

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD
45
6 PENUMBRA, INC.,

7 Petitioner,

8 v.

9 RAPIDPULSE, INC.,

10 Patent Owner.
11

12 IPR2021-01466

13 Patent No. 10,531,883
1415
16 REMOTE DEPOSITION OF BRIAN BROWN

17 Hanover, Minnesota via Zoom

18 June 15, 2022
19
20
21

22 Reported by:

23 Dana Welch, CSR, RPR, CRR

24 Job No. 212699
25**RapidPulse-2013**
U.S. Patent 10,531,883RapidPulse, Inc.
Exhibit 2024
Penumbra v. RapidPulse
IPR2024-01261

Page 2 1 2 3 June 15, 2022 4 8:34 a.m. CDT 5 6 Remote deposition of BRIAN BROWN, held via 7 Zoom with the deponent appearing from Hanover, 8 Minnesota, before Dana Welch, Certified Shorthand 9 Reporter, Registered Professional Reporter, 10 Certified Realtime Reporter and Notary Public. 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 3 1 APPEARANCES: 2 For the Patent Owner: 3 PERKINS COIE LLP 4 Lori Gordon, Esq. 5 Michael Chajon, Esq. 6 Paul Parker, Esq. 7 700 Thirteenth Street NW 8 Washington, DC 20005 9 10 11 12 13 14 15 16 17 For the Petitioner: 18 BAKER BOTTS L.L.P. 19 Eliot Williams, Esq. 20 Mark Oda, Esq. 21 Dr. Frank Zhu, Esq. 22 1001 Page Mill Road 23 Palo Alto, California 94304 24 25
Page 4 1 APPEARANCES CONT'D: 2 3 Also Present: Dr. Ender Finol 4 William Yee, Esq. (Penumbra) 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 5 1 BROWN 2 P R O C E E D I N G S 3 BRIAN BROWN, 4 having provided proper identification, was 5 placed under oath and testified as follows: 6 COURT REPORTER: Due to COVID-19 and the 7 practice of social distancing, the court reporter, 8 Dana Welch, will not be in the same room with the 9 witness and will swear the witness remotely. 10 Do all parties stipulate to the validity 11 of this remote swearing and that it will be 12 admissible in court as if it had been taken 13 following the Federal Rules of Civil Procedure and 14 the state's rules where this case is pending? 15 MS. GORDON: This is Lori Gordon. We so 16 stipulate. 17 MR. WILLIAMS: This is Eliot Williams. We 18 stipulate on behalf of the petitioner. 19 EXAMINATION 20 BY MS. GORDON: 21 Q. So could you state your full name for the 22 record, please? 23 A. Yes. It is Brian J. Brown. 24 Q. Thank you. 25 Good morning, Mr. Brown. My name is Lori

Page 6 1 BROWN 2 Gordon, and I represent the patent owner in this 3 proceeding, RapidPulse. I'm going to be taking 4 your deposition here today. 5 Have you been deposed before? 6 A. I have. 7 Q. How many times? 8 A. Approximately ten times. 9 Q. And were those ten depositions in 10 different matters? 11 A. Yes. 12 Q. Okay. So you have been an expert witness 13 in ten different legal matters? 14 A. No. 15 Q. Okay. So the depositions you've taken, 16 how many matters were they associated with? 17 A. I'm not understanding the question. 18 Q. All right. So you testified that you've 19 been deposed approximately ten times; is that 20 correct? 21 A. Correct. 22 Q. And were each of those ten depositions 23 associated with different matters? 24 A. Yes. 25 Q. And were those depositions related to your	Page 7 1 BROWN 2 work as an expert witness? 3 A. Some of them were. 4 Q. How many of those depositions were related 5 to your work as an expert witness? 6 A. I believe one. 7 Q. And what were the other nine related to? 8 A. The other nine were related to when I was 9 employed with Boston Scientific and patent 10 litigation cases associated with Boston Scientific. 11 I would be brought in to be deposed on the subject 12 matter. 13 Q. I see. As the witness for the company? 14 A. Correct. 15 Q. And in the one deposition where you were 16 acting as an expert, what was that case? 17 A. It was a case between QXMedical and 18 Teleflex. 19 Q. So when was the last time you were 20 deposed? 21 A. Approximately two years ago. 22 Q. All right. So I'd just like then quickly 23 to go through some ground rules for this 24 deposition. And just a quick follow-up question, 25 was your most recent deposition by video or was
Page 8 1 BROWN 2 that still in person? 3 A. It was still in person. 4 Q. Okay. So Mr. Brown, I'm going to ask you 5 questions here today and the court reporter is 6 going to transcribe your answers. So we need you 7 to answer verbally so she can hear and record your 8 answers. Does that make sense to you? 9 A. It does. 10 Q. And if there's any time I ask a question 11 and the question is not clear, you know, maybe 12 perhaps because of the audio link or something 13 related to the platform, or you just don't 14 understand my question, please let me know and I 15 will try and reframe the question for you. Does 16 that sound reasonable? 17 A. It does. 18 Q. And during today's deposition, if you need 19 to take a break, let me or your attorney know and 20 we'll finish off any pending questions and take a 21 break. Does that sound reasonable? 22 A. It does. 23 Q. All right. Is there any reason that you 24 cannot give truthful and accurate testimony here 25 today?	Page 9 1 BROWN 2 A. Not that I'm aware of. 3 Q. You understand that you are here today 4 regarding the testimony you provided by declaration 5 in the United States Patent and Trademark Office 6 associated with inter partes review petition of 7 U.S. Patent Number 10,531,883? 8 And for purposes of today's deposition, is 9 it okay if we refer to the '883 patent or Deville 10 '883? 11 A. It is. 12 Q. Mr. Brown, did you prepare for today's 13 deposition? 14 A. I did. 15 Q. And what did you do to prepare for today's 16 deposition? 17 A. Reviewed my declaration. 18 Q. Okay. Did you review any other documents 19 other than your declaration? 20 A. I reviewed any document that was 21 referenced within my declaration. 22 Q. Okay. And those were the documents that 23 were listed in the exhibit list at the front of 24 your declaration? 25 A. Correct.

Page 10 1 BROWN 2 Q. Okay. And did you meet with anybody as 3 part of your preparation for today's deposition? 4 A. I did. 5 Q. And who did you meet with? 6 A. I met with the -- a number of counsel at 7 Baker Botts. 8 Q. And who were the counsel that you met 9 with? 10 A. I met with Eliot Williams and with Frank 11 Zhu and with Mark Oda. 12 Q. And how many hours did you spend meeting 13 with counsel in preparation for today's deposition? 14 A. I would estimate around 12 hours. 15 Q. And was that in a single day or spread 16 across multiple days? 17 A. Multiple days. 18 Q. How many days? 19 A. Two. 20 Q. And outside of the meetings with counsel, 21 how many hours did you spend preparing for today's 22 deposition? 23 A. Approximately an additional day, or eight 24 hours. 25 Q. Okay. Other than the counsel you	Page 11 1 BROWN 2 mentioned, did you talk with anyone regarding the 3 subject matter of today's deposition? 4 A. Not that I recall. 5 Q. Okay. Other than counsel from Penumbra, 6 was there anyone else in your preparation meetings 7 for today's deposition? 8 A. There was one other individual. I do not 9 recall his name. 10 Q. Okay. And what do you recall about that 11 individual? 12 A. I do recall his first name is Bill, but I 13 do not recall his last name. 14 Q. And do you recall what company Bill was 15 associated with? 16 A. I'm not sure. 17 Q. Was Bill an attorney? 18 A. I believe so. 19 Q. And was Bill an attorney representing 20 Penumbra? 21 A. I believe so. 22 Q. Was Bill an attorney from Baker Botts? 23 A. Unknown. 24 Q. Was Bill an attorney who was an employee 25 of Penumbra?
Page 12 1 BROWN 2 A. Unknown. 3 Q. And who would know Bill's affiliation? 4 A. I would suspect the attorneys from Baker 5 Botts. 6 Q. Okay. And did you receive any e-mails 7 with Bill's contact information or did you receive 8 any e-mails in which Bill was cc'd or included on? 9 A. I did not. 10 Q. Okay. 11 MR. WILLIAMS: If I can interject for a 12 second. I think Bill may actually be here as 13 someone named William came into the meeting, I just 14 want to make sure that's actually him. 15 Bill, is that you. 16 MR. YEE: Yes, that's correct, that's me. 17 MR. WILLIAMS: The last name is Y-e-e, 18 and, yeah, he is in-house counsel at Penumbra. 19 Q. Okay. So Mr. Brown, I'm going to 20 upload -- well, actually, before I do that, 21 Mr. Brown, do you have any documents related to 22 this case with you right now? 23 A. I do. 24 Q. What documents do you have? 25 A. I have my declaration and I have the	Page 13 1 BROWN 2 documents that are referenced in my declaration. 3 Q. Okay. And do those documents have any 4 notes on them? 5 A. They do not. 6 Q. Okay. And so you are representing to me 7 that these documents are clean copies with no 8 markings on them, on any pages? 9 A. Correct. 10 Q. Okay. Mr. Brown, is there anyone in the 11 room with you right now? 12 A. There is not. 13 Q. Okay. All right. So if you have your 14 declaration in front of you and the documents from 15 this proceeding, if counsel from Penumbra is okay, 16 I will just introduce the documents and allow 17 Mr. Brown to use his local copies if that is 18 acceptable to you, Mr. Williams? 19 MR. WILLIAMS: That's fine, as long as you 20 confirm with the witness that he has a copy of the 21 document you're going to ask questions about. 22 MS. GORDON: And counsel, you don't 23 require me to upload these documents from the 24 proceeding into the exhibit link; is that a fair 25 assumption?

Page 14 1 BROWN 2 MR. WILLIAMS: That's right. But I'll let 3 you know if I don't have access to the document. 4 Just let me know the exhibit number when you start 5 asking about it. 6 MS. GORDON: So we can short circuit this 7 piece of remote depositions, then. 8 Q. So Mr. Brown, I'd like to mark several or 9 introduce several exhibits now into this deposition 10 that we may be talking about this morning. 11 So could you please bring up Exhibit 1001 12 to this proceeding. 13 A. So that would be the '883 patent? 14 Q. Yes. And Exhibit 1001 is U.S. Patent 15 Number 5602 -- sorry, that's the wrong patent 16 number. 17 Yes, that's the '883 patent. So it's 18 patent number 10,531,883. 19 A. I have that in front of me. 20 Q. Do you recognize this document? 21 A. I do. 22 Q. And is this one of the documents that you 23 reviewed in preparation for today's deposition? 24 A. It is. 25 Q. All right. And can you also bring up	Page 15 1 BROWN 2 Exhibit 1005 to this proceeding titled, "The 3 Declaration of Brian Brown in Support of Petition 4 for Inter Partes Review of U.S. Patent Number 5 10,551,883"? 6 A. I have that in front of me. 7 Q. Do you recognize this document? 8 A. I do. 9 Q. Did you review this document in 10 preparation for today's deposition? 11 A. I did. 12 Q. All right. Mr. Brown, would you also 13 access what's been marked as Exhibit 1007 to this 14 proceeding, U.S. Patent Number 11,096,712. 15 A. I have it in front of me. 16 Q. Do you recognize this document? 17 A. I do. 18 Q. Is this one of the documents you reviewed 19 in preparation for today's deposition? 20 A. Yes. 21 Q. And is it okay if we refer to this 22 document as either Teigen '712 or the '712 patent? 23 A. It is acceptable. I often refer to it as 24 just the Teigen patent. 25 Q. Okay. I may ask you to clarify because we
Page 16 1 BROWN 2 have a lot of references with Teigen as the first 3 inventor in these proceedings. So to the extent 4 that we need to be more clear, I will ask for 5 clarification, but thank you for that 6 representation or that explanation. 7 So I would also like you to access what's 8 been marked as Exhibit 1010 to this proceeding, 9 which is a publication from the World Intellectual 10 Property Organization, WO 2014/151209. Do you have 11 that document in front of you? 12 A. I do. 13 Q. And do you recognize this document? 14 A. I do. 15 Q. And is this one of the documents that you 16 reviewed in preparation for today's deposition? 17 A. Yes. 18 Q. All right. So Mr. Brown, I'd like to turn 19 to your declaration. 20 A. I have it in front of me. 21 Q. If you could turn to page 162. 22 A. I'm on 162. 23 Q. Is that your signature on this page? 24 A. Yes. 25 Q. Okay. And is that an ink signature or is	Page 17 1 BROWN 2 that an electronic signature? 3 A. I believe that is an electronic signature. 4 Q. Okay. And you inserted this signature 5 yourself into the document? 6 A. Yes. 7 Q. Okay. And you confirmed that you inserted 8 it into the copy of the electronic document that 9 was submitted in this proceeding? 10 MR. WILLIAMS: Objection to form, vague. 11 A. I don't recall or I'm not completely 12 understanding your question, I guess. 13 Q. So you testified that you inserted this 14 signature into an electronic document, correct? 15 A. I did say that, and maybe I need to just 16 clarify when you say "inserted it," what do you 17 mean by -- so I provided the electronic signature 18 to place into this document. 19 Q. Okay. So you did not place the signature 20 into this document yourself? 21 A. I do not recall whether I placed it in 22 here or not. 23 Q. Okay. But you recall sending your 24 signature separately to counsel for use in this 25 proceeding?

Page 18 1 BROWN 2 A. Correct. 3 Q. And you sent that via e-mail? 4 A. Correct. 5 MS. GORDON: Counsel, can we turn -- 6 Q. I mean, sorry -- Mr. Brown, can we turn to 7 paragraph 1? 8 A. I am at paragraph 1. 9 Q. In this paragraph, you state, "I have 10 prepared this declaration as an expert witness 11 retained by Penumbra, Inc." 12 When were you retained by Penumbra, Inc. 13 in connection with this IPR proceeding? 14 A. I do not recall the exact date. 15 Q. If we turn back to page 162. 16 A. I am there. 17 Q. This declaration is dated on August 26, 18 2021; is that correct? 19 A. Correct. 20 Q. Approximately how many months before 21 August 2021 were you retained by Penumbra in 22 connection with this IPR proceeding? 23 A. Approximately, I would say 6 to 9 months. 24 Q. Okay. So you were retained by Penumbra at 25 approximately the start of 2021?	Page 19 1 BROWN 2 A. I believe it was more towards the end of 3 2020. 4 Q. Okay. And were you engaged by Penumbra or 5 retained by Penumbra specifically related to 6 preparing a declaration for an IPR of the '883 7 patent? 8 MR. WILLIAMS: Objection to form. 9 A. I was retained by Penumbra to serve as an 10 expert witness related to the '883 patent. 11 Q. Okay. And were you retained by Penumbra 12 to serve as an expert witness related to any other 13 patent? 14 A. Yes. 15 Q. What other patent? 16 A. I do not recall the number, but it would 17 be the second issued patent from Syntheon. 18 Q. Okay. And that is the patent that you 19 submitted a declaration in earlier this year? 20 A. Correct. 21 Q. Okay. So other than serving as an expert 22 witness related to the '883 patent and the 23 follow-on patent, were you retained by Penumbra in 24 any other context to serve as an expert witness? 25 A. No.
Page 20 1 BROWN 2 Q. So your work as an expert witness for 3 Penumbra is limited to the two proceedings that we 4 discussed? 5 A. Yes. 6 Q. And you testified that you were retained 7 by Penumbra approximately around the end of 2020. 8 When you say "retained," is that when you signed an 9 engagement letter to work on behalf of Penumbra? 10 A. I signed a letter to work on this case as 11 an expert witness. I do not recall whether the 12 engagement letter was with Penumbra, with Baker 13 Botts or with the firm that recruited me. 14 Q. Okay. And what firm recruited you? 15 A. It is referred to as IMS. I don't recall 16 exactly what each one of those letters mean. 17 Q. Okay. So IMS Consulting reached out to 18 you regarding this matter; is that correct? 19 A. Correct. 20 Q. Okay. And when did IMS Consulting reach 21 out to you? 22 A. Fall of 2020. 23 Q. Okay. When you say "the fall," are we 24 talking October time frame, November? When you say 25 fall, can you dial it in a little more precisely?	Page 21 1 BROWN 2 A. I am unable to dial it in any closer than 3 that. 4 Q. Okay. So approximately how many months 5 between when you were first consulted and when you 6 were retained in the end of 2020 were you 7 contacted? 8 A. I do not recall. 9 Q. Was it one month? 10 A. I do not recall. 11 Q. Was it several weeks? 12 A. I do not recall. 13 Q. Do you have any recollection of the time 14 frame between when you were first contacted by IMS 15 and when you were retained by Penumbra? 16 A. I'm sorry. Are you asking if I have any 17 recollection? 18 Q. Right. I'm trying to get a sense -- I 19 mean, we're talking, you know, less than two years 20 ago. I'm just trying to get a sense for a rough 21 time period from when you were first contacted by 22 IMS and when you were engaged by Penumbra. 23 A. And I am telling you that I do not recall 24 the exact time frame between those two points. 25 Q. All right. Do you recall whether it was a

Page 22 1 BROWN 2 matter of days? 3 A. I do not recall. 4 Q. So you don't recall -- you have no 5 recollection of whether you got a call and were 6 engaged within a week? You just don't have any 7 recollection of that? 8 A. That is what I'm telling you. 9 Q. Okay. And in the period of time between 10 when you were contacted by IMS Consulting and when 11 you signed the engagement letter, did you have any 12 conversations with individuals regarding either the 13 Deville '883 patent or any patents owned by 14 RapidPulse or Syntheon? 15 A. Please ask the question again. 16 Q. Okay. So in the period of time between 17 when you were contacted by IMS Consulting and when 18 you signed the engagement letter to when you were 19 formally retained, did you have any conversations 20 regarding either Deville '883 patent or any patents 21 owned by RapidPulse or Syntheon? 22 A. I do not recall whether I reviewed or had 23 any conversations regarding those patents in that 24 time frame. 25 Q. Okay. And did you have any conversations	Page 23 1 BROWN 2 with counsel for Penumbra prior to being retained 3 formally in these matters? 4 A. I believe we had an interview, but that is 5 all I remember. 6 Q. Okay. And do you recall who was present 7 at the interview? 8 A. I do not. 9 Q. Okay. And do you recall speaking with any 10 individuals from Penumbra prior to being engaged in 11 this matter? 12 A. I do not remember any interaction with 13 Penumbra. 14 Q. Okay. When you say any interaction, do 15 you mean conversations with Penumbra or -- 16 MS. GORDON: Strike that. 17 Q. Can you explain to me what you meant by 18 your answer, any -- sorry -- looks like my 19 real-time froze. I believe you said any -- 20 MS. GORDON: Sorry. My real-time froze. 21 Q. So your answer, you said, "I don't 22 remember any interaction with Penumbra." 23 Could you explain to me what you mean by 24 "any interaction with Penumbra"? 25 A. I meant any conversation related to this
Page 24 1 BROWN 2 case. 3 Q. Okay. And were you familiar with the 4 Deville '883 patent before you were contacted by 5 IMS Consulting? 6 A. I was not. 7 Q. Okay. And were you familiar with the 8 Teigen '712 patent before being contacted by IMS 9 Consulting? 10 A. I was not. 11 Q. Okay. And do you have any familiarity 12 with Penumbra before being contacted by IMS 13 Consulting? 14 A. Yes. 15 Q. And what is that? 16 A. I am aware that they are a medical device 17 company that specializes in the treatment of 18 neurovascular disease. 19 Q. Okay. And have you used any Penumbra 20 devices? 21 A. Can you clarify what you mean by "used"? 22 Q. Okay. So maybe you can help me, what's 23 the distinction you're making in your mind when I 24 use the term "use"? 25 A. I'm asking you what you mean by the word	Page 25 1 BROWN 2 "use." 3 Q. So have you operated any Penumbra devices? 4 A. In which time frame? 5 Q. So I'm starting with the universe of all 6 times. So have you ever used any Penumbra devices? 7 A. I have not -- 8 Q. Let me -- sorry. Have you ever operated 9 any devices offered by Penumbra? 10 A. I have not operated a Penumbra device. 11 And your word "operate" would suggest that turning 12 something on, off, using, I have not done that. 13 Q. Okay. Are you familiar with the devices 14 offered by Penumbra? 15 A. Some of them. 16 Q. All right. Which devices are you familiar 17 with? 18 A. Most familiar with their thrombectomy 19 devices. 20 Q. And what are those devices? 21 A. Those are devices that remove thrombus. 22 Q. Right. But do those devices have 23 commercial names? 24 A. They do, and I do not recall the names. 25 Q. Okay. And how are you familiar with those

Page 26 1 BROWN 2 devices? 3 A. I am familiar with some of them through 4 this case and just being aware of their devices 5 because I work in the medical device community. 6 Q. Okay. And when you say you are aware of 7 their devices through this case, can you explain to 8 me how you became aware of the devices through this 9 case? 10 A. Some of the documents that are in this 11 case do refer to Penumbra devices. 12 Q. Okay. And have you seen -- 13 MS. GORDON: Let me strike that question. 14 Q. Are you only familiar with the documents 15 through -- I mean, with the devices through the 16 documents you reviewed? 17 A. As stated earlier, that is my highest 18 level of familiarity is through those documents, 19 but I was also aware of Penumbra and the fact that 20 they have devices prior to this case. 21 Q. Okay. And have you ever seen any Penumbra 22 devices being used or operated by anyone? 23 A. I have not. 24 Q. Okay. And have you handled any of the 25 Penumbra devices?	Page 27 1 BROWN 2 A. "Any" being any product from Penumbra? 3 Q. Yes. Have you handled any product from 4 Penumbra? 5 A. Yes. 6 Q. Which products are those? 7 A. It was an infusion catheter. I do not 8 recall the name. 9 Q. Okay. And other than the infusion 10 catheter, have you handled any product from 11 Penumbra? 12 A. I have not. 13 Q. So you have not handled the thrombectomy 14 you mentioned earlier? 15 A. I have not. 16 Q. And you have not seen the thrombectomy 17 device being operated; is that correct? 18 A. Correct. 19 Q. And have you seen any videos related to 20 the operation of Penumbra's thrombectomy device? 21 A. I do not recall seeing a video. 22 Q. Okay. Have you seen any videos related to 23 the operation of a device from Syntheon? 24 A. Not that I recall. 25 Q. And have you seen outside of the '883
Page 28 1 BROWN 2 patent, any documents related to a device from 3 Syntheon? 4 A. The second Syntheon patent. 5 Q. Okay. So other than the two RapidPulse or 6 Syntheon patents, you have not seen any documents 7 related to a Syntheon product? 8 A. Correct. 9 Q. Okay. I believe, Mr. Brown, in your 10 declaration, you refer to your standard rate in 11 paragraph 2. What is your standard rate? 12 A. It is 400 per hour. 13 Q. Okay. And in your declaration, you 14 mention prior litigation experience, but I did not 15 see a listing of that litigation experience. Can 16 you provide me to the best of your recollection the 17 litigation matters that you've acted as an expert 18 witness on? 19 A. You would like me to provide that 20 verbally? 21 Q. I would like you to walk me through that, 22 yes, please. 23 A. I served as an expert witness for a case 24 between QXMedical and Teleflex. 25 Q. Okay.	Page 29 1 BROWN 2 A. I served as an expert witness in a case 3 between Abbott and Cardinal Health; I served as an 4 expert witness in a case for Dr. Raju versus 5 Medtronic; and I served as an expert witness for 6 this case. 7 Q. Okay. So starting with the first 8 litigation that you mentioned, the QX versus 9 Teleflex. Was that a proceeding in front of the 10 United States Patent and Trademark Office? 11 A. No. 12 Q. Was that a proceeding in front of a 13 district court? 14 A. Yes. 15 Q. And who did you represent in that matter? 16 A. QXMedical. 17 Q. And what was the technology in that case? 18 A. That was a guide catheter extension. 19 Q. A guide catheter extension, okay. 20 And QXMedical was the patent owner in that 21 case? 22 A. No. 23 Q. So it was Teleflex versus QXMedical? 24 A. No. As odd as it sounds, QXMedical 25 actually sued Teleflex ahead of Teleflex suing

Page 30 BROWN 1 2 them. 3 Q. So it was a declaratory judgment action? 4 A. Yes. 5 Q. So QXMedical was what we would 6 traditionally refer to as the defendant, but they 7 were in fact the petitioner. Understood. 8 A. Yes. 9 Q. And what was your role in that case? 10 A. I was their subject matter expert. 11 Q. Were you the subject matter expert for 12 validity? 13 A. Yes. 14 Q. Did you also act as the subject matter 15 expert for infringement? 16 A. Yes. 17 Q. And I believe you testified earlier that 18 you were deposed as part of that case; is that 19 correct? 20 A. Correct. 21 Q. Okay. And did that case go to trial? 22 A. Not yet. 23 Q. I see. So it is a pending case? 24 A. Correct. 25 Q. Okay. All right. And do you recall what	Page 31 BROWN 1 2 jurisdiction that case is in? 3 A. I don't recall jurisdiction, but the case 4 is being held here in Minneapolis. 5 Q. I see. Okay. In the second matter you 6 mentioned, Abbott Laboratories versus I believe you 7 said Cardinal Health; is that correct? 8 A. Correct. 9 Q. Was that a proceeding in front of the 10 United States Patent and Trademark Office? 11 A. Yes. 12 Q. And who did you represent in that matter? 13 A. Abbott. 14 Q. And were they the petitioner in that case? 15 A. It was a unique case where it wasn't 16 litigation as far as infringement. It was a case 17 of contract dispute. 18 Q. Okay. So -- all right. So let me take a 19 step back. You said it was a proceeding in front 20 of the United States Patent and Trademark Office; 21 is that correct? 22 A. Correct. 23 Q. And did Abbott file an inter partes review 24 petition? 25 A. Correct.
Page 32 BROWN 1 2 Q. I see. And in that case, you were acting 3 as an expert for Abbott to challenge the validity 4 of the patent; is that correct? 5 A. Correct. 6 Q. Okay. And would it be a correct 7 assumption that there was also a parallel contract 8 dispute in a district court between those parties? 9 A. Correct. 10 Q. I see. 11 And did you act as a subject matter expert 12 in that contract matter? 13 A. Yes. 14 Q. I see. I see. 15 And for the patent office piece of that 16 matter, were you deposed in that proceeding? 17 A. I was not. 18 Q. Okay. And is that matter still pending? 19 A. No. 20 Q. Okay. And do you recall what the 21 resolution was for that matter? 22 A. It was settled out of court. 23 Q. Okay. And is that same true for the 24 contract piece of that dispute between Abbott and 25 Cardinal Health?	Page 33 BROWN 1 2 A. Yes. 3 Q. I see. Okay. And you were not deposed as 4 a subject matter expert in that contract dispute 5 either, correct? 6 A. Correct. 7 Q. Okay. In the third matter you referenced, 8 Dr. -- let me go back to the Abbott matter. What 9 was the technology in that case? 10 A. It was a stent design. 11 Q. Okay. All right. Now, before Dr. Raju 12 versus Medtronic -- was that in front the United 13 States Patent and Trademark Office? 14 A. No. 15 Q. Was that a matter in front of the district 16 court? 17 A. I do not recall if it was in front of the 18 district court. It was a matter related to trade 19 secret infringement or theft. 20 Q. I see. I see. Okay. So it could have 21 been a state court. 22 So you were acting as an expert witness in 23 that matter? 24 A. Correct. 25 Q. And did it involve any patents?

Page 34 1 BROWN 2 A. Not that I recall. 3 Q. And who did you represent in that case? 4 A. Dr. Raju. 5 Q. Okay. And what was the technology in that 6 case? 7 A. A venous stent. 8 Q. Okay. And is that case still active? 9 A. It is not. 10 Q. Okay. And were you deposed in that case? 11 A. No. 12 Q. And did that case go to trial? 13 A. No. 14 Q. And what was the resolution of that case? 15 A. I believe the judge ruled that there 16 wasn't sufficient evidence to try the case. 17 Q. I see. Okay. So let's turn to paragraph 18 5 of your declaration. 19 A. I'm there. 20 Q. Okay. All right. In this paragraph, you 21 mention experience in the development of 22 neurovascular and aspiration thrombectomy devices. 23 Do you see that? 24 A. I do. 25 Q. Can you explain your experience in	Page 35 1 BROWN 2 aspiration thrombectomy devices? 3 A. Yes. I was asked to develop a 4 thrombectomy catheter during my employment with 5 SciMed, and I worked on developing that catheter 6 for approximately 1 to 2 years. 7 Q. Okay. And other than that experience, is 8 there any other experience you have in aspiration 9 thrombectomy devices? 10 A. Yes. In my role as vice president of 11 research and development at Boston Scientific, I 12 was responsible for overseeing all of our product 13 development in the area of cardiovascular, and we 14 were either developing aspiration thrombectomy 15 devices or we were acquiring aspiration 16 thrombectomy devices, and I was responsible for 17 overseeing those. 18 Q. Okay. Now, your experience in SciMed, 19 when did that occur? 20 A. That was in the early '90s. 21 Q. Okay. And the experience you referenced 22 with Boston Scientific, when did that occur? 23 A. That would be in the time frame of roughly 24 2000 to 2013. 25 Q. Okay. So approximately 13 years?
Page 36 1 BROWN 2 A. Approximately. 3 Q. Okay. And the aspiration device you 4 worked on at SciMed, was it in the area of 5 cardiovascular? 6 A. Yes. 7 Q. And other than the experience at Boston 8 Scientific and at SciMed, do you have other 9 experience in aspiration thrombectomy? 10 A. Not that I recall. 11 Q. Going back to your answer regarding your 12 role at Boston Scientific, what aspiration 13 thrombectomy devices were developed at Boston 14 Scientific while you were in that role? 15 A. There isn't any trade name to the 16 products. We were just developing devices, none of 17 them were commercialized. 18 Q. I see. 19 And I believe you mentioned Boston 20 Scientific was acquiring aspiration thrombectomy 21 devices during that time period; is that correct? 22 A. Correct. 23 Q. And what aspiration thrombectomy products 24 were acquired by Boston Scientific in that time 25 period?	Page 37 1 BROWN 2 A. Unfortunately, I do not remember the names 3 of the products. 4 Q. Okay. Do you recall what companies you 5 were acquiring those devices from? 6 A. I do not. 7 Q. Okay. Do you recall, were the products 8 that were being developed by Boston Scientific in 9 that time frame mechanical thrombectomy devices? 10 A. Some of the ones that we were either 11 looking at or acquiring were mechanical. 12 Q. Okay. So you said some of them were 13 mechanical. What were the others? 14 A. Well, we really haven't established the 15 different categories, but there's mechanical, 16 there's aspiration, there's lytics. 17 Q. Did you say lytics? 18 A. Correct. 19 Q. Can you spell that for me? 20 A. I believe it's l-y-t-i-c-s. 21 Q. I see. And so lytics is the drug-related 22 systems; is that correct? 23 A. Correct. 24 Q. Okay. And in paragraph 5, you said 25 "including the development of neurovascular

Page 38 1 BROWN 2 devices." What devices fall under the category of 3 neurovascular in your experience? 4 A. I was involved with the development of a 5 neurovascular guidewire and a neurovascular 6 infusion catheter. 7 Q. And during what time frame were you 8 involved with the development of a neurovascular 9 guidewire? 10 A. In the early '90s. 11 Q. Okay. And for what company? 12 A. SciMed. 13 Q. Okay. And your reference to a 14 neurovascular infusion catheter, what company were 15 you working for when you were involved in that 16 work? 17 A. SciMed. 18 Q. And for the neurovascular guidewire, what 19 indications was that for? 20 A. Neurovascular. 21 Q. Okay. For what conditions? 22 A. For the treatment of neurovascular 23 disease. 24 Q. Okay. Can you be a little bit more 25 specific for me what type of neurovascular disease?	Page 39 1 BROWN 2 A. The indication is what I just said, so it 3 would be all encompassing of neurovascular disease, 4 treatment with a catheter. 5 Q. Okay. I'm trying to get an understanding 6 of when you are using the term "neurovascular 7 disease," what does that encompass? 8 A. You would like me to list all different 9 types of neurovascular disease? 10 Q. So I would like you to give me maybe an 11 understanding, because I am not a medical 12 professional, so I would like to understand when 13 you use that term, what do you mean? 14 A. When I say "neurovascular disease," I'm 15 referring to treatment of embolic stroke, 16 hemorrhagic stroke, ischemic events, 17 atherosclerotic plaque treatment, thrombectomy. 18 Q. Thank you. 19 So other than the neurovascular guidewire 20 and the neurovascular infusion catheter, do you 21 have any other experience with neurovascular 22 devices? 23 A. Those two would be the most direct 24 applications. 25 Q. When you use the word "direct," were there
Page 40 1 BROWN 2 any indirect experiences? 3 A. Similar to our earlier discussion, in my 4 role as vice president of R&D, I would be made 5 aware of other activities in the neurovascular 6 space. 7 Q. Okay. And so while you were working at 8 Boston Scientific, you were made aware of 9 activities in the neurovascular space by Boston 10 Scientific? 11 A. Correct. 12 Q. And do you recollect what those activities 13 were? 14 A. They were related to due diligence or 15 acquisitions of technologies. 16 Q. And what technologies in the neurovascular 17 space? 18 A. Primarily stent related. 19 Q. I see. Okay. 20 Okay. So turning to paragraph 8. 21 A. I am there. 22 Q. In this paragraph you say, "I have served 23 as a technical consultant for various early stage 24 medical device companies in product design and 25 intellectual property development."	Page 41 1 BROWN 2 What services do you provide as a 3 consultant for intellectual property development? 4 A. I help companies with their research and 5 development, which then also sometimes leads to the 6 filing of applications. I also am working with the 7 law offices to manage the filings and also look at 8 the portfolio of patents and manage that portfolio. 9 Q. Okay. And going back to our discussion of 10 your neurovascular experience, for the 11 neurovascular infusion catheters, what was being 12 infused through those catheters for the neuro 13 applications? 14 A. The infusion could include embolic 15 particles, it could include saline, it could 16 include lytics, it could include cyanoacrylate 17 glues. 18 Q. Okay. Other than those items you listed, 19 can you think of anything else it could include? 20 A. It could include the aspiration of 21 thrombus. 22 Q. Okay. Anything else? 23 A. Not that I recall. 24 Q. Okay. So in paragraph 8, you list 25 QXMedical, Peytant Solutions and CardioMech as

Page 42 1 BROWN 2 companies that you have done work for; is that 3 correct? 4 A. Correct. 5 Q. Since September 2017, have you provided 6 technical consultation for any other corporations? 7 A. Not that I recall. 8 Q. Okay. And without divulging any 9 confidential information, can you give me a 10 high-level understanding of the type of technical 11 work you did for QXMedical? 12 A. I assisted them in doing product testing. 13 Q. For what type of product? 14 A. For a guide catheter extension. 15 Q. Did you work with them on any other type 16 of technology? 17 A. Not that I recall. 18 Q. And without divulging any confidential 19 information, can you give me an high-level 20 understanding of the type of technical work you did 21 for Peytant Solutions? 22 A. I helped develop and getting regulatory 23 approval for an airway stent. 24 Q. Okay. And can you explain to me what an 25 airway stent is?	Page 43 1 BROWN 2 A. It is a stent that is implanted in your 3 trachea or your bronchus to hold open your airway. 4 Q. Okay. And other than the airway stent, 5 did you do any other technical work for Peytant 6 Solutions? 7 A. No. It has all been related to the airway 8 stent. 9 Q. Okay. Without divulging any confidential 10 information, can you give me a high-level 11 understanding of the type of technical work you did 12 for CardioMech? 13 A. Assisted them in the development of a 14 structural heart device. 15 Q. Can you help me understand what a 16 structural heart device is? 17 A. It is a device that treats structural 18 abnormalities within your heart and so as an 19 example, if you were to have a faulty heart valve, 20 it would be a device that would help to treat that. 21 Q. All right. Interesting. 22 In this paragraph, you also mention that 23 you're a founding partner for Northern Nitinol 24 design. 25 A. Partially correct. Northern Nitinol,
Page 44 1 BROWN 2 there's no "design" in that word or title. 3 Q. Oh, sorry. 4 MS. GORDON: Let me rephrase the question. 5 Q. You mentioned you were a founding partner 6 for Northern Nitinol, LLC, correct? 7 A. Correct. 8 Q. And you mentioned that company specialized 9 in nitinol design? 10 A. Correct. 11 Q. What exactly is nitinol design? 12 A. Nitinol design is the art of designing 13 devices using a material that is called nitinol. 14 Q. Okay. And nitinol is a shape-memory 15 material, correct? 16 A. It can be. 17 Q. Okay. And in this sentence, you say, you 18 "specialize in nitinol design and prototyping for 19 medical device components." 20 What medical device components were you 21 involved in the prototyping? 22 A. It ranged from stents to electrophysiology 23 catheters, to guidewires. We were a service 24 organization. We did not develop our own products. 25 We developed our customers' products, so a wide	Page 45 1 BROWN 2 variety of products. 3 Q. I see. And what customers did you develop 4 products for? 5 A. Primarily start-up companies. 6 Q. And what start-up companies were those? 7 A. We developed products for a company, 8 Electrolytics. 9 Q. Okay. 10 A. I'm trying to remember the name of a 11 company that we were working with to develop an 12 electrophysiology catheter. 13 I apologize. I don't remember it. 14 Q. That's fine. 15 A. Then a number of different companies 16 developing structural heart devices. 17 Q. You use the term "electrophysiology 18 catheter," what do you mean by that? 19 A. It is a catheter that is used by an 20 electrophysiologist. 21 Q. Okay. And can you help me understand what 22 an electrophysiologist focuses on? 23 A. They focus on the rhythm of your heart. 24 Q. So that would be a cardio catheter? 25 A. It can fall into that bucket.

Page 46 1 BROWN 2 Q. Okay. Are there any other buckets it 3 could fall into? 4 MR. WILLIAMS: Objection to form. 5 A. Not that I'm aware of. 6 Q. Okay. So are those cardio-physiology 7 catheters used for ablation? 8 A. They are used for ablation and for 9 sensing. 10 Q. Thank you. 11 MS. GORDON: So I think we've been going a 12 little over an hour. Would you like to take a 13 short break, Mr. Brown? 14 THE WITNESS: Yes. 15 MS. GORDON: So we can go off the record. 16 (Proceedings interrupted at 9:42 a.m. and 17 reconvened at 10:03 a.m.) 18 BY MS. GORDON: 19 Q. So Mr. Brown, I'd like to jump to 20 paragraph 12 of your declaration. In this 21 paragraph, you state that, "I have considered 22 information from various sources in forming my 23 opinions." 24 What were those sources? 25 A. They would be the sources listed on the	Page 47 1 BROWN 2 exhibit list. 3 Q. So were there any other sources than those 4 listed on the exhibit list that you considered? 5 A. I would say just my general work 6 experience. 7 Q. Okay. So your general work experience and 8 the documents listed on the exhibit list were what 9 you considered when forming your opinion that's 10 stated in this declaration? 11 A. Correct. 12 Q. Did counsel provide you with any of the 13 documents listed in the exhibit list? 14 A. Yes. 15 Q. Which documents were provided to you by 16 counsel? 17 A. Is it okay if I look at the exhibit list? 18 Q. Yes. Please do. 19 A. I can either go through this list and tell 20 you the ones that they did or the ones that they 21 did not. 22 Q. Well, let's go one by one and tell me what 23 they provided and what they didn't. That's fine 24 with me. 25 A. Okay. So 1001 was provided by counsel.
Page 48 1 BROWN 2 Q. Okay. 3 A. 1002 was provided by counsel, 1003 was 4 provided by counsel, 1004 was provided by counsel, 5 1005 was not provided by counsel, 1006 was not 6 provided by counsel, 1007 was provided by counsel, 7 1008 was provided by counsel, 1009 was provided by 8 counsel, 1010 was provided by counsel, 1011, I 9 believe was provided by me, 1012 was provided by 10 counsel, 1013 was provided by me, 1010 was not 11 provided by counsel. 12 Q. You mean 1014? 13 A. I'm sorry. What did I say, the last 14 number? 15 Q. 10, 1010. 16 A. So strike that. 17 It should have been 1014. 18 Q. Was provided by you; is that correct? 19 A. Was not provided by counsel. 20 Q. Okay. Was it provided by you? 21 A. Correct. 22 Q. Okay. 23 A. 1015 was not provided by counsel, 1016 was 24 provided by counsel, 1017 was not provided by 25 counsel, 1018 was not provided by counsel. I'm	Page 49 1 BROWN 2 sorry. I got to the bottom of the page. I did not 3 realize there was a second page. That's why I 4 stopped. 5 Q. Oh. So on -- 6 A. I'm moving on to the second page. Sorry. 7 Q. Yeah. 8 A. 1019 was provided by counsel, 1020 was 9 provided by counsel, 1021 provided by counsel, and 10 the -- let's see, 1022 was not provided to me, 1023 11 was provided by counsel, 1024 was provided by 12 counsel, 1025 by counsel. 13 Q. Okay. 14 A. 1026 by counsel. 15 Q. Okay. 16 A. 1027 by counsel, 1028 by counsel, and 17 1029, I do not believe was provided, 28 may not 18 have been provided either. 19 Q. Okay. So Mr. Brown, can you go to the 20 first page of this declaration. 21 A. Which would be the cover page? 22 Q. The cover page, yes. 23 A. Yes. 24 Q. What is the title of the document you're 25 looking at?

Page 50 1 BROWN 2 A. United States Patent and Trademark Office 3 Before the Patent and Trial Board. 4 Q. Yeah. At the bottom? 5 A. I see. The very bottom is the 6 "Declaration of Brian Brown in Support of Petition 7 For Inter Partes Review of U.S. Patent Number 8 10531883." 9 Q. Okay. And is the version you're looking 10 at stamped with an exhibit number? 11 A. It is not. 12 Q. Okay. And the version of the document 13 that you're looking at right now, where did you 14 obtain that document from? 15 A. From counsel. 16 Q. At what time was that document provided to 17 you? 18 A. It was provided Monday of this week. 19 Q. Monday of this week? Okay. 20 Mr. Brown, what I would like you to do is 21 to send me a electronic copy of the document that 22 you're currently looking at. 23 A. It was sent to me as a hard copy. 24 Q. A paper copy. Okay. 25 So at the conclusion of this declaration,	Page 51 1 BROWN 2 I would like you -- I will talk to counsel off-line 3 about securing a copy of the document that you're 4 currently looking at, so that it can be provided to 5 me -- sorry. At the end of the deposition. Sorry. 6 Do you understand, Mr. Brown? 7 A. I understand that you will be making a 8 request to counsel. 9 MS. GORDON: I am making a request during 10 this deposition that I be provided a copy of the 11 document you're currently looking at. 12 THE WITNESS: You're asking me to then ask 13 counsel to send that to you? 14 MS. GORDON: I am asking you at the 15 conclusion of this deposition to make sure that you 16 retain a copy of the document you're looking at so 17 that it can be provided to me. So retain the 18 document, do not throw it away, do not recycle it, 19 do not mark it up in any way. 20 THE WITNESS: Very good. 21 Q. Okay. All right. So I'd like to go to the 22 list of exhibits that you were talking about, 23 starting with, let's see -- let's just go from the 24 top so I can make sure that we are talking about 25 the same exhibits.
Page 52 1 BROWN 2 Is Exhibit 1001 the Deville '883 patent on 3 your list? 4 A. It is. 5 Q. Is Exhibit 1002, Provisional Application 6 number 62/701,086? 7 A. It is. 8 Q. Is Exhibit Number 1003, U.S. Provisional 9 Application 62/750,011? 10 A. It is. 11 Q. Is Exhibit 1004 the file history of the 12 '883 patent? 13 A. It is. 14 Q. Is Exhibit 1005 the Expert Declaration of 15 Brian Brown? 16 A. It is. 17 Q. Is Exhibit 1006 the CV of Brian Brown? 18 A. It is. 19 Q. Is Exhibit 1007, the Teigen '712 patent? 20 A. It is. 21 Q. Is Exhibit 1008, U.S. provisional 22 application number 62/702,804? 23 A. It is. 24 Q. Is Exhibit 1009 U.S. provisional 25 application number 62/778,708?	Page 53 1 BROWN 2 A. It is. 3 Q. Is Exhibit 1010 the Grey patent we 4 discussed earlier or that I introduced earlier? 5 A. It is the Grey PCT. 6 Q. Okay. And is Exhibit 1011 U.S. Patent 7 Number 3,955,574 to Rubenstein? 8 A. It is. 9 Q. Is Exhibit 1012, U.S. patent publication 10 2017/0238953 to Yang? 11 A. It is. 12 Q. Is Exhibit 1013, U.S. patent publication 13 number 2012/0138833 to Matteo? 14 A. It is. 15 Q. Is Exhibit 1014, a paper called 16 "Endovenous Management of Iliocaval Occlusion"? 17 A. It is. 18 Q. Is Exhibit 1015 a paper entitled 19 "Catheter-Based Clot Busting Therapies"? 20 A. It is. 21 Q. Is Exhibit 1016 the PCT application to 22 Brady? 23 A. It is. 24 Q. Is Exhibit 1017 "Large Tube Section is the 25 Key to Successful Coronary Thrombus Aspiration"

Page 54 1 BROWN 2 paper? 3 A. It is. 4 Q. Okay. Is 1018 a paper entitled, 5 "Mechanical Thrombectomy in Catheter Systems"? 6 A. It is. 7 Q. Is Exhibit 1019 a patent to Eichelman? 8 A. It is. 9 Q. Is Exhibit 1020 a patent to Sielaff? 10 A. It is. 11 Q. Okay. Is Exhibit 1021 a patent to Blanck? 12 A. It is. 13 Q. Is Exhibit 1022 a paper entitled, 14 "Exploring the Efficacy of Cyclic Versus Static 15 Aspiration"? 16 A. It is. 17 Q. Okay. Is Exhibit 1023 the expert 18 declaration of Ian Ross? 19 A. It is. 20 Q. And you reviewed the expert declaration of 21 Ian Ross before preparing this declaration? 22 A. During the preparation of this 23 declaration. 24 Q. Okay. You reviewed the version that was 25 filed as Exhibit 1023?	Page 55 1 BROWN 2 A. I do not know. 3 Q. You reviewed at least a version of a 4 document entitled, "Expert Declaration of Ian Ross" 5 while preparing this declaration; is that correct? 6 A. Correct. 7 Q. Was that declaration signed that you 8 reviewed? 9 A. Thinking back, I believe it was. 10 Q. Okay. 11 A. But I don't recall 100 percent. I will 12 leave that open a little bit. 13 Q. Okay. Fair enough. 14 Is Exhibit 1024 on your list the CV of Ian 15 Ross? 16 A. Yes. 17 Q. And what is Exhibit 1025 on your list? 18 A. It is a patent publication to Lockhart. 19 Q. Okay. And what is Exhibit 1026 on your 20 list? 21 A. It is a patent to Ingraham. 22 Q. Okay. And can you give me the patent 23 number for the Lockhart and the Ingraham patents? 24 A. Lockhart is a patent publication. 25 Q. Okay.
Page 56 1 BROWN 2 A. It is 2010/0204672. 3 Q. Okay. And what is the number associated 4 with the Ingraham patent you referenced? 5 A. 4,634,435. 6 Q. Okay. And what is Exhibit 1027 on your 7 list? 8 A. It is a paper titled, "The Overview of 9 Mechanical Thrombectomy Techniques." 10 Q. Okay. And who is that to? 11 A. It is a paper. 12 Q. I mean who's the author, sorry? 13 A. Munich. 14 Q. Okay. And what is Exhibit 1028 on your 15 list? 16 A. It is a response to office action during 17 prosecution of U.S. patent '712 Teigen. 18 Q. Okay. And what is Exhibit 1029 on your 19 list? 20 A. Notice of allowance during prosecution of 21 U.S. Patent Number '712 to Teigen. 22 Q. Okay. Thank you. 23 And if we, again, turn to page 162 of the 24 document in front of you? 25 A. I'm there.	Page 57 1 BROWN 2 Q. This document that you're looking at 3 currently has your electronic signature affixed to 4 it? 5 A. It does. 6 Q. All right. Thank you. 7 So did counsel provide you with any 8 documents not listed in the exhibit list that you 9 relied upon when forming your opinions in this 10 proceeding? 11 MR. WILLIAMS: Objection to form. 12 Q. Mr. Brown, do you understand my question? 13 A. Reask it to make sure that I do understand 14 it. 15 Q. Okay. Did counsel provide you with any 16 documents not listed in the exhibit list that you 17 relied upon when forming your opinions in this 18 proceeding? 19 MR. WILLIAMS: Same objection. 20 A. Not that I recall. 21 Q. Okay. Did you receive any documents from 22 any individuals employed by Penumbra after being 23 retained to work on this matter? 24 A. Not that I recall. 25 Q. Did counsel provide you with any facts

Page 58 1 BROWN 2 that you considered when forming your opinions in 3 this matter? 4 A. Not that I recall. 5 Q. Did counsel provide you with any data that 6 you relied upon when forming your opinions in this 7 matter? 8 A. Not that recall. 9 Q. Okay. Did counsel provide you with any 10 assumptions that you relied upon when forming your 11 opinions in this matter? 12 MR. WILLIAMS: Objection to form. 13 A. Not that I recall. 14 Q. Okay. Other than counsel, have you spoken 15 with anyone regarding the subject matter in this 16 proceeding? 17 A. Not that I recall. 18 Q. Mr. Brown, did you draft your declaration? 19 A. I drafted it with the assistance of 20 counsel. 21 Q. And when you say "you drafted it with the 22 assistance of counsel," what do you mean by that? 23 A. I drafted it, meaning I wrote portions of 24 it, and then I relied on counsel to write other 25 portions of it based upon my opinion.	Page 59 1 BROWN 2 Q. Okay. And what portions of this document 3 did you draft yourself? 4 A. I drafted -- I may not give the exact 5 title -- but it would be the history or the 6 overview of thrombectomy. 7 Q. Did you draft any other portions of this 8 document personally? 9 A. I was very involved with the editing and 10 construction of it, but I relied on counsel to put 11 together the very final document. 12 Q. How many hours did you spend preparing 13 your declaration? 14 A. When you say "preparing," do you mean the 15 writing of it? 16 Q. So we can break this down into two pieces. 17 How many hours did you spend in the writing and 18 editing of your declaration? 19 A. I do not recall the exact numbers, but it 20 was days. 21 Q. Okay. And how many hours total did you 22 spend from the time you were retained until August, 23 when this was filed, preparing your opinions in 24 this proceeding? 25 A. I do not know the exact number.
Page 60 1 BROWN 2 Q. Was it more than a hundred? 3 A. Likely not over a hundred. 4 Q. Okay. Was it more than 50? 5 A. I'm going to guess it's somewhere between 6 50 and 100. 7 Q. Okay. And that was hours spent solely on 8 this proceeding and not the other proceeding that 9 you mentioned earlier today; is that correct? 10 A. Good question. I don't recall exactly the 11 break point between the two. 12 Q. Okay. So I'd like to turn to the section, 13 let's see, I think it's your section 2, 14 understanding of the law. If you could flip to -- 15 it's page 6 in the version of the declaration I'm 16 looking at currently, not sure what page it is in 17 the version you have. 18 A. It is also page 6. 19 Q. Okay. 20 A. I'm at section 2, paragraph 13, I assume. 21 Q. So it's page 13 in the version you have? 22 A. No. Page 6. 23 Q. Paragraph 13. Okay. Understood. 24 Yes. We are on the same page. 25 What would you consider to be the field of	Page 61 1 BROWN 2 invention of the Deville '883 patent? 3 A. I am trying to understand your question 4 because your question does not appear to be related 5 to paragraph 13. 6 Q. That is correct. This is a general 7 question related to the field of invention of the 8 Deville '883 patent. 9 A. The field of invention would be in the 10 medical device industry related to aspiration 11 thrombectomy using dynamic aspiration involving an 12 inlet valve and a vacuum valve. 13 Q. Okay. And would you consider this to be 14 the same field as Teigen '712? 15 A. Yes. 16 Q. So turning to the precise language of 17 paragraph 13, in this paragraph, you say "the 18 following legal principles provided to me by 19 counsel." Which counsel provided these principles 20 to you? 21 A. The Penumbra counsel. 22 Q. And that would be the counsel from Baker 23 Botts? 24 A. Correct. 25 Q. And in paragraph 17, this paragraph is

Page 62 1 BROWN 2 directed to objective considerations of 3 non-obvious; is that correct? 4 A. Paragraph 17 is objective evidences -- 5 excuse me -- objective considerations of 6 non-obviousness. 7 Q. Okay. And are you aware -- 8 MS. GORDON: Strike that. 9 Q. This paragraph lists seven different types 10 of objective considerations, correct? 11 A. There appears to be seven. 12 Q. Okay. Looking at the first consideration, 13 a long-felt but unmet need in the prior art that 14 was satisfied by the invention of the patent. Are 15 you aware of any long-felt but unmet need for the 16 Teigen '712 and Deville '883 patents? 17 A. Yes. 18 Q. Okay. And what would that be? 19 A. The need for a thrombectomy device that 20 does not cause thrombus to break free and embolize. 21 Q. Okay. And why in your opinion was that a 22 long-felt and unmet need? 23 MR. WILLIAMS: Objection to form. 24 A. The medical device community has been 25 wanting a device that minimizes embolic debris for	Page 63 1 BROWN 2 a long time. 3 Q. Okay. And for approximately how long of a 4 time before these patents was that need felt? 5 A. Going back to the beginning of 6 thrombectomy procedures. 7 Q. Okay. And how did individuals recognize 8 the need that you mentioned? 9 MR. WILLIAMS: Objection to form. 10 A. They recognized the need to minimize 11 embolic debris during the procedures they were 12 performing because they would have clinical 13 complications associated with it, the debris. 14 Q. Okay. And what were those clinical 15 complications? 16 A. Many times it was a stroke. 17 Q. Okay. 18 A. If it was a cerebral vascular procedure. 19 Q. Okay. Were there any other clinical 20 complications? 21 A. Yes. For other areas of the body where a 22 thrombectomy was being performed, it could lead to 23 an ischemic event if it was cardiovascular, meaning 24 within the heart; if it was dealing with deep vein 25 thrombosis, it could lead to a pulmonary emboli,
Page 64 1 BROWN 2 which could then create difficulties in breathing 3 or death. 4 Q. Okay. And when you said an ischemic 5 event, what do you mean by "ischemic event"? 6 A. Ischemia is a word that refers to a 7 blockage of a blood flow, then resulting in a lack 8 of oxygen and nutrients to the tissue. 9 Q. Okay. Other than the complications you 10 listed, can you think of any other clinical 11 complications? 12 A. Associated with? 13 Q. The need we are discussing. 14 A. The other need in the area of thrombectomy 15 is also a device that's able to break up clot. 16 Q. Okay. And why was that recognized as a 17 need? 18 A. Because clot is difficult to break up and 19 because of its difficulty in being able to break it 20 into smaller pieces, it will cork or block the end 21 of the catheter. 22 Q. Okay. And when was that need first 23 recognized? 24 A. At the beginning of thrombectomy 25 procedures.	Page 65 1 BROWN 2 Q. Okay. And can you give me a rough time 3 frame of that? 4 A. I would say that it would be possibly as 5 early as the 1950s. 6 Q. I see. I see. 7 And what type of thrombectomy procedures 8 would have been occurring in the 1950s? 9 A. Aspiration. 10 Q. Okay. Were mechanical procedures 11 occurring at that time as well? 12 A. Not that I'm aware of. 13 Q. Okay. And was the aspiration static at 14 that time frame? 15 A. Correct. 16 Q. Okay. And why was the need in your 17 opinion unmet? 18 A. Because the clot would stick in the end of 19 the catheter and would not be aspirated. 20 Q. And so in your opinion, individuals or 21 companies were attempting to address these 22 circumstances and were not successful in their 23 attempts? 24 MR. WILLIAMS: Objection to form. 25 A. Companies were working on meeting these

Page 66 1 BROWN 2 unmet needs and some were successful. 3 Q. Okay. And what companies were successful? 4 A. One that comes to mind is Penumbra. 5 Q. Okay. And are you referring to the Teigen 6 '712 patent when you are referring to a company 7 that met this need? 8 A. Correct. 9 Q. Okay. And did the Deville '883 patent 10 meet this need as well? 11 A. I believe it was a move in the right 12 direction, yes. 13 Q. Okay. So you mentioned the term, I 14 believe, "embolic degree." Am I recalling that 15 correctly? 16 A. I used the term "embolic debris." 17 Q. Debris, sorry. I just wanted to make 18 sure. I was a little confused by embolic degree. 19 What do you mean by embolic debris? 20 A. Embolic material, it is material that 21 breaks loose and is able to move away from the 22 location at which -- from which it originated. And 23 debris is just a general term referring to material 24 that you don't want to have. 25 Q. And is embolic debris an issue for all	Page 67 1 BROWN 2 thrombectomy devices? 3 MR. WILLIAMS: Objection to form. 4 A. It is a concern for all embolic devices, 5 meaning thrombectomy devices. 6 Q. So it is a concern for mechanical 7 thrombectomy devices, correct? 8 A. It is a concern. 9 Q. It is a concern for aspiration 10 thrombectomy devices; is that correct? 11 A. Correct. 12 Q. Would it be considered a concern for 13 static aspiration devices? 14 A. It is. 15 Q. Would it be considered a concern for 16 dynamic aspiration devices? 17 A. It is. 18 Q. And I believe just a few minutes ago you 19 mentioned aspiration thrombectomy going back to the 20 1950s. Do you recall what companies were involved 21 with those devices in that time frame? 22 A. I do not. 23 Q. Okay. And that's just based on your 24 recollection or do you have any papers that you 25 could point me to with information about those
Page 68 1 BROWN 2 devices from the 1950s? 3 A. I do not. Procedures performed in the 4 1950s, doctors were doing aspiration in the 1950s, 5 using basic guide catheters, diagnostic catheters, 6 any type of a tube. These devices at that time 7 were not specifically indicated as thrombectomy 8 catheters. They were using whatever was available 9 to them to attempt to do a thrombectomy. 10 Q. I see. I see. Thank you. 11 Okay. So going back to paragraph 17, the 12 second item in the list on this paragraph is 13 failure of others where the invention succeeds. 14 Are you aware of any examples of failure of others 15 where the Teigen '712 patent and Deville '883 16 patent succeeded? 17 A. Yes. 18 Q. What are those? 19 A. I don't have a list to give you, but many 20 attempts in creating thrombectomy devices prior to 21 Deville and Teigen failed. 22 Q. Okay. And what were the attempts that 23 failed prior to Deville and Teigen? 24 A. So when you say what were the attempts, 25 I'm not understanding what you mean.	Page 69 1 BROWN 2 Q. Yeah. So I think your answer was many 3 attempts in creating thrombectomy devices prior to 4 Deville and Teigen failed. So I'm trying to get an 5 understanding of what you meant by the attempts 6 that failed. If you could maybe like, you know, 7 expand on what attempts you're aware of that failed 8 in creating thrombectomy devices. 9 A. There have been a number of devices that 10 have been created for doing thrombectomy, some of 11 them rely on a form of a basket to try and capture 12 the thrombus, some of them rely on almost like a 13 blender to go down and macerate the thrombus and 14 aspirate it, others have relied on different types 15 of devices that will cut the thrombus as it is 16 being pulled into the catheter, others rely on a 17 combination of lytics and aspiration. 18 Q. And the devices you just listed, in your 19 opinion, did all those devices fail to meet the 20 need that we discussed that drove the '712 and '883 21 patents? 22 A. Some work better than others, and none of 23 them were perfect. 24 Q. Okay. And which ones worked better than 25 others?

Page 70 1 BROWN 2 A. That would rely on each individual design. 3 I would have to know the exact one that you're 4 referring to. 5 Q. Okay. So when you say some work better 6 than others, were you talking about the general 7 class of the devices in your list, or you're saying 8 devices with some -- some devices within an 9 individual class work better than others? 10 A. A little of both. 11 Q. Okay. And would you consider any of the 12 devices in that list to be failures? 13 A. Not as a class, but devices within that 14 class were failures. 15 Q. Okay. And which devices within that class 16 were failures? 17 A. The ones that were never brought to 18 market. 19 Q. And which were those? 20 A. I don't have that list in front of me. 21 Q. Okay. And which devices were brought to 22 market? 23 MR. WILLIAMS: Objection to form. 24 A. In the area of thrombectomy, there was 25 baskets, there were lytic devices, there was	Page 71 1 BROWN 2 products brought to market in all those classes. 3 Q. I see. 4 Okay. And circling back to the -- my 5 earlier question about failure of others where the 6 Teigen '712 and '883 patent succeeded, would any of 7 the devices that were brought to market be 8 considered a failure in terms of the need that the 9 Teigen '712 and Deville '883 patents were meeting? 10 MR. WILLIAMS: Objection to form. 11 A. I don't know if I would refer to them as a 12 failure because many of them are still on the 13 market. 14 Q. Okay. But would they be a failure when 15 tied to the need we were discussing, the specific 16 need we were discussing for the Teigen '712 and 17 '883 patents? 18 A. I would not refer to them as failures. 19 They probably would not work as well as the Teigen 20 or the '883. 21 Q. Okay. Understood. 22 For the devices that were not brought to 23 market, what were some of the reasons that they 24 failed? 25 MR. WILLIAMS: Objection to form.
Page 72 1 BROWN 2 A. They may have been too large; they may 3 have clotted; they may have created embolic debris; 4 they may have been too expensive to manufacture; 5 they may have been too difficult to use. 6 Q. Okay. Thank you. 7 Turning back to paragraph 17, the fourth 8 topic on this list is unexpected results. Are you 9 aware of any unexpected results associated with the 10 Teigen '712 or Deville '883 patents? 11 A. I don't know if I would refer to it as 12 unexpected. I think they got what they were hoping 13 to get. 14 Q. Okay. And are you aware of any products 15 or prototypes directed to the subject matter of 16 either the Teigen '712 or the Deville '883? 17 A. I am not. 18 Q. And what type of metrics would be 19 associated with success in thrombectomy? 20 MR. WILLIAMS: Objection to form. 21 A. I am going to need you to reask that. 22 Q. Okay. We were talking about success in 23 the area of thrombectomy. Would recanalization 24 rate be considered a metric by which you could 25 consider the success of a device?	Page 73 1 BROWN 2 A. It would be one of the metrics. 3 Q. Okay. And what would other metrics for 4 assessing success be? 5 A. Complication rates. 6 Q. Anything other than recanalization rates 7 and complication rates? 8 A. And also long term results. 9 Q. Okay. So anything other than 10 recanalization rate, complication rates, and long 11 term results? 12 A. Those would be the three primary ones I 13 can think of right now. 14 Q. Okay. So when you use the term 15 "recanalization rate," what do you mean by that? 16 A. I interpret that to mean the time it takes 17 to recanalize. 18 Q. And what does it mean to recanalize? 19 A. To open up a blocked lumen. 20 Q. Okay. And you used the term "complication 21 rates," what type of complications occur? 22 A. Many of the items that we have already 23 discussed such as embolic debris, others that could 24 be included in complications are damage to the 25 artery.

Page 74 1 BROWN 2 Q. Okay. And would a metric be also the 3 amount of blood flow restored? 4 A. Yes. 5 Q. And when you mention long term results, 6 what would that encompass? 7 A. That would include the amount of blood 8 flow restored and also the long term patentcy, 9 meaning the ability to remain open over time. 10 Q. Okay. Turning back to this paragraph, you 11 state, "I further" -- sorry, before I move on to 12 that, where would clinical outcomes fall in the 13 assessment of success? 14 MR. WILLIAMS: Objection to form. 15 A. Please reask. 16 Q. Okay. Let me ask it a different way. 17 Would the extent of impairment be 18 considered a metric for determining the success of 19 a device? 20 A. I'm not understanding the term 21 "impairment." 22 Q. Okay. So when -- so I think we talked 23 about kind of one of the risks being a stroke. Is 24 one of the risks with these procedures also a risk 25 of death?	Page 75 1 BROWN 2 A. There is a risk of death. 3 Q. Okay. And would those -- the risk of, for 4 example, stroke or death be a type of metric you 5 would look at when assessing the success of a 6 device? 7 A. Yes. 8 Q. Okay. All right. So now I would like to 9 turn back to the language in this paragraph. You 10 say, "I further understand that contemporaneous and 11 independent invention by others is an objective 12 consideration supporting an obviousness 13 determination." 14 Did you apply that legal principle in any 15 of your analysis in this declaration? 16 A. Yes. 17 Q. Okay. And how did you apply that? 18 A. I looked to see if there were other 19 inventions that were developed that were similar. 20 Q. Okay. And what inventions -- what similar 21 inventions are you referring to in your answer? 22 A. I'm referring to inventions such as Grey 23 and such as Teigen. 24 Q. Okay. 25 A. Such as Rubenstein, such as Matteo, such
Page 76 1 BROWN 2 as Yang. 3 Q. Okay. So you're referring in this 4 paragraph to the prior art that you applied in your 5 grounds in this proceeding? 6 A. That is how I understand this. 7 Q. Okay. And where did you obtain this 8 understanding that's cited in this paragraph? 9 A. I guess from myself. 10 Q. Okay. So this wasn't a legal principle 11 that was provided to you by counsel? 12 MR. WILLIAMS: Objection to form. 13 A. I do not recall. 14 Q. Okay. Turning to paragraph 21. In this 15 paragraph, you state that, "I understand that a 16 particular combination may be proven obvious by 17 showing that it was obvious to try the 18 combination." 19 Do you see that sentence? 20 A. I do. 21 Q. And how did you develop the understanding 22 that's recited in this sentence? 23 A. That is an understanding that was provided 24 by the legal principles of obviousness. 25 Q. Okay. So that understanding was provided	Page 77 1 BROWN 2 to you by counsel? 3 A. Yes. 4 Q. Okay. And in your analysis set forth in 5 this declaration, did you apply the legal standard 6 for obviousness to try? 7 MR. WILLIAMS: Objection to form. 8 A. I did not understand the question. 9 Q. Okay. So this paragraph, you set forth 10 your understanding of the legal principle called 11 "obvious to try." And I believe in this paragraph 12 you explained legally what that means: "When there 13 is a design need or market pressure to solve a 14 problem and there are a finite number of identified 15 predictable solutions, a person of skill has good 16 reason to pursue the known options within his or 17 her technical grasp because the result is likely 18 the product, not of innovation, but of ordinary 19 skill and common sense." 20 Did you apply that legal principle 21 anywhere in your analysis, in your declaration? 22 A. Yes. 23 Q. Okay. Do you recall where you applied 24 that legal principle? 25 A. I would say throughout the declaration.

1 BROWN Page 78 2 Q. Okay. So sitting here today, your 3 testimony is that your opinion on obviousness is 4 based on the obvious to try rationale? 5 MR. WILLIAMS: Objection to form. 6 A. I did not say that the entire declaration 7 is based on that. 8 Q. Okay. But your recollection that some of 9 your obviousness opinions are based on an obvious 10 to try rationale, particularly the legal basis 11 cited in paragraph 21? 12 A. I believe so. 13 Q. Okay. Turning to paragraph 48. In this 14 paragraph you state you "considered several things, 15 including various prior art techniques relating to 16 aspiration embolectomy and thrombectomy." What is 17 the difference between embolectomy and 18 thrombectomy? 19 A. I'll start with thrombectomy because that 20 is the topic that we've been discussing up until 21 now and that is the removal of thrombus or a blood 22 clot. Embolectomy is the removal of an emboli, 23 which can include a blood clot that has gone 24 downstream. 25 Q. Okay. And when you say "a blood clot that	1 BROWN Page 79 2 has gone downstream," what do you mean by that? 3 A. We were talking about embolic debris that 4 is formed by a thrombectomy device, so the debris 5 that is created during thrombectomy is referred to 6 as an emboli, and that would then flow with the 7 blood away from the location, thus my term 8 "downstream." And then embolectomy would be the 9 removal of that emboli. 10 Q. Okay. And in your answer you said flow 11 with the blood away from the location. What is 12 "the location" you're referring to in that answer? 13 A. Is this also in 48? 14 Q. No. I'm going back to your answer to my 15 question. You said debris that is created during 16 thrombectomy is referred to as an emboli and that 17 would flow with the blood away from the location. 18 So just trying to get an understanding of what the 19 location is. 20 A. The treatment location. 21 Q. Okay. And is the treatment location where 22 the tip of the catheter would be located? 23 A. The treatment location would be where the 24 thrombus is located, and the thrombectomy. 25 Q. Okay. So the treatment location is the --
1 BROWN Page 80 2 I see. So with the emboli, are you saying that the 3 thrombus still -- or part of the thrombus still 4 exists in the treatment location? 5 MR. WILLIAMS: Objection to form and 6 incomplete hypothetical. 7 A. I'm going to need you to reask the 8 question. 9 Q. Okay. So you said the treatment location 10 would be where the thrombus is located, correct? 11 A. Correct. 12 Q. Okay. And then you said -- you were 13 talking about an embolectomy where the emboli has 14 moved away from the treatment location. So I'm 15 trying to get a sense for what you mean if the 16 treatment location is location of a thrombus, but 17 your emboli has moved downstream, are those things 18 happening -- do they both exist or, you know, maybe 19 you can help me there with, you know, understanding 20 what you mean by the treatment location being where 21 the thrombus exists, but you have this emboli that 22 is now downstream from that location. 23 MR. WILLIAMS: Objection to form. 24 A. The -- as stated earlier, the emboli is 25 material that has broken free from the treatment	1 BROWN Page 81 2 site and has moved away from the treatment site. 3 Q. Okay. So there is still a portion of the 4 thrombus at the treatment site, correct? 5 A. There can be. 6 Q. There can be. Okay. 7 And so in the circumstance where 8 there's -- where the entire thrombus has moved 9 away, do you still refer to that as the treatment 10 site? 11 A. If the entire thrombus moves, my own 12 personal definition would be that the treatment 13 site has moved. 14 Q. Okay. All right. Just trying to make 15 sure we're in line with terminology. 16 Okay. So if the entire thrombus has 17 moved, then in your terminology, or in your 18 personal definition, the treatment site moves with 19 the thrombus as it moves downstream? 20 A. That would be my own personal definition, 21 yes. 22 Q. Okay. And in paragraph 48, you mentioned 23 various prior art techniques related to aspiration 24 embolectomy and thrombectomy, what are the prior 25 art techniques you're referring to in this

Page 82 1 BROWN 2 paragraph? 3 A. The ones that we previously discussed. 4 Q. Okay. And can you refresh my recollection 5 of which of those fall into the category of prior 6 art techniques related to aspiration embolectomy 7 and thrombectomy? 8 A. The ones related to having any type of 9 aspiration associated with the removal of thrombus 10 or the clot, so they can include the baskets, they 11 can include the blenders, they can include the 12 cutters. 13 Q. Okay. And in this paragraph, you refer to 14 the type of problems that techniques gave rise to, 15 and I believe one of the problems we were talking 16 about was embolic debris; is that correct? 17 A. Yes. 18 Q. Okay. Were there any other types of 19 problems that these techniques gave rise to? 20 A. Yes. 21 Q. Okay. And what are those other types of 22 problems? 23 A. It would be the list of complications that 24 we previously discussed. 25 Q. Okay. And in this paragraph, you mention	Page 83 1 BROWN 2 the rapidity with which innovations were made. 3 What is your understanding of the rapidity of 4 innovations in this field? 5 MR. WILLIAMS: Objection to form. 6 A. The rapidity would be the fact that there 7 were many people working on this over an extended 8 period of time. 9 Q. Would you consider the innovations in the 10 field of the Deville '883 patent and Teigen '712 11 patents to be rapid, I mean, in this field? 12 A. At times it was rapid. At other times it 13 would slow down. 14 Q. Okay. And at what times were the 15 innovations in the field of aspiration thrombectomy 16 rapid, in your opinion? 17 A. It varied. In the '90s, there was a 18 number of attempts. It's kind of odd, it seems 19 like about every ten years, there was another 20 attempt to try and make improvements. 21 Q. Okay. And in the '90s, what were the 22 attempts for improvements, were they focused on a 23 particular area or aspect of aspiration 24 thrombectomy? 25 A. They would range from peripheral arteries
Page 84 1 BROWN 2 to coronary arteries to neurovascular, to venous. 3 Q. Okay. So let me understand the 4 terminology you're using here. 5 When you are referring to "peripheral 6 arteries," what are you referring to? 7 A. A peripheral artery would be any artery 8 outside of the heart. 9 Q. Okay. And that would be the arteries in 10 your legs, for example? 11 A. That's a good example. 12 Q. Okay. And you use the terminology 13 "venous," what did you mean by that? 14 A. That's referring to the treatment inside 15 of veins. 16 Q. Okay. And does peripheral include 17 arteries in the lungs? 18 A. Yes. 19 Q. Okay. And would peripheral include 20 vessels in the brain? 21 A. It is inclusive of vessels within the 22 brain, but it is its own subspecialty for treatment 23 of arteries within the brain. 24 Q. Okay. So how does neuro then differ from 25 peripheral?	Page 85 1 BROWN 2 A. I don't understand, the term, the 3 procedure? 4 Q. Well, you said peripheral included 5 arteries or vessels within the brain. But you 6 listed neuro as a separate category from 7 peripheral. So I'm trying to understand the 8 distinction between peripheral and neural. 9 A. The treatment of cerebral arteries is 10 unique enough that it needs a special -- needs a 11 specialist to treat those arteries and extensive 12 training to treat those arteries, versus the 13 treatment of peripheral arteries. 14 Q. Okay. And the treatment of cerebral 15 arteries, that falls under the category of neuro? 16 A. Correct. 17 Q. Okay. And what about the treatment of 18 cerebral arteries makes it unique? 19 MR. WILLIAMS: Objection to form. 20 A. The anatomy. 21 Q. Okay. And what about the anatomy? 22 A. The vessels are -- have a different 23 structure to them. The knowledge of where the 24 vessels go and the knowledge of complications 25 associated with each one of them, the skills of

Page 86 1 BROWN 2 being able to access those vessels, all are 3 different. 4 Q. Okay. And what are the structural 5 differences you mentioned? 6 A. The physical makeup of the vessel. 7 Q. Okay. And what would that include? 8 A. The strength of them, the response to the 9 treatment, they are sometimes viewed as being more 10 delicate. 11 Q. Is there any other aspects of the physical 12 makeup of the cerebral vessels? 13 A. There probably are. I'm not aware of the 14 exact differences. 15 Q. Okay. And when you mentioned "the 16 strength of them," what did you mean by that? 17 A. The durability of them to withstand a 18 procedure. 19 Q. Okay. So are the cerebral vessels less 20 durable than other vessels? 21 A. There may be other vessels that are 22 similar to them within the body, but in general, 23 they are viewed as being more delicate as, than 24 peripheral vessels. 25 Q. Okay. And are the cerebral vessels	Page 87 1 BROWN 2 smaller than other vessels? 3 A. As -- 4 MR. WILLIAMS: Objection to form. 5 Sorry. Go ahead. 6 A. In general, cerebral vessels are on the 7 smaller side when you take a look at the range of 8 vessels within the body. 9 Q. Okay. And you mentioned the complications 10 associated with the cerebral vessels. What are the 11 different complications, cerebral versus 12 peripheral, for example? 13 MR. WILLIAMS: Objection to form. 14 A. We have discussed those complications 15 previously. 16 Q. Okay. And those -- are they 17 complications, the risk of stroke; is that what 18 you're referring to? 19 A. That is one of them. 20 Q. Okay. And emboli -- would you consider 21 embolic debris, is that a complication? 22 A. Embolic debris is not a complication, but 23 it is the cause of a complication. 24 Q. I see. Okay. 25 And are the cerebral vessels, would they
Page 88 1 BROWN 2 be considered -- 3 MS. GORDON: Strike that. Let me ask that 4 again. 5 Q. Are the cerebral vessels smaller than the 6 vessels of the lung? 7 A. Not necessarily. 8 Q. And when would they not necessarily be 9 smaller than vessels in the lungs? 10 A. Throughout the body, there is a range of 11 vessel sizes, going from large to small. 12 Q. I see. 13 So you're saying that there are -- 14 MS. GORDON: Okay. Strike that question. 15 Q. Would the cerebral vessels be smaller than 16 the vessels of the leg? 17 MR. WILLIAMS: Objection to form. 18 A. Not necessarily. 19 Q. Okay. So let me take a step back. Where 20 the thrombectomies are performed, are the cerebral 21 vessels smaller than the pulmonary artery? 22 MR. WILLIAMS: Objection to form, 23 incomplete hypothetical. 24 A. Cerebral vessels are smaller than the 25 pulmonary artery.	Page 89 1 BROWN 2 Q. Okay. And are the cerebral vessels 3 smaller than the deep veins in the legs where 4 thrombectomies are performed? 5 A. Generally, yes. 6 Q. And I believe you mentioned there are -- 7 just go back so I can use the right terminology. 8 You said the treatment of cerebral 9 arteries needs a specialist to treat those 10 arteries, and extensive training. Is my 11 understanding correct of your answer? 12 A. You did repeat my answer correctly. 13 Q. Okay. And what is the specialist that 14 treats cerebral arteries? 15 A. It's typically a neural interventionalist. 16 Q. Okay. And how much training in your 17 opinion does it take to treat the cerebral 18 arteries? 19 MR. WILLIAMS: Objection to form, outside 20 the scope. 21 A. It depends on your starting point and what 22 other skills you have. 23 Q. Okay. I mean, your answer said that it 24 needs a specialist to treat those arteries and 25 extensive training to treat those arteries. So I'm

Page 90 1 BROWN 2 trying to get an understanding from your answer 3 what you meant by what's encompassed in "extensive 4 training." 5 A. And as I said, it depends on your starting 6 point and what you are already trained in. 7 Q. Okay. What type of training is required 8 to treat cerebral arteries? 9 A. You need to understand the function of the 10 cerebral arteries as far as what do they supply, 11 what are the complications associated with each 12 one, what are the potential risks of treating each 13 one, the skills in being able to even access the 14 potential artery that you're trying to get to. 15 It's a different knowledge base, different skill 16 set than what your typical interventionist will 17 have. 18 Q. Okay. You mentioned access to the 19 potential artery. When you need to access a 20 cerebral artery, what is -- 21 MS. GORDON: Let me rephrase that. 22 Q. What is the path to access a cerebral 23 artery? 24 MR. WILLIAMS: Objection to form, outside 25 the scope.	Page 91 1 BROWN 2 A. There are different starting points, but 3 the end result typically is you end up going up the 4 carotid artery and accessing the cerebral arteries. 5 Q. Okay. And how is the path you mentioned 6 traversed to the cerebral artery? 7 MR. WILLIAMS: Same objection. 8 A. It depends, I guess, on the procedure that 9 they're trying to do. 10 Q. If we're talking about an aspiration 11 thrombectomy, what is the path to traverse to the 12 cerebral artery? 13 MR. WILLIAMS: Same objection. 14 A. The path would depend upon which cerebral 15 artery you are trying to get to. 16 Q. Okay. Let me maybe ask it a different 17 way. Based on your background in catheter design, 18 what are the challenges of accessing the cerebral 19 arteries for aspiration thrombectomy? 20 A. The challenges are that the vessels are 21 very tortuous, they are small, and they are 22 delicate. 23 Q. Okay. So let me turn back to paragraph 24 48. In about five, six lines down, you state, "I 25 also considered the sophistication of the
Page 92 1 BROWN 2 technologies involved." 3 Do you see that? 4 A. I do. 5 Q. What was your determination of the level 6 of sophistication in this case? 7 MR. WILLIAMS: Objection to form. 8 A. I believe the sophistication has a lot to 9 do with what we've already been talking about. 10 Q. What specifically, because we've been 11 talking about a lot today. What are you referring 12 to? 13 MR. WILLIAMS: Objection to form. 14 A. I'm referring to the fact that the 15 treatment of cerebral arteries has very unique 16 design challenges, that using a catheter to do 17 thrombectomy has very unique challenges, all of 18 which kind of require somebody to have some 19 experience and knowledge in the area of 20 thrombectomy. 21 Q. All right. In this paragraph, you set 22 forth two different definitions of the level of 23 skill in the art. 24 Do you see that? 25 A. I do not.	Page 93 1 BROWN 2 Q. Okay. If you look at the bottom of this 3 paragraph, you say, "I came to the conclusion that 4 the characteristics of a person of ordinary skill 5 in the field" -- 6 A. I'm sorry. Bottom of the page or bottom 7 of the paragraph? 8 Q. Oh, sorry. The bottom -- I guess this is 9 a very long paragraph. So starting at the bottom 10 of page 18, six lines up, through page 19, you set 11 forth two alternatives for the definition of a 12 person of skill in the art. 13 Do you see that? 14 A. I do see that. 15 Q. Okay. Is it your view that someone 16 meeting either of these definitions would be a 17 person of ordinary skill in the art for the '883 18 patent? 19 A. That is correct. 20 Q. All right. So I'd like to start with 21 alternative 1. You say a person with a bachelor of 22 science degree in engineering or an equivalent 23 field with two to four years of academic or 24 industry experience in the aspiration embolectomy 25 and thrombectomy industry or comparable industry

Page 94 1 BROWN 2 experience who would, where necessary or desire, 3 work or consultant with others including a 4 physician to develop embolectomy or thrombectomy 5 devices. 6 So would any type of engineering qualify 7 in your POSITA definition? 8 A. Yes. 9 Q. So a civil engineer would qualify? 10 A. If they were capable of doing this, yes. 11 Q. I don't see a requirement for capability 12 in here. 13 MR. WILLIAMS: Objection to form. 14 A. Of working within the industry. 15 Q. So you're saying a civil engineer that's 16 worked in the industry for two to four years would 17 be a person of skill in the art? 18 A. If a civil engineer is capable of doing 19 aspiration embolectomy, yes. 20 Q. What do you mean by saying that an 21 engineer is capable of doing aspiration 22 embolectomy, actually performing it? 23 A. Having the qualifications of working in 24 the industry. 25 Q. Okay.	Page 95 1 BROWN 2 A. In this area. 3 Q. Okay. So you're saying, if a civil 4 engineer was able to get hired in this industry, 5 they would be a person of skill in the art? 6 MR. WILLIAMS: Objection to form. 7 A. So if they have academic or industry 8 experience in aspiration embolectomy and 9 thrombectomy, yes. 10 Q. So is it your opinion that a civil 11 engineer has academic experience in aspiration 12 embolectomy? 13 A. There are very few civil engineers, if 14 any, that have that experience, but if they did 15 have that experience, they would qualify. 16 Q. So you're saying a bachelor of science 17 degree in civil engineering gives you academic 18 experience in aspiration embolectomy? 19 MR. WILLIAMS: Objection to form. 20 A. I did not say that. 21 Q. Well, your definition said a person with a 22 bachelor of science degree in engineering. And it 23 doesn't provide any more specifics on what courses 24 or field of study that person would have to do, 25 correct?
Page 96 1 BROWN 2 A. You are correct. 3 Q. So then in your opinion, sitting here 4 today, not anyone with a civil engineering degree 5 would be a person of ordinary skill in the art. 6 A. That is correct. 7 Q. Okay. So when you say industry experience 8 in the aspiration embolectomy and thrombectomy 9 industry, what does that encompass? 10 A. That means having experience and 11 familiarity with aspiration embolectomy and 12 thrombectomy. 13 Q. And so what would you consider to be that 14 industry, working for a company that manufacturers 15 those devices? 16 A. That would be one example. 17 Q. What are other examples? 18 A. Maybe the engineer is working in the 19 hospital in that area. 20 Q. Okay. And what type of courses would be 21 necessary for a person of skill in the art to have 22 taken as part of their BS degree to be a person of 23 skill in the art in the Deville '883 patent? 24 MR. WILLIAMS: Objection to form. 25 A. They would be required to take whatever	Page 97 1 BROWN 2 courses are required for their degree. 3 Q. Okay. But are there specific courses that 4 would be important to be a person of ordinary skill 5 in the art in the field of the Deville '883 patent? 6 MR. WILLIAMS: Objection to form. 7 A. There would be courses that would be nice 8 if they had, but if they received industry 9 experience that was equivalent, the course would 10 not be required. 11 Q. Okay. So what courses would be nice to 12 have for a person of skill in the art? 13 A. It would be nice to have training in the 14 area of fluid mechanics. It would be nice to have 15 some training in the area of anatomy and 16 physiology. It would be nice to have some training 17 in the area of catheter design. 18 Q. Any other training areas in the nice to 19 have bucket in your mind? 20 MR. WILLIAMS: Objection to form. 21 A. Those are the ones that come to mind right 22 now. 23 Q. Okay. When formulating this first 24 alternative for person of skill in the art, were 25 there any types of training or skills that were

Page 98 1 BROWN 2 necessary or are necessary for a person of skill in 3 the art in the Deville '883 patent? 4 MR. WILLIAMS: Objection to form. 5 A. It is necessary to have an engineering 6 degree, along with two to four years of academic or 7 industry experience in the area of aspiration 8 embolectomy and thrombectomy. 9 Q. We were talking about the training you 10 mentioned, fluid mechanics, the area of anatomy, 11 that it's nice to have catheter design. So are any 12 of those areas necessary for a person of skill in 13 the art? 14 A. Those areas would be part of your industry 15 experience if you did not receive it in your 16 engineering degree. So yes, it would be part of 17 what would be expected. 18 Q. I see. Okay. 19 So a person of skill in the art, an 20 alternative, one, as either part of their 21 undergraduate degree or this two to four years of 22 experience would have training in fluid mechanics, 23 training in anatomy, and training in catheter 24 design? 25 A. Either training or work experience.	Page 99 1 BROWN 2 Q. Okay. So you provided a range for the 3 number of years of experience here. What's your 4 basis for that range? 5 A. It depends on how much prior education the 6 individual had in his areas. 7 Q. Okay. So it's a bit of a sliding scale 8 based on the level of training in the BS degree; is 9 that a fair statement of your POSITA definition? 10 A. That would be an important part of it, 11 yes. 12 Q. Okay. So turning to your second 13 definition alternative, you say an interventional 14 neurosurgeon with at least three years of 15 experience developing and/or using medical devices. 16 And what are the types of courses that are part of 17 a routine medical education? 18 MR. WILLIAMS: Objection to form. 19 A. I do not have a medical degree, so I'm 20 unable to answer that. 21 Q. Okay. But you did form an opinion that a 22 neurosurgeon would have -- be a person of skill in 23 the art in this patent, correct? 24 A. Correct. 25 Q. And what was your foundation for making
Page 100 1 BROWN 2 that assessment? 3 A. That the neurosurgeon has been trained to 4 do these procedures and to use the devices. 5 Q. So would a neurosurgeon have understanding 6 of fluid mechanics? 7 A. Some have -- yes. So to answer the 8 question, yes, they would. 9 Q. So in your opinion sitting here today, a 10 neurosurgeon would have the level of knowledge in 11 fluid mechanics that would be required for the 12 invention of the Deville '883 patent? 13 A. They would have a level of understanding, 14 yes. 15 Q. But we're asking the person of ordinary 16 skill in this invention. And so would a person -- 17 a neurosurgeon have the level of knowledge in fluid 18 dynamics required to be of ordinary skill for the 19 '883 patent? 20 MR. WILLIAMS: Objection to form. 21 A. An interventional neurosurgeon is going to 22 be familiar with the devices, with the anatomy, 23 with how the devices work, so they would be a 24 person of ordinary skill in the art of doing 25 aspiration thrombectomy.	Page 101 1 BROWN 2 Q. So they would be skilled in the art of 3 performing the procedure? 4 A. Yes. 5 Q. So in your second definition you use the 6 language "at least three years of experience." 7 Do you see that? It's at the bottom of 8 page 18 to the top line of 19. "An interventional 9 neurosurgeon with at least three years of 10 experience." 11 Do you see that statement? 12 A. I do now, yes. 13 Q. So is it your opinion that three years of 14 experience was the floor for a person of ordinary 15 skill in the art? 16 MR. WILLIAMS: Objection to the form. 17 Q. The minimum number? 18 A. That is my opinion for an interventional 19 neurosurgeon, yes. 20 Q. So would an interventional neurosurgeon 21 with 20 years of experience still be a person of 22 ordinary skill in the art? 23 MR. WILLIAMS: Objection to form. 24 A. Yes. 25 Q. Would a neurosurgeon with ten years of

Page 102 1 BROWN 2 experience be a person of ordinary skill in the 3 art? 4 A. Yes. 5 Q. Okay. So in your opinion, for your second 6 definition of a person of skill in the art, what is 7 the dividing line between when an interventional 8 neurosurgeon is a person of skill in the art and 9 when they become an expert in the field of the '883 10 patent? 11 MR. WILLIAMS: Objection to form and 12 outside the scope. 13 A. I do not have an opinion on that. 14 Q. Okay. Do you have an understanding of the 15 difference between what makes someone a person of 16 just ordinary skill and an expert in patent law? 17 MR. WILLIAMS: Same objection. 18 A. I do not recall the exact details. 19 Q. Okay. And would an interventional 20 neurosurgeon have any skill set relevant to the 21 claimed invention that the person of ordinary skill 22 in the art would have under your definition -- 23 MS. GORDON: Let me strike that, let me 24 ask that again. 25 Q. Would the interventional neurosurgeon have	Page 103 1 BROWN 2 any skills relative to the claimed invention that a 3 person under your first definition would lack? 4 A. Possibly. 5 Q. And what would those be? 6 A. You're asking for a hypothetical. 7 Q. I'm trying to understand the basis for you 8 having two different alternatives. So it's more 9 than just a hypothetical. So what skill set does 10 an individual that falls under your second 11 definition have that the individual under your 12 first definition does not have? 13 A. It's difficult to say. I'm saying that 14 either of these would be qualified. 15 Q. And would they be qualified for different 16 reasons? 17 A. It's hard to say, depends on the 18 experience of each individual. 19 MS. GORDON: So I think we've been going 20 for quite a long time in this session. Why don't 21 we go off the record. 22 (Proceedings interrupted at 11:45 a.m. and 23 reconvened at 12:47 p.m.) 24 BY MS. GORDON: 25 Q. Good afternoon, Mr. Brown.
Page 104 1 BROWN 2 A. Good afternoon. 3 Q. So I'd like to turn back to your 4 declaration and specifically the technology 5 background section. And it starts on page 19 in 6 the version of your declaration that I have, not 7 sure what page that starts in the version you're 8 looking at. 9 A. Also on 19, paragraph 49. 10 Q. Okay. Great. 11 So I know we've talked about some 12 terminology this morning, but I want to make sure 13 we have a common understanding of some of these 14 terms. So you use the terms "thrombus," "emboli," 15 and "clot" throughout your declaration. Can you 16 explain to me at a high-level what each one is and 17 any material difference between these terms? 18 A. Yes, I can. 19 Q. Would you, please? 20 A. If you go to paragraph 50 -- 21 Q. Okay. 22 A. -- it does a nice job there of describing 23 the difference between thrombus and clot as far as 24 actually showing that they are different from each 25 other.	Page 105 1 BROWN 2 In general -- 3 Q. So, sorry to interrupt. The paragraph 50 4 in the declaration that was filed doesn't mention a 5 clot. 6 A. So the first sentence that I read, 50, is 7 thrombectomy refers to a physical removal of soft 8 fresh thrombus or clotted blood. 9 Q. Okay. And so clotted blood is what you're 10 referring to as a clot? 11 A. Correct. 12 Q. Okay. All right. Thank you. 13 A. Thrombus, especially fresh thrombus is 14 typically viewed as being something that's very 15 soft, almost like jelly, whereas non-fresh or 16 sometimes they use the term "organized thrombus" 17 and even sometimes a "clot" can be material that is 18 more aged and more organized as far as the process 19 of it becoming -- a clot transitions from being the 20 soft jelly-like material to almost like tissue, and 21 that's how it prevents you from bleeding when you 22 get injured, it transforms the tissue. And that 23 same thing happens inside your artery. And so the 24 longer it is there, the more it is aged, the more 25 transition into this organized material that's

Page 106 1 BROWN 2 typically referred to as a clot. And the terms 3 clot and thrombus unfortunately get used 4 interchangeably because there really isn't a time 5 frame where you say something transitions from clot 6 to thrombus or thrombus to clot. And for that 7 reason, sometimes you might even hear people talk 8 about it initially being a clot and turning into 9 thrombus and sometimes might be thrombus and 10 turning into clot. So it varies. 11 Going back to the third one, which was 12 emboli, emboli is any material within the body that 13 breaks loose or even gets introduced into the body 14 that then is -- goes downstream and ends up 15 becoming lodged or possibly continues to float 16 around within the body. 17 Q. Okay. 18 A. So particles of thrombus, particles of 19 clot can be emboli. 20 Q. Okay. So in your declaration, are you 21 making a distinction between clot and thrombus? 22 A. Not a hard line between the two, because 23 when you talk about a thrombectomy device, the term 24 "thrombectomy" includes the word thrombus, and 25 ectomy means the removal of, so the removal of	Page 107 1 BROWN 2 thrombus, but it also removes clots. 3 And as I said, there isn't a clear 4 dividing line necessarily between them. I suspect 5 if we did a Google search, there might be a little 6 bit of difference between the two, but like I said, 7 it isn't something that's black and white, the 8 difference between them. 9 Q. Okay. And are there different types of 10 thrombi? 11 A. There's different ages of thrombus, and 12 that's what I was referring to. A fresh, soft 13 thrombus, when it first forms, is very soft, very 14 jelly-like. As it ages, it starts to migrate more 15 into like a tissue. 16 Q. Okay. Then you said at some point it 17 would be considered a clot? 18 A. Yes. And as I said, those words get 19 thrown around interchangeably, so what some people 20 may call a clot, some people may call it thrombus 21 and vice versa. But there probably is a proper 22 term. I don't remember right off the top of my 23 head which is which. But I may have used the 24 terms, if we went to my definition here, of a 25 thrombectomy procedure, I probably am using the
Page 108 1 BROWN 2 term correctly there. 3 Q. Okay. So is it fair to say that clot 4 materials hold their shape? 5 MR. WILLIAMS: Objection to form. 6 A. As we have been defining clots here in the 7 last minute or two as being more organized, that it 8 does have a more rigid shape to it than what fresh 9 thrombus does. 10 Q. Okay. And would a clot be considered a 11 solid? 12 MR. WILLIAMS: Objection to form. 13 A. I guess we would have to spend more time 14 defining what you mean by solid. 15 Q. What's your understanding of the term 16 "solid"? 17 A. My understanding would be it does not 18 flow. 19 Q. Okay. And with that understanding, would 20 you consider a clot to be a solid? 21 A. With that definition, yes. 22 Q. Okay. Would you consider a fresh thrombus 23 to be a solid? 24 A. In general, yes. 25 Q. Okay. I'd like to turn to paragraph 57 of	Page 109 1 BROWN 2 your declaration. And if you look at the very last 3 sentence of that paragraph, you reference the Grey 4 document. 5 Do you see that? 6 MR. WILLIAMS: Sorry, Lori, I missed what 7 page you said. Give it to me again. 8 MS. GORDON: We're in paragraph 57. 9 A. That would be page 22. 10 Q. Yes. 11 A. Last sentence. So I do see where I have 12 referenced Grey in the last sentence. 13 Q. Okay. And that's the document we 14 introduced into this deposition at the start, 15 correct? 16 A. As Exhibit 110, yes. 17 Q. Okay. So can you please pull that 18 document up for me? 19 A. Yeah, I have it in front of me. 20 Q. All right. So I'd like to turn to page 6 21 of Grey. 22 A. I'm there. 23 Q. And the first paragraph, Grey's providing 24 definitions of terms. 25 Do you see that?

Page 110 1 BROWN 2 A. It appears that is what he's doing. 3 Q. Okay. If you could read that paragraph 4 for me, because I'm going to have some questions. 5 And let me know when you finish reviewing it. 6 A. I have finished. 7 Q. Do you agree with Grey that negative 8 pressure and vacuum pressure are generally used 9 interchangeably? 10 MR. WILLIAMS: Objection to form. 11 A. Can you repeat your question? 12 Q. Do you agree with Grey that negative 13 pressure and vacuum pressure are used 14 interchangeably? 15 A. They are used interchangeably within his 16 PCT, yes. 17 Q. Okay. And would a person of skill in the 18 art have used those terms interchangeably outside 19 of the Grey PCT context? 20 A. They could. 21 Q. And in the feel of aspiration 22 thrombectomy, are the terms "negative pressure" and 23 "vacuum pressure" generally used interchangeably? 24 A. Generally, yes. 25 Q. Do you agree with Grey's statement that	Page 111 1 BROWN 2 positive pressure supplies a pushing force? 3 A. In how he uses it in his PCT, yes. 4 Q. And what's your understanding of Grey's 5 use of the term "pushing force"? 6 A. It would be better if I could see where he 7 has used it. 8 Q. So you're saying just based on Grey's 9 statement, positive pressure supplies a pushing 10 force, you don't understand what he means by 11 pushing force? 12 MR. WILLIAMS: Object to form. 13 A. I believe I understand what he means by 14 it, but you asked me specifically what he means. 15 So it would be best if I could see what he wrote. 16 Q. Okay. And what do you believe that he 17 means by it in this paragraph? 18 A. I believe that he means that it is pushing 19 fluid. 20 Q. Okay. And do you agree with Grey's 21 statement that negative pressure supplies a suction 22 force? 23 A. As he has it written here, yes. 24 Q. What is your understanding of a "suction 25 force"?
Page 112 1 BROWN 2 A. The force applied to an object that draws 3 it toward -- near. 4 Q. Okay. So Grey uses the term aspiration 5 and suction force interchangeably; would you agree 6 with that? 7 A. Is that in this paragraph? 8 Q. No. I'm asking you a general question 9 about Grey. 10 MR. WILLIAMS: Objection to form. 11 A. I do not recall. 12 Q. Okay. And is suction force a term in the 13 art of aspiration thrombectomy? 14 A. I would say it is sometimes used within 15 the art, yes. 16 Q. Okay. And in what direction is a suction 17 force? 18 MR. WILLIAMS: Objection to form. 19 A. It would be in the direction towards the 20 suction source. 21 Q. Okay. And Grey in this first paragraph 22 states that "pressure relieving means a reduction 23 in the magnitude of either positive pressure or 24 negative pressure." 25 Do you agree with that statement?	Page 113 1 BROWN 2 A. As he has it written here, yes. 3 Q. Okay. So is there a reason why you said, 4 as he has it written here, you would say yes? 5 MR. WILLIAMS: Objection to form. 6 A. Because he has taught here that negative 7 pressure can be called pressure. And typically 8 when you talk about pressure relieving, you are 9 reducing pressure, and so relieving a negative 10 pressure is actually increasing pressure, so it's a 11 little bit of a contradiction if it was not defined 12 here. 13 Q. Okay. So when you relieve a negative 14 pressure, you're increasing pressure; is that 15 correct? 16 A. Correct. 17 Q. And what would an example of relieving 18 positive pressure be? 19 MR. WILLIAMS: Objection to form. 20 A. Taking a pressure that is positive and 21 lowering it. 22 Q. Okay. So when you lower a positive 23 pressure, you're relieving that pressure? 24 A. Typically, yes. 25 Q. And in the context of Grey, when you

Page 114 1 BROWN 2 increase a negative pressure, you're relieving that 3 pressure? 4 A. Not necessarily how you defined it, no. 5 Q. Okay. What was wrong with my statement? 6 A. I would -- it did not make sense, what you 7 asked. 8 Q. Okay. So we said that Grey defines 9 pressure relieving as a reduction in the magnitude 10 of either positive pressure or negative pressure. 11 And my understanding from our discussion was when 12 you increased a negative pressure, Grey referred to 13 that as relieving the pressure, correct? 14 A. Incorrect. 15 Q. And what is incorrect about that? 16 A. As Grey has defined it here, increasing a 17 negative pressure would be reducing the pressure. 18 Q. So help me understand the distinction 19 you're making. So Grey said pressure relieving 20 means a reduction in the magnitude of either 21 positive pressure or negative pressure, right? 22 A. He does say that. 23 Q. And in your testimony, when we were 24 discussing that, my understanding was you said that 25 in context of this statement from Grey, he would	Page 115 1 BROWN 2 consider going from increasing a negative pressure 3 to be relieving that pressure. Am I misstating our 4 earlier discussion? 5 MR. WILLIAMS: Objection to form. 6 A. I believe you are. 7 Q. So can you help me understand what I'm 8 getting wrong? 9 MR. WILLIAMS: Objection to form. 10 A. Is there a specific question that I can 11 answer for you here? 12 Q. Right. So I asked you the question. So 13 you're saying there's something wrong with my 14 statement. I'm trying to understand what is wrong 15 with this statement I'm making. 16 A. The -- you asked me a question, and I 17 answered it. 18 Q. Right. So let's circle back to our 19 original discussion. I asked you -- we were 20 talking about Grey's statement about pressure 21 relieving means a reduction in the magnitude of 22 either positive pressure or negative pressure. And 23 you said relieving a negative pressure is actually 24 increasing pressure. That's what you said in your 25 answer to me.
Page 116 1 BROWN 2 A. Correct. 3 Q. Okay. And so my question to you was, 4 therefore, in Grey, when you increase a negative 5 pressure, you're relieving that pressure. 6 A. And I answered incorrect. 7 Q. And I'm trying to understand why that is 8 incorrect? Does it have to do with the magnitude? 9 I mean, what is it about -- the statements seem to 10 be identical to me from what you said it was and 11 what I reiterated it was. 12 MR. WILLIAMS: Objection, argumentative. 13 Q. So let me go back to your answer. I said, 14 Grey said pressure relieving means a reduction in 15 the magnitude of either positive pressure or 16 negative pressure, right? And you said he does say 17 that. 18 And -- hold on. 19 MS. GORDON: Let me actually strike that, 20 let me go back earlier. 21 Q. I pointed you to the statement we were 22 talking about pressure relieving means a reduction 23 in the magnitude of either positive pressure or 24 negative pressure. And I said, did you agree with 25 that statement. And you said, as he has written it	Page 117 1 BROWN 2 here, yes. I said, is there a reason why you said 3 as he has written it here, you would say yes. You 4 say because he has taught here that negative 5 pressure can be -- can be called pressure and 6 typically when you talk about pressure relieving, 7 you're reducing pressure. So reliving a negative 8 pressure is actually increasing pressure. 9 That was your answer to me. My question 10 to you was, in Grey, is increasing a negative 11 pressure considered pressure relieving? And you 12 said no. So I'm trying to understand why you're 13 saying no, when it seems like I'm just restating 14 exactly what you answered in your earlier to me. 15 MR. WILLIAMS: Objection to form. 16 A. I'm not sure how to answer your question. 17 Q. So do you agree with your answer that you 18 provided earlier that in Grey, relieving a negative 19 pressure is actually increasing pressure? 20 A. Yes. 21 Q. Okay. All right. So if I restated that, 22 in Grey, relieving a negative pressure is actually 23 increasing pressure, you would agree with that? 24 MR. WILLIAMS: Objection to form. 25 A. I agree with that.

Page 118 1 BROWN 2 Q. Okay. And would relieving a negative 3 pressure be the same as relieving a vacuum? 4 A. That is my understanding. 5 Q. Okay. Going back to the first paragraph 6 on page 6, Grey states that pressurizing means an 7 increase in the magnitude of either positive or 8 negative pressure. 9 Would you provide an example of how you 10 would pressurize a fluid? 11 A. You can pressurize fluid with a pump. 12 Q. Okay. Are there any other ways that you 13 could pressurize fluid? 14 A. Yes. 15 MR. WILLIAMS: Objection to form and 16 outside the scope. 17 Q. You can answer. 18 A. I did. 19 Q. I'm sorry. I didn't hear your answer. 20 Your counsel was objecting on top of it. Can you 21 restate your answer, please? 22 A. Yes. 23 Q. And what are those other ways that you can 24 pressurize a fluid? 25 A. You can elevate it, you can -- so when I	Page 119 1 BROWN 2 say elevate it, you can increase the elevation, 3 decrease the elevation. You can apply another 4 pressure over top of the fluid to increase its 5 pressure. 6 Q. Okay. Any other ways that you can 7 pressurize a liquid, a fluid? 8 MR. WILLIAMS: Objection to form. 9 A. Those are the ones that are coming to mind 10 right now. 11 Q. Okay. So I'd like to turn to Figure 2A of 12 Grey and the discussion that occurs on page 7 that 13 starts at line 13. 14 MR. WILLIAMS: Lori, just so I know what 15 you're using, Grey has two different sets of page 16 numbers, one at the top and one at the bottom. 17 Could you identify which one you're using? 18 MS. GORDON: So I'm using the actual pages 19 from Grey itself. 20 MR. WILLIAMS: The page numbers on the 21 top? 22 MS. GORDON: The page numbers on the top, 23 not the page numbers that you added. 24 MR. WILLIAMS: Thank you. 25 Q. Okay. So do you have page 7 and Figure 2A
Page 120 1 BROWN 2 in front of you, Mr. Brown? 3 A. Give me a second to unstaple this, it's 4 going to make it much easier. 5 Okay. 6 Q. Okay. So Figure 2A of Grey illustrates an 7 aspiration system inserted into a biological lumen; 8 is that correct? 9 A. Are you reading from somewhere? 10 Q. I'm not reading from somewhere. I'm 11 describing what Figure 2A is and asking you if that 12 is correct. 13 A. I can only say that it appears to be, 14 without you showing me exactly where you're getting 15 that from. 16 Q. Okay. So you would agree based on your 17 reading of Grey, which you said you reviewed in 18 preparation for today's deposition, that Figure 2A 19 illustrates an aspiration system inserted into a 20 biological lumen, correct? 21 A. I said that it appears to be, but I don't 22 know without reading the definition here of 2A. 23 Q. Okay. All right. Well, can you read the 24 definition of 2A that starts on line 13? 25 A. Without continuing to read, I have not	Page 121 1 BROWN 2 found anywhere yet where it says that this is 3 inserted into -- and I can't remember your exact 4 term -- something like a biologic or into a 5 patient. 6 Q. Okay. So is it your testimony that 7 aspiration system shown in 2A would not be inserted 8 into a patient? 9 A. I did not say that. You were asking 10 whether 2A shows that or not. 11 Q. Okay. So in 2A, is element 202 a clot? 12 A. Again, I have not found it in here, but it 13 appears to be something at the distal end of the 14 aspiration system. 15 Q. Okay. If I point your attention to 16 page 9, line 8, where it refers to 202 as an 17 occlusion; do you see that? 18 A. I'm on page 9. What line number? 19 Q. Line 8. 20 A. I do see that now, yes, it is adjacent to 21 an occlusion, 202. 22 Q. Okay. And a clot would be a type of 23 occlusion, correct? 24 A. That is correct. 25 Q. Okay. And an occlusion occurs in what

Page 122 1 BROWN 2 Grey refers to as a biological lumen, correct? 3 MR. WILLIAMS: Objection to form. 4 A. Can you point to that for me? 5 Q. All right. So if we turn to -- back to 6 page 6, line 26, Grey says, "referring now to the 7 drawings, and in particular Figures 1A and 1B, a 8 schematic representation of the conventional 9 aspiration system 100 is shown for removal of an 10 occlusion 102 from a biological lumen, for example 11 the lumen of an artery 104." 12 Do you see that? 13 A. I do. 14 Q. Okay. And so Grey is using the label -- 15 using the term "biological lumen" to refer to a 16 vessel, for example, an artery, correct? 17 A. I can only assume that that's what he 18 means. 19 Q. Isn't that exactly what he says there? 20 A. You are correct, it does say, for example, 21 lumen of an artery. 22 Q. Okay. And if I point your attention to 23 page 8, lines 10 through 11, Grey, in referring to 24 Figure 2A says, "after inflation, a balloon 205 25 stabilizes the catheter 206 relative the vessel	Page 123 1 BROWN 2 204." 3 Do you see that? 4 A. I do, yes. 5 Q. All right. So in Figure 2A, 204 is a 6 vessel, correct? 7 A. Correct. 8 Q. 202 is an occlusion, correct? 9 A. Correct. 10 Q. And the occlusion could be a clot, 11 correct? 12 A. Correct. 13 Q. So Figure 2A is illustrating an aspiration 14 system inserted into a biological lumen, correct? 15 MR. WILLIAMS: Objection to form. 16 A. Correct. 17 Q. Okay. All right. Grey mentions that the 18 system in Figure 2A permits alteration of an 19 aspiration profile at the distal end of the 20 catheter. What is the distal end of a catheter? 21 A. I don't know where you just read from, but 22 the distal end of a catheter is typically the end 23 that is furthest away from the operator. 24 Q. Okay. And what is the proximal end of a 25 catheter?
Page 124 1 BROWN 2 A. Typically, it is the end closest to an 3 operator. 4 Q. Okay. And what is the terminology used 5 for the portion of the catheter between the distal 6 end and the proximal end? 7 MR. WILLIAMS: Objection to form. 8 A. There can be a number of different terms 9 used for the area in between. 10 Q. What is the most common term? 11 A. It can be the body of the catheter. 12 Q. Okay. What are other terms that are used 13 to describe the portion of a catheter between the 14 distal end and the proximal end? 15 A. It is actually the term you just used and 16 that is portion. 17 Q. Okay. 18 A. So you can have a distal portion and a 19 proximal portion. 20 Q. Right. But I was talking about between 21 the distal portion and the proximal portion, what 22 do you call that piece of the catheter? 23 MR. WILLIAMS: Objection to form and 24 incomplete hypothetical. 25 MS. GORDON: Not a hypothetical, but you	Page 125 1 BROWN 2 can answer the question. 3 MR. WILLIAMS: Objection, argumentative. 4 A. There is a distal portion and a proximal 5 portion -- 6 Q. Okay. 7 A. -- that make up a catheter. 8 Q. Is there any piece in between the distal 9 and proximal portion? 10 MR. WILLIAMS: Objection to form, 11 incomplete hypothetical. 12 A. There does not need to be. 13 Q. There does not need be, but there 14 sometimes is? 15 A. If somebody wants to use another term, 16 they're free to use another term, but a distal 17 portion and a proximal portion will cover the 18 entire catheter. 19 Q. Okay. What I'm trying to understand, so 20 if you have a length of a catheter, it's split 21 between a distal portion and a proximal portion; is 22 that correct? 23 A. It can be described that way, yes. 24 Q. Okay. And are there other ways that it 25 can be described?

1 BROWN Page 126 2 MR. WILLIAMS: Objection to form, 3 incomplete hypothetical. 4 A. As previously mentioned, you can have the 5 body of the catheter. 6 Q. Okay. And then when you're referring to 7 the body of the catheter, would the catheter then 8 have a distal portion, a body, and a proximal 9 portion? Is that what you're referring to? 10 A. Not necessarily, no. No. 11 Q. Okay. I'm trying to understand this 12 terminology. So when you're saying body of the 13 catheter, do you mean -- is the body of the 14 catheter the entire length of the catheter? 15 A. Yes. 16 Q. Okay. And so the body of a catheter is 17 divided into two portions, a distal portion and a 18 proximal portion; is that correct? 19 A. It can be, yes. 20 Q. Okay. You say it can be. When is it not 21 divided into two portions? 22 A. I used the word "can be" because it 23 depends upon the person who is describing it. So 24 if a person wanted to take the body of the catheter 25 and break it into a distal portion and a proximal	1 BROWN Page 127 2 portion, they're allowed to do that. 3 Q. Okay. So in the context of Grey, when 4 he's using the terminology distal portioning, 5 proximal portion, does that describe the total 6 length of the catheter? 7 A. It should. I would have to see how he's 8 using it. 9 Q. Okay. If you look at Figure 2A, and we've 10 established that 204 is a biological lumen in this 11 figure, and what is the pressure in the biological 12 lumen in Figure 2A? 13 MR. WILLIAMS: Objection to form. 14 A. I have no way of knowing. 15 Q. So you do not sitting here today know what 16 the pressure in an artery is? 17 MR. WILLIAMS: Objection to form. 18 A. I do not know the pressure in an artery 19 without having more information. 20 Q. What information would you need? 21 A. I would need to know which artery, I would 22 need to know the condition of the patient. 23 Q. So what is systolic blood pressure? 24 A. Systolic blood pressure is the blood 25 pressure when your heart is ejecting blood from its
1 BROWN Page 128 2 left ventricle. 3 Q. Okay. And what is diastolic blood 4 pressure? 5 A. That is your blood pressure when the left 6 ventricle is filling. 7 Q. Okay. And what is mean arterial pressure? 8 A. I do not recall the exact definition of 9 mean arterial pressure, so I'm going to not answer 10 that. I will say I don't recall. 11 Q. Okay. So would it be fair to say that the 12 pressure in a biological lumen would be an arterial 13 pressure? 14 A. If it's in an artery, yes. 15 Q. Okay. And in what other biological lumen 16 could it be positioned? 17 MR. WILLIAMS: Objection to form. 18 A. A biological lumen is any lumen within 19 your body. 20 Q. Right. I'm not asking what a biological 21 lumen is. You said -- I said what -- I asked 22 "would it be fair to say the pressure in the 23 biological lumen would be arterial pressure?" You 24 said, "if it's in an artery." 25 I'm asking, well, what if it's in a	1 BROWN Page 129 2 different biological lumen, what would the pressure 3 be? 4 MR. WILLIAMS: Objection to form. 5 A. Different than an arterial pressure. 6 Q. What would you call that pressure? 7 A. It would depend upon which biological 8 lumen it's in. 9 Q. Okay. So what are the biological lumens 10 you would typically use a system like you see in 11 2A? 12 A. I'm sorry. Your question is? 13 Q. So Grey's system 2A, an aspiration 14 thrombectomy system, correct? 15 A. Correct. 16 Q. And what biological lumens would you use 17 an aspiration thrombectomy system in? 18 A. Typically, you would use it in arteries or 19 in veins. 20 Q. Okay. And would you use it in any other 21 type of biological lumen? 22 A. Not for thrombectomy. 23 Q. Okay. All right. And so we discussed 24 that the pressure in the biological lumen, 2A, if 25 it's in an artery, would be arterial pressure,

1 BROWN Page 130 2 correct? 3 A. Correct. 4 Q. And what would the pressure in the 5 biological lumen be referred to if it's in a vein? 6 A. Venous pressure. 7 Q. Okay. All right. And what would you 8 consider to be or what would be the term for the 9 average blood pressure in an individual during a 10 single cardiac cycle? 11 A. That may be your mean arterial pressure. 12 Q. Okay. And you're saying that pressure 13 would be different -- the mean arterial pressure 14 would be different than the pressure in a vein? 15 A. Typically, yes. 16 Q. Okay. And what is the difference in 17 pressure, mean pressure, in an artery versus in a 18 vein? 19 MR. WILLIAMS: Objection to form. 20 A. I do not recall the exact values of venous 21 pressure, so I'm not able to give you a definitive 22 answer on the difference between arterial and 23 venous. 24 Q. Okay. Which one is higher? 25 A. Arterial pressure.	1 BROWN Page 131 2 Q. Okay. And is arterial pressure higher 3 than atmospheric pressure? 4 A. Yes. 5 Q. And is venous pressure higher than 6 atmospheric pressure? 7 A. Yes. 8 Q. So if we're looking at Figure 2A, assuming 9 this is being used in an artery, is the arterial 10 pressure, the pressure just outside the distal end 11 of the catheter? 12 A. It would be, yes. 13 Q. Okay. And would mean arterial pressure be 14 a parameter that is used in catheter design? 15 MR. WILLIAMS: Objection to form and 16 incomplete hypothetical. 17 A. It can be. 18 Q. Okay. In what circumstances would it be? 19 MR. WILLIAMS: Same objection. 20 A. If you were designing a device to perform 21 in such a way that it needed to know the pressure 22 of the blood in order for the device to perform as 23 intended. 24 Q. So for the catheter we see in Figure 2A of 25 Grey would mean arterial pressure be a parameter
1 BROWN Page 132 2 that was used in that catheter's design? 3 MR. WILLIAMS: Objection to form. 4 A. I don't know. Also, we've -- we keep 5 using the term mean arterial pressure. We 6 speculate a little bit on what that meant. If you 7 want to go with that, what we kind of speculated on 8 as we continue to use that term, I'm fine with 9 that. But I have no idea what the engineers took 10 into consideration when they designed this. 11 Q. Okay. I believe you mentioned you had 12 experience in catheter design, correct? 13 A. Correct. 14 Q. And catheter design for thrombectomy, 15 correct? 16 A. Correct. 17 Q. Right. And when you were designing a 18 catheter for aspiration thrombectomy, did you 19 consider the average blood pressure in an 20 individual during a single cardiac cycle as part of 21 that design? 22 A. I may have. I don't recall. 23 Q. Okay. Would it have been an important 24 consideration in the design of a catheter that was 25 to be used in aspiration thrombectomy?	1 BROWN Page 133 2 MR. WILLIAMS: Objection to form and 3 incomplete hypothetical. 4 A. It would be one of the parameters that 5 would be informative for the design. 6 Q. Okay. And why would it be informative for 7 the design? 8 A. Because depending upon what you want the 9 device to do, that can influence how it performs. 10 Q. So in what circumstances would mean 11 arterial -- in what circumstances would the average 12 blood pressure in an individual during a single 13 cardiac cycle influence how an aspiration catheter 14 performed? 15 A. I'm going to have to have you ask that 16 again. 17 Q. Well, can we just for the purposes of our 18 discussion here today, take the definition of the 19 average blood pressure in an individual during a 20 single cardiac cycle to be the mean arterial 21 pressure? 22 A. I'm okay with using that definition today. 23 Q. Okay. And we were talking about the 24 design of catheters. And I asked you why would the 25 mean arterial pressure be informative for the

Page 134 1 BROWN 2 design of the catheter. And your answer was 3 depending upon what you want the device to do, that 4 can influence how it performs. 5 So my question is, how does mean arterial 6 blood pressure influence how a catheter performs? 7 A. And my -- if I remember right, I said it 8 depends upon the catheter's design, the mean 9 arterial pressure and how it impacts the design 10 will depend upon what the design is. 11 Q. Okay. And what are -- so talking about 12 catheter design, what are the common components in 13 a thrombectomy catheter? 14 A. Typically, there is an extruded polymer 15 tube and there is a Luer fitting on the proximal 16 end. 17 Q. Okay. 18 A. And an aspiration line. Those are the 19 basics of a thrombectomy catheter. And then each 20 design will have other specific elements. 21 Q. Okay. So what other elements are part of 22 a thrombectomy catheter? 23 MR. WILLIAMS: Objection to form and 24 incomplete hypothetical. 25 A. Again, it depends upon the design.	Page 135 1 BROWN 2 Q. Okay. So would a thrombectomy catheter 3 have a coil? 4 A. I'm not sure what you mean by a "coil." 5 Q. So do catheters, thrombectomy catheters, 6 have a coil that wraps the catheter? 7 A. Unknown. 8 Q. So you've designed thrombectomy catheters, 9 correct? 10 A. Correct. 11 Q. Did your thrombectomy catheters include a 12 coil? 13 MR. WILLIAMS: Objection to form. 14 A. I believe there was something that could 15 be classified as a coil on my thrombectomy 16 catheter. 17 Q. Okay. So for neural applications, would 18 the catheter just be an extruded polymer tube? 19 A. It can be, in addition to those other two 20 elements I mentioned. 21 Q. So sitting here today you would say that a 22 person of ordinary skill in the art, for example, 23 our neuro -- did you say neuro -- interventional 24 neurosurgeon would have used a neuro catheter that 25 was just an extruded polymer tube, a Luer fitting
Page 136 1 BROWN 2 proximal, and an aspiration line for thrombectomy? 3 A. Yes. 4 Q. Okay. And you said you believe there is 5 something that could be classified as a coil on 6 your thrombectomy catheter. What did you refer -- 7 let me take a step back. You said something would 8 be classified as a coil. What was your terminology 9 for that component? 10 A. A coil being something that is wrapped in 11 a helical fashion. 12 Q. Okay. And did you call it a coil? 13 A. I do not recall. 14 Q. Okay. And I believe you said you were 15 familiar with Penumbra's catheter; is that correct? 16 MR. WILLIAMS: Objection to form. 17 A. I'm familiar with the Penumbra system as 18 described in the Teigen patent, and I'm familiar 19 with the fact that Penumbra has thrombectomy 20 systems. 21 Q. Okay. Are you familiar with the Penumbra 22 catheters that are available on the market? 23 A. I am not overly knowledgeable of them. 24 I'm just knowledgeable of the fact that they have 25 them.	Page 137 1 BROWN 2 Q. Okay. So is the Penumbra catheter 3 described in the Teigen patent, is that in your 4 opinion just an extruded polymer tube? 5 MR. WILLIAMS: Objection to form. 6 A. It is not just an extruded polymer tube. 7 Q. What else would be included in the 8 Penumbra catheter described in the Teigen patent? 9 MR. WILLIAMS: Objection to form. 10 A. Without having the patent in front of me, 11 it includes other elements, such as valves, 12 sensors, vacuum source. 13 Q. Okay. Does it include the helical coil 14 that we've been discussing? 15 A. It does not include my helical coil. 16 Q. When you say "my helical coil," what are 17 you referring to? 18 A. To the coil we've been discussing. 19 Q. So does it include any coil? 20 MR. WILLIAMS: Objection to form. 21 A. Not that I recall. 22 Q. Okay. And do catheters for thrombectomy 23 sometimes include layers of a braid? 24 A. Yes. The catheters sometimes include a 25 layer of braid.

Page 138 1 BROWN 2 Q. Okay. And what is the layer of braid used 3 for? 4 A. Typically, it is used to provide a 5 structural element to the catheter to keep it round 6 in the cross-section. 7 Q. Okay. And what would the coil that we've 8 been discussing be used for in a catheter? 9 A. It can be used for many different things. 10 Q. Can you please provide me a list of the 11 things that it would be used for? 12 A. Coil could be used for something very 13 similar as to what the braid we just discussed is 14 used for. It could be used for anchoring the 15 thrombus. It could be used to provide an 16 electrical pathway. It could be used to provide a 17 magnetic force. It could be used in the way that I 18 used it, and that is to provide a mechanical 19 removal of the thrombus from the arterial wall. 20 Q. Okay. Are there any other uses that you 21 can think of sitting here today for the coil? 22 A. Those are the ones that come to mind. 23 Q. Okay. And when you were first describing 24 the catheter for thrombectomy, you mentioned the 25 extruded polymer tube, and you also mentioned an	Page 139 1 BROWN 2 aspiration line. What are -- can you explain to me 3 what the aspiration line is relative to the 4 extruded polymer tube? 5 MR. WILLIAMS: Objection to form. 6 A. In my description, the extruded polymer 7 tube would be the catheter. 8 Q. Okay. 9 A. And then there would be a Luer fitting or 10 manifold, some type of connection on the proximal 11 end. 12 Q. Okay. 13 A. And then an aspiration line would be 14 connected to that and running to a vacuum source. 15 Q. Okay. And so if we look at Figure 2A of 16 Grey, what would the aspiration line be in this 17 figure? 18 A. As I look at this, I would define 19 aspiration line as potentially being between 212B 20 and 208 on the right side. 21 Q. Okay. And 208 is the aspiration source, 22 correct? 23 A. I believe that is true, but I would have 24 to look it up. 25 Q. Okay. And the Luer fitting, what would
Page 140 1 BROWN 2 that be in Figure 2A of Grey? 3 A. It is not specifically shown here, but a 4 Luer fitting is a connecting fitting, so these 5 elements as shown in Grey need to connect to each 6 other, typically, they need to connect to each 7 other, and they would connect through the use of a 8 Luer fitting. 9 Q. Okay. And then the extruded polymer tube 10 would be what we see in Figure 2A as catheter 206; 11 is that correct? 12 A. If 206 is defined as catheter, which it 13 appears that it is, yes. 14 Q. Okay. So when the catheter is introduced 15 into the biological lumen, is it filled with 16 liquid? 17 MR. WILLIAMS: Objection to form. 18 A. I can't say whether in the case of Grey, 19 it is filled with liquid. I will tell you that 20 typically, they are filled with liquid prior to 21 inserting them into the body. 22 Q. Okay. And why are they typically filled 23 with liquid prior to inserting them into the body? 24 A. Because you do not want to release the air 25 into the bloodstream.	Page 141 1 BROWN 2 Q. Okay. And so if the catheter was filled 3 with liquid -- 4 MS. GORDON: I'm sorry. Strike that. Let 5 me rephrase that question. 6 Q. When the catheter is filled with fluid, do 7 you refer to the fluid inside the catheter as a 8 fluid column? 9 A. It can be described that way. The reason 10 I pause is you used the term "fluid" and fluid can 11 be air or liquid. Does it use the term fluid or 12 liquid? 13 Q. All right. Let me correct my question 14 then. When the catheter is filled with liquid, is 15 that liquid within the catheter referred to as a 16 liquid column? 17 A. Typically, yes. 18 Q. Okay. And like the catheter, would the 19 column of liquid have a distal portion? 20 MR. WILLIAMS: Objection to form. 21 A. It could. 22 Q. Okay. And when it has a distal portion, 23 would that same column of liquid also have a 24 proximal portion? 25 A. Within the catheter, yes.

Page 142 1 BROWN 2 Q. Okay. And typically, what would be 3 considered the dividing line between the distal 4 portion of the fluid -- the liquid column and the 5 proximal portion of the liquid column? 6 MR. WILLIAMS: Objection to form. 7 A. It would typically be the midpoint of the 8 catheter. 9 Q. Okay. Okay. And when the catheter is 10 inserted into the biological lumen, at that point 11 in time, what is the pressure inside the catheter? 12 MR. WILLIAMS: Objection to form. 13 A. That is an unknown. 14 Q. What makes it an unknown? 15 A. Because I would need to know which 16 catheter and what system. 17 Q. Okay. So when you say "what system," what 18 do you mean by that? 19 A. You said when a catheter is placed into 20 the -- I can't remember if you said body or 21 biological lumen, you wanted to know what pressure 22 was inside the catheter. 23 Q. Right. So we're talking about the 24 aspiration system in Figure 2A of Grey. So when 25 the catheter 206 of the aspiration system of Grey	Page 143 1 BROWN 2 is inserted into a patient's biological lumen, what 3 would the pressure of the liquid inside the 4 catheter be at that point in time? 5 MR. WILLIAMS: Objection to form and 6 outside the scope. 7 A. I can only assume that the system has not 8 been turned on at the time that they are inserting 9 this, so more than likely, the pressure inside the 10 lumen would be at atmospheric pressure. 11 Q. Okay. And what is the value or what is 12 typically -- 13 MS. GORDON: Strike that. 14 Q. In Figure 2A -- okay. 15 MS. GORDON: Let me take a step back. 16 Q. For the aspiration system we see in 17 Figure 2A, when it is inserted into the biological 18 lumen, without the vacuum being applied, would the 19 pressure be at mean arterial pressure? 20 A. More than likely, no. 21 Q. Okay. Why not? 22 A. And I may correct myself here. You said 23 after it has been placed into the body? 24 Q. Right. So after it has been placed in the 25 body and before the vacuum is applied.
Page 144 1 BROWN 2 A. Sorry. I missed that subtle point. So if 3 it has been placed in the body, yes, the pressure 4 inside that catheter will be at blood pressure. 5 Q. Okay. All right. So let me take a step 6 back. At the instant when it is inserted into the 7 biological lumen, the pressure inside the catheter 8 is at atmospheric. But after it's been inserted 9 into the lumen and before the vacuum is applied, it 10 will be at blood pressure, correct? 11 A. Correct. 12 Q. Okay. All right. So in Figure 2A of 13 Grey, is the aspiration source always in fluid 14 communication with the catheter? 15 MR. WILLIAMS: Objection to form. 16 A. In Figure 2A, it is. 17 Q. Okay. And Grey discloses an opening 216 18 to a chamber 214 that holds a liquid, correct? 19 A. It possibly does. 20 Q. Okay. And when you say it possibly does, 21 what else could chamber 214 hold? 22 A. I would have to see what Grey describes as 23 being in 214. 24 Q. Okay. So do you want to quickly review 25 Grey and let me know what the contents of chamber	Page 145 1 BROWN 2 214 are in your opinion? 3 A. I can, yes. 4 Q. Would you, please? 5 A. It describes here that chamber 214 can 6 be -- have an aspiration medium, which may be a 7 compressible fluid such as air or incompressible 8 fluid such as water or saline. 9 Q. Okay. Thank you. 10 MS. GORDON: So Mr. Brown, we've been 11 going for over an hour now. Would you like to take 12 a short break? 13 THE WITNESS: I would, yes. 14 MS. GORDON: All right. So do you want to 15 do another 15-minute break? 16 THE WITNESS: That would be perfect. 17 (Proceedings interrupted at 2:04 p.m. and 18 reconvened at 2:19 p.m.) 19 BY MS. GORDON: 20 Q. So Mr. Brown, before we took a break, we 21 were talking about Figure 2A of Grey. I'd like to 22 return to that discussion, and also look at 23 Figure 2B in conjunction with Figure 2A. 24 So if I can direct your attention to 25 Figure 2B.

Page 146 1 BROWN 2 A. Okay. 3 Q. So in Figure 2B, we see the vertical line 4 being labeled "negative pressure." 5 Do you see that? 6 A. I see the vertical axis, yes, being 7 labeled negative pressure. 8 Q. Yes. And the horizontal axis is labeled 9 "time," correct? 10 A. Correct. 11 Q. Okay. And where the vertical axis and 12 horizontal axis intersect, can we refer to that 13 time as "time zero"? 14 A. We can. 15 Q. Okay. And what would you consider to be 16 the pressure at that point where the lines 17 intersect? 18 A. It appears to be at the zero point, being 19 there isn't any numbers on there, so it's hard to 20 say definitively, but for now we could say it's 0. 21 Q. Okay. So let's refer to that point as 22 being zero pressure and time 0. And at time 0, 23 opening 216 in the aspiration system of Figure 2A 24 is closed, correct? 25 A. I believe it is. I have not studied 2B	Page 147 1 BROWN 2 but based on the shape of this and what I'm seeing, 3 it does appear that it is closed. 4 Q. Okay. And I believe before the break, we 5 discussed that when the aspiration system is 6 inserted into the biological lumen, before the 7 vacuum is turned on, the pressure inside the 8 catheter would be at mean arterial pressure. Is my 9 recollection correct? 10 A. Correct. 11 Q. Okay. And so that would be the pressure 12 at the distal end of the catheter at time 0, 13 correct? 14 A. Correct. And I just want to add that when 15 we say it will be at mean arterial pressure, that 16 would just be the average pressure inside the 17 catheter. It would not -- the pressure is going to 18 vary. 19 Q. Okay. You mean, so the pressure inside 20 the catheter is going to vary, that's what you're 21 referring to? 22 A. Prior to turning it on, yes. 23 Q. I see. Okay. 24 Okay. Understood. So prior to turning 25 on, the pressure is going to vary, but the average
Page 148 1 BROWN 2 pressure would be mean arterial pressure? 3 A. Correct. 4 Q. Okay. All right. Okay. So at time 0, 5 before the aspiration source is turned on, would 6 blood flow into the distal end of the catheter? 7 A. Based on what I'm seeing in Figure 2B, is 8 that your question? 9 Q. Yes. 10 A. Difficult to say. 11 Q. Okay. Why is it difficult to say? 12 A. Because you said it was before the system 13 is turned on. 14 Q. Correct. 15 A. So I have no idea whether blood would be 16 able to flow through this catheter before a system 17 is turned on. 18 Q. Okay. What would you need to know to be 19 able to make the determination of whether blood 20 would flow through the catheter before the system 21 is turned on? 22 A. I would need to know whether there's an 23 outlet on this catheter somewhere. 24 Q. Okay. And what do you mean by an "outlet 25 on the catheter"?	Page 149 1 BROWN 2 A. An area for fluid to flow out of. 3 Q. Okay. And in the catheter in the 4 aspiration system of Grey we see in Figure 2A, does 5 it have an outlet? 6 A. It would have to have an outlet when it's 7 turned on. 8 Q. Okay. So in the aspiration system of 9 Figure 2A, let's assume the catheter is filled with 10 a liquid, there's no outlet, and the vacuum is not 11 turned on, would blood flow into the catheter? 12 MR. WILLIAMS: Objection to form and 13 outside the scope. 14 A. If the catheter is in the body and the 15 system is not turned on and there is no outlet, 16 blood will not flow in. 17 Q. Okay. And assuming the catheter is filled 18 with liquid, there's no outlet, the vacuum has not 19 been turned on, would liquid flow out from the 20 catheter into the biological lumen? 21 MR. WILLIAMS: Objection to form and 22 outside the scope. 23 A. It shouldn't. 24 Q. Okay. So looking at Figure 2B, we see the 25 negative pressure go from 0 to a higher pressure.

Page 150 1 BROWN 2 And let me take a step back because we had some 3 discussion about terminology earlier when we were 4 talking about negative pressure. So I want to make 5 sure I'm on the same page and asking the question 6 properly. 7 So if we look at Figure 2B, and you see 8 the kind of the pressure line, you know, going up, 9 would you consider that to be an increase in 10 negative pressure? 11 A. Yes. And that is how it's labeled, 12 negative pressure. And we've established the 13 bottom of it being 0. So yes, as it's going up, it 14 would be an increase in negative pressure. 15 Q. Okay. Just wanted to make sure that we're 16 on the same page on terminology here. 17 Okay. So as the negative pressure 18 increases at some time after time 0, it appears to 19 level off. 20 Do you see that? 21 A. I do. 22 Q. And what does that leveling reflect? 23 A. That would reflect kind of a static state, 24 meaning that there is no additional pressure change 25 within the catheter.	Page 151 1 BROWN 2 Q. Okay. And so sometime after T-0, the 3 aspiration source was turned on, correct? 4 A. That would be my assumption. We have not 5 defined what is happening here yet in 2B based on 6 the description of the patent. But as you and I 7 are reviewing it, we're making some assumptions. 8 So that appears to be what's happening. 9 Q. Okay. And you said that leveling off 10 reflected a static state. And what would be the 11 cause of getting to a static state? 12 A. That the system is now in equilibrium, 13 everything has balanced out. 14 Q. Okay. And would that state reflect the 15 maximum negative pressure? 16 MR. WILLIAMS: Objection to form. 17 A. That is unknown. If you're referring to 18 device as shown in Figure 2A, it is the maximum 19 negative pressure as shown in Figure 2B. 20 Q. Okay. So it's the maximum negative 21 pressure we see in 2B. And your answer is you 22 don't know if that's the maximum negative pressure 23 for the system of 2A? 24 A. Correct. 25 Q. Okay. And so when it -- the pressure line
Page 152 1 BROWN 2 we see, that's reflecting the pressure level inside 3 the catheter, correct, in Figure 2B? 4 A. That is a little bit of an unknown. We 5 have not established that. 6 Q. Okay. So we turn to page 8, line 26, Grey 7 says Figure 2B shows an example aspiration profile 8 250. 9 A. Yes. I see that. 10 Q. Okay. And with that understanding, going 11 back to my question, the pressure profile we see in 12 2B, is that reflecting the pressure inside the 13 catheter? 14 A. It does not clearly state whether this is 15 inside the catheter, inside the manifold, inside 16 the vacuum chamber. 17 Q. What would -- so you reviewed Grey in 18 preparation for today's deposition, correct? 19 A. Yes. 20 Q. And you reviewed Grey when preparing your 21 declaration, correct? 22 A. Correct. 23 Q. What is your understanding of Figure 2B? 24 A. It is the pressure profile -- aspiration 25 profile -- excuse me -- according to a repetitive	Page 153 1 BROWN 2 alternation of opening of the 216 valve. 3 Q. So based on your understanding of Grey, is 4 this an aspiration profile inside the catheter? 5 A. It can be. I'm saying it's not specific. 6 Q. But is it your understanding from your 7 analysis of Grey that this represents the 8 aspiration profile inside the catheter? 9 A. Unknown. 10 Q. Okay. Is it your understanding from your 11 analysis of Grey that this figure represents the 12 aspiration profile within the manifold? 13 A. Unknown. 14 Q. Is it your understanding based on your 15 analysis of Grey that Figure 2B represents the 16 aspiration profile within the vacuum chamber? 17 A. Unknown. 18 Q. What would you need to know to determine 19 what this aspiration profile related to? 20 A. I would need -- 21 MR. WILLIAMS: Objection to form. 22 A. I would need something within Grey to 23 specify exactly where this is being measured. 24 Q. Okay. 25 A. I'm not saying it doesn't exist; I'm just

1 BROWN Page 154 2 saying I haven't found it. 3 Q. Was your opinion set forth in your 4 declaration based on the understanding that the 5 figure in 2B is the aspiration profile in the 6 catheter? 7 MR. WILLIAMS: Objection to form. 8 A. I don't recall if I reference Figure 2B in 9 my declaration. 10 Q. Okay. And is it your opinion that the 11 aspiration profile would differ from the catheter 12 and between the catheter and the manifold? 13 A. That is not what I said. 14 Q. I wasn't summarizing what you said. I'm 15 asking a question. 16 So you said you could not distinguish 17 whether this was a pressure profile between -- 18 inside the catheter, the manifold or the vacuum 19 source. So would the pressure aspiration profile 20 differ in the catheter versus in the manifold? 21 A. Slightly, yes. 22 Q. And what would be the factors that would 23 influence that difference? 24 A. Where in the catheter you are measuring. 25 Q. And --	1 BROWN Page 155 2 A. That was a statement, that wasn't a 3 question. So a location in the catheter where you 4 are measuring. 5 Q. Okay. So my question would be, was 6 related to whether the aspiration -- or that 7 aspiration profile would look different if it was 8 in the catheter versus in the manifold. And it 9 sounded like your answer was that aspiration 10 profile could look different even within the 11 catheter itself? 12 A. Correct. 13 Q. Okay. And why is that? 14 A. Due to what they refer to as kind of head 15 losses, but it would be potential dampening of the 16 profile, energy losses that occur along the length 17 of that catheter. 18 Q. Okay. So the aspiration profile at the 19 distal end of the catheter would be different than 20 the aspiration profile at the proximal end of the 21 catheter? 22 A. They can be. 23 Q. They can be. 24 In what circumstances would they not be 25 different?
1 BROWN Page 156 2 A. They will always be slightly different. 3 It's just a relative magnitude of the difference. 4 Q. Right. And what contributes to the 5 difference? 6 MR. WILLIAMS: Objection, asked and 7 answered. 8 A. It can be -- primarily the design of the 9 catheter. 10 Q. Okay. And when you say design of the 11 catheter, what aspects of the design would impact? 12 A. The diameter, the compliance of the 13 material, any restrictions that may be in the 14 catheter, the length. 15 Q. Anything else? 16 A. Those are the ones that come to mind. 17 Q. Okay. So you used a term that I'm not 18 sure I'm familiar with. You said the "compliance 19 of the material." What do you mean by that? 20 A. The compliance is referring to the 21 material's ability to maintain its shape after a 22 load is applied to it. 23 Q. Okay. And the material that would be -- 24 what in the context of a catheter, what would the 25 material be that you're referring to?	1 BROWN Page 157 2 A. The material that the catheter itself is 3 made out of. 4 Q. Okay. And that's the extruded polymer you 5 were talking about earlier? 6 A. It can be, yes. 7 Q. Okay. Can it be something other than 8 that? 9 A. It can be the braid we talked about. 10 Q. Okay. 11 A. It can be the coil we talked about. 12 Q. Okay. Can it be anything other than that? 13 A. The catheter does not necessarily have to 14 be plastic. It can be other materials. 15 Q. Okay. You mentioned restrictions in the 16 catheter. What did you mean by that? 17 A. Changes in diameter of the catheter along 18 its length. 19 Q. Okay. And why would there be changes in 20 diameter of the catheter along its length? 21 A. There could be locations where they are 22 bonding components together. There could be 23 intentional changes in diameter along the length. 24 Q. Okay. Would there be restrictions in the 25 catheter that were not intentional?

1 BROWN Page 158 2 MR. WILLIAMS: Objection to form. 3 A. Not that I'm aware of. 4 Q. Okay. You said intentional changes in 5 diameter, could there be unintentional changes in 6 diameter when you're using a catheter in 7 thrombectomy? 8 A. Yes. 9 Q. And what would those be? 10 A. During its use, as you apply a vacuum, you 11 can get the tubes to compress or collapse down upon 12 themselves. They can also, as you are navigating 13 through tortuous anatomy, there's always a risk of 14 the tubes kinking. 15 Q. Okay. Are there any other circumstances 16 where there would be unintentional changes in the 17 diameter of a catheter? 18 A. Those are the ones I can think of right 19 now. 20 Q. Okay. So let me go back to -- let's go 21 back to Figure 2B. All right. So for the purpose 22 of this line of questions, I'd like to assume that 23 Figure 2B is illustrating the aspiration profile at 24 the distal end of the catheter. Okay? 25 A. As long as I don't receive any objections	1 BROWN Page 159 2 from counsel. 3 Q. So with that understanding, at some time 4 after what we've termed to be figure -- time T-0, 5 the vacuum source is turned on, correct? 6 A. That appears to be what's happening. 7 Q. And we see during the time period -- 8 MS. GORDON: Strike that. 9 Q. Do you see the first four-pointed star in 10 Figure 2B? 11 A. I do see the left side four-pointed star. 12 Q. Okay. So let's refer to that as time A. 13 Okay? So from time 0 to time A, the vacuum source 14 is being applied, correct? 15 A. That is how you and I have agreed to 16 describe this, yes. 17 Q. Okay. And during that time period, the 18 negative pressure increases from 0 to what is the 19 maximum negative pressure, for Figure 2B, correct? 20 A. Correct. 21 Q. And it levels off for a short period of 22 time before time A, correct? 23 A. Before the first four-point star, yes. 24 Q. Okay. So what, if anything, occurs 25 structurally to the catheter at this point when it
1 BROWN Page 160 2 is in the state of maximum negative pressure? 3 MR. WILLIAMS: Objection to form and 4 outside the scope. 5 A. It highly depends upon the design of the 6 catheter as far as what happens to it. 7 Q. Okay. So let's drill down into that. So 8 assuming we're at that point where right before 9 that first four-pointed star, we're at that maximum 10 negative pressure, and there is a clot blocking the 11 end of the catheter, like we see in Figure 2A. If 12 we have a catheter that is an extruded polymer 13 tube, what structurally is going to occur to the 14 catheter at this point? 15 MR. WILLIAMS: Same objection. 16 A. As I stated, highly dependent on the 17 design of the catheter, but at a very high-level, 18 you more than likely will see a change in diameter 19 and a change in length. 20 Q. Okay. And when you say a change in 21 diameter, would the diameter become smaller? 22 A. Yes. 23 Q. Okay. And you said a change in length. 24 What is the change in length at that point? 25 A. There's a possibility that it would	1 BROWN Page 161 2 shorten. 3 Q. Okay. And would catheters of different 4 sizes react differently? 5 A. They would follow the same principle. 6 Q. Okay. And the same principle being that 7 their diameter would become smaller and their 8 length would become smaller? 9 A. Yes, that is the principle we discussed. 10 Q. Okay. So let's assume now that we have a 11 catheter that has a coil and a braid as well as an 12 extruded polymer tube. So would that catheter 13 react differently than the catheter that we were 14 discussing that was just the extruded polymer tube 15 at the point right before time A? 16 MR. WILLIAMS: Objection to form, outside 17 the scope. 18 A. Again, I'm assuming you mean before the 19 four-point star? 20 Q. Yes. 21 A. So the same principles would apply with a 22 catheter that has a braid and a coil. It's just to 23 different degrees. 24 Q. Okay. And would the diameter of a coil 25 have any impact into how the catheter reacts at

Page 162 1 BROWN 2 that time right before the four-pointed star? 3 MR. WILLIAMS: Same objection. 4 A. I guess I'm not understanding when you 5 refer to the diameter of the coil. 6 Q. Okay. So would a braid and a coil make 7 the catheter more or less compliant? 8 A. They would become less compliant. 9 Q. Okay. And is there any aspect of the 10 construction -- 11 MS. GORDON: Strike that. 12 Q. If the catheter is less compliant, then 13 there would be less change in diameter than if it 14 was just an extruded polymer catheter, correct? 15 MR. WILLIAMS: Objection to form, outside 16 the scope. 17 A. As a general rule, if you're using all the 18 same dimensions. 19 Q. Right. So if we're using all the same 20 dimensions, if we had a less compliant catheter, 21 then the change in diameter would be less than for 22 just an extruded polymer catheter, correct? 23 MR. WILLIAMS: Same objection. 24 A. Again, as a general rule. It depends on 25 which polymer, depends on which braid. But as a	Page 163 1 BROWN 2 general rule, applying a braid or a coil will 3 reduce the compliance. 4 Q. Okay. So from the answer to your 5 question, is it fair to say then the degree of 6 compliance depends on the material being used for 7 the catheter? 8 A. The material and the design. 9 Q. Okay. And when you say "design," what do 10 you mean by that? 11 MR. WILLIAMS: Objection to form. 12 A. I'm referring to the design of the tube 13 itself, and so what have you built into it relative 14 to the braid, coils, pitch angles. 15 Q. Okay. And what is a "pitch angle"? 16 A. That is the angle of the braid and wire 17 relative to each other. 18 Q. Okay. And so is it fair to say then the 19 degree of compliance would depend in part on the 20 pitch of the braid? 21 A. It's one of the factors that influences 22 the compliance, yes. 23 Q. Okay. And what other factors influence 24 the compliance of a catheter? 25 MR. WILLIAMS: Objection to form, outside
Page 164 1 BROWN 2 the scope. 3 A. The material of the braid, the diameter of 4 the wires, the amount of cold working in the wires, 5 the selection of the polymer, how the polymers 6 refloat over the braid. 7 Q. When you use the term "cold working," what 8 do you mean by that? 9 A. That is a term used in the alloy world to 10 refer to the amount of deformation that is in the 11 material. 12 Q. Okay. And do some catheters have more 13 than one coil? 14 MR. WILLIAMS: Objection to form and 15 outside the scope. 16 A. As we have been using the term coil to 17 mean a coil that's in the catheter tube, there are 18 catheters that do have multiple coils. 19 Q. Okay. And would the number of coils be a 20 factor that would impact the compliance of a 21 catheter? 22 A. Possibly. 23 Q. Okay. And when would it impact the 24 compliance of a catheter? 25 A. Depending upon the design and the location	Page 165 1 BROWN 2 of the coils. 3 Q. Okay. When you say "location of the 4 coils," what do you mean? 5 A. Are the coils side by side or is one on 6 top of the other. 7 Q. Okay. 8 MS. GORDON: Okay. One second. 9 Q. So I want to turn back to Figure 2B. And 10 we're talking about that time period right before 11 that first four-pointed star, which we were 12 referring to as time A. So what -- so assuming 13 there's a clot on the end of the catheter like we 14 see in Figure 2A, what forces would be exerted on 15 the clot as a result of the change from 0 to that 16 maximum vacuum state we see in 2B? 17 MR. WILLIAMS: Objection to form, outside 18 the scope. 19 A. If there were a clot at the end of the 20 catheter, it would experience a suction force, as 21 we earlier defined, on to the clot in that time 22 period that was shown in Figure 2B. 23 Q. Okay. So I believe we said the suction 24 force was a force that was -- had a proximal 25 direction, correct?

Page 166 1 BROWN 2 A. We said the direction towards a vacuum 3 source. 4 Q. Okay. And in Figure 2A, that would be a 5 force moving proximally in the catheter, correct? 6 A. Correct. 7 Q. Okay. And you said in your answer, you 8 said a suction force on to the clot. So I just 9 want to understand when you said "on to the clot," 10 what did you mean by that? 11 A. The term "force," a force has to be 12 applied to something. 13 Q. Okay. 14 A. And in this case, the force is being 15 applied to the clot. 16 Q. Okay. So it's a force with a proximal 17 direction being applied to the clot, correct? 18 A. As you have described what the situation 19 is, yes. 20 Q. Okay. And have you heard the term 21 "acceleration force"? 22 A. I have. 23 MR. WILLIAMS: Objection to form. 24 Q. You said you have, right? Sorry. I 25 didn't hear you.	Page 167 1 BROWN 2 A. I have heard of the term, acceleration 3 force. 4 Q. And would you consider the suction force 5 that's being applied to the clot during this time 6 period to be an acceleration force? 7 MR. WILLIAMS: Objection to form, outside 8 the scope. 9 A. It can be at times. 10 Q. Okay. Let me take a step back so I can 11 understand terminology a little better. What is an 12 acceleration force? 13 A. It is a force that changes the speed of an 14 object. 15 Q. Okay. And when you say that the suction 16 force applied to the clot can be at times an 17 acceleration force, what times would it be an 18 acceleration force? 19 MR. WILLIAMS: Objection, outside the 20 scope. 21 A. At the times when it's moving the clot. 22 Q. Okay. So when the suction force is -- 23 MS. GORDON: Strike that and take a 24 step -- strike that. 25 Q. When the clot is physically moving, that
Page 168 1 BROWN 2 suction force would be an acceleration force? 3 A. Correct. 4 Q. Okay. And because it is a suction force, 5 having a direction towards the aspiration source, 6 that acceleration force would also be directed 7 towards the aspiration source, correct? 8 MR. WILLIAMS: Objection to form and 9 outside the scope. 10 A. Correct. 11 Q. Okay. So turning back to Figure 2B, if 12 we -- if a clot was not occluding the end of the 13 vessel, would there be -- would lick -- 14 MS. GORDON: Sorry. Strike that. 15 Q. If the clot is occluding the end of the 16 catheter, would there be liquid removed from the 17 catheter during the time period from 0 to right 18 before that first four-pointed star? 19 MR. WILLIAMS: Objection to form and 20 incomplete hypothetical, outside the scope. 21 A. If the catheter is -- has the clot on the 22 end, the word "corking" the end, so that fluid 23 cannot get in, then the fluid that is in the 24 catheter should not be removed. 25 Q. Okay.	Page 169 1 BROWN 2 A. Now, that -- there's a lot of variables 3 associated with that, and it really depends upon 4 the amount of vacuum and whether you're able to 5 vaporize the fluid or not with the vacuum. But 6 assuming that it remains liquid, you will not have 7 a change or removal of the liquid in that catheter. 8 Q. Okay. All right. So let me just unpack 9 what you're saying. You used the term, "corking." 10 What do you mean by corking the end of the 11 catheter? 12 A. I am using the plain and ordinary meaning 13 of cork, just the same as if you were to put a cork 14 in the end of a wine bottle, something that plugs 15 the end of an opening. 16 Q. Okay. So when you cork the end of the 17 catheter, no fluid can be drawn into the catheter, 18 correct, from the outside? 19 A. Correct. 20 Q. Okay. So if we have the catheter corked, 21 we're drawing full vacuum, which is what we see 22 right before that first four-pointed star, and we 23 have a column of liquid in the catheter, is it your 24 testimony that in that circumstance there would be 25 no liquid removed from the catheter during that

1 BROWN Page 170 2 time period? 3 MR. WILLIAMS: Objection, outside the 4 scope. 5 A. That is what I said. There will be very 6 minimal fluid removed, going back to what we've 7 talked about earlier, and that is the compliance of 8 the system. So if there is a change in diameter, a 9 change in length, that will change the volume of 10 fluid that it's able to hold. 11 Q. Okay. And we said during that time 12 period, the diameter is getting smaller and the 13 length is getting smaller, so the volume of fluid 14 in that catheter would be reduced, correct? 15 A. Yes, at a very minimal level. 16 Q. Okay. All right. So let's look at 2B 17 again. And Grey says that at the first 18 four-pointed star, at a four-pointed star opening 19 216 is opened. And Grey says, quote, a second 20 fluid passes through the opening during an open 21 state. 22 Do you see that disclosure in Grey? 23 A. I do see that. You're on page 8, looks 24 like line 27, 28, 29? 25 Q. Yes.	1 BROWN Page 171 2 A. Yes, I do see that. 3 Q. Okay. So if we look at this exact 4 language from Grey, it says, "In this example, the 5 second fluid, which passes through opening 216 6 during an open state, is of a substantially 7 constant pressure." 8 What does Grey mean when he says, 9 substantially constant pressure there? 10 MR. WILLIAMS: Objection to form. 11 A. It means exactly what he has written 12 there. 13 Q. Okay. So is he talking about the second 14 fluid that's at a substantially constant pressure? 15 A. That appears to be what he is saying. 16 Q. Okay. So if we have our catheter example 17 that we were talking about where we were looking -- 18 where Figure 2B is measuring the aspiration profile 19 at the distal end of the catheter, Grey tells us 20 that first four-pointed star opening 216, is 21 opened, and second fluid is passing through the 22 opening. So based on this discussion of Grey, is 23 the fluid flowing from chamber 214 into the 24 catheter? 25 MR. WILLIAMS: Objection to form and
1 BROWN Page 172 2 outside the scope. 3 A. It is flowing into what appears to be 212 4 on Figure 2A. 5 Q. Okay. And what is 212 in Figure 2A? 6 A. 212 is defined as a conduit. 7 Q. Okay. And would that -- does Grey tell us 8 what the structure of that conduit is? 9 A. I don't recall. 10 Q. Okay. And would that conduit have the 11 same design aspects you talked about, for example, 12 would there be compliance associated with 212? 13 MR. WILLIAMS: Objection to form, outside 14 the scope. 15 A. Everything has compliance, it's just a 16 matter of how much or how little. 17 Q. Okay. So in that time period we were 18 talking about from time 0 to right before the 19 four-pointed star, conduit 212 may be experiencing 20 the same effects because of its compliance that we 21 talked about as the catheter was experiencing; is 22 that correct? 23 A. It could. 24 Q. Okay. So going back to the fluid that is 25 passing through the opening, so it's going into	1 BROWN Page 173 2 conduit 212, correct? 3 A. Correct. 4 Q. Okay. And is it correct to say -- so 5 maybe let me take a step back to right before the 6 four-pointed star. So while the vacuum is on, the 7 fluid is -- 8 MS. GORDON: Hold on. Let me strike that 9 and try and rephrase it. 10 Q. All right. So we're talking about the 11 state where opening 216 is open and fluid is 12 flowing from chamber 214 into 212. While the 13 vacuum is on, where does the fluid from conduit 212 14 flow? 15 MR. WILLIAMS: Objection to form, outside 16 the scope. 17 MS. GORDON: And I can restate that to be 18 even more precise. 19 Q. So we're talking about after the 20 four-pointed star, but before the six-pointed star. 21 While the vacuum is on, opening 216 is open, and 22 fluid is flowing from chamber 214 into 212. Where 23 does the fluid from 212 flow then? 24 MR. WILLIAMS: Same objections. 25 A. If the clot is on the end of the catheter,

Page 174 1 BROWN 2 then that -- and we are maintaining a negative 3 pressure, as shown here, then that fluid that is 4 entering at 216 would have to flow into the vacuum 5 chamber of 208. 6 Q. Okay. So the fluid introduced through 7 that opening is flowing into the aspiration source? 8 MR. WILLIAMS: Same objections. 9 A. Into the vacuum source. 10 Q. Okay. And in that time period between the 11 first four-pointed star and the six-pointed star to 12 its right, the pressure at the distal end of the 13 catheter remains negative while opening 216 is 14 opened? 15 MR. WILLIAMS: Objection to form, 16 incomplete hypothetical, outside the scope. 17 A. Based on Figure 2B, what you described is 18 correct. 19 Q. Okay. All right. So during the time 20 period between the first four-pointed star and the 21 six-pointed star to its right, what occurs to the 22 structure of the catheter assuming we have a clot 23 corked at the end of the catheter? 24 MR. WILLIAMS: Same objections. 25 A. Again, it's hard to say. It all depends	Page 175 1 BROWN 2 upon the design of the catheter. 3 Q. Okay. So let's start with the example 4 catheter that's just an extruded polymer tube. So 5 we discussed that during the time period between 0 6 and the first four-pointed star, that catheter's -- 7 the diameter is going to get smaller and the length 8 is going to get smaller. When opening 216 is 9 opened, and we see the negative pressure going 10 down, what occurs to the structure of that catheter 11 during that time period? 12 MR. WILLIAMS: Same objection. 13 A. At a very high-level, that catheter 14 diameter should grow in diameter a little bit, and 15 I say a little bit because you can see on this 16 particular plot that that change in pressure is 17 marginal compared to the overall pressure, and the 18 length should get longer by a little bit. 19 Q. Okay. And does that mean the volume of 20 the catheter has increased in that time period? 21 A. Correct. 22 Q. Okay. So in your answer you said the 23 change in pressure is marginal compared to the 24 overall pressure. So during that time period, the 25 vacuum was only partially relieved, correct?
Page 176 1 BROWN 2 A. The time period between the four-pointed 3 star and the six-pointed star? 4 Q. Correct. 5 A. It is only partially relieved, correct. 6 Q. Okay. And the flow of liquid during that 7 time period was in the direction of the aspiration 8 source, correct? 9 MR. WILLIAMS: Objection to form, outside 10 the scope. 11 A. The flow of the majority of 216 would be 12 towards the vacuum source. 13 Q. Okay. So what do you mean when you say 14 "the majority of 216"? 15 A. Well, we just discussed that the catheter 16 diameter will get a little bit larger. 17 Q. Okay. 18 A. Length will get a little longer. 19 Therefore, the volume of the catheter will slightly 20 increase, and so a portion of 216 will need to fill 21 that void. 22 Q. I see. I see. But the majority of the 23 liquid will flow from 216 to the aspiration source? 24 A. To the vacuum source, yes. 25 Q. Okay. So with our assumption that	Page 177 1 BROWN 2 Figure 2B is the pressure at the distal -- pressure 3 profile at the distal end of the catheter, is it 4 fair to say that the pressure of the fluid in the 5 catheter is less than the mean arterial pressure? 6 MR. WILLIAMS: Objection, outside the 7 scope. 8 A. I think that is a fair assumption. 9 Without values on here it is difficult to say, but 10 at a high-level, I think your comment is correct. 11 Q. Okay. And, therefore, because the 12 pressure in the catheter is less than the mean 13 arterial pressure, there would be no flow out the 14 distal end of the catheter if there was no clot 15 corked in it, correct? 16 MR. WILLIAMS: Objection, incomplete 17 hypothetical, outside the scope. 18 A. Correct. 19 Q. And let's assume there's a clot corked at 20 the end of the catheter at the time period between 21 that first four-pointed star and the six-pointed 22 star to its right. What happens to the clot during 23 that time period? 24 MR. WILLIAMS: Same objections. 25 A. It really depends upon the type of clot

1 BROWN Page 178 2 that is there. 3 Q. Okay. And can you be more specific? What 4 type of clots are you referring to? 5 A. To the different types that we discussed 6 earlier today. 7 Q. So I think we discussed a fresh thrombus 8 and a clot, correct? 9 A. Yes. And different ages of clot, 10 different levels of organized thrombus. 11 Q. Okay. And how -- why would it depend on 12 the type of clot? 13 A. Because each type has a different 14 structural makeup to it. 15 Q. Okay. So would the force experienced by 16 the clot be the same during that time period, 17 regardless of its type? 18 MR. WILLIAMS: Objection to form, outside 19 the scope. 20 A. At a very high-level, the force should be 21 the same on all of them. 22 Q. Okay. And what is the force that's being 23 experienced by the clot in the timeframe between 24 the first four-pointed star and the six-pointed 25 star to its right?	1 BROWN Page 179 2 MR. WILLIAMS: Same objection. 3 A. It is a decrease in suction force. 4 Q. Okay. So it's still experiencing a 5 suction force, but just less of a suction force? 6 A. Correct. 7 Q. Okay. So what's the risk of losing the 8 clot when no vacuum is applied in the aspiration 9 system of Grey? 10 MR. WILLIAMS: Objection to form, outside 11 the scope. 12 A. Are you referring to a point on Figure 2B? 13 Q. So yeah, so let's assume after the first 14 four-pointed star that vacuum is not being applied, 15 let's make that assumption. Is there risk of 16 losing the clot if there's no vacuum being applied? 17 A. Only if the pressure inside the catheter, 18 the vacuum that is being applied initially, if the 19 vacuum pressure goes back to mean blood pressure. 20 Q. Okay. So as long as the pressure inside 21 the catheter remains below mean blood pressure, 22 there's no -- the risk -- 23 MS. GORDON: Strike that. Let me try 24 again. 25 Q. So as long as the pressure inside the
1 BROWN Page 180 2 catheter remains below mean blood pressure, the 3 risk of losing the clot is minimal? 4 A. Correct. 5 Q. Okay. And what happens when the pressure 6 inside the catheter becomes greater than mean 7 arterial pressure? 8 MR. WILLIAMS: Outside the scope. 9 A. There will be a force inside the catheter 10 applied to the blood clot. 11 Q. Okay. And that force would cause the flow 12 of liquid out from the distal end of the catheter? 13 A. Possibly. 14 Q. Okay. In what circumstances would it not? 15 MR. WILLIAMS: Objection to form, outside 16 the scope. 17 A. In order for it to flow out, fluid must be 18 coming in somewhere. 19 Q. Okay. So what you're saying is if the 20 pressure in the catheter increases above mean 21 arterial pressure, but there's no fluid flowing 22 into the catheter, you would not have flow out the 23 distal end of the catheter? 24 A. In theory, there would be no flow. 25 Q. Okay. In practice, would there be flow?	1 BROWN Page 181 2 A. Hard to say. 3 Q. And if you had a clot occluding the end of 4 the catheter, what would happen when your pressure 5 inside your catheter increases above mean arterial 6 pressure? 7 A. There would be a force applied to the 8 clot. 9 Q. Okay. And that force would -- what would 10 be the direction of that force? 11 A. It would be in the distal direction. 12 Q. Okay. 13 MS. GORDON: So I think we've been going 14 again more than an hour, so why don't we take 15 another short break. 16 MR. WILLIAMS: Go off the record. 17 (Proceedings interrupted at 3:28 p.m. and 18 reconvened at 3:46 p.m.) 19 BY MS. GORDON: 20 Q. Okay. So let's turn to figures 3A through 21 3c of Grey. And direct your attention to page 9, 22 line 26. This is where Grey talks about these 23 figures. So Grey refers to a pressure profile and 24 a frequency profile. What is a pressure profile? 25 A. Would you like me to read these to tell

Page 182 1 BROWN 2 you what he is describing them as? 3 Q. Well, I'd like your understanding based on 4 the fact that you've reviewed Grey in preparation 5 of today's deposition. So what is your 6 understanding of pressure profile in Grey? 7 A. I will give you my understanding of what a 8 pressure profile is, and that is typically the 9 change in pressure over time being plotted out, 10 would give you a pressure profile. 11 Q. Okay. And what is a frequency profile? 12 A. Frequency would be typically a change in 13 frequency over time. 14 Q. Okay. And what do we see depicted in 15 figures 3A through 3c? 16 A. 3A through 3c include dashed lines 17 representative of constant pressure aspiration 18 profiles. 19 Q. Okay. So these are aspiration profiles? 20 A. That is what it is describing them as, 21 yes. 22 Q. Okay. And are these representative of 23 pressure profiles inside the catheter? 24 A. So I'm going to correct myself here, it 25 says it includes a dashed line representing a	Page 183 1 BROWN 2 constant pressure profile. So each of these plots 3 or figures include a dashed line, in addition to 4 the solid lines. 5 Q. So are Figures 3A and 3c pressure profiles 6 inside the catheter? 7 A. So I need to actually -- where you had 8 directed me was not the beginning of 3A and C. So 9 I'm going to go up to page 9, line 15. 10 Okay. Yes, so as we have already agreed, 11 these are pressure profiles versus time, and it 12 does not specifically say the location. But for 13 purposes of this deposition, at the distal tip is 14 fine. 15 Q. And the opinion you presented in your 16 declaration, where did you assume these pressure 17 profiles were occurring? 18 MR. WILLIAMS: Objection to form. 19 A. I do not recall if I referenced these 20 figures. 21 Q. So I would point to you in your 22 declaration to page, I believe, page 188 or 23 paragraph 185. 24 A. Here it is. It does not say in here 25 either whether I was assuming it to be at any
Page 184 1 BROWN 2 location. But as I said earlier, to have it at the 3 distal end is fine with me. 4 Q. Okay. So you're saying when you formed 5 your opinion in your declaration, you did not take 6 a position on what location those profiles were 7 occurring? 8 A. Correct, because here -- in my 9 deposition -- in my declaration, it is talking 10 about frequency profiles as shown in these figures, 11 and it does not talk about the location of these 12 profiles. 13 Q. Okay. And the dashed line you referenced 14 in each one of these figures at about 25 inches of 15 mercury, what does that represent? 16 A. As described in Grey, the dashed lines are 17 a constant pressure aspiration profile. 18 Q. Okay. And why is that considered a 19 baseline? 20 MR. WILLIAMS: Objection to form. 21 A. I don't know why it would be a baseline. 22 Q. Okay. And is the value 0 on the vertical 23 column, is that atmospheric pressure? 24 A. Are you referring to all three figures? 25 Q. All three figures, yes.	Page 185 1 BROWN 2 A. It does not appear to be that. It's not 3 clear on what it is. It's talking about absolute 4 pressures. 5 Q. Okay. Okay. So in Figure 3A, at time 6 T-0, the aspiration source is in fluid 7 communication with the catheter, correct? 8 A. I'm sorry. Please reask. 9 Q. At time T-0, the aspiration source is in 10 fluid communication with the catheter, correct? 11 A. With the Grey design, yes. 12 Q. Okay. And at that time, the vacuum starts 13 providing a non-0 suction force, correct? 14 MR. WILLIAMS: Objection to form, outside 15 of scope. 16 A. It starts to create a change in pressure. 17 Q. Okay. And how does it do that? 18 A. The premise of Grey is that it makes a 19 change in these pressures by opening and closing 20 the vent valve. So these are absolute pressures or 21 change in pressure. I would have to assume by us 22 just going here and starting to talk about these 23 figures, that that change or increase in absolute 24 pressure is the result of closing the vent valve. 25 Q. Okay. And when the vent valve is closed,

1 BROWN Page 186 2 there's a -- the vacuum source is in fluid 3 communication, correct? 4 A. With the catheter. 5 Q. Yes. 6 And that means there's a non-0 suctioning 7 force being provided, correct? 8 A. According to these plots, there's a change 9 in pressure in the negative direction or in a 10 positive direction relative to vacuum. And so 11 these are absolute values. And so when it shows 0, 12 that's just a reference point. And then there's a 13 change that as that vent valve is closed, it 14 changes and goes from the baseline up to roughly, 15 let's say, 24 inches of mercury. 16 Q. Okay. And that represents a negative 17 pressure at the distal end of the catheter, 18 correct? 19 MR. WILLIAMS: Objection, outside the 20 scope. 21 A. That would indicate a negative change 22 or -- yes, a negative change at the distal end. 23 Q. Okay. And at -- there appears to be a 24 leveling off at the maximum value between time T-0 25 and T-1.	1 BROWN Page 187 2 Do you see that? 3 A. There is an upper plateau, yes, where it 4 levels off. 5 Q. And why does that upper plateau occur? 6 MR. WILLIAMS: Objection, outside the 7 scope. 8 A. This is the pressure profile associated 9 with the opening and closing of the vent valve. 10 That upper plateau would be once the vent valve is 11 closed, the vacuum is building until it reaches a 12 maximum level and everything is then in -- at a 13 constant point, and then it creates that upper 14 plateau. 15 Q. Okay. And then when we see the pressure 16 profile go back down to 0, is that because the vent 17 valve has been opened? 18 MR. WILLIAMS: Objection, outside the 19 scope. 20 A. That would be the typical reason. I'm 21 just looking here, they've got labels of DC and UC, 22 so I'm looking to see what those are. 23 Okay. So as you had described, the down 24 slope, that is the opening of the vacuum valve. 25 Q. Okay. And in Figure 3A, from time 0 to
1 BROWN Page 188 2 when the aspiration source is maintaining a non-0 3 suction, correct? 4 MR. WILLIAMS: Objection, outside the 5 scope. 6 A. I'm not understanding the "non-0 suction." 7 Q. Well, that's the language Grey uses and 8 that's the language you cite throughout your 9 declaration. Grey page 13, line 10, "As example of 10 this as provided in profile 330 of Figure C, 11 providing a non-0 suction force in the catheter at 12 all times reduces the risk of occlusive material 13 breaking free." 14 A. Thank you for reminding me. Yeah. So 15 what they're referring to is that the suction never 16 reaches 0 as they've defined it. So one has to 17 assume that these plots are never reaching 0 18 suction. 19 Q. Okay. Okay. So we see in Figure 3A, the 20 magnitude of change in the level of vacuum is less 21 than 25 inches of mercury, correct? 22 A. For the cycling plots, yes. 23 Q. Okay. And if we look at Figure 3B of 24 Grey, we have a similar profile where we go from 0 25 to a maximum value with a slight plateau.	1 BROWN Page 189 2 Do you see that? 3 A. I do. 4 Q. But the plateau in 3B is less than the 5 plateau in 3A. Why is that? 6 MR. WILLIAMS: Objection to form, outside 7 the scope. 8 A. That is an unknown. I would have -- if it 9 is revealed in Grey, the reason for that 10 difference, I would have to find it and read it. 11 I'm not familiar with him giving a reason for a 12 difference in the absolute pressure between A and 13 B. 14 Q. Okay. So let's go to page 23, lines 17 15 through 26. Can you read that for me? 16 A. Page 23? 17 Q. Lines 17 through 26. 18 A. Okay. I've read it. 19 Q. Okay. So going back to my question about 20 Figure 3B, when -- 21 A. As far as -- go ahead. 22 Q. So my question was, what was the reason 23 that the plateau in 3B is lower than the plateau in 24 3A? 25 MR. WILLIAMS: Objection, outside the

1 BROWN Page 190 2 scope. 3 A. It does not give a reason here. 4 Q. Okay. So Figure 3B, you would agree that 5 the frequency has increased, correct? 6 A. Yes. 7 Q. Okay. And the magnitude of the change in 8 pressure is around 22 in the example, correct? 9 A. Roughly, yes. 10 Q. Okay. So the magnitude in change in 11 pressure is lower in Figure B than it is in 12 Figure 3 for a lower frequency, correct? 13 A. B is lower than A, yes. 14 Q. Okay. So if we look at Figure 3C, we see 15 that we're starting at 0, at time T-0, then we're 16 going to slightly under 19. 17 Do you see that? 18 A. Yes. 19 Q. Okay. And then we see that it goes down 20 then to 5. 21 Do you see that? 22 A. Yes. 23 Q. What's your understanding of the reason 24 why in Figures 3C the pressure is alternating 25 between 19 and 5?	1 BROWN Page 191 2 A. Grey does not give an explanation for 3 that. You mentioned earlier frequency probably 4 plays into it. 5 Q. Okay. So in Figure 3C, the magnitude of 6 the pressure difference is 14, correct? 7 A. Yes, roughly. 8 Q. Okay. And that's less than the magnitude 9 of the pressure difference in 3B, correct? 10 A. Correct. 11 Q. Okay. And so what we see is in Grey as 12 the frequency increases, the magnitude of the 13 pressure differentials decrease, correct? 14 MR. WILLIAMS: Objection to form, outside 15 the scope. 16 A. What we see in these three figures as 17 shown in Grey, we see a decrease in the magnitude 18 of the pressure with an increase in frequency, 19 keeping in mind that this is utilizing the system 20 as defined in Grey. 21 Q. Okay. 22 A. Every system will be different. 23 Q. And in that portion I had you review on 24 page 23, lines 17 through 26, Grey indicates that 25 the relationship between pressure and frequency is
1 BROWN Page 192 2 linear, correct? 3 MR. WILLIAMS: Objection to form. 4 A. You're correct. I'm reading it, trying to 5 understand what it's saying. 6 Q. Okay. So if we turn to Grey at page 13, 7 lines 4 through 11. 8 A. I'm sorry. I hadn't left my train of 9 thought. Please state that. 10 Q. I completely understand. It's late in the 11 day. But if we turn to page 13, lines 4 through 12 11. 13 A. Okay. 14 Q. Grey says that "the realized pressure 15 differential, i.e. the magnitude of the difference 16 between the maximum and minimum of pressure 17 achieved at the catheter tip, may be between 0 and 18 negative 100 inches of mercury." 19 So would a person of skill in the art 20 understand that 0 inches of mercury means 21 atmospheric pressure? 22 MR. WILLIAMS: Objection to form, outside 23 the scope. 24 A. No, they would not. 25 Q. What would they understand 0 inches of	1 BROWN Page 193 2 mercury to be? 3 A. The teaching here is related to the 4 magnitude of difference, and so the magnitude 5 couldn't be 0 or to 100 inches of mercury. 6 Q. Okay. So let me take maybe a step back. 7 Outside of this example on page 13, lines 4 through 8 11, would a person of ordinary skill in the art 9 understand 0 inches of mercury to refer to 10 atmospheric pressure? 11 MR. WILLIAMS: Objection, outside the 12 scope and incomplete hypothetical. 13 A. It completely depends upon the situation 14 you are in. 15 Q. Okay. And what is the level of full 16 vacuum at most on the Earth? 17 MR. WILLIAMS: Same objection. 18 A. So full vacuum means zero pressure, would 19 be relative to atmospheric pressure, would be 20 roughly negative 30 inches of mercury. 21 Q. Okay. And would that value change if I 22 were, for example in Denver versus in DC? 23 A. A little bit. 24 Q. Okay. And how does Grey achieve a 25 pressure differential of minus 100 inches of

Page 194 1 BROWN 2 mercury? 3 A. Because he is not teaching here that he is 4 going to a negative 100 inches of mercury. He's 5 teaching here that the difference between the 6 maximum and minimum pressure is 100 inches of 7 mercury. 8 Q. Okay. And Grey says in this paragraph 9 that he is providing a non-0 suction force in the 10 catheter at all times, correct? 11 A. I'm -- let's see. I'm not seeing where 12 you're reading. I'm sorry. 13 Q. Page 13, line 10 through 11. 14 A. Yes. So your question is? 15 Q. Okay. Does that mean that the pressure at 16 the distal end of the catheter is negative? 17 MR. WILLIAMS: Objection to form, outside 18 the scope. 19 A. It is a suction force, so it is 20 maintaining a suction force at the distal tip of 21 the catheter. 22 Q. Okay. And would that mean that the 23 pressure at the distal end of the catheter is 24 negative? 25 A. It would -- it means that the pressure at	Page 195 1 BROWN 2 the distal end of the catheter must be less than 3 the pressure outside the catheter. 4 Q. Okay. And the pressure outside the 5 catheter is mean arterial pressure? 6 MR. WILLIAMS: Objection to form. 7 A. If you are in an artery. 8 Q. Okay. And how can a person of ordinary 9 skill in the art achieve a pressure differential of 10 minus 100 inches of mercury in a catheter? 11 MR. WILLIAMS: Objection to form, outside 12 the scope. 13 A. If the environment that you're in would 14 allow that much change, you can achieve it. 15 Q. So if the catheter is in the human body, 16 can you achieve that pressure differential of 100 17 -- minus 100 inches of mercury? 18 MR. WILLIAMS: Objection to form, outside 19 the scope. 20 A. I have not studied this to know whether 21 it's possible to do this in a human. So I cannot 22 give you an answer to that right now. 23 Q. Okay. So Grey says in that sentence I've 24 directed you to that providing a non-0 suction 25 force in the catheter at all times reduces the risk
Page 196 1 BROWN 2 of occlusive material breaking free of a clot and 3 traveling distally in the vessel. And why does 4 providing a non-0 suction force reduce that risk? 5 A. Because the suction force will always be 6 in the direction of the proximal end of the 7 catheter, so, therefore, it is always pulling the 8 occlusive material, which are in this case the 9 clot, towards the proximal end of the catheter. 10 Q. I see. 11 So there would never be flow out of the 12 distal end of the catheter? 13 MR. WILLIAMS: Objection to form. 14 A. As long as there is non-0 suction force, 15 there would never be flow out of the distal end of 16 the catheter. 17 Q. Okay. So I would like to turn now to 18 Teigen '712. We can put Grey aside for now. And 19 I'd like to direct you to -- 20 A. One second. 21 Q. Yes. No problem. 22 A. Okay. I have Teigen in front of me. 23 Q. Okay. I'd like to direct you to paragraph 24 113. And do you see the figure in paragraph 113? 25 A. You are in the Teigen '712 patent?	Page 197 1 BROWN 2 Q. Paragraph 113 of your declaration. 3 A. Oh, I'm sorry. 4 Q. Yeah, sorry, you might have missed that 5 when you were grabbing Teigen. But I want you to 6 have both of them up and ready to go. 7 A. I'm at 113. 8 Q. Okay. Did you prepare the diagram we see 9 in the -- in Figure 113 -- in paragraph 113 of your 10 declaration? 11 A. I worked with counsel to prepare it. 12 Q. Okay. And in this diagram, what is in the 13 box in the upper right? 14 A. The box in the upper right is a blowup of 15 the base unit shown below it. 16 Q. Okay. And where is that base unit 17 reflected in the bottom figure? 18 A. The shadow that comes off of that upper 19 right figure goes down to where it is located in 20 the lower figure. 21 Q. Okay. And what is the figure in the upper 22 left? 23 A. The figure in the upper left is the fluid 24 injection assembly. 25 Q. Okay. And the figure at the bottom, is

Page 198 1 BROWN 2 that a figure from the Teigen '712 patent? 3 A. It is a figure from the Teigen '712 with 4 minor alterations to it. 5 Q. Okay. So you created the figure at the 6 bottom; it doesn't occur in this form in the Teigen 7 '712 patent, correct? 8 A. If I remember correctly, we made some 9 minor alterations to the figure. 10 Q. Okay. And in this bottom figure, why is 11 the catheter depicted as being curled up? 12 A. I believe because it was curled up in the 13 original figure. 14 Q. I don't recall seeing a picture of a 15 catheter curled up. 16 So we, Mr. Brown, we talked about a 17 catheter having compliance earlier. Would the 18 catheter in this figure have compliance as well? 19 MR. WILLIAMS: Objection to form. 20 A. As stated earlier, everything has 21 compliance. It's just a matter of degree of how 22 much. And the degree of how much is dependent upon 23 the design. So looking at this figure, I cannot 24 tell you how much compliance there is in this 25 catheter.	Page 199 1 BROWN 2 Q. Okay. And are catheters categorized by 3 compliance values? 4 A. They are not. 5 Q. Okay. So for a given catheter, can the 6 extents of change in diameter and length be 7 predicted? 8 A. They can through engineering. 9 Q. And what would it require to make that 10 prediction? 11 MR. WILLIAMS: Objection to form. 12 A. It would require knowledge of the 13 materials and the design and the use of finite 14 element analysis. 15 Q. Okay. And what is -- okay. 16 And the knowledge of materials and design 17 were the aspects we were talking about earlier when 18 you were talking about compliance, correct? 19 MR. WILLIAMS: Objection to form. 20 A. Correct. 21 Q. Okay. And in your figure, you show a 22 piece of tube labeled a connecting tube. 23 Do you see that? 24 A. I do. 25 Q. And would the connection tube also have
Page 200 1 BROWN 2 compliance like the catheter? 3 A. As stated earlier, everything has 4 compliance. 5 Q. Okay. And what is the purpose of the 6 connection tubing in this figure? 7 A. To -- 8 MR. WILLIAMS: Objection to form. 9 A. -- connect the vacuum source to the fluid 10 injection assembly. 11 Q. Okay. And how long would the connection 12 tubing typically be in an aspiration thrombectomy 13 system? 14 MR. WILLIAMS: Objection to form. 15 A. It varies, depending upon the design. 16 Q. Okay. And what aspects of the design 17 would cause it to vary? 18 A. The location of the vacuum source during 19 the procedure. 20 Q. Okay. Any other criteria that would cause 21 the length of the connection tube to vary? 22 A. Well, in this case, I had probably 23 misstated that the connection tube is connecting 24 it, the injection assembly to the vacuum source. I 25 should have correctly stated that it's connecting	Page 201 1 BROWN 2 it to the base unit, which is the vacuum on/off 3 valve. But my answer still remains the same, it 4 depends upon the design, the length of that 5 connecting tube, and the position of that base 6 unit, which is the vacuum source valve. And so, 7 yeah, it depends on where the designer wants to 8 place that valve. 9 Q. The vacuum valve? 10 A. Correct. 11 Q. So from one procedure to another, the 12 connection tubing could have a different length; is 13 that correct? 14 MR. WILLIAMS: Objection to form, outside 15 the scope. 16 A. From one design to another, it could have 17 different lengths. 18 Q. So you're saying the aspiration system 19 would have a certain length of connection tubing 20 and that would be consistent in every procedure 21 that system was used in? 22 A. That would be the typical way of designing 23 a system, yes. 24 Q. Okay. In this figure in 113, you're 25 pointing to something called a pinch valve. How

1 BROWN Page 202 2 does a pinch valve operate? 3 MR. WILLIAMS: Objection to form. 4 A. A pinch valve is typically a valve that is 5 able to open and close through the pinching of the 6 material that the fluid is flowing through. 7 Q. Okay. And what is an angle valve? 8 A. An angle valve is a very broad term and 9 can encompass many, many different types of valves, 10 but, typically, it is a valve where there is an 11 angle between the inlet and the outlet of the 12 valve. 13 Q. Okay. And in the aspiration system in 14 figure -- in the figure in paragraph 113 of your 15 declaration, assuming the catheter has been 16 inserted into a patient, what happens when a clot 17 is fully ingested into the end of the catheter? 18 MR. WILLIAMS: Objection to form. 19 A. It really depends upon the design of the 20 catheter. 21 Q. So the catheter through the aspiration 22 system in Teigen '712, when a clot is fully 23 ingested into the end of the catheter and it's 24 operating according to its normal principle of 25 operation, what happens to the clot?	1 BROWN Page 203 2 MR. WILLIAMS: Same objection. 3 A. I want to make sure I understand what 4 you're asking. When you say fully ingested, what 5 are you referring to? 6 Q. Right. So when you're doing aspiration 7 thrombectomy, one of the goals is to ingest the 8 clot, right, and move it proximally through the 9 aspiration system into a collection device, 10 correct? 11 A. Correct. 12 Q. Okay. So in the figure on paragraph 113, 13 what happens when a clot is fully ingested into the 14 end of the catheter? 15 MR. WILLIAMS: Objection to form. 16 A. Again, I want to make sure you and I are 17 on the same page here. You were saying that the 18 entire clot is inside the distal end of the 19 catheter? 20 Q. Right. So you've ingested the entire clot 21 into the distal end of the catheter. 22 A. Okay. So now, please repeat the question. 23 Q. Okay. So what happens when you have fully 24 ingested a clot into the distal end of the catheter 25 in the system depicted in the figure in paragraph
1 BROWN Page 204 2 113 of your declaration? 3 MR. WILLIAMS: Objection to form, outside 4 the scope. 5 A. If the vacuum is on, I would expect the 6 clot to move proximal. 7 Q. Okay. And so when it moves proximally, it 8 moves through the catheter into the connection tube 9 and then to a collection canister; is that correct? 10 MR. WILLIAMS: Same objection. 11 A. It moves through the fluid injection 12 assembly -- well, first of all, it moves through 13 the external unit, then through the fluid injection 14 assembly, then through the connecting tube, then 15 through the base unit, and then to the vacuum 16 source, which is the holding canister. 17 Q. Okay. So let's keep this figure open and 18 turn to column 11, lines 46 through 53 of Teigen 19 '712. Actually, I changed -- 20 MS. GORDON: Let me strike that question. 21 Q. Let me point your attention to Teigen 22 column 15, line 44 through 64. 23 A. Okay. 24 Q. What does Teigen '712 -- sorry? 25 A. Sorry. I completely missed what you --	1 BROWN Page 205 2 Q. All right. Sorry. 3 So I'm pointing your attention to column 4 15, line 44 through 64 of Teigen '712. 5 A. Column 16, 44. Okay. 6 Q. Okay. So what does Teigen '712 mean when 7 it says the catheter is "in clot"? 8 MR. WILLIAMS: Objection to form. 9 A. Okay. Can you hear me? 10 Q. Yes. 11 A. Apologize. I have no idea, but, yeah, I 12 got cut off there. 13 So let's almost start back from the 14 beginning here. You want me at column 16? 15 Q. No. 16 Actually, let's just move on and go back 17 to the figure you have in paragraph 113. 18 A. Okay. 19 Q. Okay. So I want to focus on the figure in 20 the upper left in this diagram. And you said that 21 is the representation of the fluid injection 22 assembly, correct? 23 A. It is. 24 Q. Okay. And this is showing an injection 25 tube within the connection tube, correct?

Page 206 1 BROWN 2 A. It is showing an injection tube within the 3 fluid injection assembly. 4 Q. Right. And that injection tube extends 5 into the connection tubing, correct? 6 A. It extends -- as it's shown, it does not 7 extend into the connection tubing. 8 Q. It extends into tubing connecting the 9 fluid injection assembly and the external unit, 10 correct? 11 A. As shown here, yes. 12 Q. Okay. And you mentioned earlier that when 13 a clot is fully ingested into the catheter, it 14 flows through the catheter, through the external 15 unit, and through the fluid injection assembly, 16 correct? 17 A. I did. 18 Q. How does the clot get by that injection 19 tubing? 20 A. It would have to be able to fit in the 21 space that is provided there. 22 Q. So would the injection tube need to be 23 small relative to that tube connecting the external 24 unit and the fluid injection unit? 25 A. In the case of the design shown here, you	Page 207 1 BROWN 2 would -- it would be desirable to have it small, 3 yes. 4 Q. Okay. So in your opinion as an expert in 5 the field, how much of that connection tube could 6 be occluded by -- or how much of the tube between 7 the fluid injection assembly and the external unit 8 could be occluded by the injection tube and still 9 be functional to clear a clot? 10 MR. WILLIAMS: Objection to form, outside 11 the scope. 12 A. That, again, completely depends upon the 13 design. If I have a design that has a very large 14 diameter tube between the injection assembly and 15 the external unit, I can have a good percentage of 16 it occluded because it's a very large tube. So 17 even though there's a large percentage of it 18 occluded, there's still plenty of space for the 19 thrombus to pass by. 20 Q. Okay. And that's not the design we see 21 here in the figure on your column, in your 22 paragraph 113, correct? 23 MR. WILLIAMS: Objection to form. 24 A. I see here an illustration of a design. I 25 do not see any dimensions on this at all.
Page 208 1 BROWN 2 Q. Okay. In column 16, lines 2 through 5 of 3 Teigen, it states that "the three-point junction 4 292 may be positioned between the base unit 210 and 5 the external unit 204 or may be positioned distal 6 to both the base unit 210 and the external unit 7 204. 8 What does Teigen '712 mean when it says 9 the three point junction can be placed distal to 10 both the base unit 210 and the external unit? 11 MR. WILLIAMS: Objection to form. 12 A. It means exactly what it just said, it can 13 be distal of the external unit. 14 Q. So it can be on the other side of the 15 distal external unit? 16 A. The other side compared to where it is 17 shown right now, which would be on the left side of 18 the external unit in this figure. 19 Q. Okay. So it could be on the left side in 20 this figure. 21 So does that mean that the fluid then 22 would be introduced near the proximal hub of the 23 catheter? 24 MR. WILLIAMS: Objection to form. 25 A. It is -- does not say one way or the	Page 209 1 BROWN 2 other, it just simply says that it would be on the 3 left side of the external unit. 4 Q. But in your figure, if it's on the left 5 side of the external unit, wouldn't that make it 6 next to the proximal hub of the catheter? 7 MR. WILLIAMS: Objection to form. 8 A. If it -- it would make it very close, 9 whether it is or isn't is difficult to say from 10 this figure. 11 Q. Okay. But the external unit is the unit 12 that couples the catheter to the -- the multiple 13 segments of connection tubing, correct? 14 MR. WILLIAMS: Objection to form. 15 A. I'm going to need you to reask that. 16 Q. So what is the function of the external 17 unit? 18 A. If I remember correctly, the external unit 19 houses a pressure sensor. 20 Q. And is the catheter connected -- the 21 proximal end of the catheter connected to the 22 external unit? 23 A. I believe if it's not directly connected, 24 it's very close -- 25 Q. Okay.

1 BROWN Page 210 2 A. -- to the proximal end of the catheter. 3 Q. So if you put the three point junction to 4 the left of the external unit, wouldn't that then 5 mean that fluid would be introduced near the 6 proximal end of the catheter? 7 A. Yes. That would bring it closer to the 8 catheter than where it is positioned right now. 9 Q. Okay. And then the fluid would not go 10 through the connection tubing? 11 MR. WILLIAMS: Objection to form, outside 12 the scope. 13 A. The fluid currently in this figure does 14 not go through the connection tubing. When you say 15 "fluid," are you referring to the introduced fluid? 16 Q. So the introduced fluid in the figure 17 depicted in paragraph 113 of your declaration goes 18 through a tube that connects the fluid injection 19 unit to the external unit of the catheter, correct? 20 A. No. 21 Q. So fluid introduced in this figure is 22 going through the vent valve, correct? 23 A. Correct. 24 Q. Which is in the fluid injection assembly, 25 correct?	1 BROWN Page 211 2 A. -- 3 MS. GORDON: I think we lost the witness. 4 Can you take us off the record. 5 Oh, he's back. 6 THE WITNESS: Okay. 7 MR. WILLIAMS: We lost you Brian. 8 THE WITNESS: Yes, you did. And this is 9 very unusual. I usually have just amazing Internet 10 coverage here. I'm trying to think what else we 11 can do if this continues to be a problem. I would 12 say let's give it another try, but if it continues 13 to be a problem, I can try making a hot spot on my 14 phone and -- 15 Q. Okay. Are you all right? 16 So the vent valve -- can you hear me? 17 A. I can. Thank you for asking me. 18 Q. So the vent valve is in the fluid 19 injection unit, correct? 20 A. Correct. 21 MR. WILLIAMS: Objection to form. 22 Q. All right. So when fluid is introduced 23 through the vent valve to get to the catheter, it 24 has to flow through the tube that is connecting the 25 fluid injection assembly and the external unit,
1 BROWN Page 212 2 correct? 3 A. If you wanted the fluid to go to the 4 catheter, correct. 5 Q. Okay. So you said if you wanted the fluid 6 to go to the catheter. When would you not want the 7 fluid to go to the catheter? 8 MS. GORDON: We lost him. 9 MR. WILLIAMS: Want to go off the record, 10 Lori? 11 MS. GORDON: Yeah, let's go off the 12 record. 13 (Proceedings interrupted at 4:44 p.m. and 14 reconvened 4:55 p.m. 15 BY MS. GORDON: 16 Q. Mr. Brown, I'd like to turn to Figure 20 17 of the Teigen '712 patent. 18 A. I'm there. 19 Q. And this is illustrating a graphical 20 representation of an example pulsation protocol? 21 A. From what I remember of the patent, you're 22 correct, without having the exact line item in the 23 patent to confirm that, I'm going off memory. 24 Q. Okay. And would it be fair to assume that 25 the catheter is positioned inside a patient to	1 BROWN Page 213 2 generate this profile? 3 A. I think that would be unfair without 4 confirming that. 5 Q. So in your declaration, did you assume 6 that this profile was assuming that the catheter 7 was positioned inside a patient? 8 A. Again, I would need to see in my 9 declaration where I refer to this figure. 10 Q. So what other circumstances would a 11 profile like this be generated? 12 A. The other circumstance would be on a 13 benchtop. 14 Q. Okay. All right. So can we assume for 15 purposes of today's deposition that this profile 16 represents a profile when the catheter is 17 positioned inside a patient? 18 MR. WILLIAMS: Objection to form. 19 Sorry. Go ahead Brian. 20 A. I am okay going with that assumption as 21 long as Eliot is or counsel is, and I suspect what 22 we're trying to say is that the distal end of the 23 catheter is positioned inside a patient? 24 Q. Correct. 25 A. When I say inside -- or a patient, inside

Page 214 1 BROWN 2 of an artery or some type of a blood vessel? 3 Q. Yes. So let's assume it's inside of an 4 artery, for example. 5 A. Okay. 6 Q. And would it, in our discussion, let's 7 also assume that the catheter is positioned -- the 8 distal end of the catheter is positioned next to a 9 clot. Okay? 10 A. We can start with that assumption. 11 Q. Okay. All right. So let's assume at time 12 0 in Figure 20, there is liquid in the catheter. 13 Okay? 14 A. We can start with that assumption. 15 Q. Okay. And when I think we discussed when 16 the catheter is first inserted into the artery, the 17 liquid would be at atmospheric pressure, correct? 18 A. Prior to it going into the patient, yes. 19 Q. Okay. And the pressure in the artery is 20 what we were referring to as mean arterial 21 pressure, correct? 22 A. We were using that as a general pressure, 23 yes, inside the -- 24 Q. Okay. And we also discussed that when the 25 catheter was positioned inside the vessel and	Page 215 1 BROWN 2 before the system was turned on, the pressure 3 inside the catheter would be at mean arterial 4 pressure, correct? 5 A. Correct. 6 Q. Okay. So in Teigen at column 19, line 62 7 through 64, the patent states that "from time 0 to 8 time 1, the catheter has lost pressure, lunging 9 from atmospheric pressure to near vacuum," and it 10 says near 29.9 inches of mercury. 11 Do you see that? 12 MR. WILLIAMS: Objection to form. 13 A. So I see the decrease in pressure to full 14 vacuum. I don't know where you were reading from. 15 Q. So I said I was reading from column 19, 16 line 62 through 64. 17 A. Okay. Please continue. 18 Q. Okay. What causes a catheter to lose 19 pressure in that time interval, from time 0 to time 20 1? 21 MR. WILLIAMS: Objection to form and 22 incomplete hypothetical. 23 MS. GORDON: Mr. Brown, are you frozen? 24 THE WITNESS: I'm not. I was probably 25 looking like it.
Page 216 1 BROWN 2 MS. GORDON: I was not meaning any 3 dispersions on you. 4 A. So I'm reading more about Figure 20. So 5 Figure 20 is a graphical representation of an 6 example pulsation protocol. So nowhere does it 7 represent or say that this is in a patient. And 8 then as far as -- it says the pressure in the 9 catheter may be manipulated by a variety of 10 methods, for instance, vacuum aspiration may be 11 used to reduce pressure within the catheter. 12 Q. Okay. So in our system that we've been 13 discussing, one that has -- is the catheter has 14 been inserted into a patient and has been turned 15 on, is it fair to say that applying a vacuum causes 16 the catheter to lose pressure between time T-0 and 17 T-1? 18 A. Correct. 19 Q. Okay. And between that time period, there 20 is a negative pressure at the distal end of the 21 catheter, correct? 22 MR. WILLIAMS: Objection to form, 23 incomplete hypothetical. 24 A. Right now, this is talking about pressure 25 in a catheter, and as we discussed earlier, we can	Page 217 1 BROWN 2 make this at the distal end, yes. 3 Q. Okay. And so to answer my question, 4 there's a negative pressure at the distal end of 5 the catheter, correct? 6 A. Correct. 7 Q. Okay. And from time 1 to time 2, Teigen 8 '712 states in column 19, "The catheter has gained 9 pressure, which decreases the vacuum strength," 10 and we see that in Figure 20 as the pressure going 11 up from full vacuum to something less than full 12 vacuum. During this time period, there is still 13 negative pressure at the distal end of the 14 catheter, correct? 15 A. Correct. 16 Q. Okay. So during time period, the period 17 of time from T-1 to T-2, fluid would not be able to 18 flow out of the distal end of the catheter, 19 correct? 20 MR. WILLIAMS: Objection to form, 21 incomplete hypothetical. 22 A. That is the general principle that we are 23 operating under, yes, that you have to have a 24 positive pressure to flow out of the end of the 25 catheter.

Page 218 1 BROWN 2 Q. Okay. And in the system of Teigen '712, 3 what causes the decrease in vacuum strength? 4 A. The vacuum source. 5 Q. Okay. 6 A. I'm sorry. You said decrease in vacuum 7 strength? Or decrease in vacuum? 8 Q. Hold on one second. Can you just hold on 9 one second. 10 Can we -- sorry. Can we just go off the 11 record for one second? Something just came up. 12 MR. WILLIAMS: That's fine. Interrupt. 13 (Proceedings interrupted at 5:06 p.m. and 14 reconvened at 5:25 p.m.) 15 BY MS. GORDON: 16 Q. So Mr. Brown, in our last 30 minutes, I'd 17 like to switch gears a little bit and turn your 18 attention to claim 1 of the Teigen '712 patent. 19 So if you could look at that in reference 20 to the figure in paragraph 113 of your declaration. 21 So I'd like to step through this claim relative to 22 that figure. 23 And the claim, if we look at starting the 24 second limitation, so second limitation is a 25 controllable vacuum valve. In the figures you have	Page 219 1 BROWN 2 in paragraph 113, where is that vacuum valve? 3 A. The vacuum valve is shown in that 4 illustration as the upper right-hand corner image 5 there, that pinch valve, that would be the vacuum 6 valve. 7 Q. Okay. And the claim then recites a vacuum 8 source. And where is the vacuum source in these 9 figures? 10 A. In this illustration, it would be right 11 below that and labeled "vacuum source." 12 Q. Okay. And that's the canister we see in 13 the bottom figure? 14 A. Correct. 15 Q. Okay. And the claim then recites a 16 controllable vent valve. What is the controllable 17 vent valve in these figures? 18 A. We have the fluid injection assembly and 19 in the upper portion of that is labeled a "vent 20 valve." 21 Q. Okay. And so that would correspond to the 22 vent valve in the claim; is that correct? 23 A. Correct. 24 Q. The claim then recites a vent fluid 25 source. And is that equivalent to the fluid
Page 220 1 BROWN 2 introduction unit in your figures? 3 A. Correct. 4 Q. Okay. The claim then recites a manifold 5 connected to the catheter, to the vacuum valve, and 6 to the vent valve. And what is the manifold in 7 this figure? 8 A. A manifold is anything that combines 9 multiple tubes together. And so as we look at 10 this, it could be anywhere in this illustration, 11 could be on the proximal, on the catheter, it could 12 be that external unit, it could be in that fluid 13 injection assembly, that could be a manifold. 14 Now, this claim talks about connecting 15 various elements together. Those elements that are 16 being connected together, I'm trying to find here 17 where in my disclosure we talk about that 18 particular claim. 19 Q. Yeah. So you talk about it in -- starting 20 from paragraph 87 to paragraph 95. 21 A. I'm sorry, did you say 187? 22 Q. Paragraph 87. Well, that's where you 23 start talking about this claim. The manifold 24 discussion is in paragraph 93. 25 A. Yes. And so as I was suggesting, the	Page 221 1 BROWN 2 fluid injection -- let me make sure I'm using the 3 right terminology. I'm looking back to find that 4 image -- the image to walk through this. So the 5 fluid injection assembly could be viewed as that 6 manifold. 7 Q. Okay. 8 A. Which here in paragraph 93 that we're 9 reviewing is this Figure 13. 10 Q. Okay. But if the fluid injection assembly 11 is the manifold, it's not directly connected to the 12 catheter, correct? 13 A. It -- 14 MR. WILLIAMS: Objection to form and 15 outside the scope. 16 A. It can be. In fact, you may recall in our 17 conversation, we talked about the fluid injection 18 assembly being on the left side of that external 19 unit and being at the proximal end of the catheter. 20 Q. Okay. So if it's on the left side of the 21 external unit, then how is it also connected to the 22 vent valve? 23 A. The vent valve moves with it -- 24 Q. Oh, sorry. Continue going. 25 A. I think you understand.

Page 222 1 BROWN 2 Q. Yeah. If it's on the left side of the 3 external unit, then how is it also connected to the 4 vacuum valve? 5 A. Through the connecting tube. 6 Q. Okay. So it's not connected directly to 7 the vacuum valve? 8 A. It's connected directly to the vacuum 9 valve using the connecting tube. 10 Q. But if it's on the left side of the 11 external unit, then it's connected to the external 12 unit. The external unit is connected to the 13 connecting tube, which is then connected to the 14 vacuum valve, correct? 15 MR. WILLIAMS: Objection to form and 16 outside the scope. 17 A. You are correct in saying that in this 18 image, the external unit would be between the fluid 19 injection assembly and what is being referred to as 20 the base unit here. 21 Remember, this is an illustration of one 22 embodiment. The existence of that external unit is 23 not mandatory in this design. 24 Q. So that injection unit as shown in this 25 figure is not directly connected to all three of	Page 223 1 BROWN 2 the catheter vacuum valves and vent valves, 3 correct? 4 MR. WILLIAMS: Objection to form. 5 A. It is connected to all three of them in 6 this figure. 7 Q. So my question was directly connected. 8 MR. WILLIAMS: Objection to form, outside 9 the scope. 10 Q. So the fluid injection assembly is 11 connected to the connection tube, correct? 12 A. It is in this illustration, yes. 13 Q. All right. And it's connected to the tube 14 between the fluid injection tube and the external 15 unit, correct? 16 A. In this illustration, yes. 17 Q. Okay. So let's go on to the next element 18 of the claim. It recites a controller connected to 19 the vacuum valve and the vent valve. 20 And so is the controller circuit board you 21 have highlighted there an example of the controller 22 of claim 1? 23 A. It is an example of that, yes. 24 Q. Okay. And how is that controller 25 connected to the valves?
Page 224 1 BROWN 2 A. Through electrical wires. 3 Q. Okay. So it's an electrical control of 4 the valves? 5 A. In the case of this illustration, yes. 6 Q. Okay. And the claim requires that the 7 controller be configured to selectively open and 8 close the vacuum valve and the vent valve, correct? 9 A. Correct. 10 Q. Okay. And the claim says, "Responsive to 11 opening the vacuum valve, the vacuum source is 12 fluidically connected to the liquid column in the 13 lumen." 14 Do you see that in the claim? 15 A. I do. 16 Q. What is the lumen that's being referred to 17 in the claim? 18 A. I am -- before I tell you what I think it 19 is, I just want to make sure it's not defined 20 somewhere here. But the lumen is the lumen of the 21 catheter. 22 Q. Okay. And so the claim requires there to 23 be a liquid column in the catheter lumen; is that 24 correct? 25 A. Yes. It requires it to be fluidically	Page 225 1 BROWN 2 connected to the liquid column in the lumen of the 3 catheter. 4 Q. Okay. And in the first limitation, it 5 sets forth that the liquid column has a proximal 6 portion and a distal portion, correct? 7 A. The liquid column does, yes. 8 Q. Okay. And we've discussed the meaning of 9 proximal and distal portion earlier today. And is 10 it your opinion that in this claim, the distal 11 portion and the proximal portion take up 12 approximately half the liquid column each? 13 MR. WILLIAMS: Objection to form, outside 14 the scope. 15 A. That is my opinion, that it is 16 approximately half each. 17 Q. Okay. Okay. So going back to the 18 controller limitation, the second piece of that 19 that says, "Responsive to opening the vent valve, 20 the vent fluid source is fluidically connected to 21 the liquid column in the lumen." 22 Do you see that? 23 A. I do. 24 Q. Okay. And so that's referring to 25 fluidically connecting the contents of the fluid

Page 226 1 BROWN 2 source to the liquid column; is that a fair 3 assumption? 4 A. Yes. 5 Q. Okay. All right. So let's step to the 6 last limitation of the claim. It says, "The 7 controller configured to cyclically open and close 8 the vacuum valve and the vent valve to change a 9 level of negative and positive pressure at the 10 distal end." 11 Do you see that limitation? 12 A. I do. 13 Q. So that means that in claim 1, the 14 controller -- 15 MS. GORDON: Strike that. Let me rephrase 16 that. 17 Q. That means in claim 1, the distal end of 18 the catheter must experience both a negative 19 pressure and a positive pressure during a cycle? 20 MR. WILLIAMS: Objection to form, outside 21 the scope. 22 A. It does not. 23 Q. Okay. And can you explain to me why 24 you're saying that? 25 A. It states here that the controller is	Page 227 1 BROWN 2 configured to cyclically open and close the vacuum 3 valve and vent valve to change a level of negative 4 and positive pressure at the distal end. It does 5 not say that it must change the level of negative 6 and positive pressure at the distal ends. 7 Q. Okay. But it has to be configured to be 8 able to, correct? 9 A. Correct. 10 Q. Okay. And it has to be configured to be 11 able to control flow in and out of the distal end 12 during each cycle, correct? 13 A. It has to be capable of doing that, yes. 14 Q. Okay. And "flow out from the distal end 15 of the catheter" means that there is a portion of 16 the liquid column is being shifted out of the 17 distal end of the catheter, correct? 18 MR. WILLIAMS: Objection to form. 19 A. So the control flow of the distal portion 20 in and out on the distal end is referring to flow 21 in and out of the catheter distally. 22 Q. Okay. Right. And that would mean that a 23 portion of the liquid column is moving out of the 24 distal end of the catheter, correct? 25 A. At some times, it can be flowing out, yes
Page 228 1 BROWN 2 if it's told to. 3 Q. Okay. So what this limitation is saying 4 is that it's controlling the flow of the liquid 5 column out of the distal end of the catheter, 6 correct? 7 MR. WILLIAMS: Objection to form. 8 A. It is saying that it is configured to be 9 able to control the flow out the distal end, yes. 10 Q. Okay. And in the prior art that we 11 discussed, the Grey patent, that was -- there was 12 no flow out the distal end of the catheter, 13 correct? 14 MR. WILLIAMS: Objection to form. 15 A. When are you referring to no flow out the 16 distal end of the catheter? 17 MS. GORDON: Let me rephrase the question. 18 Q. All right. Okay. So we talked about Grey 19 and Grey's teaching of providing a non-0 suction 20 force at all times, correct? 21 A. Correct. 22 Q. Okay. And since Grey has negative 23 pressure inside the catheter at all times, it has 24 no flow out of the distal end, correct? 25 MR. WILLIAMS: Objection to form.	Page 229 1 BROWN 2 A. During operation within a patient, it does 3 not have flow out the distal end. 4 Q. Okay. So if claim 1 is merely capable and 5 doesn't need to have flow out of the distal end, 6 then wouldn't Grey anticipate Teigen '712? 7 MR. WILLIAMS: Objection to form, outside 8 the scope of this direct testimony. 9 A. That is not something that I have 10 analyzed. 11 Q. Right. But you're here saying that the 12 scope of Teigen '712 means that it never has to 13 have flow outside -- out of the distal end; isn't 14 that correct? 15 A. Please restate that. 16 Q. Okay. So if I understand your earlier 17 testimony, it was that claim 1 of Teigen '712 did 18 not have or require flow out of the distal end of 19 the catheter, correct? 20 A. Does not require flow out of the distal 21 end of the catheter during operation, correct. 22 Q. And doesn't that make it, then, just like 23 Grey? 24 MR. WILLIAMS: Objection to form, outside 25 the scope.

1 BROWN Page 230 2 A. I have not analyzed whether Grey is prior 3 art to Teigen, that at a very high-level, no, I do 4 not believe that would make it -- invalidate 5 Teigen. 6 Q. Okay. So -- but if -- but in the 7 situation where Teigen '712 doesn't have flow out 8 the distal end, doesn't Grey operate in the same 9 way, where it does not have flow out of the distal 10 end? 11 MR. WILLIAMS: Objection to form, outside 12 the scope. 13 A. So to your example, they would both not 14 have flow out of the distal end. But Teigen -- 15 excuse me -- Grey does not have a vacuum valve. 16 Q. Okay. So in Teigen '712, does Teigen '712 17 system, as disclosed in the patent, disclose the 18 capability of having flow out of the distal end of 19 the catheter? 20 A. I believe it does. 21 Q. Okay. And does Teigen '712 also disclose 22 that you want to control that level of flow out of 23 the distal end of the catheter? 24 A. Yes. 25 Q. Okay. And why does Teigen '712 want to	1 BROWN Page 231 2 control the flow out of the distal end of the 3 catheter? 4 MR. WILLIAMS: Objection to form. 5 A. To minimize the generation of embolic 6 debris going distal. 7 Q. Okay. And why does Teigen '712 have the 8 capability to have flow out of the distal end of 9 the catheter? 10 MR. WILLIAMS: Objection to form. 11 A. It has that capability built into it, 12 depending upon what they want the catheter to do in 13 a particular cycle. As an example, when we went 14 back and we were looking at Figure 20, it showed 15 you a variety of different cycles, some of them 16 remaining negative, some of them going positive. 17 And what they're teaching is that the catheter is 18 capable of doing both. 19 Q. Okay. And so a person of skill in the art 20 would understand in Teigen '712 that you want to 21 control flow out of the distal end of the catheter 22 because you do not want uncontrolled flow, correct? 23 A. That would be one of the reasons you'd 24 want to maintain null distal flow. 25 Q. Well, I didn't ask about no distal flow.
1 BROWN Page 232 2 I asked about maintaining -- about controlled 3 distal flow. 4 A. So you -- 5 MR. WILLIAMS: Objection to form. 6 Q. So we established that Teigen '712 7 discloses having flow out of the distal end of the 8 catheter, correct? 9 A. Yes. They disclose that it is capable of 10 doing that. 11 Q. Right. 12 And with that capability, you also 13 would -- a person of skill in the art would 14 understand that you would want to -- 15 MS. GORDON: Let me strike that. 16 Q. A person of skill in the art would 17 understand, therefore, in that system you would not 18 want uncontrolled flow out of the distal end -- 19 MR. WILLIAMS: Objection to form. 20 Q. -- in a thrombectomy application? 21 A. I believe you're correct, you'd not want 22 to have uncontrolled flow. Having flow coming out 23 the end does not mean it's uncontrolled, in fact, 24 the claim 1 talks about controlling it in and out. 25 Q. Okay. So is it your view then that any	1 BROWN Page 233 2 system with a vacuum valve combined with Grey would 3 be the same as Teigen '712? 4 MR. WILLIAMS: Objection to form and 5 outside the scope. 6 A. So just please re-read the question to me. 7 MS. GORDON: Let me restate it. 8 Q. I believe earlier you stated the 9 distinction between Teigen '712 and Grey was the 10 absence of a vacuum valve, correct? 11 MR. WILLIAMS: Objection to form. 12 A. That was one of the things I pointed out. 13 Q. All right. So then would a reference with 14 a vacuum valve combined with Grey be the same in 15 your view as the system claimed in Teigen '712? 16 MR. WILLIAMS: Objection to form and 17 outside the scope. 18 A. I have no way of being able to answer 19 that. 20 MS. GORDON: Okay. So can we go off the 21 record really quickly? 22 MR. WILLIAMS: That's fine. 23 (Proceedings interrupted at 5:53 p.m. and 24 reconvened at 6:15 p.m. 25 BY MS. GORDON:

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BROWN

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2 Q. So Mr. Brown, I'd like to take you back to

3 Teigen '712, claim 1. And we were talking about

4 the limitations the controller configured to

5 cyclicly open and close the vacuum valve and vent

6 valve. And we discussed in that first portion of

7 that limitation the controller was configured to

8 change a level of negative and positive pressure at

9 the distal end. And when that capability is

10 exercised, is there positive pressure at the distal

11 end of the catheter?

12 MR. WILLIAMS: Objection to form. Outside

13 the scope.

14 A. If it is configured to provide positive

15 pressure at the distal end, there would be flow out

16 the distal end as long as the clot isn't occluding

17 or corking the distal end.

18 Q. Okay. So Mr. Brown, during today's

19 deposition, did you speak to anyone about the

20 substance of your testimony?

21 A. I did not.

22 Q. Okay. All right.

23 MS. GORDON: Well, I think, Mr. Brown,

24 that concludes our cross-examination today. I

25 would remind you to keep a copy of the document you

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CERTIFICATE

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2

3

4 I, Dana Welch, Registered Professional

5 Reporter, Certified Realtime Reporter, do hereby

6 certify that BRIAN BROWN, the witness whose

7 deposition is hereinbefore set forth, was duly

8 sworn by me pursuant to stipulation of counsel

9 relating to remote depositions and that such

10 deposition is a true record of the testimony

11 given by the witness.

12 I further certify that I am neither related

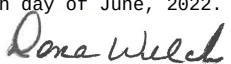
13 to nor employed by any of the parties in or

14 counsel to this action, nor am I financially

15 interested in the outcome of this action.

16 In witness whereof, I have hereunto set my

17 hand and seal this 15th day of June, 2022.

18 

19 _____

20 Dana Welch

21 Notary Public

22 My Commission Expires:

23 September 13, 2024

24

25

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BROWN

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2 have in front of you, and I will speak to counsel

3 after the deposition regarding that. But at this

4 time, Eliot, we will hand the witness over to you

5 for redirect.

6 MR. WILLIAMS: Thank you. Petitioner has

7 no redirect, so we can go off the record.

8 MS. GORDON: Well, let me just conclude,

9 then, because I like to have the last word, and

10 thank you, Mr. Brown, for your time today. We

11 appreciate you sitting for this deposition.

12 THE WITNESS: You're welcome.

13 MR. WILLIAMS: No transcript.

14 (Time ending: 6:09 p.m. CDT)

15 _____

16 BRIAN BROWN

17 Subscribed and sworn to before me

18 this ____ day of _____, 2022.

19 _____

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ERRATA SHEET

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2 Case Name:

3 Deposition Date:

4 Deponent:

5 Pg.	No.	Now Reads	Should Read	Reason
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Signature of Deponent

SUBSCRIBED AND SWORN BEFORE ME

THIS ____ DAY OF _____, 2022.

(Notary Public) MY COMMISSION EXPIRES: _____

2 WITNESS:
3 BRIAN BROWN
4
5 EXAMINATION:
6 BY MS. GORDON
7 EXHIBITS MARKED:
8 NO. DESCRIPTION
9 None marked
10
11
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13
14 NOTATIONS:
15 Request of counsel
16
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18 No exhibits marked.

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