

MAY 24, 2024

CARL ZOTTERMAN

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BILLERUD AKTIEBOLAG (PUBL),

Petitioner,

V.

WESTROCK MWV, LLC,

Patent Owner.

Case No. IPR2023-01206

Patent No. 11,293,142B2

Deposition of:

CARL ZOTTERMAN

Taken on behalf of the Patent Owner
May 24, 2024

Commencing at 9:20 a.m.

WESTROCK EXHIBIT 2005
BILLERUD v. WESTROCK
IPR2023-01206

Reported by: JEANNIE CHAFFIN, LCR

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Also Present:

MR. CAMERON CAMPBELL

I N D E X

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S T I P U L A T I O N S

The deposition of CARL ZOTTERMAN was taken by counsel for the Patent Owner, at the offices of Stites & Harbison, PLLC, 401 Commerce Street, Suite 800, Nashville, Tennessee, on May 24, 2024, for all purposes under the Federal Rules of Civil Procedure.

All formalities as to caption, notice, statement of appearance, et cetera, are waived.

It is agreed that JEANNIE CHAFFIN, LCR, Notary Public and Court Reporter for the State of Tennessee, may swear the witness, and that the reading and signing of the completed deposition by the witness was not discussed.

* * *

THE REPORTER: Will the attorneys please introduce themselves for the record.

MR. WOFSY: Sure. Scott Wofsy of Locke Lord on behalf of the Patent Owner, WestRock.

MR. JONES: Josh Jones of Locke Lord on behalf of the Patent Owner, WestRock.

MR. BARNES: Thad Barnes of Stites & Harbison on behalf of Billerud.

MR. WIREN: Anders Wiren of Kransell and Wennborg on behalf of Petitioner, Billerud.

MR. WRIGHT: Terry Wright of Stites & Harbison on behalf of the Petitioner, Billerud.

MR. MYERS: Richard Myers of Stites & Harbison on behalf of the Petitioner.

* * *

CARL ZOTTERMAN,
was called as a witness and having first been
duly sworn, testified as follows:
///

EXAMINATION

QUESTIONS BY MR. WOFSY:

Q. Good morning, Mr. Zotterman. How are you today?

A. Good morning. I'm fine. Thank you.

Q. Great.

My name is Scott Wofsy. I'm an attorney with the law firm of Locke Lord, and I represent a company called MeadWestvaco, which became WestRock. Are you familiar with MeadWestvaco and WestRock?

A. Yes.

Q. Okay. Mr. Zotterman, do you have any issues with the English language? Do you speak fluent English?

A. It's not my first language. And I haven't been here since 20 years ago. But I think I can manage.

Q. Okay. I'm going to try and speak clearly and slowly so that you're able to understand what I say. I sometimes have trouble with English because I'm from New York, and --

A. Okay.

Q. -- we have our own language there.

A. All right.

1 Q. But again, I'll speak slowly. I'm going
2 to ask also that you do the same.

3 A. Okay.

4 Q. Okay. And I'm going to be asking you a
5 series of questions. I'm going to ask that you
6 provide verbal responses. No head gestures, no
7 hand gestures, so that the court reporter is
8 able to -- is able to hear your response and
9 the transcript will be clear.

10 A. I understand.

11 Q. Okay. Mr. Zotterman, have you ever had
12 your deposition taken?

13 A. No.

14 Q. This is the first time you've had your
15 deposition taken?

16 A. Yes.

17 Q. Okay. So a couple more rules then.

18 Aside from the questions and the
19 answers that we're going to exchange. If at
20 any time during this deposition you need to
21 take a break to use the facilities or to get a
22 cup of water, just say so. I mean, we're on
23 the record, and we can stop the deposition.

24 However, if there's a question
25 pending at that time, then I'd ask you to reply

1 the answer to the question that's on the
2 table --

3 A. Okay.

4 Q. -- and then we'll take the break, fair?

5 A. Yes.

6 Q. Okay. So, Mr. Zotterman, when did you
7 arrive in the United States for this
8 deposition?

9 A. The day before yesterday.

10 Q. The day before yesterday.

11 So that would have been Tuesday of
12 this week, or is it Wednesday?

13 A. Wednesday.

14 Q. Wednesday.

15 When you arrived here on Wednesday,
16 did you meet with counsel?

17 A. The day after, yes.

18 Q. Okay. And when you met with counsel, did
19 you do any type of preparation for the
20 deposition today?

21 A. We discussed my declaration.

22 Q. You discussed the declaration?

23 A. Yes. Yes.

24 Q. Okay. When -- when I ask questions
25 today, I'm going to ask that you wait for the

1 question to be completed before you respond, so
2 that the transcript remains nice and --

3 A. Okay.

4 Q. -- clean.

5 Okay. So when you met with counsel,
6 you said that you reviewed your declaration,
7 correct?

8 A. Correct.

9 Q. Did you review any other documents, aside
10 from your declaration?

11 A. Not the -- anything except declaration
12 and the exhibits?

13 Q. The exhibits, meaning the prior art
14 references that were used within the
15 declaration.

16 A. Correct.

17 Q. Okay. Did you -- in reviewing your
18 declaration, did you find that there were any
19 changes or modifications that you think you
20 would need to make today before we begin
21 discussing your declaration?

22 A. That were some minor conversion errors.
23 You know, like, from PLI to kilonewtons per
24 meter. I don't think it's significant. But we
25 discussed that, and I changed that in my

1 declaration.

2 Q. Okay. So when we get to speaking about
3 your declaration in particular, I'll ask you to
4 point those out to me --

5 A. Okay.

6 Q. -- so that we make sure that we're
7 working from the same set of information.

8 A. Okay.

9 Q. That's fair.

10 MR. WOFSY: All right. Well, I'd
11 like to mark as the first exhibit -- we'll call
12 it WRK-1 for WestRock. WRK-1 will be the
13 notice of deposition here today.

14 (WHEREUPON, the above-mentioned
15 document was marked as Exhibit 1.)

16 BY MR. WOFSY:

17 Q. Mr. Zotterman, have you seen what I've
18 marked as Exhibit 1 in the past?

19 A. No.

20 Q. I'm going to explain to you what this
21 document is.

22 And by the way, this is not a trick
23 or anything like that. This is the notice that
24 is asking you to appear today for this
25 deposition. It's a formal document that was

1 filed with the United States Patent Office.

2 A. Okay.

3 Q. So just to keep things tidy, I wanted to
4 make this a --

5 MR. BARNES: Can I --

6 MR. WOF SY: Yes, absolutely. I'm
7 sorry.

8 MR. BARNES: No, no worries.

9 BY MR. WOF SY:

10 Q. Okay. So that will be, again, WRK-1.

11 The next document that I'd like to
12 mark as an exhibit, as WRK-2, will be your CV.
13 WRK-2 has Bates stamp numbers Billerud Exhibit
14 1003-0077 through 78. And --

15 MR. BARNES: Do you have the second
16 page?

17 MR. WOF SY: It's front and back.

18 MR. BARNES: Okay. Thanks.

19 MR. WOF SY: It's a two --

20 MR. BARNES: Saving paper.

21 MR. WOF SY: Yes. Also the weight.
22 You know, carrying documents is not easy on my
23 shoulders.

24 (WHEREUPON, the above-mentioned
25 document was marked as Exhibit 2.)

1 BY MR. WOFSY:

2 Q. So WRK-2 is a CV that, for the record,
3 was part of your declaration. It is, I think,
4 the ultimate page or the penultimate page in
5 your declaration, correct?

6 A. Yes.

7 Q. Okay. So when we refer to your CV,
8 WRK-2, would you be able -- would you please
9 put that in front of you? Because I'm going to
10 review it with you.

11 A. Okay.

12 Q. Okay. So just to get ourselves oriented,
13 you are -- is this your current address at the
14 top of your CV?

15 A. (Nods head affirmatively.)

16 Q. Yes?

17 Could you read your current address
18 for the record, please?

19 A. It's Barstavagen 8, Hammaro, Sweden.

20 Q. Okay. And this is your current mobile
21 number and e-mail address also on your CV,
22 correct?

23 A. Correct.

24 Q. All right. What is your current employer
25 called?

1 A. I'm self-employed. So it's called
2 Papercom in Sweden AB.

3 Q. Papercom in Sweden AB is your current
4 employer?

5 A. Yes.

6 Q. You're self-employed?

7 A. Yes.

8 Q. And what is your role at Papercom?

9 A. I'm the owner and senior consultant.

10 Q. And what type of business does Papercom
11 do?

12 A. Training for coated board mills and other
13 paper mills. That's the main thing today.

14 Q. And who -- what type of customers do you
15 have, or clients?

16 A. All kinds. It's paper mills.

17 Q. Paper mills?

18 A. Yes. Yeah, and also suppliers. I've
19 made business for pulp mills also. And the
20 chemical supplier.

21 Q. So the suppliers of the raw materials for
22 making paper?

23 A. Yes, correct.

24 Q. Okay. And is Billerud a current customer
25 or client of Papercom?

1 A. No.

2 Q. Papercom.

3 No, they are not?

4 A. No.

5 Q. Okay. In addition to Papercom, do you
6 have a separate consulting business?

7 A. No.

8 Q. How were you engaged by Billerud for this
9 matter? Was it through -- sorry. That's the
10 first question.

11 How were you engaged?

12 A. By a phone call.

13 Q. From whom?

14 A. Mr. Olle Steffner.

15 Q. And who is that?

16 A. I believe he's in charge of the IP issues
17 at Billerud company.

18 Q. Okay. And are you currently being
19 compensated by Billerud for your work that
20 you're doing in this matter?

21 A. That's correct.

22 Q. And you're being compensated to appear
23 today; is that correct?

24 A. Yes.

25 Q. And in terms of your compensation by

1 Billerud today, what ratio of your compensation
2 annually this year is that -- does that
3 represent?

4 A. Please rephrase the question once again.

5 Q. Certainly. Sorry. It was confusing.

6 What is the proportion of your annual
7 salary that your work with Billerud on this
8 matter represents?

9 A. It's, you know, like, 80 hours
10 altogether, I would say.

11 Q. And --

12 A. You know, I'm retired. So I only work
13 part-time. I would say that -- say about 200
14 hours I have doing working. So you can
15 calculate the percentage from that.

16 Q. Okay. So 80 out of the 200 of your
17 working hours?

18 A. No. No, it's out of 280.

19 Q. Out of 280?

20 A. Yes.

21 Q. Okay. Continuing on with your CV, why
22 don't we start from back in the old days.

23 A. Okay.

24 Q. Let's talk about your education.

25 A. Yes.

1 Q. Do you have a degree from a university?

2 A. Yes.

3 Q. And where is your university degree from?

4 A. It's the University of Linkoping in
5 Sweden.

6 Q. And what was the degree that you earned
7 at University of Linkoping?

8 A. I think it -- we would call it master of
9 science. Or it is equivalent to master of
10 science.

11 Q. Was there any particular specialty?

12 A. It was physics, engineering.

13 Q. And did you do any type of graduate
14 thesis work?

15 A. Yes.

16 Q. What was your graduate thesis in?

17 A. It was in papermaking. It was in forming
18 of paper.

19 Q. When you say forming of paper, what do
20 you mean by that?

21 A. I mean, you know, the whole papermaking
22 line has different sections. So it's forming
23 section, press section, drying section, coating
24 section, and winding. My thesis was in the
25 forming section.

1 Q. The first stage?

2 A. The first stage.

3 But it also involves for the complete
4 product. It's -- you have to look at the --
5 all the different processes together.

6 Q. I see.

7 And did you present that thesis paper
8 to a panel?

9 A. Yes.

10 Q. And was it well received?

11 A. Yes, I think so.

12 Q. Okay. And what did you do after your
13 Master's program?

14 A. Well, I started to work actually at the
15 company where I did the thesis. It was so well
16 received, so I got a job there.

17 Q. Fantastic.

18 What was that company called?

19 A. It was called Valmet or KMW at that time.
20 It was called KMW.

21 Q. KMW?

22 A. Yes.

23 Q. Which later became Valmet?

24 A. Yes.

25 Q. When you were originally employed at KMW,

1 what was your role?

2 A. Research engineer.

3 Q. And was that from the time period 1975
4 through 1978?

5 A. Yes.

6 Q. And as a research engineer, what type of
7 projects did you work on?

8 A. I was working on the development of -- in
9 the forming and wet pressing area of the paper
10 and board machine.

11 Q. And what were the paper products that you
12 were working with at the time?

13 A. Packaging paper and then packaging board
14 papers.

15 Q. After your position at KMW, where did you
16 move on to? What was your next employer?

17 A. Well, it was actually The Institute of
18 Paper Chemistry in Appleton.

19 Q. That was Appleton, Wisconsin?

20 A. Yes, correct.

21 Q. So you moved here to the United States?

22 A. Correct.

23 Q. And you were a visiting assistant
24 professor at that time?

25 A. That's correct.

1 Q. And, what, did you teach a class?

2 A. Well, in continuing education. But
3 mainly my job was to build up a small pilot
4 unit for a pilot -- a small pilot facility.

5 Q. Could you describe what that small pilot
6 facility did?

7 A. Yes. It was a forming unit that could
8 form a board substrate or a paper substrate.

9 Q. Are you differentiating between board
10 substrate and paper substrate for a reason?

11 A. No, not really.

12 Q. How would you --

13 A. Yeah.

14 Q. Go ahead.

15 A. No. I mean, not really. Sometimes there
16 is -- often there's also an overlap. So some
17 grades are actually -- can be defined as board
18 grades. And it's also actually in different
19 companies and in different countries, you
20 define paper and boards slightly different.
21 So, for example, in Finland all papers that are
22 used for packaging would be called board. So,
23 yeah.

24 Q. And in the US how would they refer to --

25 A. I think in the US would be more like in

1 Sweden, that a board is something used for
2 packaging and of slightly heavier weights;
3 whereas, paper would be printed and mostly in
4 lower weights. But there is an overlap.

5 Q. There's some higher weight papers that
6 may be considered --

7 A. Yes, exactly.

8 Q. Okay. May be considered board
9 substrates?

10 A. Yes.

11 Q. Okay. After your position at The
12 Institute of Paper Chemistry, where did you
13 move in your employment?

14 A. Well, then I landed -- I moved to Saffle,
15 where the company -- which is a different
16 company. But Billerud had the research center.

17 Q. So you were employed by Billerud?

18 A. Well, it's not the same. It's not that
19 Billerud. It's -- but the name is the same,
20 yes.

21 Q. Okay. A predecessor of the current
22 Billerud; is that correct?

23 A. No, not necessarily. It's another
24 company.

25 Q. With the same name?

1 A. Yes, correct.

2 Q. Okay.

3 A. Well, it doesn't exist anymore.

4 Q. Okay.

5 A. But the name has survived.

6 Q. I see.

7 And what did you do in that role?

8 A. I was responsible for the development of
9 coated paperboard.

10 Q. And what is coated paperboard?

11 A. Well, it's a substrate from cellulose
12 fibers, which is coated with a coating. Well,
13 actually, it's formed in a forming section,
14 pressed in a wet press, and dried in a dryer.
15 And then calendered, for example, with a
16 pre-calender. And then the coater and the
17 final calender and the reed.

18 Q. And did you develop any particular types
19 of coated paperboard when you were at Billerud
20 maybe initially?

21 A. Yes. I worked mainly at that time with a
22 liquid paperboard.

23 Q. Is that the acronym LPB?

24 A. Yes, liquid paperboard. LPB, yes.

25 Q. Liquid paperboard.

1 Okay. Moving on, from 1985 to 1987
2 you worked for Stora-Billerud; is that correct?

3 A. Yes.

4 Q. And what was your role at that time for
5 that company?

6 A. I was superintendent of the Number 7
7 machine.

8 Q. What does that mean?

9 A. Well, it's a board machine. Typically
10 board machines would have a number. And so
11 this -- the name of the company was Number 7.
12 It was a coated board machine.

13 Q. And what grade of board did it produce?

14 A. Liquid packaging board and folding box
15 board. Both grades are coated.

16 Q. And folding box board goes by the acronym
17 FBB; is that correct?

18 A. That's correct.

19 Q. And how do you characterize FBB?

20 MR. BARNES: Object to the form.

21 THE WITNESS: Pardon?

22 BY MR. WOFSY:

23 Q. Do you understand the question? You can
24 answer.

25 A. Well, it's a board which has mechanical

1 pulp in the middle.

2 Q. So FBB is a board that has mechanical
3 pulp in the middle layer?

4 A. Yes.

5 Q. And how many layers is FBB typically?

6 A. I'd say three. At Skoghall we had
7 actually five layers. But the three -- three
8 of the layers had the same furnish. So it
9 depends a little bit on how the wire section is
10 built. But the -- in most cases it's three
11 layers.

12 Q. And the middle layer in most cases is
13 made with mechanical pulp, you said?

14 A. Yes, partly.

15 Q. Partly?

16 A. Yes.

17 Q. And what is mechanical pulp?

18 A. Well, if you think of the tree, you use
19 grind or a type of grinder. I call it refiner.
20 You heat the wood chips. You chip the wood.
21 And then you heat it. And then you run it
22 through this refiner. And then you get a
23 mechanical pulp, which has a high yield. And
24 also a good thing is that it has a good bulk
25 properties.

1 Q. It has good bulk properties?

2 A. Yes.

3 Q. All right. We're going to talk a little
4 bit more about bulk.

5 But is FBB the -- excuse me -- the
6 middle layer, the mechanical pulp layer, is
7 that wood containing?

8 A. Yes. That is the definition.

9 Q. Mechanical pulp's definition is that it
10 contains wood?

11 A. Exactly.

12 Q. Okay. It's not free of wood particles?

13 A. No. No.

14 Q. Okay. And you mentioned that it has good
15 bulk properties, correct?

16 A. Yes.

17 Q. What is bulk?

18 A. It's another way to describe the
19 thickness. Because the board -- the basis
20 weight describes the amount of fiber in the
21 board. Depending then on the bulk, it may have
22 different thickness or caliper. And in US, for
23 example, caliper is very important because the
24 board is sold mostly by caliper. And then what
25 you want to do is to produce as -- to use as

1 little fiber as possible. And then you
2 get back -- then it's beneficial with the bulk.
3 Because the higher bulk, you can sell the board
4 at the specific caliper but with less fiber.

5 Q. Okay. So when you -- less fiber, better
6 bulk is what you want to achieve?

7 A. Yes. That's what the engineer or
8 technician would always optimize in the
9 production process.

10 Q. And when you talk about bulk, what is the
11 dimensions of the bulk? Is it -- I'm talking
12 about the units.

13 A. Yes. Yes, I understand.

14 So it's point and pounds per 3,000
15 square feet, American.

16 Q. Points and pounds per --

17 A. No. Just a second.

18 It's the basis weight divided by the
19 thickness.

20 So now I have to think. I have to
21 think about the...

22 Q. So you're saying bulk is equal to basis
23 weight over caliper; is that correct?

24 A. Yes. I have to just think about --

25 Q. Sure.

1 A. It's easy to mix up.

2 Q. I mean, you could -- we could -- I'll
3 give you a piece of paper. You can even write
4 things, if it helps you.

5 A. Yeah.

6 Q. And then we'll just mark that as an
7 exhibit later.

8 MR. WOFSY: Is that okay?

9 MR. BARNES: Fine with me.

10 THE WITNESS: So the bulk is related
11 to the thickness and the basis weight.

12 BY MR. WOFSY:

13 Q. Okay.

14 MR. WOFSY: For the record, let's --
15 why don't we mark this paper as -- Exhibit 3,
16 are we on?

17 THE REPORTER: 3.

18 MR. WOFSY: Okay. So this would be
19 WRK-3.

20 (WHEREUPON, the above-mentioned
21 document was marked as Exhibit 3.)

22 MR. WOFSY: Okay. For the record --

23 MR. BARNES: Let me see it real fast.

24 MR. WOFSY: -- Mr. Zotterman has
25 written a formula or an expression -- a

1 mathematical expression that is bulk equals T
2 over BW --

3 BY MR. WOFSY:

4 Q. -- where T is the thickness, correct?

5 A. Yes.

6 Q. And BW is the basis weight, correct?

7 A. Yes.

8 Q. Okay. Now, in this equation that you
9 wrote, what would be the units for bulk?

10 A. It would caliper for thickness. And it
11 would be pounds per 3,000 square feet for the
12 basis point.

13 Q. Pounds per 3,000 square feet, correct?

14 A. Yes. In this particular -- well, for
15 this particular board. There are other units
16 in the US, for example, and so on. But, yes.

17 Q. Okay. We'll be referring to that
18 equation throughout this discussion today. So
19 it's good that we have it down on that paper.

20 All right. I want to continue on
21 with your...

22 (Brief conference between attorneys.)

23 BY MR. WOFSY:

24 Q. So what are -- what is the unit for bulk?
25 Is it grams per meter cubed?

1 MR. BARNES: Object to the form.

2 That's in this scenario, you're asking him?

3 MR. WOFSY: Yes.

4 MR. BARNES: Okay.

5 THE WITNESS: Okay. So you're asking
6 the --

7 BY MR. WOFSY:

8 Q. Let me restate.

9 A. -- American units?

10 Q. Let me restate.

11 Is bulk a density?

12 A. No. It's the inverse of the density.

13 Q. The inverse of the density?

14 A. Yes.

15 Q. Okay. Continuing on now with your CV,
16 just so we get further acquainted with your
17 work.

18 A. Okay.

19 Q. In 1987 you went to work for Valmet,
20 correct?

21 A. Yes.

22 Q. And from 1987 through 1995, you were
23 employed by Valmet, correct?

24 A. Yes.

25 Q. And what was your role at that time?

1 A. I was manager for the board machine, the
2 technology.

3 Q. What does that mean, the board machine?

4 A. Well, it's, given the finish, a slightly
5 wider definition. It would be the machines
6 producing packaging paper grades and board
7 grades. Paperboard grades.

8 Q. Would that include FBB?

9 A. Yes.

10 Q. Would it include SBS?

11 A. Yes.

12 Q. And what does SBS stand for?

13 A. Solid bleached sulfate.

14 Q. Solid bleached sulfate board?

15 A. Sulfate -- yes.

16 Q. And any other materials?

17 A. No. That's a very wide definition.

18 Q. How about WLC?

19 A. No.

20 Q. And what does WLC stand for?

21 A. No, no, no. Sorry. Sorry. I'm sorry.

22 WLC, that's white-lined chipboard.

23 Q. White-lined chipboard?

24 A. Yes. And that's -- correct. And that's
25 also a board -- packaging board grade. But

1 it's produced from a hundred percent -- well,
2 more or less a hundred percent recycled fiber.

3 Q. And how would you characterize SBS in
4 terms of its furnishings?

5 A. Well, that's a hundred percent bleached
6 pulp. Bleached sulfate pulp or kraft pulp.
7 It's...

8 Q. And how do you differentiate kraft pulp
9 from mechanical pulp, in your words?

10 A. Well, kraft is different. It has no wood
11 in it, so to say. It's just the cellulose.
12 And it's made in a chemical process. So
13 actually in the wood, you normally would have
14 lignin. You have fibers, and you have lignin.
15 And when you make mechanical pulp, you get the
16 very high yield. Say 95 percent of the wood is
17 then pulp, which means that some of this lignin
18 -- or most of the lignin is actually in the
19 mechanical pulp. And that's why it's called
20 wood containing, which also means, for example,
21 that in daylight it yellows.

22 If you, on the other hand, on the
23 contrary, talk about a wood-free product, it
24 could be wood-free paper or SBS board. There
25 you have hundred percent bleached chemical

1 pulp. And the chemical pulp, you actually --
2 in the pulping process, you remove the lignin,
3 which means that you have a much lower yield.
4 It's only, like, 50 percent. So actually 50
5 percent of the wood is -- stays in the chemical
6 pulp. And we use it to produce energy for
7 heating and drying and so on.

8 So the pulp yield is only 50 percent.
9 And then you call it the wood-free paper
10 because it's only cellulose.

11 Q. And so you use the byproduct for energy
12 purposes?

13 A. Exactly.

14 Q. I see.

15 And SBS does not suffer from
16 yellowing; is that correct?

17 A. That's correct. It's actually say that
18 -- it's stable. Light stable. Not hundred
19 percent. But very much different from the
20 wood-containing papers and boards.

21 Q. Thank you for that explanation.

22 And do you refer to the term kraft?

23 A. Yes.

24 Q. And could you -- again, for the record,
25 what is kraft?

1 A. That's a pulping process.

2 Q. And it's kraft with a K, correct?

3 A. Yes.

4 So it's just -- I would say it's the
5 important pulping process today. So it's
6 kraft. And sometimes you use the word kraft.
7 So when you talk about SBS board, it's most
8 likely produced from a kraft process.

9 Q. And does SBS board have different bulk
10 characteristics than FBB?

11 A. Yes.

12 Q. And what are the differences in their
13 bulk characteristics between those two
14 materials?

15 A. It has less bulk.

16 Q. What is it? SBS has less?

17 A. Yes.

18 Q. So SBS has less bulk than FBB, correct?

19 A. Yes.

20 Q. And why is that?

21 A. Because the mechanical part is different,
22 so you maintain a bulk better.

23 Q. In FBB versus SBS?

24 A. Yes.

25 Q. Okay. Moving on with your CV, we're

1 almost off of the back page here. So it's 1995
2 through 1997, you worked for StoraEnso
3 Skoghall?

4 A. Yes, correct.

5 Q. And what type of company was that?

6 A. It's a major pulp and paper company,
7 StoraEnso.

8 Q. And what was your role there?

9 A. I was a manager and board meeting manager
10 in the board meeting.

11 Q. And what type of products were made on
12 that board mill?

13 A. Coated paperboard.

14 Q. FBB?

15 A. Yes.

16 Q. Yes.

17 SBS?

18 A. No. Liquid packaging board.

19 Q. LPB?

20 A. Yes.

21 Q. Okay. Any other materials?

22 A. No.

23 Q. Okay. From 1997 to 2004 you worked for
24 the Metso Paper Corporation; is that correct?

25 A. Metso.

1 Q. Met -- how do you spell that?

2 A. M-E-T-S-O.

3 Q. Thank you. My eyes are just going a
4 little crazy here. Metso, M-E-T-S-O, Paper
5 Corporation.

6 And what was your role at Metso?

7 A. I was responsible for the board machine
8 thing -- board -- coated board machine
9 technology.

10 Q. When you say you were responsible for it,
11 what does that mean?

12 A. I was a manager, vice president
13 technology.

14 Q. And what type of products were
15 manufactured at Metso?

16 A. Paper and board machines.

17 Q. Oh, they made machines?

18 A. Yes.

19 Q. I see.

20 A. Because the machine supplier, they would
21 have supplied machines, for example, Stewerhour
22 (phonetically) or MeadWestvaco.

23 Q. I see.

24 From 2004 to 2008 you worked The
25 Packaging Greenhouse AB?

1 A. Yes.

2 Q. And what was Packaging Greenhouse AB,
3 what type of company?

4 A. Oh, it was technical company. We worked
5 with product development, pilot drives, and
6 pilot work, and the training of the mill
7 personnel.

8 Q. Training of the folks that work on the
9 paper mills?

10 A. Yes.

11 Q. And did you train people in the US?

12 A. No.

13 Q. Only people in Europe, you trained?

14 A. Yes.

15 Q. How about in South America?

16 A. No.

17 Q. Okay. And that brings us back to today.
18 From 2008 to the present you were the senior
19 consultant and owner of Papercom, correct?

20 A. Correct.

21 MR. WOF SY: Okay. I'm going to be
22 marking as Exhibit Number 4 a document entitled
23 Papermaking Part 3, Finishing, which bears the
24 Bate stamp numbers Billerud Exhibit 1005-0001
25 through 0088.

1 (WHEREUPON, the above-mentioned
2 document was marked as Exhibit 4.)

3 (Off-the-record discussions.)

4 BY MR. WOFSY:

5 Q. Mr. Zotterman, are you familiar with what
6 I have now marked as Exhibit Number 4?

7 A. Yes.

8 Q. And what is Exhibit Number 4?

9 A. It's a part of a series of textbook, you
10 can say, in paper and board making. And I
11 think today it's -- originally it was published
12 by the Finnish Pulp & Paper Association. And
13 now it's also a joint publication with the
14 American Pulp & Paper Engineer's Association,
15 TAPPI.

16 Q. TAPPI?

17 A. Yes.

18 Q. T-A-P-P-I?

19 A. P-P-I. Yes.

20 Q. And is papermaking from which Exhibit 4
21 is a part, is that a well-known treatise or
22 well-known authority --

23 A. Yes.

24 Q. -- in the industry?

25 A. Yes, I would say so. Definitely.

1 Q. Is it something that you, as a
2 papermaking -- employed in the papermaking, is
3 it you, as someone that is employed in the
4 papermaking industry, refers to often?

5 A. Yes. I think it was used as a reference
6 handbook for the different processes. Yes --

7 Q. Okay.

8 A. -- definitely.

9 Q. And throughout your career you have
10 referred to this document; is that correct?

11 A. Yes.

12 Q. Okay. All right. I'd like you to turn
13 to page 80 of Exhibit Number 4, which is the
14 page that bears the Bates stamp number
15 1005-0042.

16 A. Uh-huh.

17 Q. On page 80 there is a Figure Number 62.
18 Do you see that?

19 A. Correct. Yes.

20 Q. Do you recognize that figure?

21 A. Yes.

22 Q. And this figure has in it three acronyms.

23 A. Yes.

24 Q. Each of which we have spoken about
25 already?

1 A. Correct.

2 Q. They include FBB --

3 A. Yes.

4 Q. -- which you mentioned was called folded

5 box board?

6 A. Yes.

7 Q. It mentions WLC --

8 A. Yes.

9 Q. -- which you mentioned was white-lined --

10 A. Sheet board.

11 Q. -- sheet board.

12 Chipboard?

13 A. Chipboard.

14 Q. And then there's SBS, which is --

15 A. Solid bleached sulfate.

16 Q. Solid bleached sulfate, okay.

17 What is Figure 62 teaching, in your

18 view?

19 A. It's teaching typically where these

20 different products are oriented in this PPS

21 bulk -- what do you say -- surface. I mean,

22 this diagram is a surface. And you have PPS,

23 and you have bulk. So it illustrates where

24 typically you would find these products.

25 Q. So PPS is shown on the Y axis, correct?

1 A. Yes.

2 Q. And what is PPS?

3 A. That's Parker Print Surface. That's a
4 measure -- a method. And so you can measure
5 the surface smoothness, which is relevant to, I
6 would say, high quality printing.

7 Q. Parker Print Surface, correct?

8 A. Yes.

9 Q. And what is the X axis of this graph in
10 Figure 62 showing?

11 A. That's bulk.

12 Q. And what units is bulk shown in?

13 A. That's what we discussed previously.
14 Here -- no. Here it's in metric units. So
15 it's cubic centimeters per gram, I think. It's
16 most difficult to see here.

17 Q. Cubic centimeters per gram?

18 A. Yep.

19 Q. And that's the inverse of density; is
20 that correct?

21 A. That's correct.

22 Q. And what would be the range of bulk for
23 FBB in Figure 62?

24 A. If you look at the diagram -- or figure
25 here, it's from 1.1 to 1.9.

1 Q. From 1.1 to 1.9, correct?

2 A. Yeah.

3 Q. And what would be the range for bulk of
4 SBS in Figure 62?

5 A. From 1 to maybe -- difficult to see.
6 Maybe 1 to 1.28 or something.

7 Q. 1.0 to 1.28?

8 A. Yeah.

9 Q. And at a PPS of 2.0, what would the bulk
10 for FBB be?

11 A. For PPS of 2? Sorry.

12 Q. Yes, for a PPS of 2 --

13 A. Yes.

14 Q. -- what is the bulk for FBB?

15 A. Well, since it's a surface, it's not a
16 specific number. It follows a line, which is
17 almost horizontal. So there is no -- as far as
18 that curve shows.

19 Q. And --

20 A. It doesn't give you a specific number.
21 It's a range then.

22 Q. What is the range?

23 A. Maybe 1.4 to 1.8 or something.

24 Q. And what would be the bulk for SBS in
25 Figure 62 of Exhibit Number 4?

1 A. At what point?

2 Q. At 2 microns.

3 A. Oh, okay.

4 Q. At -- I'm sorry -- at 2 PPS.

5 Let me restate that.

6 MR. BARNES: Thanks.

7 BY MR. WOFSY:

8 Q. So don't answer that yet.

9 For SBS --

10 A. Yes.

11 Q. -- at a value of 2.0 PPS, what would the
12 bulk be?

13 A. In this diagram it indicates 1.1.

14 Q. Okay. I'm now going to have marked as
15 Exhibit Number 5, WRK-5, your declaration.

16 (WHEREUPON, the above-mentioned
17 document was marked as Exhibit 5.)

18 BY MR. WOFSY:

19 Q. Okay. So before we start going into some
20 details in your declaration, which has been
21 marked as Exhibit Number 5 and bears Bates
22 stamp Billerud Exhibit 1003-0001 through 0080,
23 inclusive, you had mentioned when we began our
24 discussion today that there were some
25 corrections or modifications that you noticed

1 during your preparation for today?

2 A. Yes.

3 Q. Could we -- could you point me towards
4 those in Exhibit Number 5, please?

5 A. Yes, just a second.

6 (Reviews documents.)

7 MR. BARNES: I can tell him the
8 paragraph, if you want me to.

9 MR. WOFSY: All right.

10 MR. BARNES: 119.

11 THE WITNESS: Sorry?

12 MR. BARNES: 119. Paragraph 119.

13 THE WITNESS: Okay.

14 MR. WOFSY: Thank you.

15 MR. BARNES: That's all right.

16 THE WITNESS: Yeah, I'm sorry about
17 that.

18 So in Paragraph 119 -- one, two,
19 three, four -- you know, it reads 3.5 to 88
20 PLI.

21 BY MR. WOFSY:

22 Q. Pounds per inch is PLI?

23 A. Yes. It should be 57.1 to 228.4. Yeah,
24 I guess that's -- that was it.

25 Q. Aside from that correction on page 42 of

1 your declaration at Paragraph 119, were there
2 any other changes or modifications that you
3 wish to make at this time?

4 A. No.

5 Q. Okay. If you could turn to your
6 declaration at page 56.

7 MR. BARNES: Carl, use that one.

8 THE WITNESS: Okay.

9 MR. BARNES: They are on the same
10 page. Use this.

11 THE WITNESS: Okay. Okay.

12 MR. WOFSY: So for the record,
13 Counsel has instructed Mr. Zotterman to refer
14 to the exhibit, as opposed to his own personal
15 notes.

16 MR. BARNES: Correct. Thank you.

17 MR. WOFSY: Okay.

18 BY MR. WOFSY:

19 Q. So on page 56, Mr. Zotterman,
20 Paragraph 154 of your declaration, which is
21 Exhibit Number 5, do you recognize the diagram
22 there?

23 A. Yes.

24 Q. That is Figure 62 from the papermaking
25 reference, correct?

1 A. Yes.

2 Q. Which was Exhibit 4, correct?

3 A. Yes.

4 Q. And in Paragraph 154 you refer to a bulk
5 as high as 1.7 centimeters cubed per gram,
6 correct?

7 A. Yes.

8 Q. And in Figure 62, that would correspond
9 to a point on the curve for FBB, correct?

10 A. Yes.

11 Q. In Paragraph 154 you say that 1.7
12 centimeters cubed per gram corresponds to a
13 basis weight of 130 pounds per 3,000 foot
14 squared and a caliper of 14.2. Do you see
15 that?

16 A. Yes.

17 Q. How did you derive that caliper of 4.2 on
18 Paragraph 154?

19 MR. BARNES: Object. The caliper, I
20 think you said 4.2.

21 MR. WOF SY: I'm sorry. The caliper
22 of 14.2.

23 MR. BARNES: Yeah, thank you.

24 MR. WOF SY: I appreciate that.

25 THE WITNESS: I did a calculation

1 from -- I mean, it's from the bulk.

2 BY MR. WOFSY:

3 Q. Could you explain that calculation? In
4 other words, how did you come up with 14.2
5 corresponding to 1.7 centimeters cubed per
6 gram?

7 A. (No verbal response was heard.)

8 Q. So Mr. Zotterman is going to be using
9 what we marked as Exhibit 3, the piece of
10 notepaper, to do a calculation, apparently.

11 A. It's a lot of different units, which has
12 to be converted. And I don't have that
13 exact...

14 Q. Okay. Well, how would --

15 A. I would need some conversion units to be
16 able to do that, which is not in here.

17 Q. What conversion units would you need?

18 A. Between pounds and grams per square
19 meter.

20 Q. Okay. If I had that conversion factor,
21 what would I do with it?

22 A. It would convert the pounds to grams per
23 square meter. And you would convert the
24 caliper to millimeters.

25 Q. You would convert the caliper to

1 millimeters?

2 A. Yes.

3 Q. What would you convert, what number would
4 you convert to millimeters?

5 A. The 14.2. The caliper, which is -- which
6 is in the thousands of inches.

7 Q. Point is thousands per inch?

8 A. Yes. It's 14.2.

9 Q. So that is zero?

10 A. Yes. That has to be converted to a
11 metric unit.

12 Q. So 0.0142?

13 A. No. 24. I mean, inches -- in
14 millimeters per inch, it's --

15 Q. Could you write it on the paper, please?

16 MR. BARNES: Write what? Objection.

17 MR. WOFSY: You're correct.

18 BY MR. WOFSY:

19 Q. Could you -- on Exhibit Number 3, could
20 you show your work, as to how you're converting
21 14.2 caliper to millimeters?

22 A. No.

23 Q. You cannot?

24 A. No.

25 Q. Why?

1 A. Because I don't have the material here.
2 I don't have the conversion tables. I would
3 need the conversion tables, and then I would
4 need to make the conversions.

5 Q. Was that work done when you did your
6 declaration?

7 A. Yes.

8 Q. So you did those conversions, and you
9 came up with 14.2?

10 A. Yes.

11 Q. And 14.2 corresponds to 1.7 kilometer
12 cubed per gram, correct?

13 MR. BARNES: Object to the form.

14 THE WITNESS: 1 -- yes.

15 BY MR. WOFSY:

16 Q. And that's for FBB, correct?

17 A. Yes. Well, for the coated board. I
18 mean, we talk about different things here. It
19 would take coated board, in general, like a
20 paperboard substrate that covers all these
21 different -- these are subspecies, so to say,
22 of coated board substrate.

23 Q. What covers these species?

24 A. This diagram. All these three. If you
25 could make a line around all of this and then

1 you could say that is coated board.

2 MR. BARNES: For the record, the
3 witness was pointing to --

4 THE WITNESS: Yeah.

5 MR. BARNES: -- Paragraph 154 of the
6 diagram --

7 THE WITNESS: Yes. Yes.

8 MR. BARNES: -- in his declaration.

9 THE WITNESS: Yes.

10 BY MR. WOF SY:

11 Q. Continuing on with your declaration on
12 Paragraph 154 on page 57, it appears that
13 you're doing some type of calculation there
14 with the caliper of 4.2, correct?

15 A. Yes.

16 MR. BARNES: Object to the form.

17 BY MR. WOF SY:

18 Q. And what are you using 4.2 for in this
19 formula?

20 A. To calculate the position in relation to
21 the curve Y3 brim.

22 Q. And what was 130 in that calculation
23 shown in Paragraph 155 of Exhibit Number 5?

24 A. That's the basis weight.

25 Q. Where did you get that from?

1 A. All that's an example.

2 Q. Example from what?

3 A. Of the paperboard. Of the paperboard
4 substrate.

5 MR. BARNES: Take your other exhibit
6 out of the thing.

7 THE WITNESS: Sorry?

8 MR. BARNES: Pull that out. That's
9 an exhibit.

10 THE WITNESS: Okay.

11 MR. BARNES: Sorry.

12 THE WITNESS: This one. Oh, okay.
13 I'm sorry.

14 MR. WOFSY: I'm going to mark
15 Exhibit Number 6 US Patent Application
16 Publication 2009/023062 Fugitt, et al.
17 F-U-G-I-T-T, et al.

18 (WHEREUPON, the above-mentioned
19 document was marked as Exhibit 6.)

20 BY MR. WOFSY:

21 Q. Are you familiar with what I've marked as
22 Exhibit Number 6, Mr. Zotterman?

23 A. Correct. Yes.

24 Q. And could you turn to Paragraph 57 of
25 Exhibit Number 6, please.

1 A. Uh-huh.

2 Q. Is that paragraph of Fugitt, et al.,
3 where you got the 130.0 basis weight for
4 Paragraph 155 of your declaration?

5 A. No. 130 is just an example of the basis
6 weight, which is quite common.

7 Q. Is 14.2 a common caliper?

8 A. No. I think they would normally be even,
9 you know, like 10, 12, 14.

10 Q. So does 14.2 come from the prior art
11 somewhere?

12 A. I have to look a little bit here.

13 (Reviews documents.)

14 You have to rephrase the question
15 again.

16 Q. So we are using 130 as a basis weight,
17 which you said was a common basis weight,
18 correct?

19 A. Yes.

20 Q. And the 14.2 you derived from 1.7
21 kilometer -- centimeter cubed per gram in the
22 Paragraph 154, correct?

23 A. Once again, please repeat the question.

24 Q. So the caliper of 14.2, which is shown in
25 Paragraph 155 of your declaration, was derived

1 from a conversion of 1.7 centimeter cubed per
2 gram, correct?

3 A. Yes.

4 Q. And that is the caliper that is
5 associated with FBB in Figure 62, correct?

6 A. Yes.

7 Q. Why did you choose to use FBB bulk --

8 A. Well --

9 Q. -- for this calculation?

10 A. Well, that's -- as I mentioned before,
11 SBS white-lines sheet board and folding box
12 board, they are three different variations of
13 the paperboard substrate. So if you consider a
14 paperboard substrate, you could actually use
15 all these three parts: SBS white-lined sheet
16 board and folding board, because they are all
17 paperboard substrates.

18 So actually that would fall -- these
19 figures would fall within the definition of
20 paperboard substrate. That's --

21 Q. Now, you characterized earlier that FBB
22 was made with mechanical pulp, correct?

23 A. That's correct.

24 Q. And mechanical pulp contains wood,
25 correct?

1 A. Yes, correct.

2 Q. Wood particles, correct?

3 A. Yes.

4 Q. SBS does not, correct?

5 A. Correct.

6 Q. Do you know what material is used in the
7 examples of the Fugitt reference, which was
8 marked as Exhibit Number 6?

9 A. I have to check here. Because this is
10 the Exhibit 6, yes?

11 It's solid bleach sulfate.

12 Q. So they use SBS --

13 A. That's correct.

14 Q. -- for Fugitt, et al., correct?

15 A. Yes.

16 Q. They do not use FBB in Fugitt, et al.,
17 correct?

18 A. It's a paperboard substrate.

19 Q. That's not responsive.

20 Do they use FBB in Fugitt, et al.?

21 A. They are all paperboard substrates.

22 Q. Is FBB mentioned anywhere in Fugitt,
23 et al.?

24 A. No. They mention paperboard substrate,
25 and then they give an example.

1 Q. And what is that example?

2 A. That's SBS.

3 Q. And when they use the example SBS, what
4 is the caliper points that they are using in
5 that example of Fugitt on Paragraph 57?

6 A. It's 130 pounds, if I -- did you ask for
7 the basis point or the caliper?

8 Q. The caliper.

9 A. Okay. That was 12 points.

10 Q. 12 points?

11 A. Yes.

12 Q. So why did you use 12 points instead of
13 14.2 in Paragraph 155 of your declaration?

14 MR. BARNES: Object to the form.

15 THE WITNESS: Well, I think they
16 could do the same job. I mean, it's just an
17 example.

18 MR. WOFSY: Can you read that back,
19 please?

20 (WHEREUPON, the requested testimony
21 was read back by the reporter.)

22 BY MR. WOFSY:

23 Q. What is just an example?

24 A. A basis weight or a caliper.

25 Q. So the example that you're showing of the

1 basis weight in 155 is -- has nothing to do
2 with Fugitt? Is that what you're saying?

3 A. Well, in that case, since the number is
4 130, it is the same as Fugitt.

5 Q. And the caliper weight for Fugitt
6 example -- the example in Fugitt was 12.0,
7 correct, the caliper?

8 A. Yes.

9 Q. So why not use the caliper of Fugitt when
10 you did the calculation in Paragraph 155?

11 A. Because I was actually referring to
12 Figure 62.

13 Q. And in Figure 62 isn't there a caliper
14 for SBS?

15 A. There are calipers for all these
16 different paperboard substrates.

17 Q. Well, if Fugitt is teaching SBS --

18 A. Yes.

19 Q. -- and Figure 62 has values of bulk for
20 SBS, why didn't you select the bulk values for
21 SBS to use for your calculation in Paragraph
22 155?

23 A. Because it's still a paperboard
24 substrate. It's an example of a paperboard
25 substrate.

1 Q. Did you use the 12-point value of Fugitt
2 to calculate Y3 prime at any point in time
3 during the preparation of your declaration?

4 A. Yes.

5 Q. When? Is that work present in your
6 declaration?

7 A. Yes.

8 Q. Where is that?

9 A. I think it's in Claim 22. Paragraph 149.

10 Q. So in Paragraph 149, which discusses the
11 equation Y3 -- not Y3 prime -- you used a
12 12-point caliper, correct?

13 A. Yes.

14 Q. And, in fact, for Claim 21, which you
15 discuss in Paragraphs 147 and 148, you also
16 used a 12.0 caliper, correct?

17 MR. BARNES: Object to the form,
18 foundation.

19 BY MR. WOFSY:

20 Q. You can answer.

21 A. Yes.

22 Q. So if you used 12.0 caliper for Claim 21,
23 and you used a 12-point caliper for Claim 22,
24 why didn't you also use a 12-point caliper for
25 Claim 23?

1 A. Because to show that was nothing unique
2 in the numbers for SBS, that there were
3 examples of paperboard substrates that would
4 have a higher bulk.

5 Q. And is that taught somewhere in the prior
6 art references that you used in preparing your
7 declaration?

8 MR. BARNES: Object to the form.

9 BY MR. WOFSY:

10 Q. You can answer.

11 A. Yeah, I think this current Figure 62
12 shows that.

13 Q. So Figure 62.

14 Then why didn't you use 14.2 for
15 Claim 22 calculation?

16 A. Well, I think it's an example of
17 different prior arts. In 22 it was Fugitt, and
18 in 23 it was from Papermaking.

19 Q. What if you were to use the same 12-point
20 caliper that you used for Claim 21 and Claim 22
21 to perform the mathematical expression in 155?
22 Do you know what would happen if you used 12.0
23 instead of 14.2? Do you know what the result
24 would be?

25 A. It would be different.

1 Q. It would be different?

2 A. Yes.

3 Q. Different than 145, correct?

4 A. Yes.

5 Q. Could you -- on your Exhibit Number 3,
6 the paper that we've been jotting notes on,
7 would you be able to calculate Y3 prime using
8 12.0 caliper as you did for Claim 21 and 22?

9 A. No.

10 Q. Why not?

11 A. Well, it would take some time and
12 efforts. And I wouldn't --

13 Q. Well --

14 MR. BARNES: Hold on. Let him
15 finish.

16 BY MR. WOFSY:

17 Q. How much time would you need to make that
18 calculation?

19 A. An hour.

20 Q. An hour.

21 Well, let's start.

22 MR. BARNES: Before we start, can we
23 take a break? We've been going about an hour
24 or something.

25 MR. WOFSY: Certainly. That's fair.

1 Can we go off the record, please?

2 (Short break.)

3 (WHEREUPON, a document was marked as
4 Exhibit 7.)

5 BY MR. WOFSY:

6 Q. Mr. Zotterman, I want to remind you that
7 you remain under oath, okay?

8 A. Yes.

9 Q. All right. While we took a break, I took
10 the liberty to create an Exhibit Number 7,
11 where I have handwritten the Y3 prime equation
12 that is found in your declaration at page 56 --
13 excuse me -- at page 57. Could you verify that
14 I've correctly transcribed the equation from
15 the table in Paragraph 155 of your opinion or
16 your declaration?

17 A. Yes, that's correct.

18 Q. Now, for the -- for X equals 12.0, which
19 is the caliper point from the Exhibit 6,
20 Paragraph 57, which is Fugitt Paragraph 57,
21 would you --

22 MR. BARNES: Hold on. Let me make
23 sure he gets it. You have to use your --

24 THE WITNESS: Just a second.

25 Okay. Paragraph 57, Fugitt.

1 BY MR. WOFSY:

2 Q. Yes.

3 So Fugitt has the caliper of 12.0,
4 correct?

5 A. Yes.

6 Q. So for X equals 12.0, could you solve the
7 Y3 prime using the formula on Exhibit Number 7?
8 And I provided a calculator for you.

9 A. Thank you. Yes.

10 Q. Okay. Please have at it.

11 A. (Respite.)

12 Yes. Does it match your numbers?

13 Q. (Respite.)

14 No. It does not match the numbers.
15 Could you redo your calculation, please?

16 A. Sure. Sure.

17 (Respite.)

18 Q. Could you please for the record state the
19 result that you obtained for Y3 prime using the
20 12.0 caliper?

21 A. 128.69.

22 MR. BARNES: May we borrow that for a
23 second and take a picture?

24 MR. WOFSY: Absolutely. Please. If
25 you'd like, you can run the calculation.

1 MR. BARNES: No. I just want to get
2 a copy, so we can see it for a second. I don't
3 want to interrupt your question.

4 Take a picture. We're just going to
5 keep it here. You can have it back.

6 Thank you.

7 MR. WOFSY: Could you read that back?

8 (WHEREUPON, the pending question was
9 read back by the reporter.)

10 BY MR. WOFSY:

11 Q. Is 128.69 greater than 130 or less than
12 130?

13 A. It's less.

14 Q. And what would the units be for 128.69?

15 A. It will be basis weight and pounds per
16 3,000 square feet.

17 Q. So for Y3 prime, using a caliper of 12.0,
18 you obtained a value of 128.69 pounds per 3,000
19 foot squared, correct?

20 A. Yes.

21 Q. Could you put the proper units there on
22 your calculation?

23 A. Here (indicating)?

24 Q. Yes, please.

25 A. (Complies.)

1 Q. Mr. Zotterman, could you initial that
2 final answer, please.

3 A. (Complies.)

4 Q. Thank you.

5 MR. WOFSY: Let the record show that
6 Mr. Zotterman has initialed Exhibit Number 7
7 with the result being Y3 prime equals 128.69
8 pounds per 3,000 foot square.

9 BY MR. WOFSY:

10 Q. Mr. Zotterman, have you reviewed the
11 petition for inter partes review that was filed
12 in this matter?

13 A. Yes.

14 THE REPORTER: Exhibit 8?

15 MR. WOFSY: 8, yes.

16 (WHEREUPON, the above-mentioned
17 document was marked as Exhibit 8.)

18 BY MR. WOFSY:

19 Q. I've marked as Exhibit Number 8 a
20 document that was filed by Billerud Petitioner,
21 which is entitled the Petition for Inter Partes
22 Review of US Patent Number 11,293,142 B2.

23 Do you see that document, sir?

24 A. Yes.

25 Q. Could you turn to page 54 of that

1 document?

2 A. (Complies.)

3 Q. Mr. Zotterman, did you at any point in
4 time, when you worked on this matter, review
5 the calculations that are performed on page 54
6 of the petition that has been marked as
7 Exhibit Number 8?

8 A. This was a year ago since I looked at
9 this. Because this was before the declaration.
10 So I had to look at it and read through it --

11 Q. Okay.

12 A. -- in more detail.

13 Q. Well --

14 A. Please rephrase your question.

15 Q. Okay. So there is a calculation for Y3
16 prime performed on page 54 of the petition,
17 which is Exhibit Number 8, which is the --
18 similar to the calculation that you performed a
19 few moments ago on Exhibit Number 7.

20 And on page 54 of the petition,
21 there's a caliper thickness used that is 12.2.
22 Do you know why 12.2 was used in this
23 calculation, in Exhibit Number 8 on page 54?

24 MR. BARNES: Object to the form.

25 You can answer.

1 THE WITNESS: Yeah, I have to read
2 through this. Because as I said, this is --
3 it's more than a year since we -- since I
4 looked at this. So -- and it's so much
5 numbers. And I have to go through it.

6 BY MR. WOFSY:

7 Q. Okay.

8 A. So I need some time.

9 Q. Why don't we look then at your
10 declaration again, which was marked as
11 Exhibit Number 5, which you reviewed in
12 preparation for this deposition. And I'm going
13 to refer you specifically to Paragraph 151.

14 A. Now you're moving too quick.

15 Q. Yes.

16 A. So are we looking at Exhibit 6 or --

17 Q. We're going to look at your
18 declaration --

19 A. Okay.

20 Q. -- which is Exhibit Number 5.

21 And I apologize for moving quick.

22 A. Okay. Starting to get a lot of paper
23 here.

24 Q. I'll help you out here.

25 MR. BARNES: Paragraph 151.

1 THE WITNESS: Yes.

2 BY MR. WOFSY:

3 Q. So in your preparation for this
4 deposition today, did you review the text of
5 Paragraph 151?

6 A. Are you talking about the declaration --

7 Q. Yes.

8 A. -- or the deposition?

9 Q. Declaration, Exhibit Number 5.

10 A. Yes.

11 Q. That's this one (indicating)?

12 A. Yes.

13 Q. Okay. Paragraph Number 151.

14 A. Yes.

15 Q. You talk in Paragraph 151 of your
16 declaration about a caliper thickness being
17 12.2 instead of 12.0. Do you see that?

18 A. Yes.

19 Can I elaborate on that?

20 Q. Yes, please.

21 A. Okay. If you look at Fugitt -- because
22 this is both Papermaking and Fugitt. If you
23 look at Fugitt, he indicates that he can use --
24 or you can use steam to heat the calender.
25 Now, steam heat the calender has a maximum

1 temperature of -- now we need the conversions
2 again. But say 200 -- or 130 centigrades. If
3 you look at Papermaking, they indicate that you
4 can actually increase the temperature with, for
5 example, hot oil to over 200 centigrades.

6 And if you consider that, and if you
7 look at, for example, Gratton, who indicates
8 how you can save bulk by increasing the
9 temperature, it's -- it becomes obvious for
10 somebody with ordinary skill of the art to --
11 that that would improve the bulk.

12 If you made that increase in
13 temperature from, say, 130 to 204 degrees
14 Celsius, then that would actually be -- you
15 could expect, from Gratton, more than 2 percent
16 increase in bulk. And here, to be on the safe
17 side, he indicates that 1.6 is reasonable.

18 Q. Would .8 have been reasonable? .8
19 percent?

20 A. Yes.

21 Q. So a caliper of 12.1 would have been
22 reasonable, correct?

23 A. Yeah. But the example here is 12.2. So
24 why should we change that to 12? I mean, it
25 says here that the caliper thickness being 12.2

1 instead of 12.0, only 1 percent -- 1.6 percent
2 higher is sufficient for providing paperboard,
3 having a basis weight below the function Y3
4 prime. It's to show that it's reasonable,
5 taking into account the knowledge which was
6 well available at the time of 2019, that
7 looking into the different references of
8 Papermaking and Fugitt, it would be reasonable
9 to use that knowledge and to find -- to come to
10 the conclusion that you could get a better bulk
11 of 1.6 percent.

12 Q. Why didn't you use 12.2 for Claim 22
13 then?

14 A. I will have to go back to Claim 22.

15 Q. Right. That would be on page 54 of your
16 declaration.

17 A. Okay. Because I think there -- there
18 were already numbers given at Fugitt.

19 Q. What were the numbers given by Fugitt?

20 A. 12.0, 130.0, and 131.31912.

21 Q. What was 131.912?

22 A. 3192. One that -- that was a Y2 prime.

23 Q. That was what was calculated --

24 A. Yes.

25 Q. -- 131.3192?

1 A. Correct.

2 Q. Was calculated for Claim 21, correct?

3 A. Yes.

4 Q. And then for Claim 21 you used 12.0

5 caliper, correct?

6 A. Yes.

7 Q. From Fugitt, correct?

8 A. Yes.

9 Q. And for Claim 22 you used 12.0 caliper --

10 A. Yes.

11 Q. -- from Fugitt, correct?

12 A. Yes.

13 Q. But for Claim 23 you increased it 1.6

14 percent to 12.2, correct?

15 A. Yes.

16 Q. Why didn't you use 12.0 on Claim 23?

17 A. Well, because we could show that with

18 Papermaking, if you increase the temperature,

19 it was reasonable to -- to think that you would

20 get this high a number, if you consider Fugitt,

21 Papermaking, and Gratton.

22 Q. Where in Papermaking do you get the

23 teaching to raise caliper 1.6 percent?

24 A. Well, actually it teaches that you can

25 use a higher temperature. In the hot

1 calendering, it clearly -- it says that you can
2 run, for example, with hot oil up to 204
3 centigrades. And you can go even further
4 using, for example, electrical -- not
5 electrical but -- yeah, electrical heating.
6 Induction heating. Induction heating.

7 So actually if you look at the
8 Fugitt, he's only talking about steam heating.
9 And with steam you get up to a limit of -- I
10 think it was, like, 130 centigrades.

11 But if you take into consideration
12 the Papermaking, you -- it teaches you that you
13 can go much higher. And as high as 205. And
14 even centigrades. And even higher than that.
15 And then everybody working in the industry
16 with, say, an engineering degree and with some
17 experience of board making, knows that when you
18 increase the temperature, you will improve the
19 surface smoothness. And you will have a
20 possibility also to decrease the basis weight,
21 thus to increase the bulk --

22 Q. So --

23 A. -- by increasing the temperature of the
24 calender.

25 Q. So you --

1 A. And looking at these references, you can
2 actually add on the findings with the higher
3 temperature from Papermaking. That's the
4 background.

5 Q. So you're saying that Fugitt teaches
6 steam heating, correct?

7 A. A possibility of steam heating, yes.

8 Q. Okay. Now, if I were to take Fugitt --

9 A. Yes.

10 Q. -- and -- which teaches steam heating?

11 A. Uh-huh.

12 Q. And change Fugitt or modify Fugitt for
13 oil heating, would I achieve the same
14 characteristics in the examples of Fugitt?

15 A. Given the same temperatures. It's not
16 that me doing the such, it's the temperature on
17 the roll that gives you the calendering
18 effects.

19 Q. So if I were to raise the temperature to
20 the temperature that can be attained using oil
21 heating --

22 A. Yes.

23 Q. -- in Fugitt, would I achieve the same
24 characteristics in the examples of Fugitt?

25 MR. BARNES: Object to the form.

1 THE WITNESS: You would get better
2 examples. Because you said it would -- sorry.
3 You have to rephrase it again. I maybe
4 misunderstood you.

5 MR. WOFSY: Please, if you could read
6 back.

7 (WHEREUPON, the pending question was
8 read back by the reporter.)

9 THE WITNESS: No. No.

10 MR. BARNES: Same objection.

11 THE WITNESS: You would get better.

12 BY MR. WOFSY:

13 Q. Why would it be better?

14 A. Because the higher temperature.

15 Q. How do you know this?

16 A. Well, it's well known. It's well known.

17 Actually I didn't mention, but I used
18 to work at the Skoghall Mill, for example,
19 where there was a --

20 Q. The what?

21 A. The Skoghall Mill, which was mentioned in
22 the reference.

23 Q. Skoghall Mill?

24 A. Yes.

25 And there, it's a coated board mill.

1 It's a hot pre-calender before the cutter. And
2 this is today. I would say -- and even back
3 in my -- from 2019, that would be the industry
4 standard.

5 So whenever you would build a coated
6 board machine, you would have a hot-hard nip
7 pre-calendar before the cutter. And you would
8 use the heat to improve the surface smoothness.
9 And it would allow you to lower the nip load.

10 Q. Nip load, N-I-P?

11 A. Yeah.

12 And this is fundamental. I mean,
13 everybody working in the mill would know this.
14 And that would be a part of the daily
15 optimization.

16 So -- and then -- so normally you
17 would run as high a temperature as possible.

18 Q. Does it cost more energy to run oil
19 versus steam?

20 A. No, not at all.

21 MR. BARNES: Let him finish.

22 THE WITNESS: Sorry.

23 No, not at all.

24 Well, the savings, for example, in
25 fiber, which would -- because you could lower

1 the basis weight. That will allow you to
2 increase the production of the machine. And
3 the lower basis weight would cost less energy
4 in preparing the pulp, in drying, and so forth.
5 So the increase in heating of the calender is
6 totally negligible.

7 It's a difficult word.

8 So...

9 BY MR. WOFSY:

10 Q. In your opinion -- excuse me -- in your
11 declaration at Paragraph --

12 (Brief conference between attorneys.)

13 BY MR. WOFSY:

14 Q. -- 84 of your declaration on page 30 --
15 that's this, correct? Exhibit Number 5?

16 MR. BARNES: No.

17 THE WITNESS: No, this is mine.

18 BY MR. WOFSY:

19 Q. Yes.

20 A. Okay. Okay. Yes.

21 Q. Turning to Paragraph 84 of Exhibit Number
22 5 --

23 MR. BARNES: It's on page 30.

24 MR. WOFSY: Thank you, sir.

25 ///

1 BY MR. WOF SY:

2 Q. Could you review that paragraph, please?

3 A. Which one?

4 Q. Paragraph Number 84.

5 A. 84?

6 Q. Yes, sir.

7 A. Yes. Chapter 1 titled Calender
8 Construction. Should I read it or no?

9 Q. No.

10 A. Okay.

11 Q. Just review it. Because I'm going to be
12 asking you some questions about it.

13 A. Okay.

14 (Reviews documents.)

15 Okay.

16 Q. All right. So here you talk about steam
17 being used to increase the surface temperature
18 of rollers, correct?

19 A. Yes.

20 Q. And you also talk about the surface
21 temperature of rollers --

22 A. Yes.

23 Q. -- using hot oil, correct?

24 A. Yes.

25 MR. BARNES: Carl, I would instruct

1 you to wait for him to finish his question, for
2 the record.

3 THE WITNESS: Oh, I'm sorry.

4 MR. BARNES: It makes it a cleaner
5 record.

6 THE WITNESS: Okay.

7 MR. BARNES: Let him finish, and then
8 you can answer.

9 BY MR. WOFSY:

10 Q. So Paragraph 84 talks about heating
11 rollers with hot oil, correct?

12 A. Yes.

13 Q. And we were speaking about the use of hot
14 oil to increase lower temperatures earlier,
15 correct?

16 A. Yes.

17 Q. Now, what is the range that you can
18 achieve using a hot oil?

19 A. Room temperature up to -- it probably
20 depends on the regulations in the country we
21 talk about. But I would say typically --
22 because there are some safety issues related to
23 hot oil. But I would say 204 centigrades.

24 Q. 204 centigrades?

25 A. Centigrades.

1 So from ambient temperature --
2 because you can turn off the oil. So the range
3 would be -- in the ambient temperature would be
4 maybe 80 centigrades. So say from 80
5 centigrades up to 204.

6 Q. And you say here in Paragraph 84 of the
7 opinion -- in your declaration, excuse me --
8 that hot oil, when used, can reach over 220
9 degrees --

10 A. Yes.

11 Q. -- C, correct?

12 A. Yes.

13 Q. Which is even higher than 204, correct?

14 A. Right.

15 Q. Are you aware of any reference in the
16 prior art that is found in this proceeding
17 where hot oil is shown to be used at
18 temperatures higher than 220 degrees C?

19 A. No.

20 Q. And it's your understanding that there
21 are limits to the use of hot oil at 204 degrees
22 C?

23 A. Yes.

24 Q. And again, could you -- what are those
25 limits again? You said they were regulatory?

1 A. It's safety issue. Because it's hot, and
2 it's also -- what happened was that there were
3 also some cases in the beginning when -- well,
4 hot oil and heated calendering started actually
5 in the end of 1980s. When I used to work the
6 school, I let the Number 7 machine -- we had
7 the Kusters calender, which had two steel
8 rolls, one of which was heated with oil.

9 And at that time -- because there
10 were number of these installations coming up,
11 because everybody realized that the heated
12 cylinder would be an advantage in the coated
13 board production. You could increase the bulk
14 and make all these savings and so on. So that
15 was very attractive.

16 Unfortunately, hot oil needs some
17 specific technical proportions because it can
18 catch fire. And in the Skoghall Mill, as well
19 as in several other mills, there were fires
20 because of this.

21 So then for the period of time -- and
22 actually to start again, oil was replaced by
23 induction heating. Because there is no issue
24 there of heating oil and so on or fire from
25 that reason. And in addition, those could be

1 operated up to 300 centigrades, which might be
2 even more advantages for the board quality.

3 Q. Are the regulations that you talked about
4 as to the temperatures of hot oil in place in
5 the United States?

6 A. I'm not aware of that. But I can tell
7 you that more -- actually MeadWestvaco bought
8 three or four calenders in the period of 1982
9 to 1987 for them. It's four calenders with hot
10 rolls heated up to 200. And that would be oil
11 heating.

12 Q. Up to 200 degrees C?

13 A. Yes.

14 THE REPORTER: And what was the name
15 of the company that you said?

16 THE WITNESS: MeadWestvaco.

17 THE REPORTER: Thank you.

18 THE WITNESS: The Evadale mill and
19 the Mark mills (phonetically).

20 BY MR. WOF SY:

21 Q. Evadale?

22 A. Evadale.

23 Q. Evadale.

24 A. Evadale. E-V-A -- Evadale.

25 Q. Okay. Evadale.

1 And so they were -- they operated at
2 200 degrees C?

3 A. Yes.

4 Q. Okay. Which is about, what? About 400
5 F?

6 A. Uh-huh.

7 MR. BARNES: We printed out
8 conversion tables in case.

9 MR. WOFSY: Would you like us to mark
10 that as an exhibit?

11 MR. BARNES: That would be great, if
12 you find it useful.

13 BY MR. WOFSY:

14 Q. So 200 degrees C, according to this
15 table, is about 392 degrees F?

16 A. Yep.

17 THE REPORTER: Do we want to mark
18 that?

19 MR. WOFSY: (Shakes head negatively.)
20 That's all right.

21 BY MR. WOFSY:

22 Q. Okay. So you have experience building
23 machines?

24 A. Yes.

25 Q. Papermaking machines?

1 A. Yes.

2 Q. Okay. Would there be an increased
3 capital cost in converting a steam-heated
4 roller machine --

5 A. Yes.

6 Q. -- to a --

7 A. Sorry.

8 Q. -- oil-heated roller machine?

9 A. Yes.

10 Q. And what would the scale of that capital
11 cost increase be?

12 A. If you compare to the total capital cost
13 for the operation, it would be very, very
14 small.

15 Q. What are the capital costs for the
16 operation, in your view?

17 A. Well, if you talk about a board mill,
18 it's like a hundred -- well, \$200,000,000 or
19 something like that. But, yeah.

20 Q. So the capital cost of that 200 million
21 to convert from steam to oil heat would be
22 what?

23 MR. BARNES: Objection to form.

24 MR. WIREN: Objection to form of the
25 question. He didn't say that.

1 BY MR. WOFSY:

2 Q. You can answer.

3 A. Sorry?

4 Q. You can answer.

5 A. Yes. \$50,000.

6 (Off-the-record discussions.)

7 MR. WOFSY: I'm going to mark as --
8 is it 9?

9 THE REPORTER: Yes.

10 MR. WOFSY: Exhibit Number 9, WRK-9,
11 a document that is entitled Temperature
12 Gradient Calendering of Foodboard.

13 (WHEREUPON, the above-mentioned
14 document was marked as Exhibit 9.)

15 THE WITNESS: Thank you.

16 BY MR. WOFSY:

17 Q. You're welcome.

18 Exhibit Number 9 bears Bate stamp
19 number Billerud Exhibit 1006-001 -- excuse me,
20 0001 -- three zeros -- through 0006.

21 Are you familiar with what has been
22 marked as Exhibit Number 9, Mr. Zotterman?

23 A. Yes. It's an article from the
24 January 1998 TAPPI journal. TAPPI is the
25 American pulp and papermakers association.

1 It's a very -- it's a highly regarded paper. I
2 would say that an article like this would be
3 read by -- by anybody working with, especially,
4 like, board production or paper production. I
5 really like this.

6 Q. And this reference is referred to in
7 these proceedings as Gratton, G-R-A-T-T-O-N.
8 So if I refer to this in our discussions as
9 Gratton, will you recognize that?

10 A. Yes. Yes.

11 Q. Okay.

12 A. Also you can mention that it's actually
13 marked Hot Calendering, this article.

14 MR. WOF SY: So for the record, at the
15 upper right-hand corner, there's the term
16 Hot Calendering, as identified by the Deponent.
17 BY MR. WOF SY:

18 Q. There is a drawing figure in the lower
19 right-hand corner on Exhibit Number 9, could --
20 which is entitled Conventional Calendering in
21 one section. And then below that there is a
22 section that says Temperature Gradient
23 Calendering.

24 Do you see that?

25 A. Yes.

1 Q. Could you explain what this drawing shows
2 with respect to temperature gradient
3 calendering?

4 A. Yes. We also have to remember that this
5 is from 1998. So that was conventional
6 calendering at that time. I would say that
7 1998 actually the temperature gradient
8 calendering could be considered as conventional
9 calendering.

10 But what you see there is basically,
11 I will say, 50 centigrades, is -- could be
12 ambient temperature. That's in the top part of
13 the figure. You see two calender rolls. Or a
14 two-roll, one-nip calender. And at the bottom
15 you see them heated up to 200. Both rolls to
16 210 centigrades. And then you can see how it
17 affects the paper.

18 So in the first, where you have 50
19 degrees, you have a uniform compaction, you can
20 say, throughout the thickness of the paper,
21 because the temperature is similar throughout
22 the paper thickness.

23 In the bottom one, however, because
24 of the elevated temperatures of the calender,
25 you can -- the figure indicates that the

1 surface, which is close to the hot calender
2 roll, is compacted more, but the center of the
3 sheet is compacted less.

4 And in this case it shows a
5 double-sided hot calender. And -- which it has
6 not to be made that way. But in this specific
7 case, that's what it shows.

8 Q. And just to be clear, the Exhibit 9, on
9 the bottom of that figure on page 81 of
10 Exhibit 9, the temperature gradient calendering
11 shows two heated roll -- a two-heated roll nip,
12 correct?

13 A. Correct.

14 Q. And both rolls of that nip are heated to
15 the equal temperature, correct?

16 A. Yes. In this case, yes.

17 Q. Are you familiar with multi-roll
18 calendering?

19 A. Yes.

20 Q. And in a multi-roll calender -- well, can
21 you explain for the record what a multi-roll
22 calender is?

23 A. Well, you can add a roll, for example.
24 So you have three rolls, and then you let the
25 paper go through the second nip as well. So

1 you have two nips in one stack. And it's
2 slightly mechanically simpler as having two
3 separate calenders in some respects.

4 Q. A multi-roll calender would be simpler
5 than having two separate nips, is what you're
6 saying?

7 A. Well, if you have two nips in a
8 multi-roll calender, you would save the
9 framing, some of the framing that you would if
10 you had two separate.

11 Q. So the capital costs would be less,
12 correct?

13 A. Yes.

14 Q. And would it be feasible to convert a
15 multi-roll calender to a calender having two
16 nips?

17 MR. BARNES: Object to the form.

18 THE WITNESS: Not having two nips.

19 Now, it has -- well, that's
20 converting the same to the same.

21 I mean -- sorry, rephrase it. I
22 didn't understand the question.

23 THE REPORTER: You want me to --

24 MR. WOFSY: Yes, please.

25 ///

1 (WHEREUPON, the pending question was
2 read back by the reporter.)

3 THE WITNESS: But a calender having
4 two nips is also defined as a multi-roll
5 calender. So I don't understand the question.

6 MR. WOFSY: Okay. Withdrawn.

7 Why don't we take a break?

8 (Short break.)

9 BY MR. WOFSY:

10 Q. Back on the record.

11 Remind you that you remain under
12 oath.

13 A. Yes.

14 Q. Okay. Turning back to Exhibit Number 9,
15 I'll refer you to the last page of the
16 document. And there's a section with a
17 heading, Experimental. Do you see that?

18 A. Yes.

19 Q. And in this section there is -- in the
20 third paragraph there's a reference to
21 conventional calendering. Do you see that?

22 A. Yes.

23 Q. And then there's a TG calendering below
24 that, correct?

25 A. Yes.

1 Q. Okay. And there's a set of nip loads
2 there?

3 A. Yes.

4 Q. Do you see those nip loads?

5 A. Yes.

6 Q. And what are they?

7 A. 20, 40, 60, 80, and 100 kilonewtons per
8 meter.

9 Q. And the nip loading there is applied to a
10 TG calender for what type of material sample?

11 A. I think it was the foodboard. I think
12 that it was called foodboard. Yeah, that's
13 right. A foodboard.

14 Q. And could you -- turning back to the page
15 we were just on. The last page there. At the
16 top of the Experimental paragraph there, it
17 talks about the type of samples that we used.
18 Do you see that?

19 A. Yes. The foodboard samples, yes.

20 Q. And are those samples materials that
21 contain wood particles?

22 A. I would say hard -- no.

23 Q. Why do you say that?

24 A. Traditionally we talk North America
25 foodboard would be made from a hundred percent

1 bleached sulfate pulp. Maybe I'm not sure if
2 it says -- but that's -- that's traditionally
3 what foodboard would be.

4 Okay. Actually it says -- actually
5 it says on the -- if you take the first
6 paragraph, the sized and unsized foodboard
7 samples were made from 100 percent bleached
8 kraft pulp. A mixture. I would say that's
9 typical American foodboard.

10 Q. Okay. And what is the acronym for
11 foodboard?

12 A. Doesn't have one.

13 Q. Doesn't have one?

14 A. No.

15 Q. Okay. All right. Going back to
16 Papermaking, which is Exhibit Number 4 --

17 A. Yes.

18 (Off-the-record discussions.)

19 BY MR. WOFSY:

20 Q. If you could turn to page -- if you could
21 turn to page 72 of Exhibit Number 4. And --
22 are you with me?

23 A. Just a second. It was printed both
24 sides.

25 Q. Yes.

1 A. That was efficient.

2 Okay. Page 22?

3 MR. BARNES: No.

4 BY MR. WOFSY:

5 Q. 72.

6 MR. BARNES: 72.

7 THE WITNESS: 72, yeah.

8 BY MR. WOFSY:

9 Q. Okay. And on page 72 there's a section
10 called Calendering Method. Do you see that?

11 A. Yes.

12 Q. And then a subheading Pre-Calendering.
13 Do you see that?

14 A. Yes.

15 Q. Then there are some lighter load values
16 there. Do you see those?

17 A. Yes.

18 Q. And what are they?

19 A. 10 to 40 kilonewtons per meter.

20 Q. Okay. In this instance what type of
21 paper grades are these being -- these nip
22 loadings applied to?

23 A. In this case they are referring to LVC
24 paper.

25 Q. LVC or LWC?

1 A. LWC. LWC, correct.

2 Q. And this section is called, what, 4.1.3?
3 What is this section called?

4 A. Coated wood containing paper grades.

5 Q. So is W -- excuse me.

6 Is LWC a wood-containing paper grade?

7 A. Yes, it can be. Yes.

8 Q. And what is MFC?

9 A. That's medium-weight coated. LWC is
10 low-weight coated. And MWC is medium-weight
11 coated.

12 Q. I see.

13 And both are wood-containing, coated
14 paperboard grades?

15 A. Yes.

16 MR. WOFSY: All right. I think this
17 is a fair time then to break for lunch. Why
18 don't we take an hour? Is that fine?

19 MR. BARNES: Yes.

20 (Short break.)

21 MR. WOFSY: Back on the record.

22 BY MR. WOFSY:

23 Q. We're back on the record, Mr. Zotterman.
24 And I'll remind you, once again, that you
25 remain under oath.

1 Did you enjoy your lunch?

2 A. Yes.

3 Q. Okay. Did you speak with counsel about
4 your testimony during lunch?

5 A. No.

6 Q. What did you speak about?

7 A. Well, we discussed the city and the new
8 buildings here and the new companies coming
9 into Nashville.

10 Q. Fair enough.

11 A. Yeah.

12 Q. All right. I'm going to be referring
13 back to Exhibit Number 4. And when we last
14 were discussing Exhibit Number 4, we were
15 referring to page 72. And the nip loading on
16 page 72. And that nip loading was 10 to 40
17 kilonewtons per meter, correct?

18 A. Yes.

19 Q. And was that the nip loading that you
20 referred to earlier in your declaration that
21 had an incorrect calculation associated with
22 it?

23 A. (No verbal response was heard.)

24 Q. If I remind you, your declaration is
25 Exhibit Number 5.

1 A. Yes.

2 Q. And Exhibit Number 5 at Paragraph 119.

3 A. Just a second.

4 (Reviews documents.)

5 Yes.

6 Q. Okay. So that was the range there from
7 10 to 40 kilonewtons per meter that is found on
8 Paragraph 119 of Exhibit Number 5, correct?

9 A. Yes.

10 Q. Okay. Then you go on in your paragraph
11 to discuss a linear load that may even exceed
12 100 kilonewtons per meter at 571 PLIs. Do you
13 see that?

14 A. Yes.

15 Q. And you refer to page 82 of
16 Exhibit Number 4, correct?

17 A. Now, we're jumping to page 82, yes?

18 Q. Yes, sir.

19 A. Okay. That's in the beginning. A modern
20 cartonboard line, as a rule, has one hard-nip
21 pre-calendar before the coating section. Is
22 that the part?

23 Q. Yes.

24 And then continuing on, I guess,
25 about three or four lines down, you refer to a

1 hundred kilonewtons per meter. Do you see
2 that?

3 A. Yes.

4 Q. And that's the 100 kilonewtons per meter
5 you refer to in Paragraph 119, correct?

6 A. Yes.

7 Q. Now, when the Papermaking reference talks
8 about 100 kilonewtons per meter, what type of
9 material is it referring to with that nip
10 loading?

11 A. Well, if you take this first section,
12 again, a modern cartonboard line, as a rule,
13 has one hot-hard nip pre-calender before the
14 coating section, especially in Asia. High
15 thermo roll temperatures, and in some cases
16 over 200 centigrades, result in bulk savings.
17 The linear nip load may even -- may even exceed
18 a hundred. Yes?

19 Q. Right.

20 So that nip load was associated with
21 cartonboards. But the nip load range that he
22 referred to at page 72 of 10 to 40 kilonewtons
23 per meter, that was associated with
24 wood-containing, coated paperboard grades,
25 correct?

1 A. No, I don't think so.

2 Q. Why don't we take a look at page 72 then?

3 A. Okay.

4 Q. Yeah, it's stapled in a bad place.

5 A. Okay. Please, rephrase the question.

6 MR. WOFSY: Would you read back,
7 please?

8 (WHEREUPON, the pending question was
9 read back by the reporter.)

10 MR. WOFSY: All right. I've got it.
11 I'll rephrase.

12 BY MR. WOFSY:

13 Q. So the nip loading on page 72 --

14 A. Yes.

15 Q. -- of 10 to 40 kilonewtons per meter
16 refers to coated, wood-containing paperboard
17 grades, correct?

18 A. Yes.

19 Q. And the nip loading of 100 kilonewtons
20 per meter on page 82 relates to cartonboards,
21 correct?

22 A. Yes. Yes.

23 Q. Okay. We're going to turn to
24 Paragraph 63 of your declaration, which is on
25 page 23. Can you review that paragraph, and

1 then I'm going to ask you some questions about
2 it.

3 A. (Reviews documents.)

4 Okay.

5 Q. All right. So in the second sentence of
6 Paragraph 63, you state, in particular, the
7 specification contrasts hot-hard calendering at
8 nip loads ranging from 90 PLI to 140 PLI and
9 roller surface temperatures from 480 to 500
10 degrees F with what it calls traditional
11 calendering at nip loads of 350 PLI and roller
12 surface temperatures of 300 degrees F.

13 That is what you state, correct?

14 A. Yes.

15 Q. Do you agree with that statement, as you
16 sit here today?

17 A. Yes.

18 Q. So are you aware of anything in the prior
19 art involved in these proceedings that has a
20 hot-hard calender with nip loads ranging from
21 90 to 140?

22 MR. BARNES: Object to the form.

23 BY MR. WOFSY:

24 Q. You can answer.

25 A. Yes. In fact, the -- my experience from

1 the mill where I've been working, there is an
2 installation in KM8 at Skoghall, which started
3 up in 1997; has a hot-hard calender operating
4 in that range and with a roller temperature --
5 I'll check again -- 480 to 50 Fahrenheits.
6 That's -- no, that was wrong again.

7 400 -- no.

8 So please rephrase the question again
9 so I get this right.

10 Q. Absolutely.

11 Well, first of all, we were talking
12 about nip loading?

13 A. Yes.

14 Q. So I asked you if you're aware of any of
15 the prior art references that have been of
16 record in these proceedings, this IPR
17 proceeding, if you're aware of any reference in
18 this proceeding where there is a nip load range
19 from 95 PLI to 140 PLI for a hot-hard calender?

20 A. Papermaking is -- now, I have to check
21 here. Isn't that -- let me see now.

22 (Reviews documents.)

23 Just a second. I have to find the
24 cartonboard section.

25 (Reviews documents.)

1 Okay. I'll have to get back here.

2 (Reviews documents.)

3 In this 82, the section in the
4 beginning, a modern cartonboard line has only
5 one hot-hard nip pre-calender before the
6 coating section. High thermo roll
7 temperatures, in some cases over 200, result in
8 bulk savings because of the temperature
9 gradient. The linear nip load may even exceed
10 100 kilonewtons per meter.

11 Q. Which is 571 PLI, correct?

12 A. Yes.

13 Q. So I restate the question.

14 Are you aware of any prior art
15 references in this proceeding where there's a
16 nip load of between 90 PLI to 140 PLI?

17 A. What about Gratton?

18 (Reviews documents.)

19 Now we're talking about ranges.

20 Q. Uh-huh.

21 A. You have to state the question again.

22 I'm sorry about that.

23 MR. WOFSY: (Gesturing.)

24 (WHEREUPON, the pending question was
25 read back by the reporter.)

1 THE WITNESS: Yes. And that would
2 need to convert that into kilonewtons per
3 meter. Because isn't it so that the Gratton,
4 for example, 20, 40, 60, and 80 kilonewtons?

5 BY MR. WOFSY:

6 Q. Gratton is in kilonewtons, yes.

7 A. 20 kilonewtons, for example, that's 140
8 PLI.

9 Does that answer your question?

10 Q. Yes.

11 And Gratton is a temperature gradient
12 calendering that has two heated rolls --

13 A. Yes.

14 Q. -- correct?

15 A. Yes.

16 Q. All right. Now, same question. Are you
17 aware of any prior art that's in these
18 proceedings where they have a nip load range of
19 90 PLI to 140 and roller surface temperatures
20 of 480 to 500 degrees F, as you state in your
21 Paragraph 63?

22 A. I have to go back to Gratton. Don't they
23 also have that?

24 Q. Gratton teaches 210 degrees C --

25 MR. BARNES: Object to the form.

1 BY MR. WOFSY:

2 Q. -- correct?

3 A. You went too fast. You'll have to repeat
4 the question again.

5 MR. BARNES: There's a couple
6 pending.

7 THE WITNESS: Sorry.

8 MR. BARNES: Just go -- just pick
9 one. I think there's two pending.

10 BY MR. WOFSY:

11 Q. So -- that's okay.

12 If you can look at Paragraph 63 of
13 your opinion, of your declaration, please.

14 A. Yes. Good.

15 Q. And the second sentence of Paragraph 63.

16 A. 63. Uh-huh.

17 Q. Okay. The second sentence -- that's what
18 we've been focusing on -- talks about the nip
19 loading range of 90 PLI to 140. Do you see
20 that?

21 A. Yes.

22 Q. And it talks about roller surface
23 temperatures from 480 to 500 degrees F. Do you
24 see that?

25 A. Yes.

1 Q. And I'm asking you if you are aware of
2 any prior art references involved in these
3 proceedings that have a hot-hard calender with
4 that nip loading range and that temperatures,
5 that range?

6 A. Okay. So this is from the patent.

7 Q. When you say the patent, are you
8 referring to the 142 patent?

9 A. Yes, 140 -- yes. 42.

10 Q. 142 patent?

11 A. Yes.

12 MR. WOFSY: I'm going to mark for the
13 record as Exhibit Number 10 --

14 THE REPORTER: Yes.

15 MR. WOFSY: -- US Patent Number
16 11,293,142, which is the patent involved in
17 this IPR.

18 (WHEREUPON, the above-mentioned
19 document was marked as Exhibit 10.)

20 BY MR. WOFSY:

21 Q. Okay. So I just handed you what has now
22 been marked Exhibit Number 10, which is US
23 Patent Number 11,293,142.

24 A. Yes.

25 Q. And you -- your previous statement said

1 that the ranges that we were talking about in
2 Paragraph 63 are from the patent. Were you
3 referring to the patent that has now been
4 marked as Exhibit Number 10?

5 A. Yes.

6 Q. Okay. Now, are you familiar with any
7 prior art references that are involved in these
8 proceedings where there is roller surface
9 temperatures in the range of 480 to 500 degrees
10 F?

11 A. In the range?

12 Q. 480 to 500.

13 A. Okay.

14 (Reviews documents.)

15 Yes, Gratton.

16 Q. Gratton teaches 480 to 500?

17 A. It's 250 centigrades, which is 482.

18 Q. Where do you see 250 centigrades?

19 A. Here on the first diagram, on Number --
20 page 81. It says 250, temperature Z.

21 Q. That's for a scale on the X axis,
22 correct?

23 A. Sorry? No, that's the roll temperature.

24 Q. Isn't the roll temperature shown in the
25 figure next to that diagram, 210 degree C?

1 A. Okay. Yes, you're right. You are
2 correct.

3 Q. So Gratton does not teach a roller
4 surface temperature between 480 and 500,
5 correct?

6 A. Well, if you look at that diagram, it's
7 not farfetched to -- to also run 250. I mean,
8 he hasn't given an example of 210. But to -- I
9 mean, he has shown that going from 50 to 210 as
10 a specific increase in possibility in bulk.

11 Now, if you look at this and you see
12 that it even indicates 250 as a possible
13 temperature here for the roll surface, I would
14 say that's for -- with a reasonable background,
15 it would not be difficult to assume and take
16 that step to 250. And that's within the range.

17 Q. I'm going to ask if you can turn to
18 Exhibit Number 10, which is the 142 patent.

19 A. Yes.

20 Q. And if you could turn to Claim 3 of the
21 142 patent, which is found at Column 12.

22 A. Claim 3, yes.

23 Q. Do you know why Claim 3 was not
24 challenged in this IPR?

25 MR. BARNES: Object to the form.

1 THE WITNESS: You have to explain
2 what you mean by that.

3 BY MR. WOFSY:

4 Q. So in your declaration --

5 MR. BARNES: Object to the form. I
6 think it's outside his declaration.

7 MR. WOFSY: That's what I'm going to
8 get to.

9 MR. BARNES: I think I just did. But
10 okay.

11 BY MR. WOFSY:

12 Q. Okay. So in your declaration, you don't
13 discuss Claim 33, correct?

14 Excuse me. Withdrawn.

15 In your declaration, you don't
16 discuss Claim 3 of the 142 patent, correct?

17 A. Correct.

18 Q. Why?

19 MR. BARNES: Object to the form.

20 THE WITNESS: 500 Fahrenheit is 260.

21 MR. BARNES: I'll state for the
22 record that as an expert witness, he wasn't
23 instructed to look at Claim 3. It wasn't a
24 decision. It was a Petitioner's decision.

25 MR. WOFSY: I'm just asking if he

1 knows why.

2 MR. BARNES: You asked why "he," but
3 why it wasn't done. I think that's a nuanced
4 question. He wasn't instructed to.

5 BY MR. WOFSY:

6 Q. Are you aware of any prior art in this
7 proceeding that would impact Claim 3 of the 142
8 patent?

9 MR. BARNES: Same objections. And
10 outside of his declaration.

11 BY MR. WOFSY:

12 Q. So Claim 3 talks about a temperature of
13 500 degrees F, correct?

14 A. Yes.

15 Q. And Paragraph 63 of your declaration
16 talks about 500 degrees F, correct?

17 A. Yes.

18 Q. So 500 degrees F is totally within the
19 scope of your declaration, correct?

20 MR. BARNES: Object to the form,
21 foundation. Paragraph 63 -- pardon the
22 speaking objection -- is citing from the
23 patent, correct?

24 BY MR. WOFSY:

25 Q. I'm talking about Paragraph 63, page 23,

1 of your declaration, which is why we're here
2 today. And you talk about 500 degrees F,
3 correct?

4 MR. BARNES: Which is citing the
5 patent, correct?

6 Objection.

7 THE WITNESS: Uh-huh.

8 BY MR. WOFSY:

9 Q. Are you aware of any prior art of record
10 in this case where there's roller surface
11 temperatures of 500 degrees F?

12 MR. BARNES: Object to the form.
13 Outside the scope for which he was retained to
14 testify.

15 BY MR. WOFSY:

16 Q. You can answer.

17 MR. BARNES: If you know.

18 THE WITNESS: Should I answer?

19 BY MR. WOFSY:

20 Q. Yes.

21 A. Well, I may need some time to find it.
22 But if I remember correctly, it's actually
23 indicated in Papermaking.

24 Q. Papermaking?

25 A. Yes. As to -- because when you -- yes.

1 I think it's listed somewhere, the different
2 methods of heating a hot-nip calender. And
3 they're even higher, I think, it states. And
4 maybe that's not quantifying in exact numbers.
5 But higher temperatures, yeah.

6 Q. Okay. Sticking with the Exhibit Number
7 9, you -- which is the Gratton reference?

8 A. Yes.

9 Q. Exhibit Number 9 was Gratton?

10 A. Yes. Yes.

11 Q. And then looking at Gratton together with
12 Fugitt, which was Exhibit Number 6.

13 A. Okay.

14 MR. BARNES: Hold on. Give me one
15 second.

16 MR. WOFSY: I'm sorry.

17 MR. BARNES: No, you're fine. I just
18 need to catch up.

19 6 and 9?

20 MR. WOFSY: Yes, sir.

21 MR. BARNES: Okay. Got it.

22 BY MR. WOFSY:

23 Q. If you could turn to Figure 11.

24 MR. BARNES: In which one?

25 MR. WOFSY: In Exhibit Number 6,

1 which is the Fugitt reference.

2 BY MR. WOFSY:

3 Q. Would you characterize the calender,
4 Number 36 in Figure 11, to be a multi-roll
5 calender?

6 A. Yes.

7 Q. Why is that a multi-roll calender?

8 A. Because there are multi rolls.

9 Q. And is the calender designated by
10 Number 36 in Figure 11 of Fugitt different than
11 the temperature gradient calender that is shown
12 in Exhibit Number 9, Gratton?

13 MR. BARNES: On which page?

14 MR. WOFSY: On the front page of
15 Exhibit Number 9.

16 THE WITNESS: The calender, as it is
17 drawn in Figure 11, is different from the
18 calender that is shown in the -- on first page,
19 81.

20 BY MR. WOFSY:

21 Q. And would it have been -- how difficult
22 would it have been for a person of ordinary
23 skill in the art to take the teachings of
24 Gratton and combine them with Fugitt, which is
25 teaching a multi-roll calender?

1 A. Well, I think you have to go more deeper
2 into Fugitt's description. Because I think
3 that he actually says that there could be less
4 rolls than the -- than this drawing.

5 But apart from that, it's also
6 taught in Papermaking that you can actually
7 take the sum of the loads of the calender stack
8 like that, and if you reduce the rolls and
9 increase the loads, you can actually -- I would
10 say that today you would build calenders or
11 maybe from -- even from '97 then, you would not
12 build calenders like that. You would build
13 them with just one nip. But you would also
14 have the possibility to run the high nip loads.

15 So what Papermaking is teaching is
16 that you can exchange a multi-roll calender
17 with a calender with less rolls, even down to a
18 one nip calender. But then you have to
19 increase the load. And I think it says that
20 you can sum the loads in this calender stack,
21 and then they would give the same result, in
22 terms of thickness and surface.

23 Q. And how would one do that from the
24 standpoint of machine design, which you are
25 familiar with, based on your prior experience?

1 A. Well, I would say that today would just
2 supply a two-roll calender. I think these are
3 getting very rare, the calender stacks.

4 MR. BARNES: And for the record, just
5 what the witness has been referring to in the
6 last two answers is Figure 11.

7 THE WITNESS: Yes.

8 MR. WOFSY: We're talking about
9 Figure 11.

10 MR. BARNES: That's what he's been
11 pointing to.

12 THE WITNESS: Yes.

13 BY MR. WOFSY:

14 Q. And what would the capital cost be
15 associated with converting the device shown in
16 Figure 11 of Fugitt to a device that
17 incorporated a temperature gradient, two-roll
18 calender as shown in Gratton?

19 A. We talk about some hundred thousands of
20 dollars. But I would say that the improved
21 performance would make that an easy decision.

22 MR. WOFSY: All right. We're going
23 to take a break now and see if we have anything
24 else to go through. And then we may call it a
25 day.

1 MR. BARNES: Sure. Thank you.

2 MR. WOFSY: Off the record.

3 (Short break.)

4 MR. WOFSY: Back on the record.

5 BY MR. WOFSY:

6 Q. Mr. Zotterman, I only have a couple of
7 more questions for you. And it's about nip
8 loading.

9 A. Okay.

10 Q. All right. We looked at Exhibit Number 4
11 earlier today, which is the Papermaking
12 reference. And we saw a nip load range of 10
13 to 40 kilonewtons per meter. Do you recall
14 that?

15 A. Yes.

16 Q. Are you aware of any references,
17 including Papermaking or any other reference in
18 these proceedings with a nip load for
19 paperboard substrates less than 10 kilonewtons
20 per meter?

21 A. No.

22 Q. Okay. Same question but I'm going to
23 switch it around a little bit. And I'm going
24 to ask you if you're aware of any references in
25 these proceedings, in prior art references in

1 these proceedings, where there is a nip loading
2 range for paperboard substrates that runs from
3 20 PLI to 90 PLI?

4 MR. BARNES: Can I ask you to do the
5 conversion or provide him with the conversion
6 table?

7 MR. WIREN: For PLI.

8 MR. WOFSY: For PLI?

9 MR. BARNES: Yes.

10 BY MR. WOFSY:

11 Q. So 10 PLI, if you recall, was 57 --
12 excuse me -- 10 kilonewtons per meter was 57.1
13 PLI, according to your correction earlier
14 today, correct?

15 A. Okay. Let me just take a note here.

16 So please repeat.

17 Q. So we talked about the correction to your
18 declaration --

19 A. Yes.

20 Q. -- earlier today?

21 A. Yes, yes.

22 Q. And you corrected the range as being 57.1
23 to 228.6 PLI?

24 A. 57 point --

25 Q. 1.

1 A. -- 1.

2 Q. To 22.8 -- excuse me, 228.6 --

3 A. 228.6 --

4 Q. -- PLI?

5 A. -- PLI.

6 So that's the range, yes.

7 Q. So that was the range that we calculate

8 --

9 MR. BARNES: 10.

10 BY MR. WOFSY:

11 Q. -- of 10 to 40, correct?

12 A. 10 to 40 kilonewtons, yes.

13 Q. That corresponds to the nip load of 57.1
14 to 228.6 PLI?

15 A. Yes.

16 Q. Okay. Now I'm asking you, for a
17 paperboard substrate, are you aware of any --
18 of a nip load range of 20 PLI to 90 PLI within
19 any of the prior art references that are
20 involved in these proceedings?

21 A. It's a common nip load for a calender in
22 that position. But I have to look through the
23 references. I cannot just, by heart, say that
24 it's here or there, you know.

25 But this is a common range that's

1 used in the pre-calendar, hot calender, and
2 boardmaking. But I'm not hundred percent in
3 all this material what it is.

4 MR. WOFSY: Okay. I have no further
5 questions. The witness is tendered.

6 (Brief conference between attorneys.)

7 MR. WOFSY: Your witness.

8 MR. BARNES: Thank you.

9
10 EXAMINATION

11 QUESTIONS BY MR. BARNES:

12 Q. Mr. Zotterman, I have a couple questions.

13 Right before the last break you were
14 asked about Figure 11 and the numbers of rolls.
15 Do you recall that testimony?

16 A. Yes.

17 Q. And you made reference to a teaching in
18 Fugitt, which is Exhibit 6. Do you recall
19 making the reference to Fugitt?

20 A. Yes. It was comparing a multi-roll
21 calender with a single-roll calender.

22 Q. If I ask you to go to Exhibit 6, can you
23 find and provide us with the teaching or the
24 reference that you were referring to?

25 A. Just a second. It's in this paper here.

1 (Reviews documents.)

2 Yeah, it's in detailed description.

3 It's 37. It's in the Section 26. I think it's
4 the final sentence. The nip loads and number
5 of nips of the calender may be substantially
6 reduced to minimize or avoid reduction in
7 caliper thickness.

8 Q. Okay. Thank you.

9 I want to switch gears and make sure
10 that the record is clear.

11 What is your opinion of testimony for
12 the maximum temperature for heating with steam?

13 A. That would be typically 170 Celsius.

14 Q. Which according to the chart is what
15 Fahrenheit?

16 A. 338.

17 Q. Thank you.

18 MR. BARNES: That's all we have.

19 MR. WOFSY: All right. Well, thank
20 you very much, Mr. Zotterman.

21 THE WITNESS: Okay. Thank you.

22 MR. WOFSY: Hope this wasn't too
23 painful for you.

24 THE WITNESS: No, that's okay.

25 THE REPORTER: Do you want to order

1 the transcript?

2 MR. WOFSY: Yes.

3 THE REPORTER: And do you-all want a
4 copy?

5 MR. BARNES: Yes, we do.

6 FURTHER DEPONENT SAITH NOT

7 (Proceedings concluded at 1:38 p.m.)

E R R A T A P A G E

I, CARL ZOTTERMAN, having read the foregoing deposition, Pages 1 through 116, do hereby certify said testimony is a true and accurate transcript, with the following changes (if any):

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CARL ZOTTERMAN

Notary Public

My Commission Expires: _____

C E R T I F I C A T E

STATE OF TENNESSEE

COUNTY OF SUMNER

I, JEANNIE CHAFFIN, Licensed Court Reporter, with offices in Portland, Tennessee, hereby certify that I reported the foregoing deposition of CARL ZOTTERMAN by machine shorthand to the best of my skills and abilities, and thereafter the same was reduced to typewritten form by me.

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