during the claim construction process?
MR. WELLS: Objection; vague, foundation.
THE WITNESS: I relied on the materials -- explicitly relied on materials that I've cited in the declaration. My understanding is that the analysis should focus first on intrinsic information, the patents, the file history. Extrinsic is secondary.
MR. OU: Okay. Maybe we can make this a little easier.
Lawrence, could you -- could you pull up the document that's marked as Exhibit 2?

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THE VIDEOCONFERENCE TECHNICIAN: Just one moment.
(Exhibit No. 2 was marked for identification by the videoconference technician; attached hereto.)
THE VIDEOCONFERENCE TECHNICIAN: Putting it in the chat now.
MR. OU: Dr. Glew, let me know when you have Exhibit 2 open.
THE WITNESS: I'm seeing my CV.
MR. OU: You know what? I'm sorry.
THE WITNESS: I'm seeing my CV. I have that open, yes.
MR. OU: I apologize. I went out of order. Let me just --
Q So Exhibit 2 is your CV; is that right?
A That's what I have as Exhibit 2, yes.
MR. OU: Okay. Lawrence, could you pull up Exhibit 3, please, put it in the chat?
(Exhibit No. 3 was marked for identification by the videoconference technician; attached hereto.)
THE VIDEOCONFERENCE TECHNICIAN: Exhibit 3

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is now in the chat.
MR. OU: Okay. Let me know when you have that, Dr. Glew.
THE WITNESS: Okay. I have Exhibit 3.
MR. OU: Okay. For the record, Exhibit 3 is a document titled "Plaintiff Demaray LLC's Disclosure of Extrinsic Evidence," and it's dated January 15th, 2021.
Q Dr. Glew, have you ever seen this document before?
A I've seen the dictionary definitions cited in it. As for this particular document, I don't recall.
Q Okay. But -- but these dictionary definitions are -- are definitions that you -- you do recall seeing before in preparing your claim construction positions?
A I recall seeing dictionary definitions, yes.
Q Okay. And then did you consider these claim -- these dictionary definitions in forming your claim construction opinions?
MR. WELLS: Objection; vague and ambiguous, compound.
MR. OU: Let me go one by one, Dr. Glew,

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actually, so that we can have a cleaner record.
So if you'll go down to Page 3, let me know when you're there.
Q Do you see the first term is "Substrate"?
A I'm sorry. I'm on the wrong page. Yes.
Q Okay. And then next to the term "Substrate," it says under "Proposed constructions," "Plain and ordinary meaning," and there's a proposed construction, right?
A Yes.
Q And then in the next column, under "Extrinsic Evidence," it identifies expert testimony from you as well as a dictionary definition of "substrate," right?
A Yes.
Q And so my question is, in forming your claim construction positions on -- on the term "substrate," did you consider this dictionary definition that's cited to in Exhibit 3 for substrate?
A Yes, I considered the dictionary definitions.
They were consistent with my understanding.
Q Okay. And in your opinion, they support

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the proposed construction that's proffered by Demaray in this document?
MR. WELLS: Objection; vague and ambiguous and misstates testimony.
THE WITNESS: I think these dictionary definitions further support the claim construction opinions that I've offered.
MR. OU: Okay. Okay. Let me just go one by one.
The next term that there's a dictionary definition is "Pulsed DC power."
Do you see that at the bottom of Page 3.
A Yes.
Q And then there's -- it says "Plain and ordinary meaning," and then there's also a claim construction provided, right?
A Yes.
Q And then in the last column, under "Extrinsic Evidence," it cites to expert testimony from you as well as a dictionary definition for "pulsed," right?
MR. WELLS: Objection; misstates the document. There's several definitions.
THE WITNESS: I'm sorry. We're at the bottom of Page 3, extending on to Page 4?

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MR. OU: Yeah. Let me rephrase my question.
At the bottom of Page 3, going into Page 4, for the term "Pulsed DC power" under "Extrinsic Evidence," it cites to expert testimony from you as well as a reference to a dictionary definitions of "pulsed."
Q It looks like there's one, two, three, four -- five of them listed here; is that right?
A Yes, and there is a "Pulsed as defined in the Modern Dictionary of Electronics" with some definitions for that, yes.
Q And did you consider the dictionary definitions of "pulsed" in forming your opinions as to claim construction for the "pulsed DC power" term?
MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: Yes, I considered the dictionary definitions.
BY MR. OU:
Q Okay. And in your opinion, the dictionary definitions provide additional support for the claim construction position that's proffered in this document by the plaintiff?
A I believe that the dictionary definitions

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further support their claim construction terms, yes.
Q Okay. And then the next term is "narrow band rejection filter."
Do you see that at the bottom of Page 4?
A Yes, I see that, in the first column.
Q And then the second column again says "Plain and ordinary meaning," and then offers a proposed construction, right?
A Yes.
Q And then in the third column, "Extrinsic evidence," it cites to expert testimony from you, and then there's also a dictionary definition of the term "narrow band"; is that right?
A Yes.
Q Did you consider the dictionary definition of "narrow band" that's cited in this document in forming your claim construction positions as to what a person of ordinary skill would understand "narrow band rejection filter" to mean?
A Yes.
MR. WELLS: Objection; vague and ambiguous.
In addition, I'd like the record to reflect that these are not our final claim constructions that were brought forth in that process, Phil, so I want to make sure that's clear on the record.

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THE WITNESS: I considered these. I think they generally support the claim constructions. There are a number of different definitions in some of these, but they're generally consistent.
BY MR. OU:
Q And -- and in your opinion, does the -- does the definition of "narrow band" in the extrinsic evidence from the dictionary -- does that support the claim construction offered in this document by the patentee for a narrow band rejection filter?
MR. WELLS: Objection; scope.
Again, the definitions that are offered in this document do not reflect the ones that were actually ultimately agreed to by the parties and briefed, and for which Dr. Glew has addressed in his declaration, so outside the scope of the deposition.
THE WITNESS: I would say that they are generally consistent. As a person of ordinary skill in the art, I put on my filter, per se, when I read these things, and sort of have a -- I would say a little more subtle understanding of what I think the dictionary definitions are saying.
BY MR. OU:
Q So, Dr. Glew, my question is whether or not

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the dictionary definition in this document is something that you considered in forming your opinions as to what a person of ordinary skill in the art would understand "narrow band rejection filter" to mean.
A I considered these. I think that they are generally consistent. As a person of skill in the art, I filter material that I read in a different way than a layperson would.
When I see things like involving signals over a range, a narrow range, I understand that nothing -- that filters aren't perfect, that they have a falloff response, meaning maybe a -- maybe when you're talking about a range, it would refer to a 3-decibel or a 6-decibel drop-off per octave, so nothing is -- nothing is all or nothing in this signal processing world.
It has to do with, as a person of skill in the art would understand, the normal behavior of electrical circuits.
Q Dr. Glew, in your opinion, would a person of ordinary skill in the art understand "narrow band rejection filter" to mean filter that passes all of the frequencies of the power supply except within a narrow band?

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MR. WELLS: Objection; vague and ambiguous and misstates the document.
Again, for the record, this does not reflect the plaintiff's final claim constructions arrived at and addressed in both the briefing and in their initial -- in Dr. Glew's declaration, so this is outside the scope.
MR. OU: And -- and, Maclain, I've let you do it several times. If you do that again, I am going to call the court. You're not allowed to coach the witness. You're allowed to make objections on the record.
If you want to redirect the witness, you can. You can ask him about the claim construction positions and the differences when it's your turn. But it's completely improper to coach the witness and provide clues or other information as to the questions that I'm asking.
So please refrain from doing that; and if you do it again, I will call the court. Okay?
MR. WELLS: And for the record, Phil, to respond, you put a document before him that is from a meet -- the meet-and-confer process that he did not opine upon and are asking him misleading questions without giving him the full context.

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You're not asking him about his declaration or the actual briefing and claim construction, so I think the objection is appropriate, I think your question is inappropriate, and I think your questioning on this document is inappropriate.

MR. OU: Okay. Well, I'm going to ask my question because he's offered opinions as to what a POSITA would understand certain terms to mean and I'm going to ask my question again.

Q So, Dr. Glew, in your opinion would a person of ordinary skill in the art understand the term "narrow band rejection filter" to mean filter that passes all the frequencies of the power supply except within a narrow band?

MR. WELLS: And, again, for the record, you're asking him about a document from the meet-and-confer process that does not reflect the actual claim construction positions addressed in his declaration or by Demaray in its brief.

MR. OU: Fine. I'm asking him about his opinion.

Go ahead, Dr. Glew. Can you please answer the question?

Let me ask -- let me ask the question one more time so that I can have a clean record.

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Maclain, and if you can just say -- you know, you -- you repeat your objection. Your speaking objections are muddying our record here; so let me just ask my question please, and you can state your objection.

Q Dr. Glew, my question for you is, in your opinion, would a person of ordinary skill in the art understand the term "narrow band rejection filter" to mean a filter that passes all of the frequencies of the power supply except within a narrow band?

MR. WELLS: And, again, for the record, this document reflects meet-and-confers, not the actual briefing or positions taken by Demaray or addressed by Dr. Glew in his declaration, so it's vague and ambiguous and misleading.

THE WITNESS: As I've said before, as a person of skill in the art, I put on my filter in my brain when I read these things.

Electronic circuits are not perfect, so one would understand that a narrow band filter would -- would pass, largely, most of the -- of the -- or restrict, depending on what we're talking about, in a certain range, not perfectly; and outside of that range, it would also imperfectly pass or -- or filter out frequencies.

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As I said, you know, filters have falloff specifications. One might say that it's 3 DBs per octave, meaning that every time the frequency doubles, the power level drops by 3 DB, or that's a power factor of 2. Not that it goes to zero, but that it drops off 3 DB.

Alternatively, one might define the filter as a 6-decibel-per-octave falloff. So this is what one of skill in the art understands.

What we have here before us is sort of a layperson's kind of very vague, general definition. It's not sufficient to define the claim term, it's kind of -- vaguely goes in the right direction, but it's not -- it's not how electronics really work. It's not a perfect mathematical equation, it's an actual working circuit.

As I wrote in Paragraph 55 of my report, a bandwidth is usually defined as the point at which the level of attenuation drops by a certain ratio, not that it is 0; thus, the definition that all signals outside the stated filter bandwidth are removed is not what one of skill in the art would understand.

So the definition here points in that direction, but it does so in sort of a layman's way,

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which isn't sufficient to really inform what a person of -- or define what a person of skill in the art understands out of it.

BY MR. OU:

Q Your -- your primary problem with this potential construction of narrow band rejection filter that we're looking at, Exhibit 3 -- I understand it's not your client's position in its briefs, but your -- your problem is that it's not describing -- it's describing an ideal or perfect filter and that's inconsistent with what a, you know -- a filter that is -- you know, in real-life practice would actually reflect; is that fair?

MR. WELLS: Objection; misstates testimony and vague.

THE WITNESS: I would say that is part of my objection.

Yeah, I described it in certain detail in Paragraph 55 in my report. Signals in real life passing through real filter circuitry do not resemble a perfect mathematical filter, all or nothing.

It's -- the falloff and attenuation rate are usually given in octaves of frequency multiplied by 2 or by half used to describe the falloff rate.

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So, yeah, Paragraph 55 in my report describes -- that's part of the problem, and then we also have to be clear on what's -- whether we are talking about rejection or passing of -- of signals too.

THE VIDEOCONFERENCE TECHNICIAN: I'm sorry.

MR. OU: Dr. Glew --

THE VIDEOCONFERENCE TECHNICIAN: I don't know if it's just me or is anybody else getting extreme distortion from Dr. Glew's audio?

MR. OU: Yeah. Thanks, Lawrence. I was too. I wanted to let him know.

He's finished the question. And we've been going on for over an hour. Do you want to take a quick break and then maybe check the audio connection?

Does that work for everyone?

THE VIDEOGRAPHER: We are going off the record at 11:31.

(A recess was taken from 11:31 a.m. to 11:44 a.m.)

THE VIDEOGRAPHER: We are back on the record at 11:44.

BY MR. OU:

Q Dr. Glew, did you speak with your counsel during the break?

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A No, I did not.

MR. OU: Lawrence, could we pull up the document that you have that's marked as exhibit -- it's going to say Exhibit 3 in your files, but we're going to mark it as Exhibit 4. It should be Defendants' 115.21, "Disclosure of Extrinsic Evidence."

THE VIDEOCONFERENCE TECHNICIAN: Yes. Putting it in the chat now.

(Exhibit No. 4 was marked for identification by the videoconference technician; attached hereto.)

MR. OU: Dr. Glew, if you want to save this in your files and rename it as Exhibit 4 so we don't get confused later, go ahead. Let me know when you have that document that's in the chat.

THE WITNESS: So this is labeled Exhibit 3?

MR. OU: Yeah. I went out of order.

THE WITNESS: Okay.

MR. OU: So we're going to mark it on the record as Exhibit 4.

THE WITNESS: All right. I'll call it Exhibit 4 here.

MR. OU: So, for the record, the next

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document we're going to mark as Exhibit 4 is --

THE WITNESS: Did you want me to mark this as Exhibit 4?

MR. OU: Yeah.

Hold on one second. I think I've got these a little bit out of order. Give me a second, let me make sure we've got this right.

Right. Okay. I apologize. Lawrence, it's actually -- it's a document in your files that's Exhibit 4.

THE VIDEOCONFERENCE TECHNICIAN: Okay. Exhibit 4 is in the chat now.

MR. OU: Yes, that's it.

THE WITNESS: All right. So I'm going to abandon the last document labeled Exhibit 3?

MR. OU: Yes, please.

THE WITNESS: All right. I did not save it.

So this one is called -- just so we're clear, Exhibit 4, "Defendants' Identification of Extrinsic Evidence."

MR. OU: Correct.

THE WITNESS: Okay.

MR. OU: So we'll mark as Exhibit 4 the document titled "Defendants' Identification of

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Extrinsic Evidence" dated January 15th, 2021.

Dr. Glew, after you've had a chance to open it, can you please take a look and let me know if this is a document that you have ever seen before.

THE WITNESS: I don't recall seeing this document.

MR. OU: Okay. Just -- just so you understand, we had previously looked at the extrinsic evidence that Demaray had submitted in this case. This is the defendants' submission of extrinsic evidence.

I'll represent that for -- that to you. It sounds like as we're sitting here today you don't have any recollection of reviewing this document in preparing your claim construction declaration.

Q Is that right?

MR. WELLS: Objection; misstates the document. Defendants haven't actually submitted this evidence.

MR. OU: Okay. Let me rephrase my question.

I'll represent to you that this is the document that the defendants exchanged with the plaintiff that discloses their identification of extrinsic evidence.

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Q To the best that you can recall, have you ever seen this document?
MR. WELLS: Objection; asked and answered.
THE WITNESS: I don't recall seeing this document off the top of my head.
BY MR. OU:
Q Okay. Your counsel did not provide it to you to review in preparing your claim construction positions?
MR. WELLS: Objection; vague and ambiguous, asked and answered.
THE WITNESS: Off the top of my head, I don't recall seeing this document.
BY MR. OU:
Q Okay. And I'm not going to go one by one through each of the identifications of extrinsic evidence; but do you see that in this document, there is a table and it identifies for each -- for certain listed claim terms there is extrinsic evidence in -- in the next column?
Do you see that?
A Generally, yes.
Q Okay. Did you review the extrinsic evidence that's cited in this document in preparing your claim construction opinions in this case?

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MR. WELLS: Objection; compound and vague.
THE WITNESS: I don't recall seeing this document so I did not specifically -- I don't specifically recall reviewing the art cited as extrinsic evidence.
I am familiar with some of these references.
MR. OU: Fair enough.
Q There are certain references here that you may have reviewed; but is it correct that you were not, for example, provided a complete set of the extrinsic evidence identified in this document for your review in preparing your claim construction positions?
MR. WELLS: Objection; foundation.
THE WITNESS: I don't recall seeing this document and I do not believe I was provided with the documents listed in the table. I am familiar with some of the documents in the table, but I don't think I have a complete listing of these documents.
MR. OU: Okay. Fair enough.
Let me go back to your declaration at Exhibit 1 in Paragraph 9. In Paragraph 9, the last sentence, you wrote "I am also aware of information generally available to and relied upon by a person

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of ordinary skill in the art at the relevant time, including, for example, textbooks, manuals, technical papers, and articles, as well as commercially available systems."
Q Do you see that in your declaration, Dr. Glew?
A Yes.
Q What are the types of commercially available systems that a person of ordinary skill at the time of the invention would have been familiar with?
A It might be power supplies, it might be PVD machines or related technologies to that.
Q Okay. Power supplies and PVD systems.
Anything else specific that comes to mind in terms of commercially available systems that a person of ordinary skill would have been familiar with at the time?
A Well, there are different aspects of equipment. Equipment is -- capital equipment, so there are lots of components in there. One might be aware of the de- -- more details of a piece of equipment.
Q Would you agree that the -- the patents-in-suit are -- are directed to PVD reactors

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or systems and particular hardware components or configurations of those hardware components at a very general level?
Would you agree with that?
MR. WELLS: Objection; misstates the documents.
THE WITNESS: Not exactly, no.
BY MR. OU:
Q In your own words, how would you describe generally what the patents are directed to?
A Well, the '276 patent, which I have before me now, cites in Claim 1 a reactor, and it gives a description of an apparatus.
The '657 patent describes in Claim 1 a method of depositing a film. So whereas one patent is very specific to hardware, the other is more specific to method.
Q Okay. Let's -- let's talk about the '276 patent.
In Claim 1, you said it's a -- it's a reactor claim, right?
A Generally, yes, it's about a reactor.
Q Okay. That reactor claim requires a pulsed DC power supply -- right? -- that's providing -- sorry. Let me restate my question.

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The '276 patent is a reactor claim that has certain specific hardware components, right?
A The '276 patent, Claim 1, for example, relates to the reactor, which has, yes, certain claim elements that require specific hardware configurations.
Q And those include a pulsed DC power supply that's coupled to a target area, right?
A Yes, that is --
MR. WELLS: Objection -- objection; incomplete recitation of the limitation.
THE WITNESS: That is the opening portion of the third claim element. It requires -- there's five main lines in that claim, and that's part of the third line.
MR. OU: Okay. Dr. Glew, just -- just so you understand, I'm not trying to just kind of recite each claim limitation.
Q You would agree that the -- Claim 1 of the reactor -- Claim 1 of the '276 patent is a reactor claim that has certain hardware components, correct?
A I would say generally --
MR. WELLS: Objection; vague.
THE WITNESS: -- it's an apparatus and it has certain claim limitations requiring specific

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hardware or specific physical manifestations of things, yes.
BY MR. OU:
Q Okay. And those include a pulsed DC power supply, right?
MR. WELLS: Objection; misstates the document.
THE WITNESS: Well, the claim element is -- it does require a pulsed DC power supply coupled to the target area, the pulsed DC power supply providing alternating negative and positive voltages to the target. So it does require that.
BY MR. OU:
Q Okay. And it also requires an RF bias power supply coupled to the substrate, right?
A Yes, that is the fourth claim element.
Q And it also requires a narrow band rejection filter that rejects at a frequency of the RF bias power supply coupled between the pulsed DC power supply and the targeted area, right?
A Yes, that is the fifth claim element.
Q Okay. If we go to Paragraph 22 of your declaration --
Let me know when you're there, Dr. Glew.
A Okay. I'm at Paragraph 22.

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Q Okay. And then the third sentence says "Figure 1-A below represents a schematic representation of an example reactor apparatus according to the Demaray patents," and then there is an image of Figure 1 that's annotated, right?
A Yes, Figure 1-A is annotated from the patent.
Q Okay. At the time of the alleged invention, were there any commercially available systems that had each of the hardware components that are in this schematic representation that -- recited at Paragraph 22?
MR. WELLS: Objection; scope.
Counsel, you're going to validity issues. This is a claim construction deposition.
MR. OU: I'm asking him about -- he's already opined that a person of ordinary skill would have knowledge about commercially available systems, so I'm asking him about what commercially available systems a person of ordinary skill would have known at the time.
MR. WELLS: He's answered that question.
BY MR. OU:
Q Can you answer my question?
MR. WELLS: Go ahead. I'm not going to cut

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you off. Go ahead, finish. Are you done?
MR. OU: Go ahead. I'm done.
MR. WELLS: He answered that question, and now you're asking him about validity issues. If it keeps going, we can go to the court on this. This is a claim construction deposition.
MR. OU: Okay. Well, I don't think he answered my question, or at least I'm going to check the transcript. So let me ask the question again. Give me a second.
Q Dr. Glew, you -- you previously testified that a person of ordinary skill in the art at the time of the invention would have general familiarity with commercially available systems, right?
A I would say generally, yes, that's what I've described in Paragraph 9 of my declaration.
Q Okay. At the time of the invention, would a person of ordinary skill in the art have an understanding of commercially available systems that meet or have each of the hardware components that are shown in Figure 1-A of your declaration after Paragraph 22?
MR. WELLS: Objection regarding scope.
You're going to validity issues. This is outside the scope of this deposition.

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THE WITNESS: Could you repeat the question?
MR. OU: Sure.
Q At the time of the invention, would a person of ordinary skill in the art have an understanding of commercially available systems that have each of the hardware components that are shown in Figure 1 of your declaration at Paragraph 22?
MR. WELLS: Objection to scope.
Again, you're asking about validity issues, not claim construction.
THE WITNESS: A person of skill in the art would have general knowledge of commercial systems available at the time.
BY MR. OU:
Q Okay. And do you consider yourself a person of ordinary skill in the art at the time of the invention?
A Yes.
Q Okay. What commercially available systems were you aware of as a person of ordinary skill in the art at the time of the invention?
MR. WELLS: Objection; asked and answered.
THE WITNESS: By which systems, are you referring to anything in specific?

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MR. OU: Sure.
Q What commercially available systems used for reactive magnetron sputtering were you aware of at the time of the invention?
MR. WELLS: Objection; vague and ambiguous, scope.
THE WITNESS: I haven't gone back and tried to prepare an answer on this. I didn't specifically list commercially available systems in my declaration.
Off the top of my head, as I sit here now, I think of, for example, Applied Materials made systems, the Endura system, Veeco made systems, Varian made systems. There were manufacturers of PVD systems in Japan, in Europe also.
But, you know, things that were of comparable technology, those three come to mind off the top of my head.
BY MR. OU:
Q Okay. Would a -- would a person of ordinary skill in the art at the time of the invention have an understanding of the hardware configurations of those commercially available systems such as the Endura system that you just mentioned, sold by Applied Materials?

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MR. WELLS: Objection; vague and ambiguous.
THE WITNESS: One would have some knowledge of the systems. Other knowledge might be proprietary.
BY MR. OU:
Q Okay. In terms of the -- the some knowledge, for example, would a person of ordinary skill in the art at the time of the invention have an understanding as to whether or not a PVD system sold by one of the companies you just listed, for example, provide an RF bias to the substrate?
Is that the level of information a person of ordinary skill in the art would understand or know at the time?
MR. WELLS: Objection; vague and ambiguous and incomplete hypothetical.
THE WITNESS: In terms of information that wasn't proprietary, one of skill in the art at the time would be aware of advertisements for the equipment, publications in journal articles or industry magazines describing the latest and greatest benefits of a particular tool.
Something like a biassing of a substrate could be one of those things that was advertised and publicly known as opposed to proprietary. It would

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depend on the individual piece of equipment in the individual case.
I would have to go back and examine, you know, a specific -- specific piece of equipment and the documents available at the time to give an assessment of what was publicly known versus what was held confidential and private.
BY MR. OU:
Q Okay. What -- would you agree that a person of ordinary skill in the art at the time of the invention would at least be familiar with the types of publicly available journals or marketing materials describing PVD systems at the time of the invention?
A I think that one of skill in the art would be aware of advertisements and journal articles on the equipment, yes, generally.
Q So let's just say, for example, one of the companies in Japan that was manufacturing and selling PVD equipment, they released marketing materials that described the PVD system that provided DC power to the target and an RF bias to the substrate.
Someone -- a person of ordinary skill in the art would be familiar with that type of

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marketing publication; would you agree?
MR. WELLS: Objection; scope and incomplete hypothetical.
Counsel, again, you're asking for validity issues and knowledge of a person of skill in the art regarding alleged prior art, or whatnot. This is all relating to validity issues and not claim construction. If it keeps going, we can call the court.
MR. OU: Okay. I -- I -- I disagree, Maclain. This is all within what a person of ordinary skill in the art would understand these claims to mean and certain claim terms to mean.
So if you want to call the court and get a resolution on your objections so that we can move forward with the deposition, I'm happy to explain to the court the purpose of our questions and how they relate to claim construction.
Do you want to do that?
MR. WELLS: You've got to explain to me. How -- how do -- how do these questions relate to claim construction? You're asking whether a person of skill in the art would be -- know about a specific commercial hypothetical marketing piece (audio disruption). Why --

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MR. OU: Yeah, because Dr. Glew --
MR. WELLS: What does that have to do with any of the opinions that Dr. Glew has offered in this matter?
MR. OU: Because he's said at Paragraph 9 "I'm also aware of information generally available to a person of ordinary skill in the art, including commercially available systems," and I'm trying to understand what is -- what are the bounds of the commercially available systems that a person of ordinary skill in the art would be aware of.
So, Dr. Glew, let me ask my question again.
And, Maclain, if that answer is not satisfactory to you, I'm happy to call the court and get the court's resolution because the speaking objections are really bogging down my examination and, you know, I don't want to have to go to the court and ask for a second day of Dr. Glew because we've had to deal with these speaking objections, so I -- I'd rather get resolution of it sooner than later.
If you want to have a running objection, you're happy to make that; but I can't have you to continue to disrupt my examination with these long speaking objections.

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(Mr. Ou and Mr. Wells speak simultaneously.)
MR. WELLS: This is a claim construction discovery -- claim construction deposition and you are asking about validity issues. You can ask your question --
MR. OU: No, I'm not.
MR. WELLS: -- and I'll make my objections.
That's inappropriate; and if it continues, we'll have to go to the court. I've given you reasonable leeway, but you're going beyond that bound.
Go ahead and ask your question, and I will object, and then we'll decide whether we need to go to the court.
MR. OU: Okay.
Q So, Dr. Glew, my question was, let's say one of the companies in Japan that was manufacturing and selling PVD equipment that you previously identified, they released marketing material to describe the PVD system that provided DC power to a target and RF to the substrate.
Would someone -- a person of ordinary skill in the art be familiar with that type of marketing publication?

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MR. WELLS: Objection regarding scope and incomplete hypothetical.
THE WITNESS: My general understanding of a person of skill in the art is that they would have knowledge of publicly available information.
BY MR. OU:
Q And that would include marketing material that described PVD systems that accompany -- like Applied Materials was selling, right?
MR. WELLS: Objection; scope and incomplete hypothetical.
THE WITNESS: My general understanding of a person of skill in the art is that they would be aware of publicly available information in the field to the extent the information was publicly available, then that would fall in the arena of information that a person of skill in the art would be familiar with.
BY MR. OU:
Q And is it your testimony that a person of ordinary skill in the art in the field would only be familiar with information that's publicly available?
MR. WELLS: Objection; vague and ambiguous, misstates testimony.
THE WITNESS: A person of skill in the art

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wouldn't necessarily be aware of proprietary information from other companies. Information that is trade secret and confidential isn't necessarily within the knowledge of a person of skill in the art.
BY MR. OU:
Q The knowledge of a person of ordinary skill in the art isn't -- isn't limited to just publicly available information?
MR. WELLS: Objection; calls for a legal conclusion, scope, and vague.
THE WITNESS: I think you're perhaps not understanding my answer.
Information that is confidential or proprietary to one company isn't necessarily known by other people, including a person of skill in the art.
BY MR. OU:
Q It -- it would depend on the circumstances; is that fair?
MR. WELLS: Objection; vague, calls for a legal conclusion, and scope.
MR. OU: Let -- let -- let me reask my question, or ask it a different way.
Q At Paragraph 9 of your declaration, you

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state that you have relied on your personal knowledge and professional experience in designing and developing equipment for semiconductor manufacturing; is that right?
A Yes.
Q Okay. That personal knowledge and professional experience likely includes information that was not publicly available and perhaps confidential to a company, but that's still information that you as a person of ordinary skill in the art would have had available to you; is that fair?
MR. WELLS: Objection; calls for a legal conclusion, scope, and misstates the document.
THE WITNESS: Not exactly, no.
MR. OU: Okay.
THE WITNESS: I'm going to turn my lights on. One second.
MR. OU: Dr. Glew, your answer to my last question was "Not exactly, no"; and I want to give you the opportunity to explain why my question or statement -- why you did not agree with it.
MR. WELLS: Objection; scope, scope, calls for a legal conclusion.
THE WITNESS: Trade secrets aren't within

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the public domain. Most professionals and persons of skill in the art have some trade secret knowledge, potentially -- well, I don't say most do, but some do.
So trade secret knowledge isn't necessarily the kind of information that a person -- that a person of skill in the art knows. A person of skill in the art may have trade secret knowledge, but another person of skill in the art may not have that same trade secret knowledge, so it's not reasonable to assume that trade secret knowledge is part of the knowledge set of any POSITA.
MR. OU: Okay. Understood. It's -- again, it goes to the type of information.
Q If we're talking about trade secret information, that level of confidentiality, those are things that you would not consider a POSITA to know at the time of the invention; is that right?
MR. WELLS: Objection; scope, calls for a legal conclusion.
This goes to validity issues.
THE WITNESS: I'm not an attorney, but my general impression is that two people in the field who are both POSITAs may have different trade secret knowledge, confidential information, and they

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wouldn't be expected to know what was happening internal to another company if it was confidential. It wouldn't be public knowledge.
BY MR. OU:
Q You agree that there's a difference between information that's confidential and information that's considered trade secrets, right?
MR. WELLS: Objection; scope, calls for a legal conclusion.
THE WITNESS: Trade secrets, yes, generally are things that aren't patented, but they are held tightly. Confidential information is information that is, you know, held within one company.
So either way, trade secrets and confidential information from one company aren't necessarily known by a person at another company or in the general public. It wouldn't be confidential if it was -- if the public knew it.
BY MR. OU:
Q Is it your testimony that the knowledge of a person of ordinary skill in the art is limited solely to what is publicly available?
MR. WELLS: Objection; calls for a legal conclusion, outside the scope.
THE WITNESS: All I'm saying is that a

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person who has confidential knowledge from one company has knowledge that other people don't have.

A person of ordinary skill in the art's knowledge includes the skill and the expertise in that field, but it wouldn't include, necessarily, confidential information from another company or entity.

BY MR. OU:

Q Okay. You would agree that a person of ordinary skill in the art's knowledge would at least include the skills and the expertise in that particular field, right?

A Yes, a person of ordinary skill in the art should have the skills and expertise in that field.

Q So, for example, a person of ordinary skill in the art in the field of PVD systems would have some level of expertise and knowledge about PVD systems, right?

A A person of skill in the art in that field should have the skills and capability in that field, yes.

Q And those skills -- skills and capabilities, those would not be limited to just information that is publicly known and available, you would agree, right?

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MR. WELLS: Objection; scope, calls for a legal conclusion.

THE WITNESS: Your question is a bit confusing. I'm not sure that skills and publicly available information are even in the same category.

BY MR. OU:

Q Okay. What about expertise? I believe you said that a person of ordinary skill in the art would have expertise in that particular field, right?

MR. WELLS: Objection; misstates testimony.

THE WITNESS: (Audio disruption) talk about a person of ordinary skill in the art, I describe that the person would have at least one to two years of relevant work experience, they would have at least a general understanding of sputtering methods and systems, as well as sputtering deposition of thin films on substrate.

So that is the definition of POSITA that I've -- I've ascribed in this matter.

BY MR. OU:

Q Okay. You're looking at Paragraph 16 of your declaration; is that right, Dr. Glew?

A Yes, it's Paragraph 16 of my declaration.

Q And you agree that the relevant timeframe

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for a POSITA -- let me just start over and -- and make sure the court reporter has this.

If I -- going forward, if I say POSITA, meaning P-O-S-I-T-A, will you understand I'm saying that shorthand for a person of ordinary skill in the art?

A I will understand that, yes.

Q Okay. Great.

You agree that the relevant timeframe for a POSITA is between 2001 and 2002; is that right?

A I think that's generally the relevant timeframe in this matter, yes.

Q Okay. And -- and it's your belief that you qualify as a POSITA at the time of the invention, right?

A Yes.

Q Okay. And in Paragraph 16, you've stated that a POSITA at the time of the invention would have an undergraduate degree in electrical engineering or material science; is that right?

A Yes.

MR. WELLS: Objection; misstates the document.

THE WITNESS: Or a related field and -- and some other experience too, yes.

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BY MR. OU:

Q Okay. And -- and you believe that you have that requisite degree, right?

A Yes.

Q You also state that a POSITA would have one to two years of relevant work experience, right?

A That is one of the things I've described in Paragraph 16, yes.

Q Okay. In your opinion, what would qualify as relevant work experience?

A There are a lot of things that would qualify. One could work in an equipment company that made PVD equipment. One could work in one of the components or subsystem suppliers that made systems that went into PVD equipment. One could work for a manufacturer who used PVD equipment to make chips or other products. Things related to that.

Q Is it fair to say that it would have to be relevant to PVD, though, each of those examples that you just gave?

In order for it to be relevant work experience, it would at least have to relate to PVD?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: I would say that the term

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"relate" is -- needs clarification here in my answer.

You know, there are companies that made vacuum equipment and they were -- actually had a very strong expertise in PVD. PVD requires a fairly good vacuum, you know, it's a relatively deep vacuum for processing.

There's people that -- you know, you wouldn't say that they made PVD tools, but they made the vacuum equipment that go in it, and there were other people that made flow controllers, the gas control or the power supplies that went into PVD equipment.

You know, all of these people would have significant experience in PVD. The equipment companies don't make a lot of their own stuff. They basically piece together large subsystems and rely upon the expertise of multiple suppliers, and they -- they design the chamber itself, but not many of the things that go into it.

So I'd say all of these things relate to PVD.

MR. OU: Okay. And -- and so I -- I think I understand your testimony.

Q You -- a person doesn't necessarily have to

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have worked at a company that manufactures PVD equipment or uses the PVD equipment, it could also be someone that works at a company that designs and manufactures certain components that go into PVD equipment; is that fair?

A Yes.

The component suppliers actually have quite a bit of expertise; and as an engineer, I always -- and the other engineers relied on the expertise of these suppliers in integrating all of these components to create a subsystem or a reactor.

Q Okay. And then you -- the final part of your, kind of, opinion as to what qualifies as a POSITA is that a POSITA would have had at least a general understanding of sputtering methods and systems as well as sputtering deposition of thin films on substrates; is that right?

A Yes, that's one of the sentences in Paragraph 16 from my declaration.

Q And is it fair to say that, for example, if someone worked at a PVD equipment manufacturing company, a company that manufactures PVD equipment such as Applied Materials, that person should have at least a general understanding of sputtering methods and systems as well as sputtering deposition

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of thin films on substrates?

MR. WELLS: Objection; incomplete hypothetical.

THE WITNESS: Can you repeat the question?

MR. OU: Yes.

Q Is it fair to say that if somebody worked at a PVD equipment company, meaning a company that manufactures PVD equipment like Applied Materials, that person would at least have a general understanding of sputtering methods and systems as well as sputtering deposition of thin films on substrates?

MR. WELLS: Objection; incomplete hypothetical.

THE WITNESS: (Audio disruption) services.

BY MR. OU:

Q I'm sorry. What was that?

A Are you including people in janitorial services in Applied Materials?

Q No.

So tell me what -- what are the type of -- you worked at Applied Materials, right?

A Yes, I --

Q You worked there from 1987 to 1997?

A Yes.

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Q And would you say that there are at least some employees of Applied Materials that would have general understanding of sputtering methods and systems as well as sputtering deposition of thin films on substrates?

A I would say that generally the people in technical capacities did, yes, or many of them did.

Q Does that include yourself?

A Yes.

Q And can you just generally describe where your general understanding of sputtering methods and systems as well as sputtering deposition of thin films on substrates comes from at the time of the invention?

MR. WELLS: Objection; vague and ambiguous.

THE WITNESS: Well, I worked at Applied Materials. It was the largest manufacturer of PVD equipment in the world, I think, at the time. They went back and forth with another company or two.

But as an equipment engineer and then as a core technologist, one of 15 corporate experts in the company, I worked with all of the divisions, so I had knowledge of the CVD group and what they did, the etching group, PVD group, so forth and so on, the different divisions within the company.

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I had a strong expertise in micro contamination, meaning how particles and contamination get into the process chamber. I had a strong expertise in fluid delivery. I was the core technologist for ultra-high-purity systems. So high vacuum systems are high-purity systems.

You have to make sure that what comes into the process chamber is extremely clean. You can't get little particles and chemical species that are undesired in the process chamber, contamination. Particles cause 90 percent of wafer loss, so that's a major concern.

I also had some expertise in other areas, but generally along -- things along those lines, as well as any training and education I had in that area.

MR. OU: So thanks -- thanks for that explanation, Dr. Glew.

Q When you sat on the corporate engineering and technology council, I think you said that that would have involved working with all the different groups at Applied Materials, different technologies, including CVD, PVD, and others, right?

A Yes.

Q So you would have been familiar, as a

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person of ordinary skill, of the different product offerings from Applied Materials at that time when you were in that role; is that right?

MR. WELLS: Objection; vague and ambiguous and misstates testimony.

THE WITNESS: At the time, I would have been generally available with the product offerings and the products at Applied Materials. I haven't specifically, for the purposes of today, attempted to recount all that detail.

BY MR. OU:

Q Your experience in working, for example, with the PVD group, PVD technology at Applied Materials, that experience is part of what, you know, you believe qualifies you as a person of ordinary skill in the art; is that fair?

MR. WELLS: Objection; misstates testimony and vague.

THE WITNESS: I believe that my work at Applied Materials, including that with the PVD group, would be a portion of what makes me a person of skill in the art.

BY MR. OU:

Q What commercially available PVD systems were you working on at Applied Materials in the 1997

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timeframe?

A Well, 1997, early '97, was when I left Applied Materials.

But the time preceding up to that, Applied had what they called the Endura system, so I worked -- worked with the equipment engineers who developed and improved the Endura system.

Q Are you familiar with a system called Vectra or Vectra IMP?

A In a general sense, the ionized metal plasma. I'm not sure if that was at that time -- you know, I haven't, for the purposes of today, tried to recount the history of all PVD tools, and I'm not sure --

Q Okay. I was just trying to --

A I'm not sure when -- when I became knowledgeable or aware of that equipment, off the top of my head, when it came out.

Q Okay. Sitting here today, you don't have a recollection of the Vectra IMP Applied Materials PVD system?

A That's not what I said.

Q Sorry.

Can -- can -- can you restate what your testimony was? I may have misunderstood it.

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A I don't recall off the top of my head what year the Vectra IMP system came out. I would have to review documents for that. I don't believe I've opined on the Vectra IMP system in my declaration.

If I have, I'd be -- and you can direct me to that portion of my declaration, I'd be happy to review it.

Q Okay. Yeah, no, I'm just trying to understand whether or not it's a commercially available system that you would have been aware of as a person of ordinary skill in the art in the 2001 timeframe.

MR. WELLS: Objection; asked and answered, outside of the scope.

BY MR. OU:

Q Do you need me to restate my question, Dr. Glew?

A I wasn't aware there was a question pending.

Q Okay. I apologize.

Is the Vectra IMP system from Applied Materials a commercially available system that you would have been aware of as a person of ordinary skill in the art in the 2001 timeframe?

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MR. WELLS: Outside the scope, asked and answered.
THE WITNESS: I haven't specifically reviewed the product release time of -- of the Vectra IMP by Applied. Off the top of my head, I don't recall what year it came out over the last 30 years of my career.
I don't recall opining on the release date of that product in my declaration. If you can direct me towards that specific product in my declaration, I'd be happy to review it.
BY MR. OU:
Q So what commercially available systems do you recall existed in the 2001 timeframe in terms of PVD systems from Applied Materials?
A Well, they had --
MR. WELLS: Outside of the scope.
THE WITNESS: I'm sorry.
MR. WELLS: Objection; outside of the scope.
Go ahead.
THE WITNESS: They had what they would call the Endura system. That was the system. It was the mainframe with two low blocks. There were a number of different chambers that were available on most of

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the mainframes.
Whether it was a CVD and etch or a PVD tool, one could pick different reactors or chambers, as we would call them, to put on the Endura. My recollection, it was roughly -- there were nine positions one could mount chambers, so there were a lot of different variations on the tools that went out the door and what was sold.
BY MR. OU:
Q Okay. Dr. Glew, when you were working at Applied Materials in the 1996/1997 timeframe, were you involved at all in preparing or publishing marketing material about Applied's PVD offerings?
A I was in a technical capacity. Not to say that there may not -- there may have been one or two occasions where somebody asked me to check something or look at it, but I don't really -- it was not my duty to prepare marketing material.
I was a core technologist, one of 15 corporate technical experts, so I was definitely in the technical domain, not the marketing or sales domain.
Q And so in that role, is it fair to say that you had familiarity with the different PVD offerings by Applied Materials?

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A It would be fair to say that I had familiarity with the different PVD offerings at -- at the time. I haven't specifically reviewed all of the offerings from 15 years ago or 20 years ago for the purposes of today's declaration, and I don't believe I've offered opinions on what was available at Applied Materials 20 years ago in my declaration.
If you care to direct me toward a portion of my declaration where I've covered this, I'd be happy to review it; but I don't recall describing the product offerings 20 years ago at Applied Materials.
Q 20 years ago, did Applied Materials offer commercially available systems that a person -- person of ordinary skill in the art would be aware of that provided DC power to the target?
MR. WELLS: Objection; vague and ambiguous, outside of scope, and incomplete hypothetical.
In addition, it calls for a legal conclusion.
THE WITNESS: I don't believe I've opined on Applied's product offerings from 20 years ago in my declaration.
If you can direct me to a portion of my declaration where I have, I'll be happy to review

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it.
MR. OU: Dr. Glew, I'm -- I'm asking you whether or not a person of ordinary skill in the art at the time of the invention would have been aware of commercially available systems offered by Applied Materials that provided DC power to a target.
Q Can you answer that question?
MR. WELLS: Objection; scope, vague and ambiguous.
THE WITNESS: I would say that I have not prepared a breakdown of Applied's product offerings from 20 years ago today, and I haven't opined on it in my declaration.
I would further say, though, that one of skill in the art would generally be aware of power supplies connected to targets; but I have not, you know, done a prior art analysis and a timing analysis for the purposes of the claim construction.
MR. OU: Okay. Maybe it will be easier if I ask you questions more general, not necessarily specific to Applied Materials' product offerings.
Q Is that okay?
A You're -- you're welcome to ask me general questions. I'll just have to understand the -- the context of the question.

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Q Okay. Well, let me just try to wrap up that last question.
Sitting here today, do you have any recollection of Applied Materials offering commercially available systems in PVD in the 2001 timeframe that provided DC power to the target?
MR. WELLS: Objection; scope.
THE WITNESS: You asked specifically again about Applied Materials, not general?
MR. OU: Yeah, Applied Materials.
Q To the best that you can recall, in 2001, was Applied Materials offering PVD systems that provided DC power to the target?
MR. WELLS: Objection; scope.
THE WITNESS: I haven't performed an analysis of what Applied's product offerings were 20 years ago versus 24 years ago or versus 18 years ago. I couldn't give you a year-by-year breakdown of what was offered when.
Generally I can say that I think one of skill in the art would be aware of power -- DC power supplies in PVD systems.
BY MR. OU:
Q In 2001, DC power supplies in PVD systems was not new, right?

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MR. WELLS: Objection; scope.
Counsel, again, you're going to invalidity issues. We've been patient on this; but if you keep going down this road, we're going to have to stop.
You can answer this question.
But I'm telling you that this is clearly off topic.
THE WITNESS: Can you direct me to where in my declaration I've opined on when DC power supplies in PVD systems became available?
MR. OU: I'm not asking you about that, Dr. Glew.
Q I'm asking you about your opinions as to what a POSITA would have understood and known at the time of the invention; and I believe you stated that such a person would have a general understanding of sputtering methods and systems, right?
A A POSITA at that time would have a general understanding of sputtering methods and systems.
Q And a POSITA at that time would have an understanding of the commercially available PVD sputtering systems, right?
MR. WELLS: Objection; vague and ambiguous and misstates the testimony -- or misstates the document.

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THE WITNESS: I've opined in Paragraph 9 of my declaration that a POSITA would have -- would be generally available of commercially available systems.
I did not opine that a person of skill in the art would memorize commercially available systems from 20 years ago or 22 or 24 years ago.
BY MR. OU:
Q Okay. Sitting here today, can you tell me whether or not a POSITA at the time of the invention in 2001 would have an understanding as to whether there were commercially available PVD systems that provided DC power to the target?
A What I opined is that a person of skill in the art would be aware of generally available systems at the time.
If you're asking me for detailed knowledge about when specific pieces of technology became available, that isn't the subject of this declaration.
Q Okay. As an expert in this field, can you tell me here, sitting here today as you are under oath and you're supposed to answer my questions, whether or not a POSITA at the time of the invention in 2001 would have an understanding as to whether

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there were commercially available PVD systems that provided DC power to the target?
Do you know one way or the other, sitting here today?
MR. WELLS: Objection; scope.
You can answer to the extent you know.
THE WITNESS: It's my -- it's my understanding, without having opined on this in my declaration or prepared for this today, that there were DC power systems -- power supplies attached to sputtering tools.
I can't, you know, tell you exactly what the configuration was 20 years ago versus 22 years ago versus 18 years ago. That's an inquiry of prior art and validity analysis that I haven't yet performed.
BY MR. OU:
Q But based on your personal experience and professional experience in designing and developing equipment for semiconductor manufacturing, you would agree that a person of ordinary skill in the art in 2001 would have known that there were commercially available systems, PVD systems, that provided DC power to the target, right?
MR. WELLS: Outside of scope.

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But, again, to the extent you know, you can answer.
THE WITNESS: I haven't opined on this or performed -- in my declaration on claim construction or performed a detailed timing analysis of specific power supply configurations year by year.
My general understanding is that a person of skill in the art would be aware of DC power supplies on sputtering systems at the time of the invention. I can't go into a lot of specifics on the particular configuration at the time without conducting that analysis.
BY MR. OU:
Q And based on your personal experience and professional experience in designing and developing equipment for semiconductor manufacturing, you would agree that a person of ordinary skill in the art in 2001 would have known that there were commercially available PVD systems that provided RF bias to the substrate, right?
MR. WELLS: Objection; outside of scope.
To the extent you have knowledge, you can answer.
THE WITNESS: I haven't reviewed the art on a year-by-year basis to understand when specific

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configurations became available. Just because I'm aware of something now doesn't mean I recall whether it came out 20 years ago, 25 years ago, or 15 years ago off the top of my head.
My general recollection is that RF systems were -- RF bias systems were likely available around the time of the invention.
MR. OU: Okay. Since you're having trouble pinpointing the year, which -- well, let me ask it more broadly and hopefully this will better help your recollection.
Q In the 1990s, so that would have included the seven years you worked at Applied Materials in that decade, plus the three years that you were getting your Ph.D. at Stanford, were you generally aware of commercially available PVD systems that provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; vague and ambiguous, outside of -- outside the scope of the report.
THE WITNESS: I haven't prepared on that specific topic for today's declaration, and it was not something I opined on in my declaration.
My general recollection without having any documents in front of me is that there were RF bias

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systems available in the '90s, but I couldn't put much more detail on it without reviewing the timeframe and which years they became available.
MR. OU: Yeah, I'm not asking you for any specific detail. I'm just asking your general recollection.
Q You would agree that in the 1990s, there were commercially available PVD systems that provided DC power to a target and RF bias to the substrate, right?
MR. WELLS: Objection; scope, asked and answered, and misstates his testimony.
THE WITNESS: I had answered questions, I believe, separately about DC power supplies and separately about RF bias to a substrate.
You're asking me, as I understand, were they combined? Is that the question?
MR. OU: Correct.
MR. WELLS: Objection; scope.
THE WITNESS: You know, I -- I reviewed material along these lines for the purposes of the IPR declarations I wrote, but I didn't prepare for an examination on the material in the IPR for today's declaration, which is on the claim construction, so I can't really give detailed

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year-by-year or couple-year ranges of when specific technologies were combined in the context of this declaration and my preparation for this declaration.
BY MR. OU:
Q Okay. Dr. Glew, but based on your 30-plus years of experience in this field and your professional experience in designing and developing equipment for semiconductor manufacturing, sitting here today, do you have a recollection as to whether or not in the 1990s when you were working at Applied Materials and then working on your Ph.D. -- whether or not there were commercially available systems that provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; outside of scope and incomplete hypothetical, as well as being vague.
Counsel, he's answering your questions. Now you're probing on, clearly, validity issues. We've given you a lot of leeway here, but how does this relate to claim construction?
MR. OU: Dr. Glew, can you answer my question?
And then, Counsel, we can have a sidebar off the record. If you want to, we can call the court --

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MR. WELLS: Well, before he answers --
BY MR. OU:
Q Can you answer the question, Dr. Glew?
MR. WELLS: -- how this relates to claim construction.
We've given you leeway, but you're asking something that's clearly going to validity issues relating to the IPRs.
MR. OU: No, I'm not. I'm asking him about what a person of ordinary skill in the art would understand in terms of available commercial systems. I've explained this to you numerous times. The fact that you think that it relates to IPRs or validity issues, that's -- that's your opinion.
I'm asking him about what a person of ordinary skill in the art would understand in terms of commercially available systems, which he's discussed in his report without providing additional detail.
I can explore with him his recollection of what are those commercially available systems that a POSITA would know and understand. So I'm happy to explain that to the court --
(Mr. Ou and Mr. Wells speak simultaneously.)

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MR. WELLS: Go ahead. I didn't mean to cut you off. Go ahead.
MR. OU: No, that's okay.
I'm happy to go to the court and get clarification; but, you know, your -- your objections and, you know, suggestions that Dr. Glew, you know, cannot answer these questions because you think that they relate to validity or the IPRs, it's inappropriate.
I have the -- the right to ask him questions about what he has opined on. He's stated that a person of ordinary skill in the art would have information about commercially available systems.
He himself has said that -- has said that he is a person of ordinary skill in the art, and he should answer my questions as to what he recalls as opposed to trying to limit what his testimony will be to what's written in his declaration, so --
MR. WELLS: And I think -- and now I'm going to respond.
MR. OU: Go ahead.
MR. WELLS: -- you are going beyond the scope of claim construction. You're asking about -- about validity issues in the IPRs.

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He's stated for the purposes of his declaration that he didn't do an analysis of a year-by-year disclosure and that the only analysis he has relating to this issue relates to the IPRs, which he didn't prepare on, and you keep probing it.
So I think it's pretty clear that you're going well beyond claim construction; and if it continues, we'll go to the court.
Ask your questions if you're going to ask, and then we'll see if we need to go to the court.
MR. OU: Okay. I'm going to ask my question again and then let's take a break and then we'll call the court. Okay?
Q Dr. Glew, based on your 30-plus years of experience in the field and your professional experience in designing and developing equipment for semiconductor manufacturing, sitting here today, do you have a recollection as to whether or not in the 1990s when you were working at Applied Materials and working on -- then working on your Ph.D. -- whether or not there were commercially available systems that provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; scope.
You can answer to the extent you know.

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THE WITNESS: The audio faded in and out a couple of times. I'm sorry, but I'll have to hear the question again.
MR. OU: That's okay, Dr. Glew. Let me try again.
Q Based on your 30-plus years of experience in this field and your professional experience in designing and developing equipment for semiconductor manufacturing, sitting here today, do you have a recollection as to whether or not in the 1990s, when you were working at Applied Materials and then working on your Ph.D. -- whether or not there were commercially available systems that provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; outside of scope.
To the extent you have personal knowledge, you can answer.
THE WITNESS: These technologies eventually were combined. I didn't, for the purposes of this declaration, prepare an analysis of when these technologies were released year by year.
The documents in the IPR are relevant to this, but those aren't -- I didn't review those for today and they're not in front of me today.
My general recollection, although

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recollections are imperfect, is that there was likely the combination of these two technologies in the '90s, but I didn't review for that today and I haven't prepared an analysis of a year-by-year breakdown of technologies --
BY MR. OU:
Q And so if it's likely that --
A -- my declaration.
Q I apologize. I didn't mean to cut you off.
And so, Dr. Glew, in the -- if these systems were commercially available sometime in the 1990s that had pulsed -- I'm sorry. Let me start over.
Dr. Glew, so if these systems, these PVD systems, that were commercially available sometime in the 1990s that provided DC power to the target and RF bias to the substrate -- would a person of ordinary skill in the art in 2001 have knowledge of such commercially available systems?
MR. WELLS: Objection; assumes facts not in evidence and outside of scope, incomplete hypothetical.
THE WITNESS: I can only answer in the general sense that if the technology was commercially available, then a POSITA should be

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aware of it.
BY MR. OU:
Q Okay. So if -- let's assume that there were commercially available PVD systems in the 1990s that provided DC power to the target and RF bias to the substrate.
You would agree that a person of ordinary skill in the art in 2001 would have knowledge of those commercially available systems, right?
MR. WELLS: Objection; outside of scope, calls for a legal conclusion and incomplete hypothetical.
THE WITNESS: This is a general question outside the scope of my declaration, I believe. I don't think I opined on this.
What I can say is that if there was a technology available in the '90s, then a person of skill in the art should be aware of it by 2001 or '02.
MR. OU: Okay. Thank you.
Dr. Glew, it's almost 1:00 and I want to be sensitive to everyone's time and lunch. Why don't we go off the record, take a break, and then we can talk about logistics for your lunch. Why don't we go off the record.

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THE VIDEOGRAPHER: We are going off the record at 12:59.
(A recess for lunch was taken from 12:59 p.m. to 1:47 p.m.)

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P R O C E E D I N G S

THE VIDEOGRAPHER: We are back on the record at 13:47.
CONTINUED EXAMINATION
BY MR. OU:
Q Dr. Glew, welcome back.
Did you speak with your counsel during the break about the substance of your testimony?
A I did not speak with him at all.
Q Okay. Would you agree that a POSITA at the time of the invention would be generally familiar with sputtering deposition of thin films on substrates?
A I believe that a POSITA at the time of the invention, as I described in Paragraph 16 of my declaration, would have a general understanding of -- of sputtering deposition on thin films on substrates.
Q And a POSITA at the time would also be familiar with reactive magnetron sputtering of -- to deposit thin films on substrates, right?
A A POSITA at the time of the invention would be generally familiar with the technologies that existed at the time.

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Q You said "would be generally familiar with the technologies that existed at that time," and would those technologies include reactive magnetron sputtering to deposit thin films on substrates?
A I -- my understanding is that there was some reactive magnetron sputtering at the time, although I don't recall opining on exactly when it became more commonplace in my declaration.
I have Paragraph 18 in my declaration where I -- I describe, you know, magnetron sputtering generally.
Q Reactive magnetron sputtering, that was something that was known by a POSITA at the time of the invention.
There's no dispute of that, right?
A I don't believe I've offered the opinion that there is.
As I said, I believe that -- you know, I've described tantalum nitride, you know, where the nitrogen gas is used for sputtering, in Paragraph 18 of my declaration.
Q And that's citing to the patent, right?
In Paragraph 18, you're citing the '657 patent?
A I've cited, yes, to the '657 at a few

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locations.
Q Right.
And so you would agree that at the time of the invention, a POSITA would be familiar with reactive magnetron sputtering systems that were used to deposit thin films such as tantalum nitride or titanium nitride?
Would you agree?
A I would agree that they'd be familiar with the systems that were available at the time. There have been advances in the technology since then. They wouldn't necessarily be -- they wouldn't be familiar with those at the time; but they'd be familiar with what was available at the time, yes.
Q Okay. And the reactive magnetron sputtering systems that were commercially available at that time to do titanium nitride and tantalum nitride depositions, to the best that you can recall, would those have included providing DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; scope.
Again, Counsel, you're going to issues relating to -- invalidity issues in the IPR, and this is improper.
To the extent the witness can answer,

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though, he can answer.
BY MR. OU:
Q Can you answer the question, Dr. Glew?
Do you need me to read it back?
A No. I'm looking at the patent and the references that I've cited within the patent, what that disclosed.
Could you repeat the question?
Q Sure.
The reactive magnetron sputtering systems that were commercially available at the time in approximately 2001 that were used for deposition of titanium nitride or tantalum nitride, to the best that you can recall, would those commercially available systems have provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; scope.
And, again, this is related to the IPRs and validity issues, and is improper.
But to the extent the witness can answer, he can answer.
THE WITNESS: The magnetron sputtering that I've described in Paragraph 18 is -- does not disclose RF sputtering.
I can't tell you off the top of my head

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when RF and magnetron were combined.
BY MR. OU:
Q Sitting here today, you don't have a recollection as to whether or not by 2001, there were reactive magnetron sputtering systems that used -- that provided pulsed DC power -- I'm sorry. Let me start over.
Sitting here today, you don't have a recollection as to whether or not by 2001, a person of ordinary skill in the art would be familiar with or would be aware of magnetron sputtering systems that used or provided DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; outside of the scope.
And this, again, relates to the IPRs and validity issues and does not appear to relate to claim construction and is improper.
To the extent you can answer on your personal knowledge, you can answer.
THE WITNESS: I don't recall off the top of my head when those three techniques were combined.
BY MR. OU:
Q And by "three techniques," you're referring to reactive magnetron sputtering and then DC power

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to the target and then RF bias to the substrate, those three?

A Essentially, yes.

Q Okay. So I just want to make sure I have your testimony clear.

Sitting here today, you don't know whether or not a POSITA at the time of the invention would be aware of any systems that used reactive magnetron sputtering while providing DC power to the target and RF bias to the substrate?

Do I have your testimony right?

MR. WELLS: Objection; vague and ambiguous as well as outside of the scope.

THE WITNESS: Without any documents in front of me, I do not recall off the top of my head when those three techniques were combined.

MR. OU: Okay. Can we actually go off the record for one second? My headset fell off so I'm on speakerphone. I want to go grab a different one, if you don't mind.

THE VIDEOGRAPHER: We are going off the record at 13:56.

(A recess was taken from 1:56 p.m. to 1:59 p.m.)

THE VIDEOGRAPHER: We are back on the

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record at 13:59.

MR. OU: Dr. Glew, just to reorient ourselves, I believe the last question that I asked and your answer before we took the break was you had indicated that without any documents in front of you, you could not recall off the top of your head whether there were commercially available systems known to a POSITA in 2001 that would have used or combined reactive magnetron sputtering with DC power to the target and RF bias to the substrate.

Q Is that right?

MR. WELLS: Objection; misstates testimony.

THE WITNESS: I think generally that's along the lines. Yes. Without any information in front of me, I don't recall off the top of my head when the multiple techniques were combined.

BY MR. OU:

Q Okay. No -- no recollection whatsoever?

MR. WELLS: Objection; asked and answered.

THE WITNESS: You know, in a 10- or 15-year period, generally; but I couldn't tell you exactly.

BY MR. OU:

Q What exactly do you mean by that, "in a 10- or 15- period"?

Are you saying that those techniques would

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have been combined within 10 or 15 years of 2001? What did you mean by that?

A You know, whether it occurred in -- when commercially available products came out, I don't know if it was, you know, mid '90s or mid -- mid 2000s off the top of my head.

Q Okay. Just sitting here today, you don't remember?

A Not off the top of my head, I don't recall that, no --

Q And so drawing on your personal experience working at Applied Materials in the mid '90s, you don't have any recollection of such systems being offered by Applied Materials in the mid '90s; is that fair?

MR. WELLS: Objection; scope.

THE WITNESS: I don't recall exactly what -- you know, whether they came out while I was working there or when I was -- or after I was working there.

It's, you know, 20 -- roughly 20 years ago. I just don't recall off the top of my head when exactly it happened.

MR. OU: Lawrence, could you put into the -- the chat an exhibit? It's U.S. Patent

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Number -- the one ending in '276, please.

THE VIDEOCONFERENCE TECHNICIAN: '276?

MR. OU: Yeah. 7,544,276.

THE VIDEOCONFERENCE TECHNICIAN: Just one moment.

(Exhibit No. 5 was marked for identification by the videoconference technician; attached hereto.)

THE VIDEOCONFERENCE TECHNICIAN: It's uploading in the chat now.

MR. OU: Okay. And I believe this is going to be Exhibit 5, right?

THE VIDEOCONFERENCE TECHNICIAN: Yes, it is.

MR. OU: Okay.

Dr. Glew, I think you have the patents-in-suit in front of you, so we're going to mark as Exhibit 5 the '276 patent.

Q Do you have it in front of you?

A Yes, I do.

Q Okay. And -- and you're familiar with the '276 patent, right?

A Yes, generally.

Q Okay. Just generally, or --

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A Yes, I'm familiar with the '276.
Q Could you turn with me to Column 4 and Line 44, right below the detailed description? Are you there?
A Not yet, no.
Q Okay. Let me know when you're there.
A Okay. I'm in the detailed description.
Q Okay. In the first sentence of the detailed description, it says "Reactive DC magnetron sputtering of nitrides and carbides is a widely practiced technique." Do you see that?
A Yes.
Q Okay. Do you agree with that statement as -- as a person of ordinary skill in the art at the time of the invention?
A I don't disagree with that first clause in the patent, no.
Q You don't disagree with it, but do you agree with it, that it was a widely practiced technique?
MR. WELLS: Objection; scope.
THE WITNESS: Well, there's a modifier in that sentence that goes on to describe when it's not done. You know, there are some limitations to it.

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MR. OU: Okay. Let's -- let's take the full -- the full sentence in -- in context so that we're not, you know -- we're on the same page. Okay?
Q So the -- can you read the full sentence just into the record, please?
A "Reactive DC magnetron sputtering of nitrides and carbides is a widely practiced technique, but the reactive DC magnetron sputtering of nonconductive oxides is done rarely."
Did you want me to continue reading?
Q No. I apologize. I was just checking something. Okay. So let's -- let's -- let's break that down. Reactive DC magnetron sputtering of nitrides and carbide -- carbides -- just focusing on nitrides, what would a person of ordinary skill in the art understand those nitrides to be referring to at the time of the invention?
A It could be --
MR. WELLS: Objection; scope.
THE WITNESS: -- could be titanium nitride, which is a conductor, tantalum nitride, which is a conductor.

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BY MR. OU:
Q Okay. And so reactive DC magnetron sputtering of nitrides such as titanium nitride and tantalum nitride, those would be -- those would be techniques that were widely practiced and known to a POSITA at the time of the invention; would you agree?
MR. WELLS: Objection; scope.
THE WITNESS: "At the time of the -- the patentee represents that at the time of the invention, that reactive DC magnetron sputtering of nitrides and carbides was widely practiced." That -- that, I agree to. It's my understanding further that typically this would have been something along the lines of titanium nitride or tantalum nitride, what we call barrier layers that are conductive.
MR. OU: All right.
Q And -- and at the time of the invention, what would a person of ordinary skill in the art understand those widely practiced techniques to be in terms of depositing titanium nitride or tantalum nitride?
A I'm not sure I follow your question.
Q So the -- the -- the inventors wrote in the

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specification that reactive DC magnetron sputtering of nitrides, that was -- they were widely practiced techniques, and I'm asking you what a POSITA would understand those widely practiced techniques to be.
MR. WELLS: Objection; vague and ambiguous and scope.
THE WITNESS: He's -- the sentence, I think, just clearly says reactive DC magnetron sputtering of nitrides is a widely practiced technique. I'm not sure what your question is.
BY MR. OU:
Q Okay. Would a -- would a person of ordinary skill in the art at the time of the invention know whether or not reactive DC magnetron sputtering of nitrides at that time used DC power to the target and RF bias to the substrate?
MR. WELLS: Objection; incomplete hypothetical and scope.
THE WITNESS: Sorry. Let me ask on the question again -- did you say there was a bias on this?
MR. OU: Right. A -- an RF bias to the substrate and DC power to the target.
Q So would a person of ordinary skill in the

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art reading this statement from the inventors understand that the widely practiced techniques of reactive DC magnetron sputtering of nitrides -- would they be using DC power to the target and RF bias to the substrate?

MR. WELLS: Incomplete hypothetical, calls for speculation, and outside the scope.

BY MR. OU:

Q Dr. Glew, do you have my question in mind or do you need me to read it back?

A No, I have it. I'm reading the patent.

Q Okay.

A This sentence just discloses DC magnetron sputtering. You -- it doesn't -- this sentence or passage doesn't disclose a RF bias on the substrate.

Q Okay. But would a person of ordinary skill in the art reading this sentence, based on that person's knowledge of sputtering methods and systems at the time of the invention -- would that person understand the reactive DC magnetron sputtering systems that were widely practiced techniques to also include RF bias to the substrate?

MR. WELLS: Objection; scope, calls for speculation, incomplete hypothetical.

THE WITNESS: That particular passage

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doesn't disclose RF bias. I don't know what -- you know, one -- another person might have in their head.

BY MR. OU:

Q Dr. Glew, I'm asking you whether or not, in your opinion, a person of ordinary skill in the art at the time of the invention reading this statement would recognize that one of the widely practiced techniques for reactive magnetron sputtering of nitrides would include both DC power to the target and RF bias to the substrate.

MR. WELLS: Objection; scope, incomplete hypothetical, calls for speculation.

THE WITNESS: This passage only discloses DC magnetron sputtering. It doesn't disclose RF, necessarily, so I don't think that one would necessarily read RF into it.

MR. OU: Okay. The next sentence or the next part of the sentence says "but the reactive DC magnetron sputtering of nonconducting oxides is done rarely."

Q Do you see that?

A Yes, I do.

Q Do you agree with that statement as well?

A I think -- I think it's generally correct,

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it was problematic.

Q And when it refers to "reactive DC magnetron sputtering," can you generally describe what the DC element of that sputtering process is?

A Generally a DC on the target, you know, with a -- with a magnet field -- magnetic field around the target.

Q Okay. So -- so a person of ordinary skill in the art, when -- when you see reactive DC magnetron sputtering, the "DC" is referring to DC power being provided to the target; is that fair?

A I think that's generally fair.

Q Okay. Now, is that a continuous DC that's being provided to the target?

MR. WELLS: Objection; vague, incomplete hypothetical.

THE WITNESS: I'm going to turn my lights on. Excuse me.

BY MR. OU:

Q Do you need me to read back the question again, Dr. Glew?

A No.

I'm looking at the patent.

Q Okay.

A The particular passage doesn't disclose

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whether it's constant DC or pulsed.

Q So when you refer to "constant DC or pulsed," can you explain what's the difference between those two?

A A constant DC might be a 500-volt negative charge or -- or the voltage potential held on a target. A pulsed is one that would turn off, and it wouldn't be constant.

Q What do you mean by "turn off"?

A Well, I understood that you were -- you were using the term "pulsed" in the concept -- in the way of -- and I know the term "pulsed" is at issue in this patent case, so I'm trying to not create more confusion.

I understood that you asked DC versus pulsed meaning either the DC stayed on or the DC turned on and off.

Q So in -- in practice, are there any DC power supplies that never turn off?

MR. WELLS: Objection; vague, incomplete hypothetical.

THE WITNESS: There are DC power supplies that remain constant.

BY MR. OU:

Q Meaning they never shut off?

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MR. WELLS: Objection; vague.
THE WITNESS: Your question is odd.
They stay on during the process, and then step, and then they might be turned off when the process step is over. DC, direct current, just means that it will stay on at a specific voltage. Yeah.
BY MR. OU:
Q Okay. So in your opinion, a DC power supply or a constant DC power supply is one where the current will stay on during the process, it will never shut off whatsoever -- is that right? -- during the process?
MR. WELLS: Objection; incomplete hypothetical and misstates testimony.
THE WITNESS: Well, your question was in the context of DC versus pulsed DC.
A DC system might be set for a certain period of time to stay at a fixed voltage and then when the step is over or however long it was supposed to stay on, it turns off, typically, is how one would think in a general sense of a DC power supply as opposed to a pulsed power supply, which would turn on and off more rapidly.
The term "pulsed" is at issue here, so I'm

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trying to not introduce more confusion.
MR. OU: Okay. I'm actually trying to resolve the confusion because we both, I think, recognize that there is some -- at least you've provided opinions as to what a person of ordinary skill in the art would understand "pulsed DC power" to mean.
Q Right? You've provided that opinion?
A Yes, I provided that in the context of the '276 and '657 patent claims.
I think you're asking about pulsed, though, in a very general sense or specifically in a prior art sense, so I'm not sure --
Q I'm -- I'm asking what a person of ordinary skill in the art would understand in the context of these patents. So let me make sure I understand your testimony.
The first sentence of the detailed description that describes reactive DC magnetron sputtering of nitrides, that's -- and carbides, that's a widely practiced technique, but -- but where nonconducting oxides is done rarely, is that DC power one that stays constant unless it is shut off?
MR. WELLS: Objection; scope, incomplete

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hypothetical, calls for speculation.
THE WITNESS: What it doesn't say is it doesn't say pulsed DC, so I'm distinguishing direct current, a fixed voltage, essentially, as different than a pulsing DC power supply.
BY MR. OU:
Q And how would you describe or explain a pulsing DC power supply?
A A pulsed DC power supply, I've described in Paragraph 48 of my declaration.
A POSITA would understand it as something that provides pulsing DC power. This is contrasted with something that is continuous. One of skill understands that the pulse is essentially what is different than constant.
Q Okay. Earlier you made reference to a -- a pulsing DC power supply would turn on and off more rapidly.
Did -- did I hear you correctly?
A Well, essentially, yes.
You know, the DC -- a fixed DC, direct current, is -- essentially stays on for a period of time, whereas a pulsing system will periodically cycle down, then power back up, provide a pulse of direct current as opposed to a constant direct

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current.
Q Okay. And what do you mean by it will periodically cycle down and then power back up?
Do you mean that it will turn on and off at a particular frequency?
MR. WELLS: Objection; misstates testimony.
THE WITNESS: The frequency doesn't have to be fixed. It basically has the ability to provide a pulse of power.
BY MR. OU:
Q So what does it mean for it to be periodic?
A What is the context for "periodic"?
Q Well, you said -- you said that fixed DC, direct current, is essentially -- stays on for a period of time, whereas a pulsing system will periodically cycle down and power back up, provide a pulse of direct current as opposed to a constant direct current.
That's what you said in response to my last question, right?
A Sounds generally correct, yeah.
Q Okay. So my question is, what did you mean by "it will periodically cycle down, then power back up"?
A Well, a power supply, for example, might be

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set to stay on for two minutes during a -- a process step. You know, processes may have half a dozen, a dozen steps, and one of those steps, the power supply is supposed to be on.

So in that step, either it's just on or it may turn off after 20 seconds, then turn back on; it may turn on, you know, with a fixed period; it may turn on with a different period based upon other process requirements.

Q Okay. But is it your -- would you agree that when it turns on or turns off, understanding that that time period can change, those would need to be set, meaning that the turning on and off is not happening randomly?

MR. WELLS: Objection; vague.

THE WITNESS: The turning on and off could be under machine control.

For example, there's a couple ways to control power at fixed voltages. One could change the width of the pulse, pulse width modulation. One could change the frequency of the pulse and the width.

There's -- if one is -- if one's goal is to have a fixed power and one has a fixed voltage, roughly, or tries to hold the voltage, then, you

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know, there's only so many ways to control the power, so the machine can alter these -- the machine control can alter the nature of the pulses as necessary for process control.

MR. OU: Okay. Dr. Glew, I apologize to interrupt.

If we can go off the record. Maclain, my understanding is the court is available. So why don't we go off the record right now.

THE VIDEOGRAPHER: We are going off the record at 14:27.

(A recess was taken from 2:27 p.m. to 2:57 p.m.)

THE VIDEOGRAPHER: We are back on the record at 14:57.

MR. WELLS: So, Alex, we spoke with the court and the court gave us some guidance regarding the topics that are allowed and are not allowed.

My objections need to be objections to form at this point forward; but if I -- I think that the question is objectionable as beyond the scope, then I can instruct you not to answer, at which point if there's a later dispute, that will be something the court will -- will address at that point in time.

THE WITNESS: Okay.

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MR. OU: Yes, and that's a fair characterization from my perspective, so thanks, Maclain.

All right. Are we ready to proceed?

MR. WELLS: We are -- yeah.

MR. OU: Okay. Dr. Glew, I think before we took the break, we were looking at the '276 patent and the first paragraph, the detailed description.

Q Could you flip back there and let me know when you have that in front of you?

A I have that in front of me.

Q Okay. We were looking at the first sentence where it said "The reactive DC magnetron sputtering of nonconducting oxides is done rarely."

And I think you said you agree with that statement -- right? -- as a person of ordinary skill in the art?

A Yeah, I think that's fair.

Q Can you provide some more context as to why a person of ordinary skill in the art would understand at the time that reactive DC magnetron sputtering of nonconducting oxides is done rarely?

A It caused poisoning or -- or gunking up, if you will, of the target.

Q And -- and what exactly caused that to

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happen?

A Nonconductive material would accumulate on the target. The same type of material that one is trying to deposit on the substrate actually forms on the target too, and when it gets thick enough, it becomes a problem.

Q And so what was the solution to deal with that problem that the inventors disclosed in their patent?

MR. WELLS: Objection to form.

THE WITNESS: Well, they described certain things over the course of the specification; but in Claim 1, they claimed a specific set of limitations to help solve that problem.

MR. OU: Okay. Let -- let me take a -- direct you to the second sentence of the detailed description.

Q Do you see it says "Films such as aluminum oxide are almost impossible to deposit by conventional reactive DC magnetron sputtering due to rapid formation of insulating oxide layers on the target surface"?

A I see that, yes.

Q Okay. What would a person of ordinary skill in the art understand those conventional

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reactive DC magnetron sputtering techniques to be?
MR. WELLS: Objection to form.
THE WITNESS: I understand that it would be something generally along the lines of a DC magnetron sputtering chamber with, you know, for example, oxygen in the gas content along with an aluminum target for aluminum oxide, the example in this sentence.
BY MR. OU:
Q So but what would -- what would be the conventional reactive DC magnetron sputtering?
MR. WELLS: Objection to form.
THE WITNESS: Do you -- do you mean what is a DC magnetron sputtering tool?
MR. OU: Yeah. Let me -- let me be a little more precise.
Q Would you agree that the inventors in this sentence were saying that -- were identifying conventional reactive DC magnetron sputtering techniques and saying that those conventional reactive DC magnetron sputtering techniques would not -- it would be almost impossible to use those to deposit films like aluminum oxide?
Would you agree?
MR. WELLS: Objection to form.

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THE WITNESS: What they've said is that it's almost impossible to deposit by conventional DC magnetron sputtering.
I'm not -- you know, that's what it says there. I'm not sure what your question is regarding what their statement is.
BY MR. OU:
Q Yeah. My question is what were they referring to as "conventional reactive DC magnetron sputtering"?
MR. WELLS: Objection to form.
THE WITNESS: I understand, you know, DC magnetron sputtering essentially to be a DC source hooked up to a target, magnets behind it would be typical, and then to make it reactive, one would have, for example, oxygen in -- in with the argon and one would have a reactive DC magnetron sputtering system.
MR. OU: And -- sorry. I didn't mean to interrupt you.
Q Were you done?
A I was just -- yeah, that would, you know, produce a reactive material film, a thin layer on the substrate until the target itself got covered too much with the same, you know, material, the

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oxygen reacts with the, for example, aluminum target and creates a thick layer of aluminum oxide.
Then it eventually can't sputter much and it will damage the power supply, as they represent.
Q And so that DC source that's hooked up to the target, is that a continuous DC source or a pulsed DC source?
MR. WELLS: Objection to form.
THE WITNESS: It doesn't say pulsed, it says "DC."
I understand that it is probably referring to your standard DC power supply.
BY MR. OU:
Q And when you say "standard DC power supply," can you describe what you're referring to?
A I'm contrasting a standard DC power supply with a pulsed DC power supply that can switch on and off. Relatively quickly, it will.
Q Dr. Glew, are you familiar with a -- a term called "arcing"?
A Yes.
Q Would you agree that arcing was a known problem as early as the '90s, perhaps even sooner -- before that?
MR. WELLS: Objection to form.

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THE WITNESS: The patent describes here at Column 4, Line 51, arcing. They describe that as one of the problems with the DC magnetron reactive sputtering, so the patent discloses that this was a problem.
MR. OU: I want to go back to your earlier testimony where you're drawing the distinction between a standard DC power supply and a pulsed DC power supply.
Q You agree that those are two different things, right?
MR. WELLS: Objection to form.
THE WITNESS: Well, a DC power supply can also be -- a standard DC power supply can also be modified by external circuit to pulse. The pulses can be done external to the power supply.
BY MR. OU:
Q By that, are you referencing, for example, a Sparc-le unit, which I think you discuss in your declaration?
A That would be one -- that would be one way to do it. I mean that would be one aspect of pulsing.
There's other aspects of pulsing too.
Q So a standard DC power supply could be

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modified with additional hardware such as a Sparc-le unit to, thus, basically convert it into a pulsed DC power supply; is that right?

A That would be one way to do it, yes.

Q Okay. What is another way that it could be done?

MR. WELLS: Objection to form.

THE WITNESS: Well, it's not as efficient, maybe, as other methods; but one can simply have an external circuit that helps to draw up the voltage to ground -- or not to ground but, you know, basically an external pulsing circuit.

BY MR. OU:

Q What do you mean by an "external pulsing circuit"?

A Imagine that one had -- this is a hypothetical question, so you're getting a hypothetical answer.

Imagine one had a 500-volt setting on a DC power supply and one had an external circuit that just grounded it -- you know, had a heater that got hot, essentially, and carried the current to ground.

You could potentially dump it to ground that way or dump it -- you know, something like that, you know, or to a bias voltage, dump it to

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250, whatever. There -- you know, there -- there are a lot of ways to create circuits.

Q And so is it your testimony or your opinion that a standard DC power supply with this type of external circuit that would ground the voltage, that would, in your view, be a pulsed DC power supply in the context of these patents?

MR. WELLS: Objection to form.

THE WITNESS: Well, in the context of the claims of these patents, they typically -- let me -- for example, I'll look at Claim 1 of this one.

It requires, in the third claim element, at Column 32, Line 44, all -- or 45, a -- the pulsed DC power supply providing alternating negative and positive voltages to the target, so it would have to go from negative to positive, not just ground.

BY MR. OU:

Q And so a DC power supply that had some external circuitry that grounded the voltage, for example, when an arc is detected, that, in your view, would not be what a person of ordinary skill in the art would understand a pulsed DC power supply to be in the context of these patents; is that fair?

A No.

MR. WELLS: Objection to form.

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THE WITNESS: What I said was that, you know, in the context of these patents, it would have to hit a positive voltage.

You know, how it does it is -- you know, there's a lot of ways to create a circuit, but it would have to -- in this -- in this -- for example, this claim element, provide alternating negative and positive voltages to the target, so it would have to hit a positive voltage.

BY MR. OU:

Q What -- can you elaborate what you mean by "it would have to hit a positive voltage"?

A The claim limitation requires that -- I'll read the whole thing and then describe what I'm talking about.

"A pulsed DC power supply coupled to the target area, the pulsed DC power supply providing alternating negative and positive voltages to the target," so -- end quote.

So in this context, when it pulses, you know -- and typically it might be set at minus, let's say, you know, a few hundred volts. It would have to go to some positive voltage.

The positive voltage is there on the target -- or it provides the positive voltage to the

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target in order to attract the negative electrons. The negative electrons are very light. They weigh about 1/1800th of a single proton.

So it doesn't need to be positive, and it doesn't need to be positive for very long, but it does need to be positive to attract the electrons to clean up the target that's been, you know, poisoned, oxidized, made -- too thick of a nonconductive layer on it, basically.

BY MR. OU:

Q Dr. Glew, were you -- when -- at the time that you were working at Applied Materials and working with the PVD team, do you have any recollection as to the power supplies that Applied Materials was using?

A Generally, yes, but it's been a long time.

Q Can you just tell me what you recall?

MR. WELLS: Objection to form.

THE WITNESS: I -- it's been a long time.

I generally recall that as a company, all the divisions pretty much used ENI and Advanced Energy. ENI was later bought by MKS.

BY MR. OU:

Q In the '90s, those were the two kind of leading suppliers for power supplies in the

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semiconductor equipment manufacturing space; is that fair?

A It's my understanding they were the leaders in that space and they were also the main providers to suppliers to Applied Materials.

Q Okay. And do you have any recollection as to the specific power supplies from Advanced Energy that you were working with in the mid '90s?

A It's been a long time. I don't recall the model numbers.

Q Do you remember if any of those power supplies were the pulsed DC power supplies that you've been talking about, or were they the standard DC power supplies?

MR. WELLS: Objection to form.

THE WITNESS: It's been a long time, you know, 20-plus years. I don't remember them being pulsed, but it's been a long time.

BY MR. OU:

Q So they would have been the standard DC power supplies, then, that were used by Applied Materials when you were working there in the mid '90s?

MR. WELLS: Objection to form.

THE WITNESS: It's been a long time. I

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haven't gone back and tried to recreate what was being done then at Applied. I don't recall them being pulsed, but that's just a general recollection.

I -- I really couldn't positively say one way or the other. I just don't recall them being pulsed.

BY MR. OU:

Q And to the extent that you know, were ENI and Advanced Energy -- were they the primary power supply suppliers to other equipment manufacturers other than Applied Materials?

MR. WELLS: Objection to form.

THE WITNESS: My understanding is that ENI and Advanced Energy were both large suppliers to the semiconductor industry and to other equipment companies. They both applied -- they both supplied to Applied Materials.

I think my general recollection -- again, it's been a long time -- is that ENI had larger market share than Applied Materials, but that Advanced Energy was taking market share around that time.

BY MR. OU:

Q Would you -- would you say that a person of

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ordinary skill in the art with respect to these patents-in-suit would be familiar with the power supplies that ENI and Advanced Energy were supplying to manufacturers of PVD equipment?

MR. WELLS: Objection to form.

And I instruct the witness not to answer.

BY MR. OU:

Q Are you going to follow your counsel's instruction?

A Yes.

Q If you can turn with me, Dr. Glew, to Paragraph 9 of your -- of your declaration.

Are you there?

A Yes.

Q The -- the second sentence of Paragraph 9, you wrote -- and I'm going to not read the whole thing, but just to orient you -- "I'm also aware of information generally available to and relied upon by persons of ordinary skill in the art at the relevant time, including, for example" -- and one of the things that you include are manuals.

Is that right?

A Yes.

Q When you wrote this statement, what type of manuals were you referring to?

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A Principally equipment and component manuals.

Q And by "component manuals," you mean certain components that would be in PVD equipment?

A Yes.

Q Okay. And --

A Sub- -- subcomponents or subsystems.

Q So that could be, for example, like power supply that's used in a PVD system, right?

A It could be a power supply, a flow controller, a -- a vacuum gauge, things like that, yeah. Things that were attached to the chambers --

Q Okay.

A -- in some of the processing.

Q Okay. And so would you agree, then, that a person of ordinary skill in the art at the time of the invention would have knowledge of manuals of these types of components such as power supplies, vacuum gauges, and -- and other things like that, flow controllers?

Is that fair?

MR. WELLS: Objection to form.

THE WITNESS: I think one of skill in the art would generally be aware of the manuals for the equipment.

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BY MR. OU:
Q And by "equipment," you -- you're including the overall equipment as well as the components of the equipment, things like the power supplies, vacuum gauges, flow controllers; is that right?
MR. WELLS: Objection to form.
THE WITNESS: Let me say one -- one of skill in the art would generally be familiar with the manuals for the process tool equipment and the components contained there- -- therein, such as valve -- or flow controllers, power supplies, pressure vacuum gauges, things like that.
MR. OU: Got it.
Dr. Glew, earlier you had made reference, or maybe it was me, to -- to a Sparc-le unit.
Q Do you recall us briefly discussing that?
A I recall you brought it up, yes.
Q Okay. Can you generally describe what a -- what your understanding is of a -- is a Sparc-le unit?
A My general understanding or summary of a Sparc-le unit would be that it is a unit that forces the power supply to provide a brief positive voltage --
Q And as a result of -- of providing that

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brief positive voltage, after that happens, does the voltage then go back down to the constant negative voltage that was -- it was previously set at?
A My understanding is generally that's how people operated the equipment, yes, was to briefly provide a positive voltage and then return it to its negative setting, constant negative setting.
Q And the result of that combination of constant DC power supply with a Sparc-le unit would effectively create a -- a pulsed DC power supply that would alternate between positive and negative voltages at a frequency; would you agree?
MR. WELLS: Objection to form.
THE WITNESS: No, not necessarily.
BY MR. OU:
Q Can you explain why -- why you say "Not -- no, not necessarily"?
A The Sparc-le could be initiated, the positive -- the brief positive pulse could be initiated by the onset of a current avalanche -- an arc, so something along those lines could initiate the positive pulse.
Q So if an arc is detected, the Sparc-le unit could basically create a pulse to quench the arc, and in that situation, it would not be happening at

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a set frequency?
Is that what you're saying?
MR. WELLS: Objection to form.
THE WITNESS: Essentially the -- the positive voltage, the Sparc-le, whatever you want to refer to it as, is initiated by machine control with the apparent onset of arcing current avalanche, so, yeah, it's not a necessarily fixed frequency. It could -- it would be detected.
MR. OU: Give me a second. I'm going to put a document in the chat, actually. Let me know when you have it, Dr. Glew.
THE STENOGRAPHER: Will this be the next exhibit in order?
MR. OU: Yes.
This is going to be Exhibit 6, right.
THE VIDEOCONFERENCE TECHNICIAN: Yes, this is Exhibit 6.
(Exhibit No. 6 was marked for identification by the videoconference technician; attached hereto.)
MR. OU: Okay. Great.
So, Dr. Glew, I've -- I've marked as Exhibit 6 a document that has Bates number

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Defendants' PA_0003064, and it's titled "Sparc-le 20 Accessory."
Q Do you see that?
A Yes.
Q Okay. Are you -- have you seen this document before?
A I'm not sure if I have. I'm generally familiar with the subject matter, though.
MR. OU: Okay. Let me refer you to Exhibit 7, which I just put in the chat, if you can download that. Let me know when you have it.
(Exhibit No. 7 was marked for identification by the videoconference technician; attached hereto.)
THE WITNESS: Okay. I have Document 7 up.
MR. OU: Okay. Exhibit 7, it starts with a Bates number DEFTS-PA_0003057 -- or 3056, going to 3063.
Q Do you recognize this document, Dr. Glew?
A I recognize the name, Scholl.
Hang on a sec.
I don't recall reviewing it in the context of the claim construction.
Q Maybe I can help you, Dr. Glew. It -- in

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your declaration, at Paragraph 44, you've included a Figure 5, an image of a Sparc-le waveform when arc is triggered.

Do you see that?

A Yeah, where -- where are you?

Q Yeah, I'm in your declaration at Paragraph 44.

A Got it. Okay. Yeah. Got it. 3058. Okay. Yes. Okay. But, actually, 62 -- there we go. Yes. Okay. Yeah.

Q So do you -- does that refresh your recollection?

Is this white paper something that you reviewed in preparing your declaration?

A Yes.

Like I said, I remember the name Scholl, I just didn't remember the title of the paper. Okay.

Q Okay. And -- and did you review this entire document in forming your claim construction opinions?

A I looked at the document. Some parts were more interesting than others.

Q Okay. At Paragraph 44 of your declaration, the first sentence --

A Yes.

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Q -- you write "Arcing is a failure and an unexpected result, and the use of one or more pulses of DC power to prevent it upon detection can also occur in real time."

Do you see that?

A Yes.

Q Okay. And I think in several other places in your declaration, you describe the patents-in-suit as disclosing a way to prevent arcing; is that fair?

A I think it's part --partly, yeah. It's meant to prevent arcing in these systems where there's an insulating material that -- that develops on the target, yes.

Q And how does the patent explain how using a pulsed DC power supply can prevent arcing?

A Well, I've cited to a number of areas of the patent throughout my declaration.

For example, in Paragraph -- let's see -- 43, I'm citing to -- at Paragraph 43, I cite to 530 through 39, starting at Line 33. I will read from the patent.

"During the positive period, the insulating layer on the surface of Target 12 is discharged and arcing is prevented. To obtain Arc 3 deposition,

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the pulsing frequency exceeds a critical frequency that depend on target material, cathode current, and reverse time."

And it goes on. That -- that's kind of a synopsis of what it does.

Q And so you would agree that the patent discloses preventing arcing through the use of a pulse of DC power that alternates between negative and positive potentials, right?

MR. WELLS: Objection to form.

THE WITNESS: What it describes or what it claims is providing alternating negative and positive voltages to the target, so essentially it's along those lines.

BY MR. OU:

Q And so why does providing alternating negative -- or how does providing alternating negative and positive voltages prevent arcing?

A Well, the negative is required for the actual sputtering, the deposition, in which case certain ions are attracted to the target.

The positive part attracts negative things to the target; and in that positive phase, it will, one, reduce the charge accumulation, and two, reduce material, potentially, or remove material. But

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those are kind of the two physical phenomenon going on.

I'll add one sentence. You know, whereas the -- the negative portion attracts positive charge, the positive portion of the pulse attracts negative charge, so the goal is to not let negative or positive build up but to balance each other out.

Negative charges, electrons, are very small and move very fast, so one doesn't need much positive potential or for very long to very quickly gather negative charges on the surface to counteract positive accumulation.

Q And so that happens by alternating the positive and negative voltages at a frequency; is that right?

MR. WELLS: Objection to form.

THE WITNESS: Are you asking about a particular instance?

BY MR. OU:

Q Well, I'm -- I'm asking you generally, or within the context of -- of the patents, you would agree that the patents, when they discuss pulsed DC power, reference a frequency and the reverse time; is that right?

MR. WELLS: Objection to form.

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THE WITNESS: Some of the preferred embodiments may mention frequency and reverse time. The Claim 1 does not put a limitation of frequency reverse time on the pulse.
BY MR. OU:
Q Is -- is there a place anywhere in the patent specification that you can point me to that has a discussion of pulsed DC that doesn't also discuss having the frequency and the reverse time?
MR. WELLS: Objection to form.
THE WITNESS: Well, for example, looking at Column 5, Line 49, it describes that the reverse time can be set between 0 and 5 microseconds; so in that case, it discloses, you know, no reverse time setting, 0. That would be one example.
BY MR. OU:
Q So if -- if there's 0 reverse time, you wouldn't have a pulse, though, right?
A I don't think I follow your question.
Q Well, I -- I asked you does the patent ever disclose or discuss a pulsed DC -- I'm sorry. I'm hearing an echo.
Okay. That's better. Let me start over. I apologize.
I was asking you does the patent ever

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disclose or discuss pulsed DC power supply without reference to a frequency and a reverse time; and as I understood your question -- your response, it was you were referring me to a reverse time scenario where the reverse time is 0.
Is that right?
A Yes.
Q So if there's no reverse time -- if there's 0 reverse time, you don't have a pulse, though, right?
MR. WELLS: Objection to form.
THE WITNESS: No, that's not my understanding.
BY MR. OU:
Q Okay. Well, if the reverse time is set at 0, can you describe what the voltage output would be of the pulsed DC power supply?
MR. WELLS: Objection to form.
Sorry.
THE WITNESS: I think generally it would just mean as fast as it can.
BY MR. OU:
Q Do you mean it -- it would pulse as fast as it -- as it can?
A No.

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Basically that it would just provide the positive pulse as quickly as it could. There would -- there would be no delay of returning to voltage. It would sort of be a fast -- fastest response possible.
BY MR. OU:
Q So in -- in that situation, you would have a reverse time and you would also have a frequency, right?
MR. WELLS: Objection to form.
THE WITNESS: These are machines. They're not perfect. It's still -- it can't instantaneously reverse. It just reverses as quickly as it can, to my understanding.
MR. OU: Right.
Q And so in that situation, you would have a frequency and you would have a reverse time associated with the pulses being generated, right?
MR. WELLS: Objection to form.
THE WITNESS: There's no specified reverse time. The machine is just commanded to, you know, provide the positive pulse and then get back as fast as it can to negative.
That's how I understand this. This is -- you know, that was one example. You were interested

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in other things too, though.
MR. OU: Yeah.
Q My -- my question, again, was, can you point me to one -- any part of the specification that describes the pulsed DC power supply and doesn't associate it with having a frequency and a reverse time?
MR. WELLS: Objection to form.
THE WITNESS: Well, it uses the term "frequency" in Column 5 at Line 35, and I don't think the way that you're using the term "frequency" and the way the patent uses it is necessarily the same.
So the patent reads, at 535, "To obtain arc-free deposition, the pulsing frequency exceeds a critical frequency that depend on target material, cathode current and reverse time." It goes on.
So basically it needs to be -- receive a positive pulse on the target at least a certain amount so that it doesn't build up this excessive poison layer, insulating layer.
It doesn't necessarily mean that it's at a fixed value. It's just saying that you have to refresh the positive at least this often in order to avoid arcing.

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BY MR. OU:
Q And -- and by doing that, that will prevent arcing, right?
A Yes.
The goal here is to prevent arcing, to discharge the target voltage current accumulation on the surface, or -- or charge accumulation on the surface.
Q So -- and -- and to prevent arcing, in order to do that, would -- you would agree that there's going to be some frequency where you want to be pulsing back and forth between positive and negative which is higher than this critical frequency, and also for a long enough period of time in positive such that you have an arc-free deposition, right?
MR. WELLS: Objection to form.
THE WITNESS: It basically says that you must refresh this frequently, the positive voltage, in order to avoid arcing. You can do it more often too, it says. You know, during -- let's see.
It's -- it must exceed this -- this frequency. By "frequency," it means how often, you know, it was done. This isn't necessarily set it at this value, it's -- so this is an example of

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tradeoff with a lot of things.
The more often that one refreshes, though, the slower the deposition, typically. It does stop sputtering when it's in this positive potential.
MR. OU: Right.
Q So in order for a pulsed DC power supply to prevent arcing, if you wanted to maximize your arcing prevention, you would want to pulse back and forth between positive, negative, as frequently as possible and also have a long enough reverse time as possible, but that would also have some tradeoffs in that that would slow down your deposition rate.
Would you agree with that?
MR. WELLS: Objection to form.
THE WITNESS: Not exactly.
I -- I think the most desirable scenario -- or a desirable scenario is to refresh as needed to maximize the deposition rate but minimize the possibility of arcing, because arcing can ruin the product.
BY MR. OU:
Q Okay. When you say "refresh as needed," do you mean basically determine a frequency and also determine a reverse time that would maximize your arc prevention as well as maximize your deposition?

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MR. WELLS: Objection to form.
THE WITNESS: Could you repeat the question?
MR. OU: Yeah. You -- you -- you made reference to refresh -- refresh as needed, and -- and I wanted to better understand what you meant by refresh as needed --
THE WITNESS: Yeah.
MR. OU: -- in order to have a desirable scenario. So let me start over.
I think -- what you said was the most desirable scenario is to refresh as needed to maximize the deposition rate but minimize the possibility of arcing because arcing can ruin the product.
Q That -- that's what you said, right?
A Yes, there's --
MR. WELLS: Objection to form.
THE WITNESS: As I said -- yeah, if you read from my testimony, then I suppose that's fair.
MR. OU: Right.
And -- and so let me ask -- let me ask my follow-up question.
Q In terms of "refresh as needed," did you mean that you would basically decide what -- at what

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frequency the voltages would alternate between positive and negative, and also at what reverse time you would be in the positive voltage so that you can accomplish these -- these different tradeoffs, right? -- in terms of maximizing deposition rate as well as minimizing the possibility of arcing?
MR. WELLS: Objection to form.
THE WITNESS: The -- the last example that I was discussing talks about a critical frequency, basically. It has to be pos- -- refreshed, positive, you know, at least this often in order to avoid arcing.
That was at Column 5, Line 35. It could be done more often, you know. It depends upon the system.
A single arc can be, you know, catastrophic for the process, so one may decide that one wants to pulse or refresh the positive charge -- positive potential more often in order to remove or reduce risks, with a slight tradeoff in deposition rate.
MR. OU: Right.
Q So -- so the different ways to do that, in -- in order to minimize the likelihood of having a -- an arc event or to maximize your ability to prevent arcing, the -- the tradeoffs would be to

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increase the frequency at which you're alternating between positive and negative and also having a longer reverse time in terms of how long you are in the positive voltage, but the trade-off of that would be that you're going to have, you know, a potentially lower deposition rate; is -- is that right?

MR. WELLS: Objection to form.

THE WITNESS: That generally goes in the right direction, but there's some issues there.

You know, the reverse time, how long it spends at 0 doesn't have to be set at all. The -- you know, the specification describes that it can be 0, which just basically means go to this positive voltage and immediately come back, Don't wait around.

The reality is it is going to be at a positive voltage for a finite period of time. It's a machine. It's not instantaneous. But you're not specifying the period of time that it is positive, you're just taking what you get, so you don't even have to set the reverse time.

There was -- that was described at Column 5, Line 48 and 49. Quote, the reverse time on this embodiment of Power Supply 14 can be

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adjusted between 0 and 5 microseconds.

So it may try to dwell positive for 5 microseconds or it may not try to dwell at all and you just get what you get, you know, maybe it's half a microsecond, maybe it's something, you know, pretty fast. But you just don't want to hang out positive too long.

Q You agree that there will be a reverse time, though, even in the disclosure that you're pointing to at Column 5, Line 48 through 49?

That 0 isn't actually 0 seconds, it's just as -- as quickly as possible?

Did I understand your testimony right?

MR. WELLS: Objection to form.

THE WITNESS: What it essentially means is no setting. Don't set it. You know, it's just as fast as the machine can go, as fast as the power supply can get there. That's how I understand it.

So, yes, it is going to be a finite value. It's not instantaneous. Nothing is.

MR. OU: Right.

Q And -- and so in every instance where the pulsed DC power supply is being discussed in this patent, you would agree that there is some reverse time, even if it's, you know, a very finite number,

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as well as there's going to be a frequency?

Would you agree?

MR. WELLS: Objection to form.

THE WITNESS: I wouldn't agree that the reverse time is set there. There's no setting at all for the reverse time in that case. It's 0, it's not set.

MR. OU: Yeah, I don't think in my last question, Dr. Glew, I -- I made reference to set. I was just -- I was saying that in -- in every instance that pulsed DC power supply is discussed, there is an associated frequency and there will be an associated reverse time.

Q Is that right?

MR. WELLS: Objection to form.

THE WITNESS: As I said before, there's no setting for the reverse time in the reference that I just gave.

BY MR. OU:

Q Okay. But there is a reverse time, right?

A There isn't a defined reverse time. There is a -- there is a time that it's -- that it's reversing itself, but there's no setting for the reverse time.

Q Okay. Is there a setting for the

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frequency?

MR. WELLS: Objection to form.

THE WITNESS: Are you asking that particular instance or in one of the other 30-plus references to how to do this in the patent?

MR. OU: Sure.

Q Are there any disclosures in the specification where there is not a frequency associated with a pulsed DC power supply?

MR. WELLS: Objection to form.

THE WITNESS: Well, back to Column 5 at Line 35 -- we discussed this previously -- it merely describes that the -- the pulsing must be done more often than a minimum value. It uses the term "frequency," but I don't believe it's using the term "frequency" in the same way you're using the term "frequency."

I will read from 5-35. "To obtain arc-free deposition, the pulsing frequency exceeds a critical frequency that depends on target material, cathode current, and reverse time. High-quality oxide films can be made using reactive DC magnetron sputtering in Apparatus 10."

So there's -- as long as it is greater than the time that it takes to build up charge or -- and

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thickness of the poison layer, that is sufficient. There's nothing that precludes one from doing it any amount of time that is more than -- more than that critical period.

BY MR. OU:

Q As long as your frequency is higher than the critical frequency, you will successfully prevent the arcing?

MR. WELLS: Objection to form.

BY MR. OU:

Q Do you agree?

A If the -- the positive pulse occurs more often than that critical frequency, then there will not be arcing. This is something that, you know, if we go back to the Sparc-le circuit, what it does is it basically measures the critical frequency.

It says, okay, we've exceeded the critical frequency, we're starting to arc, and then it initiates a positive pulse.

So, you know, the positive pulse requirement, the critical period is dependent upon the target material and a number of other factors; the more worn a target is, the process one's running, and so forth and so on.

So the critical frequency isn't necessarily

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constant and one doesn't have to stick at that value, one can vary anything that's that value or more to avoid -- or more often to avoid the -- the arc effect.

I'm going to get my lights.

MR. WELLS: Hey, Phil, we've been going over an hour, and I have to take a short break. Is now a good time?

MR. OU: Yeah, no problem. Why don't we go off the record. Do you want -- yeah, let's go off the record.

THE VIDEOGRAPHER: We are going off the record the 15:56.

(A recess was taken from 3:56 p.m. to 4:08 p.m.)

THE VIDEOGRAPHER: We are back on the record at 16:08.

MR. OU: Dr. Glew, welcome back.

Q Did you have any conversations with counsel during the break?

Could you hear me okay, Dr. Glew? I think you might be on mute, or at least I can't hear you.

MR. WELLS: Still can't hear you.

MR. OU: I still can't hear you.

THE WITNESS: Can you hear me now?

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MR. OU: Yes.

THE WITNESS: Okay. Yes.

MR. OU: Sorry.

Q During the break, did you have any conversations with counsel?

A Yes.

Q You -- did you have any conversations about the substance of your testimony?

A No.

Q Okay. What was the extent of your conversation?

A Logistics, when this might end.

Q Gotcha.

Okay. Let me turn back to documents.

Dr. Glew, one other just logistical question. I'm not sure if you have -- in front of you, do you have one monitor or two monitors?

A I have two monitors.

Q Okay. Okay. I had just noticed you're kind of -- eyes keep going off to the left or right -- or to the right.

Are you -- do you have like one window that's open that has the Zoom and the other with the documents?

A Yes.

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I have Adobe on one window and people on the other.

Q Gotcha.

And those are the only things that are open on -- on your computer in terms of applications?

A Yes.

Q Okay. Got it. Makes sense now.

Let's see. Rhonda, or, actually, Maclain, do you know, just because I lost it, is the last exhibit I marked 7? Do -- do I have that right? Okay.

Dr. Glew, could -- could you open up Exhibit 7 for me?

A Exhibit 7.

Q And just to confirm, do you have Exhibit 7 as the white paper from Advanced Energy?

A Yes.

Q Okay. Great.

Can you turn with me to the second to last -- the second to last page.

A Okay. I am on Page 3062.

Q Okay. Great. So am I.

And do you see --

A 7 -- yeah, 7 of the document.

Q Right.

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Do you see at Figure 5 -- Figure 5 is titled "Sparc-le Waveforms, Arc Triggered"?
A Yes.
Q Okay. And you -- you included this figure in your declaration, right?
A Yes, that is on Page 11 of my declaration.
Q And can you describe to me, in your opinion, what this figure is illustrating?
A It shows the triggering of the Sparc-le circuit or function, shows that there's a positive voltage, not so great, and sort of a soft shoulder on the rise, then a return to the DC, roughly minus 600 volts.
Q Okay. And -- and so in this situation, this diagram is showing there's an arc event, so an arc is occurring, and then, effectively, it's detected and then the Sparc-le unit is used to quench the arc; is that right?
MR. WELLS: Objection to form.
THE WITNESS: That's, I think, effectively what Figure 5 is showing, is the initiation of -- well, it's showing the initiation of -- of a Sparc-le waveform function, yes.
Presumably there was -- I mean, I don't know if they actually had it hooked up to a reactor

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with an arc, but they may have just triggered the Sparc-le function and recorded it on its oscilloscope, something along those lines.
MR. OU: Right.
Q And so what's happening is -- is an arc event is occurring and the voltage is rapidly approaching 0 and then the Sparc-le is effectively triggered to quench the arc; is that right?
MR. WELLS: Objection to form.
THE WITNESS: Well, the -- the arc or a simulation of an arc is detected.
Again, I don't know if this was off a real system or just a lab sim, but -- simulation. But, yes, there's an event, an arc -- arc event or arc event simulation, then the Sparc-le is triggered, runs it up to somewhere 60, 80 volts positive, something like that, and then brings it back down to minus 600, and there's some ringing on the reset, minus 600.
BY MR. OU:
Q All right. And then can you explain what the difference is between what's shown in Figure 5 and what's shown in Figure 4 of this document?
A The document describes, on Page 3, on the top right column, that Figure 4, the voltage

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waveform is essentially fixed, I think.
Q What do you mean by "the voltage waveform is essentially fixed"?
A Reading from the document, it says at the top right column in Page 3, Bates number 3058, quote, the pulse width of some models is fixed at 5 or 10M. Maybe supposed to be micron, I'm not sure. "In others, the pulse width can be adjusted from 1 to 20M. The voltage waveform for a fixed unit is shown in Figure 4 on Page 7."
Then it goes on to describe Figure 5 as an arc detect circuit.
Q Right.
So in Figure 4, where it says "Sparc-le waveforms self-run mode," what do you understand "self-run mode" to mean?
MR. WELLS: Objection to form.
THE WITNESS: In the bottom of Column 3 -- in the bottom of the left column on Page 3, it writes -- or gives, quote, periodically, left paren, the rate can be varied from 2 to 50 kilohertz, close paren. A signal is sent to the switch to close. When the switch is closed, the circuit is changed.
So that's shown in Figure 3 on Page 6. The tapped inductor becomes a transformer with a ratio

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adjustable from 20 to 1 to 4 to 1.
Then it goes on to describe what I read. "Note that the transformer polarity is such that the voltage is reversed at the output so when the output is pulsed, it's -- when the output switch is pulsed, it's positive and varies from 5 to 25 percent of the normal sputtering voltage.
"The pulse width in some models is fixed at 5 or 10M; in others, the pulse width can be adjustable from 1 to 20M." The voltage waveform for a fixed unit is shown in Figure 4 on Page 7.
BY MR. OU:
Q And so in this situation, the self-run mode, would you agree that there's -- there's a set frequency and a set reverse time that's going to be used to prevent arcing in this self-run mode?
MR. WELLS: Objection to form.
THE WITNESS: I'm not sure if the pulse width, the return time is adjustable or fixed in this one yet. I think likely it's fixed.
BY MR. OU:
Q And so what's being shown in Figure 4 is pulsing with a -- a frequency and a reverse time to prevent arcing; would you agree?
MR. WELLS: Objection to form.

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THE WITNESS: I don't think it says that the frequency is fixed. I think it says that the return time is fixed.
MR. OU: If you'll go back to Page 3.
THE WITNESS: I'm on Page 3.
MR. OU: So at the bottom in the -- in the last -- the bottom paragraph on the left, the second sentence, it states "The energy stored in the magnetic field of the inductor acts to steady the current into the plasma. Periodically, the rate can be varied from 2 to 50 kilohertz, a signal is sent to the switch to close."
Q What do you understand "periodically" to mean?
MR. WELLS: Objection to form.
THE WITNESS: That once in a while, somewhere in the rate between 2 to 50 kilohertz, the Sparc-le is initiated. Basically the switch is closed so that the inductor kicks in and the Sparc-le function turns on.
BY MR. OU:
Q And -- and 2 to 50 kilohertz, that's a range of -- a range of frequencies, right?
MR. WELLS: Objection to form.
THE WITNESS: It says that the rate can be

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varied between 2 and 50 kilohertz, yes.
MR. OU: Right. And so there is a frequency, it's just that you can change what the frequency is.
Q You would agree, right?
MR. WELLS: Objection to form.
THE WITNESS: Well, it says periodically. It doesn't -- doesn't say 2 kilohertz to 50 kilohertz exactly, it says 2 to 50 kilohertz, so I'm not sure if that's like 1-2 to 50 kilohertz, or -- that's kind of how I read it.
So over this large range of times, between 2 hertz, which is once every 500 milliseconds, half -- twice a second, to 50,000 times a second, the -- the Sparc-le signal can -- the positive signal can be sent, and it's done periodically.
BY MR. OU:
Q And so by "periodically," would one of ordinary skill in the art understand that to mean at a frequency?
MR. WELLS: Object to form.
THE WITNESS: It could mean occasionally or it could mean at a frequency, depending. You know, there's a -- at times the signal is sent to the load; in this case, the target, presumably.

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It does say that the -- the pulse width is fixed, I think, in Figure 4. It does not say that the period is fixed. It does say, I think, the -- yeah.
BY MR. OU:
Q But it does say that the -- sorry. I didn't mean to talk over you.
A It does say, the top of Column 4, that the -- the pulse width of some models is fixed at 5 or 10M, and others, the pulse width can be adjustable from 1 to 20M. The voltage waveform for a fixed unit is shown in Figure 4 on Page 7, so the figure we're looking at, the width of the positive pulse is fixed, but it doesn't say that the -- that there's a fixed frequency, just that periodically, this thing is triggered.
You know, it could -- it could do it when it receives a signal from the tool, it could potentially be set to a certain frequency if that's what --
(Mr. Ou and the witness speak simultaneously.)
THE WITNESS: -- allows.
BY MR. OU:
Q If it does it when it receives a signal

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from a tool, are you referring to if an arc is triggered or an arc is detected?
A No.
MR. WELLS: Objection to form.
THE WITNESS: No.
That -- that's what's shown in Figure 5, is arc detection.
BY MR. OU:
Q Okay. You agree that what's shown in Figure 5 is different from what's shown in Figure 4, right?
A Yes.
I'm on Page 7, Bates number ending in 062. And in Figure 5, it shows arc event at, you know -- about 2-and-a-half microseconds in. However, on Figure 4, it says Sparc-le triggered.
If we look 4 bars in, I guess, 4 microseconds in at minus 600 volts, there's a -- a label and a -- a line drawn to it that says "Sparc-le triggered." So something triggered this to turn on. You know, it doesn't disclose what triggered it.
Q It doesn't disclose what triggered it, but doesn't Page 3 in the last paragraph tell you that there is some -- that is happening periodically or

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at some frequency? Understanding that the frequency can be changed, but it is happening at some frequency?
MR. WELLS: Objection to form.
THE WITNESS: It says "periodically." It could be triggered once per process. It could be triggered based on an amount of deposition or some other parameter from the process tool, or it could be set to a frequency, yes.
BY MR. OU:
Q But there -- there is some set -- something that is being set that is causing the Sparc-le to be triggered in the instance of Figure 4, right?
A Yes, Figure 4 shows that something triggered it. It doesn't necessarily -- it's not necessarily the same as Figure 5, where an arc event triggered it.
Q Right.
And -- and Figure 4 is effectively showing an implementation of the Sparc-le unit to prevent arcing, whereas Figure 5 is showing where an arc event is detected and then the Sparc-le unit is triggered to quench the arc; is that right?
A Well, I would characterize it as an arc event is nascent, it hasn't really occurred yet, but

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it's going to start if you don't address it.
Obviously, there would be no point in letting it arc because then you would ruin the -- the product in the -- in the PVD tool. So it doesn't let it arc, it -- it measures or figures out that an arc is about to happen and it's in its very early stage, and deals with it.
It's not a full -- it's not a full arc.
You know, it's got to not let the arc happen.
Q Put it this way. Figure 5 is an instance where you're detecting the arc and then you're -- the Sparc-le unit is -- is suppressing it, versus the Figure 4 is showing an implementation where, using some set parameters, you are attempting to prevent the arc; is that fair?
MR. WELLS: Objection -- objection to form.
THE WITNESS: I would characterize it something like Figure 4 is sort of an open-loop approach. You know, it's not measuring the current.
Figure 5 is sort of a closed-loop approach where it's measuring the -- the voltage current change and preemptively squelching the event.
BY MR. OU:
Q Okay. And then turning back to the -- the patents-in-suit and their disclosure of using closed

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DC power to prevent arcing, would you agree that the disclosures in the patent are consistent with what is being shown in Figure 4?
MR. WELLS: Objection to form.
THE WITNESS: Can you direct me to a specific claim or you want me to look at a specific embodiment?
MR. OU: I -- I don't want you to look at a specific claim.
Q I'm asking you in terms of the embodiments that are disclosed in the specification -- let me ask it this way.
Do any of the embodiments disclosed in the specification disclose the type of, as you described it, closed-loop approach of Figure 5 that's shown in Exhibit 7 --
MR. WELLS: Objection to form.
BY MR. OU:
Q -- where the arc --
MR. WELLS: Sorry. Go ahead.
BY MR. OU:
Q Yeah, where the -- where the arc is -- where there is an arc event, and then the arc event triggers a Sparc-le to suppress the arc, is that disclosed anywhere in -- in the specification?

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MR. WELLS: Objection to form.
THE WITNESS: Well, you know, it's the same section we discussed previously in the '657 at Column 5, starting around Line 36.
There's a paragraph that describes that "To obtain arc-free deposition, the pulsing frequency exceeds a critical frequency that depend on target material, cathode current, and reverse time. High-quality oxide films can be made using reactive pulsed DC magnetron sputtering in Apparatus 10."
So, you know, in that the positive pulse to frequency would depend upon different parameters, including cathode current, I think the disclosure admits that the need -- the periodic need of positive voltage applied to the target is variable.
MR. OU: Dr. Glew, the disclosure that you just read says "To obtain arc-free deposition, the pulsing frequency must exceed a current -- a critical frequency."
That's not the same, though, as what's shown in Figure 5 of Exhibit 7, where there is an arc event occurring and then only after is a -- is a Sparc-le triggered to then quench the arc, right?
MR. WELLS: Objection to form.
THE WITNESS: Well, it does describe that,

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among other things, cathode current is one of the variables.
BY MR. OU:
Q Yeah, but isn't that describing -- isn't that describing what the critical frequency is going to be?
It says "the critical frequency that depends on target material, cathode current, and reverse time," right?
MR. WELLS: Objection to form.
THE WITNESS: Column 5, Line 30, writes "Target 12 functions as a cathode when power is applied to it and is equivalently termed a cathode."
Lower down, as I just cited, it says, at Column 5, Line 43 -- 41 to 43, "To obtain arc-free deposition, the pulsing frequency exceeds a critical frequency that depends on target material, cathode current, and reverse time."
So the current through the cathode -- the target changes the periodicity of need for positive voltage.
I'm going to turn my lights on again.
BY MR. OU:
Q The -- the target material, cathode current, and reverse time, those impact what the

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critical frequency would be such that the pulsing frequency needs to exceed the critical frequency in order to obtain arc-free deposition, right?
MR. WELLS: Objection to form.
THE WITNESS: The cathode current -- that is, the current through the target -- determines the periodicity of -- of positive voltage refresh; so as this period changes, the need for the positive voltage changes, but that is -- you know, the current through the cathode is one of those parameters that they're suggesting is important.
BY MR. OU:
Q So I -- I had originally asked you, Dr. Glew, whether or not anywhere in the specification of the patents-in-suit was there a disclosure of the -- what is shown in Figure 5 of Exhibit 7, where an arc event is occurring, it's detected, and then the Sparc-le unit is triggered such that the arcing is suppressed; and you pointed me to this disclosure in the '276 patent at Lines 35 through 40.
Is there any other disclosure in the specification that you believe is disclosing what's shown in Figure 5 of Exhibit 7?
MR. WELLS: Objection to form.

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THE WITNESS: The patent describes at Column 10, Line 54, the reverse pulsing time is determined by the amount of arcing generated during the process, end quote.
The patent also contemplates that the reverse pulse time is a variable that is determined by the behavior of the process chamber.
BY MR. OU:
Q Dr. Glew, you're reading from the '657 patent, Column 10, at Line 54 through 57; is that right?
A Roughly, yes.
Q Okay. Right before that, starting at Line 50, it says "The pulsing frequency range for power supply can be from about up to -- up to about 250 kilohertz."
Do you see that?
A They're talking about, yes, the specific system.
Q Right.
And then it says "The frequency 40 kilohertz is -- is approximately the lowest frequency at which no arcing will occur during deposition in, for example, the AKT1600-based system," right?

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A In this embodiment, yes.
Q Right.
And then this precedes the statement that you just read to me that says "The reverse pulsing time is determined by the amount of arcing generated during the process," right?
A It precedes where I read, yes.
Q So in the context of what was written above, would you agree that what this is describing, the specification for this particular embodiment is that there is a minimum frequency at which you can have no arcing occurring, and as part of that, you would also need to determine how long the pulsing time or the reverse time needs to be?
MR. WELLS: Objection to form.
THE WITNESS: Not exactly.
BY MR. OU:
Q Okay. This doesn't say in the disclosure that you just pointed me to anything about detecting an arc event happening and then thereafter quenching the arc using some mechanism such as a Sparc-le unit, right? It doesn't say that here?
MR. WELLS: I'm sorry, Phil -- Phil, was the witness done with his prior answer? I don't know that he's was.

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THE WITNESS: No.
MR. OU: Okay. I apologize. I didn't mean to cut you off.
THE WITNESS: I was pointing to the -- the reverse time, the dwell time of the positive pulse. And this basically says that the reverse time, the dwell time, the pulse width of the positive portion is going to depend upon the amount of arcing that occurs in the chamber.
So when arcing occurs more often, then the pulse will need to be longer respectively. It does say that the frequency that -- will have to be at least 40 kilohertz, but it doesn't say it has to stay at 40 kilohertz.
It just says, you know, there's a period of time over which enough charge will build up on the target that it will start arcing. Obviously, the more often one goes positive, the slower the deposition rate, so there's a balance there.
BY MR. OU:
Q So, Dr. Glew, in the situation -- if we go back to Exhibit 7 and look at Figure 5, the situation where there is an arc event and then the Sparc-le is triggered, in your opinion, this is -- there is a pulse here, right?

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A By "a pulse," you mean a positive pulse?
Yes.
Q What would the frequency be of what is shown in Figure 5?
MR. WELLS: Objection to form.
THE WITNESS: Well, it only shows one pulse, so it would be difficult -- you can't really determine the frequency from one pulse.
But if the behavior of the chamber is -- is repeatable, then at least for a certain period of time, the Sparc-le events, the positive pulses should occur on a fairly regular basis if -- if the charge accumulation is uniform and the poisoning layers are uniform in their -- are repeatable, but you really can't tell from just one pulse what the frequency is in -- in Figure 5 from Exhibit 7.
BY MR. OU:
Q You would agree that you need multiple pulses to determine what the frequency is at which a pulse occurs, right?
MR. WELLS: Objection to form.
THE WITNESS: I think that in order to find a frequency -- it depends on how you use the word "frequency."
If you're using the term "frequency" as a

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repeating periodic event, then you would need more than one event. If you're using the term as just periodic events, you know, it must be done with a certain period of -- then it doesn't really have a meaning at that point.
You know, you have a period between events -- you know, if you had two events, you would -- you know, they could vary, the time between a second event and a third event, and then the periods would be different, but you -- you would still need more than one event to understand the period of the events.
MR. OU: Right.
Q And so in this situation that we're talking about, a -- an arc event and then the Sparc-le trigger that is quenching it, you would need to have two of those events at a minimum to determine what the periodicity is or what the frequency is of that occurring, right?
MR. WELLS: Objection to form.
THE WITNESS: The period and the frequency aren't the same. Frequency is something that is -- well, it depends -- the way you're using it, I understand. You're using "frequency" in a repeating sense, as in always the same period.

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But periods can vary; and when -- when periods vary, then the frequency varies, the -- the number of times and the period between events varies. Still you would need more than one event to -- to measure that.
You know, say, for example, one set of positive voltage -- one -- one time in a process, that would still be a pulse. May be -- may be difficult to ascribe a repeating frequency or a period between events to that, but it is still a pulse.
BY MR. OU:
Q What would -- what would be the -- what would be the frequency of that pulse in that situation that you just described?
MR. WELLS: Objection to form.
THE WITNESS: Well, one would -- at that point it would happen once per process step. If it was a -- say -- I mean, I don't think this is -- I think it's occurring typically more often than this.
Obviously, you know, it said that it needs to occur 40,000 times a second, so we're -- we're very much in the hypothetical range at this point of your question.
But if you had a one-minute process and it

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occurred once, then it would be, you know, 1 cycle per minute. But like I said, I think typically they're occurring quite a bit more often than that.
BY MR. OU:
Q It's -- it's your opinion, at least based on your experience in the industry, that these arc events are happening quite a bit more than once per minute?
MR. WELLS: Objection to form.
THE WITNESS: Well, you know, it -- it depends. If one is very conservative in running a process, then it doesn't happen at all. However, in semiconductor manufacturing, people want to get more wafer, more output, more productivity, so they want -- they push the processes to the very edge of breaking.
So if it's to the point where they're trying to maximize the deposition rate, then they're going to be pushing up against more arcing events. So by -- by being able to increase the deposition rate and minimize the amount of -- minimize the time that is positive, they're going to be pushing -- they're going to be seeing more events, more arcing events.
So there's a tradeoff. You know, as the

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patent describes, there's a balance between the two, throughput or deposition rate and the amount of time spent in the positive pulse mode.
BY MR. OU:
Q Okay. Going back to my original question, is there anywhere else in the specification of the patents-in-suit that you can point me to where the patent is describing the scenario that is shown in Figure 5 where there's an arc event that is detected and then the Sparc-le is then triggered to quench the arc?
MR. WELLS: Objection to form.
THE WITNESS: As I sit here now, I don't have any other examples to discuss. I don't believe I opined on this in my declaration exactly so I don't know that I've previously examined it from this particular perspective.
MR. OU: Fair enough.
Dr. Glew, if you can go back to Exhibit 7.
Q Do you still have it in front of you?
A Yes, I have 7.
Q Okay. If you go to Page 6, there's Figure 2.
And do you see at Figure 2 it's titled or labeled "Sparc-le Unit Simplified Schematic"?

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Do you see that?
A Yes.
Q Okay. On the left-hand side there, you see there's a block that says "MDX Power Supply"?
A Yes.
Q Do you have any familiarity with the MDX power supply?
A I don't recall it in any detail. I don't recall the names of the power supplies we used back then. I'm not sure when the MDX came out.
Q Do you have any recollection as to whether or not the MDX power supply was a power supply from Advanced Energy?
A Well, this is their -- this is their white paper, so I presume it's theirs.
Q Right.
A I just don't -- I just don't recall the names of the power supplies we used or the model numbers from years ago.
Q Okay. So, for example, going back to your time working at Applied Materials, you don't remember if the Advanced Energy power supplies that were being used for PVD were using the MDX power supply?
A No, I don't recall that.

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Q Do you have an understanding as to whether or not that MDX power supply was a continuous DC power supply or a pulsed DC power supply?
MR. WELLS: Objection to form.
THE WITNESS: I don't recall what the MDX was, no.
MR. OU: Okay. So, Dr. Glew, I've put into the chat the next exhibit. We're going to mark it as Exhibit 8.
(Exhibit No. 8 was marked for identification by the videoconference technician; attached hereto.)
MR. OU: Let me know when you have it. It's a little larger in size so it may take a few seconds to download.
THE WITNESS: This is a large document. Okay. I have it.
MR. OU: Okay. Exhibit 8 is Bates number DEFTS-PA_000006, and it goes all the way down to ending in Bates number 250.
And if you'll look at the second page, Dr. Glew, it says the "Advanced Energy MDX magnetron drive."
Q Do you see that?

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A Yes.
Q Have you ever -- are you familiar with this document?
A No.
Q Okay. It's got a date of March 1993 at the bottom right-hand corner.
Do you see that?
A What page am I supposed to be on?
Q I apologize. So if you go to the page that ends in 00007 -- it's the second page of the PDF.
A Where is it supposed to say this?
Oh, there it is. I see. March '93, yes.
Q Okay. Does looking at this document -- does this refresh your recollection in any way as to your familiarity with the Advanced Energy's MDX power supply?
A Well, this says that it's a magnetron drive, which is something that drives magnets, not something that would drive a substrate, so I don't think -- I'm not sure -- I don't think this goes to the MDX drive -- MDX unit that we saw in the other document.
You know, it says on Page 11, Bates Number 11, "Congratulations on your purchase of AE's MDX magnetron drive." So, yeah, this is -- a magnet

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doesn't have a voltage or current rush, an arc event. The target has the arc event, so I'm not -- it doesn't seem like it's the same thing.
And, also, it says this has a built-in matching transformer, so this -- this doesn't seem like the same device. It may be the same family of products, but a different device.
Q Okay. Can -- can you turn with me to the page that ends in 00028?
A Okay.
Q Okay. And at the top, it says what it is, and then it says "DC sputtering with RF bias," right?
A I see this.
Q Okay. And, also, then the next line, it says "Warning. You must place an AC blocking filter in series with the output of the DC power supply if your system uses a DC power supply in combination with an AC power supply that has an output frequency greater than 50 kilohertz."
Do you see that?
A Yes, I see that.
Q Okay.
A And it's suggesting a low pass filter, basically, remove all AC, yes.

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Q Okay. And -- but it -- it's referring to the DC power supply.
Do you -- would you understand that this is discussing this MDX power supply being used to provide DC to the target?
MR. WELLS: Objection to form.
I instruct the witness not to answer.
BY MR. OU:
Q Are you going to follow your counsel's instruction?
A Yes.
MR. OU: Okay. Well, Counsel, I'd ask you to reconsider it because I previously asked the witness and he -- he indicated that he believed that this MDX power supply was to -- driving the magnet, and I'm wondering if he wants to now clarify his testimony now that he's taken a look at this other page of the document.
So do you want me to ask the question again or do you went me to reask the question?
MR. WELLS: Do you want me to respond on the record?
MR. OU: Go ahead.
MR. WELLS: He's indicated that he hasn't seen this document before, it's not part of his

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opinions regarding claim construction. This document is prior art cited in the IPRs. You're requesting him to testify regarding IPR materials, and the court has already said that's improper.
My objection and instruction stand.
MR. OU: Okay. Well, this document was submitted as extrinsic evidence in support of our claim construction position, so I disagree with your characterization, but I'll let your objection -- you can make whatever objection you want.
MR. WELLS: Objection to form.
I instruct the witness not to answer.
BY MR. OU:
Q Dr. Glew, if you go to Page -- the page ending in 11 -- are you there?
MR. WELLS: The Bates number ending in 11, or --
MR. OU: I apologize. Yeah, the Bates number ending in 11.
THE WITNESS: Yes.
MR. OU: Okay. The -- the second to last paragraph states "The standard ARC-OUT arc-suppression circuitry provides outstanding suppression and quenching of arcs, cutting off the energy that feeds hot spots."

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Q Do you see that?
A I see that, although without having read this 245-page document, I really can't make a lot of comments on it.
Q Okay. I just want to ask, so you -- you don't dispute that this is a document that was produced by Advanced Energy and it's got a date of March 1993, right?
A Let me turn my lights on.
I have not reviewed this document before. I don't have any opinions on it.
Q Okay. Let me ask you just more generally, putting aside this document, would a person of ordinary skill in the art at the time of the alleged invention in 2001 been familiar with power supplies that had arc-suppression circuitry that was -- that was designed to quench arcs?
Is that something that a person of ordinary skill in the art would know in 2001?
MR. WELLS: Objection to form.
THE WITNESS: One of skill in the art would generally be familiar with what was publicly -- certainly with what was, you know, publicly available in documents in the field.
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BY MR. OU:
Q And -- and publicly available documents in the field in 2001, what, if any, arc-suppression circuitry would a person of ordinary skill in the art be familiar with at the time of the invention?
MR. WELLS: Objection to form.
THE WITNESS: Perhaps you can direct me to where I opined on that in my declaration on the claim terms.
BY MR. OU:
Q I'm asking you generally, Dr. Glew, about one -- what a person of ordinary skill in the art would be familiar with in terms of arc-suppression functionality in power supplies.
MR. WELLS: Objection to form.
MR. OU: Let me ask it a different way.
Q Would a person of ordinary skill in the art in 2001 have any familiarity or understanding of arc-suppression circuitry in power supplies?
MR. WELLS: Objection to form.
THE WITNESS: I haven't prepared information on this topic for this declaration and this deposition. In order to make such an opinion, I would have to review the material that was available at that time.

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BY MR. OU:
Q Okay. So sitting here today, you don't have an opinion one way or the other as to whether or not a person of ordinary skill in the art in 2001 would be familiar with arc-suppression circuitry used in power supplies; is that right?
MR. WELLS: Objection to form.
THE WITNESS: Sitting here today with my declaration on claim construction, I haven't yet opined in this matter on suppression circuitry that one of skill in the art would be familiar with at the time of the invention in the patents-in-suit.
BY MR. OU:
Q And setting aside what's in your declaration on claim construction, just based on your 30-plus years of knowledge in this industry, you don't have any understanding as to the type of arc-suppression circuitry that was used in power supplies in the 1990s?
MR. WELLS: Objection to form.
THE WITNESS: That is something that I would review first to make the determination of what was in the art at the time.
BY MR. OU:
Q I'm just asking you based on your

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understanding today as an expert in this field and based on your 30-plus years of knowledge in the industry, do you have any understanding as to the type of arc-suppression circuitry that -- that was used in power supplies in the 1990s?
MR. WELLS: Objection to form.
THE WITNESS: As I've said before, I haven't yet prepared an opinion on arc-suppression circuitry at the time of the invention.
BY MR. OU:
Q Okay. Would the inventors of the patents-in-suit at the time that they filed for their patents have been familiar with arc-suppression circuitry in power supplies?
MR. WELLS: Objection to form.
THE WITNESS: I don't know what they were familiar with.
BY MR. OU:
Q Okay. And you didn't speak with Dr. Demaray or any of the other named inventors to understand whether or not they had any understanding of arc-suppression circuitry in power supplies at the time that they filed for their patents; is that right?
A No, I have not spoken with them.

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Q Okay. Do you understand that Dr. Demaray, who is one of the named inventors, is the principal of Demaray LLC?
MR. WELLS: Objection to form.
THE WITNESS: I understand that is the same person, yes.
BY MR. OU:
Q Okay. And did Demaray LLC retain you or are you being retained by Irell & Manella?
A Hmm. I'd have to think about that. I was contacted by Irell & Manella. I'd have to look at the engagement letter.
Q Okay. That -- that's fine.
But just to confirm, you didn't speak with any of the inventors of the patents-in-suit to understand their -- to understand whether or not they had any understanding of the arc-suppression circuitry that was in power supplies in the 1990s; is that right?
A I have not spoken to the inventors at all.
Q And in preparing your claim construction declaration, you did not review any manuals, articles, textbooks, or literature that would have discussed arc-suppression circuitry in power supplies in the 1990s; is that right?

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MR. WELLS: Objection to form.
THE WITNESS: In my inquiry regarding claim construction?
I did not pursue that, no.
BY MR. OU:
Q Okay. You -- you did look at Exhibit 7, though, right? The Advanced Energy white paper that we've been looking at?
A Yes, that, I did, the Scholl document, yes.
Q How is it that you selected that document to review to inform your claim construction positions but did not look at any other literature or manuals, textbooks, or other documents relating to arc-suppression circuitry or hardware?
MR. WELLS: Objection to form.
THE WITNESS: Well, that provides a nice graphic showing what a pulse is.
BY MR. OU:
Q Was it provided to you by counsel?
A I believe it was, yes.
Q Okay. Meaning you didn't like go look through a -- a stack of literature and manuals and then find that one to rely on your declaration but ignore the rest; is that fair?
MR. WELLS: Objection to form.

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THE WITNESS: Yeah, I -- I didn't have something this old sitting on my bookshelf, no.
BY MR. OU:
Q Okay. And -- and I think I asked you this earlier, but just to confirm, you were not provided any of the extrinsic evidence that was exchanged by the defendants in these cases in support of claim construction -- you didn't get that set of materials to review and consider in forming your claim construction opinions; is that right?
MR. WELLS: Objection to form.
THE WITNESS: I didn't spend that long looking today at that list of extrinsic evidence. Maybe some of it was provided to me, but I can't say that I recall getting a pile that said "extrinsic evidence," or that I -- I don't remember seeing a number of those documents.
I do recognize some of the documents from my reading over the years.
BY MR. OU:
Q Okay. And then turning back to Exhibit 8, Dr. Glew, are you still -- do you still have that up and are you on Page 11, meaning the Bates number ending in 11?
A Yes.

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Q Do you see in the last paragraph, it says "Typical applications include DC sputtering with RF bias, basic magnetron sputtering, cathodic-arc deposition sputter etching, and DC biased RF sputtering"?
Do you see that?
A I see where you've read.
Q Okay. In your opinion, would a person of ordinary skill in the art be familiar with these types of typical applications of the MDX power supply that are disclosed in this manual?
MR. WELLS: Objection to form.
I instruct you not to answer.
BY MR. OU:
Q Are you going to follow your counsel's instruction?
A Yes.
MR. OU: Sorry, Dr. Glew. Let me actually -- ignore what I just put in the chat because I'm going to relabel it with the right exhibit number, so bear with me.
Okay. Dr. Glew, I've put into the chat a document that's marked as Exhibit 9. Could you please download it and let me know what you have it open?

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(Exhibit No. 9 was marked for identification by the videoconference technician; attached hereto.)
THE WITNESS: I'm going to want to take a break pretty soon.
MR. OU: Okay. Do you want to -- while that's opening, do you want to just go off the record now and we can take however much time you need?
THE WITNESS: Sure.
MR. OU: Okay. Sounds good.
THE VIDEOGRAPHER: We are going off the record at 17:19.
(A recess was taken from 5:19 p.m. to 5:23 p.m.)
THE VIDEOGRAPHER: We are back on the record at 17:23.
BY MR. OU:
Q Okay. Dr. Glew, do you have Exhibit 9 in the chat open?
A Yes, I do.
Q Okay. Earlier today, do you recall us having a discussion about a person of ordinary skill in the art at the time of the invention would be

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familiar with, you know, publications or marketing materials in the PVD equipment industry?
MR. WELLS: Objection to form.
THE WITNESS: I understand generally that discussion, yes.
BY MR. OU:
Q Okay. Do you -- do you still agree with that -- that discussion, or -- or do you stand by that testimony that you gave earlier that a person of ordinary skill in the art at the time of the invention would have been familiar with publicly available marketing literature or publications from PVD suppliers such as Applied Materials?
MR. WELLS: Objection to form.
THE WITNESS: I would put a slight bit more detail on it. A person of skill in the art isn't expected to -- an individual isn't expected to know or remember everything published in the world. For the purposes of analysis, that is what one assumes a POSITA knows.
MR. OU: Okay. Looking at Exhibit 9, this is a -- it's a -- at the top, you see it says a PVD productivity and technology publication, and it's dated October 1996, Volume 3, Number 3, and at the bottom, you can see it's from Applied Materials.

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Q Do you see that?
A I see that, yes.
Q Okay. In October 1996, you were still working at Applied Materials; is that correct?
A Yes, I was.
Q Okay. Does -- does this type of publication refresh your recollection or just look familiar in terms of something that you were familiar with or involved in at -- when you were at Applied Materials?
MR. WELLS: Objection to form.
THE WITNESS: This would be a typical document or -- or similar to a typical document one might see. I have not reviewed it for the purposes of this claim construction declaration.
BY MR. OU:
Q Okay. And sitting here today, it doesn't refresh your recollection at all as to whether or not you were, for example, involved in putting together these types of publications?
A Oh, well, the person who put this publication together's name is on the front of it. I'm not -- this was not one I put together.
Q Okay. But while you were at Applied Materials, you put together these types of

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publications as well?
A Well, you know, we published -- there were two kinds of things one could do. One could put in journal articles or conference articles or one could do white papers.
I did more -- I was more involved in the conference papers and things like that than the white papers like this. This would generally be put out by the marketing department, they would find somebody in engineering to author it and they'd then give it to customers.
Q Okay. And what was -- what was the purpose generally of these types of documents at Applied Materials?
A These were --
MR. WELLS: Objection to form.
THE WITNESS: I mean, my recollection from, you know, whatever, 25 years ago, is that these were typically given to customers to promote -- to promote the equipment.
BY MR. OU:
Q Okay. To kind of explain here is the type of equipment that we're offering and here is some literature about it?
MR. WELLS: Objection to form.

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THE WITNESS: I would generally characterize this as a white paper, something that companies give out. It's not a -- it's not exactly a sales brochure per se, it's a little more technical than a sales brochure for people who want to read a bit more detail about a product, but it's not a -- it's not a journal article, it's not a refereed article or a conference paper.
BY MR. OU:
Q Okay. You would agree, though, that a person of ordinary skill in the art in 2001 in the context of the patents-in-suit would be familiar with publications or white papers such as this one that we're looking at, right?
MR. WELLS: Objection to form.
THE WITNESS: With regard to the white papers, it would depend. I mean, there were instances where white papers were only given to customers.
There were other instances -- it depends on the company and the situation where white papers were given out more, I'd say, publicly, indiscriminately. So it would depend on that.
BY MR. OU:
Q Okay. Based on your experience working at

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Applied and familiarity with these types of publications, would a person of ordinary skill in the art be familiar with this type of publication?
MR. WELLS: Objection to form.
THE WITNESS: Off the top of my head, I don't know if this is something that Applied only gave to the customers who bought the equipment, that already had PVD equipment, or if they gave it out more generally, you know, if they handed it out at trade shows. I don't know that.
Somebody else -- you know, it could go either way. Somebody else would have to testify to how this document was distributed.
MR. OU: Okay. I'm going to put into the chat a document we're going to mark as Exhibit 10. Let me know when you have it, Dr. Glew.
(Exhibit No. 10 was marked for identification by the videoconference technician; attached hereto.)
THE WITNESS: Okay. I have it.
MR. OU: Okay. Dr. Glew, Exhibit 10 is an excerpt from the file history of Application 10101863. If you want the full file history, I'm happy to give it to you, though it's

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going to take a while to download so we can probably do it during a break.
But this excerpt has a Bates number of DEMINT00001124 and goes through 1135.
A Okay.
Q And it's an amendment and response to office action dated June 12th, 2006.
Does -- are you familiar with this amendment and response to office action?
A It generally looks like something out of the '657 application.
Q Okay. If you go down to the page that ends in 1133, let me know when you're there.
A Okay. I'm there.
Q Okay. Do you see on Page 1113, it's -- the front page is titled "Declaration of Dr. R.E. Demaray Under 37 CFR 1.132"?
A Yes.
Q Okay. Is this a declaration that you reviewed in the context of preparing your claim construction positions?
A I generally reviewed this file history. It was rather long. This looks generally familiar.
Q Okay. When you say "generally familiar," does -- does it -- now that you see it, does it

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refresh your recollection in any way as to something that you reviewed and considered in forming your claim construction positions?
MR. WELLS: Objection to form.
THE WITNESS: It -- it's something I, you know, would have seen in the file history. It's not necessarily that helpful in -- in discerning the meaning of the claim terms.
BY MR. OU:
Q Okay. So you reviewed this declaration but determined that it wouldn't be that helpful in discerning the meaning of the claim terms?
MR. WELLS: Objection to form.
BY MR. OU:
Q Dr. Glew, sitting here today, do you have a recollection of reviewing this declaration and determining that it wouldn't be that helpful in discerning the meaning of the claim terms?
MR. WELLS: Phil, I don't think he had finished looking at what he's was looking at in answering your prior question. Please let the witness finish.
THE WITNESS: I'm looking at Page 1134.
I remember, you know, the issue of distortion of the pulses, you know, that talks about

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protecting the DC power supply -- I'm in Column -- or Paragraph 4 on Bates number ending in 1134 -- protecting the pulsed DC power supply from the RF energy while not restoring the pulses generated by the pulsed DC power supply supplied to the target, so this was actually one area that -- that was helpful.

You know, the concept of the -- the need to -- to filter a narrow band but not to ensnare the portions of the DC pulse, especially on the rise and fall that are going to be fairly complex.

BY MR. OU:

Q Okay. So now reviewing the declaration, does it refresh your recollection, is this something you did consider in forming your claim construction positions?

A Yes, I think -- yeah, I think in particular Paragraph 4 was something that was helpful.

Q The narrow band rejection filter, according to Dr. Demaray, needed to do essentially two things. One, protect the pulsed DC power supply from the RF energy; and two, preserve the waveform or the shape of the pulses.

Would you agree?

MR. WELLS: Objection to form.

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THE WITNESS: I think that those were two things he's suggested that it should do.

BY MR. OU:

Q And the applicants repeatedly relied on these two purposes to distinguish the prior art in the prosecution of these patents, right?

MR. WELLS: Objection to form.

THE WITNESS: I think these were part of the argument they made. The claims have multiple claim elements that, in combination together, make the claim.

This is -- you know, this explains what the narrow band filter should do, protect, what it shouldn't do, distort. So I would characterize it more along those lines.

BY MR. OU:

Q In Paragraph 4 that you were just reading from, the second sentence said "We discovered that a band rejection filter, which is a filter that passes all of the frequencies of the square wave power supply except within a narrow band centered on the R frequency of the RF bias, protected the pulsed DC power supply from the RF energy while not distorting the pulsed -- pulses generated by the pulsed DC power supply applied to that target."

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Do you see that?

A I see that, yes.

Q In the first part of that sentence, would you agree that Dr. Demaray is informing or telling the patent office that the band rejection filter of their invention is a filter that passes all of the frequencies of the square wave power supply except within a narrow band centered on the R frequency of the RF bias?

MR. WELLS: Objection to form.

THE WITNESS: I think that a person of skill in the art would understand what he is saying there is that this is a filter, so it has a falloff rate, and that, you know, even -- one would understand as a POSITA that passing frequencies and not passing other frequencies means that it has a bandwidth and beyond the bandwidth, it falls off at whatever the attenuation rate is for the filter, and then even within the band, it doesn't necessarily pass 100 percent, but, you know, it's going to largely pass in the desired area and largely not pass in the undesired area, depending upon the attenuation rate of the filter.

BY MR. OU:

Q So a POSITA reading a statement like this

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from Dr. Demaray would understand that his reference to "passes all of the frequencies" would not be intended to be an absolute all frequencies, right?

It would be in practice and reality, the band rejection filter is supposed to reject the frequencies within that band and then --

A It's supposed to --

MR. WELLS: Objection to form if that's the question.

MR. OU: No. Sorry. I -- I wasn't done asking my question. So I apologize for the long pause, Dr. Glew. Let me ask it again.

Q So a POSITA reading a statement like this from Dr. Demaray would understand that his reference to "passes all of the frequencies" would not be an absolute all frequencies, it would be more consistent with the explanation you just gave that it would pass -- it would reject the frequencies within the band and then it would pass all the other, subject to the attenuation rate for the filter; is that fair?

MR. WELLS: Objection to form.

THE WITNESS: I would say that outside the band, you know, there's a falloff rate and it will start accepting or passing, you know, based upon the

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attenuation rate.
Within the band, it's going to be fairly efficient at filtering at the band center and start falling off as it gets to the band edge. You know, that -- that's how filters work. A POSITA would understand that, you know, filters are -- filters have falloff rates and, you know, they're not square with -- they're not step functions or heavy side functions.
Mathematically, they're filter circuits that have an attenuation rate per decade.
BY MR. OU:
Q So, Dr. Glew, you would agree that each of the claims in the patents-in-suit requires a narrow band rejection filter, right?
A Last time I checked, they required narrow band rejection filters, yeah.
Q Okay. Yeah, I didn't think that was a point to be disputed, but I just wanted to confirm.
In other words, the -- the claims require a narrow band rejection filter, not some other type of filter like a low pass filter or a high pass filter or a band pass filter?
You would agree with that, right?
MR. WELLS: Objection to form.

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THE WITNESS: Well, Claim 1, for example, of '657 requires a narrow band rejection filter. Now, a narrow band rejection filter can be comprised of a number of circuit elements; but in -- in the end, it has to function like a narrow band rejection filter.
BY MR. OU:
Q And -- and what would be the functioning of a narrow band rejection filter as opposed to a different type of filter?
MR. WELLS: Objection to form.
THE WITNESS: Well, filters can have other functions; but a narrow band rejection filter rejects, at least at -- these are comprising -- you know, at least at a narrow band, sort of like a notch.
BY MR. OU:
Q And so it -- it rejects at a narrow band, and then the intent of the filter is to pass the frequencies that are not within the band, understanding that in practice, that may not actually happen; is that fair?
MR. WELLS: Objection to form.
THE WITNESS: Not exactly, no.
It's meant to filter out a narrow band of

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frequencies, create a notch in the spectrum, basically, and then, you know, largely pass what's outside of that.
There's always losses in any filter or any circuitry. Nothing is lossless; but they're pretty efficient circuits, usually.
MR. OU: Let me go to your declaration at Paragraph 55, where you provide an opinion about the filter elements.
Q Do you have that in front of you?
A Yes.
Q Okay. Generally speaking, what is -- a person of ordinary skill in the art, what would they understand to be the purpose of a filter in the context of the invention?
MR. WELLS: Objection to form.
THE WITNESS: Well, in this invention, it's very specifically a narrow band filter.
Is your question what is a narrow band filter or what is a filter?
BY MR. OU:
Q I want to first start generally what's a filter, what's the purpose of a filter?
MR. WELLS: Objection to form.
THE WITNESS: You know, kind of -- in a

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general English sense, you know, if you think of a water filter, it allows the water to pass through and filters out particles.
The frequency filter allows certain frequencies to pass through and filters out others. It doesn't mean -- like in a water filter, there's a pressure drop, so some of the water is, you know, slowed down, and, yes, particles do get through water filters.
But generally the intent here is that something is hindered from passing and something else is largely allowed to pass.
BY MR. OU:
Q Okay. And generally in the context of a frequency filter, how does a filter attenuate or pass frequencies?
MR. WELLS: Objection to form.
THE WITNESS: Well, you know, there are digital filters, there are analog filters and lots of filters.
But, you know, generally, the filter takes frequencies that are undesired that you want to remove and sort of diverts them somewhere else, usually off to ground, something like that. The filter --

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BY MR. OU:
Q And then these --
A The frequencies that you want to pass through, you know, doesn't -- doesn't divert off or -- or short to ground, basically, yeah.
Q Put into very simplistic terms, a filter is going to -- or the intent of the filter is to block what you don't want to go through and let the rest pass.
That's at least the intent of a filter, right?
MR. WELLS: Objection to form.
THE WITNESS: Is that supposed to be more on how it works or just what it does?
MR. OU: I guess I don't understand the -- your -- what -- what you're asking me to clarify.
THE WITNESS: The last -- the last question was how does a filter work, you know, and so it -- it doesn't -- you know, I mean -- I don't think of it as blocking exactly. I think of it as it effectively diverts part of the signal to ground, it bleeds it off, it, you know, diverts it to -- it dumps -- it dumps some of the energy to ground, typically is how -- typically is how they work.
If it's a digital filter, then it's done

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mathematically, you know, they just turn off those frequencies after the transform function. But a power -- you know, something involving real power, that basically is diverting a portion of the signal to ground that is undesired.
MR. OU: Okay. Fair enough.
Q Do you have an understanding of what is a low pass filter?
A Generally, yes.
Q And can you give me an example of a low pass filter?
A Sure.
A low pass filter lets low frequency pass largely unhindered and frequencies above the cutoff frequency, it starts attenuating. The farther it gets away from that range, the more efficient the attenuation.
Q Okay. And -- and a low pass filter, that's something that a POSITA would have been familiar with at the time of the invention, right?
MR. WELLS: Objection to form.
THE WITNESS: I think generally a POSITA would be knowledgeable in basic circuit elements.
BY MR. OU:
Q What about a high pass filter? What would

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a POSITA understand a high pass filter to be at the time of the invention?
A High pass filter is sort of the opposite of a low pass filter. It lets high frequencies pass and below a cutoff frequency, it starts attenuating them at whatever the attenuation rate is.
Q And is that something that a POSITA would also be familiar with at the time of the invention and understand?
MR. WELLS: Objection to form.
THE WITNESS: I generally think that a POSITA would understand basic circuit elements such as a high pass filter.
BY MR. OU:
Q Okay. And then what about a band pass filter?
What's your general understanding of a band pass filter?
A You know, a band pass filter will let certain frequencies pass and others are rejected.
Q And there's going to be a range of frequencies that are intended to pass, but you'll have the same issue that you described above where there's going to be attenuation and then as you get farther away from what's being rejected, that

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attenuation changes?
A Yes.
Generally -- yeah, I mean, a 3 DB filter is -- every factor of 2 on frequency, the power level drops by half.
Q Okay. And so this -- this same concept of what gets rejected and what gets passed, and then somewhere in the middle, there's going to be some amount of attenuation changing, that would apply to low pass filters, high pass filters, band pass filters, narrow band rejection filters, you would agree, right?
MR. WELLS: Objection to form.
THE WITNESS: I think generally, you know, these analog circuits have a -- an attenuation rate. Whether it's 3 DB per octave or 12 DB per octave, there's still an attenuation rate beyond the -- the targeted frequency.
I'm going to have to turn my lights on.
BY MR. OU:
Q And so, Dr. Glew, you would agree that the claim-required narrow band rejection filter is different than a band pass filter, right?
MR. WELLS: Objection to form.
THE WITNESS: Well, I mean, typically a

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band pass filter is construed as, you know, it passes a band, whereas a narrow -- this narrow band rejection filter is something that doesn't pass a band.

You know, it's -- one is -- you think of it like a notch. One is a -- one's kind of like the inversion of the other.

MR. OU: Right.

Q And so a person of ordinary skill in the art would understand that narrow band rejection filter is not the same as a band pass filter, right?

MR. WELLS: Objection to form.

THE WITNESS: I think of them as being the opposite of each other. Maybe some people might consider one to be a special case of the other, but I -- I would consider them essentially the opposite of each other.

BY MR. OU:

Q Okay. Is there any scenario that you can think of where one would -- a person of ordinary skill in the art would understand the two to be the same or substantially the same?

MR. WELLS: Objection to form.

And I instruct you not to answer.

MR. OU: Let me, maybe, rephrase my

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question and see if this will pass your counsel's filter.

Q Is there a scenario that you can imagine where a person of ordinary skill in the art in reading the disclosures and the patents-in-suit would understand the claim-required narrow band rejection filter to be the same or substantially the same as a band pass filter?

MR. WELLS: Objection to form.

I instruct you not to answer.

MR. OU: All right. Maclain, let me just hear the explanation for why you're instructing the witness not to answer. I'm asking him about what a POSITA would understand a narrow band rejection filter to encompass.

MR. WELLS: It certainly sounds like you're asking him what are the equivalents under a potential infringement read equivalent to a narrow band rejection filter. When you say "substantially similar" or "similar," that's what I understand you're getting at.

He's not here to opine on infringement issues any more than he's here to opine on invalidity issues. He's here to opine on claim construction issues.

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So I've allowed the other question because you were going at what's the meaning of band -- narrow band rejection filter. Now it appears that you've switched gears and are basing it on some kind of noninfringement arguments, or whatnot, and that's not the appropriate topic for this deposition.

MR. OU: Okay. Fair enough. Maybe I -- I disagree with your objection, but I'll -- I'll ask a different question.

Q Dr. Glew, if you had to explain in your own words what a band rejection filter is, how would you explain it?

MR. WELLS: Objection to form.

MR. OU: I'm sorry. Let me withdraw my question, then. I actually misstated my question, so let me try again.

Q Dr. Glew, if you had to explain in your own words what a band pass filter is, how would you explain it?

MR. WELLS: Objection to form.

THE WITNESS: I would generally think of a band pass filter as a filter that passes a certain band of frequencies preferentially.

BY MR. OU:

Q Okay. Is there any scenario that you can

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think of that a person of ordinary skill in the art, in reading the patents-in-suit and disclosures in the specification and the claims, would understand the claim-required narrow band rejection filter to be a filter that passes a certain band of frequencies?

MR. WELLS: Objection to form.

I instruct the witness not to answer.

BY MR. OU:

Q Are you going to follow your counsel's instruction?

A Yes.

Q Okay. So, Dr. Glew, let me -- do you have your declaration in front of you?

A Yes.

Q Can you turn to Paragraph 55?

Are you there?

A Yes.

Q In the third sentence, you state "Rejecting and passing frequencies are, however, exact opposites and different subjects."

Do you see that?

A Yes.

Q What do you mean by "rejecting frequencies"?

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A Well, rejecting is filtering out, so if one -- like a narrow band filter rejects a narrow band of frequencies. A low pass filter rejects filters -- rejects frequencies above a certain frequency. Given the attenuation rate, of course.

Q Okay. And what do you mean by "passing frequencies"?

A Passing frequencies is the attempt of a filter not to diminish or attenuate the frequency; so the goal in passing frequencies is not to bleed off any of the -- of the power or voltage, but to let it all through.

So one -- one is sort of like the brakes and the other is sort of like the gas.

Q And -- and is that what you mean by -- when you then say they are exact opposites?

A Rejecting and passing are exact opposites, yes.

Q And a POSITA would understand that there's some gray area or what you've been referring to as depending on the attenuation rate between the frequencies that are passing and rejecting in a filter; is that fair?

MR. WELLS: Objection to form.

THE WITNESS: I wouldn't call it a gray

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area. I'd just call it how analog filters work. They start attenuating at a certain frequency and the signal level drops off at a certain rate.

For example, maybe every doubling of frequency, the power level drops by 2 or 4 or 10, something like that. So that's attenuation rate. The higher the attenuation rate, the sharper the cutoff.

BY MR. OU:

Q Okay. And then you state rejecting and passing frequencies are different subjects.

I wanted to ask and better understand what you meant by that.

A The -- the endeavor to filter typically involves bleeding off certain frequencies to ground, or something along that lines, selecting a frequency and diverting it to -- so it doesn't go down the path of the main signal or the desired signal.

Passing it, you have a different set of problems. You're trying not to have losses. So there's always losses in any circuit. There's straight capacitance and inductance and wires and components that are near each over, they communicate with each other electrically, there's losses.

So passing means minimizing the losses that

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are inherent in any circuit, and that's different -- it's a whole different set of problems than trying to filter out or maximize the -- the filtering or removal of a -- of a frequency.

Q Understood.

In the next sentence, Dr. Glew, you say filters can reject alone.

What did you mean by that?

A Well, you know, I've written filters can reject alone, they can pass alone, or they can both reject and pass different frequencies simultaneously. There can be notch filters that have a couple of bands in them.

You know, if you look at a narrow band pass filter -- or narrow band rejection filter -- excuse me -- first it passes, then it rejects, then it passes. So there's -- you know, there's different architectures for filters.

Q Sorry. That last part that you were explaining, a narrow band rejection filter, that first passes, then it rejects, then it passes, could you elaborate on that? I didn't follow what you were saying.

A Sure.

You know, at low frequencies, it might pass

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everything. Then as it approaches the -- the -- I'll call it the cutoff frequency, it starts diminishing, attenuating the signal, it maximizes the attenuation at the selected frequency, then it starts slowly backing off on attenuation and allowing the frequency.

And then eventually it's allowing, essentially, most of the frequency. So, you know, you -- you go through allowing, rejecting, allowing, you know, that's -- which is different than a low pass filter, which first allows low frequencies, then rejects as you -- as you go from left to right up the frequency domain, it first -- the low pass filter first allows the frequencies to pass and then above a cutoff frequency, it starts attenuating the frequencies.

So there's just different architectures.

Q Okay. When you were saying "first" then, you weren't talking any type of temporal element, you were just saying that there's a -- there's a band that's going to be passed and then there's going to be -- you know, a band or range that's then rejected, and then another one that's being passed?

A Yes.

Q Did I -- did I understand your explanation?

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Okay. So --
A Instead of being temporal, I was talking about the frequency domain.
Q Right, so --
(Mr. Ou and the witness speak simultaneously.)
BY MR. OU:
Q So when you said filters can reject alone, you aren't talking about the -- the entire filter, were you? Meaning like a filter only rejects? Or is that what you were intending to say?
MR. WELLS: Objection to form.
THE WITNESS: Well, you can have a filter, for example, that rejects all AC. It rejects all frequencies and only allows DC. There are a lot of -- there's a lot of different architectures for -- for filter circuits.
BY MR. OU:
Q Okay. But even in that situation, something would still being passed, right?
A Well, it would still be passed but it wouldn't pass any frequencies, it would just pass DC.
Q Understood. I think maybe I just misunderstood what you were writing in this

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sentence. Let me ask it this way.
You would agree that this last part, that -- you say "or they can both reject and pass different frequencies simultaneously."
A low pass filter will both reject and pass different frequencies simultaneously, right?
A Yes.
Q Same thing with a high pass filter, right?
A Yes.
Q Same thing with a --
A Generally, yes.
Q Same thing with a band pass filter, right?
A Yes, they -- they pass and reject.
Q And then same thing with a band rejection filter, right?
A Yes, it passes, rejects, passes.
Q As well as a narrow band rejection filter, right?
A Yes, it would pass and reject selectively.
Q And that would include the specific narrow band rejection filter that is part of the -- the claims in the asserted patents, right?
A The narrow band rejection --
MR. WELLS: Objection to form.
THE WITNESS: The narrow band rejection

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filters in these claims pass certain frequencies and reject others.
MR. OU: Okay. Got it. I just wanted to make sure that you weren't intending to provide a -- an opinion that a POSITA would understand the narrow band rejection filter of the claims to be a filter that only rejected frequencies or only passed frequencies.
Q You weren't intending to say that in this -- or suggest that in this sentence that we've been looking at, right?
A I'm not saying that a narrow band rejection filter does that.
You know, there are filters that don't pass AC or don't pass DC, yeah.
Q Okay. But those --
A But that's not a narrow band rejection filter.
Q And it's not the narrow band rejection filter that's disclosed in these patents-in-suit, right?
A No.
The patents-in-suit are not -- do not reject all frequencies or pass all frequencies, no.
Q Okay. So if -- if you had to describe how

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the narrow band rejection filter of these patents rejected frequencies, certain frequencies, and passed certain frequencies, how would a person of ordinary skill in the art explain that?
MR. WELLS: Objection to form.
THE WITNESS: You know, it -- as I've written in Paragraph 50, the plain and ordinary meaning, I think, that a POSITA would understand is a narrow band rejection filter is a filter that rejects a narrow band of frequencies.
BY MR. OU:
Q And what would a POSITA then understand in terms of what that narrow band rejection filter passes?
How would a POSITA describe or understand that?
A What it doesn't filter, it passes. That which is not filtered is passed. You know, given -- given the limitations of any circuit not being perfect.
Q Okay. So you would agree that a POSITA would understand a narrow band rejection filter of the patents-in-suit to reject a narrow band of frequencies and pass the rest, subject to any limitations of any circuit not being perfect; is

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that fair?
MR. WELLS: Objection to form.
THE WITNESS: A POSITA would understand the plain and ordinary meaning of narrow band filter as a filter which rejects a narrow band of frequency. That's all it -- that's all it's supposed to do is reject a narrow bond.
A POSITA would also understand no circuit is perfect, you know, it's not going to perfectly reject and it's not going to perfectly pass. There's losses in any circuit. There's no circuit that's 100 percent. That would violate the laws of thermodynamics.
But, yeah, it's simply that, a filter which rejects a narrow band of frequencies.
BY MR. OU:
Q The intent of a narrow band rejection filter, to the extent it's not an ideal filter, is one that would inject a narrow band of frequencies and then pass all the frequencies outside of the narrow band, right?
MR. WELLS: Objection to form.
THE WITNESS: As I've written, its -- its goal is to reject a narrow band of frequencies. Every -- you know, there's limitations in every

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circuit. No circuit can go up to an infinitely high frequency.
Everything fails at infinitely high frequencies, so, you know, a POSITA would understand, you know, the basic limitations of -- of these types of analog circuits.
MR. OU: Okay. Dr. Glew, let me -- let me explain to you, maybe, a potential concern that one may be confused with your plain and ordinary meaning of narrow band rejection filter, and maybe you can explain if this is what you're intending.
Q So you've provided the opinion that the plain and ordinary meaning of narrow band rejection filter is a filter which rejects a narrow band of frequencies, right?
A Well, I understand that that's how a person of skill in the art would understand it, yes.
Q Okay. Would a person of ordinary skill in the art understand that it would be a -- a filter which rejects a narrow band of frequencies in addition to some other bands -- band or bands of frequencies that are not within that narrow band?
MR. WELLS: Objection to form.
THE WITNESS: I'm not sure I understand your question.

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MR. OU: Sure. Let me give you a -- an example to -- to -- to better understand it. Okay?
Let's -- let's take a low pass filter as an example. Okay?
Q You would agree that a low pass filter is not a narrow band rejection filter, right?
A I would say yes, a low pass filter is not a narrow band rejection filter.
Q Okay. And a low pass filter is going to reject a range of frequencies above a certain frequency, right?
A Yes, it attenuates above a certain frequency.
Q Okay. So let's assume that the narrow band of frequencies is within that range of frequencies that is rejected by the low pass filter.
Do you follow me?
A Not yet.
Are you saying that the low pass filter cutoff point is below the narrow band center point?
Q Yes.
In other words, the -- the -- the narrow band of frequencies that is rejected is within the range of frequencies that is also rejected by the -- by the low pass filter.

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A Well, what you're describing to me, I think, are two filters.
Q Those would be two different filters, right?
MR. WELLS: Objection to form.
THE WITNESS: The narrow band rejection filter is still a narrow band rejection filter, the low pass filter is still a low pass filter. What you've described, I think, is two filters.
MR. OU: Let me give you --
THE WITNESS: You know, if one -- if one has six filters in a row, are they all -- you know, they're still -- they're still what they are. You know, there may -- there may be a desire to also -- I don't know. It depends -- I guess I don't really understand what the question is.
MR. OU: Yeah. Let me -- let me try it a different way and -- and maybe give you a different example. Okay?
Q In the patents-in-suit, the embodiment or example that they give for their narrow band rejection filter is a filter that has -- it's a 2 megahertz center with approximately 100 kilohertz bandwidth, right?
A I generally recall that, yes.

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Q Okay. And so the narrow band of frequencies in an ideal filter would be rejecting between 1.95 megahertz and 2.05 megahertz, right?
A Did you say plus or minus 100, or --
Q I think it said that the -- the bandwidth was 100 kilohertz, and so I applied it with that.
A Okay. I got it.
Yes, that's approximately correct. It starts attenuating -- whatever its efficiency is, it starts attenuating at those frequencies. Or passing. Excuse me, yeah, at those frequencies, yeah.
Q Right.
The -- that narrow band rejection filter is supposed to start passing at 1.95 or 2.05 and then going below 1.95 and above 2.05, right?
A That's generally what -- what I think is described, yes.
Q Okay. And there's no dispute that that type of filter with that center of frequencies and that bandwidth is the -- a narrow band rejection filter, right?
A I understand that to be a narrow band rejection filter, for example, as described in Claim 20 of the '657.

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Q Okay. Now, let's just say that -- and keep that range in mind -- that the inventors instead designed and used a filter that rejected all frequencies below 2.2 megahertz. Okay?
A Okay.
Q Now, that filter would also reject that same narrow band of frequencies, 1.95 megahertz through 2.05 megahertz, right?
A This was a high pass filter, 2.2?
Q Right.
And so it would reject anything below 2.2 megahertz, which would include the 1.95 through 2.05 megahertz range, right?
A Yeah.
It has an attenuation rate. You know, if it was a very slow drop-off, it might -- you know, it might give you a little boost on the downside more so than the upside.
Q Okay. So a person of ordinary skill in the art would not understand that high pass filter that I just described that rejects everything under 2.2 megahertz to be a narrow band rejection filter simply because it rejected that narrow band of frequencies that we had just talked about?
You would agree with that, right?

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MR. WELLS: Objection to form.
THE WITNESS: Yeah, I mean, I think the high pass filter is still a high pass filter. I mean, I can -- you know, that circuit doesn't make a lot of sense.
I mean, it's the kind of thing that you might want a couple on the low side so that you've got -- you know, if you had a lot of signal on the low end side and you wanted extra boost on your -- actually, it just -- the circuit isn't making a lot of -- a lot of sense, really.
Yeah, maybe, you know -- yeah, maybe, if you put it on the low side down at 1.95, you could get additional filtration on the low side if, for some reason, there was a -- a desire to do that. But I don't know. Whatever. It's hard to -- the high pass filter is still just a high pass filter.
BY MR. OU:
Q Okay. And -- and that high pass-- a person of ordinary skill in the art wouldn't consider that high pass filter to be a narrow band rejection filter in the context of the invention simply because it also rejects a narrow band of frequencies -- right? -- in addition to other frequencies?

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MR. WELLS: Objection to form.
THE WITNESS: The high pass-- see, I don't understand that the high pass filter rejects a narrow band. It rejects a broad band. It -- you know, it happens to reject a band that overlaps a narrow band filter, but the high pass filter is still just rejecting a broad band. That's how I --
MR. OU: Right. And -- right. And -- and that's kind of my point.
Q You were not intending to try to say that a -- a POSITA would understand -- because your -- your understanding of a -- of a narrow band rejection filter only speaks to what is being rejected; and so if a filter was actually rejecting a broader band which included that narrow band, you would agree that that's not a narrow band rejection filter, right?
MR. WELLS: Objection to form.
THE WITNESS: I -- I would say that the -- you know, on its own, the high pass filter is not -- it's just a high pass filter, it's a broad band filter. It's not a narrow brand rejection filter. However, one can combine multiple filters in a circuit, and there may be reasons to do so.
For example, you know, there may be some

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really noisy things at the low end. Sometimes people want to screen out 60 hertz, you know, line voltage that's in the building, you know, or something, or there's an issue of maybe something shorting out that's a safety feature.

So you could put -- you know, you might put a -- you might combine a narrow band filter with other filters for safety purposes; but, you know, the narrow band filter is a narrow band filter and the other filters are other types of filters.

BY MR. OU:

Q The patents don't disclose combining --

MR. WELLS: Phil, the witness isn't there.

MR. OU: Oh, I'm sorry.

MR. WELLS: And when you get to a stopping point, can we take a five-minute break? I need to use the services.

MR. OU: Yeah, let's take one now. No problem. Let's go off the record.

THE VIDEOGRAPHER: We are going off the record at 18:22.

(A recess was taken from 6:22 p.m. to 6:29 p.m.)

THE VIDEOGRAPHER: We are back on the record at 18:29.

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BY MR. OU:

Q Dr. Glew, could you take a look at the Exhibit 10, which is the portion of the file history that we looked at earlier?

A Okay.

Q All right. Looking at Paragraph 3 of the Demaray declaration -- let me know when you're there.

A I have that in front of me.

Q Okay. Looking at the last sentence, you see it reads "Utilizing a band pass filter between the pulsed DC power supply and the plasma, however, will not protect the pulsed DC power supply from the RF bias and will also unduly distort the square wave of the pulsed DC power supply -- power signal applied to the target, which detrimentally affects the deposition conditions."

Do you see that?

A Yes.

Q What did -- what would a POSITA understand Dr. Demaray to mean when he's was referring to the square wave of the pulsed DC power signal applied to the target?

A Well, I think he just meant there that the edge -- the sharp corner on the -- the rise of a DC pulse looks kind of like part of a square.

If you actually do a Fourier transform of the real signal, what you'll see is that it's a combination of frequencies that end up looking roughly square, or, in fact, pretty square, depending on how good the circuit is.

But if you start pulling out some of the higher frequencies, it starts looking less and less square. You know, it's not a sharp or fairly sharp 90 with a rise, then a -- then a sustaining level, or a drop and a sustaining level at a specific DC voltage, negative. So that's the -- that's what he's talking about there.

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Q What about the pulsed DC power supply causes the square -- causes the pulsed DC power signal to be a square wave?

MR. WELLS: Objection to form.

THE WITNESS: Power -- power -- power that comes into the power supply is AC. That's what comes into to the wall, and then it gets rectified to DC. But, you know, it's not perfect. It may look pretty good.

If you look at it under a oscilloscope, you know, it starts looking less good but -- in fine resolution.

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But if you break it down mathematically, it's going to look kind of like a combination of very complex combination of multiple frequencies that add up to look square, and if you strip out those high frequencies, then it starts looking less sharp and starts getting rounder.

BY MR. OU:

Q So in -- in Paragraph 43 of your declaration -- let me know when you have it.

A Okay. I'm there.

Q The last sentence, you write "Pulsed DC power passing through zero could, thus, roughly approximate the following schematic waveform," and there's a graph where the Y axis is amplitude, the X axis is time, and you see some rectangles formed periodically.

Would you agree?

MR. WELLS: Objection to form.

THE WITNESS: I think the document speaks for itself. It's -- you know, it's -- it's a square wave, basically. It's a square wave in that it's, you know, for example, showing 50 percent duty cycle at 1 and 50 percent at the other.

But in reality, they don't need to be 50 percent.

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MR. OU: Just so I understand, you were just referring to 50 percent duty cycle.
Q What do you mean by that?
A Well, it's at a high -- it's at a high -- two things. First of all, it's at a high voltage half the time and a low voltage half the time. Right?
Q Got it.
And what you're saying is that a pulsed DC power supply doesn't need to be at the high voltage and low voltage for the same amount of time; and I think, actually, it's usually quite different in terms of how much time it's at a negative voltage versus -- or the high voltage and low voltage, right?
A Yes, and it doesn't have to be centered at zero.
Q Right.
It -- meaning right now the -- the -- where the half of the wave -- the first half of the wave doesn't cross zero? Is that what you mean?
Meaning like the wave could go up or down and usually it's actually -- it would shift down where the negative voltage is significantly more negative than whatever is the positive voltage; is

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that right?
A Yeah, that's essentially it.
Q Okay. And -- and why is it that, you know, Dr. Demaray describes what's coming out of the pulsed DC power supply as a square wave?
What does that refer to in the context of this -- this picture that you have, this schematic wave form?
MR. WELLS: Objection to form.
THE WITNESS: Well, you know, if you think of like a carpenter's square, a square is -- when something is square, it's something that's at 90 degrees. It's, you know, got a sharp corner on it. It's the easiest thing to draw, it's what you'll usually see, you know, as the first example.
So his concern was that the corners stay square and that they don't become round due to bleed-off of higher frequencies. So even though this looks -- you know, if it were actually coming out of a DC power supply, if you started filtering out higher frequencies, it would become less sharp on the corners.
MR. OU: I think I understand.
Q A person of ordinary skill in the art would understand Dr. Demaray's reference to square wave

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not to mean a perfect square having 90-degrees angles at each corner, right?
MR. WELLS: Objection to form.
THE WITNESS: Well, what I was saying is that they wouldn't necessarily understand that it was, you know, duty cycle, you know, even between positive and negative, and that it was centered at -- you know, that the plus and the minus were equal, that they could be biased up or down.
He does want it to stay as square as possible, which is why he uses the narrow band filter, so the higher frequencies don't get bled off, because when you bleed off high frequencies off a sharp wave like this, it will start rounding the corners and it will make them -- fall off time longer too.
You know, it becomes sort of deformed, basically. You know, it's what you see oftentimes on oscilloscopes. You see a -- a lagging drop-off and kind of a -- a rounded rise.
BY MR. OU:
Q Okay. But a person of ordinary skill reading Dr. Demaray's statement in his declaration wouldn't read square wave to mean a perfect square wave, right?

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MR. WELLS: Objection to form.
THE WITNESS: I'm -- as I said, they wouldn't -- they wouldn't expect anything is perfect. Nothing is.
But Dr. Demaray does want to keep it as sharp -- you know, as square at the corners as possible, which is why he -- he went with the narrow band filter, to protect the RF, but not, as he put it -- not distorting the pulses generated by the pulsed DC power supply.
So what I think they wouldn't understand is they wouldn't understand that it was necessarily plus and minus the same or that it was, you know, duty cycle the same, either positive or negative.
MR. OU: Understood.
Q Reading -- reading Dr. Demaray's statement, square wave, a person of ordinary skill in the art wouldn't understand that to mean that you have plus and minus the same in terms of the voltages or the duty cycles being the same; is that fair?
The intent of square wave is just to say that you want -- you do not want -- you want the corners to be as -- as close to 90 degrees as possible?
MR. WELLS: Objection to form.

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THE WITNESS: That's -- you know, I sort of read it that, you know, that's what he -- you know, when he says "square," he's looking for the -- the vertical and horizontal are roughly square with each other, you know, that it's a step function, you know, as much as possible.
MR. OU: Right.
Q And -- and -- and that's a result of using the pulsed DC power supply where you're setting the negative voltage at a certain voltage and then there's a certain positive voltage and that's going to be at a reverse time, which is likely going to be different for the time that you're at the negative voltage, right?
MR. WELLS: Objection to form.
THE WITNESS: I'm not sure -- I didn't really follow that as a question. What were you asking?
MR. OU: Sure. Let -- let me reask the question.
Q In this -- the square wave, or at least how -- how Dr. Demaray frames the square wave, the top and bottom of the waves are parallel to the Y -- to the X axis, right?
MR. WELLS: Objection to form.

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THE WITNESS: I think they are -- yeah, as -- you know, they're basically as flat as possible. I would say that's what -- that's part of it.
BY MR. OU:
Q And the reason that they're as flat as possible is because there is a set negative voltage, which is going to be the bottom of the wave, and then the set positive voltage, which is going to be at the top of the wave, right?
MR. WELLS: Objection to form.
THE WITNESS: These are intended to be DC, constant voltage, so that's the goal here in a DC, is to keep it constant.
MR. OU: Right.
Q It's intended to be DC constant except where you are pulsing and, thus, going from the negative voltage to the positive voltage and then back down to the negative voltage, right?
MR. WELLS: Objection to form.
THE WITNESS: Again, I understand "square" in that the vertical and the horizontal respectively make a 90 degree.
You know, the goal is to preserve as much of that as possible, the horizontal being as flat as

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possible because it's supposed to be DC and the vertical being as fast as possible, generally desirable.
BY MR. OU:
Q And that's how a POSITA would have understood Dr. Demaray's reference to square wave from the pulsed DC power supply in reading his declaration?
MR. WELLS: Objection to form.
THE WITNESS: You know, I understand that he talks about not distorting the pulses, meaning keeping it as square as possible. He writes in Paragraph 4 "We discovered that a band rejection filter, which is a filter that passes all of the frequencies of the square wave power supply except within a narrow band on the RF frequency of the RF bias, protected the pulsed DC power supply from the RF energy while not distorting the pulses generated by the pulsed DC power supply applied to the target."
So the distortion is not evident or minimized for the -- you know, the vertical rise and that first rise corner and then on the -- the drop-off, or vice-versa.
MR. OU: Give me one second, Dr. Glew. I'm

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going to drop in one more exhibit.
I'm getting a "Network Disconnect" when I'm putting in a document. Can we go off the record for a second?
THE VIDEOGRAPHER: We are going off the record at 18:44.
(A recess was taken from 6:44 p.m. to 6:45 p.m.)
THE VIDEOGRAPHER: We are back on the record at 18:45.
(Exhibit No. 11 was marked for identification by the videoconference technician; attached hereto.)
BY MR. OU:
Q Dr. Demaray -- I'm sorry.
Dr. Glew, do you have Exhibit 11 open?
A Yes, I do.
Q Okay. Exhibit 11 is Demaray's opening claim construction brief, right?
A That's what it's titled, yes.
Q Okay. Did you review the claim construction brief in preparation for your deposition?
A I reviewed the -- the claim constructions

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with the attorneys. I'm not -- the claim construction brief isn't exactly an engineering document.

Q Understood. I -- I more so actually just want to draw your attention to a document that has the competing proposed construction, so this was the easiest document to -- to point to.

You are familiar with, obviously, the -- the -- the parties' competing proposed constructions, right?

A In general, yes. I generally have them in my declaration.

Q Okay. If you go to the last page of the opening claim construction brief --

A Okay.

Q And I wanted to ask you about the "substantially constant" or the claim language "the temperature of the substrate substantially constant."

And are you contending that this term means that the temperature along the substrate cannot deviate by about 10 degrees from any other point on the same substrate?

A No --

MR. WELLS: Objection to form.

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THE WITNESS: -- that's not what I'm opining here.

MR. OU: Okay.

THE WITNESS: I don't understand this, yeah.

BY MR. OU:

Q Yeah, can you just clarify how you -- how you understand this -- this particular term and how a person of ordinary skill in the art would understand this term?

A Sure.

If a wafer is 300 degrees in the middle, it may be, you know, 290 on the edge because the edge is near the chamber wall, the chamber walls are usually less than 70 degrees. You don't want to melt the O rings. So it's cold. So these are cold-walled chambers. They're not at the same temperature as the substrate.

So what you typically have is you have a variation across the wafer of, you know, X, let's say, and we have a 300-degree wafer, and it's 10 -- it's to 300 in the center, 290 on the edge, and a little colder near the door, the slip valve where the wafer comes into the chamber. That's probably the coldest spot, so maybe it's 288.

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So what I understand, holding it within 10 degrees means that -- that no point on the wafer is going to vary by more than 10 degrees, so they may -- they're not going to be the same because the center is hot and the door is cold and the walls are somewhere between the door and the center.

Q Got it.

But you understand this term to mean that the temperature isn't going to deviate by more than 10 degrees of whatever is the set or expected temperature; is that right?

MR. WELLS: Objection to form.

THE WITNESS: No, not exactly.

If one sets the wafer at 300 degrees and one has one temperature sensor, then one knows that that is the temperature at that point, but one also typically measures the wafer and knows that there's a certain variation within the wafer; that it's coldest near the door, the slip valve where the wafer comes in, it's colder -- it's cold on the edges, but not as cold as near the door, typically; and it's hottest in the center.

So whatever the set point is, that's for where the temperature sensor is, but the wafer is not going to be that temperature everywhere.

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Holding it within 10 degrees, though, means that the wafer, whatever temperature -- whatever point on the wafer is at, it's going to stay within 10 degrees of that in the -- during the process.

The reality is one is going to know where -- where the temperature sensor is. Maybe one has two or three temperature sensors. One --

BY MR. OU:

Q So how -- how would one know whether or not at any point the wafer is going to vary by more than 10 degrees?

What is it varying from?

A Its -- its temperature range during the process.

Q But how is that determined? Like how do you know what the temperature range is?

A Typ- -- typically one knows the temperature where the temperature sensor is, and that's what one monitors, and one knows also -- one of skill in the art knows that there's a variation over the range of the wafer, and that's fine.

You know, you've worked it up so that that variation across the -- from the middle to the edge of the wafer is X; but, you know, you want to keep it in a range during the process run. You know, as

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the power turns on, the wafer gets hotter, but it all gets hotter.

The parts that were 290 come up to 300, the parts at 300 might come up to 310, but that's still within -- every point is staying within 10 degrees of -- you know, with a 10-degree range.

Q Again, sorry if I'm not understanding completely; but staying within a 10-degree range of what?

What is the 10 degrees varying from?

MR. WELLS: Objection to form.

THE WITNESS: It's -- the range is its temperature range during the process.

Claim 10 says the reactor in Claim 6 further including a temperature controller for holding the temperature of the substrate substantially constant.

So it doesn't say "substantially uniform," it says "substantially constant," so if you're measuring the center of the wafer and you see that it's 300 degrees, then it should stay, you know, within 10 degrees of that.

BY MR. OU:

Q Okay. And then if -- if you're measuring at some other point in the wafer that's, for

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example, 290 degrees, it needs to stay within 10 degrees of that?

A Yes.

And like I said, the edges are almost always colder than the center.

Q So essentially the staying within 10 degrees is within 10 degrees of whatever you've measured the temperature at?

A Right.

The reality is one only measures the temperature where the temperature sensor is. There might be two temperature sensors, there might be three, but, you know, they're not everywhere.

Q Okay. So -- and based on whatever that temperature sensor is measuring, a person of ordinary skill in the art would understand the temperature of the substrate substantially constant to be within about 10 degrees of whatever that measurement is.

Do I understand that right?

A Yes.

And that is how one sets processes. Any -- any parameter for a process typically has a range where you say 1,000 watts plus or minus 20 watts, or 300 degrees plus or minus 5 degrees, or something.

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So there's always a process setting, so that's -- one of skill in the art would understand that 10 degrees is the process setting for temperature control. That -- that defines "substantially constant."

Q Let me direct your attention, Dr. Glew, back up to Page 2 of the opening claim construction brief.

And do you see starting at, I guess, halfway down Page 1, there's kind of a brief overview or summary of the Demaray patents that's basically Section 2?

A I'm sorry. I'm on Page 2, Section 3?

Q And I'm sorry. So on -- on the bottom of Page 1, there's a Section 2 that's titled "The Demaray Patents."

Do you see that?

A Yes.

Q And if you go into the top of Page 2, the last sentence reads "An insight of the inventors was that a narrow band rejection filter can be used to protect the DC power supply from damaging feedback from an -- from a RF bias."

Do you see that?

A Yes.

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Q Do you agree with that statement?

A I think that's lawyer speak. It's sort of shorthand. There's a lot more to it than that.

Q You would agree that a person of ordinary skill in the art at the time of the invention would know that if a power supply at risk of getting damaging feedback from a RF bias -- that you would put a filter in there to block that RF energy, right?

MR. WELLS: Objection to form.

And I instruct the witness not to answer.

BY MR. OU:

Q Are you going to follow your counsel's instruction?

A Yes.

Q Okay. At the time of the invention, what are the different ways that a person of ordinary skill in the art working in PVD systems would understand of how to protect a DC power supply from damaging feedback from a RF bias?

MR. WELLS: Objection to form.

And I instruct the witness not to answer.

THE WITNESS: I'm turning on my lights.

MR. OU: Dr. Glew, if you don't mind, let's go off the record. I could be wrapping up, but I

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just want to check some notes. So if you don't mind, give me -- let me take like a five- -- five-, ten-minute break, and then we can probably wrap up. Okay.

THE WITNESS: Okay.

THE VIDEOGRAPHER: We are going off the record at 18:56.

(A recess was taken from 6:56 p.m. to 7:08 p.m.)

THE VIDEOGRAPHER: We are back on the record at 19:08.

MR. OU: Dr. Glew, could you pull back up Exhibit 10 for me? This is the -- and turn to the --

THE WITNESS: I have it.

MR. OU: Okay. And -- and I want to draw your attention back to Paragraph 4 of Dr. Demaray's declaration, which is on the page that ends in 1134.

THE WITNESS: Okay. I am at Page 1134.

BY MR. OU:

Q Okay. Would you agree that a person of ordinary skill in the art reading the second sentence of Paragraph 4 of his declaration would understand that the necessity of the narrow band rejection filter as opposed to some other type of

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filter is needed in order to preserve the square wave shape of the power supply signal?

MR. WELLS: Objection to form.

And I instruct the witness not to answer.

MR. OU: And, Maclain, just so I understand, on what basis?

MR. WELLS: It appears you're making noninfringement arguments and doctoring up equivalence arguments. You're not asking him what the meaning of a narrow band rejection filter is.

You asked that earlier, he's addressed that. You asked him about the other language and he addressed that. But now it appears that you're making noninfringement arguments and DOE arguments.

MR. OU: Well, I'm not, he's -- Dr. Glew has opined that the square wave -- or a person of ordinary skill in the art would not understand the square wave aspect to be a part of the proposed construction, so I -- if you're going to sustain your objection, then, you know, it is what it is, we can take it up with the court, but --

Q Are you going to follow your counsel's instruction, Dr. Glew?

A Yes.

MR. OU: Okay. And you're going to

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maintain your objection, Maclain?

MR. WELLS: I'm rereading your question just to make sure.

Yes, I'm maintaining my objection.

MR. OU: Okay. Let me, maybe, ask a -- a different question, and we'll see what happens.

Q Dr. Glew, you understand that when the applicants first filed their applications for these patents-in-suit, they didn't include a limitation that it be a narrow band rejection filter, it was just a filter to begin with?

Is that consistent with your understanding of your review of the file history?

MR. WELLS: Objection to form.

THE WITNESS: My general recollection is that there were some amendments.

MR. OU: Okay. And -- and those -- and those amendments including -- included further narrowing the claim to require a narrow band rejection filter as opposed to other types of filters.

Q You would agree, right?

A My general recollection is yes, they narrowed the claim with that language, or they -- they -- that's my general recollection. If you want

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to put that office action rejection and their response in front of me, I'd be happy to confirm it.

Q Just based on your review of the file, sir, you agree that the claims were narrowed to include the further limitation that it be a narrow band rejection filter as opposed to any other type of filter, right?

MR. WELLS: Objection to form.

THE WITNESS: I recall that they were narrowed with additional claim limitations. I believe that was one of them, but I -- you know, if you want to put the claim language -- or excuse me -- the -- the rejection and the office action and the response in front of me, I'd be happy to look at it.

If you want to -- if you want to represent that, then I can answer the question accordingly.

MR. OU: Sure.

I'll -- I'll represent that -- that the original claims did not require it to be a narrow band rejection filter as submitted by the applicants.

Q So you would agree, then, with that representation, that the claims were narrowed through prosecution to include -- to limit the

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filter to specifically a narrow band rejection filter, right?
MR. WELLS: Objection to form; and so the record is clear, after this question, your time is up, Phil.
You can answer.
THE WITNESS: With that limitation, then -- with that representation, then yes, they were narrowed to include a specific type of filter, a narrow band.
(Mr. Ou and Mr. Wells speak simultaneously.)
MR. WELLS: -- we want to take a break first.
MR. OU: Wait, wait, wait. Hold on.
Are -- are you shutting down my time? Because I only have a few more questions left and I do think, given the court's ruling today as to the inappropriateness of your speaking objections, which took up a lot of my time, I'm probably entitled to more time than the exact seven hours that you stopped on the dot.
But if you want to take a break and think about that -- we're, obviously, going to reserve the right to seek additional time, but I'll -- I'll

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defer to you. If you -- if want to shut down the deposition as to my questioning, that's -- that's your prerogative.
MR. WELLS: Well, I think the record reflects that you asked about noninfringement, you asked about invalidity, you asked about IPRs, you put references from the IPRs before the witness and spent time on those.
So no. I think the record shows that if any -- if there was any waste of time, it was on your side. So the seven-hour point has been reached; and given your conduct at the deposition, I think it's appropriate that it stop.
We're going to take a break, and then I'm going to do a couple of redirects, and then we'll finish up.
MR. OU: Okay. Well, I disagree with your representations and characterizations of our -- our questions, but the record will speak for itself.
MR. WELLS: Yep.
THE VIDEOGRAPHER: We are going off the record at 19:14.
(A recess was taken from 7:14 p.m. to 7:20 p.m.)
THE VIDEOGRAPHER: We are back on the

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record at 19:20.
EXAMINATION
BY MR. WELLS:
Q Dr. Glew, earlier today there were some questions about whether or not you reviewed the parent file history for the '657 patent.
Do you recall that?
You're muted.
A Generally, yes.
Q And do you understand that the last three digits of the parent patent to the '657 is the '356 patent?
MR. OU: Object to form.
THE WITNESS: Yes, I do.
BY MR. WELLS:
Q And did you review the '356 patent's file history in preparing your opinions on claim construction?
MR. OU: Objection; form.
THE WITNESS: Yes, I did.
I cited to it in Paragraph 21 of my declaration.
MR. WELLS: And in addition, there were some discussions earlier today about manuals for different reactors and material -- parts related

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thereto.
Q Do you recall those discussions generally?
A Generally, yes.
Q And are -- in your experience, are manuals to reactors and parts thereto all confidential -- or I mean all public?
MR. OU: Objection; form.
THE WITNESS: Most tool manuals are confidential. Some other manuals -- more specifically, component manuals -- are less likely to be confidential.
BY MR. WELLS:
Q And if the materials are confidential, then a person of skill in the art wouldn't have access to them, correct?
MR. OU: Objection; form.
THE WITNESS: A person of skill in the art wouldn't have access to confidential manuals.
BY MR. WELLS:
Q And there was some discussion earlier as well regarding the cathode current as a variable that's monitored in the reactors discussed in the Demaray patents.
Do you recall that discussion?
A Yes, generally.

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Q What happens to the cathode current when an arc is impending, when there's an impending arc event?
A As the insulating layer on the target breaks down, there will be a current rush that instigates the plasma arc.
Q And so if you wanted to monitor, for example, the cathode current, you could do that and do arc suppression at -- when you noted an increase in the cathode current; is that right?
MR. OU: Objection; form.
THE WITNESS: One should be able to monitor the cathode current to see the onset of an arc incident.
BY MR. WELLS:
Q And you could use that for arc suppression; is that right?
A Yes.
MR. OU: Object to form.
THE WITNESS: One could use knowledge of the impending arc to switch the voltage positive and suppress an arc.
MR. WELLS: I don't have any further questions.
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MR. OU: All right. I have a few follow-up questions.
FURTHER EXAMINATION
BY MR. OU:
A Dr. Glew, the first question is, did you discuss the substance of the testimony that you just gave with your counsel during the break?
MR. WELLS: You can instruct -- I instruct you not to answer on the basis of work product and attorney/client privilege.
You can answer the question as to whether we had any discussions. You can answer yes or no as to whether we had any discussions.
THE WITNESS: Yes.
BY MR. OU:
Q And what were -- what were the discussions that you had with your counsel during the break?
MR. WELLS: I instruct you not to answer.
MR. OU: Okay. Well, we're going to object, you know, to that instruction. You can't -- the witness is in the middle of a deposition. You can't discuss the substance of his testimony or prepare testimony during a break.
So are you going to continue to instruct the witness not to answer.

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MR. WELLS: I think the objection is appropriate.
MR. OU: Okay. We disagree.
Q Dr. Glew, did you -- did you discuss the substance of the testimony that you just gave with your counsel over the break? I just want a yes or no answer.
MR. WELLS: Objection.
And I instruct the witness not to answer.
BY MR. OU:
Q Did you talk about the testimony that you were about to give during the break with your counsel?
MR. WELLS: Okay. I instruct you not to answer.
And then, Phil, I've made my position clear, you've made your position clear. Move along or I'll cut it off. You've already used up your seven hours.
MR. OU: Okay. Well, I need a redirect based on the -- recross based on the redirect you just did.
I think the last question that your counsel had asked you, Dr. Glew, was whether or not one could use knowledge of the impending arc to switch

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the voltage positive and suppress an arc, and -- or at least that was your statement.
Q Is that right?
MR. WELLS: Objection to form.
THE WITNESS: Essentially, yes.
As I answered earlier in the day, the patent recommends that the current to the cathode is one of the things that determines the need for applying the positive voltage and that the target is indeed the cathode.
I'm looking at Column 5, Line 30. It says the Target 12 functions as a cathode when power is applied to it, and it's equivalently termed a cathode, so this is -- yeah, the same answer I gave earlier.
And then later on describes in that same column, that the -- the cathode voltage is a parameter in determining the need to apply the positive voltage.
BY MR. OU:
Q Can you point me to anywhere in the specification of the patents-in-suit where the applicants described functionality that would detect an arc event and then thereafter trigger arc suppression to quench the arc as was shown in

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Figure 5 of Exhibit 7?
MR. WELLS: Phil, that has nothing to do with the -- my examination, so move along.
Do you have any questions relating to -- that are actually proper recross?
MR. OU: Yeah. I think that goes directly to the questions you just asked, so if the witness will answer the question --
(Mr. Ou and Mr. Wells speak simultaneously.)
MR. OU: Well, the only time that that cathode voltage came up was when the witness was asking -- answering the questions that I was asking related to this very issue, so I disagree.
If you're going to instruct the witness not to answer, then that's your prerogative.
MR. WELLS: I'll allow this one question; but if you have any follow-up, then we're done, unless you have something that's actually related to the questions I asked.
MR. OU: This is related to the questions you asked, and I do have questions related to the other questions you asked.
Q So, Dr. Glew, can you answer the question I -- I just asked you? And I can re- --

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A Yes.
Q And I can reask the question again if you need me to.
A No.
The same reference that I cited to earlier in the day when you examined me, at Column 5, Line 41, "To obtain arc-free deposition, the pulsing frequency exceeds the critical frequency that depend on target material, cathode current, and reverse time."
So the cathode current is disclosed as something that would determine the need to pulse.
Q Where does it say that the cathode current is disclosed as something that would determine the need to pulse?
A During -- it starts -- starting at Column 5, Line 39. "During the positive period," and the positive period is the -- the positive pulse, "the insulating layer on the surface of 12 is discharged and arcing is prevented."
Then it goes on to say "To -- to obtain arc-free deposition, the pulsing frequency exceeds a critical frequency that depend on target material, cathode current, and reverse time."
Q But you would agree that the circumstance

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shown in Figure 5 of Exhibit 7 where an arc event occurs, it is detected and then the Sparc-le is triggered to suppress the arc, that's not an arc-free deposition, right?
MR. WELLS: Objection to form.
MR. OU: There's arcing occurring?
THE WITNESS: I think the point is that it's not a -- not a significant enough event to cause damage to the deposition.
The point -- the point of catching it early is that it doesn't necessarily cause a cascade that would trigger the plasma to have a little lightning bolt. If it doesn't do that, then it wouldn't be effective; but, you know, that's the point of it, is not to -- not to drop particles on the wafer.
BY MR. OU:
Q Earlier in your attorney's redirect of you, I believe you stated or provided an opinion that most tool manuals are confidential.
Did you say that?
A Yes.
Q What forms -- what is the basis of your opinion that most tool manuals are confidential?
A When I was at Applied Materials, we marked most of our tools confidential. When I get tool

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manuals in cases, they're usually marked confidential, I have to destroy them, give them back.
So most process tool reactor manuals are confidential. It doesn't mean there aren't some that aren't, but most I've seen are, certainly in the last number of decades.
Q And it's -- is it -- it's your opinion that if a tool manual is confidential, that it falls outside of the scope of what a person of ordinary skill in the art would understand, notwithstanding their experience working in a particular industry?
MR. WELLS: Objection to form.
THE WITNESS: Can you reask the question?
MR. OU: Yeah.
Q It's your opinion that if a tool manual is confidential, that falls outside of the scope of what a person of ordinary skill in the art would understand at the time of the invention, notwithstanding their experience working in a particular industry? In this case, PVD?
MR. WELLS: Objection to form.
THE WITNESS: In the -- if the manual is confidential, then it's not publicly available or disclosed, it could very well be outside the

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knowledge of one of skill in the art at the time.
BY MR. OU:
Q Okay. Is it your opinion that everything in a tool manual that's been marked confidential is actually confidential and not known to the public?
MR. WELLS: Objection to form.
THE WITNESS: There may be aspects of the manual that are kind of routine, but there are certainly aspects in manuals that have some of the latest and greatest information that the tool manufacturers would consider confidential, and it remains confidential for a while.
BY MR. OU:
Q So, for example, if a power supply tool manual disclosed a typical application that had DC power to the target and RF bias to the substrate, and that type of configuration was also disclosed in publicly available information, you would agree that that part of the manual, that's not confidential information that wouldn't have been known to the person of ordinary skill in the art, right?
MR. WELLS: Objection to form.
THE WITNESS: Can you repeat that question?
MR. OU: Yeah.
Let's say, for example, a power supply tool

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manual like the MDX power supply manual that we looked at earlier disclosed typical application of using that power supply that would be in a configuration that has a DC power to the target and RF bias to the substrate, and that same type of configuration was disclosed in publicly available information that was not confidential.
Q You would agree that that portion of the manual would not be considered confidential such that it would be beyond the knowledge of a person of ordinary skill in the art, right?
MR. WELLS: Objection to form.
And I instruct you not to answer.
MR. OU: Okay. Well, you asked a redirect on the question. But I'll ask a slightly different question.
Dr. Glew, let's say, for example, that a power supply tool manual disclosed a typical application of that power supply, and that same application was publicly available in other sources of information that was not confidential.
Q You would agree that that portion of the manual would not be considered confidential such that it would be beyond the knowledge of a person of ordinary skill in the art, right?

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MR. WELLS: Objection to form.
Instruct you not to answer.
BY MR. OU:
Q Dr. Glew, is it your testimony that every portion of a tool manual that's been marked confidential is beyond the knowledge of a person of ordinary skill in the art?
A No --
MR. WELLS: Objection to form.
But go ahead.
THE WITNESS: -- not every portion is beyond the scope of one of skill in the art, or knowledge; but there are going to be portions that are if it's marked confidential.
MR. OU: Okay. Persons of ordinary skill in the art could rely on their knowledge from working in the industry, and that would be within the scope of a person of ordinary skill in the art's knowledge at the time of the invention when assessing what a POSITA would understand a -- a particular patent to cover.
Q You would agree, right?
A Repeat that question, please.
Q A person of ordinary skill in the art can rely on their own knowledge from working in a

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particular industry -- industry, and that knowledge would be within the scope of what a person of ordinary skill in the art at the time of the invention would know when assessing trying to understand the scope of a particular patent, right?
MR. WELLS: Objection to form.
THE WITNESS: A person of skill in the art can generally rely upon their knowledge; however, if they have knowledge that is not public, that is confidential, trade secret, I wouldn't expect that that would be considered as part of the knowledge of POSITA -- of a general POSITA.
BY MR. OU:
Q And you would agree that whether or not that information is trade secret, that depends on the information, right?
It would depend on whether or not that information was actually trade secret material or it was something that would have been readily understood by a person of ordinary skill in the art, right?
MR. WELLS: Objection to form.
THE WITNESS: It could be trade secret or simply confidential, highly confidential. There is information that skilled professionals have that

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other people don't have at tech companies.
BY MR. OU:
Q Well, if information that's -- that's labeled as confidential was well known to persons of ordinary skill in the art, you would agree that that information would fall within the knowledge of a person of ordinary skill in the art, right?
MR. WELLS: Objection to form.
And I'm going to instruct you not to answer. This is going so far afield of what was actually asked, it just goes to -- sorry. I'm instructing you not to answer.
Phil, do you have any other questions that are related to actually what I asked?
MR. OU: Well, this line of questions is related to the questions that you asked; but if you're going to shut down the deposition, this was the last follow-up question I had, so I will defer to you. If you're shutting down the deposition, that's your prerogative.
MR. WELLS: I'm instructing him not to answer and I understand that you're done with your questioning.
Okay. We can go off the record.
MR. OU: I am with the caveat I am done

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with my questioning because you're shutting down the deposition. We will reserve the right to seek additional time with Dr. Glew based on the previous objections and issues that we've raised.
But I don't want to belabor the point and I'm sure you'll reserve and take your own position on that issue, and we can take it up with the court if needed.
(Mr. Chaikovsky and Mr. Wells speak simultaneously.)
MR. WELLS: -- and we'll take it up with the court as necessary.
MR. CHAIKOVSKY: Sorry. Apologize. This is Yar Chaikovsky butting in here a little bit at the end.
Could we -- before we shut down and go of the record, and everyone made their reservations, could we take a one-minute break before everyone goes home? I just want to discuss with our team here.
So if we can just go off the record, not close the deposition. We may come back, but we may come back and just say the deposition is over.
THE VIDEOGRAPHER: Okay. We are going off the record at 19:38.

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(A recess was taken from 7:38 p.m. to 7:42 p.m.)
THE VIDEOGRAPHER: Back on the record at 19:42.
BY MR. OU:
Q Dr. Glew, do you recall on redirect by your counsel, you were asked whether or not you had reviewed the parent application file history to the patents-in-suit and you revised your testimony to -- to say that you actually had?
Do you recall that testimony?
MR. WELLS: Objection to form.
THE WITNESS: Generally I recall that, yes.
BY MR. OU:
Q Okay. Now that your recollection has been refreshed as to what portions of the file history that you did review, other than the file histories for the patents-in-suit and the parent application, did you review the file histories of any of the other applications in this patent family?
A I don't recall reviewing any other applications, file history applications.
MR. OU: Okay. Yeah, I have no further questions, then, thank you.
MR. WELLS: Okay. We can go off the

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record.
THE VIDEOGRAPHER: Okay. We are going off the record at 19:44.

(Off the record at 7:44 p.m. PST.)

ACKNOWLEDGMENT OF DEPONENT

I, Alexander David Glew, Ph.D., do hereby acknowledge that I have read and examined the foregoing testimony, and the same is a true, correct and complete transcription of the testimony given by me and any corrections appear on the attached Errata sheet signed by me.

_____ _____

(DATE) (SIGNATURE)

I, the undersigned, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth with all participants appearing remotely before me; that any witnesses in the foregoing proceedings, prior to testifying, were duly sworn or affirmed; that a record of the proceedings was made by me using machine shorthand, which was thereafter transcribed under my direction; that the foregoing transcript is a true record of the testimony given.

Further, that if the foregoing pertains to the original transcript of a deposition in a federal case, before completion of the proceedings, review of the transcript [ ] was [X] was not requested.

I further certify I am neither financially interested in the action nor a relative or employee of any attorney or party to this action.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: March 5, 2021

Rhonda Norberg

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Rhonda Norberg
CSR No. 9265, CCRR No. 185

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