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

ALIGN TECHNOLOGY, INC. *
*
VS. *
*
CLEARCORRECT OPERATING, *
LLC, ET AL. *

June 23, 2026

CIVIL ACTION NO. 6:24-CV-187

BEFORE THE HONORABLE ALAN D ALBRIGHT
JURY TRIAL PROCEEDINGS
Volume 2 of 7

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08:40

08:45 (Hearing begins.)

THE BAILIFF: All rise.

THE COURT: Thank you. You may be seated.

Yes, sir, Mr. Durst.

MR. DURST: Good morning, Your Honor.

THE COURT: Good morning.

MR. DURST: It's a good day in Waco.

THE COURT: Every day in Waco's good.

MR. DURST: Good. Good.

Your Honor, we have two things we think that we would request the Court's attention to this morning before we bring the jury in.

Number 1, Your Honor, is we are increasingly concerned about the defendants' compliant with the Court's MIL No. 18, which is the MIL that appropriately prohibits product-to-product comparison for purposes of analyzing infringement.

We have not objected so far, Your Honor, but we anticipate this may be an issue today.

And the purpose of my remarks this morning is --

THE COURT: With what --

MR. DURST: Pardon? We're putting on our infringement witness this morning, Your Honor,

Dr. Reitman.

And so this is really nothing other than a heads-up that we may be on our feet for the first time objecting this morning if defendants do that.

THE COURT: Okay.

MR. DURST: The other, Your Honor, is, as your staff knows, your team knows, we have briefed an issue with respect to exhibits that are going to be used in our second witness this morning, Your Honor. And we think there's a possibility that witness will be reached before the break. So --

THE COURT: The damages witness?

MR. DURST: Yes, Your Honor.

THE COURT: Okay. And this has to do with the apportionment issue?

MR. DURST: This is a -- Mr. Nash is going to handle this, Your Honor.

MR. NASH: Yes, Your Honor. It's not actually apportionment issue. This relates to the scanner sales. So we've heard about the materials patents and the scanner patents. This is related to scanner sales data.

The expert relied on this in the context of Georgia-Pacific Factor 6 in his report. As part of the overall Book of Wisdom, this would have been at the

table and would have been considered as part of his analysis in arriving at a reasonable royalty rate. He does not opine on any incremental difference in damage -- or damage associated with the scanners.

And I believe they're arguing both relevance and prejudicial, Your Honor. And I have responses on both if you'd like to hear them.

THE COURT: I thought maybe I could hear their objection first.

MR. NASH: Yeah, yeah.

THE COURT: Maybe I'll understand what it is.

MR. MUELLER: Yes, Your Honor. Mr. Hirsch will address the damages issue.

I would like, Your Honor, if I could have just a minute after that, to discuss this product-versus-product issue.

THE COURT: I'll -- I can deal with the product-versus-product issue on -- if you're crossing there. I'm not worried about that.

MR. MUELLER: Understood.

The only other thing I was just going to note is Dr. Li, as just one example of many yesterday, literally said on direct examination that the same material was used in Zendura FLX as SmartTrack, their

product. They elicited a product-to-product comparison at the material level with Dr. Li, and it wasn't right. And we do plan to rebut that.

THE COURT: Okay.

MR. HIRSCH: Good morning, Your Honor. Jordan Hirsch for ClearCorrect.

The issue that we raised in our objection, Your Honor, is that the damages expert Mr. Lasinski has not put forth any damages number for the '936 patent, for the scanner patent.

THE COURT: That was my understanding that the problem was.

MR. HIRSCH: There's no number. There's no royalty rate. There's no apportionment. There's no final number. There's no analysis with respect to the scanner patent or any of the revenues associated with the accused products as to any of the Georgia-Pacific factors or what the result of a Georgia-Pacific analysis would be with respect to that patent.

So our concern is twofold.

First, that with no number, no apportionment, no rate, just eliciting the bottom-line revenues, accused revenues, would be improper. There's nothing for the jury to do with that number. There's been no analysis or explanation as to how that could

possibly transform into a number.

And then second, Mr. Lasinski has said in his report and Align repeated it in their briefing last night, that he says: I don't have sufficient information to provide a number.

And we don't want that being elicited in front of the jury because we obviously dispute that. That would have been a discovery dispute. There was no such discovery dispute raised, and we don't believe that it would be proper to create the impression, the incorrect impression, that we somehow did not provide the information they asked for.

THE COURT: This relates only to the scanner?

MR. HIRSCH: Correct. The '936, that's right.

THE COURT: Say the patent again.

MR. HIRSCH: '936.

THE COURT: Okay. I'll hear -- I'll hear a response.

MR. HIRSCH: Thank you, Your Honor.

MR. NASH: First, Your Honor, I believe you already addressed this exact same issue in the context of their motion for summary judgment, Docket Item 359, which was their MSJ on -- of no damages on

the scanner patent. That was denied.

THE COURT: Well, maybe it should have been a Daubert. Because what I'm hearing is that your expert didn't in his report have a number that he was going to give. He didn't perform apportionment, and he didn't have a final number for the -- of what the damages would be.

Is that -- am I misunderstanding it, or is that wrong?

MR. NASH: If I may clarify that, Your Honor. He didn't opine on an incremental difference in the damages award that he was awarding. He did not specifically opine on a scanner-based damage number. He did opine on how the scanner sales factor into his hypothetical negotiation analysis. I've got those exact paragraph cites from his expert report.

THE COURT: Well, let's assume for a second --

MR. NASH: Yes.

THE COURT: -- the '936 is the only patent in the case, and I look at his report. Where do I find out how much he tells the jury that the parties would have agreed to as a reasonable royalty?

MR. NASH: Well, Your Honor, I think, if I may, it's well-settled Federal Circuit law that a

party need not present expert testimony on damages or every aspect of damages, such as a single royalty rate.

THE COURT: I get the feeling that the answer is you don't -- he doesn't have an answer.

MR. NASH: It is relevant to -- you're right, Your Honor. Let me answer your question first.

He does not have a specific number for a hypothetical royalty rate associated with scanners.

THE COURT: With regard to the '936 patent?

MR. NASH: That's right. But --

THE COURT: And are you going to be asking the jury for a damage amount for the '936 patent individually? I mean, is --

MR. NASH: No, Your Honor.

THE COURT: Okay. Is the damage amount going to be for all of the patents as one?

MR. NASH: The damage amount is associated with the materials patents that we will be asking for. The jury is permitted to arrive at a damage number on scanners if they wanted to even without expert supporting testimony.

THE COURT: Where -- how would they do that? I mean, what -- what part of the verdict form would that be on?

MR. NASH: You're right, Your Honor. There is not a -- there's not a specific request on that. But --

THE COURT: So --

MR. NASH: Yes, Your Honor.

THE COURT: So is the '936 asserted as a patent?

MR. NASH: It is asserted as a patent, and there have been accused sales which --

THE COURT: Okay. And how does the jury determine what -- let's do a hypothetical. I grant a Rule 50 on the other patents. The only patent that survives is the '936.

What damages testimony has your expert given as to what the damages would be that the parties would have agreed to, the reasonable royalty rate, for the '936 patent?

It's your only patent left. What do they do?

MR. NASH: They would have the sales information, and they would --

THE COURT: I got that. And I think you know that I have under Daubert stricken probably at least a half dozen cases where they say they have the sales information but the expert didn't go through and

perform a reasonable royalty analysis.

I've never allowed that to go to a jury. I've given parties an opportunity to start over and fix it, but I've never allowed that to go past the pretrial conference stage that I'm aware of. So what do you have besides the sales information on the '936?

MR. NASH: We do not have a specific number associated with the scanner patent, Your Honor.

THE COURT: And this is not a lost profits case, right?

MR. NASH: It is not a lost profits case, but, if I may --

THE COURT: Uh-huh.

MR. NASH: -- Georgia-Pacific Factor 6 allows the parties to consider derivative sales in the context of the hypothetical negotiation, and derivative sales would include other products including things like the scanners. So that would be what would be at the table when they're making their royalty rate determinations. So it is relevant to that, and that is part of his analysis.

THE COURT: It's part of his analysis to what end? I mean, where does -- where does the information impact what the amount of damages would be?

MR. NASH: I'm sorry, Your Honor. I

didn't hear the question.

THE COURT: So we've agreed that he did not do an independent -- by "independent," I mean only for '936 -- analysis, and all you have is the sales numbers. And so how does -- what number does it impact?

MR. NASH: It impacts how the parties would have negotiated that reasonable royalty rate. So when they're sitting at the table, because of the ability to sell aligners that are made out of the patented device, they would also be aware of how that affects their ability to sell other things too.

And because of those other things too, like whether it's convoyed sales or derivative sales or accessories, things like that get factored into where they would arrive at on a reasonable royalty rate.

THE COURT: For what patent?

MR. NASH: So for the materials patents, as they sat down to negotiate a rate on that, because it's a patented product and there would be what they call derivative sales, they would be discussing that and be aware of those type of additional derivative sales.

And that would affect -- you know, all the Georgia-Pacific factors are a balancing and whether

this would increase a rate a little bit or decrease the rate a little bit. And so the fact that there would be available additional sales in that context is relevant to which way --

THE COURT: Which factor would that go to?

MR. NASH: Georgia-Pacific Factor 6, Your Honor. I have his section of the report, if you'd like to see it.

THE COURT: A response?

MR. HIRSCH: Okay. Your Honor, I think what Align is suggesting is that for -- a patent for which they have no damages number should be relevant to patents for which they do have a damages number.

THE COURT: Well, I get -- I think for the moment -- in my head; maybe I'm making a mistake here -- the path I see coming is that the jury's not going to be asked how much to give on the '936 patent because I'm not going to include that on the verdict form if they haven't adequately provided the damages. So setting -- that's my current thinking.

But if we leave out the '936 patent in terms of -- and all that we have are the amount of sales of the scanners and there might have been convoyed or might not have been convoyed sales, and

that goes to Factor No. 6 or some other factor that impacts what the parties would have agreed to on damages with respect to the other patents but without mention of the '936 patent, is that or is that not something that they would be able to -- that the jury should get to hear the damages person say, when I came up with the right number for the materials patents, this was -- I'm not giving them any extra money for these, but it's something that I took into consideration, and in the mystical, magical, fictional world of damages that we're forced to live in, I get to say that it would have weighed in favor of the plaintiff.

MR. HIRSCH: Yeah. I would -- thank you, Your Honor. I would say two things.

Number one, I don't think that Mr. Lasinski has provided that specific opinion, that the -- the bottom-line revenues. What he says in Georgia-Pacific 6 is the ability to offer customers products such as scanners would be relevant. And then he says the extent of sales would be relevant. So he considers that.

He never says, hey. Here's the revenues and this has this or that effect on the royalty. He just says very, very -- it's two sentences. Very

broadly, hey --

THE COURT: Does he articulate -- I'm sorry to interrupt you. Does he articulate an underlying reason for that? I mean, the -- you know, sometimes -- I'm always put in this position -- the judge is always put in the position where the expert wants to say, well, you know, it's because I'm an expert. You know, I mean, I know that's how that truck would work because I've repaired a thousand trucks and I'm an expert, you just got to trust me.

Does he do anything beyond, say, what you're saying he's going to say?

MR. HIRSCH: No. This is Paragraph 140 of his report. He says in the last two sentences: Align's ability to sell aligners made out of its patented SmartTrack material -- and I can show this to Your Honor if it would be easier -- allows it to offer to its customers other products such as intraoral scanners and associated peripherals as well as scanner-enabled Ortho restorative workflow services. The extent of such derivative sales is substantial for both Align and ClearCorrect -- by the way, it's talking about Align scanners, not even ours -- i.e., they represent a significant share of each company's annual revenues.

09:00 And then he says, summarizing his
09:00 conclusion of Factor 6: I consider this factor to
09:00 favor the negotiation posture of the hypothetical
09:00 licensor. And then --
09:00 THE COURT: But does he -- I'm sorry.
09:00 Does he articulate either why or how -- I mean, there's
09:00 a -- there's an aspect of it where it's, well, people
09:00 will buy more of these because -- at McDonald's because
09:00 they also offer fountain sodas, and he says, well, I
09:00 know that because I'm an expert.
09:00 But also, does he quantify in any way --
09:00 MR. HIRSCH: No.
09:01 THE COURT: -- because McDonald's has
09:01 fountain sodas, that means someone would have paid this
09:01 much more for an automatic hamburger machine?
09:01 MR. HIRSCH: No, Your Honor. It's one --
09:01 the entirety of Georgia-Pacific 6 is one paragraph. I
09:01 read the two sentences that relate to the scanners.
09:01 And in any event, Your Honor, that's
09:01 referring to Align's sales of its scanners, not even
09:01 our scanners, other than that one comment that says:
09:01 Derivative sales is substantial for both Align and
09:01 ClearCorrect. That's it.
09:01 THE COURT: And then let me ask you my
09:01 final question for you, which is the refuge to which

judges all cling, which is why shouldn't I say that's fine? Why don't you just handle it -- that on cross?

MR. HIRSCH: Sure. Because the '936 is an asserted patent and because they're accusing scanners, lobbing out the revenue numbers for that patent --

THE COURT: So really what you don't want the jury to hear is the revenue number for the scanners.

MR. HIRSCH: Correct. Correct. Because there's been no damages analysis. So that number should not come out.

And in addition, Your Honor, again, I also want to make sure that Mr. Lasinski doesn't say that the reason why he doesn't have a number is because he didn't have sufficient information.

THE COURT: I get that.

MR. HIRSCH: Thank you, Your Honor.

THE COURT: Mr. Nash?

MR. NASH: Your Honor, I think you put your finger on exactly what I think is their resolution here, which is opposing counsel's free to cross the expert and say expressly, you do not have a damages number specifically associated with the '936. So I think that takes care of that issue.

09:02 The expert will be explaining how he has
09:02 used these scanners' sales data. It says more than
09:02 just what counsel was reading, which is:
09:02 ClearCorrect's ability to sell aligners made out of the
09:02 accused material allows it to offer a product with
09:02 highly desirable properties and attributes which opens
09:03 the door for it into the doctors' practices. Once in
09:03 front of potential or existing customers, ClearCorrect
09:03 representatives are able to offer a suite of products.
09:03 And that is indeed a Georgia-Pacific
09:03 Factor 6. Often in the Georgia-Pacific factors, you're
09:03 not quantifying specific things. You're just weighing
09:03 whether they exist or not and how that affects the
09:03 royalty rate, like positive or negative.
09:03 And in this case, it would be a positive
09:03 thing that they would want to be able to offer this
09:03 license. And so these are the things.
09:03 THE COURT: I was trying to keep up with
09:03 what counsel read to me from his report. Does he
09:03 articulate in there the amount of the sales and why
09:03 that would impact? Does he articulate that in his
09:03 report?
09:03 MR. NASH: He does cite to those sales,
09:03 and he has a schedule of those sales. And he says that
09:03 because they're not insubstantial, that would be a

positive factor in favor of the reasonable royalty rate calculation.

And that's -- that's the weighing that you do often, like, in the context of, say, like a transfer analysis, this, like, motion to transfer. It's like this factor says slightly in favor, slightly below.

And, Your Honor, as to the prejudicial effect of the sales revenue here, we're talking about a very small amount relative to the amounts that we'll already be discussing. So --

THE COURT: Since I haven't heard the number, I guess it's the new methodology that no one says what the number is, keeping us all in suspense. What am I going to hear your expert say a reasonable royalty for the three materials patents is going to total?

MR. NASH: For the materials patents, Your Honor? What's the ultimate damage calculation?

THE COURT: Uh-huh.

MR. NASH: $73 million.

THE COURT: Okay.

MR. NASH: I think that was in the opening.

THE COURT: Okay. And --

09:04 MR. NASH: And that was based off -- I'm sorry, Your Honor. I didn't mean to interrupt.

09:04 THE COURT: And what is the amount of the sales of the scanners?

09:04 MR. NASH: Okay. So to give context, I think it's helpful to know that the reasonable royalty amount that you just wrote down is off of a base of 166 million plus 170 million.

09:05 So that's how you arrive at that. It's like hundreds of millions of dollars. That's the total sales revenue for materials-related damages. The total scanner-related sales that he noted in his report is 4.5.

09:05 THE COURT: $4.5 million.

09:05 MR. NASH: Yeah. And that's the total gross sales, I believe. I'd have to look at his schedule specifically.

09:05 So I don't think there's any prejudicial effect. We're not talking about like in the context of this case that they cite, which is LaserDynamics, that's an entire market value. That's when you have a situation where the accused product is like the semiconductor chip, but you're accusing sales of laptops. And so it'd be prejudicial to bring in, like, the laptop sales, since you have an EMD that is much

smaller than that, right -- or sorry -- a small salable unit that's much smaller than that.

Here, it's the opposite. We're not talking about big huge numbers that would be coming in that would somehow sway the jury that there should be a larger damage amount.

We're talking about 160 million, 170 million. And then we're saying, oh, by the way, the fact that they can sell scanners too, which are admittedly of a much smaller degree and much smaller scale, would somehow -- would indeed be a factor that you would consider in thinking through the reasonable royalty for those materials.

THE COURT: Anything else from...

MR. HIRSCH: Your Honor, again, I think that the issue is if Mr. Lasinski wants to say there's some peripheral sales, as he says in Paragraph 140, he can refer to that concept.

But that's different than launching out an accused revenue base where there is an asserted patent that targets that revenue base and he has no number. It's just inviting the jury to increase damages based on the '936 where there's been no damages analysis.

THE COURT: Let me see if I hear you

09:07 correctly, which is you would not object to the damages
09:07 expert being able to say there were some peripheral
09:07 sales on scanners without giving an amount.
09:07 MR. HIRSCH: I think that's --
09:07 THE COURT: And that those -- he
09:07 considered those, and they weigh in favor of the amount
09:07 that -- of the amount, the total he came up with, which
09:07 is 73 million.
09:07 MR. HIRSCH: For the materials patents, I
09:07 think that's fine. That's consistent with his report.
09:07 THE COURT: That's -- that's what I'll
09:07 allow the damages expert to say.
09:07 MR. HIRSCH: Thank you, Your Honor.
09:07 THE COURT: Without -- he will not be
09:07 allowed to say the amount of sales or -- and he will
09:07 not be allowed to mention the '936 patent.
09:07 MR. HIRSCH: Thank you, Your Honor.
09:07 And also, with respect to why he does not
09:07 have a number that -- I want to just clarity so we
09:07 don't jump up --
09:07 THE COURT: I can't imagine -- since I'm
09:07 not going to submit a number -- I'm not going to submit
09:07 a question on the '936, I can't imagine counsel as good
09:07 as the plaintiff's counsel would want to ask why there
09:08 is or is not a number for a patent that's not going to

be -- they're not going to be asked about.

MR. HIRSCH: Thank you. Thank you, Your Honor. Appreciate it.

And, Your Honor, just to be clear, if we on cross simply establish that there is no number --

THE COURT: I can't imagine why you would do that for fear of opening the door.

MR. HIRSCH: Understood. Thank you, Your Honor.

THE COURT: So.

Anything else?

MR. NASH: On that last point, Your Honor, I mean, the expert's report does say if, like I didn't arrive at a number, I didn't have reliable data, or I didn't have sufficient data is how he says it, and that's -- that would be the door that would be opened if -- if it were to go that direction. I'm just saying --

THE COURT: If they -- if they --

MR. NASH: He will not be talking about a discovery dispute in the context of that. I'm just wanting to be very clear.

THE COURT: I think I articulated what he's allowed to say about --

MR. NASH: I understand, Your Honor.

THE COURT: -- about the scanner. He's able to say that there were sales of scanner products that were related or derivative. And when he is doing the magic and voodoo that they do, it came out in favor of the number -- that the fact that there were sales of scanners is a plus factor for supporting that the right number's $73 million.

MR. NASH: I understand. Thank you so much, Your Honor.

THE COURT: And without articulating a number of sales.

MR. MUELLER: Just one housekeeping thing, Your Honor. We would respectfully request if we could just reserve Rule 50 until the end of the evidence as opposed to doing any sort of argument when the plaintiff rests.

THE COURT: I don't understand why we would do that from your perspective. I don't understand why you would not want to have a Rule 50 motion at the end of their case-in-chief.

Is that what you're asking?

MR. MUELLER: We're happy to do it, Your Honor. We're ready to do it. It's just a question of if Your Honor has the time to do a break in the action and do it at that point. We're happy to do it then.

09:10 THE COURT: I have learned -- in fact, I sent Judge Wolfe a note yesterday about just that, which is, it's much easier on me to do what you suggest, and I find that I always get bitten in an unfortunate place when I do that.

And so I've learned to just break and do the Rule 50 motion so that I don't have problems afterwards.

MR. MUELLER: That's great by us, Your Honor. Thank you very much.

THE COURT: Anything else?

MR. MUELLER: Nothing from defendants.

THE COURT: So are we ready to go?

MR. DURST: We are ready to proceed, Your Honor.

THE BAILIFF: All rise.

09:11 (Pause in proceedings.)

09:12 THE BAILIFF: All rise.

THE COURT: Please remain standing for the jury.

09:12 (Jury entered the courtroom.)

THE COURT: Thank you. You may be seated.

MR. HUNG: Your Honor, may I proceed?

THE COURT: Please.

09:12 MR. HUNG: We'd like to call Dr. Maureen
09:13 Reitman to the stand.
09:13 (The witness was sworn.)
09:13 DIRECT EXAMINATION
09:13 BY MR. HUNG:
09:13 Q. Good morning, Dr. Reitman.
09:13 A. Good morning.
09:13 Q. Can you please introduce yourself to the jury?
09:13 A. Yes. Good morning. My name is Dr. Maureen
09:14 Reitman. I'm a materials scientist. I'm a principal
09:14 engineer and a group vice president for polymers,
09:14 chemistry, biomedical engineering, and health sciences
09:14 at a company called Exponent, which is a science and
09:14 engineering consulting firm.
09:14 Q. How long have you worked with polymers?
09:14 A. Over 30 years. Since college.
09:14 Q. Where'd you go to school?
09:14 A. I went to MIT. I did my undergraduate degree
09:14 there and then continued for my doctoral degree, both
09:14 in material science focused on plastics.
09:14 Q. What did you do after MIT?
09:14 A. I went to work for the 3M Company down in
09:14 Austin actually, working first in technology
09:14 development and using 3M technologies in films, dental
09:14 materials, dental plastics, other healthcare materials,

and then ultimately moving into product development. So commercialization using those kinds of materials and materials technologies.

Q. Did you receive any patents at 3M?

A. I did. I hold three patents including for a new material.

Q. Dr. Reitman, do you still live in Austin?

A. No. I met my husband while he was at UT. He was a Marine working on becoming a diplomat for the U.S. And when he got the assignment to go to Kuwait, I went with him and moved there and then eventually moved back to Washington, D.C.

Q. How did you come to work for Exponent?

A. When I went to Washington, D.C., I called up some friends from school and said I'm looking for a job back in the U.S. And they suggested consulting at Exponent, and that's what I've been doing ever since.

Q. At a very high level, what do you do for Exponent?

A. I answer questions about plastics. So I do consulting work. I help -- people have questions about performance, sometimes companies, sometimes companies in the context of disputes.

But I also have management responsibilities, so I help to develop our team and to manage our

research investments.

Q. Have you received any professional recognition for your work?

A. Yes. On numerous occasions. Probably the two most relevant are that I am a Fellow of the Society of Plastics Engineers primarily for my work related to medical plastics. And I have also been elected to the National Academy of Engineering, which is something I'm really proud of.

MR. HUNG: Your Honor, we offer Dr. Reitman as an expert in polymer science and engineering.

MR. MUELLER: No objection, Your Honor.

THE COURT: Admitted.

BY MR. HUNG:

Q. Dr. Reitman, at a high level, what have you been asked to do in this case?

A. I was asked to look at the materials patents and to look at the Zendura FLX material and aligners made from them to see if they infringe those patents.

And I was also asked to respond to certain things raised by Dr. Spiegelberg.

Q. What did you look at to arrive at your opinions?

A. I looked at the patents, of course, including

the prosecution history.

Because these are materials issues, I also looked at materials technical data sheets, which are public documents, and I looked at the company documents, the internal documents provided by the two parties in this dispute.

Q. Did you do any testing?

A. I did also do testing to confirm some of the information that was in the documents.

Q. When you did your testing, which standards did you apply, or standard?

A. I used standards from ASTM, which is one of the standards organization that used to stand for the American Society for Testing and Materials. And these are just methods that we use so we can get comparable information.

Q. Dr. Reitman, have you prepared slides today, demonstratives?

A. Yes. I have.

Q. Okay. I'll publish them.

While we're waiting, Dr. Reitman, right in front of you are two physical exhibits, PTX-1795 and 1796. And then also PTX-129 in your binder.

Can you pull those out and see if you recognize those?

A. Yes. One is the Zendura FLX material. So this is the packaged item from Bay Materials. If you open it up, it has the discs, the plastic inside. There are ten in this package.

And then the other is aligners, ClearCorrect aligners, which have been made from the disc, the Zendura FLX. So the individual aligners are also up here.

Q. And what about Exhibit PX -- PTX-129 in your binder?

A. I've added the web page I believe -- or no. That's the picture. No. That's the web page.

MR. HUNG: I offer those three, Mr. Mueller.

MR. MUELLER: No objection, Your Honor.

THE COURT: Admitted.

BY MR. HUNG:

Q. All right. Just for the jury's benefit, hold up that first exhibit again so they can see it.

Okay. And what do you use that for?

A. So this plastic disc is a multi-layer plastic that you can heat up. And when it softens, you can shape it over a mold into the form of the aligner. So this is what you make the aligner out of.

Q. Is it hard to make a multi-layer aligner

like -- material like Zendura FLX?

A. Just having multi-layers is not hard to make. This is sort of the standard technology for making -- this is one of the things we do in plastics, is we can make multi-layer films.

Q. Have you heard of something called contract or toll manufacturers?

A. Yes. There are companies that specialize on -- specialize in making multi-layer films. You just tell them what kinds of materials you want to use, and they make film for you.

Q. All right. Let's go to our first -- okay. Let's go to our first exhibit, PTX-129.

What is this showing?

A. This is the web page information, and it's for the Zendura FLX. And it tells you that it is a three-layer material. It also tells you that the three-layer material has an elastomeric inner core and that the outsides are hard. It's a hard outer shell. So two types of materials in three layers.

Q. Okay. Dr. Reitman, let's go to -- I didn't -- I should have mentioned this roadmap.

Can you tell the jury about this roadmap? What are we going to talk about today?

A. Well, we're going to talk about quite a few

things. So the idea is to tell you what's coming. There are six topics all together. Looks like we're on Topic 2.

Q. Okay. The material properties of the patents. Let's talk about the patents. All of these have been admitted.

Can you just remind the jury of the asserted claims?

A. Yes. There are 11 asserted claims. So the '613, '384, '090, and '091 patents. You can see the claims on the bottom there.

Q. To infringe these patents, does -- do the defendants have to infringe all of these?

A. No. Only one. You only have to infringe one of them to infringe.

Q. At the highest level, what do these patents describe?

A. They describe a multi-layer film, a three-layer, at least, film made out of two materials, that if you select the materials according to the disclosure, you'll get aligners that have beneficial and improved properties compared to what was available at the time of the invention.

Q. Have you heard of something called related patents?

09:22 A. Yes.
09:22 Q. How are these patents related?
09:22 A. So all of these patents, they stem from the same 2012 application. So that's the comparison time. They're all related. They have the same specification. So that's the same teachings about the invention.
09:22 Q. Does that mean if I look in the patents, there's this whole section that is verbatim, word for word the same?
09:22 A. Yes. If you look at the patent, the front page will be a little different. The middle sections will be word for word the same. That's the specification. And at the end, the claims will be different because the claims are specific to each patent. But the things that are being taught in the middle, that's all the same.
09:23 Q. And what do those -- what date do those go back to?
09:23 A. That's -- goes back to the 2012 application.
09:23 Q. We're going to be hearing a lot about TPU elastomers and copolyesters. So let's get those out of the way. What are those?
09:23 A. A TPU elastomer is a plastic that is soft. So elastomers, stretchy. TPU stands for thermoplastic polyurethane. The polyurethane tells you about the

chemistry. Thermoplastic means you can melt it.

The TPU elastomers have -- they're a particular type of material. If you ever had like a CamelBak water bladder, that soft material, that's a TPU elastomer.

The copolyester is a different chemistry. So polyester instead of polyurethane. That gives it different properties. That's the idea in material science.

So the copolyester is actually a harder material. Based on its chemistry, it gives you different properties, and it's used for things like harder containers, even regular water bottles.

Q. That CamelBak water bottle, what is that made of actually, specifically, like copolyester?

A. CamelBak actually uses Tritan copolyester specifically for the hard water bottles.

Q. How did you -- what are the benefits of this invention that we're looking at on the screen, these patents?

A. Well, the benefits are aligners with improved properties, like the ability to continue to provide that gentle continuous force for teeth positioning, but also comfort and durability, so the ability to flex, to pop onto the teeth, to form to the teeth while -- so

09:24 1 the performance things that lead to aligners are made
09:25 2 possible by the materials you choose, and that's what
09:25 3 this patent -- these patents are about.
09:25 4 Q. Okay. Again, high level, how did you
09:25 5 determine whether Zendura FLX, the sheet or the
09:25 6 aligners, satisfied the claim requirements of these
09:25 7 various claims?
09:25 8 A. I looked at the claims specifically. I broke
09:25 9 them down into their parts. And then I looked at the
09:25 10 Zendura FLX and the aligners made from them and just
09:25 11 did a direct comparison.
09:25 12 Q. Okay. Let's -- now, we're going to be hearing
09:25 13 lots of these terms, and we'll be finding these terms
09:25 14 in the patent. And we'll be finding these terms in
09:25 15 Zendura FLX. But I'm hoping at a very high level, you
09:25 16 can walk the jury through these terms that they'll be
09:25 17 hearing over and over again.
09:25 18 So let's start with material. What is that?
09:25 19 A. That's just what kind of plastic is it?
09:25 20 Q. What about flexural modulus?
09:25 21 A. That is basically when you bend something, how
09:26 22 hard is it to do that, so the resistance to bending.
09:26 23 Q. Hardness?
09:26 24 A. This kind of hardness is basically when you
09:26 25 poke at it with an indenter, so how hard is it when you

09:26 measure it. The device we use for one of the tests is on the far right.

Q. Now, all these tensile terms, such as stretching, pulling, can you explain these five in bulk?

A. So they're all from the same test, which is shown on the right. You basically grab the material and pull it apart.

And I'm looking at, you know, how hard is it to pull it apart, how much can I move it -- that's elongation -- how much force do I have to apply to move it. And then I measure that at two points, at yield, which is when the material gives, and at break, which is when it breaks.

Q. We've heard a little bit about this one, stress relaxation.

A. This is just when you take plastic and you apply a force to it, and then you measure over time how much does it push back.

So we're doing it in a wet environment for 24 hours. So when you first push on it, it resists, and then you're measuring how much it gives up.

Q. Of the 11 claims in this case, across these four patents, is there any dispute as to many of these limitations, all of these limitations?

09:27 A. No. Most of them are agreed. There's no dispute that I'm aware of.

09:27 Q. All right. Now, I want to jump to the end because -- and I apologize. Now we're going to be walking through patents which have all these numbers, and Zendura FLX, which has all these numbers. And I just want you to lay out your opinions now so they can understand them, okay?

09:27 And can you focus on the '613 patent, Claim 1, and tell the jury your opinion as to why Zendura FLX infringes? And let's just pick Claim 1.

09:28 A. Okay. So this is Claim 1 of the '613, and it's telling you that it's a method of making the appliances. So that's the ClearCorrect aligners. That -- if you jump to the bottom, it tells you that you're thermoforming the sheet over a positive model. So we know that they're made by thermoforming.

09:28 The model of the patient's teeth, that's how it's made. And all of this is related to having a sheet made of three layers where there are two polymers.

09:28 So what I did is I looked at the Zendura FLX, which is the material, the sheet, and it has three layers. The layers have to have one layer that's hard. And the layers have to have one layer that's soft. And

09:28 1 that's in the Zendura FLX.
09:28 2 The hard layer, though, specifically has to be
09:28 3 a copolyester with a flexural modulus greater than
09:28 4 about 150,000 PSI. The hard layer in Zendura FLX is a
09:29 5 copolyester, and it has a modulus higher than that
09:29 6 number.
09:29 7 The soft layer has to be a TPU elastomer.
09:29 8 That's that flexible material we talked about. And it
09:29 9 has to have an elongation at break greater than about
09:29 10 200 percent, and it has to have a hardness in a certain
09:29 11 range, between 60A and about 85D.
09:29 12 The soft layer of Zendura FLX is a TPU
09:29 13 elastomer. It does elongate more than 200 percent
09:29 14 before it breaks, and the hardness is in that range.
09:29 15 So my opinion is that Zendura FLX and the
09:29 16 aligners made from Zendura FLX meet every one of the
09:29 17 requirements in this claim and therefore infringe.
09:29 18 Q. Which limitation, if any, in this claim is
09:29 19 disputed in this case?
09:29 20 A. I think it's just about the elongation of the
09:30 21 TPU elastomer.
09:30 22 Q. And we're going to look at all these material
09:30 23 properties later, lots more that other claims add.
09:30 24 Which of those properties are disputed in this
09:30 25 case?

09:30 A. I think the only property that's disputed is
09:30 the TPU elastomer elongation, and in one of -- some of
09:30 the claims, there's a requirement about is it by
09:30 itself?
09:30 Q. But not all?
09:30 A. No. Not all of them. Just some.
09:30 Q. Hoping to dispel this issue just now to get it
09:30 out of the way.
09:30 Does this patent cover soft-hard-soft?
09:30 A. Yes.
09:30 Q. Does this patent cover hard-soft-hard?
09:30 A. Yes.
09:30 Q. Can you explain why this patent also covers
09:30 hard-soft-hard?
09:30 A. This patent, you're making the appliances, but
09:30 we focus on the material. The material has to be three
09:30 layers, and it has to have two types of materials. So
09:30 hard and soft materials. And then the third one you
09:30 get to pick. So it can be hard-soft-hard or
09:31 soft-hard-soft.
09:31 Q. All right. Dr. Reitman, now let's go into the
09:31 claims. Let's fill in these material properties. You
09:31 saw the materials. Let's fill in the values relatively
09:31 quickly. We'll pick them out. In truth, many of them
09:31 don't matter because they're not disputed. Let's fill

that in, okay?

We looked at Claim 1 already. And let's just go past this because you talked about this.

And can you explain this reference table and how it relates to what we just looked at?

A. Yes. So I put things together to make it easier for you to do this assessment too. On the left-hand side is the list of things you have to know about. There's two columns, one for the hard layer, one for the soft lawyer. And then I'm filling in the requirements from the patent.

So in this one, the yellow, the hard has to be copolyester. The soft has to be TPU elastomer. The flex modulus has to be greater than 150,000 PSI. For the soft layer, the hardness and elongation are there. And then at the bottom, you can see that we have to have three or more layers in the plastic, and it has to be thermoformed. So this is the basic setup, and we're going to build on that and do the comparison.

Q. Okay. That was '613, Claim 1. That's the first materials patent. Let's look at the other three dependent claims, 12, 13, and 14.

What do those add to that reference sheet?

A. In terms of the material properties, nothing. This just tells you about the layer selection and

order.

Q. All right. Now let's go to the second patent, the '384 patent. What is this second patent adding to that reference sheet, if anything?

A. So this is about the appliances themselves instead of the method. But in terms of what you need from the materials to meet this, there's no additional information.

Q. All right. Now let's look at the '090, Claims 1, 3, and 10. And let's walk -- let's walk through these. Okay?

Which materials does the '090 add to the reference data sheet?

A. So this is back to being the method of making the aligners. And for the multi-layer sheet, it's three -- three layers where the first layer is still the copolyester with what we already had, but now we're adding elongation at yield of greater than 4 percent, tensile modulus greater than about 150,000 PSI, tensile strength at yield of 4,000 to 6,500 PSI, and elongation at break of greater than 70 percent.

So that's for the hard layer or for the first layer that's the copolyester.

The second one, the TPU elastomer, we're adding that it needs to have a ultimate tensile

strength of greater than 5,000 PSI.

We're also learning that the copolyester has to have an elastic modulus greater than that of the TPU elastomer. But other than that, it's basically the same kind of information.

So, again, you have a mold you're thermoforming, and in this case, you're trimming the excess after molding.

Q. All right. Can we look at our reference table, and can you fill this in now? Or tell us what you did.

A. So the things that are in yellow are the things that we just talked about that weren't in the first -- in the table already.

So you can see we're building out the table. These are the things you need to know in order to do the analysis.

Q. All right. Now, the two dependent claims for the '090, Claims 3 and 10, what do these add to our reference table, if anything?

A. The main thing is -- so in 3, you're getting that it's a copolyester for the third layer. And for 10, you're finding out that you need the copolyester to have a stress relaxation at 24 hours in a wet environment that is greater than 10 percent.

09:35 Q. And what have we done now to the reference table?

09:35 A. So I added that for the hard layer in the table.

09:35 Q. And finally our last patent, the '091, Claims 1, 10, and 11. What are these adding to our reference table, if anything?

09:35 A. This is back to being the sheet and appliances, but it doesn't introduce any additional requirements. So the table does not change.

09:35 Q. All right. Let's continue on to our proof of infringement. And let's talk about documents first. Okay?

09:35 And looking at -- oh, I'm sorry. Give me one second.

09:35 Okay. What are we seeing in this -- actually, I need to move to admit.

09:36 MR. HUNG: So let me list the number. It's in the next tab, Mr. Mueller. PTX-129, 1666, 1676, 344, 395, 404, 077, 050, 1769, 378, and 795, all PTX.

09:36 I can ask her what they are.

09:36 MR. MUELLER: Yeah, I would.

09:36 BY MR. HUNG:

09:36 Q. What are those, ma'am?

A. These are pictures and data sheets and other information I used in my analysis.

MR. MUELLER: No objection, Your Honor.

THE COURT: They're admitted.

BY MR. HUNG:

Q. All right. Let's look at this first one. I apologize for putting it on the page a little bit early.

What are we looking at in PTX-1666?

A. So to see if I have a multi-layer film, I took the film and I cut it to look at the edges. But of course it's small, so I looked under a microscope.

This picture is from under the microscope. In the top, you can see the slice, and you can see three layers.

If you follow the blue box down, that's the zoomed-in picture and there are three layers. I put this in epoxy so I could hold it, but basically there are three layers. They're all lined up together, the hard copolyester, the soft TPU elastomer, and then again the hard copolyester that make up the Zendura FLX.

Q. Now, PTX-1676, what is this showing?

A. This is when the Zendura FLX is formed into a ClearCorrect aligner. I've now sliced through the

aligner so you can see the tooth shape. And you see that it's still the three layers, and the layers are still distinct with the borders between the layers.

Q. Okay. Now, PTX-0344, what is this showing, ma'am?

A. This is an internal document from Bay Materials describing the Zendura FLX. There's some blacked-out stuff, but the information at the bottom tells you that the -- one of the layers is a Tritan copolyester and one of the layers is a TPU elastomer.

They describe the layer as hard-soft-hard, and it is three layers, a triple-layer configuration.

Q. Okay. So what have we filled in in our reference table?

A. So now we know that for the hard layer column, we're going to call that a Tritan copolyester. For the soft layer column, we're going to call that the Texin TPU elastomer.

And we know that there are three layers. So the green boxes mean that they are -- they meet the requirements. And so now we're filling this in and saying so far these things we know meet the requirements.

Q. All right. Let's look at that Tritan layer.

And now at -- using PTX-0395, what are we

09:39 seeing? What is this showing about the properties?

09:39 A. So this is a data sheet from Eastman which is the company that makes the plastic. When they make the plastic, they do all kinds of testing, and then they tell you what those values are so you can use them to decide if you want to pick the plastic.

09:39 This data sheet on the first page tells us that the Tritan is a copolyester. And on this second page, it gives us some of the properties measured by the standard methods. So you can see four of these properties here.

09:39 For this particular data sheet, it tells you that the way that they tested it was that they extruded a layer. That means that they basically melted the plastic and pushed it into a film.

09:39 One of the things that can happen for some plastics is if you push them when they're hot, the molecules can line up and you can think about if I pull on the molecules when they're stretched versus in the other direction, I might get different properties. So plastics people think about that.

09:40 For this particular plastic, they did that test for you. MD means machine direction. TD means transverse direction. And you can see how different the numbers are that they got. They're actually not

very different at all.

So for this plastic, when it's extruded into a layer, it doesn't make a difference for the properties.

Q. And to be clear, which plastic is this, the TPU or the copolyester?

A. This is the Tritan copolyester. This is the hard layer copolyester.

Q. All right. Now, what have we filled in with that document in your reference table?

A. I put those numbers into the table. They're green because they meet the requirement. So the tensile modulus is 200,000 PSI. Elongation at yield is 7 percent. The tensile strength at yield has two numbers close together. They're both about 5,800 PSI. The elongation at break has two numbers close together. They're between about 180 and 200 percent elongation.

Q. All right. Let's go to our next document, PTX-404. And this is for Texin.

And what is this showing you about the properties in our table?

A. Yeah. So this is a different manufacturer doing the same thing with the technical data sheet, the TDS, and saying here are -- for my thermoplastic polyurethane, here are my properties.

Q. And now looking at our reference table, what

09:41 1 does that data sheet help us fill in?
09:41 2 A. So now we're on the far right for the soft
09:41 3 layer, and we've added a hardness of [redacted] on the Shore
09:41 4 scale, an elongation of break of [redacted] percent, and a
09:41 5 ultimate tensile strength of [redacted] PSI.
09:42 6 Q. Now, let me pause here. We just looked at two
09:42 7 data sheets. Two data sheets for the two materials
09:42 8 undisputedly in the product, Zendura FLX.
09:42 9 Why, Dr. Reitman, do you feel it's appropriate
09:42 10 to rely upon data sheets?
09:42 11 A. Because this is the way that companies that
09:42 12 make plastic tell us about the testing that they
09:42 13 already did to give you the properties so people like
09:42 14 me can make a choice about selection.
09:42 15 And for this patent, we're talking about
09:42 16 selecting two different plastics based on the
09:42 17 properties that they're testing and telling us in these
09:42 18 data sheets. They use standard methods. People in my
09:42 19 industry use this for this exact purpose all the time.
09:42 20 Q. Does extrusion or thermoforming Zendura FLX
09:42 21 change its properties from what we see in these data
09:42 22 sheets, ma'am?
09:42 23 A. Not enough to make a difference for the
09:42 24 infringement analysis, and sometimes not at all.
09:43 25 Q. All right. Let's go to our next thing.

09:43 Actually, what is this showing? What does
09:43 PTX-0332 show?
09:43 A. This is showing that an internal document from
09:43 Bay Materials and ClearCorrect, that shows that they're
09:43 actually using the technical data sheet too. So TDS is
09:43 technical data sheet. They're saying the elongation at
09:43 break of the soft layer, the layer itself they're
09:43 saying is [redacted] percent. And they're looking at the data
09:43 sheet to get that number.
09:43 Q. Okay. What are we seeing here in PTX-77?
09:43 A. This is more internal data from Bay Materials.
09:43 On the far right are the Tritan and Texin hard layer
09:43 and soft layer pieces of information.
09:43 If you go down to Row 4, it tells you, for
09:43 example, the comparative hardness. In Section 5, it
09:44 tells you for the layers, you're getting a tensile
09:44 elongation at break of [redacted] percent for the copolyester
09:44 and again this [redacted] percent for TPU elastomer.
09:44 It also tells you in Section 6 that the
09:44 flexural modulus for the Tritan copolyester, that's the
09:44 hard layer, is 1,495 megapascals, which can be
09:44 converted by multiplying by about 145 to get to the
09:44 number in PSI.
09:44 Q. Let me make sure this point isn't lost. Let's
09:44 go back to this PTX-332.

What is this saying about when one should rely upon a data sheet to understand the property of a layer?

A. For selecting a plastic, as is taught in this patent, you would look to the data sheet. And that's what's done here in this document. The Covestro data sheet tells you the elongation at break of the soft layer.

Q. And for PTX-332, who said that?

A. This is ClearCorrect, I believe, or Bay Materials.

Q. And if we looked at the next document just now, can you read the actual -- the summary test results heading, and what does that tell us about what's being looked at here?

A. So this is comparing the extruded sheet and the -- extruded or laminated sheet. So these are layers that are -- they're made by processing.

Q. So if you look down there and see tensile break E percentage, elongation at break, Layers 1 and 2, and then we slide all the way over and we see [redacted], what is Mr. Lahlouh, John Lahlouh, saying in this sheet?

A. That the Layer 2, which is the soft TPU elastomer, is -- has an elongation at break of [redacted]

09:45 percent.

09:45 Q. Let's be clear. That's the only real disputed limitation in this case; is that right?

09:45 A. That's my understanding.

09:45 Q. All right. Let's -- tell me what you filled in here in the reference data sheet.

09:46 A. So we added the flexural modulus for the hard layer.

09:46 Q. All right. What is PTX-50 showing?

09:46 A. This is internal testing data from Bay Materials testing the soft layer, and this one is for the tensile modulus in PSI, the average value of 7,567.

09:46 Q. All right. And now what have we done to our reference table?

09:46 A. We added that for the soft layer. So rounded to 7,500. It is definitely less than the 200,000 PSI for the hard layer. So it's green.

09:46 Q. Let's go to our last limitation, stress relaxation. What is PTX-384 showing?

09:46 A. This is a Bay Materials confidential internal document that talks about testing the copolyesters, and the first row is the Tritan copolyester. One of the properties is the force retention after 24 hours. That's the stress relaxation test. So they've calculated 70 percent.

09:47 Q. All right. And what does this do to our table?

09:47 A. I added that into the Stress Relaxation column.

09:47 Q. Okay. Let's talk about a few of these other requirements. And you have that bag in front of you with the ten discs in it.

09:47 Can you explain what this shows with respect to the mold that we looked at?

09:47 A. So on the Bay Materials packaging, there's instructions, and it tells you to thermoform, right? So Bay Materials tells you to use a pressure thermoformer, and it tells you you can get more information at their website, at Zenduradental.com, which is what we did.

09:47 Q. And that exhibit is PTX-1769. And let's look at the instructions from Zendura Dental.

09:47 What do we see in PTX-378?

09:48 A. So this is from that website, and it gives you instructions for thermoforming. And you can see in the machine the mold that's placed in the machine. And what you would do is you would take the plastic sheet and put it into the machine. You would heat it up, and then you would suck it down over the mold, and that would be the thermoforming. So this is telling you,

here's the mold. Get ready to do thermoforming.

Q. And let's look at the next step.

What is this page showing, PTX-378, Page 3?

A. So after you thermoform it and you can kind of see the mold in the tooth-shaped cavities on the right-hand side picture, you have to cut and trim the excess. You can see the extra plastic material is still sticking out. In order to actually wear it, you have to trim that off.

Q. Is this how one makes a plastic clear aligner, Dr. Reitman?

A. Yes.

Q. All right. Are you aware of any way to make a Zendura FLX aligner besides thermoforming it over a positive mold and then trimming it?

A. No.

Q. So let's go to our chart. Everything's filled in, right?

A. Yes.

Q. Are all the limitations of the asserted claims satisfied?

A. Yes.

Q. Are there any uses for Zendura FLX besides clear aligners?

A. No.

09:49 Q. Why do you say that?
09:49 A. That's how it's been described. That's how it's been brought to market. That's how it's labeled. I am not aware of any other use for it.
09:49 Q. Are there noninfringing -- any noninfringing alternatives to Zendura FLX?
09:49 A. No. In order to get the desirable properties, you need the structure and two material types that are taught in the patent.
09:49 Q. Changing topics slightly.
09:49 Zendura FLX customers, which companies are you aware of that use Zendura FLX material to make aligners?
09:49 A. In the United States, at least ClearCorrect, Ormco, and Angel, so aligners that are thermoformed from Zendura FLX.
09:50 Q. And do all of those aligners infringe?
09:50 A. Yes.
09:50 Q. And let's just look at one of them.
09:50 What is PTX-95 showing?
09:50 A. This is a Straumann internal communication that confirms that they know that the Ormco TruGEN is made from Zendura FLX.
09:50 Q. Now, let's go to the second piece. You said documents. We've gone through all these documents.

09:50 Let's talk about testing. You spent a lot of time on
09:50 testing. In your binder are PTX-1671, 1663, 1648 --
09:50 84 -- 1684, 1685, 1654, 1655, 1652, 1653, 10115, 1672,
09:51 412, 1656, and 1657.
09:51 Do you recognize those documents, ma'am?
09:51 A. Yes.
09:51 Q. What are they?
09:51 A. They are test data and standards from work
09:51 that I did.
09:51 MR. HUNG: I'd like to offer these.
09:51 MR. MUELLER: No objection, Your Honor.
09:51 THE COURT: Admitted.
09:51 BY MR. HUNG:
09:51 Q. All right. Can you summarize the tests that
09:51 you ran briefly for the jury?
09:51 A. Three major categories. One, I checked the
09:51 material because you got to know what type of plastic
09:51 it is.
09:51 Two, I tested for properties that were called
09:51 out, same as on the data sheet.
09:51 And three -- using ASTM methods.
09:51 And then three, I did the stress relaxation
09:51 test that's described in the patent itself.
09:51 Q. And this first one, Fourier Transform Infrared
spectroscopy, that's a fancy way of saying your

microscope, right?

A. No. It's a fancy way of saying I did a fingerprint.

Q. Okay. Sorry.

A. So basically, it's a way to say what's in the molecule. This machine will give you an idea, and you look for a pattern of spikes and you match them.

Q. Let's look at that. PTX-1671, what does this show?

A. This is the data. So what we're trying to do is match what we got for the material to the reference. The yellows are the reference.

So in the upper one, you can see the position along the bottom is a match for the Tritan copolyester. So those are the outer layers. And the inner layer matches for the Texin TPU.

So this just confirms what we already knew from documents, that the outer layers are the Tritan copolyester, and the inner layer is the TPU elastomer.

Q. I undersold your work. I have to go back.

When you were doing this testing, what were you testing on?

A. Oh, I was testing on the layers, which is what the patent tells you. And I also did testing on the product, both the sheet and the thermoformed aligners.

09:53 Q. How did you get the material for your layers?
09:53 A. I called up the manufacturer of the plastics and got the resins and then made them into layers, so basically melted them according to the manufacturing guidance to create film that I could then test.
09:53 Q. Did you consider, as part of these tests you ran, the effect of manufacturing Zendura FLX on the material properties?
09:53 A. Yes. Of course.
09:53 Q. And what did you find?
09:53 A. Well, I knew from the data sheets the relative potential effects, and I knew from the materials what the likely effects would be. So I used melt processing to make the layers, and I considered the potential effects of extrusion, which we already had seen were not going to be significant for this type of analysis --
09:54 Q. Did you --
09:54 A. -- and for these materials.
09:54 Q. Did you consider when Bay Materials is doing its extrusion and thermoforming, et cetera, how those properties might affect the materials as you prepared them?
09:54 A. Yes. That was absolutely part of my planning of my experiments and why I checked some of the things

I did in the data sheets.

Q. All right. Okay. Let's look at your testing. Let's start with -- we covered PTX-1671. Let's go to -- I think we saw this one. This is the microscope.

What is 1666 showing?

A. This is just me actually looking at the material and seeing the three layers. When I did the chemical testing, I tested in the layers themselves. So I actually got -- was able to test in the layer. And that's why it's labeled on the left, the copolyester on the outside, the TPU on the inside.

Q. Okay. Let's go to 1778. What is this?

A. This is the hardness test. Using that meter for the soft TPU, the hardness was measured at 42D on the Shore scale.

Q. Okay. PTX-1684 and 1685. What does this show?

A. The layers themselves are not big enough to -- in the product to do a Shore test, but you can do a different type of indentation test. So this is just where I did the indentation in the layers. So they're lined up up and down on the left.

And you can see that the outer layers are measurably harder, so bigger bars, than the middle layer, which is the data on the right.

09:55 Q. Okay. What does PTX-1654 and 1655 show?
09:55 A. This is that bending test. And basically from this, I confirmed that the flexural modulus is around 246,000 PSI.
09:55 Q. All right. And now what is PTX --
09:56 A. And that was actually for the flexural modulus of the copolyester layer, the hard layer.
09:56 Q. What do we see for the soft layer, PTX-1652, PTX-1653?
09:56 A. So this is the tensile testing, so the pulling test. You can see the samples. This is the soft -- or the hard layer, the hard copolyester, and I got a tensile modulus around 178,000 PSI, a tensile strength at yield of around 5,800 PSI, and elongation at yield, average of 6.3 percent, and an elongation at break, average of 162 percent.
09:56 Q. Did you run these same tests on the soft layer?
09:56 A. I did.
09:56 Q. Okay. Let's look at that.
09:56 PTX-1661 and PTX-1662. What did you find?
09:56 A. So this is the soft TPU layer, and I ran the tensile testing again, and I got a tensile modulus of 9,300 PSI, an ultimate tensile strength around 7,900 PSI, and an elongation at break around 385

09:57 percent.

Q. These tensile tests, these are all on the sheets that you went through the trouble of melting and taking pellets and creating your own, right?

A. Yes. So you can see that I made layers that are uniform thickness. They look the way they're supposed to for these materials.

Q. I want to look at another test. You ran a test on the whole sheet, right, also? All three layers together?

A. Yes.

Q. Why?

A. Because I knew that I was going to need to respond to Dr. Spiegelberg and because I wanted to see how the layers interact. So basically, this is three layers together, and when you pull on them, you're going to get the effect of the combined. And the copolyester's a hard layer, so it's going to pick that up first. It's going to be hard to get at the properties of the middle layer, but I wanted to see what would actually happen.

Q. So I want to make sure the jury understands this. You've done all this testing on the middle layer, the sheet by itself, right?

A. Yes.

09:58 Q. And now you've run testing on all three layers together?

09:58 A. Yes.

09:58 Q. And I want to make sure this is clear.

09:58 Why do you think this is not the right test to run?

09:58 A. Because you can't reliably get at the properties of the middle layer by itself because the hard copolyester interferes with collecting that data.

09:58 When you pull on this, you can sometimes get the whole TPU to stretch all the way but only if the copolyester gets out of the way.

09:58 And that's actually what's shown in that middle picture. So I've stretched the three-layer many more than 200 percent elongation, but only because the copolyester broke first and now I can test the TPU.

09:59 So it's stretched in the middle. You see the TPU. On the far right, you kind of see the gray shading. That's the copolyester piece that broke at a lower elongation.

09:59 Q. So to make sure the jury understands this, tell me if I have this right. On the outside you have the hard layers, right?

09:59 A. Yes.

09:59 Q. And you have the soft layer in the middle?

09:59 A. Yes.
09:59 Q. And now you're stretching the whole thing?
09:59 A. Yes.
09:59 Q. And I like to think of it like glass and a rubber band in the middle. Right? Bear with me.
09:59 When you're pulling these strings together, sometimes the glass on the outside cracks and lets you continue to stretch that rubber band, right?
09:59 A. Yes.
09:59 Q. But sometimes they break together because the glass cuts the middle. Is that a fair analogy?
09:59 A. Right. If the glass cuts the rubber band, then the rubber band won't be able to behave like the rubber band. So yeah. That's...
09:59 Q. Is that a fair test of the rubber band?
09:59 A. No.
09:59 Q. When they break together, let's talk about that. What happens? What is this showing?
09:59 A. This is when they break together. So the copolyester has a crack in it that basically goes and damages the TPU like you just explained.
10:00 Q. Do you have an animation to explain this?
10:00 A. I do.
10:00 Q. Okay. Let's play it. And I'm going to just play it, and you talk while I --

10:00 A. Okay. So the -- in the cartoon, the blue is the copolyester. The light blue with stripes is the TPU. So you're stretching it.

What happens is eventually the copolyester, which is hard and brittle, will start to crack. And those cracks go in, and they move towards the middle. And when they hit the TPU, if they damage the TPU in the middle, then you're going to actually break the TPU early.

So that's what happens, is the TPU breaks early.

But if instead the crack comes in and doesn't damage the TPU, then the TPU can keep stretching. And it'll stretch more than 200 percent, and that is something that I observed in the experiments.

10:00 Q. And to go back, is what we saw in that picture where it was stretched?

10:01 A. Yes.

10:01 Q. And the outer layers broke on the right side of that -- that image?

10:01 A. Yes.

10:01 Q. Okay. If you're going to run this test -- I know you don't think it's the right test. If you're going to run this test, what do you find in looking at PTX-1672?

10:01 A. So testing it all together, you can see that the copolyester always breaks first. But if it doesn't damage the TPU, the TPU elongates over 200 percent. The average value for the whole group is 383 percent.

Q. Now, to be clear, you tested this because you thought you'd have to discuss it with Dr. Spiegelberg, right?

A. Yes.

Q. Did you run other tests on layers?

You ran all these other tests on layers as well, right?

A. Well, yes, because that's what you're supposed to do, is to run the layer test to understand the layer properties.

Q. One more. Stress relaxation. The wet test.

What did you find, PTX-1656 and 1657?

A. So you can see the data. Basically it did relax. And for the copolyester layer, the relaxation is 63 percent on average.

Q. Okay. Let's go to Dr. Spiegelberg's noninfringement opinions. Let's just get those out of the way, and let's focus on these now.

What are -- what do you understand his two main noninfringing opinions to be?

A. He opines that the elastomer breaks at less

than 200 percent. And he says that the elastomer layer does not consist of only the TPU.

Q. Let's take these one at a time. Because you're not going to get to respond after he comes up, so let's take them one at a time.

Explain why he's wrong on that first issue.

A. Well, it's the stuff we already showed you. So the layer -- the data sheets tell us that the TPU soft layer will extend more than 200 percent. The testing that I did of those layers is more than -- elongates more than 200 percent. The documents that Bay Materials had internally confirm that they also believe that the layer elongated more than 200 percent.

And when I ran the test on the three-layer material, once the copolyester fractured, you could see that the TPU elongated more than 200 percent.

So there's experimental observation. There's information from the manufacturer of the plastics itself. And there's recognition from the defendants that that's the behavior that they had expected and saw in their product.

Q. I think we've shown this, but let's show it briefly one more time. Okay?

This is on the testing on the layer, PTX-1661 and 1662. What did this show?

10:04 A. So when you pull on it, it stretches more than 200 percent.

10:04 Q. In fact, 384 percent if you're testing a layer by itself, to understand that?

10:04 A. Yes. That is the number.

10:04 Q. And we looked at this data sheet. It's a very important internal document. What is PTX-332 showing?

10:04 A. This says that internally they looked at the data sheet to tell them the elongation of break of the soft layer and that it was [redacted] percent.

10:04 Q. And I know we talked about the three-layer testing. What did this show?

10:04 A. That the elongation of the TPU layer is greater than 200 percent as long as the copolyester doesn't damage it.

10:04 Q. Now, PTX-1673 and 10115, and I think this is the results we've already seen for 383 percent, right, ma'am?

10:05 A. Yes. The average does turn out to that.

10:05 Q. Okay. I want to focus on a tiny area of disagreement with you. It's a slideshow, but let's just embrace it.

10:05 MR. MUELLER: Your Honor, I object.

10:05 MR. HUNG: Your Honor, I'll move on.

10:05 BY MR. HUNG:

10:05 Q. Dr. Spiegelberg says you used the wrong specimen; is that right?

A. For that testing, yes.

Q. And when you ran tests on all three layers together, he said you used the wrong specimen type, which was?

A. I used a Type 5, the mini specimen.

Q. What does he think you should have used?

A. A Type 4, which is a larger specimen.

Q. Why did he use a Type 4?

A. Because he thought that the plastic was nonrigid, and Type 4 was the type to use.

Q. Okay. Using PTX-394, can you explain to us why it was appropriate for you to use a Type 5 specimen?

A. Yes. So this is the ASTM standard. This is D638 for the tensile testing. For the specimen, you go to the section for specimen. It's at Section 6. There's two paragraphs for making the selection. Zendura FLX is a rigid plastic, and so you go to Paragraph 6.1.1, which tells you that there's lots of different types of specimens that you can use. And in particular, Type 5 is what you should use if you have, for example, only limited material, which I did because I had only three packs.

10:06 Q. Now, let's take those each.

10:06 Rigid and limited material. Why do you think Zendura FLX is rigid? As a sheet.

10:06 A. Because the properties in the documents tell me that the flexural modulus is a certain value and that's what the standard tells you to check.

10:07 So the standard tells you to -- what the definition of rigid is. Or it tells you where to get that definition and then how to make the decision.

10:07 Q. We're still looking at ASTM D638, and now we're looking at Table 1.

10:07 What does this tell us about how to determine whether something's rigid or not?

10:07 A. It tells you to look at the definitions in ASTM D883.

10:07 Q. And that's this line, "See terminology D883 for definitions"?

10:07 A. Yes.

10:07 Q. Okay. Let's go to that standard. And this is PTX-412.

10:07 What does this say about a rigid plastic?

10:07 A. It says that the rigid plastic has a modulus of elasticity greater than 700 megapascals.

10:07 Q. Do you know the modulus of elasticity, either in flexion or in tension, for Zendura FLX as a sheet?

10:07 A. Yes. We saw that in the documents. It is more than twice this number. It's over 1,400 megapascals. So that makes Zendura FLX rigid.

10:08 Q. And let's look here, PTX-77.

What is this showing about the flexural modulus?

10:08 A. This says it is 1,471 megapascals. 1,471 is more than twice 700.

10:08 Q. Okay. Now, you offered a second reason, limited samples.

A. Yes.

10:08 Q. Why do you say you have limited samples?

10:08 A. Well, I did not have unlimited material, and I had to run a lot of different kinds of tests on these. So I used the mini sample, which is common when you have -- well, it's actually instructed when you have limited material.

10:08 These sheets, the reason they're in a foil package, you're supposed to keep them away from moisture if you're going to use them. So you have to use them within a period of time. And that was one of the considerations when planning out the experiments.

10:08 Q. All right. Let's go to the second area of disagreement, which is the consisting of -- I'll call it the "consisting of" limitation. And can you explain

this area of disagreement?

A. Yes. So a few of the claims require that the second layer consists of just the TPU elastomer. And Dr. Spiegelberg says that when you make the film, you get mixing at the edges. And so that would not be just the TPU elastomer.

But my work shows that you actually don't get very much mixing at all, nothing measurable. There's definitely no mixing in the middle. And one of the ways we can tell that there isn't mixing is based on the chemical measurements I did, but also the reason it pulls apart is because the layers are in fact separable. They are distinct.

Q. Help me understand that. Why does the layers pulling apart -- is that delamination?

A. Yes.

Q. Why does delamination from the soft layer show there's no mixing?

A. It shows that the TPU stays together and the copolyester stays together as separate layers.

Q. I think you ran -- this is the microscope test. Can you show the jury how this relates to this noninfringement opinion?

A. Well, you can see the pretty sharp lines between the layers in the lower picture. So you can

see that the layers are distinct at this magnification. That has to do with them -- the polymers staying separate.

Q. And when we look at this image, this microscope image, PTX-1666, even if we assume that there's mixing between layers at the junction of the layers, what do we see in the middle of the soft TPU layer?

A. The middle is just TPU by itself.

Q. Pure TPU?

A. Yes.

Q. All right. Does every claim -- we were -- my client Align is asserting 11 claims from the materials patents in this case, right, ma'am?

A. Yes.

Q. Does every claim require this "consisting of" language?

A. No. It doesn't.

Q. Looking -- let's look at our first claim, Claim 1 of the '613.

What does this say? Does this use "consisting"?

A. No. It says: A soft polymer layer comprising a thermoplastic polyurethane elastomer.

So this is comprising, not consisting.

10:11 Q. All right. I want to summarize your infringement, and I want to -- I'm going to touch on SmartTrack in just a second, but I want to sort of end with where we began.

Can you summarize for the jury and explain to them, having shown documents and tests and discussed Dr. Spiegelberg's opinions, why Zendura FLX infringes the asserted claims using '613, Claim 1?

A. So the '613, Claim 1, we saw that the aligners are made from a method of making the dental appliance for positioning patients' teeth, and we saw that there is a sheet that comprises three layers -- three or more layers where there is a hard polymer layer and a soft polymer layer, right? So we need three layers. We need two polymers.

The Zendura FLX has a hard polymer layer that is the copolyester and does have the flex modulus greater than about 150,000 PSI.

The soft layer, it is a thermoplastic polyurethane elastomer. That layer has an elongation at break greater than 200 percent. And the hardness falls in the range between 60A and 85D.

The way that aligners are made is by having a positive model of the patient's teeth in a target position, and then you're fabricating that as a

10:12 negative of the positive -- that just means we fit them
10:13 together -- by thermoforming the sheet over the
10:13 positive model.
10:13 So every piece in here, every element in here
10:13 is present in the aligners made from Zendura FLX
10:13 because of the properties and structure of the Zendura
10:13 FLX material.
10:13 Q. Now, let me just touch on one thing, the
10:13 target position.
10:13 A. Yes.
10:13 Q. How does the fact that aligners sold in
10:13 multiple aligners relate to this target position?
10:13 A. So the aligners you heard are part of -- often
10:13 part of multiple positions and treatments. So you're
10:13 making multiple aligners for the target position at
10:13 each point.
10:13 So by having the pairs of the progression,
10:13 that is the target position for that stage.
10:13 Q. Does this claim cover soft-hard-soft?
10:13 A. Yes.
10:13 Q. Is it limited to soft-hard-soft?
10:13 A. No.
10:13 Q. Does it cover hard-soft-hard?
10:13 A. Yes.
10:13 Q. Can you explain that piece one last time?

10:13 A. Sure. So the sheet, it has to have three
10:14 layers. It has to be made out of two materials.
10:14 One of the materials has to be hard. It has
10:14 to be a copolyester. It has to have certain
10:14 properties, the flex modulus.
10:14 The other has to be soft. It has to be a TPU
10:14 elastomer. And it has to have certain properties, such
10:14 as the elongation as hardness.
10:14 The third layer can be any third layer from
10:14 any of these claims. That means it can be either hard
10:14 or soft. That's why both structures are covered under
10:14 this claim.
10:14 Q. Let's just confirm your opinions for the
10:14 claims individually. We looked at this reference data
10:14 sheet.
10:14 Is it your opinion that all of these material
10:14 properties are satisfied and the other requirements?
10:14 A. Yes. Everything in green there is satisfied.
10:14 Q. And now for Claim 1, does making a Zendura FLX
10:14 aligner infringe Claim 1?
10:14 A. Yes.
10:14 Q. Of the '613 patent?
10:15 A. Yes.
10:15 Q. And what about Claims 12, 13, and 14?
10:15 A. Yes.

10:15 Q. Does plurality of Zendura FLX aligners -- that just means multiple FLX aligners -- do those practice the limitations of Claim 11 of the '384?

10:15 A. Yes.

10:15 Q. Does making a Zendura FLX aligner practice the limitations of Claim 1 of the '090?

10:15 A. Yes.

10:15 Q. And what about Claims 3 and 10 of that patent?

10:15 A. Also yes.

10:15 Q. And finally, for the '091 patent, Claim 1, does a Zendura FLX sheet that's incorporated into an aligner satisfy these limitations?

10:15 A. Yes.

10:15 Q. And what about its dependent claims -- what about Claims 10 and 11?

10:15 A. Those are also satisfied. It's also infringed.

10:15 Q. One last topic, whether SmartTrack practices the patents.

Do Align's patents cover SmartTrack?

10:15 A. Yes.

10:15 Q. And let's look at -- which -- which asserted claims? Does SmartTrack practice all the four asserted patents?

10:16 A. All four patents cover SmartTrack, yes.

10:16 Q. To clear up one point of confusion, I think you saw -- were you here for Dr. Li's testimony yesterday?

A. Yes.

Q. And she referred to the first SmartTrack patent, the '691, as a SmartTrack patent.

Do you recall that?

A. Yes.

Q. Are these other four patents SmartTrack patents?

A. Yes. They're all SmartTrack patents. They all describe SmartTrack.

Q. Do they all cover SmartTrack?

A. Yes. They all cover SmartTrack.

Q. And let's just look at properties of '613, Claim 1, as an example.

How does SmartTrack practice that claim, as an example?

A. So you would take the same approach using the same sort of reference table that we did before. In this case Align uses a Tritan copolyester as well. That is a hard copolyester. [redacted]

[redacted]

SmartTrack has three layers. And the aligners made from SmartTrack are thermoformed over a positive model. So all of those are met.

Q. One last question I just realized. Align uses Tritan and Desmopan, right, ma'am?

A. Yes.

Q. Desmopan is a brand name that appears in Europe; is that right?

A. Yes. So Covestro has different TPUs by different geographies, and so Texin is mostly in North America. Desmopan is worldwide, but it's made out of Europe.

Q. So to be clear, Desmopan is the tradename used in Europe, and in the U.S., it would be Texin; is that right?

A. Desmopan is made in Europe and sold everywhere. Texin is made in the United States and mostly sold in the United States.

They both use the same chemistries. They're both made by Covestro, and they're both TPU elastomers.

MR. HUNG: Thank you very much,

Dr. Reitman.

CROSS-EXAMINATION

BY MR. MUELLER:

Q. Good morning, Dr. Reitman.

A. Good morning.

Q. My name is Joe Mueller. It's nice to meet you.

A. Nice to meet you as well.

Q. May I ask you a few questions?

A. Of course.

Q. Now, Dr. Reitman, you are here to testify about four patents being asserted by Align in this case, correct?

A. Yes.

Q. And those patents share what is called in the patent world a specification, right?

A. Yes. They do.

Q. And that means the figures and some of what's called the written description material is identical in all four patents, right?

A. Yes. For the applications, the specification information would be the same.

Q. And in fact, the specification is the same as the earliest patent application filed by Dr. Li years before that, right?

10:19 A. All of these stem from that 2012 application. So those are the teachings of that application.

10:20 Q. And so just to be very, very clear, the teachings of the 2012 application are precisely the same teachings in these four patents, right?

10:20 A. That is what I remember. Yes.

10:20 Q. And the claims are the section at the end of a patent, right?

10:20 A. Yes.

10:20 Q. And the claims have changed a bit over time, true?

10:20 A. Not quite. The claims for each specific patent, some of the claims in the -- in the course of getting to issuance did evolve. And some of them, I don't think they did. But each patent, once it had its claims, those claims didn't change.

10:20 Q. But we can agree on this: All of the claims in all of these patents are directed to the same written description, true?

10:21 A. They all stem from that application, yes.

10:21 Q. They're based on the same written description, true?

10:21 A. I believe all that information is the same. I think of it in terms of the application has the information. So I think we're saying the same thing.

10:21 Q. The same as the application back in 2012?
10:21 A. They all stem from that application in 2012. Yes.
10:21 Q. Do you understand that in 2016, Dr. Li submitted a sworn declaration to the Patent Office, true?
10:21 A. She did submit several declarations. Yes.
10:21 Q. And let's make sure we have the chronology right of some of the events that we discussed yesterday.
10:21 You were here for the testimony yesterday?
10:21 A. I was here yesterday for testimony. Yes.
10:21 Q. So 2012, Dr. Li and the folks at Align applied for patent application protection on SmartTrack technology, right?
10:22 A. Well, on multi-layer technology based on having two types of plastics.
10:22 Q. We'll come back to that.
10:22 In 2018, Bay Materials launched Zendura FLX, right?
10:22 A. Yes. I think that's the right date.
10:22 Q. And you saw all the evidence that top executives at Align were concerned about the competitive threat posed by Zendura FLX, true?
10:22 A. I saw the documents you presented yesterday

10:22 describing communications between executives. Yes.
10:22 Q. So let's take a look. DTX-2867, this is an
10:22 admitted exhibit. This is an executive management
10:22 committee presentation from 2019.
10:22 Do you see that, Dr. Reitman?
10:22 A. I do.
10:22 MR. MUELLER: Let's go to Page 2, if we
10:22 could.
BY MR. MUELLER:
10:22 Q. And here, we have in the bottom, in the
10:22 summary of where we are two months into the year, Bay
10:23 Materials' hard-soft-hard structure, big threat to
10:23 superiority of SmartTrack. Right?
10:23 A. Yes. That's what's written there.
10:23 Q. Now, after the top executives at Align
10:23 recognized that Bay Materials' hard-soft-hard structure
10:23 is a big threat to superiority of SmartTrack, Align
10:23 went back to the Patent Office, right?
10:23 A. Align was continuously interacting with the
10:23 Patent Office is what I recall.
10:23 Q. Align made new filings with the Patent Office
10:23 after recognizing the competitive threat of Zendura
10:23 FLX, correct?
10:23 A. There were additional filings after this date,
10:23 yes.

10:23 Q. And one of those filings was the new declaration from Dr. Li, true?

10:23 A. I believe there are declarations after this date from Dr. Li as well, yes.

10:23 Q. And, Dr. Reitman, Dr. Li, as we saw yesterday, made modifications to what she had said in 2016, correct?

10:24 A. The new declaration was directed at a new set of questions. So it is different than the old declaration directed at a different set of questions.

10:24 Q. There are differences between what Dr. Li said to the Patent Office in 2016 and what Dr. Li said to the Patent Office in 2019, correct?

10:24 A. Yes. For the reasons I just said.

10:24 Q. So let's take a look at some -- the declaration from 2019, and this is DTX-84.

10:24 MR. MUELLER: And if we could go to the signature page which is on Page 9.

BY MR. MUELLER:

10:24 Q. Do you see Dr. Li executed this in September 2019?

10:24 A. Yes. I do.

10:24 Q. This is just a few months after the executive meeting committee -- executive management committee presentation identifying Bay Materials' hard-soft-hard

10:25 structure as a big threat. You saw that document just
10:25 a moment ago, right?
10:25 A. I saw that document and, yes, the two dates do
10:25 relate in that way.
10:25 Q. Okay. So if we go to Paragraph 5, this is a
10:25 paragraph we did not get a chance to look at yesterday.
10:25 I want to look at it with you.
10:25 So Paragraph 5 of this declaration says, if we
10:25 go to the second -- well, second sentence: As
10:25 mentioned above, SmartTrack material was developed
10:25 during more than seven years of diligent evaluation of
10:25 over 250 materials, including numerous iterations in
10:25 which materials were tested and compared with the
10:25 results used to design new materials.
10:25 Do you see that, Dr. Reitman?
10:25 A. Yes.
10:25 Q. And let's look at the next sentence. Again,
10:25 this is in the 2019 declaration. During evaluation of
10:25 the over 250 materials, only, only the materials
10:26 according to the current claims met Align's development
10:26 criteria.
10:26 Do you see that, Dr. Reitman?
10:26 A. Yes.
10:26 Q. Okay. Now, let's have that in mind. And this
10:26 is a declaration that led to one of the patents

asserted in this case, correct?

A. I believe so.

Q. And you would agree with me that the other patents asserted in this case also issued after Zendura FLX was released, correct?

A. I honestly don't remember all of the issuance dates, but they would be on the front pages.

Q. All right. And you know that in this case, you, Dr. Reitman, are saying the four patents that issued after Zendura FLX cover a hard-soft-hard structure. That's your position?

A. Yes. As I've explained today.

Q. And again, the claims are directed to and supported by the written description material, true?

A. Yes. The teachings come from the application and specification.

Q. And that's the very same material that was in the 2012 application, right?

A. The applications stem from that. I don't recall all the details.

Q. So let's go to the 2016 declaration of Dr. Li. This is DTX-462, and I want to examine the corresponding paragraph, Paragraph 5 in Dr. Li's declaration in 2016.

So here, if you go to the second sentence,

10:27 Dr. Li said to the Patent Office: As mentioned above, the SmartTrack material was developed during more than seven years of diligent evaluation of over 250 materials.

Right?

A. Yes.

Q. Do you see that?

A. That's what's written.

Q. And the next sentence says: During evaluation of the over 250 materials, only the materials of the instant claims met Align's development criteria.

Do you see that?

A. Yes.

Q. So what Dr. Li was saying to the Patent Office in 2016 is that only the materials of the claims at that time, the instant claims, met Align's development criteria, true?

A. That is what is stated here, yes.

Q. So let's take a look at what those claims said. This is the '691 patent. It's DTX-72.

This is one of the earlier patents in this family of patents, right, Dr. Li (sic)?

A. I'm Dr. Reitman.

Q. I'm sorry, Dr. Reitman. I apologize.

This is one of the earlier patents in this

family of patents; am I right?

A. Yes. That is my recollection.

Q. So let's look at Claim No. 1, if we could, Dr. Reitman, the very first claim.

It says: A removable orthodontic tooth positioning appliance having teeth receiving cavities shaped to directly receive at least some of a patient's teeth and apply a resilient positioning force to the patient's teeth, the appliance comprising: A hard polymer layer comprising a copolyester and having a hard polymer layer elastic modulus.

Have I read that correctly?

A. Basically.

Q. And a first soft outer polymer layer and a second soft outer polymer layer each comprising a thermoplastic polyurethane elastomer.

Do you see that, Dr. Reitman?

A. Yes.

Q. And then it goes on in the last limitation there, the last set of language: Wherein the hard inner polymer layer is disposed between the first soft outer polymer layer and the second soft outer polymer layer.

Do you see that, Dr. Reitman?

A. Yes.

10:30 Q. And so this is telling us soft-hard-soft, correct?

10:30 A. For this claim, that appears to be the disclosure, yeah.

10:30 Q. And if we go back to the declaration submitted at the time in 2016, only the materials according to the instant claims met Align's development criteria, right?

10:30 A. 2016 I thought was --

10:30 Q. The one on the right is 2019.

10:30 A. Okay. 2019, yes.

10:30 Q. I'm sorry, the one on the right is 2016. The one on the left is 2019.

The one on the right says "Instant claims." That is from the 2016 --

10:30 MR. MUELLER: If you could put the signature box on there too just to make sure I get it right and not confuse the two.

10:30 BY MR. MUELLER:

10:30 Q. Here we go. This is the 2019 on the left?

10:31 A. Okay.

10:31 Q. And the 2016 on the right?

10:31 A. Oh, I was confused. Thank you.

10:31 Q. And if we look at the 2016 Paragraph 5, in the 2016 Paragraph 5, Dr. Li told the Patent Office that

only the materials of the instant claims met Align's development criteria, right?

A. Yes. That's in there.

Q. And those claims at that time were soft-hard-soft, correct?

A. I'm not sure that's true from the overall patent and the filings, but the record would -- would show that.

Q. Well, Dr. Reitman, we can look at it again.

Here's Claim No. 1. Let's look at that last language: Wherein the hard inner polymer layer is disposed between the first soft outer polymer layer and the second soft outer polymer layer.

Do you see that, Dr. Reitman?

A. Yes. For that claim.

Q. And so the claims at that time when Dr. Li made her 2016 declaration and said only the material according to the instant claims met their development criteria, those were soft-hard-soft?

A. I don't think the final claims had issued at that time. But for this claim, what issued is what you just said.

Q. So we can agree the declaration that she submitted in 2016 was in support of the patent that issued with the soft-hard-soft claim language, correct?

10:32 A. For this claim, yes.
10:32 Q. Now, nothing has changed in terms of the written description since then, true?
10:32 A. I think that's true for the way the specification works.
10:32 Q. Nothing has been added. There were no new experiments added to the written description. There was no new teachings added to the written description in the years since, right?
10:33 A. That's my understanding, yes.
10:33 Q. And yet you, Dr. Reitman, are here to say that the patents also cover hard-soft-hard, notwithstanding, notwithstanding that Dr. Li had told the Patent Office in 2016 the only thing they had made work was soft-hard-soft?
10:33 THE COURT: Hold on.
10:33 MR. HUNG: Your Honor, can I object and may we approach?
10:33 THE COURT: Sure.
10:33 (Bench conference.)
10:33 MR. HUNG: Your Honor, you granted summary judgment of written description. He's basically making a written description argument right now.
10:33 THE COURT: Overruled.

10:33 (Bench conference concludes.)
BY MR. MUELLER:
Q. Dr. Reitman, can you please answer the question I just asked?
THE COURT: Why don't you go ahead and repeat it. Why don't you go ahead and repeat the question.
MR. MUELLER: Absolutely, Your Honor.
BY MR. MUELLER:
Q. Dr. Reitman, I'll just put it in pieces just to make sure we're clear.
In 2016, Dr. Li told the Patent Office in a sworn declaration, we've done hundreds of experiments, and the only material that works, according to our criteria, is the material according to the instant claims, the claims at that time, true?
A. For the product specification, yes.
Q. And the claims at that time were soft-hard-soft, right?
A. For this claim, yes.
Q. Nothing, nothing has changed in the description in the patents, the written description, in the years since, true?
A. I don't think there's been additional teachings. The information was actually already there

in the file.

Q. And yet you're here to say that these patents somehow cover hard-soft-hard, notwithstanding that Dr. Li told the Patent Office ten years ago the only thing they had that worked was soft-hard-soft.

Your position is these patents somehow covered hard-soft-hard. Do I have that right?

A. I stand by the testimony for the reasons that I've given, yes.

Q. Now, by the way, you're being compensated for your time. And there's nothing wrong with that. Experts are permitted to be compensated for their time working on a case like this, right?

A. There's nothing wrong with that. And yes. I'm -- well, I'm a salaried employee. So I'm compensated by my employer regardless of what I'm doing. But yes. My employer bills for my time.

Q. And the billing rate's over $1,000 an hour, true?

A. This year it is, yes, for all my responsibilities.

Q. And, Dr. Reitman, you've testified in over 70 cases.

Do I have that right?

A. Over many years, that's probably true.

10:35 Q. And His Honor's rules forbid us from asking any questions about the details of other cases. I want to be careful that neither one of us gets into any other cases.

But you have been retained by Align in other litigation -- without any details, you have been retained by Align in other litigation, correct?

A. In one other matter, yes.

Q. All right.

10:36 MR. MUELLER: We can take this down. Thank you.

BY MR. MUELLER:

Q. Dr. Reitman, there was testimony yesterday about Align being a pioneer in the clear aligner space, right?

A. Yes. I believe so.

Q. And I don't -- I said in my own opening statement: Credit where credit is due. Invisalign is a good product.

Did you hear me say that?

A. I did.

Q. But it's also true that the idea of clear aligners has been known for decades and is not an Align idea, right?

A. Clear appliances have existed, like retainers

10:36 and mouthguards and things like that, but I believe the
10:36 aligners for the repositioning actually did come into
10:36 the market because of Align.
10:36 Q. Well, the concept of moving teeth with clear
10:36 overlay appliances has been around since 1926, correct?
10:36 A. There are appliances that have been clear
10:37 plastics at various points in time. Again, mostly like
10:37 thicker mouthguard retainer-type things or that
10:37 required multiple dental visits. So clear plastics
10:37 have been used in the mouth for a long time.
10:37 Q. Dr. Reitman, my question is simply the concept
10:37 of moving teeth with clear overlay appliances has been
10:37 around for 100 years; am I right?
10:37 A. I'm not sure the full movement as aligners has
10:37 been around, but definitely clear plastics in the mouth
10:37 have been around.
10:37 Q. Well, let's take a look at DTX-433. This is
10:37 Tab 4 in Volume I of your binder. This is, I believe,
10:37 an admitted exhibit, The Invisalign System.
10:37 Do you see that?
10:37 And this, I believe, is admitted. So I'm
10:38 going to go to Page 45. And we'll put it on the screen
10:38 to make this a little bit easier.
10:38 Invisalign itself says: The concept of moving
10:38 teeth with clear overlay appliances has been around

since 1926.

Right?

A. That what's written there. Yes.

Q. And in fact, you know that there was prior publications, including by someone named Sheridan, introducing a clear dental appliance called the Essix retainer made from thermoplastic copolyester material by 1993, right?

A. Let me check the dates. The 1926, I think, is the gum-massaging appliance. The Essix, I don't --

Q. Dr. Reitman, just to make this a little bit easier, I was just reading Invisalign's own product material.

Did I read it correctly?

A. In the Tuncay, it says: The -- as early as 1926; however, Remensnyder had introduced the Flex-O-Tite gum-massaging appliance.

Q. Dr. Reitman, if you could, our time is short. I was just reading from their product material, and I quoted it. It says, quote: The concept of moving teeth with clear overlay appliances has been around since 1926.

Did I read that correctly?

A. That section of the thing, yes. I think there's another section as well.

10:39 Q. And you know, Dr. Reitman, that by 1993, other folks had introduced a clear dental appliance called the Essix retainer made from thermoplastic copolyester material, true?

A. I don't remember the year. But yes. Essix had a retainer that was clear.

Q. And so the bottom line, Dr. Reitman, is for sure Invisalign is a good product that reflects some hard work, but it's also true clear aligners are not the idea of Align. That's been around for a long time, true?

A. There are specific things about aligners that were developed by Align, but there are other appliances that are related to aligners that are not developed by --

Q. Dr. Reitman, if you would please stay with my question.

Before Align, before Align -- I'll be very specific. Before Align was founded, the idea of clear dental aligners was known?

A. Clear dental appliances. I don't know that they were aligners as we are talking about today.

Q. Now, let's go back to your infringement position, your position that these four patents somehow cover hard-soft-hard dental aligners.

10:40 Do you have that position in mind?
10:40 A. I do.
10:40 Q. And let's talk about some of the requirements of the patents and whether they could be met by a hard-soft-hard structure. And you discussed with Mr. Hung the requirement of elongation at break, right?
10:40 A. Yes.
10:40 Q. And to prove infringement of the claims of the patents at issue in this case, Align must show elongation at break requirements are satisfied, true?
10:41 A. Yes.
10:41 Q. And so --
10:41 A. For the claims that include them, yes.
10:41 Q. And all of the claims asserted in this case include elongation at break requirements, true?
10:41 A. For the TPU elastomer layer, yes.
10:41 Q. All of the claims in this case require elongation break requirements, correct?
10:41 A. Yes. There are requirements specific to the TPU elastomer.
10:41 Q. Now, you heard Dr. Li testify that after Zendura FLX was released and as the top executives were appreciating that it was a competitive threat to SmartFlex, Align did testing of Zendura FLX, right?
10:41 A. Yes. I believe she mentioned the testing of

Zendura FLX once it was on the market.

Q. And in fact, Align ran more than one test on Zendura FLX at that time, correct?

A. I think so. Yes.

Q. Years before this litigation was filed, true?

A. I believe at least some testing was before this litigation.

Q. So please turn, if you could, Dr. Reitman, to Tab 12 in your binder, and take your time and let me know when you're there. This is DTX-417.

A. I am at that tab.

Q. This reflects some of the testing done by Align on Zendura FLX, right?

A. Yes. Zendura FLX is tested here.

MR. MUELLER: Your Honor, I offer it.

MR. HUNG: No objection.

THE COURT: Admitted.

BY MR. MUELLER:

Q. If we could go to the last page of the document, do you see this particular document was created and modified in 2021, right?

A. I see that. Yes.

Q. Now, let's take a look at Page 6. This is Align testing elongation at break, right?

A. Yes. This is one set of tests.

10:43 Q. And compared Zendura FLX, EX30, which is that older material we've heard testimony about, and SmartTrack, right?

10:43 A. Those are the three materials being tested in this test, yes.

10:43 Q. And tested in particular elongation at break of these materials, right?

10:43 A. Yes. The full sheet for each of these is being tested in this test.

10:44 Q. And the orange is the Zendura FLX, correct?

10:44 A. Yes. That's how to read this graph.

10:44 Q. And this was, to be clear, testing raw Zendura FLX material, not Zendura FLX that had been thermoformed into the shape of an aligner, right?

10:44 A. You can't actually do a D638 on an aligner because of the geometry. So this is --

10:44 Q. Pardon me. My question was simply this is not being done on the aligners. It's being done on the raw material, correct?

10:44 A. On the sheet, yes.

10:44 Q. And the conclusion drawn by Align was the average elongation at break of Zendura FLX was 123.7 in the left-hand test, the first protocol, correct?

10:44 A. That is the average reported there. Yes.

10:44 Q. And the requirement in the patent claims is

10:44 200 percent, right?
10:45 A. Not for this. This is the -- the elongation.
10:45 Q. The elongation -- Dr. Reitman, the elongation -- let's put it this way: The elongation at break requirement uses 200 percent, correct?
10:45 A. For the TPU elastomer layer.
10:45 Q. And for this particular elongation at break test, the elongation at break of Zendura FLX was 123.7, right?
10:45 A. Yes. The combined multi-layer --
10:45 THE COURT: Ma'am, can you just answer his question directly? If you feel like you need to give additional information, your lawyer can bring that out. But just answer his question, please.
10:45 THE WITNESS: Yes, sir.
10:45 BY MR. MUELLER:
10:45 Q. The second protocol in the middle, the orange Zendura FLX elongation at break was 125.3, correct?
10:45 A. Yes.
10:45 Q. Dr. Reitman, is 125.3 higher or lower than 200 percent?
10:45 A. It's lower.
10:46 Q. The right one, the right protocol over here, also is below 200, correct?
10:46 A. That number is also below 200. Yes.

Q. It's 139.6, right?
A. Yes.
Q. All three of these tests of Zendura FLX had elongation at break conclusions below 200 percent, true?
A. Yes.
Q. Let's turn to Tab 13 in your binder. This is DTX-418. This is titled Evaluation of ABA Laminate Films from Covestro.
And Covestro is a company you discussed with Mr. Hung, correct?
A. Yes.
Q. It's a plastics manufacturer, right?
A. Yes.
Q. This document is dated June 4th, 2019, true?
A. Yes.
MR. MUELLER: I offer it, Your Honor.
MR. HUNG: No objection.
THE COURT: Admitted.
BY MR. MUELLER:
Q. Let's go to Page 4. This shows testing on a number of producer ID materials in the left-hand column, correct?
A. Yes.
Q. And just to be clear, Covestro works with

Align, correct?

A. Yes.

Q. Supplies SmartTrack materials, right?

A. I believe they're the supplier, yes.

Q. So let's take a look at what this SmartTrack supplier concluded about Zendura FLX.

Do you see there was testing of Zendura FLX by -- in this document here too?

A. I see that marked. Yes.

Q. And one of the materials that they tested -- I'm sorry. If we look at the top here, it's tensile testing results.

Do you see that?

A. Yes.

Q. And if we look at the third column starting on the right, do you see there's an elongation at break column?

Do you see that?

A. Yes.

Q. And, Dr. Reitman, what is the number listed for Zendura FLX?

A. 110.3 percent.

Q. That's lower than 200, correct?

A. Yes.

Q. And if we go to, just by way of example,

JTX-2, this is the '613 patent, one of the patents at issue in this case, and go to Claim 1, the elongation at break number is greater than about 200 percent, right?

A. For the soft polymer layer, yes.

Q. And every elongation at break number we've seen so far is less than 200, correct?

A. For the materials tested, yes.

Q. Let's go to Tab 14 in your binder. This is DTX-419. This is titled Data on File, Technical Data for Invisalign Aligner Materials Marketing Claim.

This is DTX-419.

Do you see this, Dr. Reitman?

A. I do.

MR. MUELLER: I offer it.

MR. HUNG: No objection.

THE COURT: Admitted.

BY MR. MUELLER:

Q. Let's go to Page 4. This is an Align document, right?

A. Yes.

Q. Let's go to Page 4. Here, again, we have elongation at break data from Align testing of Zendura FLX.

Do you see that?

10:49 A. Yes.
10:49 Q. And the number in the center of the page for elongation at break for Zendura FLX when dry is what?
10:49 A. It's reported as 123.
10:49 Q. Is 123 higher or lower than 200?
10:49 A. Lower.
10:49 Q. And on the right, we have the wet testing of Zendura FLX. What's that number?
10:49 A. It says 116.
10:49 Q. Is 116 higher or lower than 200?
10:49 A. Lower.
10:49 Q. And again, this is Align testing of Zendura FLX years before this lawsuit and the opinions you've offered this jury, correct?
10:49 A. Yes.
10:49 Q. Align testing of Zendura FLX years before this lawsuit reached numbers far below 200 on elongation on break, correct?
10:50 A. For the Zendura FLX, yes.
10:50 Q. And Zendura FLX is the material that's used in the aligners that are accused of infringement, right?
10:50 A. Yes.
10:50 Q. So the very material used in the aligners accused of infringement was tested by Align years before this case was filed, correct?

10:50 A. Yes.
10:50 Q. And the conclusion in that prelitigation testing by Align, by Align, was that elongation at break was less than 200, true?
10:50 A. For the multi-layer, yes.
10:50 Q. Now --
10:50 THE COURT: Counsel, Mr. Mueller, are you anywhere close to being --
10:50 MR. MUELLER: Oh, yes, Your Honor. This is a good time for a break.
10:50 THE COURT: Yes.
10:50 Ladies and gentlemen of the jury, we'll take our recess for 10 or 15 minutes. We'll be back.
10:50 THE BAILIFF: All rise.
10:50 (Jury exited the courtroom.)
10:51 THE COURT: Thank you. You may be seated.
10:51 You may step down.
10:51 Is there anything we need to take up?
10:51 MR. MUELLER: No, Your Honor. Thank you.
10:51 MR. DURST: Nothing here, Your Honor.
10:51 THE COURT: Please be back by about 5 minutes after 11:00.
10:51 (Recess taken.)
11:07 THE BAILIFF: All rise.

11:07 THE COURT: Please remain standing for the jury.

11:07 (Jury entered the courtroom.)

11:07 THE COURT: Thank you. You may be seated.

11:07 BY MR. MUELLER:

11:07 Q. Dr. Reitman, when we broke, we were about to turn to some Bay Materials testing of Zendura FLX. You've reviewed such testing, correct?

11:07 A. Yes. Generally.

11:07 Q. Let's take a look at DTX-455. This is Tab 15 in your binder, and take your time.

11:08 A. I am at that tab.

11:08 Q. And this is titled Zendura XL-1 Design Verification Report: Tensile and Elongation Properties.

11:08 This is DTX-455.

11:08 Do you see that, Dr. Reitman?

11:08 A. Yes.

11:08 MR. MUELLER: I offer it, Your Honor.

11:08 MR. HUNG: No objection.

11:08 THE COURT: Admitted.

11:08 BY MR. MUELLER:

11:08 Q. Let's take a look at Page 1.

11:08 Do you see it says: Zendura XL-1 is a aligner

material which is formed into an orthodontic appliance used in the mouth.

Do you see that?

A. Yes.

Q. And in Paragraph 3, purpose of the verification, it says: This report addresses verification of Zendura XL-1 prototype for meeting design requirement of properties.

Do you see that?

A. Yes.

Q. And it goes on to talk about adequate tensile strength, modulus, and elongation at yield, correct?

A. Yes.

Q. And the date in the top right-hand corner is September 21st, 2018, right?

A. Yes.

Q. Let's turn to the Section 4, a little further down, test information.

Do you see there's a reference to an ASTM standard, testing standard?

A. Yes.

Q. That's ASTM 638 or D638, correct?

A. Yes.

Q. And that's the right standard to use for an elongation at break test. You would agree?

11:09 A. For plastics, yes.
11:09 Q. And in fact, you yourself used ASTM's testing standard in your own tests done in this case, correct?
11:10 A. Yes.
11:10 Q. The "A" stands for American. It's an American testing standard, true?
11:10 A. Yes.
11:10 Q. Now, let's go a little bit further down to the results section.
11:10 And if we look at the elongation at break column for Zendura, do you see those numbers in the middle?
11:10 A. Yes.
11:10 Q. There's five different samples that were tested, correct?
11:10 A. Yes.
11:10 Q. And the average of those samples was 102, correct?
11:10 A. Yes.
11:10 Q. Is that higher or lower than 200?
11:10 A. That number is lower.
11:10 Q. It's almost half of 200, correct?
11:10 A. Yes.
11:10 Q. And none of the samples was higher than 110, right?

11:10 A. That's correct.

11:10 Q. So in this Bay Materials test, long before this lawsuit was filed, that they were doing on their own material, their sample data showed an elongation at break using the American testing standard of 102 on average, correct?

11:11 A. For the multi-layer, yes.

11:11 Q. Now, let's go to Tab 17 in your binder, and take your time. And let me know when you're there, Dr. Reitman.

11:11 A. Tab 17, you said?

11:11 Q. 17, please.

11:11 A. I'm at that tab.

11:11 Q. And Bay Materials in this tab -- I'm sorry, this tab is titled Report: Oral Environment Effect on Zendura FLX and Erkoloc-Pro.

11:11 This is DTX-1775.

11:11 Do you see that? This is more Bay Materials testing, can we agree?

11:12 A. Yes. I see it. And yes. It's from Bay Materials.

11:12 MR. MUELLER: Your Honor, may I offer it?

11:12 MR. HUNG: No objection.

11:12 THE COURT: Admitted.

11:12 BY MR. MUELLER:

11:12 Q. This is dated November 8th, 2023. And do you see it lists key mechanical parameters for aligner retainer performance. And one of those is elongation at break, right?

A. Yes. I see that written there.

Q. Let's go to the testing data further down. Page 14.

And here we see the break, elongation break column in the middle and Zendura FLX at the top left-hand corner of this table.

Do you see that, Dr. Reitman?

A. I do.

Q. And there's ten samples being tested, correct?

A. Yes. For that sample, yes.

11:13 Q. And if we go up to the top right-hand corner of this document, see the date November of 2023?

A. Yes.

Q. Before Align filed this lawsuit, correct?

A. I don't know the filing date.

Q. All right. Well, we'll go down a little further, and I just want to ask you about the data here.

The average elongation at break of Zendura FLX in this data was what?

A. The number for the mean is 124.83 percent.

11:13 Q. And is 124.83 higher or lower than 200 percent?

11:13 A. That number is lower.

11:13 Q. And so, Dr. Reitman, we've now looked at Align and Covestro testing of Zendura FLX from before the lawsuit, correct?

11:13 A. Yes.

11:13 Q. Their -- their testing showed elongation at break below 200, true?

11:13 A. For the multi-layer, yes.

11:13 Q. We've now looked at multiple, multiple Bay Materials tests of their own Zendura FLX material, correct?

11:14 A. Yes.

11:14 Q. Their testing also showed elongation at break below 200, true?

11:14 A. For the multi-layer, yes.

11:14 Q. Now, you in this case have done your own testing, right?

11:14 A. Yes.

11:14 Q. You have used or tried to use in your -- using your methodology the American testing standard, the ASTM standard, right?

11:14 A. I used ASTM standards for certain of my tests, yes.

11:14 Q. Now, you have a dispute with Dr. Spiegelberg, who's an expert witness that we'll be calling, with respect to how to apply that standard in this case, correct?

A. For a specimen selection, yes.

Q. Dr. Spiegelberg's position is it's important to look at the effects of the extrusion lamination process on the raw ingredients before you test them. That's his position, right?

A. Can you say that again, please?

Q. Sure. Sure. Dr. Spiegelberg's position is that it's important to look at the effects of what's called the extrusion lamination process before the test is done, right?

A. Yes. I think that's right.

Q. And his position is you can't just look at data sheets for raw ingredients. His position is you need to look at the materials once the extrusion lamination process has occurred before they're tested, right?

A. I think that's part of it, yes.

Q. And you disagree with him, and the point for now is just there's a disagreement on that question, fair?

A. Sort of, in that I considered that but then

did the testing because of what I learned from the consideration.

Q. And I was trying to listen carefully on your -- when you were answering Mr. Hung's question.

You said you considered the effects of extrusion lamination. But, Dr. Reitman, you didn't test the materials that had been through that process of extrusion lamination, right?

A. No. For certain of the tests, I did test that. For others, I did not.

Q. Okay. Now, you told the jury about some of your test results during your direct examination of Mr. Hung, correct?

A. Yes.

Q. And just to set the chronology here, you provided some testing data to us as part of your original report in this case, your expert report, right?

A. Yes.

Q. You sat for a deposition where you answered questions about that report, correct?

A. Yes.

Q. Then you provided us some more data, correct?

A. Yes. Some of the underlying data.

Q. And the truth is, Dr. Reitman, even under your

11:16 own tests, your own tests, the majority of the results had an elongation at break below 200, true?

A. For the layer, no. They all were over. For the multi-layer, yes, because of the reasons I explained.

Q. So for the multi-layer tests, for the materials that had gone through the process of extrusion lamination -- or not even gone through, but they were in the multi-layer composition.

Do I have that right?

A. For tests of the multi-layer, yes.

Q. For tests of the multi-layer. And again, these are multi-layer clear aligners we're talking about in this case, right?

A. Yes. The final product is. Yes.

Q. For tests of the multi-layer, the majority of your testing results had elongation at break less than 200, correct?

A. Yes. I believe so.

Q. Okay. So again, this is an important point for the jury because I want to make sure we have it exactly right.

This case is about clear aligners involving Zendura FLX material, right?

A. Yes.

11:17 Q. One of the requirements of the claims, in every one of the claims being asserted, is an elongation at break of 200 or more, correct?

A. For the soft layer, yes.

Q. The majority of your own tests, the majority of your own tests in your litigation testing had elongation at break of the multi-layer below 200, true?

A. Yes.

Q. Now, just a couple of final questions here, Dr. Reitman. You had the chance in this case to review various materials produced in the case by both sides, right?

A. Yes.

Q. And that included the lab notebooks of John Lahlouh, correct?

A. Yes. I believe so.

Q. And you reviewed his deposition testimony as well, right?

A. Yes.

Q. And after reviewing all that material, you offered this jury no opinion that Mr. Lahlouh had set out to intentionally copy the Align patents or SmartTrack, correct?

A. I have not offered that.

MR. MUELLER: Thank you, Dr. Reitman.

11:18 I pass the witness, Your Honor.

11:18 MR. HUNG: Can you pull up PTX-1876, the '691 patent?

REDIRECT EXAMINATION

BY MR. HUNG:

11:18 Q. Dr. Reitman, this is the first SmartTrack patent, correct?

11:19 A. Yes.

11:19 Q. And let's go to the claims. Claim 1 should be at the end.

11:19 Is this patent asserted in this case?

11:19 A. No.

11:19 Q. This is -- do you see how this refers to a hard polymer layer, a soft polymer layer, and a second soft polymer layer?

11:19 Do you see that?

11:19 A. Yes.

11:19 Q. This patent's not asserted, correct?

11:19 A. Correct.

11:19 MR. HUNG: Let's go to DTX-84 at Page 3. Let's highlight the "during evaluation."

11:19 Thank you.

BY MR. HUNG:

11:19 Q. You discussed this declaration, the second declaration with Mr. Mueller just now, right?

11:19 A. Yes.
11:19 Q. What did you -- and you were here when Dr. Li, who's still in the audience, testified, right?
11:19 A. Yes.
11:19 Q. And you heard her discuss what she mentioned in this declaration?
11:19 A. Yes.
11:19 Q. Do you recall that?
11:19 What did you understand this sentence here to mean: During evaluation of the over 250 materials, only the materials according to the current claims met Align's development criteria?
11:20 A. I understood that to be what's there, which is the claims which require a hard polymer layer and a soft polymer layer and three layers all together were improved, and for the specific product development -- development criteria, the other product met that best.
11:20 Q. And I believe you were just shown five documents, five documents, indicating that the elongation at break of Zendura FLX's multi-layer is over -- is under 200 percent.
11:20 Do you recall just discussing those documents with Mr. Mueller?
11:20 A. Yes.
11:20 Q. Are those documents reporting elongation at

11:20 break of the inner layer, or are they reporting it of the whole sheet?

A. The whole sheet. They're not getting at the inner layer properties.

Q. Let's look at just a couple of these. Let's look at DTX-417.6.

And you recall you were asked about these values here. You see ST30 is here and Zendura FLX is here. ST30's in blue, and Zendura FLX is in orange.

Do you see that, ma'am?

A. Yes.

Q. And what is this showing?

A. The results for the multi-layer films for the tests. You can see that the values are within the standard deviations across all the conditions. So the materials are giving you elongation values for the multi-layer and are within the spec for the ST30.

Q. Let's be clear. This is a test on the whole sheet. These are values for the whole sheet, not for the inner layer; is that right, ma'am?

A. Right. These are the multi-layers. These are the -- when you put them together, this is what you get for the whole thing, including the effect of the copolyester.

Q. Are these reflecting the elongation at break

for just the TPU layer?

A. No.

Q. And actually, interestingly, what is the value for the elongation at break for SmartTrack's whole sheet?

A. For SmartTrack, you get numbers that are quite similar, under basically around 130 to 140 percent elongation.

Q. Is that less than 200?

A. Yes.

Q. Does SmartTrack practice the asserted patents that we've been discussing today?

A. Yes.

Q. Let's look at another one. Just a couple more. Let's look at DTX-418 at Page 4. And you were asked about this.

MR. HUNG: Let's highlight the elongation at break for Zendura FLX and the 110.3.

BY MR. HUNG:

Q. What is that value reporting? Is that reporting it at the whole sheet, all three layers together, or is this reporting the inner layer?

A. This is the whole sheet. This is the combined effect of all three layers.

Q. We looked at --

11:23 A. It's not the TPU layer.

11:23 Q. We looked at three more documents discussing elongation at break, and I'm happy to pull them up. I think you -- did you want to discuss those -- well, let me ask a simpler question. Let's just do one more. Let's go to 419 at 4.

11:23 MR. HUNG: And let's highlight elongation at break, Zendura FLX, 123 percent.

BY MR. HUNG:

11:23 Q. Do you see that?

11:23 A. Yes.

11:23 Q. Is that reporting the elongation at break of all sheets together, the two outer ones and the middle, or just the inner layer?

11:23 A. The whole thing together. Just like for SmartTrack, it's the whole thing together.

11:23 Q. Okay. One last document. PTX-332.3. We talked about this one. This is a ClearCorrect document.

11:24 Do you recall discussing this?

11:24 A. Yes.

11:24 Q. And when ClearCorrect, one of the defendants in this case, reports the elongation at break of the layer -- not the whole thing, of the layer, what do they report?

11:24 A. They specifically said [redacted] percent for the TPU elastomer.

MR. HUNG: Thank you very much, Dr. Reitman.

MR. MUELLER: Nothing further, Your Honor.

THE COURT: Thank you, ma'am.

Next witness, please?

MR. NASH: Your Honor, plaintiff calls Mr. Michael Lasinski.

(The witness was sworn.)

DIRECT EXAMINATION

BY MR. NASH:

Q. Good morning, Mr. Lasinski.

A. Good morning.

Q. Could you please introduce yourself to the jury?

A. Sure. My name is Michael Lasinski. I'm a partner at a company called HKA Consulting.

Q. And could you tell us a little bit about yourself including your experience that's relevant to this case?

A. Sure. I live in Chicago. I have three sons. They are all living in Chicago near me, as well as my wife.

11:26 I am a certified public accountant. I'm certified in licensing, a Certified Licensing Professional. That's somebody who actually licenses intellectual property like patents like we're going to talk about here today. I'm certified in financial forensics.

I went to the University of Michigan. I got an electrical engineering degree, and I actually wrote the software for the first remote entry system on cars. It feels like a hundred years ago now.

And then I got into this business where I've been helping companies license intellectual property as well as doing stuff like I am today, which is testifying on intellectual property damages.

MR. NASH: Your Honor, we tender Mr. Lasinski as an expert in patent damages.

MR. HIRSCH: No objection, Your Honor.

THE COURT: Admitted.

BY MR. NASH:

Q. Mr. Lasinski, what are you here to talk about today?

A. Well, I'm here to talk about patent damages, or the amount of money that would go from ClearCorrect and Straumann on the one hand to Align on the other hand if the patents are found to be infringed.

Q. Now, do you have any opinion about whether ClearCorrect or Straumann infringes?

A. No. I do not. That's actually an assumption that I make as part of my work.

Q. Okay. And do you have any slides to help you with your testimony today?

A. I do. Yes.

MR. NASH: Okay. Mr. Smith, can we have PDX-7.1?

BY MR. NASH:

Q. Are these your slides?

A. These are those slides. Yes.

MR. NASH: Okay. Let's go to the next one. PDX-7.2.

BY MR. NASH:

Q. Mr. Lasinski, can you please summarize for us what your damages opinion is in this case?

A. Sure. So we've heard about the Zendura FLX material, and I have a damages opinion on that, as well as clear aligners, and I have a damages opinion on that.

I have a 20- -- what they call a 24 percent royalty rate for the Zendura FLX material. And I multiply that by the amount of sales of Zendura FLX material over the period that we're here to talk about.

11:27 That's $166.1 million or a damages figure of
11:28 39.9 million.
11:28 For the clear aligners, I have a royalty rate
11:28 of 12 percent, and a total amount of sales there of
11:28 about $280 million and a damages figure for that for
11:28 about 300 -- I'm sorry, $33.5 million. Total damages
11:28 of 73.4 million.
11:28 Q. Well, how do you figure out these types of
11:28 numbers?
11:28 A. Well, we heard a little bit about this at the
11:28 opening, and we have what's known as the hypothetical
11:28 negotiation. And that's where the parties would sit
11:28 down at a table, a hypothetical table, if you will,
11:28 Align on the one hand and Straumann on the other hand,
11:28 and come to an agreement for what a reasonable amount
11:28 of payment would be for a license to those -- those
11:28 intellectual properties.
11:28 Q. And who would have been the parties at this
11:29 hypothetical negotiation, Mr. Lasinski?
11:29 A. It would have been Align on the one hand as
11:29 the licensor, and it would have been ClearCorrect and
11:29 Straumann on the other hand as the licensee.
11:29 Q. And what are the assumptions that would be
11:29 built into this hypothetical negotiation?
11:29 A. Well, there's really three assumptions.

First is that the parties are willing to take a license.

The second is that the patents that we are talking about are valid and infringed. I assume that they are valid and infringed.

And then there's reasonable knowledge of the facts so there's no surprises. Both parties understand what's going on in the other person's mind, if you will, about the products.

Q. And when would it have happened?

A. Well, in this case, the sales of the products, Zendura FLX as well as the clear aligners, were happening prior to the patent issuing, the first materials patent that we heard about.

So that would happen in April, right around April of 2021 as that first patent issues.

Q. And why is that the date we use?

A. Well, because that's the start of the infringement period, is when the first patent issues. There's no infringement, my understanding, before a patent has issued.

Q. Okay. And now, is there anything else we need to know before we start looking at what Align and Straumann would have agreed to?

A. Sure. So inside the hypothetical negotiation

framework, there's 15 factors that the courts have set forward and that people like me, damages experts, use to determine what they would have been thinking about when they were at the hypothetical negotiation table. And this is -- these are those 15 factors.

Q. And what do you call those factors?

A. They're the Georgia-Pacific factors. They're from a case -- I think it was 1970 -- in New York.

Q. I see. And did you analyze all of these factors in forming your opinion?

A. Yes. I did.

Q. Okay. Well, let's talk about the ones on the left, starting with comparable license and other licensing factors.

A. Sure. So I looked for and did not find any comparable licenses. That's not surprising because Align has a clear track record of not licensing its patents like these types of patents to competitors.

Q. What about that middle bucket we see there. It says economic factors?

A. Sure. So the middle bucket relates to kind of competitive or economic factors. So are the companies competitors? Do the companies believe that the products making or being made under the patents will be successful or, you know, generate a lot of profits in

11:31 the industry?

11:31 You know, on Align's side, do they feel like they could have made some of the sales that were being made by ClearCorrect because they're a competitor to them?

11:31 Q. And what about in the bucket on the far right?

11:31 A. So the bucket on the far right are technical factors. And here, I talked to, for example, Dr. Reitman, who was just heard from. And she told me that this is an important technology. It relates to comfort, patient comfort. Therefore, they use it more often. Better clinical outcomes. So that was important.

11:32 And then also very importantly, I understand that there were no acceptable noninfringing alternatives. So the parties would have known that they would continue to use an infringing product.

11:32 Q. So what's your conclusion after analyzing all 15 of these factors?

11:32 A. After analyzing these factors, I conclude that the negotiating range would favor Align or it would be at the higher end of the negotiation range.

11:32 Q. Okay. Now, I'd like to talk to you about how you analyze damages generally.

11:32 A. Sure.

11:32 MR. NASH: Let's go to the next slide.

BY MR. NASH:

11:32 Q. What are the steps you use to calculate damages?

11:33 A. Sure. So we saw in the first -- we saw in the first page I had a royalty rate and a royalty base.

So first, I calculated the royalty rate for each of the products that we're going to talk about, and then I tabulated or looked at the documents in the record to determine what that royalty base was. I multiplied those two together to get the damages that we're going to talk about.

Q. I see the word "royalty" used in a couple of contexts there.

Just at a high level, what is a royalty?

A. Sure. A royalty is a license for intellectual property like patents. You can think about it like rent for an apartment. You don't own the apartment that you're living in, so you have to pay rent.

And that's a very similar concept for intellectual property. ClearCorrect and Straumann don't own these patents, but they would pay a royalty to Align.

Q. Which Straumann business units do we care about for purposes of this analysis?

11:33 A. Well, we've heard about Bay Materials. They're the ones that make the Zendura FLX material. So we care about them. And then as well as ClearCorrect, they're the ones that actually make and sell the aligners.

11:34 Q. Okay. Well, let's focus first on that royalty rate, Mr. Lasinski.

11:34 A. Sure.

11:34 Q. I see that you already had two percentages here. Why is that?

11:34 A. Well, because there were -- the two business units that I just talked about, there are different economic factors that went into those business units. We heard earlier that Straumann, through Bay Materials, sells the aligner material. And then through ClearCorrect, they sell aligners. And there are other companies that sell aligners that use Zendura FLX as well.

11:34 So I broke it into two different buckets.

11:34 Q. Well, let's start with that first bucket, the royalty rate for Zendura FLX.

11:34 Now, can you at a high level explain your process?

11:34 A. Sure. So I have a four-step process that I use here.

11:34 First, I determine the profits that were
11:34 available or projected for Zendura FLX.
11:35 And then I go through two apportionments of
11:35 those profits so that Bay Materials and/or Straumann in
11:35 this case retained those portions of the profits, and
11:35 the remainder is left over for payment of a royalty.
11:35 Q. Well, let's start with that first step.
11:35 Can you explain that in your analysis for the
11:35 first step?
11:35 A. Sure. So around the time of the hypothetical
11:35 negotiation for Bay Materials and for Zendura FLX, I
11:35 had projections. And I was able to use those
11:35 projections to determine what Bay Materials was
11:35 thinking that they would make from the products that we
11:35 were talking about here.
11:35 And what I found was there would be a
11:35 65 percent gross margin on those products, but there
11:35 would be expenses in addition to just the material
11:35 expenses that would be incurred as well. And they're
11:35 about 10.1 percent.
11:35 So I was able to calculate a 54.9 percent
11:35 margin or a profit margin on Zendura FLX sales.
11:36 Q. I'd like you to turn to JTX-19 and JTX-22 in
11:36 your binder.
11:36 A. I'm sorry, you said 19 and 22?

Q. That's right.
A. Okay.
Q. Do you recognize those documents?
A. Yeah. These are the documents that I was just talking about.
Q. I see. And you relied on them in forming your analysis?
A. I did. Yes.
MR. NASH: I offer them, Your Honor.
MR. HIRSCH: No objection.
THE COURT: Admitted.
BY MR. NASH:
Q. Okay. So what's the next step in determining the reasonable royalty rate for Zendura FLX?
A. So the next step was I determined industry profit, like industry profit percentages.
So what I did here was I looked up what Bay Materials' industry code is. It's called the North American Industry Classification System. I found where they -- where Bay Materials is in this classification system that's used in the U.S., and then I used data from another source called Risk Management Associates. It's the type of thing that tracks companies in the same industry as Bay Materials for small and medium size companies, companies with less than $250 million

worth of assets or sales like Bay Materials.

And it gives us averages too so we can understand what normal companies in that industry make. And people like me, banking professionals, other financial analysts, use that to determine what normal industry profitability is.

Q. I'd like you to turn to PTX-356, PTX-357, and PTX-360 in your binder.

A. Okay.

Q. Do you recognize those documents?

A. Yes. These are the documents I just discussed.

Q. And you relied on them in your opinion?

A. Yes. I did.

MR. NASH: Your Honor, I offer them.

MR. HIRSCH: No objection.

THE COURT: Admitted.

BY MR. NASH:

Q. Okay. You mentioned Step 2 is the industry profit and the 10.1. Do you just stop there and then give all that's left of that profit to Align?

A. No. They keep the 10.1 percent. I'm sorry. Bay Materials keeps the 10.1 percent, but then I have a next step that I have to do for the remaining profit, and that was actually to apportion that profit between

11:38 Align and Bay Materials.

11:38 Q. And what information did you use to determine how to compensate Straumann and Bay Materials for the Step 3 that you do in your calculation?

11:38 A. Sure. That's on my next slide. And what we have here was information on when Straumann bought Bay Materials. When a company buys another company, they look at the different assets that have been bought and they allocate that purchase price between the different assets.

11:39 And one of the things that they did was allocate purchase price to the intangible assets. And so I used that allocation. I compared the allocation of the intangible assets to the purchase price to figure out what portion of that remaining profit should stay with Straumann and Bay Materials in this case.

11:39 Q. So let's return back to your four steps. I think we've gotten through three of them?

11:39 A. Yes.

11:39 Q. Okay. What's the fourth and final step?

11:39 A. So the fourth and final step then is now I've allocated twice normal industry profit as well as intangible asset profit to Straumann, and then the remainder is available for a royalty to be paid.

11:39 In this case, we saw the additional

11:40 24.5 percent left over. I determined a royalty of
11:40 24 percent to be the right royalty.
11:40 Q. And how much profit does Straumann and Bay
11:40 Materials keep as part of that?
11:40 A. 30.9 percent.
11:40 Q. Okay. And do you think this is a reasonable
11:40 amount?
11:40 A. Yes. I do. As we just talked about, the
11:40 Georgia-Pacific factors are in favor of Align, but
11:40 still Straumann is keeping the majority of the profit.
11:40 Q. Well, let's turn next to the royalty rate for
11:40 clear aligners.
11:40 MR. NASH: Mr. Smith, can we get the next
11:40 slide?
11:40 There we go.
11:40 BY MR. NASH:
11:40 Q. What was that amount?
11:40 A. 12 percent.
11:40 Q. Can you tell me how you calculated that?
11:40 A. Sure. If we can go to the next slide, we have
11:40 the same basic four-step process where I determine
11:40 profits and then do two allocations back to Straumann
11:40 and in this case ClearCorrect. But I do it in a
11:40 slightly different way.
11:40 Q. Well, could you turn to JTX-21?

11:40 A. Yes.

11:41 Okay. I'm there.

11:41 Q. What's this document?

11:41 A. So this document looks at gross sales and profit of ClearCorrect aligners.

11:41 Q. What did you find?

11:41 A. So in this case, I found that -- well, in this case, I didn't have projections like I had for Bay Materials. I actually had profits. And so I looked at the profits, the gross profits that they were making from the clear aligners. I found that to be reasonable.

11:41 But I also looked at the operating or the expenses that were being occurred -- incurred, and I found that to be suspect or unreasonable. And I found that for a number of different reasons.

11:42 Q. Well, what did you do then to calculate operating expenses in that case?

11:42 A. So since I did not believe that the operating expenses and do not believe that the operating expenses in this case were reliable, I looked at that same industry data that we talked about before. I didn't use the operating margin, but I used the operating expenses for this calculation.

11:42 Q. I see. And so what's reflected, then, in

11:42 Step 1 for purposes of understanding how you arrive at a net profit?

A. So what I did here was I looked at the gross profits that -- from that -- from the schedules that we were just talking about. I used industry data that I tested against other profitability data in the case, like Align's data, Straumann's data, as well as some information that I saw produced in other documents, tested that information.

I also -- before I calculated the overall profit, I calculated and took out any royalty rates or any royalties that would be paid on the Zendura FLX material, so not -- as to not double count those royalties. And that's what went into my calculation here.

Q. Okay. And so just so we understand, the royalty that we talked about earlier with respect to Zendura FLX, that is not being added here. Is that my understanding?

A. No. It's not being added. It is actually being subtracted. It's a cost. So it's being subtracted.

Q. Okay. Let's turn to JTX-24 in your binder.

A. Okay. I'm there.

Q. Do you recognize that document?

11:43 A. Yes. This is the intercompany sales document that we were talking about.

MR. NASH: Okay. At this time, we offer JTX-21 and JTX-24.

MR. HIRSCH: No objection.

THE COURT: Admitted.

BY MR. NASH:

Q. So what's our conclusion at Step 1?

A. Is 28.9 percent profit.

Q. Okay. How do we get to Column 2 now?

A. Column 2, we have a very similar step as to what we just did for Zendura FLX. Here, we look at normal industry profits, and I have that staying with Straumann.

Q. And where did you get the information for that?

A. I got the information from the same documents that we just talked about before, the industry code documents, as well as the RMA documents.

Q. And remind us again, what happens with the 9.8 percent?

A. That stays with Straumann.

Q. Okay. Let's go to the Column 3 next, and remind us, what's this step about?

A. So this step is allocating intangible asset

11:44 profit to Straumann. And we -- again, like Bay
11:44 Materials, Straumann bought ClearCorrect. And so we
11:44 were able to determine what percentage were
11:45 attributable of the purchase price to intangible
11:45 assets, and then I used that to determine how much of
11:45 the remaining profits should be allocated to Straumann
11:45 in this case.
11:45 Q. Okay. And I've pulled up PDX-7.13.
11:45 Is this that calculation that you were
11:45 referring to?
11:45 A. This is. Yes.
11:45 Q. Okay. And what was the result of that
11:45 calculation?
11:45 A. That calculation would be an incremental or
11:45 additional 7.1 percent profit stays with Straumann.
11:45 Q. So going back to the four-step analysis that
11:45 you have there.
11:45 A. Yes.
11:45 Q. What's our next step?
11:45 A. Our next step is to allocate the two. So in
11:45 this case, there's 12 percent left to pay a royalty on
11:45 the one hand, and then 16.9 percent remains with
11:45 Straumann.
11:45 Q. Now, do you think that's a reasonable amount?
11:45 A. Just like for Zendura FLX, I think that that's

11:45 a reasonable amount, given what the Georgia-Pacific
11:46 factors said as well as my analysis.
11:46 Q. Now, I don't want to go back through all the
11:46 Georgia-Pacific factors that are used to determine
11:46 things like this royalty, but on the economic prong
11:46 factor in this hypothetical negotiation, with Straumann
11:46 and ClearCorrect and Align be considering for the rate
11:46 of aligners, do they consider sales of anything else?
11:46 A. Yes. They do. For example, they would
11:46 consider sales of, you know, other types of products
11:46 that the company makes, and one of them that we've
11:46 heard about is the scanners.
11:46 Q. Can you look at your binder at PTX-0456 and
11:46 PTX-0457?
11:46 A. Yes.
11:46 Q. Do you recognize these documents?
11:46 A. Yes. These are sales documents for scanners.
11:46 Q. At this time -- actually, did you consider
11:46 these sales in your analysis?
11:46 A. Yes. I did.
11:46 MR. NASH: Okay. Your Honor, we offer
11:46 them.
11:46 MR. HIRSCH: Your Honor, these are the --
11:46 THE COURT: Understood.
11:46 (Simultaneous conversation.)

MR. HIRSCH: -- discussed this morning. So we do object.

THE COURT: The objection's sustained.

MR. NASH: Let's go back to 7.2. Sorry, Mr. Smith. Can you get me to 7.2?

BY MR. NASH:

Q. Okay. So now we have the royalty rates.

What is the next step in calculating damages?

A. The next step is to tabulate the royalty base or to calculate the royalty base.

Q. And what are the relevant sales here?

A. In Zendura FLX, it's 166.1 million, and then for clear aligners, it's 279 million.

Q. All right. Well, let's start with Zendura FLX.

Do the defendants make, use, and offer for sale -- sorry -- make, use, and sell Zendura FLX material in the United States?

A. Yes. They do.

Q. Okay. And what does that number consist of?

A. Well, on the next slide, I've tabulated the sales and --

MR. NASH: Whoops. Can we get to PDX-7.15, please, Mr. Smith?

Thank you.

A. So I've tabulated them in three different buckets. First, U.S.-only sales. So sales to U.S. customers. And that's 54.8 million.

The rest of the world, so sales outside of the United States, and that's 95.1 million.

And then there was a stub period or a period in which I couldn't allocate between the U.S. and global, and I call that "global unallocated" here. There would be some U.S. sales. There are rest of the world sales in there. That's 16.2 million.

BY MR. NASH:

Q. Now, I see -- oh, I'd like you to turn to JTX-20 and 23 in your binder.

A. 20 and 23, you said?

Q. 20 and 23. That's right.

MR. NASH: And, Your Honor, may I approach with a secure binder for the witness?

BY MR. NASH:

Q. Okay. Mr. Lasinski, I think you were speaking to the sales that we see here, and I had you turn to JTX-20 and 23.

A. That's correct. I have 23. I have 23 in this binder. I do not see 20.

Oh, I got 20. Here it is. Yeah. I've got 20.

11:50 Q. Okay. Do you recognize these documents?
11:50 A. Yes. I do. These are the documents we were just discussing.
11:50 MR. NASH: At this time, plaintiff offers 20 and -- JTX-20 and 23, Your Honor.
11:50 MR. HIRSCH: No objection.
11:50 THE COURT: Admitted.
11:50 BY MR. NASH:
11:50 Q. Now, let's talk about the dates that we see on this slide, Mr. Lasinski.
11:50 A. Yes.
11:50 Q. What do they represent?
11:50 A. So the dates on the left are the date that I understand the patent was first marked on a virtual or a website for Align.
11:50 And the date on the right, the dates on the right, are the dates through which I had information on the sales that we were just talking about, with the exception of the bottom row here, which that's the -- what I call the stub period or a period that starts September 1st, 2025, through December 2025.
11:51 I didn't have information to allocate those sales between the U.S. and the rest of the world. So that's the period -- is a little bit different than the other two rows.

11:51 Q. I'd like you to turn to PTX-1265 in your binder.

11:51 A. Okay.

11:51 Q. At a high level, what is this document?

Oh, I'm sorry. You weren't there yet.

11:51 A. Yep. I'm here.

11:51 Q. Okay.

11:51 A. So this document is the HTML code for the website that I was just talking about. And it has information on this marking date as well as the '613 patent that we talked about for the hypothetical negotiation.

11:51 Q. And did you rely on this document in forming your opinion?

11:51 A. Yes. For the marking date we just discussed.

11:51 MR. NASH: At this time, we offer it into evidence, Your Honor.

11:51 MR. HIRSCH: No objection.

11:51 THE COURT: Admitted.

11:52 BY MR. NASH:

11:52 Q. Okay. Let's turn to the aligners.

11:52 Do defendants make, use, and sell aligners from -- made from the Zendura FLX material in the United States?

11:52 A. Yes. They do.

Q. And what did you do to find the royalty base for aligners made of Zendura FLX?

A. So I looked at information produced in the record, information for -- if you -- if we look at the next slide, there's information on -- there's information on --

Q. Hold one second, Mr. Lasinski.

A. Yeah.

Q. I just wanted to know at a high level, do we have a base here on -- as part of your summary opinion?

A. Sure. Yes. I found $279.7 million based on information provided to me.

MR NASH: Okay. And we can go into a breakdown, but, Your Honor, at this time, I think we need to go on the sealed record because we'll have third-party confidential financial information.

THE COURT: Okay.

(Sealed proceedings.)

BY MR. NASH:

[redacted]

[redacted]

MR. NASH: Okay. Your Honor, at this time, we offer them.

MR. HIRSCH: No objection.

THE COURT: Admitted.

[redacted]

[redacted]

MR. NASH: And, Your Honor, I think we can now go off the sealed record.

(Sealed proceedings end.)

BY MR. NASH:

Q. So you -- whoops. Let's go to -- well, so you calculated the royalty rates and the royalty bases.

How did you then go about calculating damages?

A. I took these royalty rates. I multiplied them by the bases, and then I added them up. So the 24 percent for Zendura FLX, approximately $166.1 million worth of sales, $39.9 million worth of damages on that hand; and then on the other hand, clear aligners, 12 percent royalty rate, $279.7 million worth of sales, $33.5 million worth of damages for 73.4 million of total damages.

Q. Now, at some point we might be hearing about things like running royalties and lump sum. Which is this?

A. This is a running royalty that was calculated

11:55 1 up through the time with which I had information.
11:56 2 Q. Okay. So altogether, what's the total amount
11:56 3 you believe defendants should pay for past damages for
11:56 4 the use of Align's patents?
11:56 5 A. In my opinion, it's $73.4 million.
11:56 6 MR. NASH: Thank you, Your Honor. I pass
11:56 7 the witness.
11:56 8 THE WITNESS: Before we start, could I
11:56 9 just get a water?
11:56 10 THE COURT: Let me ask. Maybe.
11:56 11 Ladies and gentlemen of the jury, it's
11:56 12 about noon. Would you prefer to take our lunch break
11:56 13 now, or would you prefer to start the cross and go for
11:56 14 a while? I'm -- y'all are the judges. You tell me
11:56 15 what you'd like to do.
11:56 16 I can't hear.
11:56 17 JUROR: Can we finish?
11:56 18 THE COURT: Finish with him? Y'all are
11:56 19 the judges. That's fine with me.
11:56 20 So yes, sir.
11:56 21 MR. HIRSCH: Thank you, Your Honor.
11:56 22 THE COURT: And yes, now you can have
11:56 23 some water. Mr. Nash will get it for you.
11:57 24 MR. HIRSCH: Good morning, ladies and
11:57 25 gentlemen of the jury. My name's Jordan Hirsch, one of

the attorneys for ClearCorrect.

CROSS-EXAMINATION

BY MR. HIRSCH:

Q. Mr. Lasinski, nice to see you, sir.

A. Good to see you again.

Q. We actually met, as you referenced, right?

A. We did. Yes.

Q. I took your deposition in this case back in March of this year; is that right?

A. That is correct.

Q. Well, nice to meet with you again, sir.

I want to start with something you said at the beginning of your testimony, and that is that for purposes of your analysis, you assume infringement; is that correct?

A. I do.

Q. You didn't independently analyze infringement, fair?

A. I think you're asking me to say yes. But yes, that's -- that is fair.

Q. Thank you.

You assumed, for purposes of your analysis, that ClearCorrect infringes, correct, sir?

A. Yes. I did.

Q. And you mentioned and described for us the

hypothetical negotiation, right?

A. Yes, sir.

Q. And you described the hypothetical in which ClearCorrect and Align assume the patents are infringed and valid and negotiate a license, true?

A. True. I just -- just so maybe we're not talking past each other, I said ClearCorrect and Straumann. But, I mean, if you say ClearCorrect, that's true, but Straumann would be at the table as well.

Q. Sure. But in your -- that's fine.

In your hypothetical negotiation, you have ClearCorrect and Straumann on one side and Align on the other, right?

A. Correct.

Q. And you're assuming that those parties would themselves assume infringement and validity and negotiate a license, true?

A. That is my understanding of the task.

Q. And you understand, sir, that not in the hypothetical world but in the real world, in this courtroom, you understand that ClearCorrect says they don't need to take a license to the asserted patents, true?

A. I do understand that. Yes.

11:59 Q. You understand that in the real world, ClearCorrect says they don't infringe the asserted patents, true, sir?

11:59 A. I -- I heard that. Yes.

11:59 Q. Right. And you would agree with me that if the ladies and gentlemen of the jury in the real world decide that ClearCorrect does not infringe, including because the elongation at break requirement is not met, you'd agree damages are not that $73 million number that you showed us, fair?

11:59 A. Well, I'm not going to testify at all as to elongation at break or anything like that. But my understanding is if there's no infringement, then there's no damages.

12:00 Q. Right. So if the ladies and gentlemen of the jury conclude there's no infringement, the elongation at break requirement is not met, the correct damages number in the real world is actually zero, true?

12:00 A. If there's no infringement, my understanding -- it's a legal conclusion, but my understanding is there would be no damages.

12:00 Q. No damages.

12:00 Now, I want to pull up, if we could, Slide 12 from your -- from your damages deck.

12:00 A. Sure.

MR. HIRSCH: Pull that up, Mr. Lee.

BY MR. HIRSCH:

Q. And I want to pause for a moment here. This was your -- your ClearCorrect aligner calculation, right?

A. Correct.

Q. And this is where you calculate --

A. Clear -- ultimately aligner royalty.

Q. Aligner royalty. Right.

And you calculate the 12 percent royalty, true?

A. These are the steps that I use. Yes.

Q. Right. And I want to pause for a moment, sir, on No. 1 in the left-hand side where you say: Identify ClearCorrect aligner profit.

Do you see that?

A. I do. Yes.

Q. And right below that you say: Adjusted where necessary.

Right?

A. I do. Yes.

Q. And I want to talk a little bit about that adjustment. Okay?

A. Sure.

Q. And you would agree with me, Mr. Lasinski,

12:01 sometimes when we're digging into these damages
12:01 calculations, it's helpful to understand some of the
12:01 details. Would you agree?
12:01 A. Sure.
12:01 Q. It's helpful to explain some of the numbers
12:01 that are behind the calculations, fair?
12:01 A. I think that's fair.
12:01 Q. All right. I want to put on the projector
12:01 here something from your expert report, and you can
12:01 follow along, sir, if it's easier to see in front of
12:01 you. It's Tab No. 6 in your report.
12:01 Do you have that before you?
12:01 A. I'm here. Yes.
12:01 Q. All right. And now Tab 6 in your report is
12:01 the actual underlying calculations that you made for
12:01 your ClearCorrect aligner royalty rate, true?
12:02 A. Yes, sir.
12:02 Q. And if we look, we can see right here you've
12:02 got your 12 percent, right?
12:02 A. I do. Yes.
12:02 Q. And now I want to dig in a little bit to the
12:02 profit number, if I could. You started, you said,
12:02 Mr. Lasinski, by looking at gross margin, right?
12:02 A. Yes, sir.
12:02 Q. And then you subtract operating expenses,

12:02 true?
12:02 A. Sure. Can I -- can I just clarify one thing?
12:02 Q. Sure.
12:02 A. When you say "gross margin," this is the
12:02 adjusted gross margin --
12:02 Q. Fair enough.
12:02 A. -- for the Zendura FLX royalties.
12:02 Q. Okay. So we have ClearCorrect, adjusted gross
12:02 margin, right?
12:02 A. Yes, sir.
12:02 Q. And then you subtract operating expenses,
12:02 right?
12:02 A. Yes, sir.
12:02 Q. And you're trying to get to operating
12:02 profitability, true?
12:02 A. Yes. As one of the steps, correct.
12:02 Q. And that's one of the steps that leads to your
12:03 12 percent royalty rate, right?
12:03 A. Correct.
12:03 Q. Now, if we focus for a moment, sir, to dig
12:03 into the details a bit, for gross margin, you refer to
12:03 ClearCorrect, right? ClearCorrect, gross margin.
12:03 Do you see that?
12:03 A. Yes. I do.
12:03 Q. And then for the operating profitability, you

say ClearCorrect, right, because you're trying to calculate ClearCorrect's operating profits, true?

A. What their expectations would have been, yes. That's true.

Q. And then for the operating expenses, though, you don't write ClearCorrect. You wrote: Average NAICS 339114 historical relevant operating expenses.

Right?

A. That's exactly right. Yes.

Q. And in fact, sir, what that 339114 refers to is an industry code number, right?

A. Yes. I mean, just like what I talked about earlier, that's right. That's right.

Q. That industry code is the dental equipment industry, true?

A. Yes, sir.

Q. And you would agree with me, the dental equipment industry includes far more than clear aligners, right?

A. It does include more than clear aligners.

Q. The dental equipment industry, for example, includes things like dental chairs, correct?

A. It would. Yes.

Q. Dental chairs, we agree, are not related to the asserted patents, right?

12:04 A. They could be made by the same companies that make these types of products, but they're not related to the patents. That's correct.

Q. We agree that the dental chairs themselves, they're a part of the dental equipment industry, not related to the patents, fair, sir?

A. That is fair.

Q. All right. And the dental equipment industry includes things like cement used for dental glues, right?

A. It can. Yes.

Q. Also not related to the asserted patents. That's fair?

A. That's my understanding. Yes, sir.

Q. All right. So we've got the dental equipment industry relevant operating expenses, true?

12:05 A. True.

Q. Now, you had, sir, you had -- when you did your analysis, you had ClearCorrect's operating expenses, correct?

A. Yes. I did.

Q. And in fact, it's true, is it not, that using ClearCorrect's operating expenses, their real-world operating expenses -- not the dental equipment operating expenses but ClearCorrect's actual operating

12:05 1 expenses -- would result in a negative profit, correct?
12:05 2 A. Well, if you use the information from the P&L,
12:05 3 that is correct. I deem that to be unreliable. So I'm
12:05 4 not sure that that would be right.
12:05 5 But if you use the numbers directly from the
12:05 6 P&L that was produced, that is correct.
12:05 7 Q. Let me ask it this way, sir: Isn't it true
12:05 8 that using the actual operating expenses that
12:05 9 ClearCorrect incurred would result in a negative net
12:06 10 profit number; isn't that true?
12:06 11 A. Using the actual operating expenses from the
12:06 12 document, that is true.
12:06 13 Q. All right.
12:06 14 A. I don't think that those expenses are
12:06 15 reliable. That's why I didn't use them.
12:06 16 Q. ClearCorrect produced its data, true, sir?
12:06 17 A. It did.
12:06 18 Q. That's the data that has the operating
12:06 19 expenses, right?
12:06 20 A. It has what they purport the operating
12:06 21 expenses are. That is correct.
12:06 22 Q. And according to those actual operating
12:06 23 expenses, in that document, ClearCorrect's profit would
12:06 24 be negative, right?
12:06 25 A. According to that document, it would be

negative. That is correct.

Q. All right. And you understand, sir, that that is one of the reasons why ClearCorrect's here in this courtroom, right?

A. Well, I -- not for patent infringement. That's not why they're here.

Q. You were here for the opening statement, right, sir?

A. I was. Yes.

Q. You understand that ClearCorrect contends that Align's market practices have prevented ClearCorrect and others from being profitable, true, sir?

A. I don't have any knowledge about that piece of the case.

Q. You heard that argument?

A. I heard what was said. I don't know that specifically that they were prevented from being profitable because of Align, but I heard something similar to that. But I don't know anything about --

Q. And you're not here -- you're not here, sir, to defend the market practices of Align, are you, sir?

A. No. I'm not.

Q. And isn't it correct, Mr. Lasinski, that if you had used ClearCorrect's actual operating expenses, their real-world operating expenses, your damages

result wouldn't be 12 percent, would it?

A. Well, if you're asking if I put a different number in there, would it be 12 percent, it wouldn't be. But again, I don't know what their actual operating expenses are --

Q. Sir, you had their data?

A. I did.

Q. Right.

A. But I didn't think it was reliable.

THE COURT: Let's -- again, have you been in the courtroom?

THE WITNESS: Yes.

THE COURT: What have I told every witness?

THE WITNESS: To answer.

THE COURT: Just answer his question. If you want to give Mr. Nash an explanation when he's back up here about reliability, that's fine. But for now, just answer the question.

THE WITNESS: Okay.

BY MR. HIRSCH:

Q. All right. Sir, here's my question.

A. Sure.

Q. Isn't it correct, using ClearCorrect's actual real-world operating expenses, if you had used that in

12:08 your calculation, your result wouldn't be 12 percent; isn't that true?

A. If I use the numbers from that document, that is correct.

Q. And isn't it true, sir, that if you had used ClearCorrect's actual real-world operating expenses, your damages number would not be that $73 million that you showed us; isn't that true?

A. I would have had to use another method. So it would not. But it would have been different.

Q. And isn't it correct, sir, that if you had used the actual ClearCorrect real-world operating expenses in your calculation, your damages result for ClearCorrect aligners would be negative?

12:09 A. Well, if I had put that number in my -- in this particular calculation, it would have been negative. That's correct.

Q. All right. Now, let's pull up your Slide 8 from your testimony a moment ago.

This was your Zendura FLX royalty rate calculation, correct?

A. Correct.

Q. And here, sir, the second -- your No. 2 says: Defendants keep industry average profit.

Do you see that?

12:09 A. Yes, sir.
12:09 Q. And again, I want to dig into the details and go behind the slide a little bit. Okay?
12:09 A. Okay.
12:09 Q. I want to look at your -- the math that led you to these numbers, fair?
12:09 A. Sure.
12:09 Q. All right. Let's pull up on your -- it's in your binder. Tab -- I believe it's 11, if you want to look.
12:09 A. Okay.
12:09 MR. HIRSCH: And if we could turn the ELMO on, I can show it to folks.
BY MR. HIRSCH:
12:10 Q. This is another schedule from your report, right?
12:10 A. This is. Correct.
12:10 Q. And this shows the math behind your Zendura FLX reasonable royalty argument, correct?
12:10 A. Yes, sir.
12:10 Q. And for this one, you allege it's a 24 percent royalty rate, right?
12:10 A. That's what I say.
12:10 Q. And again, if we look at the numbers behind the -- or the math behind the numbers here, we see

12:10 right here another reference to a NAICS industry code, right?

A. That correct. Yes, sir.

Q. And this time, Mr. Lasinski, that code refers to a different industry, the plastics industry, true?

A. I think it's like plastics and resin composites.

Q. I think the full name is plastics material and resin manufacturing.

Does that sound right?

12:11 A. That's right.

Q. So for this calculation, you used -- I'll abbreviate to plastics industry. Is that okay?

A. I'm okay. I just want to make sure we're clear on the record.

Q. Thank you.

For this one, you use the plastics industry as part of your calculations, correct?

A. Yeah. That's the industry Bay Materials is in.

Q. And what you're doing here, if we want to understand the numbers a little bit, you have Zendura FLX operating profits, right? That's what I just underlined?

A. Yeah. I'm sorry. The screen was blinking out

for me. But yes. That's what you underlined.

Q. And then you're trying to get to excess -- what you call excess earnings, right?

A. Yes, sir.

Q. And so you have Zendura FLX operating profit, true?

A. Yes, sir.

Q. You're trying to determine how much of that is excess earnings that you say is attributable to the asserted patents, true?

A. Well, not at that step. No. You have to do the next step too.

Q. That's what the excess earnings is trying to calculate, right?

A. Well, that's a piece in this -- in the process that's not -- we're not done yet. So you can't say it's attributable to the patents yet.

Q. Okay.

A. You have to do the next step.

Q. Isn't it correct, sir, that as part of your methodology, what you're trying to determine are the excess earnings attributable to the asserted patents. Isn't that part of what you're doing?

A. Yeah. That's part of it, yes.

Q. All right. So you start with Zendura

12:12 profitability, and you're trying to subtract usual
12:12 profitability, correct?
12:12 A. Correct.
12:12 Q. All right. So we have Zendura accused
12:12 profits, trying to subtract usual profits, to get to
12:12 what you call an excess earnings number, correct?
12:12 A. Correct.
12:12 Q. All right. And now for this plastics
12:12 industry, you again would agree the plastics industry
12:12 includes many things unrelated to clear aligners,
12:12 right?
12:12 A. It does.
12:12 Q. All right. And you don't dispute, for
12:12 example, that the plastics industry includes a company
12:12 called Trinseo, right?
12:13 A. I don't dispute that. No.
12:13 Q. And you don't dispute that Trinseo makes
12:13 things like materials for food packaging, correct?
12:13 A. I do not dispute that. No.
12:13 Q. We can agree the asserted patents don't relate
12:13 to food packaging, fair?
12:13 A. I can agree with that. Yes.
12:13 Q. Now, I want to focus on the profitability
12:13 number for a moment. Okay?
12:13 A. Which number now are --

12:13 Q. The one that I've highlighted, the industry -- the plastics industry profitability. Have that in mind?

12:13 A. 10.1 percent.

12:13 Q. Yep.

12:13 A. Okay.

12:13 Q. And that's an input to your damages calculation, right?

12:13 A. It is. Yes.

12:13 Q. And you'd agree with me, Mr. Lasinski, that profitability is impacted by costs, right?

12:13 A. Yes, sir. It is.

12:13 Q. And in fact, as companies in the plastics industry spend more and have higher costs, their profitability goes lower, true?

12:13 A. No.

12:14 Q. Let's see what you said at your deposition. Do you have that --

12:14 A. I do.

12:14 Q. -- before you?

12:14 Let's go to Tab No. 1, and turn to Page 155.

12:14 A. Page 155 --

Q. 155.

12:14 A. -- is that what you said?

12:14 Q. Yep.

12:14 A. The little -- the little page numbers on the right?
12:14 Q. Yep. Transcript Page 155. Do you have it?
12:14 A. Not yet.
12:14 Q. Okay.
12:14 A. I'm almost there.
12:14 Q. Are you there?
12:14 A. I'm there. Yes.
12:14 Q. Great. And this is from when you and I first met back in March of this year, right?
12:14 A. I would assume so. Yes.
12:14 Q. And we sat down. You took a deposition. You were under oath, true?
12:14 A. I was under oath. Yes.
12:14 Q. Let's look at what you said at Page 155, Line 20.
12:14 You were asked this question and gave this answer: And so as other companies in the plastics industry spend more and have higher costs, your usual profit number gets lower, true?
12:15 Your answer: If you're asking about the math of the calculation, that would be true.
12:15 That was the question you were asked and the answer you provided, right, sir?
12:15 A. In the -- in the hypothetical that you had put

12:15 me in, that is correct.

12:15 Q. All right. And is -- it's also true, sir, that all else being equal, as that profitability number gets lower, your damages number gets higher, true?

12:15 A. If everything else is equal, that would be true.

12:15 Q. So let's talk about costs, because, again, we agree costs impact profits, true?

12:15 A. They do.

12:15 Q. And you would agree that companies in the plastics industry have all types of costs, right?

12:15 A. That is correct. Yes.

12:15 Q. Companies in the plastics industry have all types of costs unrelated to the asserted patents, true?

12:15 A. They would. Yes.

12:15 Q. For example, companies in the plastics industry can spend money on furniture, right?

12:15 A. Well, even -- even -- just so we're -- yes. They can. Yes. They can.

12:16 Q. Thank you.

12:16 Companies in the plastics industry can spend money on cars, right?

12:16 A. Sure.

12:16 Q. And we agree that the money that a company in the plastics industry spends on a company car, that's

not related to the asserted patents, true?

A. Well, I mean, unless that company car is being used to sell the products that we're talking about here, in those cases it -- it is related.

Q. Let me ask you -- let me ask you this, sir: Isn't it correct that the asserted patents don't purport to cover the cost of company vehicles?

A. No. They do not.

Q. All right. But isn't it correct, sir, that under your damages analysis, the more that a company like Trinseo spends on company cars, the higher your damages result?

A. Only if you believe they make no return on their -- those costs.

Q. Let me put it this way, sir: Isn't it 100 percent correct, 100 percent accurate, that the more a company like Trinseo spends on company cars, the higher your damages result. Isn't that 100 percent accurate?

A. If you limit it to just that, that would be accurate.

Q. It would be accurate?

A. Yes.

Q. Last thing, Mr. Lasinski. You told me you were here for openings, right?

12:17 A. I was here for openings. Yes.
12:17 Q. I want to pull up Align's Slide 79 from its opening.
12:17 You heard Align's opening, right?
12:17 A. I did. Yes.
12:17 Q. And you saw Align show this slide during their opening, right?
12:17 A. Yes.
12:17 Q. It showed ClearCorrect losing money, true?
12:17 A. This -- I don't think this shows losing money. I think this shows change in annual revenues.
12:17 Q. It shows a minus 31.5 million in the red, right?
12:18 A. Well, yeah. But that's revenues, not profits.
12:18 Q. All right. Let's agree on this, sir. Under your damages opinion, your hypothetical, ClearCorrect would pay more money and lose more money, true?
12:18 A. What?
12:18 Q. Under your hypothetical negotiation, sir, the $73 million, ClearCorrect would have to pay that money, correct?
12:18 A. Yes. They would. Yes.
12:18 Q. Let's go to ClearCorrect's opening slides.
12:18 You were here for ClearCorrect's opening as well, right?

12:18 A. I was. Yes.
12:18 Q. You saw ClearCorrect put this slide up, right?
12:18 A. I did. Yes.
12:18 Q. And ClearCorrect showed Align's market share, correct, sir?
12:18 A. I mean, they showed this.
12:18 Q. They showed this slide, right?
12:18 A. This slide. Yes.
12:18 Q. Under your damages opinion, sir, your hypothetical damages number, Align would get even more money, true?
12:18 A. Yeah. They would get a royalty. That's true.
12:19 Q. They would get $73 million more, right?
12:19 A. That's correct. Yes.
12:19 Q. Last question, sir. Let's come back to the real world, not in the hypothetical world. Back in the real world here.
12:19 Here in this courtroom, if the ladies and gentlemen of the jury find no infringement, we all agree, you and me, folks at Align, folks at ClearCorrect, we agree there's no damages, right?
12:19 A. I think that that is correct. Yes.
12:19 MR. HIRSCH: Thank you, sir.
12:19 Pass the witness.
12:19 REDIRECT EXAMINATION

12:19 BY MR. NASH:

Q. Just a few questions, Mr. Lasinski.

A. Sure.

MR. NASH: Could we bring up the ELMO, please?

BY MR. NASH:

Q. I heard a lot about the real world in counsel's questions to you.

A. Yes.

Q. Did you happen to examine the profitability of Straumann over a similar time frame as what we've been discussing?

A. Yes. I did.

Q. Okay. And what did you find?

A. Well, I found that Straumann's operating profit over a similar time frame is about 23.6 percent.

Q. I'm going to write that here.

Now, I'd like to talk to you about your hypothetical, okay, negotiation.

MR. NASH: And can we have Slide -- switch to Slides PDX-7.14, please.

Sorry. Actually, let's go to PDX-7.10 first.

BY MR. NASH:

Q. What amount of the profit, under your opinion

and the hypothetical negotiation, did Bay Materials and Straumann keep as part of the profit split analysis that you did?

A. 30.9 percent.

Q. And that's Bay Materials?

A. Correct.

MR. NASH: Now let's go to PDX-7. -- sorry. 7.14.

BY MR. NASH:

Q. And, Mr. Lasinski, what amount of profitability did Straumann and ClearCorrect keep as part of the profit split analysis that you did?

A. 16.9 percent.

Q. Now, is there a way to determine an average amount of profitability associated with those amounts that we're seeing here?

A. Sure. We saw earlier that sales of the ClearCorrect clear aligners are around the same amount of the sales of Zendura FLX. So you could just take the average of those two numbers.

Q. Okay. And average, you're better at math than me. It's simple. Just add and divide by 2?

A. Add and divide by 2. Correct.

Q. Okay. I did the math wrong. That's why I should have asked you. So it's 2, 3, and --

12:22 A. It will be 9.
12:22 Q. 9. Thank you. Thank you. Thank you.
12:22 So we're all clear, did I do the math right this time, Mr. Lasinski?
12:22 A. You did, sir.
12:22 Q. Okay. What does this tell you?
12:22 A. Well, so in the real world, Straumann is earning about 23.6 percent operating margin. And then if you look at the amount that they keep under my hypothetical negotiation, it comes out to be almost the same number, 23.9 percent.
12:22 MR. NASH: Pass the witness, Your Honor.
12:22 MR. HIRSCH: Nothing further.
12:22 THE COURT: Thank you, sir.
12:23 Can I have counsel up here for one second?
12:23 (Off-the-record bench conference.)
12:24 THE COURT: Ladies and gentlemen of the jury, I asked the lawyers if they wanted to keep going, and they said yes. And I said, no way.
12:24 (Laughter.)
12:24 THE COURT: Not true.
12:24 We're going to take our lunch recess. It is -- you think if they got me a bigger clock, I could tell what time it was when I looked.

12:24 Why don't we do this: If you all will be back -- it's 12:30 -- by 1:45 or so. Does that give you enough time to get to lunch and get -- I don't know. There's a food court next door that sometimes is closed on Mondays. It's open today and it has a lot of different foods. And it's the quickest thing that's available.

But -- so -- and also, tomorrow, which is Wednesday, we will be breaking at 3:00 in the afternoon so I can take care of some other court business. And so you can plan accordingly with respect to that.

So please remember my instructions, and we'll see you back at 1:45.

THE BAILIFF: All rise.

(Jury exited the courtroom.)

THE COURT: You may be seated.

Is there anything we need to take up from plaintiff?

MR. MUELLER: Nothing from defendants, Your Honor. Thank you.

MS. DURIE: No, Your Honor.

THE COURT: Okay. Thank you.

(Recess taken.)

02:05 THE BAILIFF: All rise.

02:05 THE COURT: Thank you. You may be

seated.

Yes, ma'am.

MS. DURIE: Good afternoon, Your Honor. We just wanted to raise a procedural point with you and give you sort of a preview --

THE COURT: If you'd come to the microphone, please.

MS. DURIE: I apologize.

-- and give you a preview of coming attractions. We have one more fact witness, Mr. Lahlouh, who we are calling adversely live.

We then have a couple of interrogatory responses to read into the record and a couple of relatively short deposition videos.

That will conclude our presentation of witnesses in our case-in-chief. However, we have an agreement to keep our case open with respect to two other witnesses who will be called at the beginning of the defense case-in-chief, Mr. Marbach and Mr. Kossol.

So I wanted to just raise with you procedurally in terms of resting how the Court would like us to handle that.

THE COURT: So my suggestion, and as you know, when I -- I have code words, like if I say to someone "I don't understand," I usually mean I

understand but I think you're wrong.

But here, when I say my suggestion, I actually -- this is a suggestion because I'll do what y'all want if I can. It seems to make sense to me -- and given the quality of the lawyers here, that -- I trust you all to make an intelligent decision.

It seems to me that until those two witnesses are called, you haven't rested, and that's by agreement of the party. And I think that's great. So I don't want to disrupt that.

But it doesn't make sense to have the Rule 50 motion until those two people have been called, even though you have primarily rested and what you're planning to do.

So with the agreement from Mr. Mueller on his side that -- that the plaintiff can close formally when those two witnesses have rested, and we'll do the Rule 50 at that time, and also the plaintiff's agreement. That's what I suggest.

MS. DURIE: That makes sense, Your Honor.

MR. MUELLER: Your Honor, I guess I would say this: We have thought about this since this morning. We would like to go forward this afternoon on the JMOL motion.

Here's why: The two witnesses that

Ms. Durie is referring to are witnesses -- fact witnesses, fact witnesses, that would relate to, if anything, the scan patent, the '936 scan patent.

I will tell you a preview right now that one of our JMOL arguments is going to be that the '936 patent lacks an expert opinion on all of the aspects -- there's not an expert opinion on all of the aspects of the asserted claims. There's a failure of proof.

THE COURT: Which won't be fixed by those two witnesses.

MR. MUELLER: Exactly. Exactly.

THE COURT: And I will -- not to preview anything, but I think there's a high probability I'm going to grant that motion on that patent and a very high probability I'm going to deny the Rule 50 motions on the other patents.

And so having heard that, do you have -- does plaintiff have a problem with them -- can the plaintiff articulate something that the plaintiffs -- I'm sorry -- that the witnesses might say out of order that would impact the -- whether or not there's evidence to support infringement based on what the expert said? I don't see how it could happen, but --

MS. DURIE: So the witness in question is a fact witness. He has percipient testimony with

respect to the operation and the source code of the scanner.

THE COURT: Uh-huh.

MS. DURIE: So I suppose it would depend on the basis of the motion.

I do think that in view of the final piece of testimony that was ultimately elicited from the experts, there was expert testimony with respect to each limitation of the scanner patent in the record.

To the extent -- I mean, there was certainly -- the expert provided a conclusion with respect to each limitation.

To the extent that the complaint is that there was insufficient factual support in the record for that conclusion, then certainly the percipient testimony could be germane to that.

THE COURT: So here's what I'm going to do: I'm going to have the Rule 50 motion at the end of what would ordinarily be your case, plaintiff's case.

I'm going to deny all the Rule 50 motions with respect to infringement. But absent -- and call me skeptical -- of those two witnesses saying something that would repair -- I agree with you, a lack of expert testimony, I will take up the Rule 50 at the end of your case -- end of the defendant's case, and I intend

to grant it at that time absent those two witnesses doing something that I don't anticipate they will.

MS. DURIE: Understood, Your Honor.

THE COURT: And I also anticipate you can go pretty quickly on your Rule 50 motion on the other infringement arguments because I'm -- I haven't --

MR. MUELLER: Understood, Your Honor.

Just one final question. If we could, for that issue, do the Rule 50 after those two fact witnesses? And the reason why I say that is we won't call our expert on the scan patent. We can save all of us some time.

THE COURT: Well, I think that's what I originally suggested that you didn't want to do. I'm saying the two witnesses --

MR. MUELLER: The witness who we are reserving on is a fact witness.

THE COURT: Now -- but you've lost me, because I thought my suggestion was that we wait to do the Rule 50 until after those two witnesses testified. And you said, no, you wanted to move forward on it now and -- because they -- their --

MR. MUELLER: I agree with you. I thought you are now saying the other way around. If we can do it today, that'd be great. That would be great.

THE COURT: No. What I'm saying, I'm going to do it today. I'm going to -- I'm going to do it as soon as -- forget the two witnesses that are going to be called out of order.

When plaintiff finishes with their case, as they articulated it, absent those two, I'm not going to make them rest because y'all have an agreement that they can add that. But I am going to take up your Rule 50 motion if you prefer to do it now.

I'm telling you that I'm going to deny the Rule 50 motion on all of the patents, but I'm letting the plaintiff know that absent some information being provided by those two fact witnesses during your case-in-chief, your Rule 50 motion on the scanner is going to be granted at the end of the trial to give the plaintiff the opportunity to put that evidence in and persuade me why it shouldn't be.

MR. MUELLER: But my only question was just at that point in our case, after the fact witnesses have testified --

THE COURT: Right.

MR. MUELLER: -- if we could approach Your Honor to see if that changed your tentative decision. Because if it doesn't, if you're going to grant our JMOL, we won't call our expert on that

patent.

THE COURT: Then I'll do it that way because I don't want to waste everyone's time doing that.

MR. MUELLER: Understood. Thank you, sir.

THE COURT: I think that's a fair trade.

MS. DURIE: Thank you.

THE COURT: Anything else?

MR. MUELLER: Nothing from defendants, Your Honor. Thank you.

MS. DURIE: No.

THE BAILIFF: All rise.

MR. MUELLER: One last thing. We had two demonstrative numbers to read into the record very, very quickly.

THE COURT: Okay. We're lining up and you can read those in.

MR. MUELLER: Great. Thank you, sir.

MR. HIRSCH: Read into the record demonstratives DDX-20.6 and 20.7. I'd like to make both of those under seal.

Thank you.

(Pause in proceedings.)

THE BAILIFF: All rise.

02:14 THE COURT: Please remain standing for the jury.

02:14 (Jury entered the courtroom.)

02:14 THE COURT: Thank you. You may be seated.

02:14 Yes, ma'am.

02:15 MS. DURIE: Thank you, Your Honor.

02:15 Good afternoon. We call John Lahlouh to the stand.

02:15 (The witness was sworn.)

02:15 DIRECT EXAMINATION

02:15 BY MS. DURIE:

02:15 Q. Mr. Lahlouh, good afternoon.

02:15 A. Good afternoon.

02:15 Q. We have not met. My name is Daralyn Durie. I'm one of the lawyers representing Align.

02:15 A. Nice to meet you.

02:15 Q. I have a few questions for you.

02:15 A. Sure.

02:15 Q. Now, you recently retired from Bay Materials; is that right?

02:16 A. Yes.

02:16 Q. And you started there in 2002?

02:16 A. That's correct.

02:16 Q. And while you were at Bay Materials, you were

involved in the development of Zendura FLX; is that right?

A. Yes.

Q. Now, yes or no, is it your testimony that Zendura FLX was developed totally independently of SmartTrack?

A. Totally independent. Yes.

Q. Now, you were here for the opening statements in this case, right?

A. Yes.

MS. DURIE: And if we could please put up DDX-1.20.

BY MS. DURIE:

Q. You remember seeing this excerpt from your lab notebook during opening statements?

A. Yes.

MS. DURIE: And if we could go to DDX-1.10.

BY MS. DURIE:

Q. You remember that Straumann's counsel showed this timeline with Align updating aligners to exclude EX30 in 2001 and said: So Align goes to Bay Materials for help with the EX30, and that becomes incorporated into the updated version of Align's aligners in 2001. At that point, the companies went their separate ways.

Now, in fact, Bay Materials and Align did not go their separate ways in 2001, did they?

A. That's correct.

Q. And if you -- we could introduce -- if you could turn in your binder there -- you've got a binder in front of you to -- DTX-413. There should be a number of exhibits in order.

Exhibit 413 is a copy of your lab notebook; is that right?

A. That's right.

MS. DURIE: We offer DTX-413.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could please put up Page 22.

THE COURT: I'm sorry. Is it -- are you putting in the entire notebook?

MS. DURIE: Yes. I am.

If we could please go to Page 22, and if we could blow up the top portion of the notebook.

BY MS. DURIE:

Q. You see here --

MS. DURIE: And actually, I was hoping we could get the date as well. If we can blow up just the top portion.

Actually, the date's at the bottom. Maybe just blow up the date there at the bottom.

BY MS. DURIE:

Q. You see there's an entry from July 19th of 2002? It's at the very bottom right.

A. I'm sorry. That's Page 15.

Q. It's actually -- if you could look at it on the screen, the page numbers of the PDF are different from the pages in your notebook.

A. Okay.

Q. But you see this is an entry from July 19th of 2002?

A. Yes.

Q. In the title, it says, Replacements to Isoplast for Align.

Do you see that?

A. Yes. I do.

MS. DURIE: And if we can go to the middle of the page and blow that up.

BY MS. DURIE:

Q. You see there it says: The following resins were identified by Bay Materials (Ray Stewart) as replacement for Isoplast and shipped to Align for evaluation.

And then a little further on, it refers to

material being shipped to Align to Loc's attention.

Do you see that?

A. Yes. I do.

Q. Loc is an individual who worked at Align by the name of Loc Phan, correct?

A. That's right.

MS. DURIE: And if we go to DTX-616 in evidence and we pull that up, and we blow up the top portion of it, please.

BY MS. DURIE:

Q. We saw yesterday during Dr. Li's testimony a patent that had been issued to Loc Phan and his co-inventor, right?

A. Yes.

Q. They worked for Align, right?

A. That's right.

Q. And that was a patent --

MS. DURIE: If we can go to the top right, Mr. Smith.

BY MS. DURIE:

Q. -- issued in February of 2001 that involved multi-layer materials, right?

A. I'm not sure.

MS. DURIE: Let's go to Page 12, Mr. Smith.

And if we can blow up the paragraph at the bottom of Column 9.

BY MS. DURIE:

Q. You see here it talks in this patent about materials that have a first, second, and third internal layer where internal layers are sandwiched between external layers.

Do you see that?

A. Yes.

Q. So this is talking about multi-layer, right?

A. Yes.

Q. More than one layer.

Let's go back to your notebook, DTX-413.

MS. DURIE: And if we go to Page 27, please, Mr. Smith.

Here, if we can blow this up, beginning around Line 20.

BY MS. DURIE:

Q. You see again there's a reference to materials for Align Technology and additional items being shipped to Align Technology in July of 2002?

A. Yes.

MS. DURIE: And if we could then skip forward to Page 85, Mr. Smith, and blow up the top portion of that.

BY MS. DURIE:

Q. Now, if we pull up the date at the very bottom left, it's January 3rd of 2003. And we see here some dental tray materials with some test results being done on materials that had been selected by Align Technology and being run by an individual at Align Technology, right?

A. Yes.

MS. DURIE: And if we could go, please, to Page 122 of DTX-413.

BY MS. DURIE:

Q. Here, we see on March 3rd of 2003, in the bottom right-hand corner, again a reference to samples for Loc. That again is Loc Phan, the inventor of the Align multi-layer patent, right?

A. That's right.

Q. And in fact, you continued to work with Align from 2002 all the way up to 2007, right?

A. Correct.

Q. And then in 2008 or 2009, Bay Materials' relationship with Align ended, right?

A. That's right.

Q. And in around 2010, Bay Materials started supplying ClearCorrect with a single-layer material, right?

A. That's not quite right.

Q. Okay. Let's take a look in your binder at PTX-211. If you could please turn to that in your binder.

Are you with me?

A. Can you repeat the number, please?

Q. 211. 211. They're in order. The exhibits are all in numerical order. 211.

MS. DURIE: May I approach to assist the witness, Your Honor?

THE COURT: Of course.

MS. DURIE: Thank you.

BY MS. DURIE:

Q. So, Mr. Lahlouh, Exhibit 211 is a Design Review Phase 4 - Product Launch document from Bay Materials, correct?

A. Correct.

MS. DURIE: We offer PTX-211.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could please publish Page 3, Mr. Smith. And --

There we go. Blow that up.

BY MS. DURIE:

Q. So we see here that: Bay Materials was

contacted by ClearCorrect in late 2009 and began supplying Zendura to ClearCorrect in April of 2010.

Zendura was an earlier material that you had been selling before you developed Zendura FLX, the product in this case, right?

A. That's right.

Q. And it says that: ClearCorrect has a business model to take market share away from Align by offering equivalent performance for a lower price.

That was your understanding of the ClearCorrect business model at the time, right?

A. That's what it says here.

Q. And then in October of 2012, Align announced that it had developed a new multi-layer material, right?

Sorry, that's not with reference to that document. But just you are aware that in October of 2012, Align announced it had developed a new multi-layer material?

A. That's right.

Q. And on January 18th of 2013, Align issued a press release announcing the availability of SmartTrack, right?

A. That's right.

Q. And then if you could please turn in your

binder to PTX-314. It should be a little bit further on in your binder.

Do you see that -- are you there?

A. I have this.

Q. Perfect. 314 is another Bay Materials document. It is a Zendura XL Development History, correct?

A. Correct.

MS. DURIE: We offer PTX-314.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could go, Mr. Smith, to Page 2 in the middle of the page.

BY MS. DURIE:

Q. There is a reference to the Initiation of Development Effort. And it says: In 2013 -- that was after SmartTrack had been announced, right?

A. Right.

Q. Bay Materials began investigating materials and construction to produce an improved aligner material.

Do you see that?

A. I see that.

Q. And if we go --

A. Yes.

Q. If we go to the top of Page 7, sir, and if we could go --

MS. DURIE: And if you could blow up the top portion of that page.

BY MS. DURIE:

Q. Do you see where there's a reference to Component Requirements?

A. Yes.

Q. And if we go about six rows down, next to composite flexural modulus, it says: The combined structure should have value in range of 150,000 to 200,000 PSI based on Zendura and SmartTrack benchmarking.

Right?

A. Benchmarking. Yes.

Q. And it says the same thing for impact strength, right? It identified a desired value based on SmartTrack benchmarking, right?

A. Correct.

Q. Now, in 2014, you ordered an Invisalign for your daughter; is that right?

A. That's right.

Q. And you requested a copy of the material safety data sheet for SmartTrack, right?

A. Yes.

Q. If you could turn in your binder to PTX --
A. I'm sorry, I did not request it.
Q. You got a copy, right?
A. I got a copy from the Internet.
Q. You got a copy from the Internet.
And if we could go to PTX-213 in your binder. 213.
A. Yes.
Q. PTX-213 is a copy of a material safety data sheet for Invisalign, right?
A. Yes.
Q. And it was produced from Straumann's files, right? We see a little number in the bottom right-hand corner. It says "CC Align."
That's a number indicating it came from their files, right?
A. Yes.
MS. DURIE: We offer PTX-213.
MR. ZUBLER: No objection.
THE COURT: Admitted.
BY MS. DURIE:
Q. And if we take a look at 213, and we can blow up a portion on the first page where it says Product and Company Identification. This is a material safety data sheet for SmartTrack aligner material, right?

A. That's right.
Q. Now, it's your testimony that the only reason you got this material safety data sheet was so that you could make sure that the aligner was safe for your daughter; is that right?
A. Yes. But --
Q. But you then used information from this material safety data sheet to create SmartTrack simulates, right?
A. Not quite right.
Q. Well, you remember that you gave a deposition in this case, right?
A. Yes.
Q. We've now talked a fair bit about depositions, but that's when we had a chance to ask you questions, right?
A. Correct.
Q. And you would agree that the simulates -- first of all, you would agree you did produce simulates of SmartTrack material, right?
A. That's right.
Q. And you produced those simulates from what you described as Align's declaration of their new product, right?
A. Simulates for benchmarking.

Q. Right. You produced those simulates for benchmarking from Align's declaration of their new product, right?

A. These are simulates, as guesses.

Q. And you looked at this material safety data sheet for benchmarking, right?

A. The safety data sheet gives family of the products only.

Q. Sir, yes or no, is it true that you looked at the material safety data sheet for benchmarking?

A. Yes.

Q. Okay. Now, you were doing this in order to try to evaluate these simulates, right?

A. Yes.

Q. And you were also trying to test actual aligners made out of SmartTrack material, correct?

A. That's not correct.

Q. Take a look in your binder at PTX-214. It should be immediately after the data sheet that we were just looking at. You see this is a Bay Materials document relating to the composition of Zendura FLX?

A. 214?

Q. Sorry. I apologize. 214. I was wrong about that. I'm sorry. Yes. 214. It is an analysis of Align SmartTrack, correct?

A. SmartTrack simulate.

Q. Well, we --

MS. DURIE: First of all, we offer PTX-214.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And let's put it up, and we can all take a look. Let's blow up the text that's on the document.

BY MS. DURIE:

Q. It says: Analysis of Align SmartTrack. Right?

A. Yes.

Q. And it says: Spare aligners were obtained from orthodontists office.

And then it says: Microscopy showed they were single-layer products, unlike earlier tested sample that had FTIR consistent with polyurethane outside and Tritan on inside.

Do you see that?

A. I see that.

Q. So that's a reference to testing an earlier multi-layer sample, right?

A. This is a reference to testing an aligner, different from SmartTrack.

Q. So when this is under Analysis of Align SmartTrack, and you talk about an earlier tested sample, that wasn't an earlier tested sample from Align?

And if we take a look --

MS. DURIE: Actually, let's go to the bottom of that document, Mr. Smith, and pull up the very end.

BY MS. DURIE:

Q. You see it says: Material safety data sheet for SmartTrack is same as various...

And then you cite a number of different specific polymers, right?

A. Okay. At the bottom.

Q. So you're saying, I've got information for SmartTrack. It matches up with Texin and a number of these other polymers. Should search additionally to find fit. Right?

A. The FTIR or the MSDS sheets only give broad general family of materials.

Q. Right. So the safety data sheet gave a family of materials. You were searching, try to -- trying to find the fit more specifically of the material that it might be?

A. It doesn't give a specific fit. This is for

benchmarking.

Q. Now, you did more experiments on Invisalign aligners in August of 2015, right?

A. Aligners again, not the sheets.

Q. So let's go to PTX-42. In your binder. It should be pretty near the beginning. I think it's right after your deposition. Probably the first numbered tab. 42.

A. 42.

Q. 42.

Are you with me?

A. Yes.

Q. And Exhibit 42 reflects tests that you ran on Invisalign aligner in 2015, right?

A. Right.

MS. DURIE: We offer PTX-42.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could please publish 42, and blow up the top portion.

BY MS. DURIE:

Q. What we see here is various tests that were run on Invisalign aligners, right?

A. That's right.

Q. And you show data resulting from those tests?

A. Yes.

Q. Now, if you could please turn in your binder to PTX-46.

A. I'm sorry, which number?

Q. 46. It should just be a couple of tabs forward from where you were.

A. Yes.

Q. Are you with me?

46 is a Characterization of Invisalign Aligner report prepared by you, right?

A. Correct.

MS. DURIE: We offer PTX-46.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we can pull that up, and just at the top -- start at the top.

BY MS. DURIE:

Q. It's a characterization, a report prepared by you in August of 2018?

MS. DURIE: And if we can scroll down and look at the background and summary. First of all -- actually, let's keep 1 up there.

BY MS. DURIE:

Q. It says: The purpose is to get an updated understanding of the materials and products adopted by

Invisalign --

A. For benchmarking.

Q. -- in their current orthodontic aligners and retainers for our benchmarking benefits.

And then it says: Background and summary: Our earlier knowledge of Invisalign's SmartTrack aligner was built on their material safety data sheet and CAS number disclosures.

Right?

A. That's right.

Q. And it says: In the MSDS document, SmartTrack is identified with multi-layer aromatic thermoplastic polyurethane/copolyester, right?

A. That's right.

Q. And there was a CAS number that specified the type of polyurethane, right?

A. Those are generic family names.

Q. And then if you go down to the next paragraph, it says: In June of 2018, an actual used pair of Invisalign aligners was procured.

A. Yes.

Q. This aligner was characterized for materials identity, product configuration, and basic performance.

And then you identified some findings, right?

A. I identified the test, you mean?

Q. Sure.

MS. DURIE: Let's go to last page, Page 9 of the exhibit. And if we can blow up the conclusion, Paragraph 7.

BY MS. DURIE:

Q. It says that you -- the Invisalign SmartTrack aligner, which was used, procured in 2018, had been characterized by optical analysis. Right?

A. Yes.

Q. And it said: SmartTrack is composed of aromatic polyurethane elastomer outer layers and a polyester inner layers. And then there was a reference to the results of FTIR analysis, right?

A. The FTIR identifies with RxT50D, but it could be identified with numerous other FTIR RxTs.

Q. You were performing a fingerprint analysis?

A. No. You can't do that with FTIR.

Q. Okay. Bay Materials then launched Zendura FLX in 2018, right?

A. Yes.

Q. That was five years after Align had come out with SmartTrack?

A. That's correct.

Q. And sold -- and Bay Materials sold Zendura FLX material to ClearCorrect, right?

A. Yes.

Q. Please turn in your binder to PTX-75. Should be just a few exhibits further on. That's it. I think you've got it right there.

PTX Exhibit 75 is a ClearCorrect presentation about the material launch of ClearQuartz, right?

A. Yes.

Q. ClearQuartz is the product made with Zendura FLX, right?

A. Correct.

Q. And if we turn to Page 2, you'll see this was shortly after the acquisition of Bay Materials and Zendura FLX by ClearCorrect -- Straumann, right? By Straumann?

A. After some time, yes.

MS. DURIE: We offer PTX-75.

MR. ZUBLER: No objection.

THE COURT: Admitted.

BY MS. DURIE:

Q. And if we can go to Page 2, it says: Customers expect a tri-layer material for their aligners. Thanks to the acquisition of Bay Materials and Zendura FLX, this is now a possibility.

Right?

You can also look on the screen. We've got

it. It may be easier to see there.

MS. DURIE: And if we could then go to Page 4.

A. Yes.

BY MS. DURIE:

Q. It says here: Project Incredibles. And under Description of Initiative/Solution/New Product, it says: ClearCorrect current material is less competitive compared to other aligners. The new material will allow us to compete head-to-head with Invisalign.

Right?

A. Yes.

Q. And it says: The triple-layer material allows for more strength and toughness while being comfortable for the patient due to its elastic properties.

Right?

A. That's right.

MS. DURIE: And if we could then go to Page 9.

BY MS. DURIE:

Q. There was then a competitive landscape analysis that was done, right?

A. Yes.

Q. We have Zendura FLX, SmartTrack, and some

other clear aligners, right?

A. This is not quite right because we never have SmartTrack product as a sheet. So...

Q. Sir, I'm just asking you about the ClearCorrect document.

It is identifying characteristics of Zendura FLX, SmartTrack, and other clear aligners, correct?

A. Correct.

Q. And Zendura FLX and SmartTrack both have multiple layers, right?

A. Correct.

Q. The other clear aligners are single-layer materials, right?

A. That's right.

Q. And for both Zendura FLX and SmartTrack, the materials are a multi-layer thermoplastic polyurethane and copolyester, correct?

A. Yes. But not exactly correct.

Q. That's what's written here in the ClearCorrect document, right?

A. This is not a direct comparison.

Q. All right.

MS. DURIE: Let's take a look at the next slide, Page 10.

BY MS. DURIE:

Q. If we look at the top, there's a reference to Invisalign and the SmartTrack material. And it says: The patented material that helps you get the smile you want even faster.

Do you see that?

A. I see that.

Q. Now, you knew that Align lists its patents on its website, right?

A. Probably. Yes.

Q. Well, if you're not sure, let's take a look in your binder at PTX-65. It should be just two tabs behind -- actually, one tab behind where we were.

PTX-65 is a Bay Materials report dated May 1, 2024, correct?

Oh, I'm sorry, sir.

A. I'm sorry. Yeah. Okay.

Q. Bay Materials, May 1, 2024?

A. Yes.

MS. DURIE: We offer PTX-65.

MR. ZUBLER: No objection.

THE COURT: Admitted.

BY MS. DURIE:

Q. And if we go to the Page 3 of this exhibit at the bottom, towards the bottom, it says: On Align website, most of the Invisalign treatment processes and

products are covered by Align U.S. patents.

Do you see that?

A. Can you go back, please?

Q. Sure. If you look at the screen, you may be able to see it more easily. It's blown up there. It's at the bottom of Page 3.

Do you see that?

A. I see that.

Q. And in fact, you had reviewed some of Align's patents over the years, right?

A. A few of them, yes.

Q. Now, the specific polyester material for the hard polymer layer in Zendura FLX is a Tritan plastic, right?

A. That's correct.

MS. DURIE: Your Honor, may I approach? I have a board that it would be --

THE COURT: Sure.

MS. DURIE: Thank you.

BY MS. DURIE:

Q. So I thought, Mr. Lahlouh, while we went through this, it might be helpful to have a copy of the patent claim up just to assist the jury for our reference.

Now, first of all, Zendura FLX is used to make

dental appliances, right?

A. Correct.

Q. And those dental appliances are for positioning a patient's teeth, right?

A. That's right.

Q. And Zendura FLX is a sheet of material, right?

A. Yes.

Q. And it has three polymer layers, right?

A. That's right.

Q. Zendura FLX has a hard polymer layer, right?

A. Hard polymer outer layers, yes.

Q. Right. But it has a hard polymer layer, right?

A. Correct.

Q. And that hard polymer layer is made up of a copolyester, right?

A. Yes.

Q. And that copolyester is a Tritan polyester; is that right?

A. That's right.

Q. And it has a flexural modulus of over 150,000 PSI, right?

A. That's right.

Q. Now, Zendura FLX also has a soft polymer layer, right?

02:45 A. An inner soft layer, yes.
02:45 Q. That's right. It has -- but it has -- just again, it has a soft polymer layer, right?
02:45 A. Yes.
02:45 Q. And that soft polymer layer is made up of thermoplastic polyurethane elastomer, right?
02:45 A. That's right.
02:45 Q. Now, I'm going to skip the elongation at break for a moment, but it has a hardness that's between 60A and 85D, right?
02:45 A. That's right.
02:45 Q. The hardness is actually [redacted], right, which falls between those two points?
02:45 A. That's right.
02:45 Q. Now, this elongation at break of greater than about 200 percent, so I want to focus you specifically --
02:46 A. Excuse me. The elongation to break greater than 200 percent --
02:46 Q. Greater --
02:46 A. -- of the individual sheet.
02:46 Q. Well, let's actually --
02:46 A. Not the multi-layer.
02:46 Q. Let's talk about the soft polymer layer, Mr. Lahlouh, if we may.

A. Sure.

Q. I want to focus your attention on 1[c], a soft polymer layer having an elongation at break of greater than about 200 percent.

Now, you would agree that -- well, first of all, the soft polymer layer is made using a material that's sold by a company called Covestro, right?

A. Yes.

Q. Okay. And you would agree that the TPU layer, the resin of that layer as it comes from Covestro, that elongation at break is greater than 200 percent, right?

A. Yes. The elongation to break of the individual sheet from the resin manufacturer.

Q. So again, let's -- let's try to -- I just want to make sure you focus on my questions. Okay?

A. Yes.

Q. So as you get the material from the supplier, from Covestro, that resin, as it comes from Covestro, the elongation at break is more than 200 percent, right?

A. That's right.

Q. And if you could turn in your binder to PTX-404.

A. Yes.

Q. Exhibit 404 is the product data sheet for that

Texin resin that you get from Covestro that forms the soft layer, correct?

A. That's right.

MS. DURIE: We offer PTX-404.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could put up Page 4. Go down to the bottom half of the document.

BY MS. DURIE:

Q. It says ultimate elongation of that material, [redacted] percent, correct?

A. Yes. The elongation of the resin sheet before being processed into a multi-layer.

Q. It is the elongation of the resin that is used to form the soft layer, right?

A. Of the individual sheet.

Q. So let's go now to PTX-332 in your binder.

A. Okay.

Q. Now, before we get to 332, I just want to take a step back.

Zendura FLX has more than one layer, right?

A. Has three layers.

Q. Right. We are talking here about the elongation of break, not of the hard layer but of the soft layer, right?

02:49 A. Soft layer.

02:49 Q. Okay. And PTX-332 is a list of documents for the Zendura FLX product from Bay Materials' files, right?

02:49 A. Yes.

MS. DURIE: We offer PTX-332.

MR. ZUBLER: No objection.

THE COURT: Admitted.

MS. DURIE: And if we could please turn to Page 3. Blow up the bottom portion of the page.

BY MS. DURIE:

02:49 Q. You see it says: 5.8 elongation --

MS. DURIE: No, that was perfect.

BY MS. DURIE:

02:49 Q. 5.8 elongation at break of soft layer, [redacted] percent?

02:50 A. The soft layer sheet before being introduced into the product.

02:50 Q. Well, until that soft sheet is put into the product, it's not a layer, is it?

02:50 A. It's a polymer sheet.

02:50 Q. It's a -- that's right, sir. It's a polymer sheet. And then that soft polymer sheet gets incorporated into Zendura FLX. And at that point, it becomes the soft layer, right?

A. It becomes a product, a three-layer product.
Q. With a soft layer?
A. It becomes a product which is different from the properties of the individual layer.
Q. Sir, please try to answer my question.
That soft material gets incorporated as a soft layer, right?
A. Gets incorporated, yes.
Q. And what your product data sheet says for Zendura FLX is that the elongation at break of the soft layer is [redacted] percent.
A. That's inaccurate.
Q. Correct?
A. That's not true.
Q. Do you agree, looking at your screen, that that's what your documentation says?
A. The properties of the inner layer are different from the original sheet of [redacted].
Q. So let me try my question again.
Do you agree that in your own documentation, when you were identifying the characteristics of your product and the characteristics of the layers -- sir, just listen to my question -- the characteristics of the layers within them, that what you wrote was that the elongation at break of the soft layer was

[redacted] percent?

A. 5.8 specifically says the layer, not the product. It doesn't show here a product.

Q. You would agree, sir, there is no layer until there is a product in which that layer can be found?

A. The product is different from the individual sheet.

THE COURT: You need to answer her question.

A. Yes.

MS. DURIE: Thank you, sir. I have no further questions.

CROSS-EXAMINATION

BY MR. ZUBLER:

Q. Good afternoon, Mr. Lahlouh.

A. Good afternoon.

Q. Let's cut right to the chase.

A. Yes.

Q. Do you understand that Align is accusing you of copying the SmartTrack design and Align's SmartTrack patent?

A. Yes.

Q. Did you copy Align's SmartTrack design?

A. No. Not at all.

Q. Did you copy Align's SmartTrack patent?

A. No. Not at all.
Q. Who invented Zendura FLX, sir?
A. Zendura FLX was invented by myself and Dr. Stewart.
Q. Now, before we go into the whole history of Zendura FLX, I want to address and ask you about some of the questions that Ms. Durie asked you a few moments ago.
A. Right.
Q. If you'll recall, she asked you about a document called an MSDS, a manufacturer safety data sheet.
A. Yes.
Q. Do you recall that, sir?
A. Yes. I do.
Q. Is that a public document or a confidential document?
A. This is a public document.
Q. Where did you get it?
A. I got it from the Internet.
Q. Does an MSDS document, a manufacturer safety data sheet, does it tell you the specific polymers used in the material?
A. No. It doesn't.
Q. To this day -- please go ahead.

A. It only tells you about the generic family of material.

Q. To this day, Mr. Lahlouh, do you know the specific polymers used in Align's SmartTrack product?

A. To this day, I do not know.

MR. ZUBLER: Now, if we could pull up PTX-46, which is --

BY MR. ZUBLER:

Q. You don't need to open it in your binder. We can show it on the screen, Mr. Lahlouh.

This is a document that Ms. Durie showed you.

And if you can see, Mr. Lahlouh, at the beginning of this document, there's a section that begins "Purpose."

Do you see that?

A. Yes.

Q. And it says: To get an updated understanding of the materials and products adopted by Invisalign in their current orthodontic aligners and retainers, for our benchmarking benefits.

Do you see that, sir?

A. That's correct.

Q. You mentioned benchmarking a couple of times in response to Ms. Durie's questions.

Do you recall that, sir?

02:55 A. Yes. I do.
02:55 Q. What is benchmarking?
02:55 A. Benchmarking is comparing another product to
02:56 my product for general comparison, to see how is my
02:56 product doing. Is it doing well, the same, or better?
02:56 I don't want to be the same. I want to be better.
02:56 Q. Is benchmarking -- based on your experience,
02:56 sir, in the materials industry, is benchmarking a
02:56 common or an uncommon practice in the industry?
02:56 A. Benchmarking is a common practice in the
02:56 industry.
02:56 Q. Does benchmarking involve copying, sir?
02:56 A. No. Not at all.
02:56 Q. Now, looking further at PTX-46, if we could
02:56 look at the second paragraph, Background and Summary,
02:56 and there's a sentence that begins "Additionally."
02:56 Additionally, Invisalign's patent focuses on a
02:56 three-layer construction, with a hard copolyester inner
02:56 layer surrounded by two soft polyurethane outer layers.
02:57 Do you see that, sir?
02:57 A. Yes. I do.
02:57 Q. What is your understanding of Invisalign's
02:57 patent as described in this document, sir?
02:57 A. Invisalign's patent states a soft, hard, then
02:57 soft, so two soft outer layers of urethanes surrounding

a polyester in the middle.

Q. And with Zendura FLX, what is the order and -- of the layers in Zendura FLX?

MS. DURIE: I'm going to object, Your Honor, with respect to an improper comparison.

May we approach?

THE COURT: I understand what you're saying.

MS. DURIE: Yes.

THE COURT: You're accusing him of copying. He's trying to establish he didn't copy. I'm going to overrule your objection.

MS. DURIE: Okay.

BY MR. ZUBLER:

Q. I'll repeat my question, Mr. Lahlouh.

A. Yes.

Q. What is the configuration of Zendura FLX in terms of the configuration of layers?

A. Zendura FLX is composed of hard outer layers and the soft inner layer.

Q. Now, is that the same or different than the configuration of layers in SmartTrack?

A. That's totally different from SmartTrack's. Soft --

THE COURT: I'm sorry to interrupt you.

If I could have counsel up here for a second.

MS. DURIE: Yep.

(Bench conference.)

THE COURT: Plaintiff wants at the end of the trial an instruction that this testimony was for the purpose of copying and not infringement.

MS. DURIE: Yes.

THE COURT: I'd be happy to give that. I don't think you care, do you?

MR. ZUBLER: This testimony -- the testimony she elicited was for copying, yes.

MS. DURIE: I would appreciate that. Thank you.

THE COURT: So we'll -- I'm not going to remember that. I think it's --

MS. DURIE: I will.

THE COURT: I was going to say, I get your concern. But he's -- but this guy's not an infringement guy.

MS. DURIE: No. I understand.

THE COURT: So I'm happy to give them that instruction.

MS. DURIE: I appreciate that. Thank you.

MR. ZUBLER: Thank you, Your Honor.

(Bench conference concludes.)

BY MR. ZUBLER:

Q. Mr. Lahlouh, if I could now ask you to keep looking at PTX-46, and if we could turn to the third page of it, sir.

THE COURT: And, counsel, I interrupted you. He was in the middle of an answer, and I didn't mean to interrupt him. If you'd like -- I guess I did mean to because I did it, but if you want to ask your question again, if you care to, and have him give the jury the answer, you can, or you can keep going. I just -- I don't know that he answered the question that you had posed.

MR. ZUBLER: Um --

THE COURT: Or that you remember it.

MR. ZUBLER: I've forgotten what happened, Your Honor. Thank you. I will ask the prior question again just so the record is clear.

BY MR. ZUBLER:

Q. Mr. Lahlouh, we looked at PTX-46, and you described the configuration of layers in Align's patent.

My question to you, sir, is: What was the configuration -- what is the configuration of layers in Bay Materials' Zendura FLX material?

A. Zendura FLX material is composed of hard outer layers and a soft TPU inner layer.

Q. And is that configuration the same or different than the SmartTrack material?

A. It's totally different.

Q. Now, if we could go back to PTX-46 on Page 3.

A. Yes.

Q. And this is part of the document we were looking at, the benchmarking document. If you can see Table 1 that's shown here, sir.

A. Yes.

Q. What is being shown in Table 1 in the first column, sir?

A. In the first column is a prototype of FLX laminate, HT-PU-HT. The HT is a grade of hard copolyester.

Q. And what does the -- so we're looking at the HT-PU-HT line. You said HT is a hard copolyester; is that right?

A. HT is the hard copolyester.

Q. And what does PU stand for, sir?

A. PU is polyurethane.

Q. And is that a hard or soft layer, sir?

A. That's a soft layer.

Q. And the third HT, is that hard or soft, sir?

A. That's also hard, similar to the No. 1 HT. Most of them are hard copolyesters.

Q. And as part of this benchmarking testing, can we now look at the three columns to the right?

What are those showing, sir?

A. Those are showing three simulates of SmartTrack that use soft polyurethane on the outside and HT or hard on the inside, hard polyester.

Q. Is this document, sir, describing Zendura FLX as the same or different than SmartTrack?

A. It is totally different. Not only is the types of polymers used are different where they sit outside or inside, you can also see the thickness of the layers is different.

Q. What are you pointing to there, sir?

A. On the second row there, it shows that FLX, the three layers are equal thickness 10, 10, 10. In the SmartTrack simulates, it shows a skinny 3 and then 25 for the hard and then 3 again or skinny layer on the outside.

Q. What are the units on those measurements, sir?

A. Those are in mils.

Q. Mils?

A. Mils are thousands of an inch.

Q. Thousands of an inch?

A. Yes.

Q. Mr. Lahlouh, Ms. Durie also asked you some questions about some documents, some Bay Materials documents, that purported to show a measurement of the elongation at break of [redacted] percent for a given layer in a product.

Do you recall that, sir?

A. Yes. I do.

Q. And you mentioned, sir, I believe, that that was a measurement for a layer; is that correct?

A. That's correct.

Q. And I want to be very clear about the distinction that I -- that may be relevant here. When you mentioned it's for the layer, what did you mean?

A. I mean that's the measurement of the layer processed on its own, not within a product.

Q. And when you say there's a difference between the polymer in the -- in a layer versus a polymer in a -- polymer in a product, what's the difference?

A. The properties of the product cannot be predicted from the properties of the sheet. The elongation to break in the product is totally different and not predictable from the sheet.

Q. We'll come back to that, Mr. Lahlouh.

A. Sure.

Q. One final question about Ms. Durie's questions to you.

Were you here in court when Mr. Mueller said during the opening statements that Bay Materials and Align went on separate paths?

A. Yes.

Q. Did Align and Bay Materials go on separate paths in terms of the configuration of their multi-layer materials?

A. No.

Q. Did they proceed on different paths in terms of a hard-soft-hard versus a soft-hard-soft?

A. No.

Q. Did any of Bay Materials' work with Align relate to Zendura FLX?

A. No.

Q. Was Zendura FLX ever on the path -- strike that.

Was Zendura FLX on the path that Align took or the path that Bay Materials took?

A. It was on the path that Bay Materials took.

Q. Thank you.

A. You're welcome.

Q. Now, if I could, Mr. Lahlouh, I'd like to step back in time. We didn't get a chance to ask you

questions first, so I wanted to provide a little more background about you, sir.

Mr. Lahlouh, you were -- I believe you testified that you retired earlier this year; is that correct?

A. That's correct.

Q. Congratulations.

A. Thank you.

Q. What have you been doing in your retirement, sir?

A. I've been spending some time with my family, my beautiful wife and three adult children.

Q. And, sir, from what country -- I'm sorry. Strike that.

From what company did you retire?

A. I retired from Bay Materials.

Q. How long did you work at Bay Materials, sir?

A. 24 years.

Q. And what was your title at Bay Materials?

A. I was the principal polymer engineer.

Q. What were your responsibilities as the principal polymer engineer at Bay Materials?

A. My -- my responsibilities include identification and selection of different polymers, different resins, development of processes, how to

process those polymers, making -- characterization, looking at different product concepts, like do I use a single layer? Does it give me the product requirements I want? Do I want to make a blend to generate a product? Can I use multi-layers to combine different properties into one?

And then responsibilities going to development also of test methods, characterization, and documentation of experiments or work.

Q. We'll dive into those details in a little bit, but let me just ask you a little bit more about your background and how you got to Bay Materials.

Mr. Lahlouh, where did you grow up?

A. I came over to the U.S. as an immigrant from Sudan back in 1979.

Q. Why did you come to the United States, sir?

A. For a better quality of life and better opportunities.

Q. What is your educational background?

A. I have a master's degree in chemistry and technology of polymers.

Q. Now, after you got to the United States but before you got to Bay Materials, what did you do?

A. I worked for a material science company known as Raychem. It's a company that focuses on

development -- research and development in different products and different applications, including radiation polymers. And it's a true research company.

Q. That was Raychem. But now I want to ask you about Bay Materials.

You're the first witness in this case to talk about Bay Materials, which has been the subject of a lot of conversation. At a high level, what is Bay Materials?

A. Bay Materials is a research center for polymers and materials.

Q. In your work at Bay Materials, other than dental multi-layer materials, have you worked on any interesting products there?

A. At Bay Materials at one time we were doing consulting. I worked on a product for protecting the Navy ship hulls against corrosion. That required a product using polymers and graphene to replace a very expensive and sensitive to cracking platinum wire.

So that was for the Navy, to protect the ships. And it was fantastic progress, and it was innovative application there.

Q. Now, when did you actually join Bay Materials?

A. I joined in 2002.

MR. ZUBLER: Could we pull up DDX-5.2,

please?
BY MR. ZUBLER:
Q. What is shown here -- actually, look at your -- you can look at your screen, Mr. Lahlouh.
A. Yes.
Q. What is shown in DDX-5.2?
A. This is a picture showing me on the right-hand side standing next to Dr. Ray Stewart, the founder of the company. And then the rest of the team there is -- there is scientists, engineers, and support staff as well.
Q. And who are the inventors of Zendura FLX, sir?
A. Myself and Dr. Stewart.
Q. And is Dr. Stewart the person in the dark sunglasses there, sir?
A. Yes. He is.
Q. Now, what is Dr. Stewart's educational background?
A. Dr. Stewart has a Ph.D. in organic chemistry.
Q. When you started at Bay Materials, how many employees were there?
A. We were five. I was the first engineer.
Q. Today how many employees are at Bay Materials?
A. There is 35 now.
Q. And in the development of Zendura FLX, how

many people at Bay Materials worked on Zendura FLX?

A. Four.

Q. Now, when you started working at Bay Materials in 2002, what materials did Bay Materials -- strike that.

What materials -- start again.

When you started working at Bay Materials in 2002, was Bay Materials making any material for dental aligners?

A. Bay Materials at that time was approached by Align Technology. They needed help in selecting a new material to replace what they were using at that time.

Q. Why did Align want a new material and Bay Materials' assistance in a new material?

A. The materials were -- they were using, I'm not sure, but I understand it was meeting cracking or health hazards.

Q. What was the material that Bay Materials provided to Align?

A. We provided EX30, a rigid polyurethane.

Q. You mentioned a polyurethane, and we've heard about TPUs in this case. What exactly is a TPU?

A. A TPU is a thermoplastic polyurethane.

Q. And is there more than one type of TPU, or are all TPUs the same?

A. There are rigid TPUs. There are soft and rubbery TPUs. Imagine the shoe soles. There are dozens of types of TPUs.

Q. And how long -- for how long of a period of time, I should say, did Bay Materials supply the EX30 material to Align?

A. About six years, I would say.

Q. And during the time that Bay Materials was providing this EX30 material to Align, did you ever meet with any Align personnel or scientists?

A. I remember meeting with Dr. Chunhua Li once or twice, and I probably met with Dr. Loc Phan.

Q. When did you meet with Dr. Li?

A. Around the year maybe 2004, 2005.

Q. Why would the Bay Materials team be meeting with personnel from Align?

A. Dr. Li I believe was new at Align Technology, and she came to meet with us to learn more about the EX30. So we were providing guidance, particularly Dr. Stewart, putting -- advising about how the material is very difficult to -- is very challenging to dry and to process and to characterize. And she was visiting Bay Materials to learn more.

MR. ZUBLER: Your Honor, may I approach the witness?

BY MR. ZUBLER:

Q. Mr. Lahlouh, I've handed you what's been marked as DPX Defendants' Physical Exhibit No. 6.

A. Yes.

Q. Do you recognize that, sir?

A. Yes. This is Zendura FLX.

Q. What is it, sir?

MS. DURIE: I'm sorry. Can we have a copy?

MR. ZUBLER: Oh, it's a physical exhibit. I'm happy to --

MS. DURIE: Do you mind if I just come take a look?

MR. ZUBLER: Please. I'm sorry.

BY MR. ZUBLER:

Q. Let's just start over again, sir.

A. Sure.

Q. What is DPX-6?

A. This is a Zendura FLX multi-layer sheet coming out of the package here.

Q. And can you please describe for the jury what is Zendura FLX and its characteristics?

A. Zendura FLX is this. Feels flexible, and it is at the same time rigid. It looks like a single layer that is transparent, but in reality it is three

layers of sheets, two hard outer layers and an inner layer that is soft.

This three-layer with the hard-soft-hard is stain resistant. And if I nick it here and try to tear it, it will be very difficult to try to tear it apart. It has good tear resistance, good stain resistance, good characteristics.

Q. You mentioned stain resistance. You mentioned tear resistance.

A. Yes.

Q. Do those characteristics relate or not relate to the hard-soft-hard configuration that we've been discussing?

A. They certainly relate to those aspects.

MR. ZUBLER: May I approach the witness, Your Honor?

I've handed the witness what's been marked as Defendants' Physical Exhibit DPX-16.

BY MR. ZUBLER:

Q. Mr. Lahlouh, do you recognize that, sir?

A. Yes. This is one of my lab notebooks.

MR. ZUBLER: Your Honor, we would move to have DPX-16 admitted.

MS. DURIE: No objection.

THE COURT: Admitted.

MR. ZUBLER: And then we would move to have DPX-6, the Zendura FLX, admitted as well.

MS. DURIE: No objection.

THE COURT: Admitted.

BY MR. ZUBLER:

Q. Now, Mr. Lahlouh, that notebook, why do you have a notebook?

A. The notebook is a professional way of recording every experiment or every piece of work. This is -- as you know, Bay Materials is a research center, and we try to follow very professional rules of maintaining records of experimental work.

MR. ZUBLER: Now, if we could, if we could pull up DTX-413 which was admitted earlier by Align.

BY MR. ZUBLER:

Q. And this is an electronic copy of the same notebook that you have in front of you, sir. So we can look at the screen going forward here.

MR. ZUBLER: If we could turn to the lab notebook, Page 24.

BY MR. ZUBLER:

Q. Do you see that page, sir?

A. Yes.

MR. ZUBLER: And if we could zoom in on

the top upper left-hand corner and the title where it says: EX30 replacement candidates.

BY MR. ZUBLER:

Q. Do you see that, sir?

A. That's correct. I see.

Q. What does that refer to?

A. That -- that refers to materials that we need or that we were looking at to replace the EX30.

Q. And why were you looking to replace the EX30 material that you were providing to Align?

A. The EX30 was a good material, but it was too stiff, too hard, and not comfortable for the patient.

Q. How many layers were included in EX30?

A. EX30 is a single layer of rigid polyurethane.

Q. It's a single layer, sir; is that right?

A. Yes.

Q. Now, if we could look at the bottom of this page. There's -- in the lower left-hand corner, there's a signature. Whose signature is that?

A. This is my signature.

Q. And in the lower right-hand corner, there's a date. What's the date?

A. That's August 5th, 2002.

Q. Why did you sign and date your notebooks?

A. The signature identifies the person who did

the work. The date records the date when this work was done.

Q. Is that a standard or nonstandard practice for scientists, to sign and date lab notebooks?

A. It is a professional standard technique.

Q. Now I'd like to turn to Page 26 in your lab notebook.

MR. ZUBLER: But before we put it up on the screen, Your Honor, we have a placard that I'd like to approach the witness with. Is that all right?

And if I could have a microphone, please.

BY MR. ZUBLER:

Q. All right. Mr. Lahlouh --

A. Yes.

Q. -- do you recognize this portion taken from the lab notebook we've been looking at?

A. Yes. I do.

Q. What is the title of this page, sir?

A. Multi-layered construction.

Q. What does that refer to?

A. That refers to three or more layers of materials.

Q. Now, this is two pages after the page we were looking at previously. This is Page 26. We were looking at 24 before.

What is the date shown on this?

A. The date is August 12th, 2002.

Q. That's 2002, 24 years ago, correct, sir?

A. Yes.

Q. Now, I'd like to look a little bit farther down on this, on your writing here. You have very nice handwriting, sir, but I'm going to circle some of the language so the jury can see it. And I apologize if I'm standing in the way of the jury. There's a section here that says "a three-layer construction."

Do you see that, sir?

A. Yes.

Q. What does that refer to?

A. That refers to this three-layer that you see on the diagram here.

Q. And just to be clear, are you referring to this right here?

A. Yes.

Q. And why were you investigating a three-layer construction?

A. That's a concept of hard outer layers surrounding an inner layer for adjusting the properties. It specifically outlines the use of hard layers in a multi-layer construction.

Q. Okay. I'm looking here. There's something

that says Surlyn, Selar, and Surlyn.

Do you see that, sir?

A. Yes.

Q. What are the Surlyn layers? Are they hard or soft layers, sir?

A. They're hard layers.

Q. And what is the advantage of having a hard layer on the outside of a multi-layer material?

A. Hard layer on the outside ensures that the product does not stain.

Q. And if you have these hard outer layers on the outside so it doesn't stain, why do you need a third layer?

A. A third layer allows for getting a balance of properties.

Q. What kind of balance?

A. It could be for toughness or elasticity in making it more flexible. Softer things like that, impact resistance, noncracking.

Q. Now, Mr. Lahlouh, you mentioned stain resistance as a feature of having a hard outer layers. For a dental aligner, is stain resistance an important or not important characteristic?

A. It is a very important characteristic.

Q. Why is it important?

A. It is important because aligners, the final product, it's appealing to the user is because it is clear, and you don't want to have an aligner that would stain in the mouth.

Q. What can cause an aligner to stain?

A. Simple foods like mustard or coffee or wine, anything like that can stain.

Q. Now, did you ever build this three-layer material that's shown on this page of your lab notebook?

A. Yes. I processed that in the lab into a sample.

Q. Now, just to be very clear, does that material -- is that material Zendura FLX, sir?

A. No. It is not Zendura FLX, but it's the concept of using hard layers on the outside, leading to FLX in the future.

Q. Thank you, Mr. Lahlouh. We'll move on to a different document now.

Could you now look at Tab 5 in your binder, please? This is DTX-416.

Mr. Lahlouh, do you recognize DTX-416, which is entitled Next Generation Aligner Project Plan?

A. Yes. I do.

MR. ZUBLER: Your Honor, we move

admission of DTX-416.

MS. DURIE: No objection.

THE COURT: Admitted.

BY MR. ZUBLER:

Q. Now, Mr. Lahlouh, this document is entitled Next Generation Aligner Project Plan.

Do you see that?

A. Yes. I do.

Q. Is this document from Bay Materials, sir?

A. Yes. It is.

Q. And what was the next generation aligner project plan?

A. I'm looking for different materials, different from the EX30 or Zendura in this case.

Q. Who wrote this document, sir?

A. I did.

Q. And when did you write this document?

MR. ZUBLER: If we can go to the last page of this document and zoom in.

A. I wrote this document back in June 17, 2010.

BY MR. ZUBLER:

Q. All right. So you wrote this document in June 2010.

MR. ZUBLER: And now if we could go back to the first page that we were looking at. And

actually, if we could jump to the third page of the document, where it says Materials Overview.

BY MR. ZUBLER:

Q. Do you see that section, sir?

A. Yes. I do.

Q. Now, what does this section describe as part of the next generation project plan?

A. This describes different types of TPUs or copolyesters or amides that we were looking at as replacements.

Q. Do you see, sir, there's a reference in this document to Tritan FX 100 copolyester?

Do you see that, sir?

A. Yes. I do.

Q. What does that refer to?

A. That refers to a Tritan hard copolyester. It's from the same family that Zendura FLX Tritan is.

Q. So if I'm understanding you correctly, you said this is from the same family as what?

A. Tritan copolyester.

Q. As a Tritan copolyester in Zendura FLX; is that right?

A. Yes.

Q. And this document -- is this document from before or after SmartTrack was released, sir?

A. This is before SmartTrack.
Q. This document was from 2010, you testified.
When was SmartTrack released, sir?
A. SmartTrack, 2013.
Q. Now, if we could go to the fourth page of this document, sir. And particularly, there's a section entitled Routes to 20 mil NGA Material.
Do you see that?
A. Yes.
Q. What does NGA stand for?
A. Next generation aligner.
Q. And in this paragraph, the last sentence says: Possible routes to an NGA material include the following.
Do you see that?
A. Yes.
Q. And the very last line refers to a laminate, for example, ABA sheet of CX, BX, and CX.
Do you see that, sir?
A. Yes. I do.
Q. What is that referring to, CX/BX/CX?
A. That refers to hard-soft-hard materials.
Q. And you said this refers to -- could you repeat that answer, sir?
A. Three layers, hard-soft-hard.

Q. Did you ever build this material, sir?
A. Yes. I did.
Q. And to be clear, is this the configuration -- the exact configuration of Zendura FLX?
A. This is the configuration of hard-soft-hard that is used in FLX.
Q. But is this the final configuration of Zendura FLX, sir?
A. Not the materials, but the concept of configuration, yes.
Q. Now, after this memo in 2010, this next generation aligner memo, what projects were you working on over the next several years at Bay Materials?
A. I'm sorry, which years?
Q. Yeah. So this document we were looking at was from 2010 --
A. Yes.
Q. -- the document we were looking at on the screen. After that document, what projects were you working on at Bay Materials?
A. Alongside working in developing the next generation material, we were also doing consulting work at the same time to other companies because we were a small company trying to generate funds to fund our projects, the aligner -- the orthodontic projects.

Q. You said you do consulting projects for other companies.

What kind of companies were you working with, sir?

A. We were working with all kinds of companies, including Google, for example, making those sheets of balloons. We were consulting with Medtronic, another pharmaceutical company, I believe. We were working with different consulting projects.

Q. Now, Mr. Lahlouh, I see sitting next to you there's two stacks of notebooks. Could you hold up one or two of those, sir, please?

And how many total notebooks do you have there next to you?

A. I have next to me about, I believe, 20 notebooks.

Q. And what are those --

A. Each notebook has 208 pages, and all of them are research projects. Not all of them are on orthodontic aligners, but including also the consulting work that we were doing.

Q. And do those lab notebooks, though, do they refer to any other multi-layer materials that you were working on?

A. Yes. Numerous examples in the lab notebooks.

MR. ZUBLER: These -- those notebooks have been marked DPX-16 through DPX-29 and DPX-32 and DPX-33. We would move admission of those exhibits.

MS. DURIE: No objection.

BY MR. ZUBLER:

Q. Now, in your development of --

(Off-the-record discussion.)

THE COURT: Ladies and gentlemen of the jury, if we look a little rattled up here, it may be. But again, as I told you earlier, you're not going to get physical exhibits. You're going to -- you'll be receiving photos of these, and you'll not have the actual physical exhibits. We don't have a way of doing that anymore.

So I'm admitting the exhibits, but you all will be getting photos of the exhibits and not the exhibits themselves.

BY MR. ZUBLER:

Q. Now, in developing Zendura FLX, Mr. Lahlouh, approximately how many different experiments did you run?

A. Around 850 experiments, including different polymers that we looked at, blends, multi-layers. And then there is the processing each time to work with this. So there is processes. There is conditioning.

There is making the parts for prototyping. Cycles of making samples and going back after a week or so to do more.

Q. Why did you need to run so many experiments?

A. We needed to run that many experiments because we wanted to be comprehensive. We looked at all kinds of polymers out there, and it's challenging because we have to select FDA-approved materials, first of all. They have to -- we want to make sure that they are clear at the end.

Not every combination will result into a clear product. We wanted to check the properties of the -- each time we made prototypes, we went back to test them to make sure we are on track.

So it takes time and effort, especially in a small group.

Q. Mr. Lahlouh, when you make a multi-layer product with multiple layers each with their own individual characteristics, are the properties of the ultimate final multi-layer product predictable or unpredictable?

A. They're unpredictable.

Q. If we could now -- if you could now look at Tab 9 in your binder, sir, which is DTX-263.

A. Yes.

Q. And this might have already been admitted as a plaintiff's exhibit, but just to be sure, do you recognize the document at Tab 9, DTX-263?

A. Yes.

Q. What is it, sir?

A. The Zendura XL Development History.

Q. All right.

MR. ZUBLER: Your Honor, we would move admission of DTX-263.

MS. DURIE: No objection.

THE COURT: Admitted.

MR. ZUBLER: If we could publish DTX-263 to the jury.

BY MR. ZUBLER:

Q. The document is entitled Zendura XL Development History.

What is Zendura XL?

A. Zendura XL is the previous name for Zendura FLX.

Q. And --

A. It's the same.

Q. And towards the bottom of the page, it says --

MR. ZUBLER: If we could go to actually Page 2, I should say.

BY MR. ZUBLER:

Q. Towards the bottom of the page, there's a section entitled Initiation of Development Effort?

Do you see that, sir?

A. Yes. I do.

Q. Now, the first sentence says: In 2013, Bay Materials began investigating materials and construction to produce an improved aligner material.

Do you see that, sir?

A. Yes. I do.

Q. Now, you told us earlier, looking at your lab notebook, that that was from 2002. And we looked at a 2010 document that you said related to the concept of Zendura FLX.

Why did this document refer to 2013 as the date when Bay Materials began investigating materials and construction to produce an improved aligner material?

A. This document refers to the development of the product. Before 2013, between 2010 and 2013, we were still doing the experimentations in the lab making little sheets and laminates on the hot press to make -- for testing.

But after 2013, that's the development of the product, meaning we had to go and develop the process for that product using pilot scale equipment.

I used to travel from California to Pennsylvania to access those pilot scale equipment for doing a process specific for making these laminates.

Q. Now, the jury has heard a fair amount about technical data sheets for individual polymers. Are you familiar with the technical data sheet that describes an individual polymer?

A. Yes. I do.

Q. Do you use those in your work, sir?

A. The technical data sheets only give us guidelines about the properties or process of a single sheet.

Q. During your development of Zendura FLX, did you use technical data sheets?

A. I used them as guidelines, not to predict the outcome of the three layer.

Q. And based on your experience, how did the properties that were listed on the technical data sheets for the individual polymers relate to the characteristics and properties of the layers in the completed Zendura FLX multi-layer product?

A. They're different. Totally different.

Q. Now, for product performance, sir, what is relevant for the performance of a product for a patient, for example, with a dental aligner?

Is it -- are the individual materials in Zendura FLX before manufacturing relevant or are the individual materials relevant as they are incorporated in Zendura FLX?

A. After they're incorporated. That's what is important for the patient.

Q. And why is that, sir?

A. Because that's what the patient is going to feel in their mouth, the product.

Q. The multi-layer product?

A. Yes.

Q. Now, are you familiar with how Zendura FLX is manufactured?

A. Yes.

Q. How is it manufactured?

A. I developed the process for manufacturing Zendura FLX. And as I said, you know, we -- I used to travel to Pennsylvania to access the equipment that I can develop the process there. And it took numerous times going back and forth because there was no process for Zendura FLX. No process outlined out there.

Q. What is the name of the process that's used to make Zendura FLX?

A. It's called an extrusion lamination process. It's a two-step process.

In the first step, I would have to extrude the outer layers using just one material, the copolyester, at very high temperature, 520 degrees Fahrenheit, to make sheets, collected in a row, two rows.

Then in a second step, not necessarily right away, in a second step, I would extrude -- melt extrude the polyurethane, the soft polyurethane in the melt and extrude it between deployed fill of the outer layer.

That's how it gets laminated in a continuous manner.

Q. And based on your experience, does the extrusion lamination process impact the material properties of the layers of Zendura FLX?

A. Yes. The extruded product is totally different from the individual layers.

Q. I want to return to the exhibit from your initial lab notebook that we looked at a moment ago.

MR. ZUBLER: May I approach the witness again, Your Honor?

BY MR. ZUBLER:

Q. Coming back to this part of your lab notebook from 2002, if we could focus on just one sentence here that you wrote. And I'll read it because it may not be visible to everyone. But it's --

MR. ZUBLER: Also, if we could put it on

the screen perhaps for the jurors so they can see it there as well.

BY MR. ZUBLER:

Q. It says -- and I'm looking below Line 10: While Selar PA 3426 polyamide from Dupont alone is brittle, the multi-layer construction was more flexible and nonbrittle.

Do you see that language, sir?

A. Yes.

Q. I'm just going to mark that on the document.

What is that describing, sir?

A. That describes that you cannot predict the product properties from the first layer from the sheet by itself. In fact, in this case, there was synergistic effect that a brittle material, when it was put into a laminate, it turned into a flexible material.

Q. And when did you write this statement, sir?

A. I wrote this back in 2002, August.

Q. Now, when was Zendura FLX first sold?

A. In 2018.

Q. And how many people worked on the project for Zendura FLX?

A. Four scientists and engineers.

Q. Can you describe what it was like working on

Zendura FLX with those engineers?

A. Zendura FLX was very intriguing. It was challenging. We had to work hard. We had to, you know, do this in cycles continuously.

Q. And how has the dental industry responded to Zendura FLX?

A. Zendura FLX was accepted by the industry overwhelmingly.

Q. Can you describe what you mean by "overwhelmingly"?

A. It was global acceptance. They loved it. It was just the proper -- the good package of properties in one.

Q. What companies use Zendura FLX today?

A. All over the world. There's no single company.

Q. Can you name some of them, sir?

A. Yes. ClearCorrect is one of them. Encore uses it. Australia, companies in Australia use it. In the Middle East, they would use it. In China, they use it.

It's all over the place. Companies, many, many different companies.

Q. Now, have you received any patents related to your work in developing Zendura FLX?

A. Yes. I did.

Q. If you could look at Tab 10 in your binder, sir, which is DTX-595.

A. Yes.

Q. Do you recognize that, sir?

A. Yes. I do.

MR. ZUBLER: We would move admission of DTX-595.

MS. DURIE: I do object, Your Honor, on 403 grounds.

THE COURT: I can't hear you. I'm sorry.

MS. DURIE: Sorry. I apologize, Your Honor. I object on 403 grounds.

MR. ZUBLER: May we approach, Your Honor?

THE COURT: Sure.

(Bench conference.)

MS. DURIE: I don't mind him talking about it in a way he just did and saying -- I said I don't mind him, as he just did, saying he got patents. But the specifics of the patent and the claims are not relevant to any issue, and I think it's going to be confusing to the jury as to what to make of it.

MR. ZUBLER: Your Honor -- I'm sorry to interrupt.

This is very relevant, Your Honor, for

two reasons to rebut the copying allegations. There's actually reference in this document, and I can show it to you, where he references that the contrast between the product he was developing and the SmartTrack material including testing results, and he contrasts it expressly and says it's different and it's superior. And it was -- and the patent was granted over the SmartTrack patent.

MS. DURIE: I think that's exactly the 403 issue. That's not relevant to the infringement of these claims. The fact that he could get a different patent for a different purpose.

THE COURT: I think it's responsive to the copying allegation. I'll overrule the objection.

MR. ZUBLER: Thank you, Your Honor.

(Bench conference concludes.)

MR. ZUBLER: Your Honor, we move admission of DTX-595.

THE COURT: And I'll note your objection and it's overruled.

MR. ZUBLER: If we could publish DTX-595 for the jury.

BY MR. ZUBLER:

Q. What is this document, sir?

A. This is the patent for Zendura FLX.

Q. And who are the named inventors on this patent, sir?

A. Dr. Ray Stewart and myself, John Lahlouh.

Q. And if you look at the title of it in the upper left-hand corner, it says: Dual Shell Dental Appliance and Material Constructions.

Do you see that, sir?

A. Yes.

Q. What does dual shell refer to?

A. Dual shell right away tells you that this has two hard layers. That's what a dual shell is.

Q. And if we could look down the lower right-hand corner, there's a section called Abstract that summarizes the patent.

Do you see that, sir?

A. Yes.

Q. And in particular, if we could look at the sentence -- the second sentence that says: The polymeric sheet compositions are useful for making dental appliances having outer layers comprised of a material having a modulus of from about 1,000 MPA to 2,500 MPA ("hard") and an inner core comprised of elastomeric material or materials having a modulus of from about 50 MPa to 500 MPa ("soft").

Do you see that, sir?

A. Yes. I do.
Q. What does that refer to?
A. That refers to the soft layer in between the two shells.
Q. Now, if we could -- if I could now turn your attention to Table 3 of the patent.
MR. ZUBLER: If we could zoom in on that, sir.
BY MR. ZUBLER:
Q. Table 3 is entitled Monolayer and Multilayer Sheets.
Do you see that, sir?
A. Yes.
Q. What is described in Table 3 of your patent?
A. In Table 3 of the patent, the four numbers to the right are -- the three numbers to the right, from 2, 3, and 4, those are different FLX configurations, multi-layer.
Q. And when you say "FLX configuration," what do you mean?
A. Meaning hard-soft-hard.
Q. Your invention?
A. Yes.
Q. And what is -- and before we go into the details of each column, what generally is the data

that's being reported here?

A. What's the date?

Q. What data or what information is being provided here, sir?

A. This is the properties of the product -- products that are compared to one another. P1, for example, is a rigid polyurethane like the Zendura A.

The next one is a monolayer of polyester.

The third one -- the third one is a simulate of SmartTrack. It is listed here as composed of outer layers of Texin 950. That was our simulate of 75 microns and an inner layer of a hard material 600 microns, and then again an outer TPU elastomer, 75 microns. So this is one of the simulates for SmartTrack.

Q. Who generated the data in this table, sir?

A. Myself and Dr. Stewart.

Q. So if I'm understanding you correctly, this is data comparing certain Zendura FLX or hard-soft-hard configurations with other products; is that correct?

A. That's correct.

Q. Now, why were you reporting to the Patent Office testing data about your products in comparison to other products?

A. We wanted to make it clear that we have a

different product.

MR. ZUBLER: Now, can we pull up Column 16 of the same patent, Lines 1 to 9, and if we could highlight Line 6.

BY MR. ZUBLER:

Q. Which says --

A. Yes.

Q. -- prior art material P3 is described in U.S. Patent No. 9,655,693 B2.

Do you see that, sir?

A. Yes. I do.

Q. What patent is that referring to?

A. I believe that's referring to SmartTrack Align's patent.

Q. Why were you referring in your patent to Align's patent?

A. To show that we are not copying here. We are just showing as how our product compares to a similar product.

Q. Now, if we could look at Line 8 still in Column 16. It says: Test samples 1 to 4 are multilayer laminates (as described herein), demonstrating improved stress relaxation properties, increased tear strength, and excellent stain resistance.

A. Yes.

Q. When it refers to test samples 1 to 4, is that referring to your products or the prior products?

A. My products.

Q. And now finally, if we could look at Column 16, Lines 10 to 11, it says: Compared to the prior art materials, test samples 1 to 4 exhibited a number of unexpected properties.

Do you see that, sir?

A. Yes.

Q. And again, test samples 1 to 4 are which products?

A. 1 to 4 are my products.

Q. And then if we look down to Line 17, it says: This is in contradiction to the teachings of U.S. Patent No. 9,655,693.

Do you see that, sir?

A. Yes.

Q. And it goes on to say that that patent teaches that an outer layer of elastomer is required to protect the inner hard layer.

Do you see that?

A. That's correct.

Q. Again, just to be absolutely clear, what patent is being referred to when it says U.S. Patent

No. 9,655,693?

A. I believe that's the SmartTrack patent.

Q. Did the Patent Office, after you provided this data, did it grant or deny you a patent?

A. They granted us a patent.

Q. How many patents did you ultimately get, sir, as part of this disclosure?

A. Four, I believe.

Q. Now, Mr. Lahlouh, do you understand that Align is accusing you of copying Align's SmartTrack design in developing Zendura FLX?

A. That's right.

Q. Did you copy the SmartTrack design?

A. No. Never.

Q. Now, but during the time you worked at Zendura FLX (sic), did Bay Materials evaluate other companies' products?

A. Yes.

Q. Why would you do that?

A. For benchmarking, for comparison of how our product compares to what is out there in the market.

Q. And what multi-layer competitor products did Bay Materials evaluate?

A. We compared a few, for example, 3M's Clarity product.

Q. And did you ever inspect or test Align's SmartTrack product?

A. I have never seen Align's SmartTrack product. I had to make simulates because it's not available.

Q. What do you mean, "it's not available," sir?

A. Align Technology does not have their products, the three-layer sheets, available to anyone out there except they would give them directly to the orthodontists. So any researcher could not access a SmartTrack.

Q. What about Zendura FLX, is Bay Materials' -- Bay Materials' Zendura FLX material available for purchase by companies other than Bay Materials and ClearCorrect?

A. Absolutely. It's sold all over the world and is packaged as sheets, multi-layer sheets.

Q. And during your time at Bay Materials, sir, did you ever review Align patents?

A. I have reviewed a few.

Q. And why would you review another company's patents?

A. I would review other companies' patents, not just Align's, but to keep up with what is going on in the industry, what is new, what's going on.

Q. In any of the Align patents that you've

reviewed, have any of them that you've seen described a hard-soft-hard material like Zendura FLX?

A. No. Align's patents have been consistent on soft-hard-soft.

Q. Mr. Lahlouh, I'd like to close with a few questions about the patents that Align is asserting in this case.

You understand that there's four patents that Align has asserted against ClearCorrect based on its use of Bay Materials' Zendura FLX material.

Do you understand that, sir?

A. Yes. I do.

Q. Now, have you reviewed those four patents, sir?

A. Yes. I have.

Q. When do you understand that those patents, the four that are issued in this case, when do you understand that those were issued by the Patent Office?

A. At least three years after Zendura FLX patent.

Q. Approximately what year?

MS. DURIE: Your Honor, violation of -- it's a violation of MIL 7.

THE COURT: If you want to approach the bench.

MS. DURIE: I apologize, Your Honor.

Yes.

(Bench conference.)

MS. DURIE: Your Honor, MIL 7.

THE COURT: Tell me first, are you objecting to the question he just asked or the one you think he's about to ask?

MS. DURIE: The question he just asked.

THE COURT: Okay.

MS. DURIE: And it's MIL 7, that it's the suggestion that it's improper to file a patent application or write claims to cover an adverse party's product. That was very direct and to the suggestion that it was improper to get a patent after Zendura FLX had issued.

MR. ZUBLER: I was not intending to suggest it was improper, but we can move on, Your Honor.

THE COURT: Okay. Thank you.

(Bench conference concludes.)

BY MR. ZUBLER:

Q. We were talking, Mr. Lahlouh, about the four patents that Align has asserted against ClearCorrect. I believe you said you've reviewed those patents; is that right, sir?

A. Yes. I have.

Q. And have you reviewed the claims of those patents?

A. Yes. I did.

Q. And what did you conclude based on your review of the claims of those patents?

A. My conclusion is that the Zendura FLX or ClearCorrect does not infringe on Align's patents.

Q. We talked earlier today, Ms. Durie did, about the elongation at break requirement of the patents in this case. She had a demonstration -- demonstrative up there that she had you look at.

Do you recall that, sir?

A. Yes. I do.

Q. Does the TPU layer, the soft layer in Zendura FLX, have an elongation of break greater than about 200 percent?

A. No.

Q. How do you know that, sir?

A. I have tested the product.

MR. ZUBLER: Your Honor, if -- actually, if we could pull up DTX-455, which has been admitted.

If we could zoom in on the top of this document.

BY MR. ZUBLER:

Q. It's entitled Zendura XL-1 Design Verification

Report, Tensile and Elongation Properties.

Do you see that, sir?

A. Yes. I do.

Q. What is this document?

A. This is a report on the tensile and elongation properties of Zendura FLX.

Q. What's a tensile property?

A. A tensile property is when a sample, let's say a strip, is pulled.

Q. Who wrote this document?

A. I did.

Q. And when did you write it?

A. I wrote it in 2018.

Q. Did you perform this testing before or after Align sued ClearCorrect in this case?

A. I performed this before.

Q. And why were you testing Zendura FLX?

A. I always test Zendura FLX to get an idea about its properties.

Q. If we could look at the result section at the bottom of the first page of DTX-455.

At a high level, what does that describe, sir?

A. That describes the tensile properties, and there is a few of them. Elongation at yield, break. All the tensile properties of the material.

Q. Let's focus on elongation at break, that column, sir.

Do you see that?

A. Yes.

Q. What does that column show with respect to the elongation at break of Zendura FLX?

A. That shows that when the Zendura FLX is pulled according to the ASTM test method and 2 inch per minute, it would break at an average of 102 percent elongation.

Q. And you mentioned an ASTM standard. What standard did you apply in doing this testing?

A. This is the American Standard Test Method, designation 638.

Q. Is that a standard or nonstandard way to test materials?

A. That's a very standard test method for testing polymers.

Q. And what does this testing of the elongation at break of Zendura FLX indicate, if anything, about the elongation at break of the TPU soft layer within Zendura FLX?

A. This test demonstrates that the inner layer of Zendura FLX breaks at an elongation of 102 percent.

Q. Other than this occasion in 2018 that's shown

here, did you ever have other occasion to test the elongation at break of Zendura FLX?

A. Yes. I've tested it numerous times. Every time we have a new lot of material coming and new product made, we test it.

Q. Have you ever had a result in which the elongation at break was greater than 200 percent?

A. No. Not at all.

Q. Mr. Lahlouh, you told -- strike that.

I want to clear up one other area. I want to come back to an area of questioning that I asked you about before. There may have been confusion in my question asking you about Bay Materials' path and Align's path back in the early 2000s.

Do you recall I asked you some questions about that, sir?

A. Yes.

Q. Just to be clear, when I say "path," I'm referring to a technological approach. All right, sir?

A. Okay.

Q. Now, is Zendura FLX on the same or different technological path than Align's SmartTrack?

A. It's on a different path.

Q. Does Zendura FLX use a different technological approach or the same technological approach as

SmartTrack?

A. First of all, it's a different process. It's a different technology. And I don't know how they are processing, for example, SmartTrack.

Q. Now, Mr. Lahlouh, I'll close by just asking you one question. You told the jury earlier that you're retired.

A. Yes.

Q. Why are you here testifying away from your retirement in federal court?

A. I'm here today because I wanted in person to come and tell the true story of the development of this new, different, and innovative dental product that I have co-invented.

And I also wanted to say that it didn't come easy. We were a small group. We were a small force of four because at that time we were struggling to stay alive as a small company. So we were doing contract consulting work and others before getting back on.

So this small force of four scientists, after persistent and lots of work as you have seen in my lab notebooks here, this small force created a giant product.

Now, I know it is a giant product because I know it has been accepted overwhelmingly all over the

world. And I'm grateful for every minute that I spent working on this product.

MR. ZUBLER: Thank you, Mr. Lahlouh.

No further questions.

THE WITNESS: You're welcome.

REDIRECT EXAMINATION

BY MS. DURIE:

Q. Mr. Lahlouh, just a couple more questions.

You were asked about DTX-455.

MS. DURIE: If we could put that up. DTX-455.

A. Sorry. I have it sitting down here.

BY MS. DURIE:

Q. Sorry. You've probably got it there.

MS. DURIE: But can we put it up on the screen?

There we go. And if you can blow up the bottom portion of the page.

BY MS. DURIE:

Q. You were asked about these test results that you did involving elongation at break.

MS. DURIE: And actually, just scroll up a little bit so we can see a little bit higher as well.

BY MS. DURIE:

Q. The material --

MS. DURIE: If you can just include 4.3 down.

BY MS. DURIE:

Q. The material that you were testing here --

MS. DURIE: Can you, Mr. Smith, just scroll up a little bit so we can see from about 4.3 down?

Thanks.

BY MS. DURIE:

Q. The material that you were testing here was the holes in Zendura FLX, right?

A. That's right.

Q. And so when you were doing the elongation at break, as we heard from Dr. Reitman, you were pulling apart both the hard layer and the soft layer, right, like that?

A. The whole thing is pulled together.

Q. Okay. Now, I want to go to your patent which is I think Plaintiff's Exhibit 1876.

MS. DURIE: There we go.

BY MS. DURIE:

Q. And this is United States Patent 9,655,6- --

MS. DURIE: Oh, that's actually -- sorry, that's the wrong one. That is '691.

Hang on. What I need is the exhibit

number for 9,655,693.

There we go.

DTX-95? DTX-95. Perfect. Ask and you shall receive.

BY MS. DURIE:

Q. So we've got up here DTX-95. That is U.S. Patent 9,655,693, right?

A. Yes.

Q. That's one of the patents issued to Align Technologies to Dr. Li and her colleagues, right?

A. Yes.

MS. DURIE: And if we can take a look at your patent, which is DTX-595, and if we could go to Page 14. 595, Page 14. If you can blow up the top portion of Column 16.

BY MS. DURIE:

Q. This is what you were asked about in your direct testimony. It says: Prior art material --

MS. DURIE: Whoops, not quite that. A little bit more. Second paragraph. "Compared to the prior art materials," that paragraph.

Second paragraph on Column 16.

There we go. Great.

BY MS. DURIE:

Q. So, actually, it says above there in the --

six lines down: Prior art material P3 is described in U.S. Patent No. 9,655,693.

That's what you talked about under questioning from counsel just a moment ago, right?

A. Yes.

Q. And that 9,655,693 patent, that is this patent that was issued to Dr. Li and her colleagues from Align.

MS. DURIE: If we can go back to that, the prior exhibit. And if we can go to the claims on the last page and blow up Claim 1.

BY MS. DURIE:

Q. So this patent that you were discussing, this Align patent that you were discussing in your patent, is specifically directed to a first soft polymer layer and a second soft polymer layer and a hard polymer layer between them.

So this patent is specifically directed to soft-hard-soft, right?

A. Yes.

Q. And if we take a look at --

MS. DURIE: May I approach, Your Honor? Thank you.

BY MS. DURIE:

Q. If we take a look up here at the claim of the

'613 patent, unlike the claim that you cited in your patent, this claim doesn't say soft-hard-soft, does it?

A. It is implied.

Q. Okay.

THE COURT: If you'll answer her question, please.

BY MS. DURIE:

Q. Yeah. Please answer my question.

A. Yes.

Q. This claim, the claim of the patent at issue in this lawsuit, does not say soft-hard-soft, does it?

A. No. It does not, but it is implied.

THE COURT: Again, ladies and gentlemen of the jury, ignore the second half of that answer, please.

MS. DURIE: Thank you.

BY MS. DURIE:

Q. And for the record, sir, let me ask my question again.

The text of the patent claim, the thing that defines the boundary of the invention, it says three layers. One layer is hard, one layer is soft, correct?

A. Yes. Yes.

MS. DURIE: Thank you.

No further questions.

RECROSS-EXAMINATION

BY MR. ZUBLER:

Q. Mr. Lahlouh, if we could look at '613, Claim 1, from the demonstrative exhibit from Ms. Durie that we're looking at up there.

A. Yes.

Q. The text of that patent refers to an elongation of break and requires an elongation of break of greater than about 200 percent for the soft polymer layer.

Do you see that, sir?

A. Yes. I do.

Q. Does the soft polymer layer of your hard-soft-hard product have an elongation of break of greater than about 200 percent?

A. No.

MR. ZUBLER: No further questions.

MS. DURIE: Nothing further.

THE COURT: You may step down, sir.

Next witness, please?

MS. DURIE: Thank you, Your Honor.

At this time, we would like to play some testimony by deposition video from Mr. Christopher -- I may be mispronouncing this name. If so, I apologize -- Klacyzk, the head of regulatory affairs at

ClearCorrect.

THE COURT: Ladies and gentlemen of the jury, I'm going to give you a more robust instruction on this at the end of the trial. But during the course of preparation of a case to get it to the courtroom, the lawyers will send out invitations to people and ask for them to be deposed. The lawyers will attend the deposition. There'll be a lawyer there taking the questions. There'll be someone representing the person who's being deposed. But the most important thing for your consideration is that just like in this courtroom, those witnesses are sworn in.

So you all are the judges of the evidence in this case. You're free to believe someone, not believe someone, whatever. That's why we have you here.

With respect to what you're about to see in this deposition or any deposition that's played for you, I'm instructing you not to allow the fact that the person is not here in person to impact the credibility of the witness. How you deal with what he or she says is entirely up to you. But the fact that they are appearing by video deposition should not impact you because that's perfectly acceptable under the rules that we handle our cases by.

If you'll play the deposition, please.

(Video deposition of Christopher Klacyzk played as follows:

Q. Can you please state your full name for the record?

A. Christopher Arthur Klacyzk.

Q. And what is your position, your current position at ClearCorrect?

A. I'm the head of regulatory affairs.

Q. All of the ClearCorrect aligners produced and sold today are made with Zendura FLX; is that correct?

A. Yes.

Q. If you look at the third paragraph here, the second part of that paragraph says: While the concept of moving teeth with plastic aligners has been present since 1926, the Invisalign system (Align Technology) is the first system to incorporate modern technology in a way that makes this concept more efficient and feasible. Since its first introduction, Invisalign has been established worldwide as an aesthetic alternative to labial-fixed appliances.

Do you see that?

A. Yes.

Q. Are those statements accurate?

A. To the extent of my knowledge, yes.

Q. Do you know if anyone at ClearCorrect assessed whether ClearCorrect might be infringing Align's patent rights?

A. My understanding is because of my familiarity with our quality management system, that our product development process and our software development process both called for a freedom to operate review. And so I do expect that a patent review is being conducted.

Q. Bay Materials has other customers for Zendura FLX apart from ClearCorrect; is that correct?

A. I understand that Bay Materials has at least two other commercial customers that are producing aligners at scale, which would be Ormco Spark devices and Angelalign devices. But they also sell sheet goods for dental laboratories or individual clinicians to produce their own aligners.

Q. To your knowledge, does Bay Materials still sell Zendura FLX to Ormco today?

A. I don't have direct knowledge, but my understanding is, yes, they are still a customer.

Q. And to your knowledge, is Bay Materials still selling Zendura FLX to Angelalign?

A. My understanding is that Angelalign is still a customer.

Q. In your view, who are ClearCorrect's main competitors in the clear aligner business in the U.S.?

A. Align Technology. So the Invisalign brand is one of our bigger -- biggest ones. You know, we're competing against Ormco Spark, 3M to a lesser extent from a -- as I understand the market shares. Those are the big ones, and we're monitoring others entering the market.

I mean, for a while Smile Direct Club was one of the big competitors after we stopped manufacturing for them. And then we're watching -- you know, like we know that Angelalign is in the process of building a manufacturing facility in Milwaukee.

Q. So this is an e-mail from a Cathrine Rambusch to yourself and others. You see yourself in the "to" line about halfway through?

A. Yes.

Q. In July of '23.

Do you see that?

A. I do.

Q. Regarding -- and then in italics it says: Manufacturing quality leading to patient injury. Here we have an overarching project to improve on.

Do you see that?

A. Yes.

Q. Do you recall what was the problem she was referring to here, the manufacturing quality issue that was leading to patient injuries?

A. She's referencing it as being related to the trim line. And so part of it -- it would -- it would have been a treatment planning thing. So the issues we had just discussed around placement of the spline line and having enough of the gingiva captured in order for us to have an accurate trim line. You know, so you would have pinching of the gingiva as a result of that, which could lead to lesions.

And then we also had an issue with -- in some cases we need to manually trim the trim line after it's automatically trimmed. And in some cases, they would leave sharp edges behind. And so there would be a potential for us to cut -- device to cut into the gingiva.

Q. Did ClearCorrect receive customer complaints during that time?

A. Yes.

Q. Approximately how many as a percentage of the total number of cases that ClearCorrect had?

A. I mean, our complaint level, based on the number of units shipped, was on the order of 2 percent.

Q. How do Align's aligners compare to

ClearCorrect's aligners?

A. There are differences. I mean, one of the differences is the material itself.

Q. In your experience, how important is the competition in the aligner market?

A. Well, the competition in any market is critical in that it drives -- you know, it increases the quality of products if there is true competition and potentially also drives the price down.

So from a consumer standpoint, you want competition in order for the -- the competition to lead to better, cheaper products.

(End of video deposition.)

MS. DURIE: Your Honor, at this time, we have some interrogatory responses to read into the record.

THE COURT: Okay. Ladies and gentlemen of the jury, another thing that happens in the preparation of litigation is that parties can exchange questions to each other. Those are known as interrogatories.

When a party answers the interrogatories and returns those answers to the party that sent them to them, they are sworn, again, just in the same way that witnesses are sworn. So these -- what counsel is

about to read to you are the sworn answers to interrogatories that were served -- the interrogatories that were served on the defendant.

The defendant responded to them under oath. And counsel's about to tell you what the interrogatory was and the response was.

MS. DURIE: Thank you, Your Honor.

THE COURT: But if you'd move to a microphone, please.

MS. DURIE: I apologize, Your Honor. And thank you. And we've actually agreed, with the Court's permission, that we will just read the response.

THE COURT: That's fine.

MS. DURIE: Defendants first learned of U.S. Patent No. 10,973,613 in or around October 2021.

Defendants first learned of U.S. Patent No. 11,154,384 in or around November 2021.

Defendants first learned of U.S. Patent No. 10,791,936 in or around January 2022.

Defendants first learned of U.S. Patent Nos. 11,648,090 and 11,648,091 in or around April 2024.

And with that, Your Honor, we now have deposition testimony to be played by video from Guillaume Daniellot, the chief executive officer of the Straumann Group.

(Video deposition of Guillaume Daniellot played as follows:

Q. Can you please state your name for the record?

A. Guillaume Daniellot.

Q. And you're the CEO of the Straumann Group; is that correct?

A. That's correct.

Q. Straumann then acquired Bay Materials in October 2019; is that right?

A. Yes.

Q. But at the bottom of that e-mail, you also said: In the future...it would be a different story. If we were able to grow our clear aligner significantly through our own channels, then it would generate enough growth on the Bay Material side as well, and we could then restrict Bay Material innovation to ClearCorrect product during a certain period of time.

There, you are referencing the possibility in the future of limiting sales of the Bay Material material to ClearCorrect, correct?

A. No. That's not correct. I was talking about Bay Material innovation that would be limited potentially, meaning that it was not at all about the Zendura FLX side.

Q. Why did you think it might be advantageous, at

some point in the future, to restrict Bay Material innovation to ClearCorrect products?

A. As soon as we believe that we can, for example, develop different kind of material offering for a different kind of indication on the clear aligner side.

Q. But why would it be an advantage to restrict that innovation only to ClearCorrect product?

A. To be able to differentiate ClearCorrect to some of the offering that we would have in the market.

Q. And this is a memorandum that is written by you to members of the Straumann strategic management team, correct?

A. Yes. That's correct.

Q. Next to some technical hurdles, we continue experiencing difficulties with hiring and retaining talent, especially in the U.S., which may put the 2022 timelines at risk.

What technical hurdles were you referring to?

A. It was certainly some connections that we have with our software and some of the manufacturing side, but I don't remember exactly at that time.

Q. Do you see what's been marked as Exhibit 3 is an e-mail exchange -- set of e-mail exchanges amongst yourself and other individuals at the Straumann Group?

A. Yes.

Q. And it says that it involves "follow-up NAM visit."

Is that North America?

A. That's correct.

Q. And you had this e-mail exchange with Aurelio Sahagun and Camila Finzi.

What were each of their positions?

A. Aurelio Sahagun was our leader of North America, and Camila Finzi was our head of orthodontic business.

Q. And in the third line, you say: There are many of the reasons for our shortfall which are self-inflicted wounds.

Do you see that?

A. Yes.

Q. What is the shortfall that you were referring to?

A. Our sales in North America, in the U.S., were not in line with our expectations due to, you know, some things that we should do better and also by the fact that, you know, we have been blocked by Align on being able to sell our system to the North American, and especially U.S., dentists and orthodontists.

Q. You refer under the heading "Aurelio" about

four lines down to a ClearCorrect North America customer experience emergency plan, right?

A. Uh-huh.

Q. You say there was a lack of leadership to solve problems, right?

A. Uh-huh.

Q. And then you identified problems like the blocking of customer accounts, right?

A. Uh-huh.

Q. Problems with customers having different credit cards associated to their account?

A. Uh-huh.

Q. Right?

You talked about problems that you had with your sales team?

A. Uh-huh.

Q. Right?

And then if you look under the heading "Camila," you reference treatment planning quality not being where it should be, right?

A. Uh-huh.

Q. So you had identified a number of problems that you were experiencing in the North America market that you believed to be self-inflicted wounds, right?

A. Correct.

Q. So if we start on the second page of the exhibit, in the middle of the page there is an e-mail from Mr. Sahagun to you dated June 1, 2023?

A. Uh-huh.

Q. And he says that he is forwarding to you examples of a situation that you continue to face with ClearCorrect service levels, right?

A. Uh-huh. Uh-huh.

Q. Well, let's take a look at the e-mail immediately below that in the chain. You see there is an e-mail right below that from Kent Braud at Straumann?

It is at the very bottom of the second page it starts.

A. Yes. Okay.

Q. Who is Mr. Braud?

A. He has been the sales leader of ClearCorrect in the U.S.

Q. And he says: Sharing below from Toni. Camila, you asked me to share examples of where we are losing business due to the manufacturing delays.

A. Uh-huh.

Q. Smile Source has moved business to Spark and SureSmile because of our unpredictable and unreliable TAT.

What does TAT stand for?

A. Turnaround time.

Q. So in fact, ClearCorrect had been experiencing problems with its turnaround time dating at least back to November of 2022?

A. Only from time to time.

Q. Well, if you take a look at your response at the top of the second page, there's an e-mail from you June 1, 2023.

Do you see that?

A. Uh-huh.

Q. You're writing that in response to having been forwarded this series of e-mails --

A. Uh-huh.

Q. -- about issues with things like turnaround time, right?

A. Yes.

Q. And you say: Recruiting a top operational leader for ortho is our top one priority in terms of search --

A. Uh-huh.

Q. -- as I'm now continuously receiving complaint about manufacturing delays but also manufacturing quality.

A. Uh-huh.

Q. You did consider the problems that ClearCorrect was experiencing with manufacturing delays and manufacturing quality in the summer of 2023 to be very serious, right?

A. Correct.

Q. And you see in the cover e-mail, it says: I would like to share with you the presentation given to Guillaume on last Tuesday. He has requested for a regular update on quality of CC.

The Guillaume there would be you, correct?

A. Uh-huh.

Q. So that was the presentation that was given to you?

A. Yes.

Q. Would you agree that the product quality complaints that you were experiencing were impacting customer satisfaction?

A. Like every company is manufacturing product and having some complaints, I think we are not different than any other companies out there.

Q. And then under that you have three things that you identify as KPIs. Those are key performance indicators, right?

A. That's correct.

Q. And the first one you identify there is 50 to

70 percent touch-up. That is what you were experiencing at the time, right?

A. Correct.

Q. So 50 to 70 percent of the aligners that were being manufactured were requiring touch-up; is that right?

A. That's correct.

Q. And then KPIs on the left in terms of where you were, 10 to 25 percent scrap. What does "scrap" mean in this context?

A. It means manufacturing parts that are not good to be shipped.

Q. Right. They have to be scrapped, they have to be thrown out?

A. Yes.

Q. Okay. And goal, if you take a look at the right, was to have fewer than 5 percent to be scrapped, right?

A. That's correct.

Q. And if we look at the current state of affairs, it says "multiple mixups."

Do you see that?

A. Yes. That's correct.

Q. If we take a look at two slides forward, ending No. 133, it says: 10 to 25 percent scrap rate

and up to 70 percent touch-up rework are significant disruptors to quality and cost.

And then there is a reference to Round Rock, Curitiba, and Markkleeberg, right?

A. Uh-huh. Correct.

Q. And what is Round Rock?

A. It's our manufacturing site in U.S.

Q. And the manufacturing site in the U.S. had a scrap rate in December of 2023 of 18.8 percent, right?

A. That's correct.

Q. And your manufacturing facility in the U.S. had a rework rate in December of 2023 of 71 percent, right?

A. That's correct. And at the same time, you can compare with the other manufacturing site, and especially the European one, which is very close to those numbers. And we have still been very, very significantly successful with our clear aligner business in Europe and also in Latin America, despite the same kind of scrap rate.

Then that's clearly demonstrating that this is not impacting our capability to be successful and that this capability to be successful in North America and in the U.S. in particular was coming from another important aspect which was the difficult access to the

Align customer group.

Q. And you had various meetings with Bain in the course of the work that they did, correct?

A. I think this project was led by Florian Kirsch, who was at that time the leader of our orthodontic franchise. But I participated in some of those meetings.

Q. Do you see what's been marked as Exhibit 9? It's a copy of an interim update preread provided by Bain, captioned Clear Aligner Landscape Review and Strategic Implications, dated September 26th, 2024.

Do you see that's what it is?

A. Yes.

Q. So this was the preread that was provided to you on September 26, 2024, in anticipation of this first project update meeting, right?

A. Correct.

Q. If you take a look at the series of bullets about two-thirds of the way down, it says: Align continues out-investing the industry in clinical offerings, software, and automation, making a catch up increasingly difficult.

Was that the perspective that Bain communicated to you?

A. This is only one of the points that Bain

04:27 communicated to us. But on the left side, as you can
04:27 see, there is written "a winner takes it all market,"
04:27 which imply also the anticompetitive approach that they
04:27 have been seeing into the U.S. market. And that's the
04:27 approach of the winner takes all challenging for us,
04:27 and that has demonstrated why we are having challenges
04:27 in the U.S., whereas we are successful in the other
04:27 part of the world, especially Europe and Latin America.
04:27 Q. Which companies on this list were not
04:27 competing with ClearCorrect?
04:28 A. The one on the direct to consumer side.
04:28 Q. Which is who?
04:28 A. The Impress, Byte companies.
04:28 Q. One of the key challenges that Bain identified
04:28 was that ClearCorrect's pricing and loyalty programs
04:28 were not competitive enough to attract orthodontists,
04:28 right?
04:28 A. I think this is some of the feedback that they
04:28 have received, but we think that -- yeah, this is one
04:28 of the aspects that came out from the -- from the
04:28 survey.
04:28 Q. Do you see Exhibit 16 is an e-mail from you to
04:28 a number of other individuals at ClearCorrect and at
04:28 Straumann from July of 2018?
04:28 My question is a timing one. We just looked

here at an e-mail about Align's decision to stop accepting TRIOS cases back in 2018, right?

A. Uh-huh.

Q. Straumann/ClearCorrect didn't sue Align for an antitrust violation arising from that conduct for like six years, right?

You can answer. Six years, right?

A. Six years.

Q. Bay Materials is a wholly owned subsidiary of Straumann, right?

A. That's correct.

Q. And Bay Materials employees ultimately report to you, correct?

A. Bay Material report to our head of orthodontists, which is Florian Kirsch.

Q. Do they provide sales information to you?

A. Again, at times they are providing sales information to me.

Q. Do you approve Bay Materials' budget?

A. I approve the overall ortho budget. I am looking at time at the specific Bay Material one, but nothing really specific that I can recall, except some, you know, elements that we have been discussing with the team.

Q. The overall ortho budget includes Bay

Materials?

A. That's correct.

Q. Okay. Are you involved in setting Bay Materials' strategy?

A. I'm discussing with Bay Material to define what the strategy could be.

Q. Do you sometimes approve sales contracts for Zendura FLX?

A. I have been looking at some key contracts that we have been having with Zendura FLX.

Q. And if you turn to the last e-mail, it begins at the bottom of the second to last page.

You see there is an e-mail from Constantine Davlantes at Bay Materials to you?

A. Uh-huh.

Q. And he is Bay Materials' general manager; is that right?

A. That's correct.

Q. And the subject line is: Approval requested for Angel and Ormco contract proposals.

Do you see that?

A. That's correct.

Q. So he is asking you to approve those contract proposals for Bay Materials, right?

A. Yes.

Q. So David Lee from Straumann, responsible for Bay Material, met with the CEO of Angel to discuss partnership building, right?

A. To discuss about the interest into what kind of cooperation we can have.

Q. And you were getting updated, as the CEO of Straumann, with respect to these discussions, right?

A. I received that information, that -- for information, yes.

Q. Can you explain for us what you were referring to when you referred to Align's anticompetitive behavior?

A. The challenge we are facing in the U.S. market, which is really specific versus all the rest of the commercial region, is that Align has placed their iTero scanner in all the different customers that they are having and have been locking customers in through their technology.

The iTero, in the U.S., can send a file only to the Align clear aligner and cannot send it anywhere else. And on the other side -- meaning that we cannot enter into any of those accounts, because even if we present our ClearCorrect offering, they have no access to this.

If we are also going to see then some

customers that are having other kind of scanners, they are not having the possibility also to go to the aligner side from Align, which means that we cannot sell our own scanners, because customers want to have of course a wide usage of their technology.

Then there is no way for us to enter into the iTero users, which are doing a lot of clear aligners side, by the lack of access to our manufacturing.

Q. And this is a presentation authored by Bain & Company, correct?

A. That's correct.

Q. This is not authored by Straumann?

A. Not at all.

Q. If you look at Slide 6, which ends in the Bates range 5722, this is one of the slides that counsel for Align directed your attention to, right?

A. Correct.

Q. And the title reads: Summary of key project findings (after 2 weeks).

Did I read that correctly?

A. Yeah. That's correct.

Q. The parenthetical, you understand, refers to the fact that Bain had been working on this project for two weeks, correct?

A. That's correct.

Q. You've been -- Straumann's been in this business for more than seven years, correct?

A. Yes. That's correct.

Q. Well, let me ask you about the substance of the slide. Do you agree with the conclusions being reached about the, quote, significant gaps across key success factors with respect to ClearCorrect?

A. Well, no. We have been discussing with them live during the meeting that it's a very shortsighted view. They were only having two weeks into this analysis. They have only talked to very few customers and a lot not related to ClearCorrect customers. Actually, a lot of them was competitor customers that were having just a perception about organization.

Then why, obviously, Bain is trying to paint a very negative perspective in order that they can sell more working days. I think this is something that we have taken with a grain of salt and that we also challenge from that perspective.

Q. ClearCorrect is a distant follower with significant gaps across key success factors. The distant follower, that's a reference to ClearCorrect's position relative to its competitors, right?

A. It's related especially to the customer expectations.

04:35 Q. Well, "follower." Who is ClearCorrect following?

04:35 A. Yes. Also, this is -- follower is related to competitors. Significant gaps has nothing to see with the other ones. It is key success factors that are a lot also related to customer expectations.

(End of video deposition.)

MS. DURIE: Your Honor, in connection with the deposition testimony, we would like to offer PTX-603, 194, 199, 232, 279, 311, 323, 488, 495, 548, and 586.

MR. MUELLER: And we have nothing further on those, Your Honor. Your Honor's given us your rulings on those.

THE COURT: Okay.

MS. DURIE: And with that, Your Honor, that concludes our witnesses subject to the witnesses we discussed that will be called in the defense case.

THE COURT: Understood.

04:36 Ladies and gentlemen of the jury, we're going to take a 10- or 15-minute recess, and then we'll come back and we'll begin the case of the defendants. So please remember my instructions not to discuss the case.

04:36 THE BAILIFF: All rise.

(Jury exited the courtroom.)

THE COURT: You may be seated.

Does the defendant have a Rule 50 motion?

MR. MUELLER: We do, Your Honor.

MS. DURIE: Your Honor, just for the record, I note the record did not note that those exhibits were admitted.

THE COURT: Admitted.

MS. DURIE: Thank you.

THE COURT: Thank you. I'm sorry.

MR. MUELLER: May I begin, Your Honor?

Your Honor, first, no reasonable jury could find infringement of the '936 patent. That is the patent for which we will take it up again, under Your Honor's guidance from earlier, after the additional factual testimony. We'll at least touch the base briefly.

There's a failure of proof on the surface data limitation in the claims. Neither of the experts presented by Align provided sufficient testimony that the accused scan products meet the limitations of the surface data limitation.

And again, we will revisit that after the fact testimony, but we believe there will be no fact testimony that could fill that expert testimony gap.

That alone would be dispositive, Your Honor, on that patent.

And I'll maybe move on to the other patents, Your Honor, just in the interest of time.

We'll provide more detail after the factual testimony, but the first issue would be, at a high level, a lack of sufficient proof in the form of sufficient expert testimony with respect to the '936 patent.

Next, Your Honor, for the -- and I apologize, Your Honor. Just also in the interest of time, we have the argument, of course, of JMOL of no damages in the '936, but given Your Honor's guidance on the substantive issues, it might be best just to save that for after the fact testimony as well, if that's okay with Your Honor.

Okay. No reasonable jury could find direct infringement of the '613, '384, '090, and '091 patents. These patents claim specific multi-layer materials, and no reasonable jury could find that aligners made with Zendura FLX infringe.

For all four patents, no reasonable jury could find that the accused products have a soft TPU layer with an elongation at break greater than 200 percent.

No reasonable jury could find the accused products have a soft TPU layer with an elongation at break greater than 200 percent in light of the evidence presented during Align's case-in-chief.

And that's a requirement that cuts across all of these four patents. All four require that the soft TPU layer have an elongation at break of greater than about 200 percent.

Every test of Zendura FLX before this lawsuit returned an elongation at break under 200 percent. That includes Align's own testing. Including its so-called wet testing and dry testing.

Bay Materials' testing of Zendura FLX resulted in findings that placed the elongation at break at almost half of the 200 percent requirement.

And the only above 200 percent numbers in the record thus far, Your Honor, come from Dr. Reitman's testing, which is methodologically flawed. And I'll note that even the majority of those tests of the multi-layer devices returned results below 200 percent.

No reasonable jury could rely on that evidence in light of the full record of testing evidence before and during litigation to find infringement, and in particular, to find the elongation

at break requirement met.

And because that requirement is in every asserted claim, the single failure of proof defeats infringement for all four patents.

In addition, no reasonable jury could find indirect infringement of the '613, '384, '090, and '091 patents. Align has been vague in its presentation as to who is allegedly inducing infringement and who is being induced. There has not been sufficient linking evidence in the form of expert testimony on those critical issues.

There cannot be indirect infringement without direct infringement, of course, and for all the reasons I've already given, there's no direct infringement. And moreover, Align has failed to show direct infringement by a third party for the exact same reasons.

Align has failed to present evidence of actual infringing acts by any customer, which is an independent failure to prove direct infringement by such customers.

For the methods of making aligners claimed in the '613 and '090 patents, there's no proof of any third-party customer in the United States actually practicing the asserted claims.

Likewise, there is no proof of any third-party customer actually making, using, selling, offering for sale, or importing -- importing the aligners claimed in the '384 and '091 patents.

And so without proof of those predicate acts, there can be no liability for the alleged inducement.

Moreover, no reasonable jury could find the intent requirement that is mandated for indirect infringement. Mere knowledge of the patents is not enough under controlling precedent. Both inducement and contributory infringement require knowledge of the patents and knowledge of the infringement.

THE COURT: Mr. Mueller, who is your first witness going to be?

MR. MUELLER: Mr. Kossol, Matt Kossol.

THE COURT: And about how long will he take?

MR. MUELLER: He's going to be on direct for about 25 minutes, and the estimate on cross is 6 minutes.

THE COURT: I'm trying to figure out whether it makes sense to just let the jury go home now, and we can go as long as we need to here but not keep them waiting while we're doing this.

04:42 MR. MUELLER: I'm almost done, Your Honor, really. There's not much left, and I think we'd prefer to finish his testimony --

THE COURT: That's fine.

MR. MUELLER: Okay.

So no reasonable juror could find intent required for indirect infringement. Mere knowledge of the patents is not enough.

04:43 Align has presented no evidence that ClearCorrect knew about the asserted patents, let alone knew about infringement before the lawsuit was filed.

Indeed, the interrogatory responses that Ms. Durie read earlier were all after the Zendura FLX product was launched.

Once the lawsuit began, after the products was launched, the defendants promptly asserted reasonable noninfringement defenses which we have already highlighted through cross-examination and through examination of Mr. Lahlouh during the plaintiff's case-in-chief.

So in light of that evidence, there is no basis for a reasonable juror to find the reckless intent for indirect infringement.

And for the very same reasons, there is no basis for a reasonable juror to find willful

infringement with respect to the patents-in-suit.

No evidence of presuit knowledge, and as for post-suit knowledge, ClearCorrect has substantial well-developed defenses to charges that have been made.

And moreover, we believe no reasonable juror, no reasonable juror could find that ClearCorrect has copied any feature from SmartTrack or the Align patents.

Turning to damages. We believe there's no basis for presuit damages for the '384 or '091 patents. No reasonable juror could find presuit damages for those patents because Align has not proved sufficiently marking and has not provided presuit notice of infringement.

ClearCorrect is, therefore, entitled to JMOL of no presuit damages on those patents.

THE COURT: Which patents?

MR. MUELLER: It's the '384 and the '091, Your Honor.

Every document Align has introduced on marking is either after the date of the complaint or does not list the '384 and the '091 patents. That includes PTX-1265 as well as JTX-78. One predates the complaint but only lists the '613 patent. The other postdates the complaint.

And then finally, Your Honor, there's no damages because of the various methodological defects. And Mr. Lasinski's opinions, we have previously briefed those, and we have preserved for Your Honor's granting of our continuing objection on the Daubert rulings.

Our Daubert challenges to Mr. Lasinski and many of those same methodological challenges apply to the testimony that he actually offered at trial.

He conceded that he had used ClearCorrect's -- that he did not use ClearCorrect's real-world profit and loss data but rather used some industry data that included companies with businesses unlike ClearCorrect's. And he conceded on the stand today that if he had used ClearCorrect's profit and loss data, his model actually would have yielded net negative profit figures.

He also admitted that his damages calculation could change based on costs incurred by such companies that have no relationship to the asserted patents. Spending on company cars, for example.

So again, because of these and the other methodological defects that we highlighted in the Daubert motion practice, no reasonable juror could find Mr. Lasinski's opinions to be of sufficient basis for a

damages award in Align's favor on the materials patents.

And again, I'll reserve on the '936 patent until we raise that one, Your Honor, when the remaining fact testimony is in the record.

In addition, in addition, Mr. Lasinski did not conduct a per patent reasonable royalty analysis. Instead, he evaluated damages as to the four asserted materials patents on an undifferentiated basis. He did not offer a backup number if one or more of those patents is not infringed.

And that's a problem because as discussed, there are some patent-specific arguments that could defeat infringement for certain of the patents but not others.

Moreover, the '613 and '090 patents are method patents. There's no 271(f) claim in the case, which means the methods must be practiced in the United States.

Align has introduced no evidence, no evidence about Ormco's Spark aligners, the one category of products made by third-party Ormco that Align seeks damages on, let alone evidence that those aligners are made in the U.S.

It has thus failed to prove that the

method claims of the '613 patent and the '090 patent are directly infringed by Ormco in the U.S.

And if those patents, those -- the '613 and the '090 were to be eliminated from the case including on the basis of the failure of proof of damages, the failure of proof as to the method claims being practiced in the U.S., the jury has no basis to award damages on the remaining two patents, the '384 and the '090, because Mr. Lasinski failed to provide a patent-by-patent breakdown of his proposed royalty numbers.

And that concludes our JMOL motions, again, with the exception of the '936-related issues, Your Honor.

THE COURT: I'd like to hear a response just with respect to pretrial notice with respect to the '384 and the '091.

MR. HUNG: Your Honor, with respect -- Your Honor, we submitted an exhibit during the cross-examination of Mr. Lahlouh which indicates that they were on notice of our patents and that in fact they had gone to our website and reviewed it.

THE COURT: That doesn't -- that's not notice. I mean, that's not notice they may infringe. They can be aware of the patents.

I had a suit where the inventor of our patent went and started competing against us. He had knowledge of his patent. At what point did you put them on notice that you thought they were infringing?

MR. HUNG: You're talking about -- you're talking about marking as --

THE COURT: No. I'm talking about what notice did you give -- I understand they may have had awareness of the patents prior to when you filed the suit.

What notice did you give them that you thought they were infringing prior to filing the lawsuit?

MR. HUNG: Prior to filing the lawsuit?

I'm a little confused because for -- for two of the patents, for two of the patents, there was notice because -- there was knowledge of the patents undisputedly. For all four of the patents, there was knowledge of the patents.

And then with respect to notice, there is the website. The '613, undisputedly, they're not even moving on the '613. They have notice by the marking website.

THE COURT: So these products were marked?

MR. HUNG: I'm sorry. Yes?

THE COURT: The products were marked?

MR. HUNG: The marking website, yes.

THE COURT: That was what I was not catching.

MR. HUNG: Yes.

THE COURT: Then I'll overrule that as well. I'm sorry. I didn't catch the marking part.

Okay. I'm going to overrule all the Rule 50 motions.

If you all would take as short a break as possible, as soon as everyone's reassembled, we'll put on the defendants' witness. And then we'll try and get that person done today.

MR. MUELLER: Thank you, Your Honor.

THE BAILIFF: All rise.

(Recess taken.)

THE BAILIFF: All rise.

THE COURT: Please remain standing for the jury.

(Jury entered the courtroom.)

THE COURT: Thank you. You may be seated.

Yes, sir.

MR. MUELLER: Your Honor, we're prepared

to proceed with our case.

THE COURT: Please.

MR. MUELLER: And ClearCut -- excuse me, ClearCorrect calls as our first witness Matthew Kossol. And Mr. Hirsch will conduct the examination, Your Honor.

THE COURT: Thank you.

(The witness was sworn.)

DIRECT EXAMINATION

BY MR. HIRSCH:

Q. Good afternoon, sir.

A. Good afternoon.

Q. Can you introduce yourself to the ladies and gentlemen of the jury, please?

A. I can.

Hi. My name is Matthew Kossol.

Q. And, Mr. Kossol, are you currently employed?

A. I am. Yes.

Q. Where do you work, sir?

A. I work at ClearCorrect.

Q. And we're going to talk a little bit more about ClearCorrect. But for the moment, can you tell us your role at ClearCorrect?

A. Sure. I'm a senior product development engineer.

Q. And in that capacity as a senior product development engineer, what role do you have relating to the manufacture of the ClearCorrect aligners that use Zendura FLX?

A. Yeah. So among other things, the primary role is really overseeing the development of the manufacturing processes of the aligners.

Q. Before we go deeper into ClearCorrect, I think it would be helpful, Mr. Kossol, to get a little bit more information about you.

Can you tell us about where you live and a little bit about your family, please?

A. Yeah. Sure. So I live here in Texas about 20 minutes south of our manufacturing facility in Round Rock. I live there with my wife of six years, and we just added two twin baby girls to our family as well 18 months ago.

Q. Did you go to college, sir?

A. I did. Yes.

Q. And tell us where did you go and what did you study?

A. I went to University of North Carolina at Chapel Hill, and I studied biomedical engineering.

Q. And you graduated from the University of North Carolina?

A. That's correct. Yes.

Q. All right. And after you graduated college, what work did you do?

A. So after graduating, I went into industry. I got a job for a company called RTI Surgical as a product development engineer making spine implants.

Q. Now, at some point, you obviously joined ClearCorrect?

A. That's correct. Yes.

Q. And when was that? When did you join ClearCorrect?

A. I joined in May of 2019.

Q. And what are the reasons that you decided to start working at ClearCorrect?

A. I mean, really the wife and I had been living in North Carolina our whole lives. And we decided we wanted something a little bit different. The opportunity at ClearCorrect came up. We came. We visited Texas. We liked Texas a lot. So we decided to make the move.

Q. All right. And you've been at ClearCorrect ever since; is that right?

A. That is correct. Yes.

Q. Let's talk a little bit more about ClearCorrect and its history and its business. Sound

okay?

A. Sure.

Q. All right. First, tell us, when was ClearCorrect founded?

A. In 2006.

Q. And in 2006, when the company started, at that point, where was it located?

A. So at that point, it was in Houston, Texas.

Q. And what was the -- what was ClearCorrect's business when it began in 2006?

A. The same. We made clear aligners.

Q. And today what's ClearCorrect's business?

A. We make clear aligners.

Q. All right. And so the company was started in Houston; is that right?

A. That is correct.

Q. Where is ClearCorrect located now?

A. Now it's in Round Rock, Texas.

Q. And we've heard a little bit about Straumann throughout the course of this trial. What's ClearCorrect's relationship with Straumann?

A. ClearCorrect, as of 2017, is a subsidiary of Straumann. So they're a parent company.

Q. All right. And you mentioned the manufacture of clear aligners earlier, correct, sir?

A. Yes.

Q. And where does that occur? Where does ClearCorrect make its aligners?

A. We make them here in Round Rock, in Texas.

Q. How many people work with you at the Round Rock location of ClearCorrect?

A. There's about 170 people on staff.

Q. Now, did you -- Mr. Kossol, did you prepare a video showing the manufacture process of the ClearCorrect aligner?

A. I did. Yes.

MR. HIRSCH: All right. I want to pull up, if we could, DDX-1. -- or strike that.

BY MR. HIRSCH:

Q. Before we get there, sir, before we get there --

A. Okay.

Q. -- before we get into the manufacture, we're going to get into the video.

MR. HIRSCH: Can we actually pull up DDX-1.28.

BY MR. HIRSCH:

Q. Before we go inside the facility, let's start outside of it.

Can you tell us what we're looking at?

A. Sure. This is a picture of some of my colleagues on the operation side at our facility in Round Rock. I think this picture, we're celebrating our 20-year anniversary, not long ago.

Q. Tell us a little bit about the work that some of these folks do at the company.

A. Yeah. So these are the manufacturing folks that make aligners. They run all of our process steps. They're really the people that make the product happen, make it come alive.

Q. And the sign of the building outside or the sign on top of the building, ClearCorrect, what happens in that physical literal building?

A. This is where we make the aligners.

Q. And the material that the aligners are made with, where does that come from?

A. That is from Bay Materials.

Q. So Bay Materials supplies material to ClearCorrect, right?

A. That is correct. Yes.

Q. And then what does ClearCorrect do with that material?

A. So we take that, we call raw material, and we turn it into the aligner products.

Q. In the current aligners that ClearCorrect

makes now, what material is used?

A. We use Zendura FLX for that.

Q. When did that start? When did you start using Zendura FLX in your aligners?

A. In about mid-2020 is when we started using it.

Q. And we'll talk a little bit about Zendura FLX.

How many layers are in the Zendura FLX material that you use in your aligners?

A. Yeah. That has -- it has three layers in it.

Q. And what's that composition of those layers?

A. It has a hard outer layer, a soft inner layer, and then a hard outer layer on the other side.

Q. You mentioned that ClearCorrect began using the Zendura FLX material in mid-2020; is that right?

A. That is correct. It was in August.

Q. How long did it take ClearCorrect to transition to use the Zendura FLX material into its aligners?

A. A good while. It was a probably eight- to nine-month project transitioning.

Q. And how many people at the company worked on the transition to use Zendura FLX in the ClearCorrect aligners?

A. So it was a big project. Overall, upwards of 20 had their hands in it, but we had a core team of

around eight to ten people.

Q. Did that project -- to use Zendura FLX in your aligners, did that project have a name?

A. It did. Yes.

Q. Tell us about the name.

A. So we called it Project Incredibles. It was named after a Pixar movie where one of the characters has flexible arms. Because the flexible arms and we think it's a good, incredible project, we picked the name Incredibles.

Q. And were you personally involved in Project Incredibles?

A. I was. Yes.

Q. Tell us about your role on the project.

A. So I was the senior product development engineer. I really, among other things, oversaw the manufacturing development of the product.

Q. All right. Now I want to start, Mr. Kossol, to go inside that building that we're looking at and talk about the manufacturing process itself, okay?

A. Okay.

Q. Tell us first, how many ClearCorrect aligners are made every day at that Round Rock facility?

A. So currently we make around 10,000 a day.

Q. And you mentioned the video that you helped

prepare, correct, sir?

A. That is correct, yes.

Q. All right. And that video shows the manufacturing process, right?

A. That is correct, yes.

MR. HIRSCH: Let's pull up DTX-2820. And I just want to first just pull up -- yeah, just this first frame.

BY MR. HIRSCH:

Q. Is this the video you helped prepare, sir?

A. It is.

MR. HIRSCH: I'll offer DTX-2820.

MR. HUNG: 2820. This is the video?

No objection.

THE COURT: No objection? I'm sorry. I just couldn't hear you. No objection?

MR. HUNG: No objection.

THE COURT: Admitted.

MR. HIRSCH: Thank you, Your Honor.

BY MR. HIRSCH:

Q. Mr. Kossol, I want to start -- before we play the video, tell us about what we're going to see. At a very, very high level, what does this video depict?

A. Sure. So this is the video of the actual manufacturing of the FLX aligners.

Q. On this very first still shot right here, where are we in the building, and what are we looking at?

A. So this is one of my colleagues, Joe Ella, about to walk through two of the main entry doors to kind of -- where all the machinery is that makes the product.

Q. And as we walk through the doors, tell us a little bit about the first step in the manufacturing process that we're going to see.

A. Sure. So after we receive an order and we do all of our treatment planning, the first thing for the manufacturing process is to 3D print dental models of the patient's dentition.

Q. I'm going to play the first segment of the video, and as we play it, if you could, Mr. Kossol, just tell us a little bit about what we're seeing. Okay?

All right. Let's start and play the first 20 seconds.

A. So here, Joe Ella's walking through the doors. Here's our room of what we call in-line printers. Here, one of my colleagues is taking a grid of printed dental models out of the machine. They come in grids of about 17. We then have to separate them to

individualize them for the next production step.

Q. All right. And we saw those big red cabinet-looking things.

A. Yes.

Q. What are those?

A. So those are centrifuges at the end of our in-line printers, where there's five 3D printers in a row. You just make sure that they're all clean and all the resin gets off the models.

Q. What comes out of those printers?

A. The printed 3D models.

Q. And I'm going to hand to you, sir, DPX-30.

MR. HIRSCH: Just let counsel take a look. And hand to you --

May I approach, Your Honor?

Thank you.

BY MR. HIRSCH:

Q. DPX-30, can you tell us what that is?

A. So this is one of our 3D printed dentition models or tooth models.

Q. And what are those models used for?

A. So this is what we'll actually form the aligner out of. We will take the Zendura FLX plastic, heat it up, and using pressure, kind of form the aligner out of this model.

MR. HIRSCH: I'll move to admit DTX-30.

MR. HUNG: No objection.

THE COURT: Admitted.

BY MR. HIRSCH:

Q. All right. So we have the models. What comes next in the manufacturing process?

A. So after we have the models, we'll then kind of make sure they're good to go, and then we'll go through our thermoforming process.

Q. And tell us -- before we watch it, tell us what the thermoforming process means.

A. Sure. So that's taking the plastic that you're going to make the aligner out of and using heat and pressure to form, honestly, whatever shape into the plastic you want. In this case, it's an aligner shape.

Q. All right. I want to play the next 25 seconds or so and again ask you to tell us as it's playing what we're looking at.

A. Sure.

So here is our -- one of our major thermoforming machines. It's an automated machine. We can form up to four aligners at the same time. Here, one of my colleagues is putting those models onto a machine.

This is a spooling at one end of the machine

that has the Zendura FLX plastic. And here, you'll see it gets fed through a oven for heating. And then here, at a pressure of around 10 atmosphere, we'll actually push that heated plastic on top of the models.

Q. All right. And you mentioned there's an oven for heating, right, sir?

A. I did. Yes.

Q. What's the -- what's the temperature that's used to heat the materials during that step of the process?

A. So we heat the material to around 350 degrees Fahrenheit.

Q. And you also mentioned, I believe, 10 atmosphere?

A. That is correct.

Q. What does that mean?

A. So that means like ten times the force of gravity on top of you. As we're sitting here today, it's kind of equivalent to a couple hundred feet deep in the ocean.

Q. What is that pressure used for? What does it do?

A. So that's really what forms that hot plastic around the mold to turn it into an aligner.

Q. All right. So we've got a mold with the

Zendura FLX material on it.

Is that where we are?

A. That is correct.

Q. What's the next step in the process?

A. So after this, what we do is laser-mark the appliances to ensure it has the appropriate patient information. Then we will trim the appliances and cut the trim line into them.

Q. Okay. Let's watch that part of the video. And, please, if you would, Mr. Kossol, again narrate over for us.

A. Sure.

So here is our laser-marking machine where each part goes in and gets the correct patient-identifying information put on it.

And then here, we see our five-axis mill machine where a mill bit is coming in and cutting the trim line around the edges of the appliance.

So it's coming off the machine now, but as -- has gone on.

Q. Okay. So that green -- that green light that we saw at the beginning of that segment, what was that doing?

A. So that was the laser marking. We're using UV or heat. It puts the patient information on the part.

Q. And then you mentioned the trim line. What is a trim line?

A. Yeah. So a trim line is really like the edges of the aligner or the end of the aligner. After thermoforming, we still have a big blank and a big piece of plastic drooped around the whole model. Here's where we come in and cut the aligner out of that.

Q. Okay. And how does the -- what does the trim line, how does that work in terms of the patient's mouth and how the aligner hits the patient's mouth?

A. Yeah. It is where the aligner terminates. So it's kind of where the aligner meets the gums.

Q. What kind of trim line does ClearCorrect use for its aligners?

A. ClearCorrect uses what we call the high flat trim line.

Q. What does that mean?

A. It means that we capture around 2 millimeters worth of gum in every appliance that we make. So it doesn't stop on your teeth. It goes up a little bit higher.

Q. How does the trim line that you use at ClearCorrect, how does that compare to the trim line of other aligners on the market?

A. So other aligners, they can frequently use what's called a scalloped trim line where the trim line actually follows what's called gingival contours or where the crowns meet the gums. And the trim line stays on the tooth the whole time. It never touches your gums.

Q. So we've now gone through thermoforming and laser marking and the trim line, right?

A. Correct.

Q. What's next in the process?

A. After that, we'll separate the part from the model where you'll see the final aligner. And then we'll quality inspect it.

Q. All right. Let's watch that segment, and please take us through it as it's playing.

A. Yep. So here, one of the colleagues is retrieving the part off the trimming machine, doing an initial inspection and making sure everything looks good. Separating the part from the model, obviously.

And then here would be one of our quality inspectors looking at the parts. We 100 percent inspect every part for issues before we would ship it out the door.

Q. What is the last step in the manufacturing process, sir?

A. So after this -- and we didn't show the cleaning process. But after this, they would be cleaned, and we would package the product to ship out to the customer.

Q. All right. Let's watch that last segment, and please, for one last time, please tell us what we're seeing as it's playing.

A. Sure.

So this is our bagging machine where we put an upper and lower jaw into one bag. They will be put in a box with the rest of the steps of that what we call phase. Paperwork will go in that box. And then we'll put some shipping information on the outside so we can ship it off to the customer.

Q. All right. I'm going to hand you, Mr. Kossol, what we've marked as DPX-7.

Do you recognize that, Mr. Kossol?

A. I do. Yes.

Q. Tell us what it is.

A. This is one of our Zendura FLX ClearCorrect aligners.

Q. It's one of the aligners that just went through each of those processes we just saw?

A. That is correct.

MR. HIRSCH: We'll move to admit DPX-7.

MR. HUNG: No objection.

THE COURT: Admitted.

BY MR. HIRSCH:

Q. So we've talked, sir, about the ClearCorrect aligners. Are you familiar with other aligners on the market?

A. I am. Yes.

Q. And what are the reasons that you've gained familiarity with other aligners on the market?

A. Yeah. Well, in the product development engineering but also just in business, we need to keep an ear to the ground on what competition may be doing to differentiate ourselves, to understand what's out there.

Q. But to be clear, who developed each of the manufacturing processes that we just watched on the video?

A. We did as ClearCorrect.

Q. Now, you're obviously aware of Align, correct?

A. I am. Yes.

Q. And are you aware of Align's Invisalign product?

A. I am. Yes.

Q. How does the Invisalign product compare to the ClearCorrect aligners?

A. I mean, I think it's very different.

Q. And let's start first with the composition of layers. How does the composition of layers in Invisalign compare to the composition of layers in the ClearCorrect aligners that use Zendura FLX?

A. It is completely opposite.

Q. Tell us what you mean.

A. So where our material has a hard-soft-hard configuration, theirs uses a soft-hard-soft configuration.

Q. Now, we've heard a little bit about staining. Are you familiar with staining in the context of aligners?

A. I am. Yes.

Q. And tell us a little bit about what that means and how aligners can stain.

A. Sure. So one of the biggest value propositions of a clear aligner is that it is clear. It's discreet when you wear it.

If you wear it and you wear it after you've had coffee or after you've eaten lunch, it's potential that the aligner could start picking up some of the remnants of food or food items that you've been consuming and turn the aligner not clear. It changes color.

Q. How does the staining of the Invisalign product compare to the staining of the ClearCorrect product?

A. It is much different.

Q. Tell us what you mean.

A. The ClearCorrect product does not stain near as much as the Invisalign product does.

Q. And why is that?

A. It is because the hard outer layers prevent that staining from occurring.

Q. Now, you understand, sir, that in this case, Align is accusing ClearCorrect of patent infringement, right?

A. I am. Yes.

Q. And I want to ask you, sir, about ClearCorrect's position. I'm not going to get into the details, but just a yes or no as to your understanding of the company's position.

Yes or no, the company's position, does ClearCorrect infringe Align's patents?

A. No. We do not.

Q. And yes or no, just the company's position, are ClearCorrect's aligners a copy of Align's Invisalign product?

A. No.

Q. One of the steps that you showed us in the manufacturing process, you mentioned 100 percent quality control.

Do you recall that?

A. I do. Yes.

Q. I'm going to focus on the quality control aspect for a moment. But first, tell us: What role do you have in your job on quality control of ClearCorrect's aligners?

A. Yeah. So as a product development engineer, I work very closely with our quality teams. So I have a pretty strong role.

Q. Before the aligners leave the building, what quality control, if any, occurs?

A. A lot. So we have really robust quality criteria set for every aligner, and then every aligner is 100 percent inspected for adherence to those quality parameters.

Q. And then after the aligners go out the door, what quality control process, if any, does ClearCorrect have?

A. Yeah. So also a robust one. We have a global quality team. On that team is what we call a post market surveillance team. If there are -- is any complaints, this team will be responsible for fielding

those complaints, making it right with the customer in whatever way possible. But then also starting projects so we can address those and make sure they don't happen again.

Q. You mentioned -- you mentioned complaints. And you're not -- you're not going to say that ClearCorrect never gets complaints, are you, sir?

A. I would not say that, no.

Q. What's the process that ClearCorrect has when it gets feedback from customers?

A. Yeah. So it's really through that post market surveillance team. We'll receive whatever the complaint is, do a thorough investigation, figure out what way to make it right with the customer. And then depending on what the complaint is and if it had happened before, start projects to try to make sure they don't happen again.

Q. What's the overall complaint rate for ClearCorrect's aligners?

A. I mean, overall, it's pretty low. It's like 1 to 2 percent.

Q. Are there instances -- well, strike that.

When, if ever, Mr. Kossol, has ClearCorrect made changes to its aligners in response to customer feedback?

A. Frequently. So we're constantly trying to improve. We strive for zero complaints.

Q. Can you give us some examples of improvements that you've made in response to customer feedback?

A. Sure. So we've -- we've changed the resin of the models, the 3D models that we print, to help with issues. We've changed our thermoforming parameters. We've updated trimming quite a bit. We're constantly making changes.

Q. Now, you said you've been working at ClearCorrect for seven years, right, sir?

A. That is correct, yes.

Q. And I take it you've spent many hours overseeing the manufacture of many thousands of aligners?

A. Millions, but yes.

Q. Why spend all that time, sir, working to give customers the option of choosing ClearCorrect aligners?

A. Honestly, because choice is good. We have a different product. One size doesn't fit all. I don't think one size fits all in any sort of market, not this market, and I think it's valuable for people to have options.

MR. HIRSCH: Thank you, sir.

Pass the witness.

CROSS-EXAMINATION

BY MR. HUNG:

Q. Hello, Mr. Kossol.

A. Hi.

Q. You and I've never met before, correct?

A. That is correct.

Q. You just gave some testimony about the composition of Zendura FLX. And you'd agree with me that Zendura FLX has a Tritan layer, fair?

Do you know that?

A. That is correct, yes.

Q. That's a Tritan copolyester layer, correct?

A. That is correct.

Q. And you know that SmartTrack has a Tritan copolyester layer, right, sir?

A. It's my understanding.

Q. And you know that your product has a Texin TPU layer, right?

A. In the middle, yes.

Q. And you know that SmartTrack has a Desmopan TPU layer, right?

A. On the -- on the outside is my understanding.

Q. And you know that those are manufactured by the same company, that layer?

A. I don't know that, but I accept it. Sure.

Q. And you know that those are just different brand names depending on where those layers are sold.

Do you know that?

A. I did not know that.

Q. You talked about innovation, and you talked about this -- the trim line.

Isn't it true, sir, that you're moving to a scalloped trim line, just like my client, Align, in the near future?

A. Primarily, no.

Q. Well, sir, actually in your own binder right in front of you right now, you have a PTX-114. If you could turn to it, it should be the last exhibit, Tab 4.

Do you recognize this document, sir?

A. Not immediately.

Q. You don't recognize this document in the binder from your counsel?

A. Actually, yeah. Now that I'm flipping through it, I think I do.

Q. All right. Please take a minute and turn to Page 25. PTX-114-25, and I think it's numbered Page 31 on the bottom.

A. 25 or 31? I'm sorry.

Q. Yeah. Sorry. It's the -- you're going to see a map. You're going to see a map of the world.

A. Okay.
Q. Okay.
A. Not there yet.
Okay. There.
Q. Now, sir, as part of your job, do you get to travel?
A. Not frequently.
Q. Okay. Trivia question. Did you know that there are 195 countries in the world?
A. I did not.
MR. HUNG: And by the way, could I admit your exhibit, PTX-114?
MR. HIRSCH: Yeah.
MR. HUNG: Your Honor, I'd like to admit it.
MR. HIRSCH: No objection.
THE COURT: Okay.
BY MR. HUNG:
Q. Okay. Turn to 31. Thank you.
And, sir, you know that my client, Align, has a planning center in -- I got to pronounce this correctly -- Belen, Heredia, San Jose, Costa Rica. To be clear, the Belen, Heredia district in San Jose in the country of Costa Rica.
Did you know that?

A. I don't have specifics on where Align does their treatment planning, no.

Q. Isn't it true, sir, that your company, ClearCorrect, opened a planning facility in Belen, Heredia, San Jose, Costa Rica, near ours?

A. I know that we have treatment planners in Costa Rica, but I'm not sure what they're near.

Q. What about Wroclaw, pronounced Wroclaw, W-r-o-c-l-a-w.

Do you know that Align had a planning facility in Wroclaw, Poland, for a long time?

A. I had no idea.

Q. Did you know that your -- the company that you work for, ClearCorrect, built its own planning center in the same building in Wroclaw, Poland, after Align built its?

A. I knew we had representation in Poland. Those specific you just listed, I had no idea.

Q. Now, sir, you showed that factory video, right? The video of the factory, right?

A. I did.

Q. You're not disputing that my client Align has long had factories like that?

A. I don't know what Align has had, didn't...

Q. Sir, briefly on -- actually, can you tab back

in that same exhibit?

A. Sure.

Q. And can you go to PTX-114-7, and it's the eighth page. Now, you'll see a graph that looks like this. I'm going to call that a force retention graph. It says that there. Or a stress relaxation graph.

A. Okay. Give me one moment, please. Sorry.

Q. Sure.

A. I'm there.

Q. Yeah. Sir, had you seen a graph like this before you started working for ClearCorrect?

A. Before I started working for ClearCorrect, not exactly, no.

Q. But I think you'd agree with me, sir -- let me pull up your deposition for a second.

I think you'd agree with me that Zendura FLX has better stress relaxation features than the products that were before it that ClearCorrect was selling, right?

A. That is correct. Yes.

Q. And you'd agree with me that Zendura FLX has this improved stress relaxation as a function of its three-layer structures and materials, right?

A. As a function of its tensile modulus.

Q. Of its what?

A. Tensile modulus.

Q. Tensile modulus. Thank you.

And you'd agree with me that that stress relaxation allows Zendura FLX to help ClearCorrect patients with more complex cases, true?

A. The FLX product is more flexible.

Q. Okay. And, sir, I have to ask you, have you ever seen this graph, this specific graph, one that looks similar to this in any way in a patent by Align?

A. If I do, I don't recall.

Q. Okay. Sir, just one closing question on quality. Do you know who Guillaume Daniellot is?

A. I do. Yes.

Q. Who is he, sir?

A. He is the CEO of the Straumann Group.

Q. He's probably your boss' boss' boss. He's pretty high up, right?

A. That is correct.

Q. Were you aware that he had received a feedback from Bain & Company? Have you heard of Bain?

A. No. I have not.

Q. You've never heard of the company Bain, one of the world's most famous management consulting firms?

A. Sure. Then I think I did know that. Yes.

Q. Now, sir, were you aware that Mr. Daniellot

received information that 50 to 70 percent of cases in your factories that you oversee required touch-ups?

MR. HIRSCH: Your Honor --

I apologize, counsel. I thought you were done.

A. I'm sorry. Can you repeat the question?

BY MR. HUNG:

Q. Did you know that 50 to 70 percent of the aligners that are made in your factory require touch-ups?

MR. HIRSCH: Your Honor, I object. Lack of foundation.

MR. HUNG: I'm asking him if he knows.

THE COURT: Well, it's not a deposition. If there's a reason -- if you want to lay a foundation for why he might know, you can, and then you can ask.

BY MR. HUNG:

Q. Yeah. You're involved in the factories. You oversee these factories, right, including the factory in Round Rock which I think you mentioned three or four times, right?

A. That is correct. Yes.

Q. And you know that that factory has a 50 to 70 percent touch-up rate, fair?

A. At a point in time, we did.

Q. And you know that that factory had a 10 to 25 percent scrap rate, fair?

A. At a point in time.

Q. And you know that the target rate for that factory that you oversee was supposed to be 5 percent, true?

A. Yeah. For scrap rate, we target 5 percent.

MR. HUNG: Thank you.

REDIRECT EXAMINATION

BY MR. HIRSCH:

Q. Mr. Kossol, just a few final questions.

You were asked about various facilities around the world, sir.

Do you recall that?

A. I do. Yes.

Q. I want to be very clear. The products at issue in this case, the ClearCorrect aligners at issue in this case, do you have those in mind?

A. I do.

Q. Where are the products at issue in this case manufactured?

A. Here in Round Rock.

Q. The material that's used in the ClearCorrect aligners made in the United States, what's the material, soft-hard-soft or hard-soft-hard?

A. Hard-soft-hard.

Q. Last question, sir. Do you make high-quality products in Round Rock?

A. We do. Yes.

MR. HIRSCH: Thank you, sir.

MR. HUNG: No questions, Your Honor.

THE COURT: Thank you, sir. You may step down.

Ladies and gentlemen of the jury, I have something to do tomorrow morning at 8:30 that should take me just a few minutes. If you would -- I have something to do in court. If you all would get here by about 8:45, I'm relatively comfortable we can start at 9:00.

I know that means for you you're going to have to leave one minute earlier. So I'm sorry about that.

But if y'all would be here by 8:45, we'll start tomorrow morning at 9:00.

Please remember my instructions not to discuss the case.

THE BAILIFF: All rise.

(Jury exited the courtroom.)

THE COURT: You may be seated.

So what -- if -- this doesn't need to be

on the record unless someone hears something that they want to put on the record.

(Off-the-record discussion.)

THE COURT: Any issues we need to take up on behalf of the defendant?

MR. MUELLER: None from defendants. Thank you, Your Honor.

MR. DURST: None from the plaintiff, Your Honor.

(Off-the-record discussion.)

(Hearing adjourned.)

UNITED STATES DISTRICT COURT)
WESTERN DISTRICT OF TEXAS)

I, Kristie M. Davis, Official Court Reporter for the United States District Court, Western District of Texas, do certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter.

I certify that the transcript fees and format comply with those prescribed by the Court and Judicial Conference of the United States.

Certified to by me this 12th day of July 2026.

/s/ Kristie M. Davis
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