UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EDWARDS LIFE SCIENCES CORPORATION AND

EDWARDS LIFE SCIENCES LLC,

Petitioners,

v.

AORTIC INNOVATIONS LLC

Patent Owner,

Case IPR2022-00556

Patent 10,987,236

REMOTE VIDEOCONFERENCE

DEPOSITION OF NIGEL BULLER, M.D.

CALIFORNIA

WEDNESDAY, APRIL 12, 2023

Reported by:

LAURA A. RUTHERFORD, RPR

CSR No. 9266

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1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3
4 EDWARDS LIFE SCIENCES CORPORATION AND
5 EDWARDS LIFE SCIENCES LLC,
6 Petitioners,
7 v.
8 AORTIC INNOVATIONS LLC
9 Patent Owner,
10
11 Case IPR2022-00556
12 Patent 10,987,236
13
14
15 Remote videoconference deposition of NIGEL
16 BULLER, M.D., taken on behalf of Respondents, at
17 California, beginning at 8:59 a.m., and ending at 10:31
18 a.m., on Wednesday, April 12, 2023, before LAURA A.
19 RUTHERFORD, RPR, Certified Shorthand Reporter No. 9266.
20
21
22
23
24
25

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1 INDEX

2 WITNESS: PAGE

3 NIGEL BULLER, M.D.

4 BY MR. LOWENSTEIN 5

5

6

7 EXHIBITS

8 (None)

9

10

11 INFORMATION REQUESTED

12 (None)

13

14

15 INSTRUCTION NOT TO ANSWER

16 (None)

17

18

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1 CALIFORNIA; WEDNESDAY, APRIL 12, 2023
2 8:59 A.M. - 10:31 A.M.
3 ---oOo---
4
5
6 NIGEL BULLER, M.D.,
7 having been first duly placed under oath,
8 was examined and testified as follows:
9
10 EXAMINATION
11 BY MR. LOWENSTEIN:
12 Q. Good morning, Dr. Buller -- or good
13 afternoon, perhaps, as the case may be where you are.
14 A. Good afternoon.
15 Q. Okay.
16 Now, you were, I think we all know, an expert
17 for Edwards Life Sciences in the case IPR2022-00034,
18 concerning the '846 Patent?
19 A. Remind me what that one is? The numbers
20 don't mean that much to me, I'm afraid. Which?
21 Q. Well, do you recall being an expert for
22 Edwards in another case, where the limitation "free of an
23 outer graft covering" appeared?
24 A. No. I don't remember that term in it, but I
25 may well have been, but I don't know.

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1 Q. You don't recall --
2 A. I'm sorry. In this -- in the IPI, yes. I'm
3 with you. Sorry. I'm with you.
4 Q. Okay.
5 Just to be clear, you've been an expert in
6 two IPRs, two different IPRs, the current IPR and a
7 previous IPR, where the same "free of an outer graph
8 covering" limitation appeared; correct?
9 A. Correct.
10 Q. Okay.
11 And in that prior case, which is the, again,
12 IPR2022-00034, in that case, you raised the same
13 combination of grounds that you did in this case; is that
14 correct?
15 A. Yes. I think that's fair.
16 Q. And in the -- I'm just going to -- by
17 shorthand, I'm going to refer to it as the "-00034 case,"
18 if that's okay?
19 A. It is. But as I said, the numbers don't mean
20 that much to me. As long as that's right, then, yeah, I
21 accept it.
22 MR. SUMMERS: It is. Is that the '846 IPR,
23 Nathan? I wonder if we ask "'846 Patents IPR" as a way
24 to --
25 Mr. LOWENSTEIN: That's fine. Easier to

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1 understand.
2 Q. BY MR. LOWENSTEIN: Well, I may use them
3 interchangeably. But just so you are aware, Dr. Buller,
4 the IPR I'm referring to is IPR2022-00034, concerns the
5 '846 Patent.
6 A. Yes, I understand.
7 Q. And I think you may have answered the
8 question, but let me just reask this just in case I missed
9 it.
10 You agree that the 00034 IPR raised the same
11 combination of grounds; correct?
12 A. Yes.
13 Q. And in the 00034 IPR, you argued that the
14 free of an outer graph covering limitation was disclosed
15 by each of Levi, Walther and Spencer II; correct?
16 A. Yes.
17 Q. And in this case, IPR2022-00556, you,
18 likewise, intend or opine, if you prefer, that each of
19 Levi, Walther and Spencer II disclosed the free of an
20 outer graph covering limitation; is that correct?
21 A. I did, yes.
22 Q. Now, in the 00034 IPR, you did not offer a
23 construction of graphic covering; correct?
24 A. I'm sorry. Say that again? I did not --
25 Q. -- offer a construction -- claim construction

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1 of "graph covering"?
2 A. Correct.
3 Q. And you didn't offer any constructions at all
4 in that case; correct?
5 A. I think that's true, yes.
6 Q. Okay.
7 Now, I understand that you have offered a
8 construction of graph covering with your reply
9 declaration. So I'm asking you now about your first
10 declaration in the present case, IPR2002-00556, and that's
11 Exhibit 1003.
12 A. I have a copy in front of me here. That's my
13 first declaration.
14 Q. Very good. I doubt you're even going to need
15 to look at it to answer my questions.
16 A. I have it, so you know.
17 Q. Okay.
18 So, in your first declaration in this case,
19 the '556 IPR, you did not offer a construction graft
20 covering; correct?
21 A. Correct.
22 Q. And, in fact, did you not offer any
23 constructions at all in your first declaration in the '556
24 IPR; correct?
25 A. Correct. I was going for plain, ordinary

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1 meaning in the context of the specification.
2 Q. Are you aware that the 00034 IPR reached a
3 final written decision?
4 A. Yes, I am, and I've read it.
5 Q. Okay.
6 So I take it you are aware that the Board
7 found that Edwards had not shown that the free of an outer
8 graph limitation was disclosed or obvious from any of the
9 presented grounds; is that correct?
10 A. Yes. Like now, given a claim construction
11 for outer graph covering, and that claim construction
12 means that each of the references that I've cited has an
13 outer graph covering, so it is not free of an outer graph
14 covering.
15 Q. Do you disagree with -- or let me -- we can
16 bring it up, if you prefer.
17 But, in fact, why don't we do that. Can you
18 bring up the 00034 final written position, just Paper 50;
19 is that correct?
20 And why don't you go to page 40. So why
21 don't we upload it and then also share the screen.
22 Let's go to page 40, and then we can upload
23 it.
24 Okay.
25 So you see it says "Consequently, we

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1 understand an outer graph covering to be a structure" --
2 A. I'm sorry. Can you point to where you are?
3 I've just found it.
4 Q. Maybe you can highlight it.
5 A. Yeah.
6 Q. Okay.
7 Actually, why don't you -- end the
8 highlighting there.
9 All right. So we've highlighted what I think
10 is the relevant portion. And it reads,
11 "Consequently, we understand an 'outer
12 graft covering' to be a structure, such as a
13 cloth or fabric or other material, that
14 circumferentially covers all or part of, the
15 metallic outer frame. Importantly, because
16 an outer graft covering must cover the
17 external surface of the outer frame, we
18 understand that this claim term to mean that
19 the cover must extend over not only the
20 struts and members of the metallic outer
21 frame, but must also cover the open spaces,
22 or interstices, in the intervals between
23 those struts and members."
24 Do you see that, Dr. Buller?
25 A. Yes.

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1 Q. And is that the construction you alluded to
2 from the Board in the -0034 IPR?
3 A. Yes.
4 Q. Okay.
5 Do you agree with this construction?
6 A. Yes, I accept it. Absolutely. The Board has
7 now spoken and given a construction, and I accept that
8 construction.
9 Q. Now, you're aware that in your reply
10 declaration in the 00556 IPR, you presented a different
11 claim construction; correct?
12 A. Well, correct. I went for what I thought was
13 emphasized in the patent, a nonporous. But I also said, I
14 think, in my reply declaration that the common by use of
15 graft covering would include porous and nonporous
16 coverings, which is what the Board have gone for.
17 Q. You would agree that statement we just read
18 in the 00034 IPR does not mention porosity; correct?
19 A. Correct. That's the difference. I have
20 focused on nonporous graft coverings, whereas they have
21 gone for any graft covering, whether it be porous or
22 nonporous.
23 Q. Well, you also, in your new claim
24 construction -- well, let me ask you this.
25 Are you withdrawing the claim construction

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1 you set forth in your '556 reply declaration?
2 A. I'm not sure. I'm not a lawyer. But, I
3 mean, I'm not -- everything I said was true. They were my
4 opinions.
5 But I absolutely accept that the Board has
6 now spoken, albeit not in the '236 Patent. If I
7 understand, they have given a final judgment in a
8 different patent. I assume that it's highly possible that
9 they were come to exactly the same conclusion in the '236.
10 But as I read it, they have come to a
11 conclusion in a different patent. Clearly, it's the same
12 term about the same patent specification. And I would
13 fully anticipate that they may well come to the same
14 conclusion in the '236, but that hasn't happened yet.
15 Q. Can you think of any reason why the Board
16 should come to a different conclusion in the '556 IPR?
17 A. No. But that isn't to say -- I mean, I
18 understand that it hasn't got to the conclusion yet.
19 There's more oral argument, et cetera, et cetera, so I
20 just don't know. I'm not a lawyer.
21 I can see that the claim term is exactly the
22 same in the two. They've come to a conclusion, which I
23 will accept. And as I said to you, I would anticipate
24 that they are likely, they are not certain, to come to the
25 same conclusion with the '236 Patent.

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1 Q. So I think you said this, but I want the
2 record to be absolutely clear.
3 You agree, under the Board's construction,
4 that Walther does not meet the free of an outer graft
5 covering limitation; is that correct?
6 A. That's correct.
7 Q. And you agree, under the Board's
8 construction, that Spencer II does not meet the free of an
9 outer graft covering limitation; is that correct?
10 A. No. That's one area that I would disagree,
11 because I think Spencer II is a broader teacher. I mean,
12 Spencer II clearly covers embodiments where there would be
13 an outer graft covering. As the Board said, those ones
14 wouldn't practice the claim.
15 But I think Spencer II is a broader teaching
16 and would include just coverings on the struts, where the
17 spaces between the struts and members are not covered.
18 Q. Now, you've relied upon Figure 22 in the
19 Spencer II; is that correct?
20 A. Well, the whole of Spencer, the text and the
21 figure, but, yes, the text and the figure together.
22 Q. And you would agree that Figure 22, at least
23 visually, would not be free of an outer graft covering
24 under the Board's construction; is that correct?
25 A. No. I think that's fair.

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1 As the Board have said, in looking at Figure
2 22, I think that embodiment, for that is utter preferred
3 embodiment from the specification, would not fall within
4 the claim terms as the Board have now defined it in a
5 different patent.
6 Q. Now, you began your last answer with the
7 phrase, "No. I think that's fair." I think you meant to
8 say, "Yes. I think that's fair"?
9 A. Actually, I don't remember what I said, but
10 that sounds right. If I put a double negative, I didn't
11 mean to.
12 Q. And would you agree that under the Board's
13 construction, Levi does not satisfy the free of an outer
14 graft covering limitation?
15 A. Yes.
16 Q. Now, can we bring up paragraph 60 of his
17 reply -- I'm sorry -- the original declaration in the '556
18 case?
19 Dr. Buller, are we looking at paragraph 60 of
20 your first declaration in the '556 IPR?
21 A. Yes, '556 IPR. Yep. That is -- that's from
22 my first declaration in this IPR.
23 Q. And you see it says, "The graft materials
24 used on the external surface of early THVs were designed
25 to conform to the surface of the surrounding tissue.

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1 These materials could be made with low porosity woven
2 fabrics."
3 Do you see that?
4 A. Yes.
5 Q. And then you see that you quote a patent
6 called Leonhardt?
7 A. Yes.
8 Q. And Leonhardt similarly says, "Graft material
9 24 is a thin-walled biocompatible flexible and expandable
10 low porosity woven fabric, such as polyester or PTFE."
11 Do you see that?
12 A. I do.
13 Q. And I've searched your original declaration,
14 and the only reference to porosity is in this paragraph.
15 Does that comport with your understanding?
16 A. I can't tell you that. I'll take that as
17 fact if you're saying that you've searched it, and that's
18 the only one. But I can't, as I sit here -- it's a
19 200-page declaration -- remember whether it's anywhere
20 else. But I would accept that if you tell me that's true.
21 Q. I did not find any reference to the term
22 "nonporous." Does that sound correct to you?
23 A. Yes. At that stage of the proceedings and my
24 writing the report, I was not focusing on porosity in that
25 state. I really thought that the claim -- this negative

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1 claim limitation required a complete extra layer.
2 And so what I was focusing on is whether
3 Walther, et cetera, had an extra layer of graft material
4 beneath the fibrous layer that we can see on the pictures
5 and drawings.
6 Q. Is it fair to say that the construction you
7 set forth in your reply declaration is reflective of a
8 different understanding on your part of graft covering
9 than the one you had when you submitted your first
10 declaration in the '556 IPR?
11 A. Yes. Because it's responsive to things said
12 by the Board when they had their institution decision, and
13 responsive to things that Dr. Brecker, your expert, has
14 said, and it changed rather.
15 My position at the beginning when I wrote my
16 first report was this requirement of not having a graft
17 covering was a complete extra layer. So I was looking to
18 see if there was an extra layer beneath the fibrous layer
19 of Walther.
20 And what I said in my report is that I can't
21 see anything. There's no teaching of it. There's no
22 extra graft layer.
23 Q. Now, I think it logically follows that
24 because you did not understand graft covering in your
25 original declaration to have the meaning that you gave it

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1 in your reply declaration, you, therefore, did not attempt
2 to demonstrate that the construction from your reply
3 declaration was met in your original declaration.
4 Is that fair to say?
5 A. Yes. It changed, because I was responsive to
6 all of the information and opinions that had been
7 expressed in the intervening year.
8 Q. Let me just make sure I'm being clear.
9 Because you presented a new construction in
10 your reply declaration, you did not attempt to show that
11 Walther satisfied the new construction in your original
12 declaration.
13 Is that fair to say?
14 A. Yes. That is fair to say. I had moved on
15 from my initial understanding of the negative -- it's fair
16 to say I struggled with this negative requirement in the
17 patent claim.
18 And this negative requirement, I initially
19 thought, meant there shouldn't be an additional second
20 layer of material beneath the fibrous layer. That then
21 proved not to be what was being considered by the Board
22 and certainly not what was being considered by
23 Dr. Brecker.
24 Q. Now, if I asked you the same question but
25 instead of Walther, I referred to Spencer II or Levi,

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1 would you give the same answer?
2 A. Yes. And I think -- I hope I made it very
3 clear in my first declaration that what I was saying there
4 is there's only one layer. I mean, there's not a second
5 separate layer underneath Walther's cloth or underneath
6 the teaching of the compressible material or Spencer II.
7 That is -- that is what I was focused on, and
8 that is what I hope I make clear in my declaration.
9 Q. Now, you opined that Levi's inner skirt is
10 also an inner graft covering; is that correct?
11 A. Levi's inner skirt is an inner graft
12 covering? Yes.
13 Q. Is it still your opinion that Levi's inner
14 skirt is an inner graft covering?
15 A. Yes. Because I'm not sure anything has
16 changed. Because my reading of the Board's decision was
17 construing outer graft covering, not inner graft covering.
18 So nothing that I'm aware of has changed on that.
19 Q. And just to be sure, you believe Levi's inner
20 skirt would be an inner graft covering under your reply
21 construction as well?
22 A. Well, it depends what definition you're
23 using. Now, if inner graft -- the difficulty with these
24 things are the actual definition for inner graft covering.
25 If we say that it's going to be the same as

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1 the Board have construed outer graft covering but inner,
2 then it will be the circumferential cover which goes over
3 the struts and the openings, and, yes, it would fulfill
4 that in my mind.
5 But it depends. If you're going to the
6 thoughts that I think both Dr. Brecker and I had about
7 nonporous, and things, it would potentially be different.
8 But it depends what -- you've got to define
9 what construction you're using for this term which is in
10 the claims, and if it has, in fact, been construed by the
11 Board, even though what they focused on is the outer graft
12 covering.
13 Q. So I'm not sure I got an answer to my
14 question.
15 Under the construction -- I apologize if you
16 said it, so let me just ask it again.
17 In the construction you said for graft
18 covering in your reply declaration, do you believe that
19 inner -- Levi's inner skirt would be an inner graft
20 covering under that construction?
21 A. Yes. It could be.
22 Q. Why do you say, "It could be," as to oppose
23 that it is?
24 A. Well, because there can be a range of all
25 sorts of things. And Levi is a patent, and, therefore,

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1 inner graft covering could be a nonporous fabric.
2 Q. Now, in your reply declaration, you use the
3 phrase or the term "nonporous"; correct?
4 A. Yes.
5 Q. What does that term mean?
6 A. That fluid can pass through it. I used in
7 exactly the same sense as I believe it is used in the '236
8 patent in the specification, that fluid would not pass
9 through it.
10 Q. So nonporous does not mean that there are no
11 pores. It means nonporous in the sense that it's
12 impermeable to fluid?
13 A. Well, if that's what nonporous is, because it
14 defines it. It doesn't just say "nonporous." It
15 has -- I have a copy of the patent. I have got three
16 documents, and I've got a copy of the patent. But the
17 phrase, it repeats many times, is talking about fluid. So
18 that is what I've understood it meant by nonporous.
19 Q. So just to make sure I understand under your
20 reply construction, even a cloth that had pores could
21 be -- would be nonporous under your understanding if it
22 was impermeable to fluid; correct?
23 MR. SUMMERS: Objection. Form.
24 THE WITNESS: I hadn't really thought about
25 that. I'm talking about what I -- what I've used is the

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1 wording that is used in the patent specification that says
2 that fluid will not pass through it. And so that's what I
3 understood to be meant by -- by nonporous.
4 Q. BY MR. LOWENSTEIN: Because you also offered
5 the opinions, I'm sure you'll recall, that, essentially,
6 all woven fabrics have openings.
7 Is that fair to say?
8 A. Yeah. Well, because they are woven, and
9 they're made of set fibers and strands that are woven
10 together, they will potentially have opening. But if it
11 is very tightly woven, then they can be extremely small
12 such that it may not be porous.
13 Q. So even though there's an opening,
14 under -- and I'm sorry if I'm saying the same thing over
15 and over again. I think we're on the same page, but I
16 want to be clear.
17 Even if there's a woven -- an opening in a
18 woven fabric, woven PT, let's say, the woven PT fabric
19 would still be nonporous under your reply construction if
20 the fabric is impermeable to fluid?
21 A. Correct. That's the definition which I think
22 is repeated many times in the specification. And that is
23 what I think it's defined nonporous as meaning, that fluid
24 will not pass through it. And so if fluid will not pass
25 through it, then, in the meaning of the term '236 Patent,

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1 it is nonporous.
2 Q. And fluid in the context of these valves, I
3 assume the fluid we're most interested in is blood?
4 A. It's one of them, but also the main liquid
5 part of blood is plasma, which is essentially water, and,
6 you know, very keen for treating aneurisms, which, in
7 large part of the specification, is valve 236, you want to
8 stop plasma going through. So it's blood and water.
9 I mean -- blood has lots of things in it,
10 like cells, red blood cells, which are very large. So
11 it's like a sort of analogy of being Minestrone soup.
12 There's bits in it which are very large compared with
13 water molecules.
14 But when you say nonporous to fluid, do you
15 mean nonporous to all the components of blood, including
16 plasma?
17 Q. Did you say Minestrone soup?
18 A. Yes.
19 Q. That's my job to make colorful metaphors.
20 A. I was trying to help. But, I mean, it's just
21 to say the cells are very large compared with water
22 molecules. And, therefore, my inept analogy of Minestrone
23 soup was meant to help.
24 Q. Now, I think you alluded to this in one of
25 your prior answers. But in your reply declaration, is it

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1 fair to say that -- I think it was paragraph 16, perhaps,
2 maybe 14.
3 Why don't we just pull it up, 1104.
4 A. At a convenient point, I've got two
5 corrections to make to my reply declaration. They're just
6 single-word changes in two places, if I may when it's
7 convenient to you.
8 Q. Why don't we do that when -- let me ask this
9 set of questions, and then you can remind me while we have
10 the reply declaration open, and we can point it out at
11 that time?
12 A. Sure.
13 Q. Actually, paragraph 17 is the one I was going
14 to ask you about.
15 A. That's one of the paragraphs I've a
16 correction to make, so paragraph 17.
17 Q. How timely.
18 Why don't we go to paragraph 17, and then,
19 perhaps, Dr. Buller, you can tell us what the correction
20 is.
21 A. Okay.
22 It's paragraph 17, four lines down, right at
23 the beginning of the line where it says, "material," it
24 should be "covering material." It shouldn't just be
25 "material" on its own. It should say "simply referred to

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1 a covering material attached to the stent device."
2 Q. So in your reply construction, you opine that
3 that graft covering must be nonporous?
4 A. Yes. This is the paragraph where I say, "In
5 the prior art, the term 'graft covering'" --
6 Q. Doctor, I may -- I may ask the question. I
7 think I have a sense what you're asking to say. I want to
8 make sure we're clear about it, so let me just ask a
9 couple questions, and it may resolve it.
10 So I take it the construction you provide for
11 graft covering in your reply declaration is more limited
12 than how the term "graft covering" is used in the relevant
13 prior art.
14 Is that fair to say?
15 A. Correct. It was what I took to be the plain,
16 ordinary meaning in view of the specification. That is to
17 say, my reading of the specification was that the graft
18 covering was nonporous.
19 And that's why I put in -- in paragraph 17,
20 I've explained that in the prior art, graft covering was
21 used broadly to cover both porous and nonporous. And that
22 seems to be where the Board has gone for that broad
23 covering of any graft covering.
24 But I explained that, in light of the plain,
25 ordinary meaning, to my mind, in light of the

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1 specification, was nonporous. And the Board had not
2 accepted that, and that is not what they have ruled, and I
3 completely accept that ruling.
4 Q. Now, in the '236 Patent, do you agree that
5 the phrase "graft covering" is not used in specification?
6 A. That's been one of the many difficulties is
7 graft covering isn't anywhere. And so I went through, and
8 I found this term "covering material" in the
9 specification.
10 And it appears that graft -- I didn't know
11 why it was changed in the claims, but it appears that
12 "graft covering" means what it termed "covering material"
13 in the specification.
14 That is what is said to be nonporous
15 repeatedly throughout the specification. But,
16 unfortunately, the terms in the claim are different and
17 appear nowhere in the specification.
18 Q. So I think it logically follows that there's
19 no statement in the specification, like, "We define graft
20 covering to mean X"; correct?
21 A. As I've said, the term "graft covering"
22 doesn't appear anywhere. So absolutely not. They don't
23 define it. One has to hunt and look for what on earth
24 they mean. And the thing that I found was "covering
25 material," which is always said to be nonporous.

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1 Q. Is there any statement in the '236
2 specification that you understand to be lexicographic with
3 respect to graft covering?
4 A. I'm sorry.
5 MR. SUMMERS: Objection. Form.
6 THE WITNESS: Could you say it again? I
7 didn't catch the question.
8 Q. BY MR. LOWENSTEIN: Lexicographic,
9 L-e-x- -- oh, God. I have to spell it.
10 L-e-x-i-c-o-g-r-a-p-h-i-c?
11 A. Can you define that? What do you mean by
12 that?
13 Q. It's hard to define. It means it's a
14 definitional statement.
15 A. Yes. As I said, there's a definite -- what I
16 looked at and read was the definition of "covering
17 material," which seemed to be as close as I could get to
18 "graft covering." Quite why the claims use a term which
19 appears nowhere in the specification, I do not know.
20 But "covering material" appears many times,
21 and the covering material is exactly where they're talking
22 about the graft covering going, such as covering material
23 250 on the inner lun (phonetic) expandable state, appears
24 to be what is now in the claims referred to as a "graft
25 covering."

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1 So I think it is -- and I think for the
2 covering material, there is a definition, and it is this
3 nonporous material.
4 Q. Now, are you aware that lexicography is a
5 term of art in claim construction?
6 A. Yes.
7 Q. Okay.
8 And did you ask the attorneys for Edwards to
9 give you guidance on the legal standard for finding
10 whether a statement in a specification is lexicographic?
11 A. Yes. I didn't use those terms, the words
12 you're using. But I talked on many occasions to the
13 attorneys about these issues and about the specification
14 and was reassured that what I was doing was sensible and
15 fair.
16 Q. So I take it you believe that there is a
17 lexicographic definition of graft covering in the '236
18 Patent; is that correct?
19 A. Well, graft covering doesn't appear -- I'm
20 not a lawyer. I'm talking to you as an independent
21 cardiologist. I read the specification. I was
22 disappointed to see that the claims had this term
23 repeated. It appears nowhere in the specification.
24 So I looked for what it could be, what they
25 were talking about. I found covering material. I lined

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1 it up to see that they were talking about the same thing
2 in the same, sort of, places based on the claims and the
3 specification.
4 And then I found there was a definition for
5 covering material, which was nonporous, which was repeated
6 many times on many embodiments in the specification. And,
7 therefore that is where I got the nonporous from.
8 Q. Now, I think you said there was another
9 statement you wished to correct in the reply declaration.
10 Should we hear what that is?
11 A. Yes. That's very fine. Thank you.
12 It's in paragraph 22 on page 10. And five
13 lines from the bottom, at the end of the line, there is
14 the term, "flow of blood," and it ought to be "fluid," for
15 the reasons that we talked about a few minutes ago, when
16 you were talking about what the fluid was. It's a typo.
17 It's -- should be "fluid."
18 Q. Now, in your declaration, the reply
19 declaration, I should say, you testified or you opined
20 that Dr. Brecker presented a claim construction of graft
21 covering requiring a nonporous material; is that correct?
22 A. That was my understanding from his
23 depositions and reports that he and I agreed. I think in
24 the last deposition, I did with you, I said the one thing
25 I felt Dr. Brecker and I agreed about was nonporous.

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1 Q. Now, I'd like to -- can we bring up, Will,
2 Dr. Brecker's declaration? It's Exhibit 2103, and let's
3 look at paragraph 43. So maybe share that first, if you
4 would, and then let's look at paragraph 43.
5 Okay.
6 Let's -- okay.
7 Let's look at the -- you see the sentence?
8 It's the last complete sentence on the page of page 27, in
9 paragraph 43. You see, it says "Dr. Buller further
10 correctly recognizes that a graph material could be made
11 with low porosity woven fabrics."
12 Do you see that?
13 A. Yes.
14 Q. You refer to low porosity woven fabrics, not
15 nonporous materials; correct?
16 A. That's the word he says there, "low porosity
17 woven fabrics."
18 Q. Do you believe that low porosity is the same
19 thing as nonporous?
20 A. No. Not nonporous is definitional,
21 particularly when you're saying -- you're applying it to
22 fluids, as we've talked about; whereas, low porosity
23 really is a descriptive term, and it's not precise enough.
24 It's not precise enough to, for instance, be
25 used in claims, I wouldn't have thought, because you

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1 wouldn't know where the boundaries were.
2 You wouldn't know where low changed to medium
3 or -- or -- it's a descriptive term, which I think any of
4 us can understand. Just like low lighting. It wouldn't
5 be good enough in claims, because it wouldn't have any
6 precision.
7 Q. But, nonetheless, we can see in paragraph 43
8 of Dr. Brecker's declaration that he is expressing
9 agreement with you that a low porosity woven fabric could
10 be a graft material.
11 Is that a fair characterization of what
12 Dr. Brecker is saying here?
13 A. Yes. I presume he's talking or writing about
14 that thing. I haven't follow though, because I'm just
15 looking at what you're putting on the screen.
16 But with the low -- the same term that
17 appeared in the Leonhardt reference that you showed me a
18 few minutes back, it says low porosity. But that is just
19 a descriptive term.
20 I think I'm right in saying low porosity
21 doesn't appear in the claims of Leonheardt, because it
22 wouldn't be precise enough. And low porosity, as far as
23 I'm aware, doesn't appear anywhere in the '236 Patent.
24 The '236 Patent specifies nonporous.
25 Q. I have 14 instances in Dr. Brecker's

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1 deposition where he said a graft covering can be
2 considered as low porosity. We can go through all 14 of
3 those if you'd like.
4 But will you accept my representation that
5 Dr. Brecker 14 times said graph covering is something that
6 is low porosity?
7 A. If you've been through and counted them, yes,
8 I haven't. And I wouldn't have a clue how many times he
9 said it.
10 But, I mean, graft coverings can be porous,
11 and that porosity may be low. But I'm not aware of any
12 definition of it. And it's not a term I would expect to
13 be used in claims. And, indeed, it's not a term that
14 appears anywhere, that I'm aware of, in the '236 Patent.
15 Q. Well, you agree the term "porosity,"
16 "nonporous," "low porosity," none of that appears in the
17 claims; correct?
18 A. Correct. But nonporous appears many times in
19 the specification, and that's why I use that term -- it
20 appears in the specification -- when I was considering my
21 thoughts on graft covering.
22 Q. But we've got 15 instances, at least, where
23 Dr. Brecker has testified about a graft covering being low
24 porosity, as distinct from nonporous. And yet, when you
25 describe what Dr. Brecker's supposed construction is, you

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1 make reference to nonporous but not low porosity.
2 Is that fair to say?
3 A. Yes. I haven't been through and counted any
4 of these things. I have no idea how many times he said
5 nonporous. But I can remember with key things that I have
6 looked at him saying a dense nonporous there. I cannot
7 attempt to give you the numbers, and things. I'm not even
8 sure it's relevant.
9 I thought he was saying that he could see in
10 Walther that it had a dense, nonporous layer, et cetera,
11 et cetera, I mean, plenty of things. But I haven't
12 counted them, and I'm not trying to do a numbers game. I
13 think it's relevant. But the point is the term that he's
14 used in the specification of '236 is nonporous.
15 Q. We're talking about whether Dr. Brecker
16 agrees with you. And you presented the opinion in your
17 reply declaration that Dr. Brecker agreed with you, when I
18 have at least 15 instances where Dr. Brecker testified
19 that a graft covering could be a low porosity material.
20 So isn't it a bit unfair to say that
21 Dr. Brecker agrees with your reply construction that a
22 graft covering must be nonporous, as opposed to low
23 porosity?
24 A. No. I think I've tried to be fair, and I
25 think I have been fair. I mean, the one you're showing me

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1 here from Dr. Brecker is not -- it's not relevant to
2 anything. He's saying, "Dr. Buller further correctly
3 recognized that a graft material could be laid across."
4 I mean, it can be. I'm not disputing that it
5 can be nonporous. I mean -- and I would need to go
6 through and see what he's actually saying when he's using
7 the term.
8 But the one you put in front of me is not, as
9 far as I can see, relevant to claim construction, if
10 that's what we're still talking about, or any real issue
11 in the case.
12 Because what I was talking about was purely
13 quoting the language that was used in a very early 1990s
14 THV patent from Leonhardt.
15 Q. Well, let's put it this way. If you're going
16 to opine that you agree with Dr. Brecker's construction,
17 don't you think it's very important to correctly state
18 what construction he has, if any?
19 A. And that's what I tried to do. And I thought
20 I had understood, from the key things that he said by the
21 deposition and report, that he was relying on a
22 nonporous -- dense, nonporous layer. That's what he said
23 he could see in Walther. That's what he said there was in
24 Spencer II. And that's why I used that feeling.
25 I still believe there are things he said I

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1 haven't gone through and don't know what you've done, and
2 counted up how many times he said a particular phrase, or,
3 more importantly, not what context it's in.
4 Q. But if Dr. Brecker, in fact, testified 15
5 times that a graft covering could be something that is low
6 porosity as opposed to nonporous, that would be something
7 important to note in characterizing his positions,
8 wouldn't you say?
9 A. Not necessarily. It depends on the context.
10 One would need to go through these 15 instances and see
11 what he was actually saying. Because the one you've shown
12 me --
13 Q. We have time. We have time. Let's go to
14 Exhibit 1105.
15 Okay. Let's go to page 36, lines 10 to 13.
16 What we're looking at Dr. Brecker's
17 deposition at page 36. And you see it says, "I know
18 Dr. Buller described I think a graft cover as something of
19 low porosity, and I would agree."
20 Do you see that?
21 A. Yes.
22 Q. So here again, Dr. Brecker is agreeing with
23 you that a graft covering could be something of low
24 porosity.
25 Is that fair to say?

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1 A. It can. As Leonhardt said, it can be of low
2 porosity, yes.
3 Q. And let's go to -- now, you can see the
4 question is posed in relation to the inner graft covering
5 of Claim 1; correct?
6 A. "Does the inner graft covering claimed in
7 Claim 1 need to have a specific density?"
8 Yes. I see that.
9 Q. So Dr. Brecker's not talking about graft
10 covering in some abstract sense. He's been asked about
11 what graft covering is in the context of the panel;
12 correct?
13 A. Yes. And the inner graft covering.
14 Q. Fair enough.
15 Let's go to the next page, lines 1 through 4.
16 No. You went to the previous page.
17 Now, here, I'm quoting from page 37, lines 1
18 through 4. "I've said I've expressed agreement with
19 Dr. Buller's view that, for example, woven PET is low
20 porosity and can be a graft cover. I have not gone any
21 further than that."
22 Do you see that?
23 A. I do.
24 Q. And here again, Dr. Brecker is referring to
25 low porosity, not nonporous; correct?

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1 A. Correct. But he's saying it can be a graft
2 cover. I mean, I agree with that. It can be a graft
3 cover as Leonheardt taught.
4 Q. Now, let's go to 37, 11 to 13.
5 So, you see he's being asked -- or Dr.
6 Brecker's being asked, "Does the graft covering claimed in
7 Claim 1 of the '236 Patent need to be -- or need to have a
8 low porosity?"
9 And his answer is, "So with respect to the
10 specific use of the term, I have not -- it -- within a
11 claim, I've not applied a definition. But a graft cover
12 would have a property of low porosity."
13 Do you see that?
14 A. I do.
15 Q. He doesn't say "nonporous"; correct?
16 A. He doesn't. He says, "would have a property
17 of low porosity."
18 Q. Okay.
19 So we've gone through three examples. Well,
20 why don't we do one more, because it's very close. Let's
21 go to the next question and answer.
22 Page 37, starting at line 15.
23 "QUESTION: So a graft covering would have a
24 low porosity; is that correct?
25 "ANSWER: Yes, that's correct."

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1 So, again, that's the fourth time in his
2 deposition that Dr. Brecker was referring to low porosity
3 just like he did in his declaration.
4 Is that fair to say?
5 A. I don't know if they were all different, but
6 I've looked at each of them. Yes, the word "low porosity"
7 is used, but I'm just not sure I see the relevance.
8 Q. Well --
9 A. Low porosity is not used in the specification
10 of the '236 Patent. And low porosity, if one was going to
11 use it precisely, one would need to define what you mean.
12 I have no idea where low stops and medium
13 starts, or, you know -- I mean, I don't know in any
14 precise way what it actually means. It's a perfectly
15 reasonable descriptive term, but it's not a precise
16 scientific term.
17 Q. Do you believe that Dr. Brecker set forth a
18 formal claim construction in this case?
19 A. I'm not aware that he did.
20 Q. Now, if Dr. Brecker testifies 15 times that a
21 graft covering could be low porosity, would it be fair to
22 believe that that's his view?
23 A. I honestly can't answer that. It would be
24 much better to ask Dr. Brecker that question. I've seen -
25 - and you haven't told me how many times you've counted up

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1 him saying "nonporous."
2 Q. I think you've counted every single one of
3 them if --
4 A. I haven't. I absolutely -- I can give you my
5 word I haven't count the them. I've looked at a few key
6 statements where we're talking about the actual terms in
7 the claim. And my take-home message from reading
8 everything was that he considered the inner covering of
9 all, for instance, to be a dense nonporous layer.
10 Q. Now, do we need to go through the next 11
11 examples, or will you -- are you willing to accept my
12 representation that Dr. Brecker 11 more times in this
13 deposition testified that a low porosity material can be a
14 graft covering?
15 A. I agree. A low porosity material can be a
16 graft covering. And as I said when you first said it, I
17 full accept if you counted them up, and you said it's 15
18 times, I was more than willing to accept it as soon as you
19 said it. I'm not disputing it.
20 Q. Now --
21 A. I'm sorry. Can I just finish?
22 I mean, I'm just want to make clear that I'm
23 now accepting the Board's decision on their definition of
24 graft covering.
25 I realize it's not in the '236 Patent, but

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1 I'm expecting they may well come to exactly the same
2 conclusion about the same term in the '236, and,
3 therefore, the porosity is no longer an issue.
4 They have said graft covering is a graft
5 covering if it covers the struts, members, and intervening
6 spaces, and, therefore, the issue of how porous or not
7 porous it is seems, to me, to have rather disappeared.
8 Q. So just to be clear, because you accept the
9 Board's construction of graft covering, it follows that
10 you also accept that none of Levi, Spencer II or Walther
11 disclosed the free of an outer graft covering limitation;
12 correct?
13 A. No. I've already told you that I think
14 Spencer II does have teaching that would be embodiments
15 that are free of an outer graft covering.
16 Walther is just Walther. It's not a patent.
17 It doesn't have a range of things. So Walther has a graft
18 covering. I absolutely accept, and that's what the Board
19 has said.
20 But Spencer II, I think, is a broader
21 teaching. It isn't just limited to Figure 22, as we
22 talked about a few minute ago.
23 Q. Now, you understand that the Board found that
24 Spencer II did not disclose or render obvious the free of
25 an outer graft covering limitation; correct?

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1 A. That was their opinion, correct.
2 Q. So you disagree with that opinion?
3 A. I do.
4 Q. Let's go to the '236 Patent.
5 We go to column 13.
6 Let's zoom in around here.
7 Okay.
8 Now, you see starting at line 25 -- well,
9 first of all, if you look at the paragraph starting at
10 column 13, line 17, are we talking about Figure 9?
11 A. "As seen in Figure 9," yes.
12 Q. Okay.
13 Now, let's go to line 25.
14 And it says, "The outer surface 240 of the
15 Section in 62, 64, 222, are covered with low profile
16 polyester ePTFE, or other nonporous covering material 242,
17 such that fluid is prevented from passing through the
18 surface 240."
19 Do you see that?
20 A. Yes.
21 Q. And in your view, that passage refers
22 to -- even though it doesn't say it, that passage referred
23 to a graft covering?
24 A. Yes. That's one of them. There are many of
25 these statements on different parts of covering on -- this

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1 is about Figure 9, and it's about the section 62, 64, and
2 222, and saying they could be covered with low profile
3 polyester, ePTFE, or other nonporous covering material,
4 and that's part of what I used when I focused on the
5 nonporous.
6 Q. Now, I'd like to direct your attention to the
7 sentence starting at column 13, line 33, which says "The
8 outer surface 240 of the section 62, 64, 222, may also be
9 covered with low profile Dacron or other synthetic
10 material."
11 Do you see that?
12 A. Yes.
13 Q. So that sentence also refers to a graph
14 covering; correct?
15 A. Yes.
16 Q. Now, you can see it says, "Low profile Dacron
17 or other synthetic material," but it doesn't make
18 reference to the term "nonporous"; correct?
19 A. No. But it's saying may also be covered with
20 these, so it's an additional covering, which is put on.
21 And it's talking about sections 62, 64, and 222, on the
22 Figure 9 embodiment, which is the endograph device. It's
23 not the compound device.
24 Q. So you believe that this paragraph suggests
25 that you would cover the outer surface at low profile

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1 polyester ePTFE, or other nonporous covering material, and
2 then you would also, on top of that, cover it with low
3 profile Dacron?
4 A. That's what it's saying.
5 Q. Well, the phrase "may be also" could also be
6 interpreted to mean may alternatively be; correct?
7 A. Well, that isn't what it says. But if that's
8 your interpretation, that would be what it's saying. But
9 it's talking about embodiment that I haven't really
10 focused on or sections that I haven't really focused on,
11 62, 64, 222.
12 And it is saying "may also be covered,"
13 because this is the part of the graft that extends up into
14 the alt of the endograft device.
15 Q. Do endograft devices use graft coverings?
16 A. Yes.
17 But again, so we're clear on this, I think
18 I've already said the Board construed it for a heart
19 valve. They did outer graft covering for a heart valve.
20 Q. What is healing porosity?
21 A. I'm sorry. Say it again? I missed your
22 words.
23 Q. What is healing porosity?
24 A. Healing porosity?
25 Q. Yes.

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1 A. I would need to see the context of what is
2 being meant by healing porosity. I can't remember that
3 term in the patent.
4 Q. You used the term "healing porosity" in your
5 declaration. Do you not recall that?
6 A. You'll need to show me. I don't, as I sit
7 here, I'm afraid. But you can refresh my memory.
8 Q. What is bleeding porosity?
9 A. I don't know. Again, if you can show me the
10 context that I used it in. If you're saying I used that
11 as well, then I need to see the context that I put it in.
12 Q. Why don't we look at Pourdeyhimi, which is
13 Exhibit 1110.
14 Dr. Buller, are we looking at Exhibit 1110,
15 called Pourdeyhimi.
16 A. Yes. I can't see the Exhibit Number. Here
17 it is. 1110, yes. We are.
18 Q. And you recognize this article?
19 This is one of your exhibits, I believe?
20 A. I do. It's from long ago. It's from 1987.
21 It's an article that I relied on.
22 Q. Okay.
23 Can we go to page 1072 of the article, which
24 I believe is page 10 of the .pdf?
25 Okay. So you see we're on a page that starts

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1 with the title for admitted vascular grafts?
2 A. Yes.
3 Q. Okay.
4 So let's go to the second paragraph on this
5 page -- and let's see. Where is it?
6 Yeah. Okay.
7 You see there's a sentence. It's second last
8 sentence of that paragraph that says, "The use of bulk
9 texurized yarns has led a reduction in porosity
10 (increasing healing porosity) without conversely adversely
11 permeability (bleeding porosity)."
12 Do you see that?
13 A. I do. I see it.
14 Q. So you see there's a distinction being made
15 in Pourdeyhimi between healing porosity and bleeding
16 porosity?
17 A. Yes.
18 Q. And you see it says, "A reduction in porosity
19 would, in this context, mean an increase in healing
20 porosity."
21 Do you see that?
22 A. Yes. That's what it says.
23 Q. And that would not adversely affect
24 permeability, which is bleeding porosity; correct?
25 A. Yes.

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1 Q. So what is healing porosity?
2 A. I assume, from what I'm reading here, that it
3 is what they're talking about is the ability of the fabric
4 to allow tissue to grow in, the healing processes. So
5 they are talking about the ability of tissue to penetrate
6 and grow in, grow through the fabric.
7 Q. Now, when the term "porous" or "nonporous" is
8 used in the '236 Patent, it's not talking about healing
9 porosity; correct?
10 A. No. It has -- as we've talked about at
11 length, it's talking about the passage of fluids, so it's
12 purely talking about the passage of fluid.
13 What I think in the patents we're talking
14 about, the '236 Patent, is we're talking about a device
15 and what it's made of and what characteristics it has.
16 This is much more talking about in the body
17 and biological events, because healing porosity and
18 bleeding porosity occur in the bone, you know, inside the
19 patient. They are not things that occur in the device
20 itself.
21 Q. Why don't we take a short break. I think I
22 can take 5 minutes, but I think we'll be done. So why
23 don't we say 10 minutes.
24 A. Okay.
25 MR. LOWENSTEIN: Off the record.

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1 (Pause in proceeding.)
2 MR. LOWENSTEIN: Well, Dr. Buller, thank you
3 for your time. Unless there is redirect, I have no
4 further questions.
5 MR. SUMMERS: I have no questions.
6 Thank you, Dr. Buller.
7 THE WITNESS: Thank you very much. Thank
8 you, both of you.
9 THE REPORTER: Mr. Summers, did you want a
10 copy?
11 MR. SUMMERS: Yes, we do.
12 THE REPORTER: Thank you.
13 (Ending time: 10:31 a.m.)
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1
2
3 I, NIGEL BULLER M.D., do hereby declare under
4 penalty of perjury that I have read the foregoing
5 transcript of my deposition; that I have made such
6 corrections as noted herein, in ink, initialed by me, or
7 attached hereto; that my testimony as contained herein, as
8 corrected, is true and correct.
9 EXECUTED this _____ day of _____,
10 at _____, _____.
(City) (State)
11
12
13
14
_____
15 NIGEL BULLER M.D.
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1

2 I, the undersigned, a Certified Shorthand Reporter
3 for the State of California, do hereby certify:
4 That prior foregoing proceedings were taken
5 completely video before me at the time and place herein
6 set forth; that any witnesses in the foregoing
7 proceedings, prior to testifying, were placed under oath;
8 That a verbatim record of the proceedings was made
9 by me using machine shorthand which was thereafter
10 transcribed under my direction; further, that the
11 foregoing is an accurate transcription thereof.
12 I further certify that I am neither financially
13 interested in the action nor a relative or employee of any
14 attorney of any of the parties.
15 IN WITNESS WHEREOF, I have this date subscribed my
16 name.
17
18 Dated: April 12, 2023
19
20
21
22
Laura A. Rutherford
23 Laura A. Rutherford, RPR
CSR No. 9266
24
25

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