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**UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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**UATP IP, LLC,  
Petitioner,**

**vs.**

**Case No. PGR2024-00054**

**SLICK SLIDE LLC,  
Patent Owner.**

**U.S. Patent No. 11,998,854  
Ref. 58544-0002PS1**

**\_\_\_\_\_ /**

**REMOTE CONFERENCING DEPOSITION OF  
STEPHEN SPIEGELBERG, Ph.D.**

**Stenographically reported by NICOLE HATLER  
California CSR No. 13730  
October 30, 2025**

THE SULLIVAN GROUP OF COURT REPORTERS

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**PAGE**

**EXAMINATION BY MR. ROZYLOWICZ.....4**

**MARKED EXHIBITS**

**NONE**

1                   **REMOTE CONFERENCING DEPOSITION OF**

2                               **STEPHEN SPIEGELBERG, Ph.D.**

3  
4                   **BE IT REMEMBERED**, that pursuant to Notice, and on  
5 the 30th day of October 2025, commencing at the hour of  
6 7:11 a.m., in the respective locations via Zoom, before  
7 me, **NICOLE HATLER**, a Certified Shorthand Reporter, State  
8 of California, personally appeared **STEPHEN SPIEGELBERG**,  
9 **Ph.D.**, produced as a witness in said action, and being by  
10 me first duly sworn, was thereupon examined as a witness  
11 in said cause.

12                                               **---o0o---**

13                   **APPEARANCES ALL REMOTELY VIA ZOOM**

14                   **For the Petitioner:**

15                               **TOM ROZYLEWICZ**  
16                               **CRAIG DEUTSCH**  
17                               **CAMERON UBEL**  
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19                   **For the Patent Owner:**

20                               **BRETT SCHATZ**  
21                               **LOUIS SITLER**  
                              **Wood, Herron & Evans**  
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                              **Cincinnati, OH 45202**  
23                               **(513) 707-0418**  
                              **Bschatz@whepatent.com**

24                   **Also present: Kalpana Viswanathan**  
25

THE SULLIVAN GROUP OF COURT REPORTERS

1                                   STEPHEN SPIEGELBERG, Ph.D.

2                                   sworn as a witness

3                                   testified as follows:

4       EXAMINATION BY MR. ROZYLOWICZ:

5           Q.   Dr. Spiegelberg, thank you for being here today.

6                   Now, to start with, I'd like to recognize that  
7       our conversation today is being transcribed by the court  
8       reporter. To make her job easier and to ensure that we  
9       obtain an accurate record of the deposition, it's  
10      important that we not talk over one another. I'll ask a  
11      question and then give -- give you an opportunity to  
12      respond. If the question is unclear, please just ask me  
13      to clarify, and I'll state and rephrase the question.

14                   Is that fair?

15           A.   Yes, it is.

16           Q.   Okay. It's important that you give verbal  
17      responses to my questions rather than nodding or  
18      otherwise answering nonverbally.

19                   Agreed?

20           A.   Agreed.

21           Q.   Okay. And if you need -- if you need a break,  
22      of course, please just let me know.

23                   Would you please state your full name for the  
24      record.

25           A.   Steven Harry Spiegelberg.

1 Q. Okay. And where do you live?

2 A. I live in 4 Fernway Terrace, Winchester,  
3 Massachusetts.

4 Q. And where do you presently work?

5 A. I work at Cambridge Polymer Group.

6 Q. Okay. And what is Cambridge Polymer Group?

7 A. Cambridge Polymer Group is a contract research  
8 lab specializing in polymeric materials.

9 Q. Okay. What is your -- you say specialize in  
10 polymeric materials.

11 Do you provide services?

12 A. Yes, we do.

13 Q. What sorts of services do you provide?

14 A. We provide testing services, formulation  
15 development, device design, testing for regulatory  
16 purposes.

17 Q. What sorts of testing for regulatory purposes do  
18 you do?

19 A. We do a lot of chemical risk assessments for  
20 biological risk assessment, according to ISO standards.

21 Q. Dr. Spiegelberg, what would that -- what would  
22 that encompass?

23 A. That encompasses a lot of chromatography,  
24 extraction analysis, and toxicological risk assessment.

25 Q. So when you say "chromatography," what would --

1 what would be involved with performing a  
2 chromatographical test and -- start with that question.

3 A. Chromatography involves the separation of  
4 compounds that are extracted from a device, according to  
5 their molecular weight and their polarity, and then  
6 assessment of them through mass spectrometry.

7 Q. And what would be a use -- with the results of  
8 your test, how would -- how would clients of yours use  
9 those test results?

10 A. Those test results are often submitted to the  
11 FDA as part of a regulatory package.

12 Q. Are there public examples you can talk about  
13 that would be -- would help me inform what sorts of  
14 chromatographical tests that you've done?

15 A. We did testing years ago for a client that was  
16 developing hip replacements, and we -- polyethylene hip  
17 replacements. So we performed a lot of chromatography  
18 testing for that.

19 Q. Okay. How large is -- how large is your -- your  
20 company?

21 A. In what sense?

22 Q. How many employees do you have?

23 A. We have about 25 employees.

24 Q. Okay. And you maintain your own lab?

25 A. Yes, we do.

1 Q. Okay. And what sorts of equipment do you have  
2 on the floor of your lab?

3 A. In addition to the chromatography equipment we  
4 just discussed, we have mechanical test equipment, we've  
5 got spectroscopy equipment, x-ray, specialized equipment  
6 for certain types of tests, and a formulation lab.

7 Q. Okay. Do you understand that the -- that you're  
8 under oath today?

9 A. Yes, I do.

10 Q. And you understand that you're giving testimony  
11 today as if you were in court at the PTAB?

12 A. I understand.

13 Q. Is there any reason you cannot give truthful or  
14 accurate testimony today?

15 A. No.

16 Q. Okay. Now, to ensure clarity, I'll define  
17 several terms that we'll use throughout this deposition.

18 Do you understand that, when I refer to the term  
19 patent owner or Slick City, I'm referring to Slick Slide,  
20 LLC?

21 Do you understand?

22 A. Yes, I do.

23 Q. Okay. When I use the term '854 patent, I'm  
24 referring to U.S. -- I'm referring to the Exhibit 1001 in  
25 PGR 2024-000054?

1 A. I understand.

2 Q. Okay. Would you please describe how you  
3 prepared for today's deposition.

4 A. I reviewed the two reports that I prepared.

5 Q. Okay. Did you have meetings with -- with  
6 Counsel?

7 A. Yes, I did.

8 Q. Okay. When did you have those meetings with  
9 Counsel?

10 A. Over the past few weeks.

11 Q. Okay. Approximately, how much time did you  
12 spend preparing for today's deposition?

13 A. I would estimate it at probably six hours.

14 Q. Okay. Now, as part of your preparation for  
15 testifying today, presume you communicated with  
16 Mr. Schatz?

17 A. Yes.

18 Q. Did you communicate with Mr. Sitler?

19 A. Yes.

20 Q. Okay. Is there anyone else you communicated  
21 with in anticipation of today's deposition?

22 A. Yes.

23 Q. Who else did you communicate with?

24 A. Dr. Rust and Mr. -- I'm sorry. I -- I'm losing  
25 his last name right now. Gary, the patentholder.

1 Q. Okay. When did you speak with Mr. Rust?

2 A. Probably two weeks ago.

3 Q. When you communicated with Mr. Rust, was it  
4 before or after his deposition?

5 A. I believe it was before.

6 Q. Okay. When did you communicate with the -- the  
7 inventor?

8 A. Again, about two weeks ago.

9 Q. And you believe that was before his deposition?

10 A. Whose deposition?

11 Q. Before -- disregard.

12 What did you discuss with Mr. Rust?

13 MR. SCHATZ: I'll instruct the witness not to  
14 answer. Privileged.

15 BY MR. ROZYLOWICZ:

16 Q. When -- when you -- did you exchange any  
17 materials in -- when you met with Mr. Rust -- Dr. Rust?

18 A. What do you mean?

19 Q. Did you provide lab results?

20 Did you exchange lab results?

21 MR. SCHATZ: I'll instruct the witness not to  
22 answer. Privileged.

23 BY MR. ROZYLOWICZ:

24 Q. In terms of documents for today, what did you  
25 review in preparation for this deposition?

1           A. My two lab reports -- I'm sorry. My two  
2 reports.

3           Q. Did you review any other materials?

4           A. No.

5           Q. Okay. In preparation for today's deposition,  
6 did you conduct any searches?

7           A. No.

8           Q. Did you do any searches on the Internet?

9           A. Can you elaborate?

10          Q. Did you review Dr. Wang's deposition?

11          A. Not in preparation for this deposition.

12          Q. Did you review Dr. Wang's affidavit in  
13 anticipation of this deposition?

14          A. No.

15          Q. Did you do any further research on the testing  
16 methodology?

17          A. No.

18          Q. Was Counsel present when you spoke with  
19 Dr. Rust?

20          A. Yes.

21          Q. Did you do any additional research as it relates  
22 to testing standards?

23          A. No.

24          Q. Okay. When were you first contacted by someone  
25 at Slick Slide to work on the matter concerning the '854

1 patent?

2 A. I don't remember.

3 Q. Have you worked with them prior to this  
4 post-grant review?

5 A. Who?

6 Q. Did -- Dr. Spiegelberg, you understand that the  
7 administrative trial that we're now involved in, of which  
8 this deposition is a part, is referred to as a post-grant  
9 review?

10 A. I understand.

11 Q. Do you understand we can informally call it a  
12 PGR as an abbreviation for post-grant review?

13 A. Okay.

14 Q. Do you understand that this deposition is part  
15 of the PGR?

16 A. Yes.

17 Q. Do you understand that the PGR began with --  
18 (Reporter clarification.)

19 BY MR. ROZYLOWICZ:

20 Q. Do you understand that the post-grant review  
21 began with Unleashed Air filing a petition for post-grant  
22 review?

23 A. Yes.

24 Q. Had you been contacted prior to this petition  
25 being filed for post-grant review?

1 A. By whom?

2 Q. Had you been contacted by anybody associated  
3 with Slick Slide prior to the petition of this petition  
4 for post-grant review being filed by individual -- by  
5 Mr. Schatz or any individuals associated with Slick  
6 Slide?

7 A. I don't know when this was filed.

8 Q. When do you recall you were engaged?

9 A. I don't recall.

10 Q. Dr. Spiegelberg, a petition was filed  
11 October 9th, 2024.

12 Had you been contacted by Slick Slide or their  
13 representatives before October 9th, 2024?

14 A. Possibly.

15 Q. Had you done any work with Slick Slide on any of  
16 their development of their slides?

17 A. Not development, no.

18 Q. Have you been contacted by Slick Slide to test  
19 any of their slides?

20 A. Not their slides.

21 Q. Okay. Beyond working on this PGR, have you done  
22 any work -- independent of this legal dispute, have you  
23 done any work with Slick Slide?

24 A. Yes.

25 Q. Work -- what work have you done with Slick

1 Slide?

2 A. We did some scanning electromicroscopy for them.

3 Q. What scanning electromicroscopy did you do for  
4 them?

5 A. We analyzed the microstructure of mesh.

6 Q. What were they seeking to understand?

7 A. They wanted --

8 MR. SCHATZ: I'm going to -- just a second.

9 Objection. Outside the scope of this  
10 proceeding.

11 BY MR. ROZYLOWICZ:

12 Q. Dr. Spiegelberg, what --

13 A. Can you ask your question again, please?

14 MR. ROZYLOWICZ: Can I ask the court reporter to  
15 please repeat my question.

16 (Whereupon the previous question was read.)

17 MR. SCHATZ: Objection. Outside the scope of  
18 this proceeding and Dr. Spiegelberg's declarations.

19 THE WITNESS: From what I remember, they wanted  
20 us to look at slides that had been used to see if there's  
21 any difference between the superstructure of the mesh.

22 BY MR. ROZYLOWICZ:

23 Q. Dr. Spiegelberg, what is the superstructure of  
24 the mesh?

25 MR. SCHATZ: Objection. Outside the scope of

1 this proceeding, and outside the scope of  
2 Dr. Spiegelberg's declarations.

3 THE WITNESS: Basically, did it look any  
4 different before and after use.

5 BY MR. ROZYLOWICZ:

6 Q. Thank you, Dr. Spiegelberg.

7 So as I understand it, they asked you to  
8 understand -- is it fair to say that they asked you to  
9 understand what the mesh looked like before it had been  
10 used?

11 MR. SCHATZ: Objection. Outside the scope of  
12 this proceeding, and outside the scope of  
13 Dr. Spiegelberg's declarations.

14 THE WITNESS: Yes.

15 BY MR. ROZYLOWICZ:

16 Q. Okay. And then as I understand your question,  
17 is it fair to say that after -- something that amounted  
18 to use or what they -- what they had seen in their  
19 facilities, they were asking you to evaluate the  
20 structure of the mesh after something had simulated X  
21 period of time or X number of runs?

22 Is that a fair characterization?

23 MR. SCHATZ: Object to form objection; outside  
24 the scope of this proceeding; and outside the scope of  
25 Dr. Spiegelberg's declarations.

1 THE WITNESS: I'm not sure I understood your  
2 question. If you could rephrase that, please.

3 MR. ROZYLOWICZ: Yeah. Counsel, I can just  
4 remind you that there are no speaking objections here.  
5 So objection is noted, but at this stage, this is really  
6 disruptive to, kind of, move beyond what's permitted  
7 by -- by objections.

8 I'm not asking for privileged information. Your  
9 point has been noted, but at this stage, your witness  
10 can't even understand the question by the time you're  
11 done with your objections.

12 BY MR. ROZYLOWICZ:

13 Q. Dr. Spiegelberg, is it fair to say that Slick  
14 Slide wanted to understand what some degree of use would  
15 look like after it had been used in their facilities?

16 MR. SCHATZ: Objection. Sorry.

17 BY MR. ROZYLOWICZ:

18 Q. Let me -- let me recast.

19 Dr. Spiegelberg, is it fair to say that they  
20 wanted to understand what the mesh looked like after some  
21 degree of use by its patrons?

22 MR. SCHATZ: Objection. Outside the scope of  
23 the proceeding; outside the scope of Dr. Spiegelberg's  
24 declarations.

25 THE WITNESS: I don't know.

1 BY MR. ROZYLOWICZ:

2 Q. But, Dr. Spiegelberg, you just indicated that  
3 you were trying to simulate how the mesh would -- would  
4 evolve over time, correct?

5 MR. SCHATZ: Objection. Outside the scope of  
6 the proceedings; outside the scope of Dr. Spiegelberg's  
7 declarations.

8 THE WITNESS: No. That's not correct.

9 BY MR. ROZYLOWICZ:

10 Q. How would you revise it?

11 MR. SCHATZ: Objection. Outside the scope of  
12 the proceedings; outside the scope of Dr. Spiegelberg's  
13 declarations.

14 THE WITNESS: How would I review what?

15 BY MR. ROZYLOWICZ:

16 Q. Dr. Spiegelberg, I'm simply trying to  
17 understand, you were engaged -- independent of this legal  
18 effort, you -- you were not engaged to perform mesh  
19 testing for Slick Slide, correct?

20 MR. SCHATZ: Objection. Outside the scope of  
21 the proceedings; outside the scope of Dr. Spiegelberg's  
22 declarations.

23 THE WITNESS: We were asked to look at the  
24 surface of mesh before and after use.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Okay. Did they indicate how much use they were  
3 trying to understand?

4 MR. SCHATZ: Objection. Outside the scope of  
5 the proceedings; outside the scope of Dr. Spiegelberg's  
6 declarations.

7 THE WITNESS: No.

8 BY MR. ROZYLOWICZ:

9 Q. So, Dr. Spiegelberg, you just admitted that  
10 you're trying to understand how the mesh structure  
11 changed before and after use, correct?

12 MR. SCHATZ: Object to form. Objection.  
13 Outside the scope of the proceedings; outside the scope  
14 of Dr. Spiegelberg's declarations.

15 THE WITNESS: We were looking at the surface of  
16 the mesh before and after use.

17 BY MR. ROZYLOWICZ:

18 Q. How did you quantify use?

19 How did you simulate what was -- what quantified  
20 use in your testing?

21 MR. SCHATZ: Objection. Outside the scope of  
22 the proceedings; outside the scope of Dr. Spiegelberg's  
23 declarations.

24 THE WITNESS: We did not do any simulation.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, did they give you used meshes?

3 MR. SCHATZ: Objection. Outside the scope of  
4 the proceeding; outside the scope of Dr. Spiegelberg's  
5 declarations.

6 THE WITNESS: Yes.

7 BY MR. ROZYLOWICZ:

8 Q. Okay. So, Dr. Spiegelberg, did they indicate  
9 how that mesh had been used?

10 MR. SCHATZ: Objection. Outside the scope of  
11 the proceedings; outside the scope of Dr. Spiegelberg's  
12 declarations.

13 THE WITNESS: No.

14 BY MR. ROZYLOWICZ:

15 Q. How did -- how did the mesh structure change  
16 when it had been used?

17 MR. SCHATZ: Objection. Outside the scope of  
18 the proceedings; outside the scope of Dr. Spiegelberg's  
19 declarations.

20 THE WITNESS: I don't remember.

21 BY MR. ROZYLOWICZ:

22 Q. Dr. Spiegelberg, when was this testing done for  
23 Slick Slide?

24 MR. SCHATZ: Objection. Outside the scope of  
25 the proceedings; outside the scope of Dr. Spiegelberg's

1        declarations.

2                THE WITNESS: I think it was sometime last year,  
3        but I don't remember for certain.

4        BY MR. ROZYLOWICZ:

5                Q. Do you remember if it was early in 2024?

6                MR. SCHATZ: Objection. Outside the scope of  
7        the proceedings; outside the scope of Dr. Spiegelberg's  
8        declarations.

9                THE WITNESS: No, I don't.

10        BY MR. ROZYLOWICZ:

11                Q. Dr. Spiegelberg, how many hours did you spend  
12        testing used meshes?

13                MR. SCHATZ: Object to form. Objection.  
14        Outside the scope of the proceedings; outside the scope  
15        of Dr. Spiegelberg's declarations.

16                THE WITNESS: Which meshes are you talking  
17        about?

18        BY MR. ROZYLOWICZ:

19                Q. Fair question.

20                Dr. Spiegelberg, how many hours did you spend  
21        testing the new meshes in this project?

22                MR. SCHATZ: Object to form. Objection.  
23        Outside the scope of the proceedings; outside the scope  
24        of Dr. Spiegelberg's declarations.

25                THE WITNESS: I'm not sure I understand what you

1 mean.

2 BY MR. ROZYLOWICZ:

3 Q. Dr. Spiegelberg, independent of whatever testing  
4 you did in this dispute, you indicated that you had  
5 performed testing independent of this legal dispute, you  
6 indicated that you had done testing on behalf of Slick  
7 Slide, correct?

8 MR. SCHATZ: Objection. Outside the scope of  
9 the proceedings; outside the scope of Dr. Spiegelberg's  
10 declarations.

11 THE WITNESS: Yes.

12 BY MR. ROZYLOWICZ:

13 Q. So in that, you test -- Dr. Spiegelberg, in that  
14 effort, let's call it the -- let's call it the  
15 non-dispute testing.

16 In the non-dispute testing, how many hours did  
17 you spend testing the -- how many hours did you and your  
18 team spend testing non-used mesh?

19 MR. SCHATZ: Objection. Outside the scope of  
20 the proceedings; outside the scope of Dr. Spiegelberg's  
21 declarations.

22 THE WITNESS: I don't remember.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, in that effort, did you spend  
25 more than 10 hours testing the mesh?

1           MR. SCHATZ:  Objection.  Outside the scope of  
2 the proceedings; outside the scope of Dr. Spiegelberg's  
3 declarations.

4           THE WITNESS:  Probably not.

5 BY MR. ROZYLOWICZ:

6           Q.  Did you spend -- Dr. Spiegelberg, in that  
7 non-disputed testing, did you spend five hours testing  
8 pre-used mesh?

9           A.  I don't remember.

10          MR. SCHATZ:  Objection.  Outside of the scope of  
11 the proceedings; outside the scope of Dr. Spiegelberg's  
12 declarations.

13 BY MR. ROZYLOWICZ:

14          Q.  Dr. Spiegelberg, do you think it would have been  
15 two hours testing the pre-used mesh?

16          MR. SCHATZ:  Objection.  Outside the scope of  
17 the proceedings; outside the scope of Dr. Spiegelberg's  
18 declarations.

19          THE WITNESS:  I don't remember.

20 BY MR. ROZYLOWICZ:

21          Q.  Dr. Spiegelberg, when you began the testing, did  
22 you have both new, that is pre-used, and used samples in  
23 your tests at the same time?

24          MR. SCHATZ:  Objection.  Outside the scope of  
25 the proceedings; outside the scope of Dr. Spiegelberg's

1        declarations.

2                    THE WITNESS:   I think so.

3        BY MR. ROZYLOWICZ:

4            Q.   So, Dr. Spiegelberg, as I understand -- as I  
5        understand your testing, you -- you did not, in fact,  
6        distress or use the -- or simulate using the -- the used  
7        sample in your testing.  You simply had two independent  
8        samples to test a new sample; is that -- in the -- in the  
9        non-disputed testing, you independently tested and  
10       simultaneously tested the new mesh and the used mesh?

11                  MR. SCHATZ:  Object to form.  Objection.  
12       Outside the scope of the proceedings; outside of  
13       Dr. Spiegelberg's declarations.

14                  THE WITNESS:  We did not simultaneously test two  
15       different meshes.

16        BY MR. ROZYLOWICZ:

17            Q.   Did you have both samples on-hand in the  
18       non-dispute testing?

19                  MR. SCHATZ:  Objection.  Outside the scope of  
20       the proceedings; outside the scope of Dr. Spiegelberg's  
21       declarations.

22                  THE WITNESS:  Yes.

23        BY MR. ROZYLOWICZ:

24            Q.   How did you test the new non-dispute sample?

25                    I'm sorry.  Let me -- let me re-cast.

1           In the non-dispute testing you did with Slick  
2 Slide, how did you test the new mesh sample?

3           MR. SCHATZ: Objection. Outside the scope of  
4 the proceedings; outside the scope of Dr. Spiegelberg's  
5 declarations.

6           THE WITNESS: With microscopy.

7 BY MR. ROZYLOWICZ:

8           Q. Okay. What would you have done -- how did  
9 you -- you -- can you describe the microscopy test you  
10 did for the new sample?

11           MR. SCHATZ: Object to form. Objection.  
12 Outside the scope of the proceedings; outside the scope  
13 of Dr. Spiegelberg's declarations.

14           THE WITNESS: We would -- I'm going from memory  
15 now, but we would normally gold coat the sample after  
16 putting it on to an SEM stub. And then --

17 BY MR. ROZYLOWICZ:

18           Q. I'm sorry. I didn't quite catch that.

19           Can you -- can you please repeat your answer?

20           A. We would normally gold coat the sample after  
21 putting it on to a SEM stub and then place that into the  
22 chamber of the scanning electronic microscopy.

23           Q. Dr. Spiegelberg, you used the term a SEM stub.  
24 Can you explain that to me, please?

25           A. SEM stands for scanning electromicroscopy.

1 Q. Okay.

2 A. An SEM stub is just an aluminum sample holder.

3 Q. Okay. Thank you. Great.

4 So, Dr. Spiegelberg, how long would -- how long  
5 would the microscopy test take?

6 MR. SCHATZ: Objection. Outside the scope of  
7 the proceedings; outside the scope of Dr. Spiegelberg's  
8 declarations.

9 THE WITNESS: Entirely depends on the project.  
10 BY MR. ROZYLOWICZ:

11 Q. How long did this particular sample testing take  
12 for Slick Slide?

13 MR. SCHATZ: Objection. Outside the scope of  
14 the proceedings; outside the scope of Dr. Spiegelberg's  
15 declarations.

16 THE WITNESS: I don't remember.

17 BY MR. ROZYLOWICZ:

18 Q. Dr. Spiegelberg, do you think it took more than  
19 an hour to test a sample under the microscoper [sic]  
20 testing device?

21 MR. SCHATZ: Objection. Outside the scope of  
22 the proceedings; outside the scope of Dr. Spiegelberg's  
23 declarations.

24 THE WITNESS: I don't remember.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, was there any differences in  
3 your pre-testing methodology that you would have done for  
4 the used-mesh sample?

5 MR. SCHATZ: Object to form. Objection.  
6 Outside the scope of the proceedings; outside the scope  
7 of Dr. Spiegelberg's declarations.

8 THE WITNESS: I don't know what you mean by  
9 pre-testing.

10 BY MR. ROZYLOWICZ:

11 Q. As you prepared the samples, were there any  
12 differences on how you would have prepared the used-mesh  
13 sample?

14 MR. SCHATZ: Object to form. Objection.  
15 Outside the scope of the proceedings; outside the scope  
16 of Dr. Spiegelberg's declarations.

17 THE WITNESS: Differences from what?

18 BY MR. ROZYLOWICZ:

19 Q. Dr. Spiegelberg, because the sample was used,  
20 were there any special accommodations or any special  
21 configuration you had to use to further test the  
22 used-mesh sample?

23 MR. SCHATZ: Objection. Outside the scope of  
24 this -- proceedings; outside the scope of  
25 Dr. Spiegelberg's declarations.

1 THE WITNESS: No.

2 BY MR. ROZYLOWICZ:

3 Q. Dr. Spiegelberg, in testing the mesh sample, was  
4 that one test or two tests?

5 MR. SCHATZ: Objection. Outside the scope of  
6 the proceedings; outside the scope of Dr. Spiegelberg's  
7 declarations.

8 THE WITNESS: I'm not sure I follow your  
9 question.

10 BY MR. ROZYLOWICZ:

11 Q. Dr. Spiegelberg, you indicated that you did  
12 microscopy, correct -- microscopy testing?

13 MR. SCHATZ: Objection. Outside the scope of  
14 the proceedings; outside the scope of Dr. Spiegelberg's  
15 declarations.

16 THE WITNESS: Yes.

17 BY MR. ROZYLOWICZ:

18 Q. Okay. Well, Dr. Spiegelberg, were there other  
19 tests you performed on the sample beyond microscopy?

20 MR. SCHATZ: Objection. Outside the scope of  
21 the proceedings; outside the scope of the declarations of  
22 Dr. Spiegelberg.

23 THE WITNESS: Not that I recall.

24 BY MR. ROZYLOWICZ:

25 Q. So to confirm, there was a single test done on

1 each of the samples, correct?

2 MR. SCHATZ: Objection. Outside the scope of  
3 the proceedings; outside the scope of Dr. Spiegelberg's  
4 declarations.

5 THE WITNESS: I'm not sure what you mean by a  
6 single test.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, you performed, for each sample,  
9 that is -- for a new sample, you performed a single  
10 microscopy test on each sample; is that correct?

11 MR. SCHATZ: Objection. Outside the scope of  
12 the proceedings; outside the scope of Dr. Spiegelberg's  
13 declarations.

14 THE WITNESS: I don't remember how many  
15 microscopy tests I performed.

16 BY MR. ROZYLOWICZ:

17 Q. Dr. Spiegelberg, why would you have done more  
18 than one microscopy test per sample?

19 MR. SCHATZ: Objection to form. Objection.  
20 Outside the scope of the proceedings; outside the scope  
21 of Dr. Spiegelberg's declarations.

22 THE WITNESS: When we're doing microscopy tests,  
23 we may want to look at different specimens or go back and  
24 look at a specimen multiple times.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, why would you consider looking  
3 at a specimen multiple times?

4 MR. SCHATZ: Objection. Outside the scope of  
5 the proceedings; outside the scope of Dr. Spiegelberg's  
6 declarations.

7 THE WITNESS: You're talking about in general?

8 BY MR. ROZYLOWICZ:

9 Q. Yes.

10 A. After analyzing the data, we may decide that we  
11 want to go back and -- and reanalyze a feature that  
12 required more analysis.

13 Q. Dr. Spiegelberg, what did your testing of the  
14 used-mesh sample reveal?

15 MR. SCHATZ: Objection. Outside the scope of  
16 the proceedings; outside the scope of Dr. Spiegelberg's  
17 declarations.

18 THE WITNESS: I don't remember.

19 BY MR. ROZYLOWICZ:

20 Q. Dr. Spiegelberg, what did you report to Slick  
21 Slide as the result of your testing?

22 MR. SCHATZ: Objection. Outside the scope of  
23 the proceedings; outside the scope of Dr. Spiegelberg's  
24 declarations.

25 THE WITNESS: I'm sorry. I didn't quite catch

1 your question, please.

2 BY MR. ROZYLOWICZ:

3 Q. Dr. Spiegelberg, what did -- what did your  
4 report to Slick Slide reveal?

5 MR. SCHATZ: Objection. Outside the scope of  
6 the proceedings; outside the scope of Dr. Spiegelberg's  
7 declarations.

8 THE WITNESS: My report would have provided the  
9 results of the analysis that we performed.

10 BY MR. ROZYLOWICZ:

11 Q. Dr. Spiegelberg, what were the results of your  
12 analysis to Slick Slide?

13 MR. SCHATZ: Objection. Outside the scope of  
14 the proceedings; outside the scope of Dr. Spiegelberg's  
15 declarations.

16 THE WITNESS: I don't remember.

17 BY MR. ROZYLOWICZ:

18 Q. Dr. Spiegelberg, when was this report to Slick  
19 Slide delivered?

20 MR. SCHATZ: Objection. Outside the scope of  
21 the proceedings; outside the scope of Dr. Spiegelberg's  
22 declarations.

23 THE WITNESS: I don't remember.

24 BY MR. ROZYLOWICZ:

25 Q. Dr. Spiegelberg, did you do any testing on the

1 coefficient of friction in the comparison of new- and  
2 used-mesh samples?

3 MR. SCHATZ: Objection. Outside the scope of  
4 the proceedings; outside the scope of Dr. Spiegelberg's  
5 declarations.

6 THE WITNESS: No.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, who provided you with the  
9 samples?

10 MR. SCHATZ: Objection. Outside the scope of  
11 the proceedings; outside the scope of Dr. Spiegelberg's  
12 declarations.

13 THE WITNESS: Which samples are you referring  
14 to?

15 BY MR. ROZYLOWICZ:

16 Q. Dr. Spiegelberg, for the non-dispute testing of  
17 the new and used mesh samples, who provided you with  
18 those samples?

19 MR. SCHATZ: Objection. Outside the scope of  
20 the proceedings; outside the scope of Dr. Spiegelberg's  
21 declarations.

22 THE WITNESS: I believe those came from Slick  
23 Slide.

24 BY MR. ROZYLOWICZ:

25 Q. Okay. Dr. Spiegelberg, for the non-dispute new-

1 and used-samples, do you know when the material was  
2 manufactured?

3 MR. SCHATZ: Objection. Outside the scope of  
4 the proceedings; outside the scope of Dr. Spiegelberg's  
5 declarations.

6 THE WITNESS: No.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, was this testing done in  
9 calendar year 2024?

10 MR. SCHATZ: Objection. Outside the scope of  
11 the proceedings; outside the scope of Dr. Spiegelberg's  
12 declarations.

13 THE WITNESS: I don't remember.

14 BY MR. ROZYLOWICZ:

15 Q. Dr. Spiegelberg, was it contemporaneous with any  
16 other events that you recall having done that might help  
17 you remember?

18 MR. SCHATZ: Objection to form. Objection.  
19 Outside the scope of the proceedings; outside the scope  
20 of Dr. Spiegelberg's declarations.

21 THE WITNESS: Not that it would help me remember  
22 the dates.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, could this have been done in  
25 2023, for example?

1 MR. SCHATZ: Object to form. Objection.

2 Outside the scope of the proceedings; outside the scope  
3 of Dr. Spiegelberg's declarations.

4 THE WITNESS: I don't know.

5 BY MR. ROZYLOWICZ:

6 Q. Dr. Spiegelberg, could this have been done in  
7 2024?

8 MR. SCHATZ: Objection. Outside the scope of  
9 the proceedings; outside the scope of Dr. Spiegelberg's  
10 declaration.

11 THE WITNESS: I don't remember.

12 BY MR. ROZYLOWICZ:

13 Q. Dr. Spiegelberg, could this have been done in  
14 this year in 2025?

15 MR. SCHATZ: Objection. Outside the scope of  
16 the proceedings; outside the scope of Dr. Spiegelberg's  
17 declarations.

18 THE WITNESS: No.

19 BY MR. ROZYLOWICZ:

20 Q. Why didn't you think this could have been done  
21 in 2025?

22 MR. SCHATZ: Objection. Outside the scope of  
23 the proceedings; outside the scope of Dr. Spiegelberg's  
24 declarations.

25 THE WITNESS: I'm sorry. Your question again

1 is?

2 BY MR. ROZYLOWICZ:

3 Q. Dr. Spiegelberg, you indicated that this  
4 non-dispute testing could not have been done in 2025,  
5 correct?

6 A. Correct.

7 Q. My question is, why don't you think this  
8 non-dispute testing was done in this calendar year 2025?

9 MR. SCHATZ: Objection. Outside the scope of  
10 the proceedings; outside the scope of Dr. Spiegelberg's  
11 declarations.

12 THE WITNESS: Because I have clear memory of  
13 what happened in the past eight months.

14 BY MR. ROZYLOWICZ:

15 Q. Okay. Okay. Did you -- Dr. Spiegelberg, in  
16 this non-dispute testing, did you work with -- did  
17 anybody from Slick Slide work with you on the testing  
18 itself?

19 MR. SCHATZ: Objection. Outside the scope of  
20 the proceedings; outside the scope of Dr. Spiegelberg's  
21 declarations.

22 THE WITNESS: No.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, did you bring any documents  
25 with you to the deposition today?

1           A. I didn't bring anything with me.

2           Q. All right. Let me go ahead and --

3 Dr. Spiegelberg, did you do any other analysis for Slick  
4 Slide prior to 2024?

5           MR. SCHATZ: Objection. Outside the scope of  
6 the proceedings; outside the scope of Dr. Spiegelberg's  
7 declarations, at least as I understand the question.

8           THE WITNESS: Beyond the testing that we just  
9 talked about, no.

10 BY MR. ROZYLOWICZ:

11          Q. Okay. Okay. Dr. Spiegelberg, for the  
12 non-dispute testing, who at Slick Slide provided you with  
13 the samples?

14          MR. SCHATZ: Objection. Outside the scope of  
15 the proceedings; outside the scope of Dr. Spiegelberg's  
16 declarations.

17          THE WITNESS: I don't remember who provided the  
18 samples.

19 BY MR. ROZYLOWICZ:

20          Q. Okay. Dr. Spiegelberg, for the -- for the  
21 testing you did that's the basis of your testimony in the  
22 affidavits, who provided you with the samples that you  
23 tested?

24          A. I think they came from Counsel, but I don't  
25 remember for certain.

1 Q. Would those samples have come from Slick Slide?

2 A. I don't remember.

3 Q. Okay. Dr. Spiegelberg, did you work with anyone  
4 from Slick Slide on the testing methodology?

5 A. For?

6 Q. I'm sorry. Thank you. I'll clarify.

7 Dr. Spiegelberg, for the testing you did that is  
8 the -- now -- now we're talking about the testing you did  
9 that is the basis of your testimony. For the testing  
10 that is the basis of your testimony, did you work with  
11 anyone at Slick Slide to devise your testing methodology?

12 A. No. No.

13 Q. Dr. Spiegelberg, in working with your testing --  
14 testing methodology, did you work with Mr. Schmitt?

15 A. No.

16 Q. Dr. Spiegelberg, did you -- in developing the  
17 your testing methodology subject -- that is the subject  
18 of your testimony in this dispute, did you work with  
19 Dr. Rust on your testing methodology?

20 A. No.

21 Q. Dr. Spiegelberg, in working and developing your  
22 testing that's the basis of your testimony, did you work  
23 with Counsel on your testing methodology?

24 A. No.

25 Q. Dr. Spiegelberg, how did you come up with your

1 testing methodology that is the basis for this dispute?

2 A. I based it on ASTM standards and on our  
3 experience with microscopy.

4 (Reporter clarification.)

5 THE WITNESS: ASTM.

6 BY MR. ROZYLOWICZ:

7 Q. Dr. Spiegelberg, in your -- how does your  
8 experience with microscopy inform your testing  
9 methodology?

10 A. It allows me to know how to measure mesh size  
11 and open spaces in mesh.

12 Q. Dr. Spiegelberg, how does microscopy allow you  
13 to evaluate mesh size and open spaces?

14 A. There's software inherent within digital  
15 microscopy systems that allows you to compute open space  
16 in -- in structure that contains open spaces.

17 Q. Okay. Bear with me. I'm going to be surfacing  
18 some of the exhibits, and as you know, there's a -- a  
19 large number of exhibits. So as I drop the exhibits into  
20 the chat, I'll be asking you to speak to the documents  
21 that I'll be asking. What are the --

22 MR. ROZYLOWICZ: Go ahead.

23 MR. SCHATZ: I was just going to say, Tom, what  
24 worked pretty well with Dr. Rust's deposition is I  
25 provided the witness with paper copies of the exhibits.

1                   MR. ROZYLOWICZ: Okay.

2                   MR. SCHATZ: Just because it the difficult to  
3 review them online. Now, I don't have every single  
4 exhibit in the proceeding, but I have a relatively large  
5 stack. So if you identify the exhibit, we might be able  
6 to provide a paper copy to the witness. That might  
7 streamline things. And if -- and I'll represent that the  
8 exhibits, of course, are un-annotated, other than maybe  
9 an exhibit number put on it.

10                  MR. ROZYLOWICZ: Thank you. I think that would  
11 certainly move things along, so I appreciate that.

12 BY MR. ROZYLOWICZ:

13                  Q. Dr. Spiegelberg, one other question.

14                         Was anyone else at Cambridge Polymer Group  
15 involved in your testing in this proceeding?

16                  A. Yes.

17                  Q. Who else was involved in testing -- who --  
18 who -- who else at Cambridge Polymer Group was involved  
19 in the testing for -- I'm sorry.

20                         For purposes of your deposition testimony and --  
21 and affidavit testimony, who else at Cambridge Polymer  
22 Group was involved in conducting the testing?

23                  A. Dr. Gavin Braithwaite.

24                  Q. I'm sorry. Dr. Braithwaite?

25                  A. Braithwaite.

1 Q. Braithwaite?

2 A. With a B.

3 Q. Braithwaite. Is that --

4 A. That's correct.

5 Q. Dr. Spiegelberg, what was Dr. Braithwaite's role  
6 in this testing?

7 A. He performed the coefficient of friction  
8 testing.

9 Q. Okay. Dr. Spiegelberg, did you, yourself, do  
10 the testing, or did Dr. Braithwaite do the testing?

11 A. Dr. Braithwaite did the coefficient friction  
12 testing. I did the other testing.

13 Q. And, Dr. Spiegelberg, to be clear, the other  
14 testing was the microscopy testing?

15 A. Correct.

16 Q. Doctor, just, again, to be clear on this point,  
17 your testing was really designed to understand the things  
18 like the density of the open spaces in the microscopy  
19 testing, correct?

20 A. That's one of them, yes.

21 Q. Okay. Dr. Spiegelberg, how did you -- how did  
22 Dr. Braithwaite go about conducting his coefficient of  
23 friction testing?

24 A. He made use of a coefficient of friction tester  
25 that we have in our laboratory and set it up according to

1 the ADS team standard, verified the system to make sure  
2 it was functioning properly, and then conducted the test.

3 Q. Dr. Spiegelberg, does -- and had Dr. Braithwaite  
4 done coefficient of friction -- friction testing before?

5 A. Yes.

6 Q. Okay. Dr. Spiegelberg, do you provide the  
7 samples to Dr. Braithwaite?

8 A. Yes.

9 Q. Dr. Spiegelberg, has -- did Dr. Braithwaite --  
10 did you provide -- I'm sorry. Let me recast.

11 Dr. Spiegelberg, did you provide the  
12 instructions to Dr. Braithwaite as to how to do the  
13 testing?

14 A. In general, yes.

15 Q. Dr. Spiegelberg, what instructions did you give  
16 Dr. Braithwaite?

17 A. I asked him to conduct it according to the ASTM  
18 standard, and also the configuration of the testing.

19 Q. And, Dr. Spiegelberg, what -- what configuration  
20 instructions would you have given him?

21 A. Which substrate to be on the bottom and which to  
22 be on the slide.

23 Q. Okay. And which instruction -- how did you  
24 instruct him for which substrate should be used on the  
25 bottom?

1           A. I told him to put the cast epoxy resin surface  
2 on the bottom and the mesh layer on the slide.

3           Q. Okay. Dr. Spiegelberg, were you involved in  
4 supervising this testing in a hands-on manner?

5           A. Yes.

6           Q. Dr. Spiegelberg, how did you supervise his  
7 testing?

8           A. After he had the system set up, he asked me to  
9 look at it and make sure that it was set up correctly,  
10 which I did and it was. And then I also reviewed the  
11 data that he produced.

12          Q. Okay. Dr. Spiegelberg, did Dr. Braithwaite  
13 himself do the actual testing?

14          A. Yes.

15          Q. Dr. Spiegelberg, approximately, how long was  
16 required to do the coefficient of friction testing?

17          A. I would guess a few hours.

18          Q. Dr. Spiegelberg, how long was required to do the  
19 coefficient of friction -- friction testing?

20               MR. SCHATZ: Object to form.

21               THE WITNESS: I thought that was the question  
22 you just asked me.

23 BY MR. ROZYLOWICZ:

24          Q. Dr. Spiegelberg, how long -- so let's break this  
25 done into two phases. There's the setting it up and then

1     there's the actual testing itself.

2             Dr. Spiegelberg, how much -- how much time is  
3     required to set up the test for your inspection?

4             A.   About an hour.

5             Q.   Okay.  Dr. Spiegelberg, were you involved in  
6     inspecting and setting up the test?

7             A.   No.

8             Q.   Dr. Spiegelberg, were you involved in conducting  
9     the test itself?

10            A.   No.

11            Q.   Dr. Spiegelberg, just to clarify, you previously  
12     indicated that it took a couple hours to do the testing?

13            A.   That's correct.

14            Q.   Dr. Spiegelberg, once the configuration was --  
15     was set up and configured, how long was required to do  
16     the actual testing itself?

17            A.   A few hours.

18            Q.   Dr. Spiegelberg, were -- were there any  
19     difficulties involved in conducting the testing?

20            A.   No.

21            Q.   Dr. Spiegelberg, were there any flaws conducted  
22     during the testing?

23            A.   Any what?

24            Q.   Did you detect any flaws when the test -- any --  
25     any problems in conducting the test -- the test itself?

1 A. No.

2 Q. Dr. Spiegelberg, was this -- was this testing  
3 all done on a single day?

4 A. I don't remember.

5 Q. Dr. Spiegelberg, how many samples did you  
6 provide to Dr. Braithwaite?

7 A. There are two sets of samples.

8 Q. Dr. Spiegelberg, what were those two sets of  
9 samples?

10 A. The epoxy substrates and then the mesh  
11 materials.

12 Q. Dr. Spiegelberg, was it a single epoxy sample?

13 A. I don't believe so. I think there were multiple  
14 ones.

15 Q. Dr. Spiegelberg, did you test multiple epoxy  
16 samples?

17 A. I believe so.

18 Q. Dr. Spiegelberg, you don't know if you tested  
19 multiple epoxy samples?

20 A. I can't remember, as we sit here today.

21 Q. Dr. Spiegelberg, for the mesh itself, how many  
22 samples were there?

23 A. There was a single sample.

24 Q. So, Dr. Spiegelberg, do you know how many epoxy  
25 samples you tested with the mesh?

1           A. And -- and to clarify, sample means the same  
2 type of material. You can have multiple specimens within  
3 a sample.

4           Q. So thank you, Dr. Spiegelberg. Let me back up.  
5           So for the mesh material, how many specimens did  
6 you test?

7           A. I believe we tested about four.

8           Q. Okay. Dr. Spiegelberg, how many specimens of  
9 epoxy did you test?

10          A. I think that was four also.

11          Q. Dr. Spiegelberg, were the mesh -- I'm sorry.  
12 I'll reword.

13                 Dr. Spiegelberg, do you know if the mesh  
14 specimens were from a single sample?

15          A. Yes.

16          Q. Dr. Spiegelberg, how do you know that the mesh  
17 specimens were from a single sample?

18          A. From what I recall, it was a contiguous piece of  
19 material.

20          Q. Dr. Spiegelberg, what's your basis for believing  
21 that it came from a single piece of material?

22          A. Because we received a single piece of material.

23          Q. Dr. Spiegelberg, did you then subdivide the  
24 single piece of -- the piece of material that you  
25 received?

1 A. Yes.

2 Q. Dr. Spiegelberg, how would you have subdivided  
3 the piece of material that you received?

4 A. By cutting out sections from it.

5 Q. Dr. Spiegelberg, how did you cut out pieces from  
6 it?

7 A. Use scissors.

8 Q. Dr. Spiegelberg, did you use any particular  
9 scissors to cut this material?

10 A. We had stainless steel scissors that we used in  
11 the laboratory.

12 Q. Okay. Dr. Spiegelberg, how long -- what are the  
13 dimensions of each sample, approximately?

14 A. Going from memory, the sled area is about 62  
15 millimeters on the side.

16 Q. Okay. So as I understand it, at 62 millimeters,  
17 each -- each sample, so it was roughly 2 or 3 inches  
18 across?

19 A. Thereabouts.

20 Q. Dr. Spiegelberg, was it a circular sample?

21 A. No. It's rectangular -- or square sample.

22 Q. Okay. So, Dr. Spiegelberg, to be clear, we're  
23 talking about -- please correct me. But we're talking  
24 about roughly a -- a 2-and-a-half-inch by  
25 2-and-a-half-inch square; is that fair?

1 A. Thereabouts.

2 Q. Okay. Dr. Spiegelberg, do you know if this  
3 sample -- this -- I'm sorry.

4 Do you know if the specimen, if it was a new  
5 specimen, or if it was a used specimen?

6 A. I don't know.

7 Q. Okay. Dr. Spiegelberg, would Dr. Braithwaite  
8 know if it was a new or used specimen?

9 A. No.

10 Q. Dr. Spiegelberg, does your earlier testimony on  
11 new and used specimens and -- and the changes to the  
12 mesh, would that inform any changes in the coefficient of  
13 friction testing?

14 A. Not that I know of.

15 Q. Dr. Spiegelberg, when you cut the materials,  
16 would that change the underlying properties of the mesh?

17 A. Not in the test area.

18 Q. Dr. Spiegelberg, my understanding, though, is --  
19 is that would it change -- is there any -- let me --  
20 thank you. I'll recast.

21 Dr. Spiegelberg, is there -- when the material  
22 is cut, is there any destruction of the mesh structure at  
23 the boundary conditions?

24 A. Well, you now have warps or webs that are now  
25 unconnected.

1 Q. Dr. Spiegelberg, does that change the tension in  
2 the mesh when you cut the specimen or when you cut the  
3 material to manufacture a specimen?

4 A. I don't know.

5 Q. Dr. Spiegelberg, does it -- how did you --  
6 Dr. Spiegelberg, can you walk me through how you set up  
7 the specimen in your testing? I'm --

8 MR. SCHATZ: That --

9 BY MR. ROZYLOWICZ:

10 Q. Dr. Spiegelberg, can you -- can you please  
11 inform us how you configure the mesh specimen to be  
12 tested?

13 A. For which test?

14 Q. For the coefficient of friction test.

15 A. The specimen is wrapped around the sled and then  
16 held in place using tape so that the -- there's no  
17 contact at the tape or the edges of the specimen to the  
18 counter phase.

19 Q. Dr. Spiegelberg, is that -- how do you  
20 maintain -- how tightly wrapped is the specimen around  
21 the sled?

22 A. It is not tightly wound. It's attempted to do  
23 so in a tension-free setting.

24 Q. Dr. Spiegelberg, is the mesh -- is it -- is it  
25 loose?

1           A.   No.

2           Q.   Dr. Spiegelberg, how do you define the amount of  
3   tension or lack thereof in the -- when you attach it to  
4   the sled?

5           A.   By asserting a certain amount of pressure when  
6   you're applying the tape on the outer surface of the  
7   mesh.

8           Q.   Dr. Spiegelberg, how much tension do you apply  
9   to the tape?

10          A.   To the tape, none.

11          Q.   How much -- how much tension is the mesh under  
12   when you -- when attached?

13          A.   About zero tension.

14          Q.   Dr. Spiegelberg, you can you press the mesh  
15   sample -- can you -- let me recast.

16                Dr. Spiegelberg, could you press the mesh  
17   sample -- could you -- let me recast.

18                Dr. Spiegelberg, could that mesh sample be  
19   stretched?

20                MR. SCHATZ:   Object to form.

21                THE WITNESS:   In what respect?

22   BY MR. ROZYLOWICZ:

23          Q.   Dr. Spiegelberg, when a mesh sample is attached  
24   to the sled, could that mesh sample be stretched?

25          A.   If one wanted to, but we did not stretch it.

1 Q. Dr. Spiegelberg, do -- do you know if you had  
2 put the mesh in tension, if it would have a different  
3 coefficient friction than a mesh sample not in tension?

4 A. I didn't do that analysis.

5 Q. Dr. Spiegelberg, would it lead to different test  
6 results if that mesh were stretched?

7 A. I didn't do that analysis.

8 Q. Dr. Spiegelberg, were all the mesh samples under  
9 the same level of tension?

10 A. Yes.

11 Q. Dr. Spiegelberg, how do you know the mesh  
12 samples were under the same level of tension when  
13 attached to the mesh?

14 A. Because we loaded them onto the sled in the same  
15 manner.

16 Q. Dr. Spiegelberg, did you measure the tension in  
17 the mesh when you attached the mesh sample?

18 A. No.

19 Q. Dr. Spiegelberg, is -- is there -- why did you  
20 make -- I'm sorry. Let me reword.

21 Dr. Spiegelberg, why did you mention -- measure  
22 the tension in the mesh when you attached the sled?

23 A. Because it was not necessary.

24 Q. Dr. Spiegelberg, why wasn't it necessary?

25 A. Well, first off, the standard doesn't require

1 that. And, secondly, we've been doing this type of  
2 testing for 20 years, and we know how to load the sample  
3 in a tension-free manner.

4 Q. Dr. Spiegelberg, would applying tension to the  
5 mesh -- would that change the thread count, the density?

6 Let me recast that.

7 Dr. Spiegelberg, would the mesh density vary if  
8 it was under tension?

9 A. Depends on what amount of tension it was under.

10 Q. Dr. Spiegelberg, could the density change with  
11 tension?

12 A. If you exerted sufficient tension to totally  
13 distort the -- the mesh, then, yes.

14 Q. The -- Dr. Spiegelberg, did you attach the  
15 samples to the sled?

16 A. No. That was done by Dr. Braithwaite.

17 Q. Dr. Spiegelberg, were you present when he  
18 attached the mesh to the sled?

19 A. One of them, yes.

20 Q. Okay. Dr. Spiegelberg, you indicate -- sorry.

21 Dr. Spiegelberg, how many specimens did you --  
22 did you test?

23 A. I didn't test any of them by coefficient of  
24 friction.

25 Q. Okay. Dr. Spiegelberg, how many specimens did

1 your lab test?

2 A. I believe we tested at least four.

3 Q. Dr. Spiegelberg, were multiple runs of the  
4 friction test performed on each specimen?

5 A. No.

6 Q. So, Dr. Spiegelberg, was a single run of the  
7 friction test done on each specimen; is that correct?

8 A. That's correct.

9 Q. Dr. Spiegelberg, do we have -- do we know that  
10 the tension in the mesh was the same on each sample?

11 A. Yes.

12 Q. Dr. Spiegelberg, did you measure the tension in  
13 the mesh?

14 A. No.

15 Q. Doctor -- Dr. Spiegelberg, how many total runs  
16 were performed?

17 A. At least four.

18 Q. Okay. Dr. Spiegelberg, could it have been more  
19 than four runs?

20 A. I don't remember as we sit here today.

21 Q. Okay. Dr. Spiegelberg, prior to your engagement  
22 in this dispute, have you ever worked with Mr. Schmitt  
23 previously?

24 MR. SCHATZ: Object to outside the scope of the  
25 proceedings; outside the scope of Dr. Spiegelberg's

1        declarations.

2                    THE WITNESS:   We've done work with Slick Slide  
3        before.

4        BY MR. ROZYLOWICZ:

5                    Q.   Dr. Spiegelberg, have you worked specifically  
6        with Mr. Schmitt prior to the engagement on this matter?

7                    MR. SCHATZ:   Objection.   Outside the scope of  
8        the proceedings; outside the scope of Dr. Spiegelberg's  
9        declarations.

10                   THE WITNESS:   I believe Mr. Schmitt was the  
11        contact I had with the Slick Slide for the previous  
12        discussion.

13        BY MR. ROZYLOWICZ:

14                   Q.   Okay.   Dr. Spiegelberg, to the best of your  
15        knowledge, were -- were you familiar with the '854 patent  
16        before being contacted to work on this matter?

17                   A.   No.

18                   Q.   Dr. Spiegelberg, had you ever seen the '854  
19        patent before?

20                   A.   Before --

21                   Q.   I'll recast.

22                   Dr. Spiegelberg, prior to you being engaged in  
23        this dispute, had you ever come across the '854 patent  
24        before?

25                   A.   Not that I recall.

1 Q. Dr. Spiegelberg, prior to being engaged in this  
2 particular dispute, had you done any testing on Slick  
3 Slide -- Slick Slide's slide themselves?

4 A. No.

5 Q. Okay. Dr. Spiegelberg, after you were engaged  
6 by Slick Slide, what was the next thing you did?

7 A. Probably would have been reviewing documents  
8 provided to me by Counsel.

9 Q. Dr. Spiegelberg, what would those documents have  
10 been?

11 A. The patent in question and the asserted prior  
12 art.

13 Q. Okay. What interactions did you have with Slick  
14 Slide?

15 MR. SCHATZ: Object to form.

16 THE WITNESS: When?

17 BY MR.

18 Q. I'm sorry.

19 Dr. Spiegelberg, what other interactions -- so  
20 I'm trying to create a -- Dr. Spiegelberg, I'm trying to  
21 understand exactly what your involvement with Slick Slide  
22 has been. And so, we've already talked about your  
23 involvement on changes to the mesh between new and used  
24 samples. We've talked about your engagement in this  
25 dispute.

1                   Do you have any other interactions with Slick  
2 Slide?

3           A.   No.

4           Q.   Did Cambridge Polymer Group have other  
5 interactions with Slick Slide?

6           A.   Not that I know of.

7           Q.   Did you have any prior engagements or have you  
8 worked with Dr. -- I'm sorry -- Mr. Schmitt previously?

9           A.   Beyond what we already talked about, no.

10          Q.   Okay. Dr. Spiegelberg, had Mr. Schmitt worked  
11 with Cambridge previously?

12                   MR. SCHATZ: Object to form.

13                   THE WITNESS: Previous to what?

14 BY MR. ROZYLOWICZ:

15          Q.   Dr. Spiegelberg, prior to the testing on new-  
16 and used-mesh samples and this dispute, had Cambridge  
17 Polymer Group worked with Mr. Schmitt previously?

18          A.   I don't believe so.

19          Q.   Dr. Spiegelberg, how did Cambridge Polymer Group  
20 come into contact with Mr. Schmitt?

21          A.   I don't remember.

22          Q.   Dr. Spiegelberg, would you have been the first  
23 point of contact with Slick Slide?

24          A.   I don't remember.

25          Q.   Dr. Spiegelberg, what did Slick Slide request

1 Cambridge do in its engagement prior to this dispute?

2 MR. SCHATZ: Objection. Asked and answered.

3 THE WITNESS: Compare the surface features of  
4 new and used mesh.

5 BY MR. ROZYLOWICZ:

6 Q. Dr. Spiegelberg, does the density of used mesh  
7 change -- let me recast.

8 Dr. Spiegelberg, does the mesh density of a used  
9 specimen differ from that of a new specimen?

10 MR. SCHATZ: Object to form.

11 THE WITNESS: I -- I'm not sure I can answer  
12 your question. That's a very generic question.

13 BY MR. ROZYLOWICZ:

14 Q. Dr. Spiegelberg, in your prior testing of new  
15 and used specimens, did you -- did you identify the  
16 density in your testing?

17 MR. SCHATZ: Objection. Outside the scope of  
18 the proceeding; outside the scope of Dr. Spiegelberg's  
19 declarations.

20 THE WITNESS: I don't remember that we did  
21 density assessment.

22 BY MR. ROZYLOWICZ:

23 Q. Dr. Spiegelberg, why would you test new- and  
24 used-mesh samples?

25 A. Because the client asked us to.

1 Q. Dr. Spiegelberg, why did the client ask you to  
2 test new- and used-mesh samples?

3 MR. SCHATZ: Objection to form. Objection.  
4 Outside the scope of the proceedings; and outside the  
5 scope of Dr. Spiegelberg's declarations.

6 THE WITNESS: I don't remember.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, in the prior testing of new and  
9 used meshes, how did you communicate with Slick Slide  
10 about the mesh?

11 MR. SCHATZ: Objection. Outside the scope of  
12 the proceedings; outside the scope of Dr. Spiegelberg's  
13 declarations.

14 THE WITNESS: It would have been primarily by  
15 phone.

16 BY MR. ROZYLOWICZ:

17 Q. Dr. Spiegelberg, did you provide a written  
18 report to Slick Slide?

19 MR. SCHATZ: Objection. Outside the scope of  
20 the proceedings; outside the scope of Dr. Spiegelberg's  
21 declarations.

22 THE WITNESS: Yes. We probably would have  
23 provided a written report.

24 BY MR. ROZYLOWICZ:

25 Q. Dr. Spiegelberg, would you have presented a --

1 something like a PowerPoint or a PDF in a -- in a  
2 meeting?

3 MR. SCHATZ: Objection to form. Objection.  
4 Outside the scope of the proceedings; outside the scope  
5 of Dr. Spiegelberg's declarations.

6 THE WITNESS: Presented to whom?

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, have you met with Cambridge  
9 Polymer Group in person for the testing on new- and  
10 used-mesh samples?

11 MR. SCHATZ: Objection. Outside the scope of  
12 the proceedings; outside the scope of Dr. Spiegelberg's  
13 declarations.

14 THE WITNESS: Have I met with Cambridge Polymer  
15 Group?

16 BY MR. ROZYLOWICZ:

17 Q. Dr. -- Dr. Spiegelberg --

18 A. I --

19 Q. -- in the non-dispute testing, did you meet with  
20 Slick Slide in person?

21 MR. SCHATZ: Objection. Outside the scope of  
22 these proceedings; outside the scope of Dr. Spiegelberg's  
23 declarations.

24 THE WITNESS: No.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, did you conduct teleconference  
3 calls on things like Zoom or Teams or Google Meet with  
4 Slick Slide in the --- in the non-dispute testing?

5 MR. SCHATZ: Objection. Outside the scope of  
6 the proceedings; outside the scope of Dr. Spiegelberg's  
7 declarations.

8 THE WITNESS: I don't remember.

9 BY MR. ROZYLOWICZ:

10 Q. Dr. Spiegelberg, did you work on a presentation  
11 for Slick Slide in the non-dispute testing?

12 MR. SCHATZ: Objection. Outside the scope of  
13 the proceedings; outside the scope of Dr. Spiegelberg's  
14 declarations.

15 THE WITNESS: I don't remember.

16 BY MR. ROZYLOWICZ:

17 Q. Dr. Spiegelberg, did Slick Slide communicate how  
18 they were using the mesh in the non-dispute testing?

19 MR. SCHATZ: Objection. Outside the scope of  
20 the proceedings; outside the scope of Dr. Spiegelberg's  
21 declarations.

22 THE WITNESS: Not that I recall.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, you just indicated that you  
25 delivered a report to Slick Slide; is that correct?

1           MR. SCHATZ:  Objection to form.  Objection.  
2   Outside the scope of the proceedings; outside the scope  
3   of Dr. Spiegelberg's declarations.

4           THE WITNESS:  For the non-dispute testing, we  
5   normally would present a report.  So I assume I did in  
6   this case.

7   BY MR. ROZYLOWICZ:

8           Q.  Dr. Spiegelberg, would you have delivered  
9   interim reports in the non-dispute testing?

10          MR. SCHATZ:  Objection.  Outside the scope of  
11   the proceedings; outside the scope of Dr. Spiegelberg's  
12   declarations.

13          THE WITNESS:  We don't normally give interim  
14   reports, so I don't imagine I did in this case.

15   BY MR. ROZYLOWICZ:

16          Q.  Dr. Spiegelberg, would your report be in a slide  
17   format -- a slideshow format, like PowerPoint?

18          MR. SCHATZ:  Objection.  Outside the scope of  
19   the proceedings; outside the scope of Dr. Spiegelberg's  
20   declarations.

21          THE WITNESS:  No.  Our reports are usually in  
22   a -- a PDF format.

23   BY MR. ROZYLOWICZ:

24          Q.  Dr. Spiegelberg, would that PDF have been based  
25   on a Word document?

1           MR. SCHATZ:  Objection.  Outside the scope of  
2 the proceedings; outside the scope of Dr. Spiegelberg's  
3 declarations.

4           THE WITNESS:  Yes.

5 BY MR. ROZYLOWICZ:

6           Q.  Okay.  Dr. Spiegelberg, for the -- for the prior  
7 non-dispute testing, what was your understanding that the  
8 material characteristics of the mesh material that you  
9 were provided with?

10          MR. SCHATZ:  Objection.  Outside the scope of  
11 the proceeding; outside the scope of Dr. Spiegelberg's  
12 declarations.

13          THE WITNESS:  I don't remember.

14 BY MR. ROZYLOWICZ:

15          Q.  Dr. Spiegelberg, was the mesh material of the  
16 prior testing, you know, that is the pre-dispute testing,  
17 was that manufactured to the same specifications as the  
18 mesh tested for in the coefficient of friction in this  
19 proceeding?

20          MR. SCHATZ:  Objection.  Outside the scope of  
21 these proceedings; outside the scope of Dr. Spiegelberg's  
22 declarations.

23          THE WITNESS:  I don't know.

24 BY MR. ROZYLOWICZ:

25          Q.  Okay.  Okay.  Dr. Spiegelberg, how would you

1 have received the samples used in the testing at issue in  
2 your affidavit?

3 A. Normally, they'd be sent to our receiving  
4 department.

5 Q. Dr. Spiegelberg, were these materials received  
6 from Slick Slide themselves?

7 A. I don't remember.

8 Q. Dr. Spiegelberg, would they have been provided  
9 by Counsel?

10 A. I don't remember.

11 Q. Dr. Spiegelberg, were you aware of any other  
12 testing that had done -- been done by other testing  
13 services?

14 A. No.

15 Q. Dr. Spiegelberg -- so, Dr. Spiegelberg, to  
16 clarify, you don't know if the materials were provided by  
17 Slick Slide or by Counsel?

18 A. Not as we sit here today.

19 Q. Dr. Spiegelberg, where were those -- were those  
20 samples that you tested for the ASTM testing -- where are  
21 those materials today?

22 A. They should still be in our -- our sample  
23 receiving area.

24 Q. Okay. Dr. Spiegelberg, were there samples that  
25 were -- Dr. Spiegelberg, were there specimen that were

1 not tested?

2 A. I believe so.

3 Q. Dr. Spiegelberg, would you have retained those  
4 specimen that were not tested?

5 A. Yes.

6 Q. Dr. Spiegelberg, would -- would those samples,  
7 would they still be attached to the slide today?

8 A. No.

9 Q. So, Dr. Spiegelberg, they -- you confirm they  
10 would be removed from the slide?

11 A. Correct.

12 Q. Okay. Dr. Spiegelberg, do you know who --  
13 Dr. Spiegelberg, who else would have handled these  
14 samples?

15 A. After we received them?

16 Q. Yes.

17 Dr. Spiegelberg, who else would have handled  
18 those samples after you received them?

19 A. Just Dr. Braithwaite and myself.

20 Q. Okay. Dr. Spiegelberg, so we -- we -- to  
21 confirm, you don't -- you're not aware of the origin of  
22 the samples?

23 A. Not as we sit here today.

24 Q. Dr. Spiegelberg, were the samples labeled with a  
25 particular manufacturer?

1           A. I believe they were labeled, but I don't --  
2 don't remember how they were labeled.

3           Q. Dr. Spiegelberg, how did you receive these  
4 samples?

5           A. They come to our receiving departments who then  
6 enters it into our database and assigns them a unique  
7 Cambridge Polymer Group number.

8           Q. Dr. Spiegelberg, were these materials attached  
9 to a ride vehicle?

10          A. No.

11          Q. Dr. Spiegelberg, was this provided as a bolt of  
12 fabric?

13          A. No. It was not provided as a bolt of fabric.

14          Q. Dr. Spiegelberg, can you describe how this --  
15 the materials were packaged when you took receipt of it?

16          A. As I recall, it was a -- a piece of mesh and  
17 then the pieces of epoxy substrate.

18          Q. Okay. Dr. Spiegelberg, can you describe it to  
19 us?

20          A. Describe what to you?

21          Q. Dr. Spiegelberg, I'm trying to understand how  
22 the material -- what the material looked like prior to  
23 you cutting the materials with the scissor.

24                 So, Dr. Spiegelberg, so for the mesh material  
25 that you received to do testing in this dispute, how

1 large was the mesh material that you received?

2 You -- how large was the sample that you were  
3 about to cut up?

4 A. I don't remember.

5 Q. Dr. Spiegelberg, would it have been larger than  
6 one-foot by one-foot?

7 A. I don't remember.

8 Q. Dr. Spiegelberg, do you know where the samples  
9 were manufactured?

10 A. No.

11 Q. Dr. Spiegelberg, do you know when the samples  
12 were manufactured?

13 A. No.

14 Q. Okay. Dr. Spiegelberg, without revealing  
15 privileged communications, can you explain the process of  
16 writing your declaration?

17 A. I, basically, write -- after I've reviewed the  
18 documents provided to me, I start writing down my -- my  
19 thoughts on the opinions in a Word document.

20 Q. And with those thoughts and opinions, what do  
21 you do with those thoughts and opinions?

22 MR. SCHATZ: Object to form.

23 THE WITNESS: What do you mean?

24 BY MR. ROZYLOWICZ:

25 Q. So, Dr. Spiegelberg, you're given a -- some

1 materials to consider. You are then -- take notes after  
2 reviewing documents. Do you -- do you write-up those  
3 notes in a -- a Word document?

4 MR. SCHATZ: Objection. Form.

5 THE WITNESS: I put my notes into a Word  
6 document that becomes part of my report.

7 BY MR. ROZYLOWICZ:

8 Q. Okay. Dr. Spiegelberg, did you write the first  
9 draft of your declaration?

10 MR. SCHATZ: Instruct the witness not to answer.  
11 Privilege.

12 BY MR. ROZYLOWICZ:

13 Q. Dr. Spiegelberg, were -- did you communicate  
14 your notes to Counsel?

15 A. Yes.

16 Q. Dr. Spiegelberg, did you e-mail your notes to  
17 Counsel?

18 A. Yes.

19 Q. Dr. Spiegelberg, did they take your notes and  
20 put that into an affidavit?

21 MR. SCHATZ: Instruct the witness not to answer;  
22 privilege.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, did you speak with Mr. Schmitt  
25 about your notes?

THE SULLIVAN GROUP OF COURT REPORTERS

1 A. Not that I recall.

2 Q. Dr. Spiegelberg, have you met Mr. Schmitt?

3 A. Yes.

4 Q. About how many times have you met Mr. Schmitt in  
5 person?

6 A. Never in person.

7 Q. Dr. Spiegelberg, how many times have you met him  
8 through a video or telephone call?

9 A. Probably twice.

10 Q. Dr. Spiegelberg, how long was the document that  
11 included your written notes?

12 A. I don't remember.

13 Q. Dr. Spiegelberg, did your -- did you have more  
14 than one set of notes that you provided to Counsel?

15 A. I don't think so.

16 Q. Dr. Spiegelberg, were your notes more than  
17 50 pages?

18 A. I don't remember.

19 Q. Okay. Dr. Spiegelberg, would your notes have  
20 been more than 100 pages?

21 A. Probably not.

22 Q. Dr. Spiegelberg, how much time did you spend  
23 preparing your notes?

24 A. I don't remember.

25 Q. Dr. Spiegelberg, was it more than 100 hours?

1 A. I don't remember.

2 Q. Dr. Spiegelberg, was it more than 10 hours?

3 A. Likely more than 10 hours.

4 Q. Dr. Spiegelberg, how long did it take you to  
5 prepare your notes?

6 A. I don't remember.

7 Q. Dr. Spiegelberg, when did you provide your notes  
8 to Counsel?

9 A. I don't remember.

10 Q. Dr. Spiegelberg, did you ever communicate with  
11 any person affiliated with Slick Slide other than Slick  
12 Slide's attorneys and Mr. Schmitt?

13 A. I don't think so.

14 Q. Dr. Spiegelberg, approximately, how many times  
15 have you communicated with Mr. Schatz?

16 A. I don't remember.

17 Q. Dr. Spiegelberg, is it more than 10 times?

18 A. I'd have to be speculating. I don't remember.

19 Q. Dr. Spiegelberg, is it more than twice?

20 A. More than twice, yes.

21 Q. Dr. Spiegelberg, did you primarily work with  
22 Mr. Schatz or Mr. Sitler?

23 A. I'd say both.

24 Q. Dr. Spiegelberg, were -- when you communicated  
25 with Counsel, was it -- were Mr. Schatz and Mr. Sitler

1 always there together?

2 A. I don't know if they were always there together.

3 Q. Dr. Spiegelberg, did Mr. Schmitt provide you  
4 with any materials?

5 A. In what sense?

6 Q. Dr. Spiegelberg, did Mr. Schmitt provide you  
7 with any documents?

8 A. I don't think so.

9 Q. Dr. Spiegelberg, did Dr. Braithwaite help you in  
10 preparing your declaration?

11 A. Other than providing the data to me, no.

12 Q. Dr. Spiegelberg, did Dr. Braithwaite provide  
13 notes in support of your affidavit?

14 A. No.

15 Q. Dr. Spiegelberg, did Dr. Braithwaite review the  
16 materials?

17 MR. SCHATZ: Objection to form.

18 THE WITNESS: What materials?

19 BY MR. ROZYLOWICZ:

20 Q. Dr. Spiegelberg, did Dr. Braithwaite review the  
21 materials given to you by Counsel to -- that are exhibits  
22 in this proceedings?

23 MR. SCHATZ: Object to form.

24 THE WITNESS: No.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, did Dr. Braithwaite review your  
3 notes?

4 A. No.

5 Q. Dr. Spiegelberg, did Dr. Braithwaite discuss  
6 your notes with you?

7 A. No.

8 Q. Dr. Spiegelberg, did you work with anybody else  
9 at Cambridge in preparing your report?

10 A. No.

11 Q. Dr. Spiegelberg, in the time since you prepared  
12 your supplemental affidavit for the '854 post-grant  
13 review report, have any of your changes -- have any of  
14 your opinions changed from those that you originally  
15 provided in the declaration?

16 A. No.

17 Q. Are you aware of any errors that exist in either  
18 of your declarations?

19 A. No.

20 MR. SCHATZ: Tom, by all means, please finish  
21 your line of questioning, but if we could take a short  
22 break here in the relatively near future, I'd appreciate  
23 it.

24 MR. ROZYLOWICZ: Okay. Thank you. Duly noted.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, let's -- fair point. Let's ask  
3 a few more questions.

4 Dr. Spiegelberg, for the samples that you tested  
5 in preparing your report, do you know the material  
6 composition of the mesh samples?

7 A. No.

8 Q. Dr. Spiegelberg, in the testing prepared in  
9 support of your affidavit, do you know the material  
10 composition of the epoxy resin sample?

11 A. No.

12 Q. Dr. Spiegelberg, do you recall if the sample --  
13 if the epoxy sample had a multilayer construction of  
14 different materials?

15 A. I did not do that analysis.

16 Q. So, again, Dr. Spiegelberg, do you know if the  
17 sample had a multilayer construction of different  
18 materials?

19 A. I do not know.

20 Q. Dr. Spiegelberg, do you know if it was a -- a  
21 common material throughout the epoxy sample?

22 MR. SCHATZ: Object to form.

23 THE WITNESS: I don't know what you mean by that  
24 question.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, do you know if it was a uniform  
3 composition throughout the thickness of the epoxy sample?

4 A. I don't know.

5 Q. Dr. Spiegelberg, do you know if the epoxy sample  
6 you tested was an epoxy resin?

7 A. It appeared to be.

8 Q. Dr. Spiegelberg, why do you believe it was an  
9 epoxy resin?

10 A. Because it was an epoxy, and by virtue of that,  
11 it's a risen.

12 Q. Dr. Spiegelberg, how would you define a risen?

13 A. Risens are polymeric materials derived from --  
14 but from synthetic form.

15 Q. But, Dr. Spiegelberg, resin -- in your mind, is  
16 there a distinction between different materials and  
17 different layer -- layers of different materials versus  
18 a -- a common material throughout the thickness?

19 A. I'm sorry. Can you ask your question again,  
20 please?

21 Q. Dr. Spiegelberg, does a risen -- does -- let me  
22 recast.

23 Dr. Spiegelberg, does a risen indicate whether  
24 it -- could be constructed as different materials or a  
25 common material throughout the thickness?

1 MR. SCHATZ: Object to form.

2 THE WITNESS: A risen is a generic phrase.

3 BY MR. ROZYLOWICZ:

4 Q. Okay. Dr. Spiegelberg, in the context that  
5 we're -- of this conversation and what you tested being  
6 an epoxy risen, how would you define the term risen?

7 A. A polymeric material.

8 Q. Dr. Spiegelberg, is a polymeric material -- I'm  
9 sorry.

10 Could I ask the court reporter to repeat his  
11 answer, please?

12 (Whereupon the previous answer was read.)

13 BY MR. ROZYLOWICZ:

14 Q. Okay. Dr. Spiegelberg, how many types of  
15 polymeric materials are you aware of?

16 A. Hundreds, if not thousands.

17 MR. ROZYLOWICZ: Okay. All right. Well, thank  
18 you. I will run with Counsel's suggestion and suggest  
19 we -- I want to be mindful of, you know, I understand  
20 some of the pressure and flight travels on the back end.  
21 So at the same time, I recognize that the -- you know,  
22 the need for breaks.

23 So, Counsel, if you're all right, I propose a  
24 15-minute break. Does that work?

25 MR. SCHATZ: Yeah. I mean, 10 minutes, I think,

1 would be better, if we could move things along.

2 MR. ROZYLOWICZ: That's fair. All right.

3 I'll -- it's 9:47 now eastern. We'll work towards a --  
4 we'll resume at 9:57 then. That works?

5 MR. SCHATZ: That sounds great. Thanks, Tom.

6 (A recess was held from 8:47 a.m. to 9:01 a.m.)

7 MR. ROZYLOWICZ: All right. On the record,  
8 Nicole, just confirming we're on the record. Great.

9 BY MR. ROZYLOWICZ:

10 Q. Thank you, everyone.

11 Dr. Spiegelberg, I would call your attention to  
12 your supplemental affidavit, Exhibit 2026. Take your  
13 time to prepare that.

14 MR. ROZYLOWICZ: Counsel, I imagine that's one  
15 of the materials you have available?

16 THE REPORTER: Counsel, will you be putting them  
17 in the chat box so I can look at them while you go?

18 MR. ROZYLOWICZ: Yeah. I'll ask my colleague,  
19 Mr. Ubel, to put them in the chat box.

20 MR. SCHATZ: Tom, did you refer to the  
21 supplemental declaration, Exhibit 23?

22 MR. ROZYLOWICZ: Actually, right. I actually --  
23 let's start off with exhibit -- his first one. Let's  
24 start off with Exhibit 2026. I did say 2030, but let's  
25 start off with Exhibit 2026. Please let me know when

1     you're ready.

2                 THE WITNESS:   I'm ready.

3     BY MR. ROZYLOWICZ:

4                 Q.   Okay.   Dr. Spiegelberg, can you please turn to  
5     page of 1 of Exhibit 10 -- 2026.

6                 A.   Page 1?

7                 Q.   Page 1, yes.

8                 A.   Yes, I'm there.

9                 Q.   Can you please identify this document for the  
10    court reporter?

11                A.   This is the declaration of Dr. Steven  
12    Spiegelberg.

13                Q.   Okay.   Is this your -- is this your affidavit,  
14    in fact?

15                A.   Yes, it is.

16                Q.   Okay.   I would call your attention to paragraph  
17    12.

18                A.   I'm there.

19                Q.   Okay.   Can I ask -- can I call -- sorry.   I'll  
20    recast.

21                         Can I ask you to please read the second  
22    sentence.

23                A.   "For purposes of this declaration, I am using  
24    November 1st, 2022, as the critical date."

25                Q.   Can you please continue to read?

1           A. "I have also considered the petition, the Wang  
2 declaration, the prior art publications cited therein,  
3 the prior art publications cited below, and the  
4 following."

5           Would you like me to read all the bullet points?

6           Q. Yes, please.

7           A. US Patent No. 11998854 to Schmitt, parenthesis,  
8 the '854 patent, Exhibit 1001; excerpts from the  
9 prosecution history from the '854 patent, the prosecution  
10 history Exhibit 1002, the Wang declaration, Exhibit 1003;  
11 US Patent No. 7896779 to Phillips, Phillips Exhibit 1004;  
12 US Patent Publication No. 2023/0129814 to Fallgatter,  
13 Fallgatter Exhibit 1005."

14          Q. Thank you, Dr. Spiegelberg. I'll -- I mean, I  
15 won't ask you to read this entire list, but I'll say, you  
16 see the list of references of records that you consider  
17 that proceeds on to page 5 of your first affidavit?

18          A. Yes, I do.

19          Q. Okay. You see the list that extends on to page  
20 6?

21          A. Yes, I do.

22          Q. And this proceeds all the way through page -- to  
23 be clear here, this extends all the way through page 12,  
24 correct?

25          A. Correct.

1 Q. Are there any materials that you considered  
2 beyond those listed references here?

3 A. No.

4 Q. Thank you. That, I will then turn to your  
5 supplemental affidavit, 2030. I'm sorry. Exhibit 2030.  
6 Please let me know when you have that in front of you.

7 A. I do.

8 Q. Okay. Can you please identify this document?

9 A. This is the declaration of Dr. Steven  
10 Spiegelberg.

11 Q. I guess, for this document, are there any  
12 materials that you considered in preparing your  
13 supplemental affidavit that weren't already listed in the  
14 first affidavit that you delivered -- that you signed and  
15 provided?

16 A. Beyond the additional testing data that we've  
17 already discussed, I don't believe so.

18 Q. Dr. Spiegelberg, I would call your attention to  
19 page 15, paragraph 44 at the top.

20 A. I'm there.

21 Q. Dr. Spiegelberg, I would have you acknowledge  
22 that there were three exhibits that I think were  
23 previously considered. Exhibits 1039, 1040, and 1041. I  
24 just want to acknowledge that, at least in your  
25 affidavit, you've considered those, as well?

1 A. That's correct.

2 Q. So, Dr. Spiegelberg, beyond those, I don't see  
3 you've got a paragraph 12 here that was -- everything  
4 that was considered. But beyond that, which explicitly  
5 is referenced in your second affidavit in Exhibit 2030,  
6 are there any additional materials beyond the scope of  
7 what's referenced here that you've considered?

8 A. No.

9 Q. Thank you, Dr. Spiegelberg.

10 Dr. Spiegelberg, I will now be referring to your  
11 Exhibit 1020 -- I'm sorry. Going back to Exhibit 2026 in  
12 the '854 PGR. Okay?

13 A. Yes, I'm there.

14 Q. Can you please describe your experience with the  
15 design and manufacturer of recreational slides?

16 A. I don't have the experience in the design and  
17 manufacture of recreational slides.

18 Q. Dr. Spiegelberg, have you had any input or  
19 suggestions in the development of recreational slides?

20 A. Not that I recall.

21 Q. Dr. Spiegelberg, were you familiar with any  
22 slide systems that were used in a ride vehicle prior to  
23 and counting the '854 patent?

24 A. Not on a professional basis.

25 Q. Okay. Dr. Spiegelberg, I would call your

1 attention to Exhibit 2026, the affidavit of Dr. Rust.

2 A. I'm sorry.

3 MR. SCHATZ: Object to form. You said --

4 THE WITNESS: That's --

5 BY MR. ROZYLOWICZ:

6 Q. I would ask you to turn to Exhibit 2026.

7 A. I'm -- I'm on Exhibit 2026.

8 Q. Not -- not you, Dr. Spiegelberg. Not your  
9 affidavit, but, in fact, Dr. Rust's affidavit, just to be  
10 clear.

11 A. One moment.

12 Q. I'm sorry. Is that 2027? I stand corrected.

13 MR. SCHATZ: Tom, you'll have to provide that  
14 one to us.

15 MR. ROZYLOWICZ: Okay. We'll put that in the  
16 chat.

17 MR. SCHATZ: And just so you know, Tom, you  
18 might have to do a screen share. If you want us to open  
19 it up in the chat, we can attempt to do that.

20 MR. ROZYLOWICZ: Okay. Thank you. I'll ask my  
21 colleague, Mr. Deutsch, to share Exhibit 2027 in the  
22 screen share. Give me one second.

23 Thank you.

24 BY MR. ROZYLOWICZ:

25 Q. Dr. Spiegelberg, I'll ask you to read the title

1 of this document up here in the middle of the screen  
2 share from Exhibit 2023.

3 A. It says, "The declaration of Dr. Jon Rust."

4 Q. Dr. Spiegelberg, have you seen this before?

5 A. I think so, but I can't say for certain.

6 Q. Dr. Spiegelberg, did you rely on any input from  
7 Dr. Rust in developing your opinion?

8 A. I don't believe so.

9 Q. Dr. Spiegelberg, did you rely on any portion of  
10 the declaration by Dr. Rust in drafting your affidavit?

11 A. I don't believe so.

12 Q. Dr. Spiegelberg, when I looked at your  
13 affidavit, is there any portion with which -- that would  
14 compel me to turn to or rely on the opinions of Dr. Rust?

15 A. I do not believe so.

16 Q. Thank you. All right. Just bear with me.

17 Dr. Spiegelberg, can you --

18 MR. ROZYLOWICZ: Thank you, Mr. Deutsch. We  
19 don't need to do the screen share anymore.

20 BY MR. ROZYLOWICZ:

21 Q. Dr. Spiegelberg, do you have a degree in fiber  
22 science?

23 A. I do not.

24 Q. Dr. Spiegelberg, have you taken classes in fiber  
25 science?

1 A. I've had classes that involve fiber technology.

2 Q. Dr. Spiegelberg, what -- what classes have  
3 you -- have you taken?

4 A. These would be polymeric courses that involve  
5 fibers.

6 Q. Dr. Spiegelberg, where did you take those  
7 courses?

8 A. Those would have been at University of Wisconsin  
9 Madison and at the Massachusetts Institute of Technology.

10 Q. Okay. Dr. Spiegelberg, I'll call your attention  
11 to Exhibit 1009.

12 A. I'm there.

13 Q. Dr. Spiegelberg, I'll call your attention to  
14 table 1.

15 A. I'm there.

16 Q. Dr. Spiegelberg, do you see that there are three  
17 mesh nylon materials that are listed here?

18 A. I see three mesh nylon materials listed here,  
19 yes.

20 MR. ROZYLOWICZ: Sorry. The court reporter --  
21 yeah. If -- if -- Craig or Cameron, if you could drop  
22 Exhibit 1009 into the chat, that would be great. Thank  
23 you.

24 BY MR. ROZYLOWICZ:

25 Q. Dr. Spiegelberg, what -- what are those three

1     nylon mesh materials that are listed here?

2             A.   What do you mean?

3             Q.   Dr. Spiegelberg, you said that there is a  
4     material listed there that is a -- labeled fine mesh  
5     nylon.

6             A.   I see something listed as fine mesh nylon  
7     monofilament bolting fabric.

8             Q.   Thank you.

9             Dr. Spiegelberg, do you see that there's also a  
10    material listed as a medium mesh nylon?

11            A.   I see medium mesh nylon monofilament bolting  
12    fabric.

13            Q.   Dr. Spiegelberg, do you see there's a material  
14    lists as a course mesh nylon?

15            A.   I see course mesh nylon monofilament bolting  
16    fabric.

17            Q.   Okay.  So, Dr. Spiegelberg, for our purposes,  
18    we'll be referring to each of those entries in the table  
19    as a fine mesh nylon, medium mesh nylon, and a course  
20    mesh nylon.

21            Do you understand?

22            A.   I understand.

23            Q.   Thank you.

24            So, Dr. Spiegelberg, can I ask you to please  
25    turn to paragraph 198 of your first declaration?

1 A. I'm there.

2 Q. Dr. Spiegelberg, if I can please ask you to read  
3 the last sentence beginning on page 93.

4 A. Starting with "however"?

5 Q. Yes, please.

6 A. "However, specimen 14 is listed as having the  
7 lowest density, 23 grams per meter squared versus 36 for  
8 the fine and 69 grams per meter squared for the course."

9 Q. Okay. Can you please continue to -- to read.

10 A. "The trend of COF with mesh density is  
11 illustrated in figure 4 and shows that the lowest density  
12 mesh has the highest COF, which is the opposite of  
13 Dr. Williams' interpretation of this exhibit."

14 Q. Okay. So can you testify here then in  
15 Exhibit 1009, specimen 14, that is the medium mesh nylon  
16 is listed as having the lowest density, as compared with  
17 the fine mesh nylon and the course mesh nylon?

18 A. Yes.

19 Q. Okay. Dr. Spiegelberg, is it true that you used  
20 the fabric weight values listed in table 1 given in grams  
21 per meter squared as measured density in your analysis?

22 A. That's correct.

23 Q. Dr. Spiegelberg, please turn to the top of table  
24 1 in Exhibit 1009.

25 A. It's in there.

1 Q. Dr. Spiegelberg, do you see another parameter  
2 there called sett, S-E-T-T?

3 A. Yes, I do.

4 Q. Do you see that this is given in threads per  
5 centimeter for every fabric sample in the table?

6 A. Yes, I do.

7 Q. Dr. Spiegelberg, why did you use the fabric  
8 weight instead of sett as measuring the density in your  
9 analysis in Exhibit 1009?

10 A. Because the fabric weight is a measurement of  
11 density and the sett is not.

12 Q. Dr. Spiegelberg, can I call your attention to  
13 the '854 patent, please.

14 A. I'm there.

15 MR. ROZYLOWICZ: Craig, could I ask you to put  
16 the patent in the -- the chat for our court reporter.  
17 We'll put this in the record.

18 BY MR. ROZYLOWICZ:

19 Q. Dr. Spiegelberg, if you turn to -- sorry. Could  
20 I ask the court reporter to read the last thing -- maybe  
21 back up -- I mean, just, kind of, read the last thing  
22 that I read in the record while we're navigating these  
23 exhibits.

24 (Reporter clarification.)

25 MR. ROZYLOWICZ: I'm sorry. If I could ask you

1 to kindly read the statement when I first referenced the  
2 '854 patent and ask him to turn to it.

3 (Whereupon the previous question was read.)

4 BY MR. ROZYLOWICZ:

5 Q. Dr. Spiegelberg, if I could ask you to turn to  
6 column 11 on the '854 patent.

7 A. I'm there.

8 Q. Can I ask you to begin reading the sentence that  
9 begins in the second line, "As used herein"?

10 A. "As used here into the diameter of the warp and  
11 weft about is intended to mean plus or minus 5 percent."

12 Q. And if you can please continue to read.

13 A. "The mesh fabric 46 is arranged such as the warp  
14 through extend along the body, 40 of the right vehicle  
15 vehicle and 14 in the length-wise direction, parenthesis,  
16 i.e., in a direction between the first end 50 and the  
17 second end 52 of the body, 48 of the right vehicle, 14,  
18 and closed parenthesis. In that regard, the weft threads  
19 72 are configured to extend along the body 48 of the  
20 right vehicle, 14 in an otherwise width-wise direction.  
21 In the embodiment shown, the density of the warp thread  
22 70 is approximately 70 -- 22 threads per centimeter of  
23 the mesh material, 46. The density of the weft thread 72  
24 is approximately 13 threads per centimeter of the mesh  
25 material 46.

1           Q. Doctor -- thank you, Dr. Spiegelberg. I'll ask  
2 you to stop.

3           If I can ask you to -- just to make sure we're  
4 being clear, can I ask you to read that sentence one more  
5 time in the last second to last sentence of the column 11  
6 of that -- that paragraph there, beginning with, "in the  
7 embodiment shown"?

8           A. In the --

9                                 (Reporter clarification.)

10           THE WITNESS: Sure.

11 BY MR. ROZYLOWICZ:

12           Q. Please proceed beginning with that sentence  
13 again, "In the embodiment shown", Doctor.

14           A. "In the embodiment shown the density of the warp  
15 threads 70 is approximately 22 threads per centimeter of  
16 mesh material 46."

17           Q. Thank you.

18           So Dr. Spiegelberg, here, why does the '854  
19 patent use this per centimeter?

20           MR. SCHATZ: Objection to form. I'm sorry.

21           Say your question again, please.

22 BY MR. ROZYLOWICZ:

23           Q. Dr. Spiegelberg, why did you use the weight  
24 to -- and density when, here, the '854 patent tells us  
25 the density should be measured in threads per centimeter?

1 MR. SCHATZ: Object to form.

2 THE WITNESS: Are you referring to the Kothari  
3 article?

4 BY MR. ROZYLOWICZ:

5 Q. That's right, Dr. Spiegelberg. In your  
6 testimony, in paragraph 198 of your declaration, you --  
7 you rely on density as being measured as, was it, grams  
8 per meter squared. Yet in the '854 patent, they're  
9 referring to density as threads per centimeter in the  
10 sentence that you just read twice now.

11 Why did you rely on -- why did you use grams  
12 per -- was it grams per centimeter, and here, they use  
13 threads per centimeter?

14 A. Yeah. It's grams per meter squared in Kothari.

15 Q. '854 you define density as threads per  
16 centimeter.

17 A. Because that's the metric that's used for  
18 describing fabrics.

19 Q. But you -- Dr. Spiegelberg, you just said that's  
20 the metric that used in defining -- I'm sorry.

21 How did you qualify that again?

22 A. The metric for defining the density in fabrics.

23 Q. Is grams per meter, in -- in your opinion?

24 A. Grams per meter squared.

25 Q. Grams per meter squared. But, Dr. Spiegelberg,

1 here in the specification of the '854 for the sentence  
2 you read, doesn't it define density as being threads per  
3 centimeter?

4 A. It does.

5 Q. Dr. Spiegelberg, wouldn't a person reading the  
6 specification then turn to the sett value in the first  
7 column to understand density?

8 A. I don't know.

9 Q. But, Dr. Spiegelberg, you, at least, acknowledge  
10 there's a difference between how the '854 defines density  
11 and how you define density, correct?

12 A. The '854 is describing mesh materials, and  
13 Kothari is describing fabric.

14 Q. Dr. Spiegelberg, how would you define what's the  
15 difference between a mesh and a fabric?

16 A. A fabric -- well, let's start with the mesh. A  
17 mesh is characterized by having an open-pore area, or  
18 rather an open area, with a numerical value attached to  
19 that.

20 Q. So, Dr. Spiegelberg, is your -- is it your  
21 contention that the '854 patent, as taught in this  
22 sentence right there, is not correct in using the measure  
23 of density?

24 MR. SCHATZ: Objection. Beyond the scope;  
25 outside the scope of Dr. Spiegelberg's declarations.

1           THE WITNESS: I didn't do an assessment of that  
2 definition within the '854 patent.

3 BY MR. ROZYLOWICZ:

4           Q. Dr. Spiegelberg, you, at least, can see that  
5 they are different?

6           A. What -- what is different?

7           Q. Dr. Spiegelberg, you can -- do you agree that it  
8 is different for how this sentence defines density  
9 compared to how the -- the your testimony in 198 defines  
10 density?

11           MR. SCHATZ: Object to form.

12           THE WITNESS: What I'm describing in my  
13 testimony, in my report, I'm referring to Kothari, which  
14 is describing fabrics.

15 BY MR. ROZYLOWICZ:

16           Q. But, Dr. Spiegelberg, in paragraph 198 of your  
17 affidavit, you do agree that you define density  
18 differently than the 85 -- in relying on Kothari is  
19 different than how you -- then how the '854 patent  
20 describes density in this sentence?

21           MR. SCHATZ: Object to form.

22           THE WITNESS: I'm describing the appropriate  
23 density definition for fabric. The '854 is describing  
24 mesh.

25        //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, I'll call your attention to the  
3 last sentence referring in that paragraph of column 11.

4 A. I'm there.

5 MR. SCHATZ: Do you mean column 11, Tom?

6 MR. ROZYLOWICZ: I'm sorry. Column 11, yes.

7 BY MR. ROZYLOWICZ:

8 Q. Can you please read that last sentence for us.

9 A. Starting with, "The density of the weft"?

10 Q. Yes.

11 A. "The density of the weft thread 72 is  
12 approximately 13 threads per centimeter of mesh  
13 material."

14 Q. Dr. Spiegelberg, do you agree that this is  
15 consistent with how they measure the -- the density in  
16 the prior sentence in -- in a thread count per centimeter  
17 of the mesh material?

18 A. Yes.

19 Q. Dr. Spiegelberg, would you agree that the  
20 density, as defined in this portion -- these two  
21 sentences, the '854 patent, measured in threads per  
22 centimeter is the same as the measurement as the sett  
23 parameter in Exhibit 1009?

24 A. Yes.

25 Q. Okay. Thank you.

1 Dr. Spiegelberg, I'll turn to Exhibit 2016.

2 A. I'm there.

3 Q. Dr. Spiegelberg, can you please identify this  
4 document for us? I'm sorry. Dr. Spiegelberg, if  
5 somebody can put exhibit -- thank you.

6 Let me ask the question again.

7 Dr. Spiegelberg, can you please identify this  
8 document for us.

9 A. This is a copy of ASTM D1894 standard test  
10 method for static and kinetic coefficient of friction of  
11 plastic sheet film and sheeting.

12 Q. Dr. Spiegelberg, you're familiar with this  
13 document; is that correct?

14 A. Yes, I am.

15 Q. Dr. Spiegelberg, if I can call your attention to  
16 exhibit -- to this exhibit, pages 2 and 3.

17 A. Okay.

18 Q. Dr. Spiegelberg, isn't it true that the ASTM  
19 standard required the coefficient of friction by dragging  
20 a sample across the flat surface, the sample weighed down  
21 by a sled?

22 A. That's correct.

23 Q. So generally speaking, to perform a test using  
24 the ASTM standard, would you attach a sample to the  
25 bottom of the sled and drag the sled across the flat

1 plane that remains stationary?

2 A. Well, there's different modalities that you can  
3 do it in, but the -- the most important thing is to have  
4 relative motion between the sled and the lower substrate.

5 Q. Could there be a sample -- could there be  
6 another sample attached to the top surface of the  
7 stationary plain so that the coefficient of friction  
8 tested is the coefficient of friction between the two  
9 selected materials?

10 MR. SCHATZ: Object to form.

11 THE WITNESS: I don't understand your question.

12 BY MR. ROZYLOWICZ:

13 Q. I'll ask the question again.

14 Could there be another sample attached to the  
15 top surface of the stationary plain so that if a  
16 coefficient of friction tested is the coefficient of  
17 friction tested between the two select materials?

18 A. I'm sorry. I don't understand your scenario.  
19 Can you try to explain it differently?

20 Q. I'll word it differently.

21 Dr. Spiegelberg, the coefficient of friction --  
22 so let me clarify.

23 Dr. Spiegelberg, there is one sample tested --  
24 I'm sorry.

25 There is one sample attached to the sled,

1 correct?

2 MR. SCHATZ: Object to form.

3 THE WITNESS: When doing the test, you attach a  
4 specimen to the sled.

5 BY MR. ROZYLOWICZ:

6 Q. Dr. Spiegelberg, are there ever two samples --  
7 I'm sorry.

8 Dr. Spiegelberg, are there two specimens ever  
9 attached to the sled?

10 A. No.

11 Q. Dr. Spiegelberg, there is only a single specimen  
12 that is attached to the sled, correct?

13 A. Correct.

14 Q. Okay. So, Dr. Spiegelberg, the coefficient of  
15 friction is calculated based on the amount of force  
16 required to pull the sled and the weight of the sled; is  
17 that correct?

18 A. Correct.

19 Q. And just to be clear, under the ASTM standard,  
20 you drag the sled across the surface, correct?

21 A. Correct.

22 Q. Okay. Dr. Spiegelberg, I'm just trying to get a  
23 better sense of how the ASTM standard works.

24 So can you -- again, can you please turn to page  
25 2 of Exhibit 2016, section 5.1.1.

1 A. I don't have that in my copy.

2 Q. I'm sorry. You don't have Exhibit 2016?

3 A. I do have Exhibit 2016, but the -- the text  
4 stops at 1.5.

5 Q. Okay. Doctor -- okay.

6 MR. ROZYLOWICZ: I think we'll have to -- just  
7 talking to Brett right now, it looks like you don't have  
8 the original exhibit. It looks like we need to turn to  
9 the replacement version. So, Counselor, I'll ask if you  
10 want to pull up the exhibit in the chat. It looks like  
11 it's the full exhibit other than what was submitted.

12 BY MR. ROZYLOWICZ:

13 Q. I guess, Dr. Spiegelberg, do you know why only a  
14 portion was submitted originally?

15 A. I'm going to have to try to understand your  
16 question. A portion of what?

17 Q. So, Dr. Spiegelberg, the exhibit you were  
18 looking at didn't feature -- did not feature section  
19 5.1.1. It was only a portion of it, and then patent  
20 owner then submitted the full exhibit.

21 Do you know why the full exhibit wasn't  
22 originally submitted?

23 A. No.

24 Q. Okay. Now, Dr. Spiegelberg, as I understand the  
25 ASTM standard, the sled must be a square metal block;

1     that's right?

2             A.   That's correct.

3             Q.   Okay.  And it should have a -- a uniform  
4     thickness of the specimen; is that correct?

5             A.   That's correct.

6             Q.   So, Dr. Spiegelberg, isn't it correct that the  
7     sled's weight should be uniformly distributed across the  
8     entire footprint of the sled?

9             A.   That's correct.

10            Q.   So, Dr. Spiegelberg, there should not be more  
11     weight at the back of the sled versus the front of the  
12     sled, correct?

13            A.   That's correct.

14            Q.   Dr. Spiegelberg, can you -- there should not be  
15     more weight on the left portion or the right portion of  
16     the sled, correct?

17            A.   That's correct.

18            Q.   Okay.  Dr. Spiegelberg, would the coefficient of  
19     friction between the -- between the two materials, would  
20     that vary if there were an uneven distribution of weight  
21     applied across those two materials?

22                   MR. SCHATZ:  Object to form.

23                   THE WITNESS:  I don't know.

24     BY MR. ROZYLOWICZ:

25            Q.   Dr. Spiegelberg, do you think that the ASTM

1 standard requires the sled to be a square block with  
2 uniform thickness so that the test produces a general  
3 coefficient of friction that can be compared against  
4 other values measured under the same conditions?

5 MR. SCHATZ: Object to form.

6 THE WITNESS: In general, yes.

7 BY MR. ROZYLOWICZ:

8 Q. Okay. So, Dr. Spiegelberg, any coefficient of  
9 friction value tested under the ASTM is produced under  
10 ideal standards; is that correct?

11 I'm sorry.

12 Is produced under ideal condition -- ideal  
13 conditions?

14 MR. SCHATZ: Object to form.

15 THE WITNESS: What do you mean by ideal  
16 conditions?

17 BY MR. ROZYLOWICZ:

18 Q. Dr. Spiegelberg, isn't it true that any  
19 coefficient of friction value tested under the ASTM  
20 standard should be done under the specified conditions?

21 MR. SCHATZ: Objection to form.

22 THE WITNESS: No, not necessarily.

23 BY MR. ROZYLOWICZ:

24 Q. Dr. Spiegelberg, under -- under what criteria  
25 would an ASTM not be done under the specified

1 conditioned?

2 A. If you have a material that you can't get into  
3 the -- the required format for ASTM F1894, or if you want  
4 to test it under different conditions, than what's  
5 specified in 1894.

6 Q. But, Dr. Spiegelberg, would that -- would that  
7 testing be compliant with ASTM 1894?

8 A. No, not necessarily.

9 Q. What -- what -- okay. Thank you.

10 Would -- would the coefficient of friction be  
11 different if it were tested under different conditions?

12 MR. SCHATZ: Object to form.

13 THE WITNESS: I don't know. It depends.

14 BY MR. ROZYLOWICZ:

15 Q. Dr. Spiegelberg, I'm asking could it be  
16 different under different conditions?

17 A. Could be different. Could be the same.

18 Q. Dr. Spiegelberg, what -- what criteria would  
19 cause it to be different?

20 A. If you have a material that exhibits a  
21 hydrostatic behavior -- or, I'm sorry -- more of a  
22 hydrodynamic behavior, that would be captured with ASTM  
23 1894.

24 Q. Dr. Spiegelberg, would -- could different  
25 temperature lead to different results?

1 A. I haven't done that analysis.

2 Q. Dr. Spiegelberg, could different humidity lead  
3 to different results?

4 A. I haven't done that analysis in this case.

5 Q. Dr. Spiegelberg, could non-uniform application  
6 of the specimen lead to different results?

7 A. I didn't understand your question.

8 Q. Dr. Spiegelberg, if the specimen were not  
9 applied uniformly to the sled, would that lead to  
10 different results?

11 A. Potentially.

12 Q. Dr. Spiegelberg, could the tension in the  
13 specimen lead to different results?

14 A. It entirely depends on what the tension was.

15 Q. Dr. Spiegelberg, could a high tension lead to  
16 different results?

17 A. I can't say that. That requires analysis.

18 Q. Dr. Spiegelberg, would high tension change the  
19 density?

20 A. It depends on what you mean by high tension and  
21 the material's response to it.

22 Q. So, Dr. Spiegelberg, what is -- what are the  
23 dimensions of the sled?

24 A. Going from memory again, it's around  
25 62-millimeter on the side.

1           Q. Okay. Dr. Spiegelberg, if -- if -- I apologize.  
2 We included the original exhibit as filed. If you go to  
3 the chat window now, there is the updated and full  
4 exhibit that was -- that patent owner later submitted.

5           So if I can give you a second to pull up the new  
6 exhibit, please let me know when you've been able to  
7 download it and pull it up.

8           A. Okay. I'm there.

9           Q. Dr. Spiegelberg, if I can read -- ask you to  
10 read the first sentence of the apparatus on page 2,  
11 beginning 5.1.1 sled.

12          A. "Metal block 63.5-millimeter (2.5 inches square  
13 by approximately 6-millimeter to 0.25 inches thick with a  
14 suitable eye screw fasted on one end."

15          Q. So, Dr. Spiegelberg, this is a -- the specimen,  
16 to be clear, we're talking about is a -- is a -- you  
17 tested was a nylon woven mesh; is that correct?

18          A. It was a woven mesh.

19          Q. Dr. Spiegelberg, do you know what the specimen  
20 was?

21          A. I'm sorry. Say that question again, please.

22          Q. Dr. Specimen [sic], can you let us -- when you  
23 performed your testing, can you please let us know what  
24 the specimen was -- what the material of the specimen  
25 was?

1 MR. SCHATZ: Object to form.

2 THE WITNESS: I -- I don't know.

3 BY MR. ROZYLOWICZ:

4 Q. Dr. Spiegelberg, to be clear, you don't know  
5 what the material that you tested that was the mesh?

6 A. In terms of the polymeric material, not as we  
7 sit here today.

8 MR. ROZYLOWICZ: Okay. Can I can the court  
9 reporter to read his last answer back, please.

10 (Whereupon the previous question was read.)

11 BY MR. ROZYLOWICZ:

12 Q. So, Dr. Spiegelberg, this polymeric material,  
13 this is material that you cut with a scissor, correct?

14 A. That's correct.

15 Q. And, Dr. Spiegelberg, you then wrapped this cut  
16 polymeric material around the sled?

17 A. That's correct.

18 Q. And, Dr. Spiegelberg, there could be differing  
19 levels of -- of tension, depending on how you wrapped it  
20 around the sled?

21 A. We are careful to have no tension on it.

22 Q. Dr. Spiegelberg, how do you know that there was  
23 no tension on it?

24 A. Because we've been doing this testing for about  
25 20 years.

1           Q. But, Dr. Spiegelberg, how do you know that it  
2 wasn't loose?

3           A. Because we could see by visual inspection that  
4 it was not loose.

5           Q. Dr. Spiegelberg, could there be differences in  
6 tension that you would not be able to visually inspect?

7           A. Not -- nothing that would affect the results of  
8 this test.

9           Q. Dr. Spiegelberg, why do you believe that that  
10 would not affect the testing -- the results of this test?

11           MR. SCHATZ: Object to form.

12           THE WITNESS: Can you clarify your question,  
13 please?

14 BY MR. ROZYLOWICZ:

15           Q. Dr. Spiegelberg, why do you believe the  
16 differences in tension, that you are unable to visually  
17 detect, would not affect the test results?

18           MR. SCHATZ: Object to form.

19           THE WITNESS: Because the sample had the same  
20 visual appearance before and after application to the  
21 sled.

22 BY MR. ROZYLOWICZ:

23           Q. Dr. Spiegelberg, could there be differences that  
24 you couldn't visually detect in tension?

25           A. No.

1 Q. Dr. Spiegelberg, you did not test tension in the  
2 polymeric -- polymeric material, correct?

3 A. No.

4 Q. Okay. Dr. Spiegelberg, could a person stretch a  
5 polymeric material around the sled?

6 A. If one wanted to, I imagine they could.

7 Q. Dr. Spiegelberg, would if you stretched a  
8 polymeric material around the sled, would that have  
9 increased tension?

10 MR. SCHATZ: Object to form.

11 THE WITNESS: It depends how much tension you're  
12 applying to it.

13 BY MR. ROZYLOWICZ:

14 Q. Dr. Spiegelberg, could you increase the tension  
15 in the polymeric material by stretching it around the  
16 sled?

17 A. If you're not careful and you -- you  
18 deliberately induce -- induce stretching on it, you  
19 could.

20 Q. Okay. Dr. Spiegelberg, can the human eye  
21 detect -- I'm -- let me recast.

22 Dr. Spiegelberg, can the human eye measure  
23 tension?

24 A. You can measure the effects of tension by  
25 measuring strain.

1           Q. Dr. Spiegelberg, can the human eye measure  
2 tension in a poly -- polymeric material?

3           A. You can assess the effects of tension by looking  
4 at the induced strain that results from the tension.

5           Q. Dr. Spiegelberg, could there be differences in  
6 the amount of tension without being able to visually  
7 perceive strain?

8           A. Not that would affect the coefficient of  
9 friction testing.

10          Q. Dr. Spiegelberg, why is that?

11          A. Because the material is depending -- I'm sorry.

12                 The coefficient of friction is dependent on the  
13 morphology of the material. So if the strain doesn't  
14 affect the morphology, then there would be no affect on  
15 the coefficient of friction.

16          Q. Dr. Spiegelberg, we're talking about the human  
17 eye, correct?

18          A. We are, indeed.

19          Q. But, Dr. Spiegelberg, can you determine the  
20 exact tension given by measurement of force by looking at  
21 the material?

22          A. No, but you can see the effects on the strain.

23          Q. But, Dr. Spiegelberg, is -- is all strain of  
24 it -- is all strain visible to the human eye?

25                 MR. SCHATZ: Object to form.

1           THE WITNESS: The -- no. But it -- the strain  
2 that would affect coefficient of friction would be.

3 BY MR. ROZYLOWICZ:

4           Q. So, Dr. Spiegelberg, there could be differences  
5 in strain that -- that aren't detectable by the human  
6 eye?

7           A. Yes. But not that would affect the coefficient  
8 of friction.

9           Q. Dr. Spiegelberg, did you test the effect of  
10 strain on the coefficient of friction?

11          A. No. Because we loaded it without strain.

12          Q. Dr. Spiegelberg, how could you be sure that  
13 you -- Dr. Spiegelberg, how can you be sure that you  
14 didn't induce any tension in the specimen?

15          MR. SCHATZ: Objection. Asked and answered.

16          THE WITNESS: Because we did a visual assessment  
17 of the sample.

18 BY MR. ROZYLOWICZ:

19          Q. Okay. Dr. Spiegelberg, if the -- if the sled  
20 were front loaded with weight, would that affect the  
21 coefficient of friction?

22          A. I don't know. I haven't done that analysis.

23          Q. Dr. Spiegelberg, let's talk about the actual  
24 conditions a slide in use.

25                 Does a human being, let's say a child, slidding

1 [sic] -- sitting on a slide -- in a ride vehicle  
2 traveling down a slide surface, distribute their weight  
3 perfectly across the ride vehicle?

4 MR. SCHATZ: Object to form.

5 THE WITNESS: I don't know. I haven't done that  
6 analysis.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, should a child taking one of  
9 these ride vehicles, do you think they -- there would be  
10 a uniform distribution of weight?

11 A. I don't know.

12 Q. Dr. Spiegelberg, do you think the child would,  
13 perhaps, shift their weight as the ride vehicle travels  
14 down the slide?

15 MR. SCHATZ: Object to form.

16 THE WITNESS: I don't know. I haven't done that  
17 analysis.

18 BY MR. ROZYLOWICZ:

19 Q. Dr. Spiegelberg, is it reasonable to think that  
20 a child might shift their weight as they travel down the  
21 slide?

22 MR. SCHATZ: Object to form.

23 THE WITNESS: I don't know. I haven't done that  
24 analysis.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, looking past your analysis,  
3 does a child traveling on a slide ever change their  
4 weight -- shift their weight riding down a slide?

5 MR. SCHATZ: Object to form.

6 THE WITNESS: I don't know.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, to be clear, you -- you don't  
9 know whether a child might shift their weight riding down  
10 a slide?

11 MR. SCHATZ: Object to form; argumentative; and  
12 asked and answered.

13 THE WITNESS: I don't know. I haven't done that  
14 analysis.

15 BY MR. ROZYLOWICZ:

16 Q. So, Dr. Spiegelberg, is it fair to say that if  
17 you were to test the coefficient of friction between the  
18 mesh layer of the ride vehicle and the non-lubricated  
19 slide according to the ASTM standard, the test conditions  
20 would not reflect the actual conditions of a child riding  
21 down a slide vehicle on a slide surface?

22 MR. SCHATZ: Object to form.

23 THE WITNESS: Well, since a child doesn't weigh  
24 200 grams, then it wouldn't reflect what a child's weight  
25 would be.

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, does a child going down a  
3 slide -- do they have the area of a 62 -- I'm sorry,  
4 63.5-millimeter square?

5 A. Probably not.

6 Q. So, Dr. Spiegelberg, the coefficient of friction  
7 of a child riding down a slide would be a different  
8 coefficient of friction than a -- than what you tested  
9 under ASTM standard?

10 A. I don't know. I haven't done that analysis. It  
11 might be the same.

12 Q. But, Dr. Spiegelberg, could it be different?

13 A. Possibly, but I don't know.

14 Q. Dr. Spiegelberg, would you expect it to be  
15 different?

16 A. No, not necessarily.

17 Q. Dr. Spiegelberg, is it possible that the weight  
18 distribution could be different in any scenario?

19 A. That's a very general question can you be more  
20 specific with it.

21 Q. Dr. Spiegelberg, is it possible that a weight  
22 distribution of a child going down on a slide on a ride  
23 vehicle could be different in any scenario?

24 MR. SCHATZ: Object to form.

25 THE WITNESS: I -- I still don't understand your

1 question, what the different scenarios you're talking  
2 about.

3 BY MR. ROZYLOWICZ:

4 Q. Dr. Spiegelberg, would a child traveling down a  
5 slide in a Slick Slide environment, would they have  
6 uniform weight distribution?

7 A. I don't know.

8 Q. For the route of the vehicle, would you  
9 expect -- I'm sorry.

10 Would you expect they would have uniform weight  
11 distribution?

12 A. I don't know.

13 Q. Dr. Spiegelberg, do you know if a child going  
14 down a ride vehicle, if they sit upright?

15 A. I don't know. I haven't look into how they  
16 ride.

17 Q. Dr. Spiegelberg, do you think that it's  
18 reasonable to assume that a person taking the ride  
19 vehicle would, perhaps, lay on the ride vehicle?

20 A. It's possible. I don't know.

21 Q. Dr. Spiegelberg, in an environment in which a  
22 person is laying on the slide -- Dr. Spiegelberg, in a --  
23 in a -- in a ride vehicle in which a -- a child is lying  
24 on a ride vehicle and going down the slide feet-first,  
25 would you -- can we reasonably expect that the upper

1 portion of the child's body would have an increased  
2 weight distribution than the lower portion of the child's  
3 body in the ride vehicle?

4 MR. SCHATZ: Object to form.

5 THE WITNESS: I really don't understand that  
6 question. Try again.

7 BY MR. ROZYLOWICZ:

8 Q. Dr. Spiegelberg, does a -- a child leaning on a  
9 ride vehicle, do you think that the child weighs  
10 uniformly across the -- the child's weight applies  
11 uniform force, as he rests on the ride vehicle?

12 A. It depends on the construct of the ride vehicle.

13 Q. Dr. Spiegelberg, how does it depend on the  
14 construct of the ride vehicle?

15 A. How rigid the ride vehicle is and its ability to  
16 distribute that load.

17 Q. Dr. Spiegelberg, I'm not talking about the --  
18 the force applied by the ride vehicle on the slide,  
19 itself. I'm just saying that the weight that the child  
20 applies to the ride vehicle itself, is there -- is  
21 there -- is it plausible that the weight would not be  
22 uniform of a child sitting on the ride vehicle?

23 MR. SCHATZ: Object to form.

24 THE WITNESS: I don't know. It depends on the  
25 construct of the ride vehicle.

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, would you expect the weight  
3 distribution will be different between sitting up and  
4 laying down?

5 A. Don't know.

6 Q. Okay. Dr. Spiegelberg, I'll call your attention  
7 to -- if you turn to page 4 of Exhibit 2016.

8 MR. SCHATZ: Tom, do you want Exhibit 2016, or  
9 2026? I'm sorry. The replacement. Sorry.

10 MR. ROZYLOWICZ: The -- I'm sorry, the  
11 replacement document.

12 MR. SCHATZ: Sorry. Thank you.

13 MR. ROZYLOWICZ: Sorry. We're going to have to  
14 pull it back up just a second.

15 THE WITNESS: Okay. What page?

16 BY MR. ROZYLOWICZ:

17 Q. Page 4.

18 A. Okay. We're there.

19 Q. If I can -- Dr. Spiegelberg, if I can ask you to  
20 kindly read paragraph 8.1, please, on -- in the  
21 right-most column?

22 A. 8.1 says, "Conditioning, condition the test  
23 specimen for 23, plus or minus 2 degrees C (72 -- 73.4)  
24 plus or minus 3.6 degrees F and 50 plus or minus 10  
25 percent relative humidity for not less than 40 hours

1 prior to test in accordance procedure A of practice D618,  
2 unless otherwise specified by agreement, or in the  
3 relevant ASTM material specifications."

4 Q. Okay. So you would agree that the -- is it true  
5 that the standard requires the temperature to be about  
6 23 degrees Celsius?

7 A. Yes, it does.

8 Q. And it's true that the humidity has to be about  
9 50 percent for some preceding time?

10 A. Yes. That's what it says.

11 Q. Dr. Spiegelberg, is it correct that the  
12 coefficient of friction can vary based on the temperature  
13 and humidity?

14 A. With some materials, yes; with other materials,  
15 no.

16 Q. Dr. Spiegelberg, what materials have coefficient  
17 of friction that varies with humidity?

18 A. Hydrogels do.

19 Q. Okay. Dr. Spiegelberg, is that why the ASTM  
20 standard gives test conditions for temperature humidity  
21 to eliminate the possibility that temperature difference  
22 explain the difference in materials?

23 A. That's one smaller reason, but the main reason  
24 is most ASTM standards for asserting the properties of  
25 materials have a conditioning step to try to bring

1 everything to the same starting condition.

2 Q. Okay. So, Dr. Spiegelberg, in a case of a child  
3 traveling down a slide surface on a ride vehicle in a hot  
4 and humid climate, let's say Orlando, Florida, is it  
5 possible that such temperatures and humidities would be  
6 outside the ranges acceptable for the ASTM standard?

7 A. Possibly.

8 Q. Okay. So there are many situations in which the  
9 actual conditions of a human riding down a slide don't  
10 match the conditions of the ASTM standard; is that  
11 correct?

12 A. Well, I don't know if I would say many, but  
13 there are condition that would be outside of the  
14 standard.

15 Q. Dr. Spiegelberg, how about the speed of the  
16 test, is it true that the -- according to the ASTM  
17 standard, that the sled's pulled at 150 millimeters per  
18 minute?

19 A. That's correct.

20 Q. So, Dr. Spiegelberg, riders typically travel  
21 much faster than 150 millimeters per minute when  
22 traveling down a slide.

23 Would you agree with that?

24 A. I assume that they would be. Otherwise, it  
25 probably wouldn't be very fun.

1           Q. So, Dr. Spiegelberg, the ASTM tests to -- as to  
2 the characteristics of the testing really differ from  
3 those of a child travel -- traveling down a slide,  
4 correct?

5           A. There are differences.

6           Q. Dr. Spiegelberg, if I could ask you to turn to  
7 page 1 of the -- and ask you to turn to the title, do you  
8 see the ASTM logo in the upper left-hand corner?

9           A. Yes, I do.

10          Q. So if this were 8 1/2 by 11 sheet, if you go  
11 down, approximately, 1 inch diagonally, do you see the  
12 title that begins, "Standard test"?

13          A. Yes, I do.

14          Q. Dr. Spiegelberg, can you please read the title  
15 of this document to us?

16          A. "Standard test method for static and kinetic  
17 coefficients of friction of plastic film and sheeting."

18          Q. Dr. Spiegelberg, this title doesn't say that  
19 it's -- doesn't list the term "mesh," does it?

20          A. No, it does not.

21          Q. Dr. Spiegelberg, this doesn't list the term  
22 "nylon," does it?

23          A. It does not.

24          Q. Dr. Spiegelberg, I'll then ask you to turn --  
25 thank you for -- for doing that.

1           If I can ask you to kindly turn to -- in the  
2 same document, if I can kindly ask you to turn to --  
3 looks like it's page 4 under test specimens. There is  
4 a -- looks like it's section 6.

5           A. Yep, I'm there.

6           Q. Dr. Spiegelberg, I'll ask you to read the  
7 paragraph beginning with 6.2.

8           A. 6.2 states, "A film specimen that is to be  
9 attached to the sled shall be cut approximately  
10 120 millimeters, 4.5 inches square."

11          Q. Can you read the next sentence, please?

12          A. "Film is defined as sheeting having a nominal  
13 thickness of not greater than 0.254 millimeters as  
14 indicated in terminology D883.

15          Q. Dr. Spiegelberg, this paragraph you just read,  
16 section 6.2, it does not mention mesh, correct?

17          A. That's correct.

18          Q. Dr. Spiegelberg, it does not mention nylon,  
19 correct?

20          A. That's correct.

21          Q. Okay. Dr. Spiegelberg, I'll then turn your  
22 attention to section 6.3, please.

23          A. Okay. I'm there.

24          Q. Dr. Spiegelberg, can you kindly read this  
25 sentence for us.

1           A. "A sheeting specimen greater than  
2   0.254 millimeters, nominal thickness, or another  
3   substance that is to be attached to the sled shall be cut  
4   63.5 millimeters 2.5 inches square."

5           Q. Dr. Spiegelberg, this doesn't mention mesh, does  
6   it?

7           A. It does not.

8           Q. Dr. Spiegelberg, this does not mention nylon,  
9   does it?

10          A. It does not.

11          Q. Dr. Spiegelberg, does ASTM standard mention any  
12   other test specimens besides film and sheeting?

13          A. Not in this section. I'd have to look at the  
14   entire document to see if there's anything else  
15   discussed.

16          Q. Dr. Spiegelberg, to your knowledge -- take your  
17   time.

18                 Does -- does any portion of this document  
19   mention mesh?

20          A. Oh, I don't believe so.

21          Q. Dr. Spiegelberg, I'll turn your attention to  
22   section 9.1.

23          A. I'm there.

24          Q. Dr. Spiegelberg, do you see a sentence where it  
25   begins "Tape the"?

1           A. Yes, I do.

2           Q. Can you please read that sentence for us.

3           A. "Tape the 250- by 130-millimeter 10 by 5-inch  
4 film or sheet specimen to the plain with the machine  
5 direction of the specimen in the 250 millimeter  
6 direction."

7           Q. Okay. Dr. Spiegelberg, can you please read the  
8 next sentence.

9           A. "Smooth the film specimen to eliminate wrinkles,  
10 if necessary, taking care not to alter the specimen  
11 surface through finger oils, et cetera."

12          Q. So, Dr. Spiegelberg, this doesn't mention mesh,  
13 does it?

14          A. It does not.

15          Q. This doesn't mention nylon, does it?

16          A. It does not.

17          Q. Dr. Spiegelberg, that second sentence, it says,  
18 "Smooth the film specimen to eliminate wrinkles."

19                 Dr. Spiegelberg, why -- why would you eliminate  
20 wrinkles?

21          A. If you have a thin enough film specimen, they  
22 can form wrinkles, which could cause them to fold over on  
23 themselves during the -- the coefficient of friction  
24 testing that would alter the -- the results.

25          Q. Dr. Spiegelberg, when you said it could alter

1 the results, it could lead to a -- a different  
2 coefficient of friction, correct?

3 A. Potentially.

4 Q. Dr. Spiegelberg, would -- could wrinkles lead to  
5 a non-uniform contact?

6 A. Yes.

7 Q. Dr. Spiegelberg, would that -- could that lead  
8 to different testing in the coefficient of friction?

9 A. It may, but you won't really know until you try  
10 it.

11 Q. Okay. Dr. Spiegelberg, this document -- isn't  
12 it true that the ASTM standard only contemplates film and  
13 sheeting its tests specimens under the ASTM standard?

14 A. According to the title, yes, but ASTM standards  
15 are often used with different types of materials outside  
16 of the initial scope.

17 Q. But, Dr. Spiegelberg, does this -- does -- does  
18 that teaching appear anywhere in this document?

19 A. In which document?

20 Q. Exhibit 2016.

21 A. That you may use it with other types of  
22 materials?

23 Q. Yes.

24 A. I don't know.

25 Q. But, Dr. Spiegelberg, does the mesh layer, like

1 the one we cited in claim 1 of the '854 patent, qualify  
2 as a film or sheeting specimen under the ASTM standard?

3 MR. SCHATZ: Object to form; outside the scope  
4 of the declaration.

5 THE WITNESS: I would not characterize it as a  
6 film or sheeting, but we've done coefficient of friction  
7 testing on materials that also wouldn't be called film or  
8 sheeting with this standard.

9 BY MR. ROZYLOWICZ:

10 Q. But, Dr. Spiegelberg, the testing only -- this  
11 document, itself, only identifies film or sheeting  
12 material, correct?

13 A. Yes.

14 Q. Okay. Dr. Spiegelberg, I'll -- thank you.

15 I'll then call your -- I'll pause for a --  
16 actually, let's resume this line of questioning. We'll  
17 go for a few more minutes, and then we'll -- we'll --  
18 I'll propose another break, if that works for -- for  
19 everyone. All right.

20 Dr. Spiegelberg, I'll call your attention to  
21 exhibit -- to your first affidavit, 1026.

22 A. Okay. I'm there.

23 Q. I'm sorry. Not 1026. 2026.

24 A. Yes. I'm there.

25 Q. If you could go to paragraph 116, please.

1           A.   Okay.

2           Q.   Dr. Spiegelberg, if I could ask you to read the  
3 first two sentences in paragraph 116.

4           A.   "A POSITA would not consider the sheeting  
5 material disclosed in -- as forming the bottom surface of  
6 a ride vehicle as mesh layer as claimed -- as claimed in  
7 claim 1 of the '854 patent."

8           Q.   Thank you.

9                     Dr. Spiegelberg, given the test, do you believe  
10 that the mesh material for the bottom surface to ride  
11 vehicle can be tested in conformance with the ASTM  
12 standard?

13          A.   Yes.

14          Q.   Dr. Spiegelberg, if I can call your attention to  
15 paragraph 163, please.

16          A.   I'm there.

17          Q.   Doctor -- I'm sorry. Thank you?

18                    Dr. Spiegelberg, you indicated that the ride  
19 vehicle can be tested in accordance with the ASTM  
20 standard. Is there anything in -- in Exhibit 2016 that  
21 suggests that other materials can be tested?

22          A.   No. But that's common practice with ASTM  
23 methods to extend them beyond the -- the scope as  
24 defined.

25          Q.   Dr. Spiegelberg, is there anything, in your

1 words, common practice -- is there anything in  
2 Exhibit 2016 that suggest that common practice that --  
3 that suggests what that common practice is?

4 A. I'm speaking of ASTM, in general.

5 Q. Okay. But within Exhibit 2016, is there  
6 anything that -- that -- that documents, as you suggest,  
7 is that common practice?

8 A. I don't know. I haven't look to see if that's  
9 in the -- the annex of this document.

10 Q. Dr. Spiegelberg, thank you. I'll again turn to  
11 paragraph 163.

12 So, Dr. Spiegelberg, if I can ask you to please  
13 read that first sentence.

14 A. "For these reasons, it is my opinion that a  
15 POSITA would not rely on coefficient of friction that did  
16 not comply with ASTM D1894, and would not rely upon any  
17 of the references relied on by the petitioner."

18 Q. Dr. Spiegelberg, so is it your testimony,  
19 therefore, that only the coefficient of friction -- I'm  
20 sorry.

21 Is it your testimony that the only coefficient  
22 of friction values that a POSITA would rely upon are  
23 values for a film or sheeting that are measured in  
24 accordance with the ASTM standard?

25 A. Those are the most reliable types of

1 measurements, when you're comparing different types of  
2 materials for consideration of low coefficient of  
3 friction.

4 Q. But --

5 A. I'm sorry. For -- I'm sorry. My bad.

6 For coefficient of friction, in general.

7 Q. But, Dr. Spiegelberg, mesh materials don't  
8 comply with ASTM D1894, as shown in Exhibit 2016?

9 A. No. I disagree in that they're not excluded.  
10 ASTM standards that do not allow certain materials to be  
11 used have that listed in their scope. ASTM 1894 does not  
12 exclude the use of that test method on mesh materials.

13 Q. Dr. Spiegelberg, if you could read the second  
14 sentence in paragraph 163, please.

15 A. "In addition, a POSITA would not be able to  
16 determine or conclude that the coefficient of friction  
17 data disclosed in the references relied upon by  
18 petitioner as complying with ASTM D1894, as does the '854  
19 patent."

20 Q. Okay. Dr. Spiegelberg, it's your testimony  
21 that, in this sentence, that only ASTM D1894 can be used  
22 to test the coefficient of friction, correct?

23 A. I'm not saying that. I'm saying that the  
24 coefficient of friction data in the references are not  
25 indicating as complying with D1894. So comparison

1 between different values is challenging.

2 Q. Dr. Spiegelberg, I'll call your attention to  
3 section 6.4 of Exhibit 2016.

4 Dr. Spiegelberg, let me know -- please let me  
5 know when you have it in front of you.

6 A. We don't have it. We're getting navigating now.

7 All right. I'm there.

8 Q. Dr. Spiegelberg, I'm not sure if you're still  
9 turning to it or you have it in front of you. So just  
10 let me know when you get there, please.

11 A. I'm there.

12 Q. I'm sorry. I think --

13 A. I'm there, Counsel.

14 Q. All right. Thank you.

15 Can you please read paragraph -- or read the  
16 sentence in 6.4.

17 A. "Sheeting specimens shall be flat and free of  
18 warpage, edges of specimens shall be round and smooth."

19 Q. Okay. Do you know if mesh is flat and free of  
20 warpage?

21 A. The -- the samples that we were looking at were  
22 flat and free of warpage.

23 Q. But in a -- okay. Great.

24 Dr. Spiegelberg -- I'll ask Counsel, do you have  
25 Exhibit 1027 handy?

1                   Counsel, if you want to begin getting  
2 Exhibit 1027 handy, I'll ask just a couple follow-up  
3 questions on Exhibit 1016.

4                   So, Dr. Spiegelberg, you indicated that the  
5 specimens you tested were flat and free of warpage; is  
6 that correct?

7                   A. That's correct.

8                   Q. But in those places where the threads crossed  
9 each other, that is where the warping and weft meet, are  
10 those places flat?

11                  A. Well, they have topology.

12                  Q. But, I guess, I mean, earlier, you weighed in  
13 that you believe this poly -- you referred to it a  
14 polymeric mesh is characterized by open spaces, correct?

15                  A. That's correct.

16                  Q. So an inherent function of the topology where  
17 there are open spaces is -- is -- is that a -- at a level  
18 of the weft and weaves meeting, it's a -- it's not  
19 uniform in those areas, correct?

20                  A. That's correct. And that's not what 6.4 is  
21 referring to, though. That's the overall construct.

22                  MR. ROZYLOWICZ: Okay. All right. Counsel,  
23 I'll -- are you ready to take a break now? I've got one  
24 more line of questioning before we can break. You let me  
25 know if you need a break. If not, we can go ahead and

1 press on.

2 MR. SCHATZ: I'm sorry. Tom, what -- what was  
3 your comment about your next line of questioning?

4 MR. ROZYLOWICZ: Counsel, I'm happy to keep  
5 going for -- for my next -- some more questions, or if  
6 you need a break, I'm -- I'm happy to convene a 10-minute  
7 break.

8 MR. SCHATZ: All right. Why don't we go ahead  
9 and take a 10-minute break. That would be great.

10 MR. ROZYLOWICZ: All right. Fantastic.  
11 We'll -- it's presently 11:23 eastern. We'll resume at  
12 11:33, unless you need more time.

13 MR. SCHATZ: No. That will be great. Thank  
14 you.

15 MR. ROZYLOWICZ: Thank you.

16 (A recess was held from 10:23 a.m. to 10:37 a.m.)

17 BY MR. ROZYLOWICZ:

18 Q. All right. I think, as I previewed before our  
19 break, I'll call your attention to Exhibit 1027.

20 THE REPORTER: And can I get that?

21 MR. ROZYLOWICZ: Yeah. Thank you.

22 BY MR. ROZYLOWICZ:

23 Q. Dr. Spiegelberg, on the -- do you see the name  
24 associated with the laboratory on the first page of the  
25 Exhibit 1027?

1 A. Yes, I do.

2 Q. Okay. Which laboratory was that?

3 A. Oak Ridge National Laboratory.

4 Q. Are you familiar -- Dr. Spiegelberg, are you  
5 familiar with Oak Ridge National Laboratory?

6 A. A little bit.

7 Q. Have you worked with them before?

8 A. I don't think so.

9 Q. Okay. Are you aware that Oak Ridge National  
10 Laboratory is a federally-funded institution?

11 A. No, I'm not.

12 Q. Okay. Would it be fair to say that they're  
13 heavily involved in research?

14 A. I don't know the extent of their research  
15 activities.

16 Q. Okay. Dr. Spiegelberg, do you have any reason  
17 to suspect that Oak Ridge National Laboratories is  
18 incapable of measuring coefficient of friction  
19 accurately?

20 A. I've gotten no basis either way.

21 Q. Is there any reason to believe that Oak Ridge  
22 National Laboratory would not be accurate?

23 A. I have no -- no opinion either way.

24 Q. Okay. Dr. Spiegelberg, I'll call your attention  
25 if you advance through this to page 2.

1           A. I'm there.

2           Q. Dr. Spiegelberg, isn't it true that, when you  
3 look at this -- if I can ask you to read the second line,  
4 please.

5           A. Second line, "Metals tested in air at room  
6 temperature."

7           Q. Thank you.

8                   So is it fair to assume that they use  
9 standardization to make sure the values in each table are  
10 controlled for external factor such as temperature?

11          A. Typically, room temperature doesn't mean it's,  
12 necessarily, controlled.

13          Q. Okay. But for something like this, is it fair  
14 to assume that it worked for purposes of -- for their  
15 purposes?

16               MR. SCHATZ: Object to form.

17               THE WITNESS: I don't know what their purposes  
18 were.

19 BY MR. ROZYLOWICZ:

20          Q. But at least some standards were identified in  
21 their testing to at least account for a temperature  
22 setting, correct?

23               MR. SCHATZ: Object to form.

24               THE WITNESS: Can you point out to what -- what  
25 you're referring to?

1 BY MR. ROZYLOWICZ:

2 Q. Well, the fact that they specified that these  
3 materials were tested at room temperature, correct?

4 A. Yes. But room temperature can be anywhere from  
5 19 -- 18 or 19 degrees to 25 degrees.

6 Q. But is it -- Dr. Spiegelberg, is there any  
7 reason to believe that -- for testing these metals, that  
8 the -- is there anything in the document that suggests  
9 that that variation in room temperature would -- would  
10 impact the identified friction coefficients?

11 A. I don't know.

12 Q. Dr. Spiegelberg, do you have any reason to  
13 believe that Oak Ridge National Laboratories would be  
14 incapable of measuring the coefficient of friction  
15 accurately?

16 A. I've got no basis to say either.

17 Q. Dr. Spiegelberg, do you see the reason that the  
18 values in each table presented in -- in Exhibit 1027 are  
19 not comparable against one another for those values  
20 shown?

21 MR. SCHATZ: Object to form.

22 THE WITNESS: I don't know. They have different  
23 references listed for the different values, so I don't  
24 know if they are comparable or not.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Okay. Dr. Spiegelberg, I'll call your attention  
3 to Exhibit 1001, the '854 patent.

4 A. I'm there.

5 Q. Okay. Do you see in column 12 -- do you see the  
6 claims of the '854 patent?

7 A. Yes, I do.

8 Q. If you can begin, kindly, by reading claim 1,  
9 please.

10 A. "A recreational slide system comprising a slide,  
11 including a slide body with a non-wet lubricated slide  
12 surface that extends beyond -- between the top entrance  
13 of the slide and the bottom exit of the slide, and a ride  
14 vehicle configured to support a rider down the slide, the  
15 ride vehicle, including a top surface configured to  
16 contact the rider and a mesh layer that forms the bottom  
17 surface configured to contact the slide surface; wherein,  
18 the coefficient of friction between the mesh layer of the  
19 ride vehicle and the non-wet lubricated slide surface is  
20 between -- is within a range of between about 0.03 to  
21 about 0.2."

22 Q. Okay. Dr. Spiegelberg, I'll ask you to go down  
23 to line 26. Can you kindly read claim 3 for us.

24 A. "The recreational slide system of claim 1  
25 wherein the slide surface includes a dry lubricant

1 material."

2 Q. Thank you.

3 Dr. Spiegelberg, I'll ask you then to turn to  
4 claim 8, which starts on line 41, and kindly read that  
5 for us, please.

6 A. "The recreational slide system of claim 3,  
7 wherein the dried lubricant material includes a resin, a  
8 lubricant, a thermal conductor, and a hardener.

9 Q. Okay. So, Dr. Spiegelberg, isn't it correct  
10 that claim 8 requires the coefficient of friction  
11 involving the non-wet lubricated slide surface to be  
12 between .03 to .2 where the non-wet lubricated slide  
13 surface comprises the enumerated list of four materials  
14 shown in claim 8?

15 A. I'm sorry. Can you say your question again?

16 Q. Absolutely.

17 So claim 8 requires the coefficient of friction  
18 involving the non-wet lubricated slide surface to be  
19 between .03 and .02 correct?

20 A. In referring to claim 1.

21 Q. Yeah. But that's also required to be -- those  
22 limitations also are required in claim 8, correct?

23 A. Are you asking for a legal opinion on that?

24 Q. I'm saying that claim 8 rests -- depends from  
25 claim 3, correct?

1 A. Yes, it does.

2 Q. And claim 3 depends from claim 1?

3 A. Yes, it does.

4 Q. And claim 1 recites the coefficient of friction  
5 between .03 and .0 -- and .2?

6 A. Yes.

7 Q. So those limitations that you see in -- I'm  
8 sorry.

9 The -- the coefficient of friction recited in  
10 claim 1 and .03 to .2, when you're considering claim 8,  
11 those coefficient of frictions have to be present when  
12 you're considering dry lubricant material that includes a  
13 risen a lubricant, a thermal conductor, and a hardener?

14 MR. SCHATZ: Object to form.

15 THE WITNESS: Say your question again, please.

16 BY MR. ROZYLOWICZ:

17 Q. The limitations recited in claim 1, in  
18 particular the coefficient of friction from .03 to .2,  
19 are necessarily present in the dried lubricant material  
20 recited in claim 8?

21 MR. SCHATZ: Object to form.

22 THE WITNESS: My lay understanding of this is  
23 that claim 8 would have the limitations within claim 1,  
24 but, again, I'm not an attorney.

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Thank you. That's all I was asking.

3 Dr. Spiegelberg, I'll ask you to turn to column  
4 2, please.

5 A. I'm there.

6 Q. Dr. Spiegelberg, I'll ask you to kindly read the  
7 first sentence appearing at line 26.

8 A. "According to yet another aspect of the present  
9 invention, the dry lubricant material may include a  
10 risen, a lubricant, a thermal conductor, and a hardener."

11 Q. Thank you.

12 So, Dr. Spiegelberg, do you recognize that these  
13 are the four materials recited in claim 8?

14 A. Yes.

15 Q. Dr. Spiegelberg, does this paragraph describe  
16 how the four materials of claim 8 would be -- would --  
17 how the four materials in claim 8 would result in the  
18 coefficient of friction within the claim rage of .03 to  
19 .2?

20 A. What do you mean?

21 Q. I mean, does it say how these materials would be  
22 combined?

23 A. Would be combined, as in formulated together?

24 Q. Yes.

25 A. It provides some additional description in

1 the -- the rest of the paragraph.

2 Q. Okay. But, Dr. Spiegelberg, so my question is,  
3 does this paragraph describe how they would be combined?

4 A. It does not provide any information about how  
5 they are mixed together.

6 Q. This -- this -- does this paragraph describe the  
7 process by which they'd be combined?

8 A. No.

9 Q. Does it describe the order of -- with which the  
10 materials may be combined?

11 A. No.

12 Q. Does it describe the temperature?

13 A. No.

14 Q. Does it describe the -- does it describe the  
15 curing process?

16 A. It includes description of a hardener.

17 Q. But does -- does it describe the time for  
18 curing?

19 A. No.

20 Q. Dr. Spiegelberg, I'll call your attention to the  
21 last paragraph on column 2.

22 A. Okay.

23 Q. If I can ask you to read that first sentence  
24 appearing in the last paragraph on column 2.

25 A. Starting with "According"?

1 Q. Yes?

2 A. "According to another embodiment of the present  
3 invention, a non-wet lubricated recreational slide is  
4 provided. The recreational slide includes a slide body  
5 with a slide surface that extends between a top entrance  
6 of the slide and a bottom exit of the slide. The slide  
7 surface includes a dry lubricant coating that comprises  
8 the resin, a lubricant, a thermal conductor, and a  
9 hardener."

10 Q. Thank you.

11 So, Dr. Spiegelberg, is this -- is this the way  
12 these portions describe how -- I'm sorry -- how these  
13 four materials would result in the claimed coefficient  
14 range?

15 A. No.

16 Q. Dr. Spiegelberg, I'll call your attention to  
17 column 7.

18 A. I'm there.

19 Q. I'll ask you to turn to the first full paragraph  
20 that appears with the sentence beginning, "According."

21 A. I'm there.

22 Q. If you can please read that first sentence.

23 A. "According to the embodiments of the present  
24 invention, the dry lubricant material is an antifriction  
25 or friction reducing material in the form of a dry

1 lubricant coating; 34, on the slide surface; 18, of the  
2 slide 12."

3 Want me to continue?

4 Q. If you can please read that next sentence.

5 A. "In that regard, the formulation for the dry  
6 lubricant material that is applied to the slide is a  
7 mixture comprising the following. I, a risen; II, a  
8 lubricant; III, a thermal conductor, and IV a hardener;  
9 otherwise referred to as a hardening or curing agent."

10 Q. Thank you.

11 Is there any description in this portion as  
12 to -- as to the process by which as to how to make the  
13 formulation using the four materials would achieve the  
14 coefficient of friction of within the claimed range?

15 A. There's no description of how to combine these  
16 materials in this paragraph or in this section that we  
17 just read.

18 Q. Dr. Spiegelberg, does the '854 patent -- I'm  
19 sorry.

20 Dr. Spiegelberg, does this portion describe --  
21 let me strike that.

22 Dr. Spiegelberg, does this portion describe the  
23 surface of the -- surface finish of the cured risen?

24 A. The surface finish? No.

25 Q. Dr. Spiegelberg, does the '854 patent ever

1 describe how the four materials can be combined to  
2 achieve the coefficient of friction?

3 Let me -- let me word that.

4 Dr. Spiegelberg, does the '854 patent ever  
5 describe the process by which the four materials can be  
6 combined to achieve the coefficient of friction of .03?

7 MR. SCHATZ: Object to form.

8 THE WITNESS: Well, it describes different  
9 embodiments throughout the -- the -- the teachings.

10 BY MR. ROZYLOWICZ:

11 Q. Dr. Spiegelberg, does -- do any of those  
12 embodiments describe a coefficient of friction of .03,  
13 specifically?

14 A. I didn't -- don't see that they do.

15 Q. Dr. Spiegelberg, is it possible that the dry  
16 lubricant material includes the four materials disclosed  
17 in claim 8 that the coefficient of friction could be  
18 greater than .06?

19 MR. SCHATZ: Object to form.

20 THE WITNESS: I can't say. You'd have to  
21 measure it.

22 BY MR. ROZYLOWICZ:

23 Q. Dr. Spiegelberg, is it -- is it possible that  
24 the coefficient of friction with these materials could be  
25 greater than .06?

1 A. I can't say. You'd have to measure it.

2 Q. Dr. Spiegelberg, is it possible that the  
3 combination of these materials would be greater than .2?

4 A. Same answer. You'd have to measure it.

5 Q. Dr. Spiegelberg, is it -- Dr. Spiegelberg, is  
6 there -- would the combination of these four materials  
7 result in the -- does the specification tell you that the  
8 result of these materials will result in a coefficient of  
9 friction of .04?

10 MR. SCHATZ: Object to form.

11 THE WITNESS: I'm sorry. Say your question  
12 again, please?

13 BY MR. ROZYLOWICZ:

14 Q. Dr. Spiegelberg, is there anything in the  
15 specification that tells us that the combination of these  
16 four materials would result in a coefficient of friction  
17 of .04?

18 MR. SCHATZ: Object to form.

19 THE WITNESS: The specification does not say  
20 0.4, from what I remember.

21 BY MR. ROZYLOWICZ:

22 Q. Dr. Spiegelberg, did the Cambridge Polymer  
23 Group, which you manage, did you do any testing as it  
24 relates to the combination of the -- in a formulation of  
25 these four materials?

1 MR. SCHATZ: Object to form.

2 THE WITNESS: Sorry. Say your question again,  
3 please?

4 BY MR. ROZYLOWICZ:

5 Q. Did the Cambridge Polymer Group -- did they do  
6 any testing in the formulation of these four materials?

7 A. We didn't do any testing to determine the  
8 formulation.

9 Q. Did you do any testing as to how these materials  
10 could be combined?

11 MR. SCHATZ: Object to form.

12 THE WITNESS: We didn't do any testing on the  
13 formulation or the combination thereof.

14 BY MR. ROZYLOWICZ:

15 Q. Dr. Spiegelberg, do you have any --  
16 Dr. Spiegelberg, do you know if these four materials were  
17 present in the epoxy that you tested?

18 A. I didn't do that analysis.

19 Q. Dr. Spiegelberg, did the Cambridge Polymer Group  
20 do any testing on the epoxy, itself, as to its  
21 formulation?

22 A. No.

23 Q. Dr. Spiegelberg, if I can call your attention  
24 to -- if we can pull up Exhibit 2039, please.

25 MR. SCHATZ: Okay. I'm there.

1 BY MR. ROZYLOWICZ:

2 Q. Dr. Spiegelberg, if you can -- can -- I'm sorry.  
3 For the court reporter's benefit, we'll put  
4 Exhibit 2039 in the -- thank you.

5 Dr. Spiegelberg, if I could ask you to turn to  
6 page 2 of Exhibit 2039.

7 A. Okay. I'm there.

8 Q. Okay. Is that a -- do you see the photograph on  
9 this page?

10 A. Yes, I do.

11 Q. Okay. Dr. Spiegelberg, in the photograph, do  
12 you see a black object with gray material placed over it?

13 A. Yes, I do.

14 Q. Do you see that that's connected to a string?

15 A. A cable, yes.

16 Q. Is this sled described in the ASTM standard?

17 A. Yes, it is.

18 Q. Do you also see the yellow square?

19 A. Yes, I do.

20 Q. Is this the yellow square a sample of the  
21 non-lubricated slide surface recited in claim 1 of the --  
22 is this the -- strike that.

23 Dr. Spiegelberg, the ASTM standard includes a  
24 requisite time beforehand before you treat a material,  
25 before you test a material, correct?

1           It has to be in a designated temperature and  
2 designated humidity for a period of time; is that  
3 correct?

4           A. That's correct.

5           Q. In this case, how did you ensure compliance with  
6 the temperature and humidity requirements of the ASTM  
7 standard?

8           A. We had an environmental conditioning chamber  
9 that we use for that.

10          Q. Dr. Spiegelberg, what were those conditions?

11          A. They would be compliant with the ASTM standard,  
12 so the 50 percent, and I believe it was 21 degrees.

13          Q. Dr. Spiegelberg, did you condition the samples?  
14 Did you place the samples in the condition  
15 chamber, I suppose?

16          A. No. That would have been done by  
17 Dr. Braithwaite.

18               MR. ROZYLOWICZ: Okay. Tell you what, looking  
19 where we stand right now, I know we talked about lunch at  
20 12:30. I propose that we break early for lunch. I -- I  
21 don't know when your lunch is set to arrive, but I'd be  
22 willing to start earlier with -- under the auspices of  
23 getting us all out of here earlier. So if we can break  
24 early for lunch, that would be -- you know, I don't know  
25 what your time frame works, but --

1 THE WITNESS: We can work with that.

2 MR. SCHATZ: Yeah. Yeah. Tom, we had -- we had  
3 scheduled lunch for 12:45 delivery, at least, probably be  
4 here at 12:30.

5 MR. ROZYLOWICZ: Okay.

6 MR. SCHATZ: What are you proposing? Like --  
7 because, like, we'll need to check and see when the  
8 sandwiches arrive and --

9 MR. ROZYLOWICZ: Yeah.

10 MR. SCHATZ: In other words, I'm looking out, I  
11 don't see the sandwiches here, but trying to get some  
12 more done now would be -- would be helpful.

13 MR. ROZYLOWICZ: Okay.

14 MR. SCHATZ: At least another 20 minutes or so.

15 MR. ROZYLOWICZ: Yeah. Absolutely. All right.  
16 Let's see.

17 MR. SCHATZ: And, Tom, listen, I don't -- I  
18 don't want to disrupt your flow. I mean, if you're --  
19 sometimes when you get close to being done, you need to  
20 take an extended break and then formulate your last, kind  
21 of, session. If that's where you are, then we can break.

22 MR. ROZYLOWICZ: Yeah. Let's do that. Because  
23 I am close to being done. So if we can take a extended  
24 break, and if that happens to run into lunch, great. If  
25 we can jump back on before lunch and get more

1 accomplished, we'll -- we'll do that, as well. But I --  
2 I think I'm nearing the -- the end of my questions.

3 MR. SCHATZ: Okay. Why don't we do this, Tom,  
4 let's tentatively slot to come back at 12:35. We are  
5 hopeful we can expedite our sandwiches and get back at  
6 12:35, and then, you know, maybe we can have the last  
7 session starting at 12:35.

8 MR. ROZYLOWICZ: That's fair.

9 MR. SCHATZ: Does that work for you?

10 MR. ROZYLOWICZ: That works for me.

11 MR. SCHATZ: Okay. Great. Thanks, Tom.

12 MR. ROZYLOWICZ: Thanks.

13 (A recess was held from 11:06 a.m. to 11:39 a.m.)

14 BY MR. ROZYLOWICZ:

15 Q. If I can call your attention to Exhibit 1040,  
16 please, and we'll put that in the chat as well.

17 MR. SCHATZ: Tom, we'll have to open that up in  
18 the chat. We don't have that one.

19 MR. ROZYLOWICZ: Yeah. No problem.

20 MR. SCHATZ: Is somebody on your team going to?

21 MR. ROZYLOWICZ: Yes. Yeah. We'll put it in  
22 the chat.

23 MR. SCHATZ: Thanks.

24 MR. ROZYLOWICZ: Okay. It was just put in the  
25 chat. You'll see it momentarily. Please let me know

1 when you've got it open and we can begin.

2 MR. SCHATZ: Yeah, I have it.

3 BY MR. ROZYLOWICZ:

4 Q. Thank you.

5 Dr. Spiegelberg, if you could please read the  
6 title of this document.

7 A. Modified epoxy coatings in mild steel:  
8 Tribology and surface energy.

9 Q. Okay. If I can, first, kindly ask you to walk  
10 through the abstract as we begin. If I can ask you to  
11 please walk through the abstract reading the first  
12 sentence.

13 A. "A commercial epoxy diglycidylether of  
14 bisphenol-A was modified by adding fluorinated  
15 Polyaryletherketone fluoropolymer" --

16 (Reporter clarification.)

17 THE WITNESS: -- "fluoropolymer, and in turn  
18 metal, micropowders (nickel, aluminum, zinc, and silver)  
19 and coated on mild steel. Two curing agents were used;  
20 triethylenetetramine, a low temperature curing agent, and  
21 hexamethylenediamine, a high temperature curing agent, for  
22 understanding the curing temperature effect on the  
23 properties."

24 Shall I continue?

25 //

1 BY MR. ROZYLOWICZ:

2 Q. Yes, please.

3 A. "Variations in tribological properties, dynamic  
4 friction and wear, and surface energies with various  
5 amounts of metal powders and curing agents were  
6 evaluated. When cured at the 30 degrees C, dynamic  
7 friction and wear decreased significantly due to phase  
8 separation reaction being favored between the  
9 fluoropolymer and epoxy. However, when cured at  
10 80 degrees C, friction and wear increased. This can be  
11 explained in terms of a crosslinking reaction favored at  
12 that temperature. There is a significant decrease in  
13 surface energies with the addition of modifiers."

14 Q. Thank you.

15 Dr. Spiegelberg, if I could turn your attention  
16 to page 1 in the upper right-hand corner. Can you  
17 identify the name of this publication?

18 A. I'm sorry. Say that again, please?

19 Q. Yeah. Can you please identify the name of this  
20 publication?

21 A. European Polymer Journal.

22 Q. This is not trade literature, right?

23 This is not a spec sheet for something that is  
24 in production; is that a fair characterization?

25 A. I don't know if it is.

1 Q. Have you --

2 A. It does -- it does say it's a commercial epoxy.

3 Q. Okay. But, for example, this is -- this is  
4 different than, for example, the spec sheet for WN0400,  
5 correct?

6 A. This is a publication. It's not a spec sheet.

7 Q. Would it be fair to characterize this as an  
8 academic journal?

9 A. Well, I don't know if I'd say it's an academic  
10 journal. It's a -- a journal.

11 Q. Okay. But does it at least imply a style  
12 similar to something that would be an academic --  
13 academic publication?

14 MR. SCHATZ: Object to form.

15 THE WITNESS: It's -- it's what I would call a  
16 peer-review journal.

17 BY MR. ROZYLOWICZ:

18 Q. Right. And thank you, Dr. Spiegelberg.

19 What are the criteria for being published in a  
20 peer-reviewed journal?

21 MR. SCHATZ: Object to form.

22 THE WITNESS: I don't know what you mean by  
23 criteria.

24 BY MR. ROZYLOWICZ:

25 Q. Well, just in general, when someone is

1 publishing in a peer-reviewed journal, what -- what  
2 merits, inclusion in something like this, what sorts of  
3 criteria?

4 MR. SCHATZ: Object to form.

5 THE WITNESS: Well, there are multiple criteria.  
6 They might include originality of research. It could be  
7 a review article, which this is considering, other  
8 previously publish information, originality of the -- the  
9 message that's being conveyed in the article. There --  
10 there are multiple reasons.

11 BY MR. ROZYLOWICZ:

12 Q. Okay. Is there -- I'll ask you -- thank you.

13 Can you please identify the three authors  
14 appearing on page 1?

15 A. Madhuri Dutta and Peter Rusek.

16 Q. And in the next three lines, can you identify  
17 which three institutions they're associated with?

18 A. Looks like the Department of Material Science  
19 and Engineering at the University of North Texas, and the  
20 College of Mechanics and Robotics at -- I'm not sure if I  
21 can pronounce that, but somewhere in Poland.

22 Q. Understood.

23 Would it be a fair characterization to say that  
24 the authors are in academia?

25 A. It looks like that way. Yes.

1 Q. So at least it has the -- at least some  
2 characteristics of an academic publication?

3 MR. SCHATZ: Object to form.

4 THE WITNESS: Well, they are academics from  
5 the -- from the -- based on their affiliations.

6 BY MR. ROZYLOWICZ:

7 Q. Okay. Is it often a criteria in academic  
8 publications that you're -- you have to demonstrate some  
9 contribution to the knowledge to -- to the -- to some  
10 field?

11 A. Well, the -- as I said, there's usually some  
12 kind of novelty or instructed -- instructed information  
13 that's usually provided in these articles, but they can  
14 be as, I mentioned, review articles, as well.

15 Q. Okay. Is there -- is there any indication that  
16 this article is a review article?

17 A. I don't know. I'd have to review it to see if  
18 that's the case.

19 Q. Okay. But there's nothing -- based on your  
20 knowledge right now, there's nothing to suggest that this  
21 is a review article?

22 A. I can't say without reviewing it.

23 Q. Have you reviewed this article?

24 A. I don't remember as we sit here today.  
25 Possibly.

1           Q. For a academic article that is providing --  
2 weighing in on some novel subject matter, is it fair to  
3 say that the abstract would be a summary of the novel  
4 contributions?

5           A. No. No. The abstract is a summary of what the  
6 article is about.

7           Q. Okay. I'll call your attention in the abstract  
8 to the sentence that begins, "When cured at 30 degrees."

9           A. Okay. I'm there.

10          Q. Okay. Can you -- can you read that again, just  
11 so we're all on the -- aligned and -- with what we're --  
12 the part we're considering. So can you read that  
13 sentence again for me, please?

14          A. Sure. "When cured at 30 degrees Celsius,  
15 dynamic friction and wear decreases -- the dynamic  
16 friction and wear decrease significantly due to the phase  
17 separation reaction being favored between the  
18 fluoropolymer and the epoxy."

19          Q. Okay. And then if you can read that -- I'm  
20 sorry. If you can please read the next sentence.

21          A. "However when cured at 80 degrees C, friction  
22 and wear increase. This can be explained in terms of a  
23 crosslinking reaction favored at that temperature."

24          Q. Does -- as defined in this abstract of those two  
25 sentences that you read, does curing temperature impact

1 dynamic friction?

2 A. According to this -- this abstract and with this  
3 specific combination of materials, yes.

4 Q. Okay. And the '854 patent, is there any  
5 discussion of curing temperature?

6 A. Not in the sections that we reviewed earlier  
7 today.

8 Q. Thank you. If I can call your attention to page  
9 6 of this article.

10 Please let me know when you get there, as I'm  
11 navigating there myself.

12 A. Okay. I'm there.

13 Q. Okay. If you can call your attention to the  
14 right column, there is a completed sentence that appears  
15 to be varied by page 6. The sentence begins "Also, on  
16 the friction."

17 Please let me know when you're -- you see there.

18 A. I'm there.

19 Q. Can you please read this sentence.

20 A. "Also friction decreased with the addition of  
21 FPEK to the epoxy during slow curing, the FPEK migrates  
22 to the free surface since the surface energy of the  
23 fluoropolymer is lower than that of the pure epoxy."

24 Q. Does the specification of the '854 patent  
25 mention slow curing?

1 A. I don't recall that it says that.

2 Q. Does it describe the effects of surface energy  
3 on a fluoropolymer?

4 A. I don't remember, as we sit here today.

5 Q. Okay. Is there anything in the '854  
6 specification that it talks about these issues?

7 A. I don't remember as we sit here today.

8 Q. Okay. Is there anything in the '854  
9 specification that acknowledges this complexity?

10 A. What complexity are you talking about?

11 Q. The impact on slow curing?

12 A. I don't remember that the '854 discusses curing  
13 rate.

14 Q. Does the -- does anything in the '854  
15 specification speak to the addition of FPEK?

16 A. I don't remember -- that -- what that. I guess  
17 I do remember the acronym stands for. I don't remember  
18 actually if it's FPEK is mentioned in that patent.

19 Q. Okay. Thank you.

20 I'll call your attention -- if we can scroll  
21 back up to page 2, please.

22 A. I'm there.

23 Q. There is a sentence on page 2, let's see if I  
24 can direct you to it in particular. Precision -- okay.  
25 There is a -- in the right column, just before section

1 2.2 there is a sentence that begins, "It has been  
2 reported."

3 A. Yep, I see that.

4 Q. If you can kindly read that for us.

5 A. "It has been reported in literature that curing  
6 temperature has a significant effect on a variety of  
7 properties especially mechanical ones. Friction, tensile  
8 bond strength, electrical resistivity, et cetera of cured  
9 epoxies."

10 Q. Okay. Is there any discussion in the '854  
11 specification on the significant effect of curing  
12 temperature?

13 A. I don't remember, as we sit here today.

14 Q. Okay. Dr. Spiegelberg, in your affidavit -- in  
15 either of your affidavits, have you weighed in -- I'm  
16 sorry.

17 Did you test the formulation of any of the  
18 materials?

19 MR. SCHATZ: Object to form.

20 THE WITNESS: Which materials are you referring  
21 to?

22 BY MR. ROZYLOWICZ:

23 Q. The four materials we cited in claim 8.

24 A. We didn't do any formulation assessment.

25 Q. Dr. Spiegelberg, one question.

1                   Did you discuss the testing methodology with  
2 Mr. Schmitt?

3           A. No.

4           Q. Did -- okay. So to confirm, Mr. Schmitt  
5 provided no direction in testing?

6           A. That's correct.

7           MR. ROZYLOWICZ: Okay. I'll pause for a quick  
8 second, but I -- hearing no input from my colleagues, I  
9 think we've concluded this portion of the deposition.

10          MR. SCHATZ: No redirect. Thank you very much  
11 for your time.

12          MR. ROZYLOWICZ: Thank you. We can be available  
13 for the court reporter, if she has any additional  
14 questions.

15          THE REPORTER: Do both sides need the rough  
16 draft?

17          MR. SCHATZ: Counsel for the witness will need  
18 just a draft -- not a rough draft, but a draft for review  
19 and signature.

20          THE REPORTER: Okay. And is normal turnaround  
21 okay?

22          MR. SCHATZ: Fine with Counsel for the witness,  
23 yes.

24          THE REPORTER: Tom, do you know normal  
25 turnaround is okay?

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1           MR. ROZYLOWICZ: Sorry. I missed that. What is  
2 normal turnaround?

3           MR. ROZYLOWICZ: We'll need expedited.

4           THE REPORTER: Do you know when?

5           MR. ROZYLOWICZ: Can we get -- what would be  
6 involved in receiving something Tuesday next week,  
7 Wednesday next week.

8           THE REPORTER: It's an expedite charge based on  
9 the how you do it.

10          MR. ROZYLOWICZ: I think we're fine with the  
11 rough draft then. That should be fine. Okay.

12          Two weeks, I mean.

13          (Whereupon proceedings concluded at 11:58 a.m.)

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I, the undersigned, STEPHEN SPIEGELBERG, Ph.D.,  
do hereby certify that I have read the foregoing  
deposition and find it to be a true and accurate  
transcription of my testimony, with the following  
corrections, if any:

[illegible]

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REPORTER'S CERTIFICATE

I, NICOLE HATLER, a Shorthand Reporter, State of California, do hereby certify:

That STEPHEN SPIEGELBERG, Ph.D., in the foregoing deposition named, was present and by me sworn as a witness in the above-entitled action at the time and place therein specified;

That said deposition was taken before me at said time and place, and was taken down in shorthand by me, a Certified Shorthand Reporter of the State of California, and was thereafter transcribed into typewriting, and that the foregoing transcript constitutes a full, true and correct report of said deposition and of the proceedings that took place;

IN WITNESS WHEREOF, I have hereunder subscribed my hand this 12th day of November 2025.



Nicole A. Hatler Texas CSR 11275  
Expiration Date: 11/30/26  
California CSR 13730, EXP 6/30/26  
New Mexico CCR 588, EXP 12/31/25  
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| <b>respective</b><br>3:6                                                   | <b>rider</b><br>126:14,16                                                                                                                                   | <b>ROZYLEWICZ</b><br>3:15                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>respond</b><br>4:12                                                     | <b>riders</b><br>110:20                                                                                                                                     | <b>ROZYLOWICZ</b><br>4:4 9:15,23 11:19<br>13:11,14,22 14:5,15<br>15:3,12,17 16:1,9,15<br>17:1,8,17 18:1,7,14,21<br>19:4,10,18 20:2,12,23<br>21:5,13,20 22:3,16,23<br>23:7,17 24:10,17 25:1,<br>10,18 26:2,10,17,24<br>27:7,16 28:1,8,19 29:2,<br>10,17,24 30:7,15,24<br>31:7,14,23 32:5,12,19<br>33:2,14,23 34:10,19<br>36:6,22 37:1,10,12<br>40:23 46:9 47:22 51:4,<br>13 53:14 54:5,13,22<br>55:7,16,24 56:7,16<br>57:1,9,16,23 58:7,15,23<br>59:5,14,24 63:24 64:7, |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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# THE SULLIVAN GROUP OF COURT REPORTERS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                               |                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>screen</b><br>77:18,22 78:1,19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>sense</b><br>6:21 67:5 91:23                                                                                                                                                                                                               | <b>shows</b><br>81:11                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>screw</b><br>97:14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>sentence</b><br>73:22 81:3 83:8 84:4,5,<br>12 85:10 86:1,22 87:8,<br>20 88:3,8,16 97:10<br>112:11,25 113:24<br>114:2,8,17 118:13<br>119:14,21 120:16 129:7<br>130:23 131:20,22 132:4<br>140:12 145:8,13,20<br>146:14,15,19 147:23<br>148:1 | <b>sic</b><br>24:19 97:22 103:1                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>scroll</b><br>147:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>sentences</b><br>88:21 117:3 145:25                                                                                                                                                                                                        | <b>side</b><br>44:15 96:25                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>separation</b><br>6:3 141:8 145:17                                                                                                                                                                                                         | <b>sides</b><br>149:15                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>services</b><br>5:11,13,14 60:13                                                                                                                                                                                                           | <b>signature</b><br>149:19                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>session</b><br>138:21 139:7                                                                                                                                                                                                                | <b>signed</b><br>75:14                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>set</b><br>38:25 40:8,9 41:3,15<br>46:6 65:14 137:21                                                                                                                                                                                       | <b>significant</b><br>141:12 148:6,11                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>sets</b><br>42:7,8                                                                                                                                                                                                                         | <b>significantly</b><br>141:7 145:16                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>sett</b><br>82:2,8,11 86:6 88:22                                                                                                                                                                                                           | <b>silver</b><br>140:18                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>setting</b><br>40:25 41:6 46:23<br>124:22                                                                                                                                                                                                  | <b>similar</b><br>142:12                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                               | <b>simply</b><br>16:16 22:7                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                               | <b>simulate</b><br>16:3 17:19 22:6                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                               | <b>simulated</b><br>14:20                                                                         |

# THE SULLIVAN GROUP OF COURT REPORTERS

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