

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5 PENUMBRA, INC.,

6 Petitioner,

7 v.

8 RAPIDPULSE, INC.,

9 Patent Owner.

10
11 Case IPR2024-01261

12 Patent 11,406,402

13
14
15 Deposition of IAN ROSS, MD

16 Conducted virtually via Zoom

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21 Reported by: THERESA A. VORKAPIC,

22 CSR, RMR, CRR, RPR

1
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3 virtually via Zoom, pursuant to notice before
4 Theresa A. Vorkapic, a Certified Shorthand
5 Reporter, Registered Merit Reporter, Certified
6 Realtime Reporter, Registered Professional
7 Reporter and a Notary Public in and for the State
8 of Illinois.
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A P P E A R A N C E S

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C O N T E N T S

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E X H I B I T S

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1 P R O C E E D I N G S

2 THE REPORTER: Would you raise your right
3 hand, please.

4 (The witness was duly sworn.)

5 IAN ROSS, MD,
6 called as a witness herein, having been first duly
7 sworn, was examined and testified as follows:

8 EXAMINATION

9 BY MR. SANDERS:

10 Q Thank you. Good morning, Dr. Ross.

11 A Good morning, Mr. Sanders.

12 Q Could you please state your full name for
13 the record.

14 A Ian Beaudoin Ross.

15 Q What's your address?

16 A Home address or business address?

17 Q Home address.

18 A 1605 Pegfair, P-e-g-f-a-i-r, Estates Drive
19 in Pasadena, 91103.

20 Q Is there any reason you cannot testify
21 truthfully and accurately today?

22 A No.

1 Q Other than being on this Zoom, are you
2 communicating with anyone in any other way?

3 A At the present time no. And I've turned
4 off my phone.

5 Q Perfect. What did you do --

6 A You know what I will, I'll turn it off.
7 Let me turn it off, please. It's on silent but
8 off is even better I would think. There. It's
9 off.

10 Q Thank you. What did you do to prepare for
11 your deposition?

12 A I read my declaration, I read through some
13 of the exhibits that had been provided for me in
14 terms of this binder that's very conveniently
15 located and I met with Mr. Oda, Counsel for
16 Penumbra yesterday.

17 Q Have you spoken with Mr. Brown,
18 petitioner's other expert in this proceeding?

19 A No. I've heard his name mentioned but
20 that's it.

21 Q Have you reviewed his declaration?

22 A I don't believe that it was provided to me

1 and I don't think that I have seen it. I don't
2 think so, no.

3 Q Have you reviewed any deposition
4 transcripts in preparation for your deposition
5 today?

6 A When I was meeting Mr. Oda yesterday,
7 there was a brief point where he pulled up my
8 deposition from the previous IPR, I believe it's
9 what they call IPR No. 1, and we went over I think
10 just one segment of that but that's the only
11 deposition that I've reviewed that I can recall.

12 Q Today I'd like to discuss with you your
13 declaration and some of the exhibits that are
14 cited in your declaration. I see you have them in
15 front of you in binders, so you're free to use
16 those copies. If it's helpful for us to put it on
17 the screen, happy to do that, too.

18 A Okay.

19 Q Why don't we start with your declaration
20 in this proceeding which is Exhibit 1023.

21 (A certain document was marked Deposition
22 Exhibit 1023 for identification, as of

1 05/16/2025.)

2 AV TECH ABRAMS: Counsel, are we marking
3 this at one or are we starting at is it 1023 the
4 marking you want?

5 MR. SANDERS: Correct, we'll just keep the
6 same exhibit number that it already has, 1023.

7 AV TECH ABRAMS: Thank you.

8 BY MR. SANDERS:

9 Q I'd like to direct your attention to
10 Page 8, Paragraph 15.

11 A I'm there.

12 Q You state in the last sentence of that
13 paragraph: "The concept of inducing forward flow
14 (of dubious benefit and safety in the setting of
15 aspiration thrombectomy for the treatment of acute
16 thrombotic stroke) to unclog a blocked catheter
17 through predetermined periods of positive pressure
18 was also described in Rubinstein."

19 Do you see that?

20 A I do.

21 Q What do you mean by the concept of
22 inducing forward flow?

1 A That would refer to some forward momentum
2 of liquid -- we're talking about aspiration
3 catheters here, so it would refer to some forward
4 movement of liquid within the catheter, flow,
5 yeah.

6 Q You anticipated my next question, which is
7 what do you mean by forward flow?

8 A There's no flow, there's backward flow and
9 forward flow. So backward flow -- these catheters
10 are designed to aspirate, so that's a very good
11 question.

12 So you really are most of the time having
13 a negative pressure and having what -- it's the
14 intended flow is backward flow and forward flow
15 would be flow in the opposite direction at the
16 distal end of the catheter, not necessarily at the
17 end of the catheter, but flow within the catheter.
18 I think we're referring to flow within the
19 catheter, yeah.

20 Q Why is it of dubious benefit and safety
21 in the setting of aspiration thrombectomy for the
22 treatment of acute thrombotic stroke?

1 MR. ODA: Objection to form.

2 THE WITNESS: May I answer the question?

3 MR. ODA: Yes.

4 BY THE WITNESS:

5 A Perhaps that's not the best word but it is
6 certainly attendant with some risk and generally
7 speaking most of the time when one is doing an
8 aspiration thrombectomy, there's either zero
9 pressure or negative pressure within the catheter
10 system to promote reverse flow or backward flow as
11 opposed to forward flow.

12 The risk is that if you have too much
13 forward flow, you can push a thrombus out the end
14 of the catheter and cause the thrombus to go
15 further up vascular tree and cause perhaps a
16 problem that would be more difficult to treat.

17 BY MR. SANDERS:

18 Q This will be building off your prior
19 answer but I'd like to direct your attention
20 forward to Page 9, Paragraph 17.

21 A I see it.

22 Q Why is the potential for embolization of

1 clot debris downstream in the circulation of the
2 patient's vasculature one of the major limitations
3 of aspiration thrombectomy devices?

4 A Again, limitation is a word -- the
5 procedure of mechanical thrombectomy be it with an
6 aspiration catheter or with a stent retriever has
7 an attendant risk of distal embolization or what's
8 referred to here as embolization of clot debris
9 downstream in the circulation of the patient's
10 vasculature. That's an attendant risk.

11 Q You state in the next sentence: "This
12 risk can be remarkable with large and organized
13 clots, especially those that are challenging to
14 fully remove due to their physical consistency
15 fibrin content".

16 Do you see that?

17 A Yes, I do.

18 Q What do you mean by: This risk can be
19 remarkable with large and organized clots?

20 A Am I allowed to read the next sentence
21 because I believe that explains it?

22 Q Sure.

1 A It says: These clots may be easier to
2 dislodge from the site of occlusion, which is a
3 good thing, but they may fragment during the
4 retrieval process. So they can break up and go
5 forward while you are pulling them out and the
6 larger clots are more dangerous that way because
7 you can't always get all of the clot into the
8 aspiration thrombectomy catheter.

9 Q To make sure I understand, is it your view
10 that the clots that are large and organized are
11 easier to dislodge but more likely to fragment?

12 A Well, they're not all like that. It's
13 just -- there's just a tendency with a larger clot
14 to have more problems with distal embolization.
15 It's more size related than "organized clot"
16 related. The larger ones are probably more often
17 organized. They're bigger clots that have been --
18 usually these start in the heart and they've been
19 formed in the heart and they've been there for a
20 while and then they family broke off and to get
21 that big they are often what we call organized or
22 firmer.

1 Q Those firmer clots have a higher fibrin
2 content than clots that are not at firm?

3 A I'm not a pathologist so I can't really
4 tell you for sure. I can tell you physically when
5 we see them or take them out, they tend to be
6 firmer. An acute clot is extremely friable. An
7 organized clot, which has been around longer, as
8 you say may have fibrin in it. I can't really
9 speak to the exact biochemical makeup of them, but
10 generally the bigger ones tend to be firmer, yes.

11 Q What do you mean by an acute clot?

12 MR. ODA: Objection. Form.

13 BY THE WITNESS:

14 A If you took some blood out of me and put
15 it in a little bowl, within five minutes it would
16 form a rubbery mass like Jello. That's an acute
17 clot. That's not an old clot. A chronic clot is
18 when it's been there for a long time, hyperacute,
19 I suppose, but that's what I mean by an acute
20 clot.

21 BY MR. SANDERS:

22 Q I'd like to direct your attention to the

1 next paragraph, Paragraph 18 on Page 10, to the
2 first sentence there. You state: "As taught by
3 Grey, Ofek, Yang and Mullins, aspiration
4 thrombectomy systems that maintain controlled
5 levels of suction force at the distal end of the
6 catheter can help protect the patient from distal
7 embolis migration and thus prevent forward flow".

8 Do you see that?

9 A Yes.

10 Q How does maintaining controlled levels of
11 suction force at the distal end of the catheter
12 help protect the patient from distal embolis
13 migration and thus prevent forward flow?

14 MR. ODA: Objection, form. Was that a
15 question?

16 BY THE WITNESS:

17 A Yeah, I was going to ask you, was that a
18 question? I'm not clear.

19 BY MR. SANDERS:

20 Q Yes, I'll repeat it.

21 How does maintaining controlled levels of
22 suction force at the distal end of the catheter

1 help protect the patient from distal embolus
2 migration and thus prevent forward flow?

3 A If there's negative pressure at the end of
4 the catheter and the catheter is against the clot,
5 it will have very often or usually or almost
6 always pull the clot into the catheter. So it's
7 sort of sucked in there, you know. We all know
8 what a suction device is, so it sort of sucked it
9 in there.

10 So if you've got a negative pressure there
11 you're holding the clot on. I don't know how to
12 explain it a different way. People know what
13 suction is. It's a negative pressure. So if you
14 have a negative pressure holding a somewhat soft
15 mass against the catheter, that mass is going to
16 be not stuck, stuck is the wrong word, but will
17 cling to it just because of the difference in
18 pressures.

19 And then the other question was -- there
20 was two parts to that question, oh, prevent
21 forward flow. You don't get forward flow if
22 you've got reverse flow or negative pressure

1 generally speaking. I don't know -- if you have
2 less pressure at the proximal end of the catheter
3 than at the distal end of the catheter, the
4 general tendency for flow is going to be towards
5 the proximal end of the catheter, what we've been
6 referring to as reverse flow.

7 Q When you say in the first sentence of
8 Paragraph 18 or refer to aspiration thrombectomy
9 systems that maintain controlled levels of suction
10 force at the distal end of the catheter, do you
11 mean always have some level of suction force at
12 the distal end?

13 MR. ODA: Objection. Form.

14 THE WITNESS: Sorry. Did you need to say
15 your objection again?

16 MR. ODA: No.

17 BY THE WITNESS:

18 A Maybe you should ask the question again.
19 Ask the question again. I'm sorry. I lost my --

20 BY MR. SANDERS:

21 Q Sure. When you refer to aspiration
22 thrombectomy systems that maintain controlled

1 levels of suction force at the distal end of the
2 catheter, do you mean always have some level of
3 suction at the distal end?

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A That's not a question that I have an easy
7 answer for because you used "always."

8 There's not always negative pressure
9 there. If a system is turned on depending what
10 the system is, it will be a negative pressure.
11 Sometimes we will turn the system on and off,
12 sometimes we even push forward a little bit just
13 to, you know, get the clot to maybe come into the
14 catheter more, so always that's not a good
15 question -- I shouldn't tell you it's a good or
16 bad question, but I can't answer that question
17 really in a very good way.

18 BY MR. SANDERS:

19 Q Let me rephrase.

20 When you refer to aspiration thrombectomy
21 systems that maintain controlled levels of suction
22 force at the distal end of the catheter, are you

1 referring to systems that have some level of
2 suction at the distal end when the system is
3 turned on?

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A I think the answer to that is yes. Maybe
7 I should qualify my answer a little bit.

8 The aspiration thrombectomy systems that I
9 am currently using and that I am aware of for the
10 most part have a steady negative pressure. So,
11 yes, most of them will maintain a controlled level
12 of suction force at the distal end of the catheter
13 to help protect the patient from distal embolus
14 migration that's what I said, but I'm not
15 answering your question.

16 BY MR. SANDERS:

17 Q I think you have. Let me follow-up on
18 your answer.

19 How long have you been doing procedures
20 with as aspiration thrombectomy systems?

21 A I don't know for sure. Probably at least
22 15 years.

1 Q In that at least 15 years, have the
2 systems that you've used for aspiration
3 thrombectomy applied negative pressure -- let me
4 start again.

5 In at least 15 years, have the systems
6 that you've used for aspiration thrombectomy
7 applied steady negative pressure when those
8 systems are turned on?

9 MR. ODA: Objection to form.

10 BY THE WITNESS:

11 A How do you define turned on, when the
12 system is turned on?

13 BY MR. SANDERS:

14 Q I was using the language that you used
15 earlier.

16 What's your view of what turned on means?

17 A Well, there are many parts to the system.
18 There is a catheter. That's part of the system.
19 There are connectors. That's part of the system.
20 There's a tube that goes from the connector on the
21 catheter to the vacuum source. There is an on/off
22 switch.

1 To answer your question, the earliest
2 generation of thrombectomy catheters actually had
3 you induce forward -- I won't call it flow but
4 forward motion or momentum with something called
5 separator so you actually push something at the
6 end of the catheter to loosen the clot up so it
7 would be aspirated in.

8 So I think you asked if they've always
9 been like that for me over the last 15 years and
10 the answer is no. That company got rid of that
11 separator thing, which was inducing a little bit
12 of forward momentum if not flow.

13 So does that answer your question? The
14 systems have changed over the years a little bit,
15 you know. They have.

16 BY MR. SANDERS:

17 Q I'm referring to the situation when the
18 on/off switch is in the on position.

19 A Okay. The systems -- go ahead. Ask your
20 question again.

21 Q I was just going to make it clearer. I
22 think we're on the same page, but when the systems

1 that you're using have the on/off switch in the on
2 position, do those systems apply steady negative
3 pressure?

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A It's my understanding that they do but
7 they have not always which you asked.

8 BY MR. SANDERS:

9 Q When you say they have not always, what do
10 you have in mind?

11 A As I said, when I first started using
12 these systems, one of the manufacturers came
13 with -- taught the art at the time was that you
14 would push the separator which was a little
15 bulbous catheter out the end of the catheter which
16 was at rating -- which would definitely change the
17 pressure into the catheter. So it would not --
18 there would not be a steady negative pressure at
19 the end of the catheter 15 years ago or roughly
20 whenever it was that or 20. I don't know.
21 Whenever it was that I started using these
22 systems.

1 Q You mentioned that the company got rid of
2 the separator, is that right?

3 MR. ODA: Objection. Form.

4 BY THE WITNESS:

5 A I don't know if they got rid of it. I
6 don't see it, and I don't use that technique
7 anymore. You'd have to ask the company if they
8 got rid of it.

9 BY MR. SANDERS:

10 Q Is there a reason you don't use that
11 technique anymore?

12 MR. ODA: Objection. Form.

13 BY THE WITNESS:

14 A It does not seem to be necessary given the
15 current technology, and I am not aware if it's
16 even available, but more importantly, the
17 technology has improved to the point where it
18 doesn't occur to me that I would want or need
19 that.

20 BY MR. SANDERS:

21 Q How has the technology improved?

22 MR. ODA: Objection. Form.

1 BY THE WITNESS:

2 A It's mostly catheter technology. The
3 catheters have improved. We get better access.
4 They seem to work better. I don't know what
5 exactly the company did, the engineers, to make
6 the catheters work better, but they not only get
7 to the clot better and there are many more sizes
8 so we can size the catheter, you know, to where
9 the size of the vessel that the clot is in and
10 they seem to pull in the clots better.

11 BY MR. SANDERS:

12 Q After the first sentence of Paragraph 18
13 that we were discussing a few minutes ago, you
14 cite a few references including Ofek, right?

15 A Correct.

16 Q You reviewed the Ofek reference, correct?

17 A I reviewed the Ofek reference, yes.

18 Q Let's take a look at the Ofek reference
19 which is I think Exhibit 1007.

20 A I just looked through that again, yeah.

21 Q You have that in front of you there?

22 A I have Column 4, Lines 21 to 44.

1 Q I'll start with a more general question
2 about Ofek.

3 Ofek discloses a patency device, right?

4 A That's the first three words of their
5 abstract, a patency device for catheter assemblies
6 and other elongate tubular devices used for
7 establishing access blah blah blah -- yes, that's
8 their language, yes.

9 Q The term patency means to be open or
10 unobstructed, right?

11 MR. ODA: Objection. Form.

12 BY THE WITNESS:

13 A That's my understanding of the word.

14 BY MR. SANDERS:

15 Q Is a patency device different than an
16 aspiration thrombectomy system?

17 MR. ODA: Objection. Form and scope.

18 BY THE WITNESS:

19 A We're just talking about aspiration
20 thrombectomy systems here, so I wouldn't say
21 they're one in the same. It's sort of an
22 iteration or add-on feature to an aspiration

1 thrombectomy system designed to keep the catheter
2 open or patent as you said.

3 BY MR. SANDERS:

4 Q Let me direct you to in Ofek Column 2,
5 paragraph that begins at Line 56.

6 A Yes, I see that in there.

7 Q Specifically in the last two sentences in
8 that paragraph, I'll give you a chance to look at
9 them first and then let me know when you're ready
10 and I can ask the question.

11 64, is that where you are?

12 A Yes. Yes, I just read those through.

13 Q Ofek discloses using impulses to dislodge
14 occlusions that are formed in the lumen of the
15 catheter, right?

16 MR. ODA: Objection. Form.

17 BY THE WITNESS:

18 A That's what the wording suggests.

19 BY MR. SANDERS:

20 Q Ofek does not discuss removing a clot that
21 is outside of the catheter, right?

22 MR. ODA: Objection. Form and scope.

1 BY THE WITNESS:

2 A This is a long patent for me, you know.
3 I'm not a -- I guess it's a short one. It's only
4 11 columns in terms of wording, but I just don't
5 remember every last bit of the patent. So I
6 really can't answer that question. I believe
7 they're referring to keeping a catheter open.
8 You're quite right, but...

9 BY MR. SANDERS:

10 Q Let's go now to the portion of Ofek that
11 you had cited in Paragraph 18 and that's Column 4.
12 It's the paragraph Lines 21 through 44.

13 A Yes.

14 Q In that paragraph and in particular at
15 Lines 29 to 37 of that paragraph, Ofek discloses
16 using high pressure impulses to dislodge the
17 occlusion that are not of sufficient duration to
18 push it out of the distal end, right?

19 A Correct. That's right there. There's a
20 sentence that says that.

21 Q Then I'd like to direct your attention to
22 the rest of the paragraph from Lines 37 to 44.

1 Ofek uses negative pressure following the
2 high pressure impulses to prevent the clot from
3 exiting the distal end, right?

4 A That's what's implied, a subsequent
5 negative pressure, rest period following each
6 impulse connect to prevent escape of the clot from
7 the catheter in one embodiment.

8 Q Then I want to actually turn to the other
9 embodiment, the last section of Ofek I'll ask you
10 about. It starts Column 6 at Line 64 and the
11 paragraph ends at Line 2 of Column 7.

12 A Yes, I just looked through that line,
13 those lines, yes, that paragraph.

14 Q Ofek teaches preventing the formation of
15 an occlusion in the catheter by preventing initial
16 adherence and growth of the occlusion in the first
17 place, right?

18 A That's what it says, but I'll be honest
19 with you, I'm not exactly sure what they mean by
20 that sentence, you know, when they say to prevent
21 the formation of an occlusion by preventing
22 initial adherence and growth of the occlusion in

1 the first place. I think they're referring to the
2 catheter clogging up and they're just trying to
3 keep it open by having this -- these impulses,
4 little bits of varied pressure and flow changes,
5 but I'm not -- again, I don't -- it's there. It's
6 written down. I'm not disputing what they wrote
7 down. I'm just not totally sure that there's not
8 more than one interpretation of what's been said.
9 That's all.

10 Q Let me ask this way, then.

11 How would you describe what Ofek's device
12 does?

13 MR. ODA: Objection. Form.

14 BY THE WITNESS:

15 A I think with just a little bit of forward
16 flow or changes in pressure, it somehow keeps the
17 catheter open and from clogging up and it keeps it
18 having an ability to maintain some type of
19 probably reverse -- not probably. Keeps it
20 having -- keeps the system patent and able to
21 provide suction and aspiration at it's distal end.
22 That was my understanding of it, yes.

1 BY MR. SANDERS:

2 Q Now I'd like to go back to your
3 declaration.

4 A Certainly.

5 Q The next page, Page 11, Paragraph 19.

6 A I am there.

7 Q You state in the first two sentences: "It
8 is common for doctors conducting aspiration
9 thrombectomies to consider how best to protect the
10 patient from fragmentation of the clot and any
11 resulting distal migration of clot fragments
12 (emboli) one way to accomplish this is to maintain
13 a distal pressure less than that of the pressure
14 in the blood vessel or the patient's blood
15 pressure (i.e. physiological pressure)".

16 Do you see that?

17 A Right in front of me, yes. I see all of
18 that.

19 Q Can you explain how maintaining a distal
20 pressure less than that in the blood vessel or the
21 patient's blood pressure protects the patient from
22 fragmentation of the clot and any resulting distal

1 migration of clot fragments?

2 A If the clot has been sucked into the
3 distal end of the catheter, which is commonly
4 referred to as corking, if you can think of a wine
5 bottle with a cork in it and if you had negative
6 pressure in the wine bottle and it sucked the cork
7 in, the exact opposite of what would normally
8 happen, the feeling is that the whole situation is
9 much more stable. You've got a clot that's been
10 partially -- that's been stabilized and its
11 adherence is perhaps the wrong word, but it's been
12 pulled into the catheter and it's being held
13 there, and the whole situation is more stable.

14 So the feeling is it's just going to be
15 less likely to fragment because you're not
16 macerating it or moving it around.

17 Q Is it correct that as long as you maintain
18 the distal pressure in the catheter below that of
19 the blood vessel outside the catheter, then the
20 clot will not be pushed away from the distal end
21 of the catheter into the vasculature?

22 MR. ODA: Objection. Form.

1 BY THE WITNESS:

2 A Well, that can happen. You know, all
3 sorts of things happen. The idea is it's like
4 you're sucking with a straw, right, and you're
5 sucking and you've got something plugged up in the
6 end. I hate to use the word it's common sense,
7 but, you know, if you just have -- it doesn't
8 always work, but the goal is to, you know, cork
9 the clot in there and the feeling is that.

10 If you can do that and you maintain some
11 negative pressure at the end, the clot is going to
12 be stable and you're going to be less likely to
13 have fragmentation and distal embolization.
14 Generally speaking that's the goal. We can talk
15 about how, you know, I'm a practitioner, right,
16 because there are sort of some basic principles.
17 It doesn't mean that you don't do things
18 differently sometimes, but this is the general
19 principle, yes, if you're doing an aspiration
20 thrombectomy and the rationale is right there,
21 maintaining some negative pressure at the end of
22 the catheter and corking the clot.

1 BY MR. SANDERS:

2 Q In the next sentence after the two we just
3 discussed, you state: "The risk of distal
4 migration of emboli and forward flow may be
5 heightened in connection with dynamic aspiration
6 thrombectomy if a positive pressure source is used
7 to temporarily relieve the vacuum in the
8 catheter."

9 Do you see that?

10 A I can.

11 Q How does using a positive pressure source
12 to temporarily relieve the vacuum heighten the
13 risk of distal migration of emboli?

14 A I use the word may, you know, could is
15 another word, could possibly happen. I believe
16 it's all common sense. You're sucking on the
17 straw and then if you blow on the straw, there's a
18 chance that whatever's stuck in the end of the
19 straw can go flying out, you know. So it's sort
20 of what I was trying to say. I don't know that
21 that answers your question but --

22 Q I'm experiencing a technical difficulty at

1 the moment. I have some programs a crashing. Why
2 don't we go off record and give me a few minutes
3 to see if I can resolve this.

4 MR. ODA: No problem. Come back in five,
5 ten?

6 MR. SANDERS: Yes, that would be fine.
7 Hopefully I can do it in five.

8 (A recess was had.)

9 BY MR. SANDERS:

10 Q Dr. Ross, I'd like to focus back on
11 Paragraph 19 where we were previously on Page 11,
12 and specifically to the sentence that begins:
13 "Too high a positive pressure increases the risk
14 of fluid exiting the distal end of the catheter".

15 Do you see that?

16 A Paragraph 19?

17 Q Yes. It's about halfway down the
18 paragraph, the sentence begins on the righthand
19 side?

20 A I see it. It starts right at the end of
21 the line there, yes: "Too high a positive pressure
22 increases the risk of fluid exiting the distal end

1 of the catheter and of occlusive material breaking
2 free of a clot and traveling distally in the
3 vessel".

4 That's the sentence?

5 Q That's the sentence.

6 A Yes, I'm on it.

7 Q What do you mean by too high a positive
8 pressure?

9 A I mean a positive pressure that is
10 sufficient to increase the risk of fluid exiting
11 the distal end of the catheter and of occlusive
12 material breaking free of a clot and travelling
13 distally in the vessel. I just mean pressure that
14 is sufficient to cause that. What that exact
15 pressure is I can't tell you.

16 Q Is that a pressure above the pressure in
17 the blood vessel?

18 MR. ODA: Objection. Form.

19 BY THE WITNESS:

20 A I'm not a hydraulic engineer. I don't
21 know. I can't really answer that question
22 accurately. I can talk in vague -- not vague, I

1 can talk with broad brush strokes about the
2 concept, but I don't know if one millimeter
3 mercury pressure more at the end of the catheter
4 is going to -- if the clot is stuck in there
5 that's probably not going to be a problem, but if
6 you, you know, blew as hard as you could on the
7 end of the catheter, you would almost certainly
8 blow the clot out, so that would be too high a
9 pressure. There is a big difference between a
10 millimeter of mercury and a super high pressure,
11 and where that high pressure is, I can't tell
12 you.

13 BY MR. SANDERS:

14 Q And in the next sentence after the one we
15 were just addressing you state of the distal --
16 I'll start again:

17 "If the pressure at the distal end of the
18 catheter eclipses the amount of negative pressure
19 in the catheter provided by the vacuum source, it
20 is well known that the risk of forward flow out
21 from the distal end of the catheter would be
22 exacerbated."

1 Do you see that?

2 A I do.

3 Q Do you mean that if the pressure at the
4 distal end is above zero that increases the risk
5 of flow out of the distal end of the catheter?

6 A Sort of.

7 Q How do you say sort of?

8 A Give me a second and let me read that
9 sentence myself for a few seconds and I'll try to
10 answer a little better.

11 Q Sure.

12 A I think the sentence speaks for itself,
13 but ask your question again, please.

14 Q Sure.

15 Do you mean that if the pressure at the
16 distal end is above zero, that will increase the
17 risk flow out of the distal end of the catheter?

18 MR. ODA: Objection. Form.

19 BY THE WITNESS:

20 A Depends how you define zero, of course,
21 but, I mean, that if the pressure at the distal
22 end of the catheter is non-negative basically,

1 which would be another way of saying above zero,
2 however you zero things, if there's more pressure
3 inside the catheter than outside of the catheter,
4 which is sort of what I'm referring to, I think
5 common sense would dictate that you have a chance
6 of blowing something out the end of the catheter
7 that is stuck in there or coked as I've used.

8 BY MR. SANDERS:

9 Q Do you consider that to be undesirable?

10 MR. ODA: Objection. Form.

11 BY THE WITNESS:

12 A Not always. Not always, no. As we were
13 saying as a general principle, we generally like
14 mostly negative pressure. There may be times when
15 that would not be the case.

16 BY MR. SANDERS:

17 Q Are there times when you're performing
18 aspiration thrombectomy that you introduce
19 positive pressure?

20 MR. ODA: Objection. Form.

21 BY THE WITNESS:

22 A It can happen inadvertently, but we'll go

1 to what you mean intentionally, right?

2 BY MR. SANDERS:

3 Q Intentionally, yes.

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A It would be highly unusual for me to hook
7 a positive pressure source up to the catheter
8 because I don't have anything that exists like
9 that to push the -- and push fluid forward.
10 However, often we will push the catheter forward
11 which causes forward momentum within the catheter
12 and with the pressure off -- without the suction
13 on -- if we hook up the suction apparatus and it's
14 not engaging the clot, often we will advance the
15 catheter without the suction on and try to, you
16 know, engage the clot. So it would be unlikely
17 that I would want to induce forward flow or induce
18 higher pressure within the catheter.

19 BY MR. SANDERS:

20 Q I'd like to direct your attention to the
21 next page, next paragraph, Paragraph 20. In that
22 paragraph, in the middle of the page, you cite the

1 Mullins reference.

2 Do you see that?

3 A Yes, I think I cite the figures and some
4 paragraphs.

5 Q You reviewed the Mullins reference, right?

6 A I think that was my testimony earlier,
7 and, yes, that is correct.

8 Q Feel free to take a look at Mullins if
9 you'd like. It's Exhibit 1008. My first
10 questions are general. Let me know when you're
11 ready.

12 A I've got it right in front of me. I'm
13 sorry.

14 Q Okay.

15 A I can go to the page of Figure 47. I
16 thought you would direct my attention as you have
17 done in the past.

18 Q My initial questions are general.

19 A Okay, go ahead. I've got it in front of
20 me, so yes.

21 Q Mullins describes using a pressure sensor
22 along with high and low pressure limits to

1 determine whether to apply positive pressure or
2 next pressure, right?

3 MR. ODA: Objection. Form.

4 BY THE WITNESS:

5 A I don't know. I'm not an engineer. I
6 sort of got the general gist of what Mullins is
7 trying to say as an end user, but I really don't
8 know about how these sensors work.

9 And I do know from reading it and from
10 looking at the illustrations that there was
11 some -- and looking at the graphs that he could
12 induce positive -- he, that the patent sort of
13 describes inducing some forward flow or at least
14 positive pressure within the catheter system to
15 help move the clot back and forth within the
16 system, yes.

17 Did that answer your question? I don't
18 think so. You asked about various controllers and
19 stuff like that. I'm sorry. I don't -- I'm not
20 up on that. That sort of goes beyond my pay
21 level.

22

1 BY MR. SANDERS:

2 Q Let me ask it a different way.

3 What's your understanding of Mullins?

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A It's a system where they have
7 alternating -- they're able to alternate the
8 pressures within the aspiration catheter to help
9 with aspiration and part of the cycle that they
10 describe or how they set it up causes -- my
11 understanding was causes probably a little bit of
12 forward flow or higher than this zero pressure
13 that we were referring to earlier within the
14 system. That's my understanding of it.

15 BY MR. SANDERS:

16 Q Have you ever used a system that
17 alternates pressure to perhaps cause a bit of
18 forward flow?

19 MR. ODA: Objection. Form.

20 BY THE WITNESS:

21 A I've never used a system that
22 automatically does that.

1 BY MR. SANDERS:

2 Q Have you ever seen such a system?

3 MR. ODA: Objection. Form.

4 BY THE WITNESS:

5 A What do you mean by "seen," at a
6 professional meeting or some colleague using it?

7 Is that what you mean?

8 BY MR. SANDERS:

9 Q I mean although you may not have used it
10 yourself you might have seen it used by others or
11 in one of your conferences, for example?

12 MR. ODA: Objection. Form and scope.

13 BY THE WITNESS:

14 A Not that I recall.

15 BY MR. SANDERS:

16 Q You referred in your declaration to
17 Figures 47 to 50 of Mullins and Column 26 at the
18 end, Line 65 to Column 28, Line 64.

19 A Yes.

20 Q And you quoted a sentence from Mullins in
21 your declaration: "The pressure (being) further
22 increased until a high limit is reached. In one

1 embodiment this high limit is defined such that
2 the ingested clot may not be completely expelled
3 from the catheter."

4 What was your point in including that
5 quotation in your declaration?

6 MR. ODA: Objection. Form.

7 BY THE WITNESS:

8 A It's I guess to remind me when I'm in
9 front of you or just to make the point that they
10 do have -- as I just mentioned they do have this
11 concept of increasing the pressure within the
12 catheter and causing a little bit of forward flow
13 to maybe jig the clot back and forth to get it to
14 move along without causing so much pressure or
15 forward flow that the clot goes flying out the
16 end. I don't know what wizardry they use sort of
17 in terms of as I just mentioned computer chips or
18 valves opening and closing or sensors. I don't
19 know how they do that but that's my basic
20 understanding is that they have some way of doing
21 that.

22 BY MR. SANDERS:

1 Q Do you have any basic understanding of how
2 Mullins does what you just described to provide a
3 little bit of forward flow to maybe jiggled the
4 clot back and forth but not too much?

5 MR. ODA: Objection. Form.

6 BY THE WITNESS:

7 A Well, in was it Figure 47, there are
8 graphs that show that pressure going up a little
9 bit, if you look at Page 21 of 40 in my exhibit,
10 if you look at the bottom right at 47J, you can
11 see that there's pressures going up and down and
12 you see the pressure going above zero, which is I
13 think the zero we were talking about, for short
14 periods of time. It doesn't go -- the high limit
15 seems to be less high than the low limit in terms
16 of the deflection from zero. In other words,
17 there's more time, the area under the graph is
18 much greater at the low end than at the high end
19 and the peak of the high is much less than the
20 depth of the low, but how they do that, I don't
21 know. They graphically describe it and that's how
22 I understood it.

1 And, in fact, on that page if you follow
2 the 47E, 47F, 47G, 47H, 47J and just look at
3 the -- forget about the graph, if you look at the
4 illustration one can see the clot moving forward a
5 little bit on 47H and then on 47J being pulled
6 back even more. I think they illustrate the
7 concept at varying the pressure so that maybe the
8 clot will move in a little bit. It's like when a
9 kid is sucking on a -- or you may have had this
10 experience -- milkshake and you get a piece of ice
11 cream, you don't necessarily want to blow it all
12 the way out but if you put a little forward
13 pressure and suck again maybe the ice cream will
14 come up and not be blocked. That's sort of my
15 understanding of it.

16 BY MR. SANDERS:

17 Q You also cited Figures 47 and 50 that
18 appear a couple of pages later.

19 A Right.

20 Q What's your understanding of those
21 figures?

22 A Again, it's just pictures, graphs going up

1 and down and things happening with the clot and
2 then I believe that's 49 or sorry and those are
3 the 48s and if you look at 49, that's a little
4 hard for me to follow but I think it's just
5 suggests how the switches work going on and off to
6 cause these pressure variations and then my
7 understanding of Figure 50 is that there are
8 various programs that be run and various pressure
9 levels that could be set with the system
10 specifically. I don't know if those are
11 predetermined or there's some feedback loop or I
12 didn't -- some of the technical details would have
13 washed over me when I was looking at the
14 reference.

15 Q I'd like to go back to your declaration,
16 the same paragraph we were on, Paragraph 20, it's
17 a long paragraph?

18 A Yes.

19 Q I'd like to direct your attention to on
20 Page 12, the sentence that begins five lines from
21 the bottom, it begins: "Thus to reduce the reduce
22 the risk of forward flow..."

1 Do you see that?

2 A Yes, I'm on it.

3 "Thus to reduce the risk of forward flow,
4 the aspiration thrombectomy system and/or persons
5 of skill in the art understood well before 2019
6 that the operator of the system should monitor
7 control, regulate the timing of the vent and
8 vacuum valves to maintain the levels of suction
9 forces described in Mullins, Yang, Ofek and
10 Grey..." and this goes on and on and on, anyhow,
11 yes. That sentence, yes.

12 Q What do you mean by monitor control and
13 regulate the timing of the vent and vacuum valves
14 to maintain the levels of suction force?

15 A The operator of the system would be me.
16 So when you're suctioning clots, sometimes you
17 just get blood going up the system and that kind
18 of means you're not even getting any clot or
19 you're not corked on the clot. Sometimes you get
20 nothing, which actually no blood being aspirated
21 and there's stasis within the system which is
22 often felt to be a good thing. Sometimes it'll

1 munch up the clot and you'll see little bits of
2 clot coming back and forth there are various
3 things that happen, but the operator, you know, if
4 there's just pure blood coming up you turn the
5 thing off otherwise you could, you know, bleed the
6 patient to the death if you leave it on for five
7 minutes. And if it's totally corked and blocked
8 that's not necessarily a bad thing although
9 sometimes we will not necessarily induce forward
10 flow, but play with the catheter back and forth
11 especially if it's a super huge clot that we're
12 not going to be able to get out in one pull.

13 So the operator just has to monitor these
14 things, but, you know, as I mentioned to you, I
15 don't know how this Mullins machine, which I've
16 never seen, would work and what the controls and
17 regulators and things that I could adjust would
18 be.

19 What I have right now is basically an
20 on/off switch for the system that I use, but the
21 operator has to be aware of what's going on and
22 regulate these things or control them within the

1 parameters of what's been made available with the
2 system. I mean, I'm driving the car at the end of
3 the day so I have to know how to put on the brakes
4 and steer the thing. I think that's what that's
5 saying but, again, it starts with to reduce the
6 risk of forward flow.

7 THE REPORTER: I'm sorry to interrupt,
8 Mr. Sanders. Can we go off the record just for
9 five minutes.

10 MR. SANDERS: Sure.

11 (A recess was had.)

12 BY MR. SANDERS:

13 Q Picking up where we left off, Dr. Ross,
14 how would you as the operator of the system
15 monitor the timing of vent and vacuum valves?

16 MR. ODA: Objection.

17 BY THE WITNESS:

18 A I didn't hear the end of the sentence very
19 clearly. How would I monitor what?

20 BY MR. SANDERS:

21 Q The timing of vent and vacuum valves?

22 MR. ODA: Objection. Form.

1 BY THE WITNESS:

2 A I don't know because I haven't had that --
3 it's like you're asking me how I would drive a
4 standard manual transmission car when all I've
5 ever driven was an automatic. You know, there's
6 just more things to do there and I haven't worked
7 with a system that allowed me that control and had
8 those features.

9 BY MR. SANDERS:

10 Q As the operator of the system, would it be
11 important to you to be able to monitor and control
12 the timing of the vent and vacuum valves?

13 MR. ODA: Objection. Form.

14 BY THE WITNESS:

15 A It might be. I've been a doctor for a
16 long time and I've seen a lot of things come and
17 go, technologies, and I'm conservative because I
18 want to not hurt my patients.

19 You know, if some new apparatus came along
20 that had a great a track record that seemed to
21 be -- even though it's got all these vents and
22 stuff, if my colleagues seem to swear by it that

1 it worked better, it's the new and improved thing,
2 maybe I wouldn't need that control. I don't know.
3 If I had the option of the control, I suppose I'd
4 have to learn how to work it.

5 Am I answering your question? I'm not
6 sure I'm answering your question.

7 BY MR. SANDERS:

8 Q Let me ask it this way.

9 Would you have concerns about potential
10 dangers to the patient if you did not have the
11 ability to control the timing of the valves?

12 MR. ODA: Objection. Form and scope.

13 BY THE WITNESS:

14 A I would say that's what I would call
15 hypothetical. I mean, I'm always careful. These
16 are very potentially dangerous things we do, so I
17 would be very concerned and I would be very
18 careful, but, you know, as I said, if something
19 comes out -- if something comes out and it's been
20 tested and got FDA approval and the seal of
21 approval from my colleagues, and it seems to work,
22 I'd use it and if they said, well, you have to use

1 this valve and that and adjust it, you know, that
2 this is the new technique, then that's the way we
3 would do it. It's hypothetical. I don't know how
4 it would be presented to me in terms of what the
5 control I would have would be.

6 Q Going on to the next page, Page 13, the
7 next sentence after the one we were discussing,
8 you state: "By controlling sufficient levels of
9 vacuum in the catheter, i.e., generally keeping
10 the overall pressures exerted on the fluid within
11 the catheter, low blood pressure, the risk
12 creating forward flow material out of the distal
13 end of the catheter is reduced".

14 Do you see that?

15 A Yes.

16 Q Would an operator skilled in the field
17 such as you seek to control the levels of vacuum
18 in the catheter to avoid having overall pressure
19 within the catheter exceed blood pressure?

20 MR. ODA: Objection. Form.

21 BY THE WITNESS:

22 A I really think that's hypothetical. The

1 way the systems are now there's an on and off
2 valve and I don't have -- I have control of on or
3 off. If I had more control or there was a system
4 that was controlling it for me that I understood,
5 I wouldn't use it unless I felt that it followed
6 some of these basic tenets or rules of, you know,
7 again, I hate to use the word common sense but
8 it's just kind of common sense there. I wrote it
9 down because I thought it was worth mentioning
10 but, yeah.

11 BY MR. SANDERS:

12 Q Going to the last sentence of the
13 paragraph on Page 13, you refer to manipulating
14 the timing or the opening and closing of the vent
15 vacuum valves to adjust the timing of the pressure
16 change.

17 Do you see that?

18 A Right.

19 Q So is that a hypothetical, too?

20 MR. ODA: Objection. Form.

21 BY THE WITNESS:

22 A Yes. Yes. I use the word vent valves

1 and, you know, the system I have now does have an
2 on/off switch which I'm talking about, opening and
3 closing the vacuum, and I can vent it to
4 atmospheric pressure as well which I will
5 sometimes do. So it's not exactly hypothetical,
6 but we're talking about also this concept of sort
7 of automated dynamic aspiration, you know.
8 Everything is dynamic in that, you know, it's just
9 real life going on and switches are going on and
10 off and all of that, but I think this whole
11 proceeding today is about some iteration on that
12 with some forward flow added in and you are sort
13 of asking me questions about sort of how I
14 practice now and how I could practice in the
15 future were other devices to become available.

16 So if you're asking about the present
17 time, then that is not totally hypothetical there
18 and if you're asking me about the future, then --
19 or about some other device that I don't use even
20 if it's not in the future, if it's present, you
21 know, that holds true as well.

22 BY MR. SANDERS:

1 Q In your years of practice, have you come
2 across any devices that perform dynamic aspiration
3 in an automated way?

4 MR. ODA: Objection to form.

5 BY THE WITNESS:

6 A I have not been exposed to them on either
7 a developmental level or a commercial level. I
8 can qualify that a little bit.

9 There are devices that I have used that
10 are outside of the scope of what we are talking
11 about that could be -- that induce forward flow
12 and backward flow and use ultrasonic power. I've
13 used that kind of apparatus to remove clots from
14 the supra vascular system in the past, but -- so
15 the answer is yes, there are devices beyond sort
16 of what we're talking about in terms of arterial
17 thrombectomy that I have used that are more
18 automated that have different types of technology,
19 but nothing along the lines of Mullins and the
20 '402 patent, no. That type of technology, no, but
21 I've used other types of devices.

22 BY MR. SANDERS:

1 Q In your practice today, how do you try to
2 address a clot that is too big to be ingested
3 through the catheter?

4 MR. ODA: Objection. Form.

5 BY THE WITNESS:

6 A I would usually use a tandem technique
7 where I would put a stent retriever up to get a
8 better grip on the clot more distally because I
9 didn't think I could pull very much of the clot
10 into the catheter. So I would try to cork the big
11 clot partially in the catheter and then also use
12 the stent retriever, which is, I don't know, I can
13 explain that, it's a little expandible stent that
14 goes into the clot so you get a -- you can get a
15 grip on the clot with the stent and you're also
16 sucking some of the clot and corking it back in,
17 and then using the two together that that's how I
18 would remove it. But often with very large clots,
19 it takes multiple passes and often it's inevitable
20 that you get distal embolization anyhow and we
21 know that's going to happen. We're going to have
22 to go up and have to chase clots higher up. It's

1 just impossible to get it all out without distal
2 embolization in one pass although that's always
3 the hope.

4 BY MR. SANDERS:

5 Q Have you heard the term first pass
6 efficacy?

7 A Or something along those lines, yes.

8 Q Can you explain what that is? And feel
9 free to use your alternative words for first pass
10 efficacy.

11 A Maybe that's the word -- those are the
12 words that I just used in my deposition here.
13 It's just a percentage of time that you would get
14 the vessel open to your satisfaction and not have
15 to go back in and either try to get the same clot
16 out or get more distal clots out. So, you know,
17 if you go up once and you get all the clot out and
18 that happens eight out of ten cases, then that
19 would be like an 80 percent first pass efficacy.
20 And if you got 95 percent of them out with two
21 passes, then I guess you could say that would be
22 like a 95 percent two-pass efficacy. It's not

1 80 percent unfortunately. The percentage is a
2 little lower than that.

3 Q Is there a clinical benefit to getting the
4 clot out on the first pass as opposed to having to
5 go to the second pass?

6 MR. ODA: Objection. Form.

7 BY THE WITNESS:

8 A Yes.

9 BY MR. SANDERS:

10 Q Can you describe what that benefit is?

11 A I think it's in my declaration, but, you
12 know, again, I hate to use the common sense but
13 the sooner you can get sort of normal blood
14 flowing to tissue that's had ischemia or it not
15 enough blood flow the better so, you know, if it
16 takes you an extra 10 or 15 minutes to get the
17 thing open because you have to do a second pass,
18 that's 10 or 15 more minutes of ischemia and not
19 always but in many cases that will mean 10 or 15
20 more minutes of more severe insult to the tissue
21 and a higher burden of dead tissue or worse
22 outcome.

1 MR. SANDERS: Thank you, Dr. Ross. Those
2 are all my questions.

3 MR. ODA: Let's take a break, say
4 15 minutes.

5 MR. SANDERS: Sure. We'll come back at
6 35.

7 MR. ODA: Okay.

8 (A recess was had.)

9 EXAMINATION

10 BY MR. ODA:

11 Q Dr. Ross, can you turn to Page 12,
12 Paragraph 20 of your declaration.

13 A I'm there.

14 Q At the bottom of Page 12, there's a
15 sentence that reads: "Thus to reduce the risk of
16 forward flow, the aspiration thrombectomy system
17 and/or persons of skill in the art understood well
18 before 2019 that the operator of the system should
19 monitor control and regulate the timing of the
20 vent and vacuum valves to maintain the levels of
21 suction force as described in Mullins, Yang, Ofek
22 and Grey thereby preserving sufficient levels of

1 pressure contained in the vacuum aspiration
2 system."

3 Do you see that?

4 A I do.

5 Q What did you intend to convey by that
6 sentence?

7 A I intended to convey that the operator of
8 the system if that would be me is responsible for
9 the system and understands how -- to a certain
10 degree how it works and basically overall is just
11 watching how it works. It says should monitor
12 control and regulate the timing of the vent and
13 vacuum valves to maintain the levels of suction
14 force.

15 The main thing is the level of suction
16 force, and you can generally I think in all of
17 these systems, hypothetical systems, it's probably
18 a clear tube and you can see what's happening in
19 the tube and I'm not sure how I would control and
20 regulate the timing of the vent and vacuum valves.
21 That's very hypothetical but that would -- it
22 would be important to make sure the end result,

1 you know, and see what's happening in the tube and
2 the aspiration and just watch that while it's
3 going on, and that's what I mean by monitor.

4 Q And in these hypothetical systems of these
5 references in Mullins, Yang, Ofek and Grey, is it
6 your understanding that the regulating of the
7 timing of the valves would be part of the
8 technical design of these systems?

9 MR. ODA: Objection. Form.

10 BY THE WITNESS:

11 A I would expect that. I would expect that
12 although it's very hypothetical. You know, maybe
13 you could turn one thing up a bit and turn another
14 thing down or switch one thing, you know, change
15 the level of suction or the on/off timing. I
16 don't know what it's going to be like, but I would
17 think that it would be fairly set, full of
18 presets. I don't know. That's a very
19 hypothetical answer -- question and answer to a
20 hypothetical situation.

21 BY MR. ODA:

22 Q But if I understand you correctly, you're

1 saying the main point is that the operator would
2 be carefully controlling the system to maintain
3 the level of suction force and thereby preserving
4 sufficient levels of pressure contained in the
5 vacuum aspiration system; is that right?

6 A Yeah. I wouldn't use -- yes, I wouldn't
7 use the system if I didn't sort of have some
8 concept of how it was working and what it was
9 doing and I would monitor all that, you know,
10 within the parameters that were provided to me in
11 terms of whatever control I would have.

12 MR. ODA: Okay. No further questions.
13 Pass the witness.

14 MR. SANDERS: Nothing further, Dr. Ross.
15 Thank you.

16 MR. ODA: We're off the record.

17 (Deposition concluded at 12:39 p.m. CST.)
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19
20
21
22

1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

2 I, Theresa A. Vorkapic, Certified
3 Reporter and Notary Public within and for the
4 State of Illinois do hereby certify:

5 That IAN ROSS, MD, the witness whose
6 deposition is hereinbefore set forth,

7 Was duly sworn by me before the
8 commencement of such deposition and that such
9 deposition was taken before me and is a true
10 record of the testimony given by such witness.

11 I further certify that the adverse
12 party, patent owner, was represented by counsel at
13 the deposition.

14 I further certify that the deposition of
15 IAN ROSS, MD, occurred virtually on Friday, May
16 16, 2025 commencing at 10:56 a.m. to 12:39 p.m.
17 CST.

18 I further certify the inspection,
19 reading and signing of said deposition was
20 waived on the record by agreement of all parties.

21 I further certify that I am not related
22 to any of the parties to this action by blood

1 or marriage, I am not employed by or an attorney
2 to any of the parties to this action, and that I
3 am in no way interested, financially or otherwise,
4 in the outcome of this matter.

5 IN WITNESS WHEREOF, I have hereunto set
6 my hand this 21st day of May, 2025.

7
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9 _____

10 Theresa A. Vorkapic

11 My commission expires November 6, 2027.

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