

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

NICHOLSON MANUFACTURING, LTD. PETITIONER

VERSUS CASE NO. PGR2025-00081
U.S. PATENT NO. 12,163,947

BID GROUP TECHNOLOGIES, LTD. PATENT OWNER

ZOOM VIDEOTAPED DEPOSITION OF

RUBIN SHMULSKY, PH.D.

APPEARANCES NOTED HEREIN

DATE: JUNE 23, 2026
PLACE: HILTON GARDEN INN
975 MS-12
STARKVILLE, MISSISSIPPI
TIME: 9:17 A.M.

REPORTED BY: TODD J. DAVIS
CSR #1406

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1 VIDEOGRAPHER: Good afternoon. This is
2 the videotaped deposition of Mr. Rubin
3 Shmulsky, taken by counsel in the matter of
4 Nicholson Manufacturing, LTD versus Bid Group
5 Technologies, LTD.

6 Today's date is June the 23rd, 2026.
7 The time is now 9:17 a.m.

8 Counsel may now introduce themselves on
9 the record. And afterwards the court
10 reporter can swear in the witness.

11 MR. DANLEY: Jeff Danley from Seed IP
12 for Petitioner Nicholson Manufacturing.

13 MS. BURKS: Caroline Burks for Patent
14 Owner BID Group. I am joined on Zoom by
15 Pierre Faucher with BID Group and Philippe
16 Brouillette with Brouillette Legal.

17 COURT REPORTER: Okay. I will go ahead
18 and swear in the witness.

1 RUBIN SHMULSKY, PH.D.,
2 having been first duly sworn, was examined and
3 testified under oath as follows:

4 EXAMINATION BY MR. DANLEY:

5 Q. Good morning.

6 A. Good morning.

7 Q. Could you state your name for the
8 record?

9 A. Rubin Shmulsky.

10 Q. Professor Shmulsky, have you been
11 deposed before?

12 A. Yes.

13 Q. How many times?

14 A. Approximately 30.

15 Q. Have you been deposed before with
16 respect to patent cases?

17 A. Yes.

18 Q. About how many times for that?

19 A. Approximately five.

20 Q. So I'm going to go over some points that
21 I'm sure that your attorney has gone over with you
22 or you have picked up from previous depositions,
23 but just to make sure we are on the same page. Is
24 that fine?

25 A. Yes, sir.

1 Q. So, first of all, as you can see, the
2 court reporter is taking down everything that we
3 say. So I would ask so that the record is clear
4 and to make his job easier, that we not speak over
5 each other. Is that acceptable?

6 A. It is.

7 Q. So, I would just ask that you let me
8 finish asking my question before you provide the
9 answer even if you know what the answer is already
10 going to be. And likewise, when you are providing
11 your answer, I'll try to let you finish before I
12 ask the next question. Is that okay?

13 A. Yes.

14 Q. From time to time, your counsel may make
15 objections to questions that I ask. What I would
16 ask of you is that as long as you can provide an
17 answer to the question and understand the
18 question, that you go ahead and provide an answer.
19 Is that fair?

20 MS. BURKS: Objection. The only
21 critique I'll have on that is with privilege
22 objections.

23 MR. DANLEY: I understand.

24 MS. BURKS: But I'm sure we don't have
25 any concern there.

1 BY MR. DANLEY:

2 Q. Is that fair what I said?

3 A. It is.

4 Q. So as your counsel said, if she
5 instructs you specifically not to answer, based on
6 privilege, then I will ask you if you're going to
7 follow your counsel's suggestion. Okay?

8 A. I understand.

9 Q. So, about every hour I'll try to take a
10 break. If you do need to take a break beforehand,
11 just let me know. All I ask is that if there is a
12 question pending, that you provide an answer or a
13 response and then we can take a break. Okay?

14 A. Yes, sir.

15 Q. Did you prepare for today's deposition?

16 A. Yes.

17 Q. About how long did you prepare for -- or
18 strike that.

19 What did you do to prepare for
20 today's deposition?

21 A. I reread my declaration, the 947 patent
22 and several other case file materials and met with
23 Ms. Burks.

24 Q. About how long did you prepare for
25 today's deposition in total?

1 A. About six to eight hours.

2 Q. And how many times did you meet with
3 Ms. Burks to prepare for today's deposition?

4 A. Once.

5 Q. When was that?

6 A. Yesterday.

7 Q. And about how long did y'all meet
8 yesterday?

9 A. Approximately three hours.

10 Q. And just a "yes" or "no" answer to this
11 question. Did you review any documents during the
12 time that you spent with Ms. Burks?

13 A. Yes.

14 Q. And a "yes" or "no" answer to this
15 question. Did any of the documents you reviewed
16 yesterday refresh your recollection?

17 A. Yes.

18 Q. Okay. Now, I just want you to focus on
19 those documents to refresh your recollection. Can
20 you identify those documents for me?

21 A. My declaration. Are you asking which
22 documents we reviewed? Which ones --

23 Q. No, no, no, no. Just which ones -- of
24 the ones you reviewed, which of those refreshed
25 your recollection?

1 A. My declaration. And I think that's it.

2 Q. Okay. And with respect to your
3 declaration, what about reviewing your declaration
4 refreshed your recollection or how was your
5 recollection refreshed?

6 A. It was refreshed that -- to the extent I
7 brought to the -- closer to the front of my memory
8 the content of the declaration.

9 Q. Was there any particular content that
10 you recall being brought to the forefront of your
11 memory or recollection?

12 MS. BURKS: I'm just going to caution
13 you to not discuss our conversations, but you
14 can discuss the document itself.

15 A. None in particular.

16 BY MR. DANLEY:

17 Q. When was the last time you reviewed your
18 declaration before yesterday?

19 A. The day before yesterday.

20 Q. All right. So let me ask a better
21 question. So when was the last time you reviewed
22 your declaration before preparing for today's
23 deposition?

24 A. When I wrote it.

25 Q. And when you wrote your declaration,

1 about how long did you spend working on that
2 document?

3 A. I don't recall.

4 Q. Can you give me a ballpark?

5 A. No.

6 Q. Was it more than 25 hours?

7 A. I think I have less than 25 hours all
8 in, so it was less than that.

9 Q. And do you know about how many or --
10 strike that.

11 So I have that you signed your
12 declaration May 13th of 2026. Does that sound
13 about right?

14 A. Yes, that sounds about right.

15 Q. Can you tell me when you were engaged to
16 work on this declaration?

17 A. To my recollection, sometime this
18 spring.

19 Q. So at least a month before working on
20 the declaration; is that fair?

21 A. I don't recall exactly.

22 Q. Okay. And do you keep billing records
23 to submit to the group?

24 A. Yes.

25 Q. And do you recall about how much time

1 you have charged to BID Group for this project?

2 A. Approximately 20 to 25 hours.

3 Q. Does that include the prep time for
4 today's deposition?

5 A. It does not.

6 Q. Do you recall about how much you have
7 been paid so far for working on this project?

8 A. Yes.

9 Q. And can you provide that number to me?

10 A. Yes.

11 Q. And what is that number?

12 A. Zero. Check is in the mail.

13 Q. Do you recall about how much -- well, do
14 you recall about how much you have charged to BID
15 Group for work on this project?

16 A. To my recollection, I billed somewhere
17 between eight and \$10,000.

18 Q. So I'm going to go ahead and introduce
19 to you what has previously been marked as Exhibit
20 2037. And it is your declaration.

21 A. Thank you.

22 MR. DANLEY: Want a copy?

23 MS. BURKS: I don't need a copy.

24 BY MR. DANLEY:

25 Q. And take as much time to review it as

1 you need to and let me know when you are ready for
2 questions.

3 A. I'm ready.

4 Q. Do you recognize this document?

5 A. I do.

6 Q. What is this document?

7 A. My declaration.

8 Q. And as I mentioned earlier, you signed
9 your declaration mid May of 2026; is that correct?

10 A. That is correct.

11 Q. And does this declaration provide the
12 full extent of opin- -- of the opinions that you
13 are going to be providing in this matter?

14 A. Yes, to my knowledge, at this time.

15 Q. Are there any additions or corrections
16 to the declaration that you would like to make?

17 A. Yes.

18 Q. And what is that?

19 A. Paragraph 1 --

20 Q. Uh-huh (affirmative response).

21 A. -- states I reside in Starkville,
22 Missouri. That's a typo. I would like to change
23 that to Mississippi.

24 And I have one other, but I don't
25 remember what paragraph it is in. It has to do

1 with the evolution of softwoods versus hardwoods.
2 And I have a wrong word. Essentially it says
3 softwoods evolved more recently. And it should be
4 hardwoods evolved more recently. But I don't
5 remember what paragraph that's in.

6 Q. If you look at paragraph, I think, it is
7 around 78 or 79.

8 A. Yeah.

9 Q. I think 80 is actually the paragraph you
10 are talking about.

11 A. Correct.

12 Q. Okay. And which -- what correction
13 would you like to make to paragraph 80?

14 A. I think the easiest correction would be
15 replace the word "more" with the word "less."

16 "As a result, there are less recent
17 evolution. Softwoods have a simpler and more
18 primitive basic structure."

19 Q. Thanks for reading that, because there
20 are a couple of mores in there, so...

21 Any other corrections you would
22 like to make?

23 A. No.

24 Q. Okay. So if I can direct your attention
25 to your background section, to the extent that you

1 need to reference it.

2 Can you describe your background
3 for me as it relates to this -- this matter?

4 A. Starting with education?

5 Q. Wherever you would like to start.

6 A. I have a Bachelor of Science degree from
7 University of Massachusetts in Building Materials
8 and Wood Technology. Master of Science degree in
9 Forest Products from Mississippi State University.
10 Ph.D. in Forest Resources with a concentration in
11 forest products from Mississippi State University.
12 And during graduate school and since graduate
13 school I have worked in the field of wood
14 processing.

15 Q. When did you get your bachelor's degree
16 from the University of Massachusetts?

17 A. 1995.

18 Q. Did you take any classes at the
19 University of Massachusetts related to computer
20 programming?

21 A. I don't recall.

22 Q. Do you recall if computer programming
23 was a required course to take as part of your
24 degree at the University of Massachusetts?

25 A. I don't recall.

1 Q. And when did you get your master's
2 degree from Mississippi State?

3 A. 1996.

4 Q. Do you recall if you took any courses at
5 Mississippi State for your master's degree that
6 related to computer programming?

7 A. I took an electrical applications course
8 and a bioinstrumentation course. Both of which
9 dealt with programming for machine control and
10 PLCs. So they were computer programming with
11 specific reference to controlling wood products
12 machinery.

13 Q. Was that one course or two separate
14 courses?

15 A. Electrical application was one and then
16 the -- there is two bioinstrumentation courses,
17 one and two. And I rolled them together and did
18 that as a special topics course.

19 Q. So for those three courses that you
20 took, were those required courses for your degree
21 at Mississippi -- Mississippi State?

22 MS. BURKS: Objection. Misstates
23 testimony.

24 A. They were courses I took. And there's
25 not a set of required courses for each student,

1 but those were chosen in concert with my
2 committee, so they required them.

3 BY MR. DANLEY:

4 Q. And when did you get your Ph.D. from
5 Mississippi State?

6 A. 1998.

7 Q. And did you take any courses as part of
8 getting your Ph.D. or was it just research?

9 A. I took courses.

10 Q. Do you recall if you took any courses
11 related to computer programming to get your Ph.D.?

12 A. The -- not in addition to the courses
13 I've already mentioned. But one or both of those
14 might have been in support of a Ph.D.

15 Q. How related is the building materials
16 degree that you got from the University of
17 Massachusetts to the degrees you got at
18 Mississippi State? I'm just trying to understand
19 what is the relationship, if any, or overlap
20 between building materials and the degree -- the
21 focus at Mississippi State?

22 A. The degree in building materials and
23 wood technology was a -- basically, half forest
24 products degree and half building materials supply
25 chain degree. So the building materials or the

1 forest products and wood technology component did
2 have overlap for that at Mississippi State has it
3 included, wood treating, wood gluing, wood
4 processing, sawing, et cetera.

5 Q. Okay. Do you currently teach courses at
6 Mississippi State?

7 A. No, I don't.

8 Q. Do you currently teach courses anywhere?

9 A. No.

10 Q. When was the last time you taught
11 courses at a university as a professor?

12 A. Probably two years ago.

13 Q. And for how long had you been teaching
14 courses up until then?

15 A. I started teaching university level
16 courses during my Ph.D., so probably 1997 is when
17 I started.

18 Q. So looking back over the courses you
19 taught in your career as a professor, did any of
20 those courses involve computer programming?

21 A. To the extent that that relates to
22 machine control, yes.

23 Q. About how many courses did you take or
24 -- strike that.

25 About how many courses did you

1 teach as a professor that involved machine
2 control?

3 MS. BURKS: Objection. Vague.

4 A. Kiln dry, lumber manufacturing, wood
5 composites and furniture making each have an
6 aspect to that, so the four. And intro to wood
7 technology has an introduction to that, so five.

8 BY MR. DANLEY:

9 Q. Okay. And when I was looking at your --
10 the description of your background, in your
11 declaration, I didn't see anything related to
12 artificial intelligence. Is there -- did I miss
13 something?

14 A. That's -- I don't remember if I stated
15 that in my background or not.

16 Q. Do you have experience in -- if I use
17 "AI," you understand what I am referring to?

18 A. Yes.

19 Q. Okay. Do you have a background or
20 experience in AI as it relates to your
21 professional or your role as a professor?

22 A. Yes.

23 Q. And can you describe for me that
24 experience related to AI?

25 A. Sure. As a professor and as department

1 head in the forest products and then sustainable
2 bio products program, we have a wood
3 identification program. And I have worked with
4 several faculty and a couple of different teams to
5 promote and advance AI based wood identification,
6 speciation.

7 Q. And from that description, I take it is
8 that more research focused?

9 A. It's research with the intent of
10 application.

11 Q. Okay. And am I correct in understanding
12 is that this is not related to building out, for
13 example, a class or a course at Mississippi State;
14 is that correct?

15 A. It is in conjunction with a class,
16 because we have a wood identification class. And
17 now the AI aspects and the automated wood
18 identification are a component of the class.

19 Q. Is that an undergraduate level class or
20 a graduate level class?

21 A. Split level. Both.

22 Q. Okay. When did -- or strike that.
23 Is that class currently being
24 offered to students at Mississippi State?

25 A. Yes.

1 Q. How long has it been offered to students
2 there?

3 A. The wood anatomy and identification
4 course has been offered as long as we have had a
5 program, so 45 years.

6 Q. How about with respect to the AI
7 component you were describing?

8 A. That has --

9 Q. How long has that been offered?

10 A. -- crept in during the last five to six
11 years.

12 Q. So I want to direct your attention to
13 page 15 of your report. And in particular
14 paragraph 40.

15 And in that paragraph, you state,
16 "I note that the petition, including the evidence
17 it cites appears to refer to other issues
18 regarding which I have not been asked to provide
19 my opinions." Do you see that?

20 A. I do.

21 Q. And I wanted to ask you with respect to
22 these other issues, do you know or can you
23 describe for me what those other issues are?

24 MS. BURKS: Objection. To the extent
25 that the question calls for privilege,

1 please, do not discuss the contents of your
2 communication with counsel. But otherwise,
3 you may answer.

4 A. I don't recall specifically what they
5 are. So my opinions are those contained in the
6 declaration.

7 BY MR. DANLEY:

8 Q. I assume, though, when you wrote this
9 sentence, you did have an idea what those other
10 issues are?

11 A. Yes.

12 Q. But over the past month you've forgotten
13 what those issues would be?

14 A. Yes.

15 Q. So do you recall -- or strike that.

16 You reviewed the petition in order
17 to or as part of preparing to write your
18 declaration; is that correct?

19 A. Yes.

20 Q. Do you recall if the petition had a
21 section related to patentability or section 101 of
22 the patent law?

23 A. Vaguely, yes.

24 Q. I don't see an opinion from you in your
25 declaration related to that subject. Did you

1 provide an opinion related to patentability in
2 your declaration?

3 MS. BURKS: Objection. Vague.

4 A. I don't think so.

5 BY MR. DANLEY:

6 Q. And as you're sitting here today, do you
7 have an opinion regarding the patentability of the
8 947 patent?

9 MS. BURKS: Objection. Calls for a
10 legal conclusion.

11 A. I'm not a lawyer, so I don't think I
12 could answer that one way or the other.

13 BY MR. DANLEY:

14 Q. Well, I noted in -- note that in your
15 legal background section, you didn't describe
16 patentability as something that had been explained
17 to you. Is that correct?

18 A. Can you rephrase that question?

19 Q. Yeah. So looking through the legal
20 section -- legal background section of your
21 report, where it describes the legal concepts that
22 have been explained to you by counsel, I did not
23 see a section related to patentability or section
24 101. Is -- did I miss something in reviewing your
25 legal section?

1 A. Not to my knowledge.

2 Q. So in other words, patentability, as far
3 as you can recall, is not a -- is not a topic or a
4 legal issue that was -- that was explained to you;
5 is that right?

6 A. It's not an issue that I have an opinion
7 about.

8 Q. So I wanted to give you what is marked
9 as Exhibit 1001.

10 MR. DANLEY: Do you want a copy?

11 MS. BURKS: No.

12 BY MR. DANLEY:

13 Q. Do you recognize this document?

14 A. Yes, sir.

15 Q. What is this document?

16 A. The 947 patent.

17 Q. And can you describe for me your
18 understanding of the technology that is described
19 in the 947 patent?

20 A. The 947 describes debarking technology
21 where information about an incoming log is
22 acquired. And then the machine operating
23 parameters of the debarker are changed. Before
24 that log enters the debarker, they are changed for
25 that log such that the debarking essentially is

1 optimized in an automated way.

2 Q. And when you said information about the
3 incoming log is acquired, what type of information
4 is acquired?

5 A. Diameter and length, taper, shape,
6 moisture content, knot intensity, species, kink,
7 and protuberances or humps on the log.

8 Q. Anything else you can remember?

9 A. Temperature, to my recollection.

10 Q. Anything else?

11 A. No.

12 Q. And just so the record is clear, when we
13 refer to the 947 patent, that is patent number
14 12,163,947; is that correct?

15 A. Yes.

16 Q. And how does an 947 patent describe
17 obtaining or acquiring this information?

18 A. Via sensors.

19 Q. What type of sensors?

20 A. There could be multiple types. Cameras,
21 laser, other.

22 Q. Such as?

23 A. Moisture sensors, temperature sensors.

24 Q. Anything else?

25 A. I don't recall.

1 Q. Does the term "laser curtain" sound
2 familiar to you?

3 A. Yes.

4 Q. And can you describe -- did I use the
5 right terminology? Laser curtain?

6 A. I'm familiar with that.

7 Q. Okay. Can you describe for me your
8 understanding of what a laser curtain is?

9 A. A laser curtain is a series of parallel
10 lasers that have an emitter and a receiver. And
11 when a object goes between the transmitter or
12 emitter and the receiver, it breaks the laser beam
13 similar to when you -- your garage door is
14 closing. If you break the beam that goes from
15 right to left, the door stops. So it senses that
16 there is something under the door.

17 So the laser curtain -- when one
18 laser in that curtain is broken, it can tell there
19 is an object there. And then it -- based on that,
20 it can sense, because there is multiple lasers.
21 The more that are broken, the wider the object in
22 the curtain is. And that could be used to sense
23 diameter and shape of a log.

24 Q. Has -- to your knowledge, have laser
25 curtains been used for such a purpose to measure

1 the diameter of a log?

2 A. Yes.

3 Q. For how long are you aware that this use
4 of laser curtains has been made? I guess strike
5 that. Let me ask it more clearly.

6 How long did -- do you know for how
7 long laser curtains have been used for this
8 purpose?

9 A. I don't know exactly.

10 Q. Are you aware that laser curtains have
11 been used at least prior to 2018?

12 A. Yes.

13 Q. Have laser curtains been used for this
14 purpose before 2010?

15 A. I think, yes.

16 Q. Have laser curtains been used for this
17 purpose before 2000?

18 A. Not sure.

19 Q. And also, as part of your description,
20 you said that machine parameters are changed
21 before debarking. Did I get that correct?

22 A. Yes.

23 Q. Can you describe for me what the machine
24 parameters would be that are changed or that might
25 be changed?

1 A. The feed speed of the log advancing into
2 the debarker, in the case of a ring debarker, the
3 feed speed of a log advancing in the rotational
4 speed of the ring and the pressure with which the
5 knives push onto the log.

6 Q. Any other parameters that might be
7 changed?

8 A. There may.

9 Q. Can you describe those additional
10 parameters for me?

11 A. No, I don't have any in mind.

12 Q. So, I heard feed speed and pressure of
13 the knives; is that correct?

14 A. And rotational speed of the ring.

15 Q. Okay. So there are three parameters
16 that can be changed; is that correct?

17 A. In the ring debarker, yes.

18 Q. How about for other debarkers, are there
19 other parameters that are specific to these other
20 debarkers that might be changed?

21 A. Yes.

22 Q. And what are those -- what are the other
23 types of debarkers other than a ring debarker?

24 A. Drum debarker, hydraulic debarker and a
25 Rosserhead debarker.

1 Q. And so, for the drum debarker, what type
2 of other parameters might be changed?

3 A. Really the only parameter that could be
4 changed with a drum debarker -- well, there is
5 two. The rotational rate of the drum and the feed
6 speed of logs entering the drum. That would
7 influence how many logs are in the drum at a given
8 time.

9 Q. Is the drum usually angled?

10 A. Yes.

11 Q. Can you change the angle?

12 A. In some cases, yes.

13 Q. And for a hydraulic debarker, can you
14 describe for me the parameters that might be
15 changed?

16 A. The hydraulic water pressure that's
17 hitting the log, the rate at which the spray
18 nozzle or nozzles advance along the log from one
19 end to the other. And if the log is rotated, the
20 rotational speed of the log.

21 Q. And I believe you said Rosserhead
22 debarker. Did I get that right?

23 A. Yes.

24 Q. What is a Rosserhead debarker? Can you
25 describe it -- the high level for me? Like, how

1 it functions?

2 A. Yeah. The Rosserhead functions -- it
3 has a abrasive or neural cylinder that rotates and
4 is pushed up against the face of a log as the log
5 rotates. And that friction or sheering effect of
6 the spinning Rosserhead and the spinning log chew
7 the bark off the log. And then the Rosserhead
8 moves from right to left or left to right along
9 the length of the log. Or the log moves with
10 respect to the head.

11 Q. And what parameters can you change for a
12 Rosserhead debarker?

13 A. Rotational speed of the head, rotational
14 speed of the log, pressure of the head against the
15 log, and then feed speed of the log as it advances
16 past the Rosserhead.

17 Q. Now, you reviewed the 947 patent to
18 prepare your declaration. Correct?

19 A. Yes.

20 Q. And you reviewed the 947 patent to
21 prepare for today's deposition. Correct?

22 A. Yes.

23 Q. Based on your review and your
24 understanding, is the 947 patent limited to any
25 particular type of debarking machine?

1 A. No.

2 Q. And you say that the mechanical
3 parameters are changed before debarking. Can you
4 describe for me the process by which the
5 mechanical parameters are changed in the 947
6 patent?

7 A. Sure. The characteristics of the log --
8 the subject log are sensed with cameras and
9 sensors and fed into a model -- computer model or
10 AI algorithm that then communicates with the
11 debarking machine and sets or resets the
12 parameters of the machine.

13 Q. What sensor resets the parameters?

14 A. Well, the -- the model communicates with
15 the -- or the control module resets those on the
16 machine.

17 Q. So is it the control module that resets
18 the parameters?

19 MS. BURKS: Objection. Vague and
20 ambiguous.

21 A. The algorithm or AI model tells the
22 machine what to do or tells what settings to set.
23 And then there's physical pieces of hardware that
24 change on the machine.

25

1 BY MR. DANLEY:

2 Q. To your knowledge, is there a specific
3 section of the 947 patent that shows the AI model
4 as setting the parameters for the debarking
5 machine?

6 MS. BURKS: Objection. Vague and
7 ambiguous.

8 A. I don't recall, but my recollection is
9 it does discuss control. So the control is the
10 act of resetting those parameters for the incoming
11 undebarked log.

12 BY MR. DANLEY:

13 Q. And I do remember there being a
14 description about control in the 947 patent. I
15 guess the part that I don't recall is the AI model
16 being the component that actually sets or resets
17 the parameters to provide that control. So that
18 was what my direct -- my question is directed to.

19 Can you recall if the 947 provides
20 such a disclosure for the AI model?

21 MS. BURKS: Objection. Scope.

22 A. My recollection is the patent discusses
23 how that -- which variables on the log are sensed
24 and that they are fed into the model. And the
25 model then controls the machine.

1 BY MR. DANLEY:

2 Q. And can you point to a specific part of
3 the patent that provides that description or
4 disclosure?

5 A. I would have to read it.

6 Q. You can skim over it if you have time.

7 A. Column 4, line 54, starts: "A novel
8 system and method for characterizing undebarked
9 wooden logs and computing optimal debarking
10 parameters in realtime described hereafter."

11 Q. Where does that describe AI?

12 MS. BURKS: Objection to scope.

13 A. I'll have to spend more time reading it.

14 BY MR. DANLEY:

15 Q. But as you sit here right now, you can't
16 identify any specific part of the patent that
17 provides that disclosure where AI is used to set
18 the parameters for the debarking machine; is that
19 right?

20 MS. BURKS: Objection. Scope. Assumes
21 fact and testimony.

22 A. In column 6, line 17: "The system
23 generally comprises a deep learning model
24 application, software, also referred to as
25 deburning, artificial intelligence or an AI model,

1 a debarking optimization software, log
2 characterization module, and a debarking control
3 software."

4 Q. Doesn't that section actually show that
5 the AI model is separate from the debarking
6 optimization software?

7 MS. BURKS: Objection. Vague.

8 A. That -- maybe as the software --
9 considering the debarking optimization software as
10 a part of the software that communicates from the
11 model to the equipment.

12 BY MR. DANLEY:

13 Q. Any other sections that you would like
14 to point out?

15 A. I will have to keep reading.

16 Q. Okay.

17 A. Further, column 6, line 23: "The log
18 scanning and deep learning model application
19 software is programmed to identify the
20 characteristics of the conveyed log. The log
21 scanning and deep learning model application
22 software is in data communication with a scanning
23 device and sensors."

24 Q. But doesn't that section show that the
25 AI model is used to characterize the log not to

1 set the parameters of the debarking machine?

2 MS. BURKS: Objection. Vague and
3 ambiguous. Misstates testimony. Outside of
4 the scope.

5 A. Well, it says above, as I read
6 previously, in line -- column 6, line 21, that it
7 is communicating with the debarking control
8 software.

9 And then below in column 6, line
10 56: "The outputted or identified characteristics
11 of the log are inputted into the optimization
12 software. The optimization software is programmed
13 to compute optimal debarking parameters."

14 Then line 60: "The optimal
15 debarking parameters are inputted in the debarker
16 control software."

17 So it's sensing the incoming logs,
18 characteristics of interest, coming up with a
19 solution for the machine and then control of the
20 machine.

21 Column 6, line 62: "The debarker
22 control software is connected or in communication
23 with the debarker and controls the operation of a
24 debarker."

25 Q. So just to paraphrase what you read out

1 there, is it accurate to say that this description
2 in the 947 patent -- or in this description of the
3 947 patent, the system collects data about an
4 incoming log; is that correct?

5 MS. BURKS: Objection. Asked and
6 answered. Misstates prior testimony.

7 A. That is part of what it does, yes.

8 BY MR. DANLEY:

9 Q. And then further once it has collected
10 this data, the system described in the 947 patent
11 analyzes that data; is that correct?

12 A. It analyzes that data next. Yes.

13 Q. And then further after analyzing that
14 data, the system described in the 947 patent then
15 outputs controls for the debarking -- for the
16 debarker; is that correct?

17 MS. BURKS: Objection. Asked and
18 answered. Misstates prior testimony.

19 A. Yes. It sets the parameters for the
20 debarker based on that sensed information.

21 BY MR. DANLEY:

22 Q. And those output controls can be seen as
23 data; is that correct?

24 MS. BURKS: Objection. Vague. Lacks
25 foundation.

1 A. I don't know. They output control
2 information to the machine.

3 BY MR. DANLEY:

4 Q. Okay. And is there anything further
5 that the system described in the 947 patent does?

6 A. Very broadly the system scans and
7 collects information about the incoming undebarked
8 log and uses a deep learning or AI or artificial
9 intelligence model based on that information to
10 control the machine -- the debarker machine.

11 Q. And you said that -- so going back to
12 your description of the technology disclosed in
13 the 947 patent, you said that this -- the
14 technology operates so the debarking is optimized.
15 Is that accurate?

16 MS. BURKS: Objection. Misstates prior
17 testimony.

18 A. Yeah, it's -- it sets the parameters of
19 the debarking machine to achieve specific or
20 target goals for debarking at the output. So
21 we -- goals are: Debark quickly, debark
22 efficiently, remove as much bark as possible,
23 don't destroy the wood underneath the bark. And
24 those are quantifiable. So the technology allows
25 for that -- facilitates that.

1 BY MR. DANLEY:

2 Q. And you mentioned the number of
3 mechanical parameters that could be changed to
4 achieve these goals; is that right?

5 A. Yes.

6 Q. Can -- to your knowledge or
7 understanding, does the 947 patent describe how
8 these parameters can be changed to achieve these
9 goals?

10 MS. BURKS: Objection. Outside the
11 scope.

12 A. I'm not sure I understand your question.

13 BY MR. DANLEY:

14 Q. Well, for example, you say the feed
15 speed can be changed --

16 A. Uh-huh (affirmative response).

17 Q. -- on a ring debarker? Or is one of the
18 mechanical parameters again that can be changed on
19 a ring debarker; is that correct?

20 A. Yes. That is correct.

21 Q. So, for example, does the 947 patent
22 describe how the feed speed could be changed in
23 order to optimize the debarking process?

24 MS. BURKS: Objection. Outside of the
25 scope.

1 A. I'm still not sure I understand the
2 question.

3 BY MR. DANLEY:

4 Q. What part of the question is -- do you
5 not understand?

6 A. I'm not sure if you are asking like a
7 specific case where one type of log could be fed
8 faster and one would be slower. Or what is the
9 effect of changing the feed speed. Or
10 specifically how would the PLC work with a
11 Temposonic cylinder or motor to adjust the speed.
12 It is unclear to me.

13 MS. BURKS: If I can maybe help clarify
14 this?

15 MR. DANLEY: Yeah.

16 MS. BURKS: Are you asking about the
17 wood aspect of this or the computer aspect of
18 this?

19 MR. DANLEY: I am asking -- I think it
20 would be more the wood aspect.

21 BY MR. DANLEY:

22 Q. So Dr. Shmulsky, going back -- see -- I
23 was going to see if I can clarify the question.

24 So there are a number of mechanical
25 parameters that can be changed on debarking

1 machines. And the question I am asking is: Does
2 the 947 patent describe the relationship between
3 how those parameters can be changed and the impact
4 the changes would have on the debarking process?
5 So, for example, if you change the rotation speed
6 to slow it down, is there a description in the 947
7 patent about what impact that would have on the
8 debarking process?

9 A. There is an example or examples. And I
10 could read you one, but I opine, the 947 doesn't
11 give a full description of how each -- how
12 changing each parameter on the debarker changes or
13 may change the output of the quality of the logs,
14 because those vary mill to mill based on their
15 resources.

16 In column 7, line 10, it says: "As
17 an example, a log having a high moisture level and
18 a high number of knots by square inch may be
19 associated with a reduced speed of rotation of the
20 tools compared to a log having low moisture level
21 and a low number of knots by scare inch, which may
22 require an increased speed or rotation of the
23 tools."

24 Q. So I do recall that description in the
25 specification. I didn't see any other description

1 in the specification that was similar. Is that --
2 did you see anything in the specification that was
3 similar to that description?

4 A. I don't recall. I would have to read
5 through it to --

6 Q. Okay. So is it fair to say that the 947
7 patent was relying upon the knowledge of a person
8 of ordinary skill to make the -- to know the
9 relationship between the debarking parameters and
10 the impact changing those would have on the
11 debarking process?

12 A. Yes.

13 Q. Is there any description -- well, strike
14 that.

15 For the one description that you
16 just read out involving moisture and knots, is it
17 fair to say that a person of ordinary skill would
18 already know the relationship between reduced
19 rotation speed and moisture level and number of
20 knots?

21 A. I'm not sure what you mean by would
22 already know?

23 Q. You testified that there was a
24 description in the patent at column 7, line 10,
25 that describes a log having high moisture level

1 and high number of knots by square inch may be
2 associated with a reduced speed of rotation of the
3 tools compared to a log having a low moisture
4 level and a low number of knots by square inch.
5 And my question is: Would a person of ordinary
6 skill already be aware of that relationship or
7 difference?

8 A. What do you mean by would already be
9 aware?

10 Q. Would a person of ordinary skill already
11 be aware that a log having high moisture level and
12 high number of knots by square inch may be
13 associated with a reduced speed of rotation of the
14 tools compared to a log having low moisture level
15 and a low number of knots?

16 A. When would the wood already be aware? I
17 mean, when they install a debarker in a mill or
18 when they're setting it up or when they are
19 designing it?

20 Q. Just as part of their general knowledge.
21 There is no particular time frame I'm focusing on.

22 A. Uh-huh (affirmative response).

23 Q. Just a part of their general knowledge,
24 would a person of ordin- -- would a person of
25 ordinary skill already be aware of that difference

1 you described?

2 A. They would need to know that. Yes.

3 Q. But that would be part of their
4 knowledge that they would know. Correct? What
5 I'm trying to say is, like, this description in
6 the 947 patent isn't something new or something
7 that a person of ordinary skill would not know of;
8 is that an accurate statement?

9 A. A person of ordinary skill would have to
10 have acquired that information generally through
11 their work in the field. Exactly how those
12 parameters affect the debarking quality is -- is
13 something that must be learned in the mills.

14 Q. Okay.

15 MR. DANLEY: We've been going for a
16 little under an hour. Do you want to take a
17 break?

18 THE WITNESS: Sure.

19 MR. DANLEY: Okay.

20 VIDEOGRAPHER: Off the record. The time
21 is 10:12.

22 (A short recess was taken.)

23 VIDEOGRAPHER: Back on the record. The
24 time is 10:30.

25

1 BY MR. DANLEY:

2 Q. Professor Shmulsky, you mentioned a PLC
3 during your earlier testimony. Can you tell me
4 what a PLC stands for?

5 A. Programmable logic controller.

6 Q. And can you describe what a PLC is, what
7 it does?

8 A. It is a type of simple rugged dedicated
9 computer that controls some type of equipment or
10 function.

11 Q. How does it control the equipment or
12 function?

13 A. It sends an output electrical signal.

14 Q. Can a PLC receive input electrical
15 signals?

16 A. Yes.

17 Q. And can the PLC or -- strike that.

18 Would those -- could those incoming
19 electrical signals represent, for example, data?

20 A. It is possible. They represent some
21 type of parameter that's been measured and sent in
22 an effort to make a change, turn something on or
23 off or move its position or, you know, to
24 essentially control a piece of equipment.

25 Q. To your knowledge, are PLCs currently

1 used in debarking machines?

2 A. To my knowledge, they are, yes.

3 Q. For how long have PLCs been used in
4 debarking machines, to your knowledge?

5 A. To my knowledge, decades.

6 Q. You say the PLCs can be used to change
7 operating parameters based on inputs that it
8 receives. Is that an accurate statement?

9 A. Yeah. The PLC, when one wants to
10 control something, for example, if it is too cold,
11 then it would -- you could send a signal to the
12 PLCs to turn on the heat based on temperature. So
13 if the temperature is -- information went to a
14 controller and it is in the program, then it turns
15 on the heat when it gets too warm or gets too cold
16 and it turns it back off when it gets too hot.

17 Q. And as used in debarking machines, are
18 PLCs used to control the parameters of the
19 debarking machine?

20 A. They can be, yes.

21 Q. And to your knowledge, for how long have
22 PLCs been used to control parameters in debarking
23 machines?

24 A. I don't know the answer.

25 Q. At least five years?

1 A. Yes.

2 Q. At least ten years?

3 A. Ten years from when?

4 Q. Today.

5 A. I -- I think, yes.

6 Q. Twenty years from today?

7 A. I'm not sure.

8 Q. And you said the PLCs can receive data
9 that relates the measured parameters or measured
10 characteristics; is that accurate?

11 A. I think I said they receive information
12 from or related to some type of measured
13 parameter.

14 Q. And could this information, for example,
15 be related to the diameter of an incoming tree or
16 incoming log?

17 A. Yes.

18 Q. And that diameter would be measured, for
19 example, when using a laser curtain; is that
20 accurate?

21 A. It could be, yes.

22 Q. And you said laser curtains pre --
23 strike that.

24 You previously testified the laser
25 curtains were known in the art for at least ten

1 years before today; is that right?

2 A. Yes.

3 Q. So is it accurate to say that the
4 information measured by a laser curtain could be
5 put into a PLC for a debarking machine. Correct?

6 A. Yes. That is possible.

7 Q. And this was known at least ten years
8 ago from today; is that right?

9 A. I believe, yes.

10 Q. And then that information related to
11 diameter could be used by a PLC to change the
12 operating parameters of the debarking machine; is
13 that right?

14 A. Yes.

15 Q. And that knowledge was also known at
16 least ten years from today; is that right?

17 A. I believe that's correct.

18 Q. So I want to transition slightly in our
19 discussion of the 947 patent. So we've been
20 talking about the technology generally being
21 disclosed in the 947 patent. Now, I want to focus
22 more on the invention that's being described in
23 the 947 patent.

24 Do you have an understanding of
25 what the invention is in the 947 patents?

1 MS. BURKS: Objection. Asked and
2 answered.

3 BY MR. DANLEY:

4 Q. If it helps, I think that you described
5 that in paragraph 31, I think, of your
6 declaration. No, not 31. Paragraph 87.

7 A. 87 is a key invention. Claim one
8 discusses the invention in the patent.

9 Q. Okay. So maybe you can describe for me
10 what your understanding is of the invention in the
11 947 patent.

12 A. The invention is the control of the
13 debarker based on the characterization of the
14 incoming undebarked log essentially. That it --
15 the incoming log gets characterized for certain
16 things, including, but not necessarily limited to,
17 species, moisture content, and knot intensity in
18 that -- a deep learning model then takes those
19 parameters into account and develops a solution,
20 -- an optimized solution that controls the
21 debarking machine so that when that specimen log
22 goes through the debarking machine, it's processed
23 in an optimal manner.

24 Q. In your opinion, how important is the AI
25 component to the invention of the 947 patent?

1 A. It's critically important.

2 Q. Why is that?

3 A. Because that's the connecting piece
4 between sensing and characterizing the incoming
5 log and setting the machine to process that
6 incoming log without the need of a human operator.

7 Q. In your opinion -- I just want to
8 clarify the answer a little bit, because you say
9 it is the connecting piece between the sensing
10 characterizing of the incoming log and the setting
11 the machine to process the incoming log without
12 the need of a human operator. So is the AI
13 component critical, in your opinion, in sensing
14 and characterizing the incoming log as part of the
15 invention from the 947 patent?

16 MS. BURKS: Objection. Vague.

17 A. The sensing characterization occurs
18 upstream or ahead of the AI, where a camera can
19 take pictures of the log or cameras take a 3D
20 shape scan of the log. And other sensors collect
21 information about other aspects of the log. For
22 example, moisture, knottiness. Then that -- that
23 information is fed into the AI model. And it
24 digests that based on its library and what it has
25 been trained to do. And then it predicts what's

1 the best solution for this incoming log that is
2 unique that it has never seen. And then it
3 controls the debarking machine based on that.

4 Q. Is it critical, in your opinion --
5 strike that.

6 In your opinion, is it critical to
7 the invention in the 947 patent that the AI model
8 be used to predict what's the best solution for
9 the incoming log?

10 MS. BURKS: Objection. Vague.

11 A. In my opinion, that is the crux and --
12 and the need. Without -- without the AI, the
13 optimal solution for the incoming log can't be
14 known and programmed into the machine.

15 BY MR. DANLEY:

16 Q. And the AI model, under your
17 understanding -- strike that.

18 It's your understanding that the AI
19 component or model would be setting those optimal
20 parameters and providing the optimal solution for
21 the incoming log?

22 MS. BURKS: Objection. Vague. Outside
23 of the scope.

24 A. The AI model develops the optimal
25 solution and sends it to the equipment to control

1 it.

2 BY MR. DANLEY:

3 Q. And that's critical --

4 A. Yes.

5 Q. -- for the inventions, the 947 patent?

6 MS. BURKS: Objection. Incomplete.

7 MR. DANLEY: I can complete that.

8 BY MR. DANLEY:

9 Q. That's critical to the invention of the
10 947 patent, in your opinion; is that right?

11 A. What do you mean by that? That is
12 critical?

13 Q. The AI model develops the optimal
14 solution and sends it to the equipment. That's a
15 critical component for the invention in the 947
16 patent. Right?

17 MS. BURKS: Objection. Misstates
18 testimony.

19 A. It's critical that it develops the
20 solution and then controls the machine.

21 BY MR. DANLEY:

22 Q. And as part of your work in writing your
23 declaration, you reviewed the references that the
24 petitioner cited to argue that the patent is
25 invalid; is that right?

1 A. Yes.

2 Q. And that included the Gagnon reference,
3 the Ido reference, the Kambla reference and the
4 Petruzella reference; is that right?

5 A. Yes.

6 Q. And based upon your work in the field,
7 you were -- is it fair to say that you were aware
8 as of August 2020, the types of systems and
9 components that were used to control debarking
10 machines; is that right?

11 A. Yes.

12 Q. So based upon your knowledge in the
13 field and your review of the prior references, can
14 you describe for me just in general what the
15 difference is between the prior art and the
16 technology disclosed in the 947 patent?

17 MS. BURKS: Objection. Vague.

18 A. My understanding is in the prior art,
19 the debarking machine is controlled based on the
20 log or logs that have already gone through it.

21 So, for example, if a log goes
22 through the debarking machine and it has too much
23 bark on it, then it would feed back to the machine
24 and change the machine settings such that more
25 bark would be removed on the next log. So it is

1 retrospective. It is basing future decisions on
2 past performance. And that is different than what
3 is in the 947.

4 BY MR. DANLEY:

5 Q. And how would you characterize what's in
6 the 947 patent?

7 A. The difference is, the 947 patent senses
8 and characterizes information from the log that's
9 about to enter the debarking machine, not the log
10 that's already been through the machine. So it
11 develops a solution specifically for the material
12 that is about to be processed.

13 Q. So would you call that prospective as
14 opposed to retrospective?

15 A. Yes.

16 Q. So the prior art did sense the diameter
17 of the incoming log, didn't it?

18 A. Yes.

19 Q. And it changed the parameters of the
20 debarking machine based upon that diameter
21 measurement, didn't it?

22 A. Yes.

23 Q. Wouldn't that be prospective control, as
24 well?

25 A. That is a form of prospective control.

1 Q. That was disclosed in the prior art.
2 Right?

3 A. Diameter, yes.

4 Q. So how does that differ from what is
5 disclosed in the 947 patent?

6 A. The 947 specifically addresses
7 additional and other characteristics including
8 species, moisture and knot intensity.

9 Q. Are there other -- any other differences
10 with respect to the 947 patent that you can
11 testify about?

12 A. It also mentions kink.

13 Q. So besides different characteristics --
14 characterizations of the incoming log, are there
15 any differences between the use of a laser
16 curtain, for example, to measure diameter or --
17 strike that.

18 So other than the use of other
19 characterizations to provide prospective control,
20 is there any other differences between the 947
21 patent and the prior art use of diameter to
22 control the debarking machine?

23 A. Sure. The prior art, when it discloses
24 diameter or characterizes a log based on diameter,
25 it doesn't need an AI model to open the aperture

1 depth of the debarker, for example. If it senses
2 a 14-inch diameter log, then it -- the PLC can
3 open the aperture to 14 inches. So the log gets
4 fed in correctly and doesn't smash into the
5 machine, because it is not open far enough.

6 The 947 goes further than that and
7 adds additional characteristics that are important
8 that affect debarking quality and that are unique
9 to each log that enters the machine.

10 Characteristics, such as species, moisture content
11 and knot intensity, all of which affect final
12 debarked log quality. And it uses and needs an AI
13 model to do that.

14 Q. Okay. Any other differences between the
15 prior art and the technology disclosed in the 947
16 patent?

17 A. I am not certain.

18 Q. So I want to introduce what's previously
19 been marked as Exhibit 1004.

20 And when you are ready, can you
21 tell me if you recognize this exhibit?

22 A. Yes, I recognize it.

23 Q. And what is Exhibit 1004?

24 A. I call it the Gagnon patent. It is
25 international publication number W0 2013/18894881.

1 Q. And you reviewed the Gagnon -- can I
2 call it the Gagnon reference?

3 A. Yes.

4 Q. Okay. So you reviewed the Gagnon
5 reference as part of preparing your declaration?

6 A. Yes.

7 Q. And you reviewed the Gagnon reference to
8 prepare for today's deposition?

9 A. Yes.

10 Q. Would you consider yourself to be
11 familiar with the Gagnon reference?

12 A. Yes.

13 Q. And can you describe for me just in
14 general what is disclosed in the Gagnon reference?

15 A. In general, the Gagnon reference title
16 method and system for detecting the quality of
17 debarking at the surface of a wooden log is a
18 means or presents or invents a means of
19 retrospective debarker control where the surface
20 of a log is photographed as it exits the debarking
21 machine. And the bark content and surface quality
22 are analyzed based on those photographs. And then
23 the parameters of the debarking machine can be
24 changed for future logs that will subsequently
25 enter the debarking machine.

1 Q. Gagnon does disclose upstream sensors,
2 does it not?

3 A. Yes.

4 Q. What are those upstream sensors
5 disclosed in Gagnon?

6 A. To my recollection, he discloses
7 upstream sensors for diameter and temperature.

8 Q. And Gagnon also discloses changing the
9 debarking parameters based upon those
10 characteristics; is that right?

11 A. I can't recall.

12 Q. If you look at paragraph 90 of your
13 report, you state that Gagnon has three sets of
14 data, which drive the operating parameters. You
15 see that?

16 A. Yes.

17 Q. And I assume when you say operating
18 parameters, you mean operating parameters of the
19 debarking machine. Correct?

20 A. Yes, sir.

21 Q. And as number 2, one of those sets of
22 data is upstream sensors for aperture opening; is
23 that right?

24 A. Yes.

25 Q. Does that refresh your recollection as

1 to whether Gagnon discloses using upstream data to
2 control the operating parameters for a debarking
3 machine?

4 A. Yes.

5 Q. And what -- how is your recollection
6 refreshed?

7 A. That he discloses sensing the diameter
8 and controlling the opening diameter of the
9 machine.

10 Q. So if you -- look at that section, where
11 you describe Gagnon. And you have three
12 subsections. I'm going to page 35. Do you see
13 those three subsections?

14 A. Yes.

15 Q. And I can read those subsections for the
16 record, but number 1 relates to presorting.
17 Number 2 relates to downstream sensors and
18 retrospective control. And number 3 results
19 regards upstream sensors within the art. Is that
20 an accurate summarization of those three sections
21 or the titles?

22 A. Yes.

23 Q. So when I was reading this, my
24 impression was that you were describing
25 differences between Gagnon and the technology in

1 the 947 patents. Was that an accurate
2 understanding with these three subsections?

3 A. To a large degree, yes.

4 Q. Are there any other differences between
5 the technology disclosed in Gagnon and the subject
6 matter of these three subsections I just pointed
7 out to you?

8 A. Gagnon doesn't use any deep learning or
9 AI model for prospective control. Gagnon doesn't
10 control based on moisture content. Gagnon doesn't
11 sense species prospectively or knot intensity
12 prospectively or moisture prospectively.

13 Q. Any other differences?

14 A. Not to my recollection.

15 Q. Now, when you say that Gagnon doesn't
16 disclose sensing species, you're talking about
17 wood species. Correct?

18 A. Correct.

19 Q. Isn't it accurate that Gagnon does
20 disclose that information related to wood species
21 of incoming logs can be input into the debarking
22 system? Into the control system?

23 A. Yes.

24 Q. And so, what is the difference you were
25 trying to make between what Gagnon discloses and

1 your use of the term "sensing"?

2 A. Gagnon discloses and notes species is
3 important. And one could change the debarking
4 machine settings based on that. But Gagnon
5 doesn't disclose an automated means to sense or
6 characterize species.

7 Q. But that information could be input
8 manually, for example, couldn't it? The Gagnon?

9 A. In Gagnon, it is input manually. A
10 person must decide and choose and provide that
11 input.

12 Q. So I wanted to go through some of these
13 subsections that you describe here. And I wanted
14 to start with the presorting section --
15 subsection. Can you describe for me what you mean
16 by "presorting"?

17 A. Which subsection or paragraph?

18 Q. It is subsection 1 of -- the full
19 subsection is 8.8.1. "Gagnon requires human
20 operators to presort logs and program the debarker
21 according to wood species."

22 So just, in general, I wanted to
23 understand what you meant by "presorting" in the
24 subsection.

25 A. In general, that means starting with a

1 -- essentially a pile or stack of -- or volume
2 inventory of logs of multiple species and sorting
3 them by species with humans and then processing
4 them after they've been sorted by species.

5 Q. So I did a word search in Gagnon for
6 presorts and I didn't come up with any results
7 other than titles in the prior art references. Do
8 you know if Gagnon actually uses the word
9 "presort"?

10 A. I don't recall. It may be that I add
11 "pre" to "sorting" to indicate it is prior to
12 debarking.

13 Q. So where in Gagnon does it disclose
14 sorting of logs before debarking? Let me just go
15 ahead and withdraw that question and ask a
16 different question.

17 So if you go to paragraph 93 of
18 your report.

19 A. (Witness complies.) Okay.

20 Q. Say that Gagnon's efficiency --
21 efficiency relies upon the presorting of logs by
22 wood species. Do you see that sentence?

23 A. Yes.

24 Q. You don't cite any support -- any
25 document for that statement; is that right?

1 A. Right. I have the visual inspection by
2 the skilled operator. But if they are not sorted,
3 then that operator must change the parameters of
4 the debarker with every single log entering based
5 on difference species. So to be efficient for the
6 operator, they need to be presorted.

7 Q. But Gagnon itself doesn't actually say
8 that the logs need to be presorted to be
9 efficient, does it?

10 A. I would have to review Gagnon --

11 Q. Well, you don't cite --

12 A. -- for --

13 Q. I'm sorry. Go ahead.

14 A. I would have to review it to verify
15 that.

16 Q. Well, you don't cite anything in support
17 of that statement, do you?

18 A. No.

19 Q. So I want you to go to paragraph 2 of
20 Gagnon.

21 A. Okay.

22 Q. It's a very long paragraph. So go to
23 page 4.

24 A. Okay.

25 Q. If you go five lines down, you see that

1 Gagnon states: "Generally wood processing
2 involves a large variation of raw material
3 characteristics at the input end of the sawing
4 process in contrast with upstream processes such
5 as drying and planing. Therefore, debarking
6 should be entirely efficient in terms of
7 production capacity and debark log quality while
8 being fed in timber pieces of various diameters,
9 moisture contents and wood species." Do you see
10 that?

11 A. I do.

12 Q. Doesn't that indicate to you that Gagnon
13 is contemplating that the wood species could vary
14 for the timber pieces being fed into the debarker?

15 A. He's contemplating that debarking
16 characteristics vary by species.

17 Q. Where is he contemplating that in this
18 section? Well, strike that.

19 If you look at that second sentence
20 that I quoted, doesn't it indicate that the
21 diameters of the timber pieces being fed into the
22 debarker could vary?

23 A. Yes.

24 Q. Doesn't that sentence indicate that the
25 moisture content of the timber pieces being fed

1 into the debarker could vary?

2 A. Yes.

3 Q. And likewise, doesn't it indicate that
4 the wood species of the timber pieces being fed
5 into the debarker could vary?

6 A. Yes. They can vary.

7 Q. Isn't that intention -- isn't that in
8 some tension with your testimony that Gagnon
9 requires presorting of logs?

10 MS. BURKS: Objection. Vague.

11 A. I don't think it is, because as I know
12 in my paragraph 95, he develops solutions that
13 involve populations of logs of common species such
14 as black spruce. So when he is intending to run,
15 they should be run one species at a time. That is
16 sorted. They can be run multiple or varying
17 species.

18 But in his case, his retrospective
19 control model will necessarily do a poor job of
20 debarking, because as the species vary in its --
21 the machine is sensing a black spruce log, for
22 example, that's already gone through and
23 developing a solution for that, when if an
24 operator runs a pine or a fir log, with a spruce
25 solution, then it doesn't do as good of a job. So

1 sorting is important.

2 BY MR. DANLEY:

3 Q. Is the incoming timber sorted according
4 to diameter?

5 A. It can be.

6 Q. Is -- but not necessarily?

7 A. Correct. Not necessarily.

8 Q. Is the incoming timber sorted by
9 moisture content?

10 A. It can be.

11 Q. But not necessarily?

12 A. Correct.

13 Q. Okay. So likewise, wouldn't it be that
14 the wood -- that the incoming timber could be
15 sorted by wood species, but doesn't have to be?

16 MS. BURKS: Objection. Vague.

17 A. Well, in the case of diameter, the laser
18 light curtain or other means of measuring the
19 diameter is performed on the incoming log. But in
20 Gagnon, he is measuring wood quality or debarked
21 quality based on species. Each species has its
22 own solution that he develops. So if they are not
23 sorted by species, upstream, then his operating
24 parameters, even retrospectively, they don't work
25 very well.

1 BY MR. DANLEY:

2 Q. So the description in paragraph 95 of
3 your report, is with respect to a test; isn't that
4 right?

5 A. Yeah. The test is -- is run. He
6 describes that as a means of developing a control
7 programming for a species.

8 Q. And it is your testimony that the
9 debarking machine has to be operated exactly as
10 this test describes?

11 A. It doesn't have to be. Only if the
12 operator is hoping to achieve a higher quality and
13 more efficient debarking operation.

14 Q. So the operator could put in -- could
15 feed in various types of wood species to the
16 debarking machine. Correct?

17 A. Yes, they could.

18 Q. Okay. And I want to go to the next
19 sentence in paragraph 94, it's use state: "A
20 scrolling list on the machine," quote, "Enables
21 the operator to select," unquote, "the", quote,
22 "species under production." Do you see that?

23 A. Yes.

24 Q. And can you describe for me what that
25 sentence means?

1 A. That means there is an operator -- a
2 debarker operator. And as a log approaches, the
3 operator has a chance to visually look at the log
4 and identify the species. If they are, for
5 example, mixed and they are not sorted, and he --
6 the operator can click on a menu or a drop down
7 and choose the species on the fly.

8 Q. And so in this case, the operator would
9 not need to reset the entire parameters of the
10 debarking machine, would they, based upon wood
11 species?

12 A. Correct. They could click from a drop
13 down menu, select the species, and then that
14 machine is programmed to change the operating
15 parameters based on that input from the operator.

16 Q. So I want to go to subsection three.

17 A. Okay.

18 Q. Gagnon's upstream sensors used for
19 aperture opening were known to the art?

20 A. Uh-huh (affirmative response).

21 Q. And in your opinion, does the fact that
22 Gagnon's upstream sensors were known in the art
23 provide a difference between the disclosures in
24 Gagnon and the invention that is claimed with 947
25 patent?

1 A. I'm not sure I understand the question.

2 Q. Well, back whenever we started this line
3 of questions, I said my understanding was these
4 three subsections describe differences between
5 Gagnon and the technology in the 947 patent.
6 Right?

7 A. Yes.

8 Q. And so, what I'm trying to understand is
9 what significance, in your opinion, is there that
10 the upstream sensors described in Gagnon were
11 known in the art? Why is that significant? Why
12 is that a significant difference between Gagnon
13 and what is disclosed in the 947 patent?

14 A. The 947 is disclosing other
15 characterization or characteristics of the log
16 over and above what is described in Gagnon. And
17 the 947 necessarily incorporates a deep learning
18 model to make machine control decisions based on
19 those characterizations.

20 Q. And further in the section, at paragraph
21 107, you state: "Notably, Gagnon did not claim
22 the use of these upstream measurements alone, only
23 in combination with the retrospective controls."
24 Why is that notable?

25 A. It goes on, because the use of diameter

1 and length measurement in rotary ring debarking
2 was well known in the art.

3 Q. So again, why does -- why is that
4 notable?

5 A. That without -- in the case of Gagnon,
6 without his retrospective controls, it is not
7 novel. The use of diameter is not a novelty for
8 controlling debarker parameters.

9 Q. And the measurement of diameter,
10 likewise, is not novel in controlling debarking
11 machines?

12 A. Correct. In the case of Gagnon, it was
13 well known in the art.

14 Q. So I want to go -- or introduce what's
15 previously -- previously been marked as Exhibit
16 1005.

17 MS. BURKS: See you taking this paper on
18 the flight.

19 THE WITNESS: I had them shipped here.

20 MS. BURKS: Oh, okay.

21 BY MR. DANLEY:

22 Q. Do you recognize Exhibit 1005?

23 A. I do.

24 Q. What is Exhibit 1005?

25 A. CNN-based tree species identification

1 from bark image by Ido and Saitoh.

2 Q. And you reviewed -- is it okay if I call
3 it the Ido reference or Ido?

4 A. Yes.

5 Q. You reviewed Ido as part of preparing
6 your declaration?

7 A. I did.

8 Q. And you reviewed Ido with respect to
9 preparing for today's deposition?

10 A. Yes.

11 Q. Would you consider yourself familiar
12 with Ido?

13 A. Yes.

14 Q. And can you describe for me generally
15 what Ido discloses?

16 A. Ido generally discloses a method of tree
17 identification in a forest where pictures of
18 standing trees were taken for the purpose of
19 learning the species composition in the forest.
20 And a deep learning model was developed based on
21 those pictures to attempt to identify these trees
22 in the forest.

23 Q. I think you take some issue with the
24 accuracy of Ido; is that right?

25 A. I do.

1 Q. And can you describe for me your opinion
2 regarding the accuracy of Ido?

3 A. My opinion is the accuracy is low.

4 Q. And low? By low, what do you mean?

5 A. He has considered six species in the
6 forest in attempts to develop a computer vision ID
7 model for those trees or species. And he comes
8 out with a little less than 75 percent accurate.

9 Q. So I want you to turn to paragraph 145
10 of your report on page 46.

11 A. (Witness complies.) Okay.

12 Q. So you see where you say that Gagnon
13 describes error tolerance of fiber loss remaining
14 bark at 5 to 10 percent. You see that?

15 A. Yes.

16 Q. Can you describe for me what that error
17 tolerance is? Because you have fiber loss and
18 remaining bark. So I'm just trying to understand
19 what the 5 percent -- 5 to 10 percent error rate
20 is.

21 A. Well, when the log comes out of the
22 debarker, a processor will have some target for
23 remaining bark on the surface. And Gagnon
24 describes the error of that as 5 to 10 percent.

25 Q. Okay. And if you turn to the next page,

1 you have para- -- in paragraph 147, you state:
2 "That Ido achieved a maximum of 74.7 percent
3 success in successfully identifying tree species."
4 Do you see that?

5 A. Yes.

6 Q. So the part I don't understand, and I
7 was hoping that you could explain to me is, is
8 there any relationship between the 5 to 10 percent
9 remaining bark error rate described in Gagnon and
10 the 74.7 percent success rate in identifying tree
11 species identified in Ido?

12 A. Yeah. The relationship is that in the
13 case of Gagnon, when he ran his trials with sorted
14 logs, which one might consider minimizing the
15 variability of material input, he still came to 5
16 to 10 percent error tolerance. And if one were to
17 combine Ido with Gagnon, one would necessarily
18 have a much higher error, because in the case of
19 Ido -- in the best case, Ido is 75 or nearly 75
20 percent success at successfully identifying tree
21 species.

22 Then if that was applied with
23 Gagnon, then five times out of 20, the machine
24 would be set incorrectly, because it would have an
25 errant species. So the -- the error that would be

1 observed, that is either too much bark left on the
2 stem or too much wood fiber removed from the stem,
3 would necessarily go up.

4 Q. Is there a mathematical relationship
5 between describing how much the error rate would
6 go up?

7 A. There may be, but I don't have one.

8 Q. Did you run any tests to determine what
9 that error rate would be?

10 A. No. There is not enough information to
11 do so.

12 Q. What do you mean there is not enough
13 information to do so?

14 A. One such as Gagnon would have had to
15 report or someone else report what would -- what
16 is the error when that variability is high or when
17 they run, for example, black spruce through their
18 model when the model is set for fur. No one would
19 attempt to do that, because the goal in this is to
20 optimize and have high quality debarking.

21 Q. Okay. And if you look further in
22 paragraph 145, there are a couple of other
23 percentages. One is 1.5 to 3 percent remaining
24 chip bark content by weight. And another
25 percentage is just 5 percent lesser of wood loss.

1 Do you see that?

2 A. Yes.

3 Q. Are those two different measurements?

4 A. Yes.

5 Q. Can you describe for me what the
6 measurement of remaining chip bark content
7 provides?

8 A. That measurement is after -- after the
9 stem is debarked or the log is debarked, it
10 goes -- in a sawmill, it goes through chipping
11 heads, which make chips from the round part of the
12 log. And those chips get diverted or channeled to
13 a paper mill. And that 1.5 to 3 percent is a
14 measure by weight of the bark content in those
15 chips.

16 And the wood loss is an estimate or
17 measure of -- at the debarker how much wood fiber
18 got taken off. Because if the pressure is too
19 high or the log gets fed too slowly, the knives,
20 as they rotate around the stem, remove the bark
21 and then they begin to remove wood fiber.

22 Q. Is it fair to say that you would want
23 both of those percentages to remain low?

24 A. Yes.

25 Q. Is it also fair to say that in your

1 opinion that a 74.7 percent success rate as
2 described in Ido would likely cause both of those
3 percentages to increase from what they were
4 described in Gagnon?

5 A. If one were to incorporate Ido, in the
6 best case, which the 75 percent accuracy of Ido is
7 the best case, then those percentages described in
8 145 would go up. Meaning there would be more bark
9 in the chips and there would be more wood loss,
10 because the machine wouldn't necessarily be out of
11 control.

12 Q. Are you aware of any mathematical
13 relationship between the percentage of successful
14 identification in Ido in either of the percentages
15 for remaining chip bark content for wood loss?

16 A. Not necessarily mathematical, but
17 conceptually for sure, because as Ido
18 misidentifies if that were used, even in its best
19 case, if we've misidentified five out of 20 stems
20 or 20 out of 100, or it would be 25 out of a 100,
21 that's -- its error rate is 25 percent, then it
22 comes up with a nonoptimal solution for the log
23 that's going in the debarker in those cases.

24 Q. But you didn't do any experiments, for
25 example, to quantify what that increased error

1 rate would be for either remaining chip bark
2 content or wood loss?

3 A. No, I didn't. But I didn't need to
4 because I know conceptually as -- if you fed 25
5 percent into the log -- the logs into the debarker
6 and mischaracterized the species, that the error
7 goes up. It has to.

8 Q. Okay. And so I have one other topic I
9 could -- short topic I could introduce now or we
10 could take a break and come back and continue,
11 because we've been going for about an hour.

12 MS. BURKS: Your choice.

13 A. Decisions? Decisions? Let's take a
14 break.

15 MR. DANLEY: Okay.

16 VIDEOGRAPHER: Off the record. The time
17 is 11:22.

18 (A short recess was taken.)

19 VIDEOGRAPHER: Back on the record. The
20 time is 11:41.

21 BY MR. DANLEY:

22 Q. So Professor Shmulsky, I want to
23 introduce what was previously marked as Exhibit
24 1007. Do you recognize this exhibit?

25 A. I do.

1 Q. And what is this exhibit?

2 A. Petruzella's programmable logic
3 controllers.

4 Q. And what's disclosed in the Petruzella
5 reference, if I can refer to it as that?

6 A. Basically, it is a description of how
7 PLCs work.

8 Q. And if you turn to paragraph 135, page
9 43 of your report, you provided a description of
10 Petruzella. Do you see that?

11 A. Which paragraph?

12 Q. 135.

13 A. I am there.

14 Q. Okay. Sorry. So you see the paragraph
15 135 of your report, you state: "Petruzella
16 describes generic and elemental characteristics of
17 computer science PLCs were well known in the
18 industry and widely incorporated into everyday
19 machines." Do you see that?

20 A. Yes.

21 Q. So my question to you is: In your
22 opinion, does Petruzella disclose anything with
23 respect to PLCs that a person of ordinary skill
24 wouldn't have already known in 2017?

25 A. I don't think so.

1 Q. So, for example, a person of ordinary
2 skill as of 2017, would be aware that PLCs could
3 be used to provide programming logic; is that
4 correct?

5 A. Yes.

6 Q. As of 2017, a person of ordinary skill
7 would know that a PLC would use tables to store
8 values; is that correct?

9 A. Yes.

10 Q. As of 2017, a person of ordinary skill
11 would know that a PLC could use tables to perform
12 lookups for values; is that correct?

13 A. Yes.

14 Q. As of 2017, a person of ordinary skill
15 would know that a PLC could be used for storing
16 values that could further be used as operating
17 parameters, for example, debarking machines; is
18 that right?

19 A. Yes.

20 Q. And as of 2017, a person of ordinary
21 skill would know that a PLC could be used to
22 retrieve values stored in the PLC for providing
23 parameters for debarking machines; is that right?

24 A. A PLC -- a PLC could be used to retrieve
25 values from the PLC?

1 Q. A PLC could be used to retrieve values
2 from a table in a PLC to provide its operating
3 parameters to a debarking machine for example?

4 A. Yes.

5 Q. So I want you to turn to page 54 of your
6 report. Actually, if you can go to the previous
7 page, page 53, section D. Section D state claims
8 seven and eight are definite?

9 A. Uh-huh (affirmative response).

10 Q. Do you see that?

11 A. Yes.

12 Q. What is your understanding of the term
13 "definite"?

14 A. Not open ended. That there is some
15 certainty.

16 Q. When you say some certainty, that's
17 certainty to a person of ordinary skill; is that
18 right?

19 A. Yes.

20 Q. So I want you to turn to claim seven of
21 the 947 patent.

22 And I would presume you're
23 providing this opinion because there's a dispute
24 between the parties as to whether claim seven is
25 definite or indefinite. Correct?

1 A. Correct.

2 Q. And the dispute between the parties is
3 whether a particular predetermined value is
4 definite; is that your understanding?

5 A. I'm not sure I understand the question.

6 Q. Well, in terms of the specific dispute
7 as to why claim seven is indefinite, the dispute
8 centers around the term "predetermined value".
9 Would that be your understanding?

10 A. Yes.

11 Q. And can you describe for me how
12 predetermined value is used in claim seven in your
13 opinion?

14 A. That that's a means for the Pezzetta to
15 rate or to evaluate how effective the technology
16 is. And that -- I read that and I understand that
17 as, you know, we can quantify how effective it is.
18 And in that score, there is an identification
19 score. And then we know if it is trained. If it
20 is different from a predetermined value, because
21 that -- at each mill or with each model, the
22 Pezzetta would have knowledge about what would be
23 that score and what is effective.

24 Q. And when you testified that we know --
25 or strike that.

1 When you testified that we can
2 quantify how effected it is, what is the "it" in
3 that statement?

4 A. The deep learning model.

5 Q. So the predetermined value allows you to
6 quantify how effective the deep learning model is
7 in identifying characteristics of the logs; is
8 that accurate?

9 A. Can you read that back?

10 Q. Yeah. So the predetermined value, as it
11 is used in claim seven, allows you to quantify or
12 determine -- strike that. Let me just restart it.

13 The predetermined value as used in
14 claim seven, allows you to determine how effective
15 a deep learning model is in identifying the
16 characteristics of the logs; is that right?

17 A. In seven, the predetermined value is a
18 measure of the training of the model. It says,
19 "Considering the deep learning model trained if
20 the identification score is different from
21 predetermined value."

22 Q. So it provides a threshold; is that
23 accurate?

24 A. Yes.

25 Q. So I wanted you to turn to page 54 in

1 your report.

2 A. (Witness complies.)

3 Q. So if you look at paragraph 174, can you
4 describe for me what you are -- or what's being
5 disclosed in paragraph 174?

6 A. It appears to be that a -- it is related
7 to a Pezzetta understanding, the amount of
8 residual bark in a debarked log that would be
9 acceptable versus not.

10 Q. And is it fair to say that in 174 you
11 say that the threshold or the predetermined value
12 could be based upon the amount of bark present at
13 the end of the debarking process; is that right?

14 A. It could.

15 Q. And if you go down to paragraph 175,
16 isn't it -- can you describe for me what you're
17 disclosing in paragraph 175?

18 A. That relates to what -- how well a human
19 -- or what's the human error rate for species
20 identification. And then it's comparatively that
21 if, for example, a human can -- error rates in one
22 study 6.8 to 7.6 percent, then it's -- that is
23 90 -- accurate 94 -- approximately 94 percent of
24 the time.

25 Q. So is it fair to say that as described

1 in paragraph 175, the predetermined value as used
2 in claim seven could be 94 percent?

3 A. For accuracy of species identification?
4 Based on that study it could be.

5 Q. And that's based upon the average
6 skilled -- the error rate of an averaged skilled
7 human operator?

8 A. In one study.

9 Q. In one study; is that right?

10 A. Yes.

11 Q. And is it fair to say that that
12 threshold value could be different than the
13 accuracy threshold that you described in paragraph
14 174 that relates to the amount of bark present?

15 A. Well, they're considering two different
16 things. One being percent bark in the chips and
17 one being species identification.

18 Q. But both of them are being used to
19 determine the -- to provide the predetermined
20 value in claim seven. Right?

21 MS. BURKS: Objection. Asked and
22 answered.

23 A. They may be, but not necessarily.

24 BY MR. DANLEY:

25 Q. What else could be used to determine the

1 predetermined value or calculate the predetermined
2 value?

3 A. Well, this is related to training. So
4 training with respect to speciation could have one
5 threshold or one value. And training with respect
6 to percent bark in the chips could have a
7 different predetermined value. And they could be
8 combined in some type of weighted manner to come
9 up with a single value.

10 Q. So this is a third value that could be
11 used as the predetermined value; is that your
12 testimony?

13 A. One could use either of these or one
14 could develop a weighted means of having a single
15 predetermined value. But a Pezzetta would be
16 aware of that and knowledgeable of that.

17 Q. So I want to introduce what was
18 previously marked as Exhibit 1006. You recognize
19 this document?

20 A. Yes.

21 Q. And what is this document?

22 A. U.S. patent -- U.S. 2019/0003829A1. By
23 Kambla and Sirp.

24 Q. And is it okay if I refer to this as the
25 Kambla reference?

1 A. Yes.

2 Q. Or as Kambla?

3 A. Yes.

4 Q. And you reviewed Kambla in preparing
5 your declaration; is that right?

6 A. I did.

7 Q. And you reviewed Kambla to prepare for
8 today's deposition?

9 A. I did.

10 Q. Do you consider yourself to be familiar
11 with what is disclosed in Kambla?

12 A. I do.

13 Q. And can you describe for me what Kambla
14 discloses?

15 A. Kambla essentially discloses a means of
16 taking a photograph of the end of a stack of logs
17 and including a reference stick or measuring
18 device next to the logs and then estimating or
19 determining the area of the circle of each of the
20 ends of each log.

21 Q. Doesn't Kambla also disclose determining
22 wood species with the incoming log or of a log?
23 Let me strike that and ask a cleaner question.

24 Doesn't Kambla also disclose
25 determining the wood species of a log?

1 A. I don't know that Kambla discloses that.

2 Q. So if you look at paragraph 89 of
3 Kambla, first sentence of paragraph 89 states:
4 "In the alternative, embodiment, a defect in tree
5 species, detectors added additionally after pixel
6 segmentation routine 32." Do you see that?

7 A. Yes.

8 Q. Does that refresh your recollection as
9 to whether Kambla discloses determining or
10 identifying tree species of a log?

11 A. I'm not sure that's -- is that in the
12 claims?

13 Q. Why is it important if it is in the
14 claims?

15 A. Because I'm not sure he claims that
16 there -- or they claim that their invention does
17 that.

18 Q. I wasn't asking what you think the
19 invention is of Kambla. What I was asking about
20 is the disclosure in Kambla.

21 So isn't it accurate, based upon
22 that paragraph, that Kambla discloses identifying
23 the tree species of a log?

24 MS. BURKS: Objection. Vague.

25 A. I'm not convinced he is disclosing it,

1 because I think he discusses previously or in this
2 that that needs to be input.

3 BY MR. DANLEY:

4 Q. Well, actually, turning to your report,
5 I didn't see anything in your report describing
6 the identification of tree species in Kambla. Can
7 you point me to anything in your report that
8 provides your opinion related to tree species as
9 disclosed in Kambla?

10 A. I think my report doesn't include tree
11 species with respect to Kambla.

12 Q. When we started the deposition I asked
13 you if you wanted to add anything to the opinions
14 described and disclosed in your declaration and
15 you said no. Do you remember that?

16 A. Yes.

17 Q. So do you still stand by that statement
18 that you don't want to add any further opinions
19 than what's being disclosed in your declaration?

20 A. I do stand by that.

21 Q. So, as you're sitting here today, do you
22 have any opinion as to whether or not Kambla
23 discloses the identification of tree species based
24 on a deep learning model?

25 A. I would have to review Kambla.

1 Q. As you're sitting here right now, that
2 opinion is not in your report. Correct?

3 A. Correct.

4 Q. And as you're sitting here now, is it
5 fair to say you do not have an opinion as to
6 whether or not Kambla provides a disclosure
7 related to the identification of tree species
8 using an AI model?

9 MS. BURKS: Objection. Asked and
10 answered.

11 A. Yeah. To my knowledge, Kambla does not
12 claim that in his invention.

13 BY MR. DANLEY:

14 Q. But you have no opinion as to whether or
15 not it is disclosed in Kambla?

16 MS. BURKS: Objection. Asked and
17 answered.

18 A. I'm not sure that it does. Because in
19 that paragraph 89, he discusses output of a
20 training process included images of logs of a
21 predetermined species.

22 BY MR. DANLEY:

23 Q. Well, again, the training process is
24 different from the actual implementation of the AI
25 model, isn't it?

1 A. Yes.

2 MS. BURKS: Objection. Vague. Asked
3 and answered.

4 A. It can be.

5 BY MR. DANLEY:

6 Q. And Kambla does disclose tree species
7 detector for identifying tree species, doesn't it?

8 MS. BURKS: Objection. Vague. Asked
9 and answered.

10 A. I don't know how to answer this any
11 differently than I have.

12 BY MR. DANLEY:

13 Q. Which is?

14 A. That I'm not sure he is disclosing that.

15 Q. Well, I guess what I am trying to
16 understand is the -- I'm not sure that you have no
17 opinion or you're not sure in the negative do
18 you -- that you don't think Kambla does disclose
19 it. I guess that is the part I am confused about.

20 A. I'm not certain he's disclosing it.

21 Q. But that opinion is not in your
22 declaration, is it?

23 A. It is not.

24 Q. And it is not something you analyzed
25 previous to today, is it?

1 A. I did review Kambla.

2 Q. But the --

3 A. And I understand he doesn't claim any
4 tree species detector and he doesn't have any
5 control.

6 Q. So is the basis of your opinion that
7 Kambla does not claim tree species identifier?

8 MS. BURKS: Objection. Asked and
9 answered.

10 A. Kambla does not claim a tree species
11 identifier. I believe that to be true.

12 BY MR. DANLEY:

13 Q. And that is the basis of your opinion,
14 related to Kambla and a tree species
15 identification; is that right?

16 A. Yes.

17 Q. So if you go back to your report and you
18 look at section C, starting on page 40. That is
19 your description of Kambla; is that right?

20 A. Yes.

21 Q. You do something really odd, because you
22 use marketing material to inform your description
23 of the Kambla reference. Is that -- why did you
24 do that?

25 A. Can you be more specific?

1 Q. Yeah. So if you look at the last
2 sentence of paragraph 125, you say that --

3 MR. DANLEY: Do you know how to
4 pronounce their name?

5 MS. BURKS: Timbeter.

6 MR. DANLEY: Timbeter?

7 MS. BURKS: Yeah.

8 MR. DANLEY: Really? I wouldn't have
9 thought that.

10 BY MR. DANLEY:

11 Q. "Timbeter has a product embodying the
12 patent, which is described throughout the patent
13 and also in marketing materials." Do you see that
14 sentence?

15 A. Yes.

16 Q. So my question is that is -- why did you
17 use the marketing materials to inform your
18 description of what is disclosed in the patent?
19 That is a very odd thing to do.

20 MS. BURKS: Objection. Mischaracterizes
21 testimony.

22 A. Because that describes the commercial
23 level of their invention.

24 BY MR. DANLEY:

25 Q. Couldn't the patent be broader than the

1 commercial level of their invention?

2 A. Well, anything is possible.

3 Q. So you say Timbeter has a product
4 embodying the patent. How do you know that the
5 product embodies the patent?

6 A. That is my understanding, based on my
7 knowledge of them, my review of their patent and
8 my review of their materials.

9 Q. Did you perform an analysis mapping the
10 disclosures in the patents to the disclosures in
11 the marketing material?

12 A. No. I'm aware they have a commercial
13 product that is used to volumetrically measure
14 logs in a stack or on a truck.

15 Q. And when you say it is your
16 understanding, based on your knowledge of them,
17 what knowledge of Timbeter do you have?

18 A. I am a part of the Southern Lumber
19 Manufacturers Association and the Mississippi
20 Lumber Manufacturers Association. And they have
21 periodic meetings a couple of times a year. And
22 as part of those, they have trade shows. And
23 vendors come to the trade shows. And to my
24 knowledge, Timbeter has come to those promoting
25 their materials. And some are incorporated in

1 regional sawmills.

2 Q. So I'm going to introduce what was
3 previously marked as Exhibit 2027. Do you
4 recognize Exhibit 2027?

5 A. Yes.

6 Q. What is Exhibit 2027?

7 A. It is from a Timbeter blog.

8 Q. And I believe that you cite Exhibit 2027
9 throughout your discussion of the Kambla
10 reference. Right?

11 A. Yes.

12 Q. So does Exhibit 2027 have any patent or
13 patent application numbers included within it?

14 MS. BURKS: Objection. Scope.

15 A. I don't think so.

16 BY MR. DANLEY:

17 Q. Does Exhibit 2027 state that the
18 Timbeter product embodies the Kambla reference?

19 A. Exhibit 2027 appears to be the Real
20 World application of what is covered in the
21 patent.

22 Q. That wasn't quite my question.

23 My question is that: Does Exhibit
24 2027 have any statements or analysis stating that
25 the Timbeter product embodies the patent that is

1 the Kambla reference to the patent application
2 that is of the Kambla reference?

3 A. Not to my knowledge.

4 Q. So I want to introduce what was
5 previously marked as Exhibit 2028. Do you
6 recognize Exhibit 2028?

7 A. Yes.

8 Q. And you reviewed Exhibit 2028 to prepare
9 your declaration?

10 A. Yes.

11 Q. And to prepare for today's deposition?

12 A. No.

13 Q. Okay. Would you consider yourself to be
14 familiar with Exhibit 2028?

15 A. Yes.

16 Q. So the same questions. Does Exhibit
17 2028 list the patent application that is the
18 Kambla reference?

19 A. No. It is a description of how it is
20 used that -- measuring log sizes.

21 Q. And does Exhibit 2028 include any
22 statement or analysis providing that the Timbeter
23 product embodies the patent application that is
24 the Kambla reference?

25 A. Not to my knowledge.

1 Q. Did you review any other marketing
2 material from Timbeter in providing your
3 description of the Kambla reference other than
4 Exhibits 2027 and 2028?

5 A. None other than those and any others
6 that are listed in my reliance materials.

7 Q. I didn't see anything else listed in
8 your reliance materials, so I just wanted to know
9 if there is anything else that you remember that
10 was used for forming your opinion?

11 A. No.

12 Q. So if you look at paragraph 126, that's
13 where you describe the reference. Do you see
14 that?

15 A. Yes.

16 Q. Can you describe for me what the
17 reference is?

18 A. The reference could be anything of known
19 length.

20 Q. And what is it used for?

21 A. Calibrating the size of the objects of
22 interest.

23 Q. In this case, the objects of interest
24 would be the ends of the logs; is that right?

25 A. Correct.

1 Q. And if I look at the picture that is
2 included with paragraph 126, is the reference the
3 orange and green stick that is shown vertically in
4 that picture?

5 A. Yes.

6 Q. To your knowledge, do you have any
7 opinion as to whether the reference is used to
8 determine wood species in the Kambla reference?

9 A. To my knowledge, the reference is used
10 to calibrate diameter only.

11 Q. So if you look further down in paragraph
12 126, it states that -- or you state that:
13 Timbeter urges that this is the most important
14 step. Do you see that?

15 A. Yes.

16 Q. What is the -- that's referenced in that
17 sentence?

18 A. The inclusion of the reference object
19 dimension.

20 Q. And is that statement based upon the
21 disclosures in the Kambla reference itself or is
22 that statement based upon disclosures in the
23 marketing material that you reviewed?

24 A. To my recollection, it's disclosures in
25 the patent.

1 Q. Well, if you look at the previous
2 sentence above the picture, where it talks about
3 the reference is a physical object.

4 A. Yes.

5 Q. You see that sentence?

6 A. Yes.

7 Q. And then the citation to that sentence
8 is footnote 66. Footnote 66 is Exhibit 2027.
9 Which is one of the marketing -- pieces of
10 marketing material that I provided to you. Do you
11 see that?

12 A. Yes.

13 Q. You don't cite to the patent to support
14 that statement, do you?

15 A. No. But that doesn't suggest that it is
16 not in the patent.

17 Q. Can you describe -- can you show me
18 where in the patent it says that the reference is
19 the most important step?

20 A. I will have to look for it.

21 Q. Actually, strike that.

22 If -- isn't it fair to say that
23 even if the statement is true, that this is the
24 most important step for determining the diameter
25 of the log?

1 A. Can you repeat that?

2 Q. Yeah. So even if the statement is
3 accurate, that Timbeter urges that this is the
4 most important step, isn't it fair to say that
5 this is the most important step for determining
6 the diameter of the log?

7 A. In Kambla?

8 Q. Or the Timbeter product.

9 A. Yeah. The reference stick is needed to
10 calibrate the image to calculate the diameters.

11 Q. And isn't it fair to say that you do not
12 provide an opinion in your declaration about
13 incorporating the wood species identification
14 features of Kambla into the system disclosed in
15 Gagnon?

16 MS. BURKS: Objection. Misstates the
17 record. Lacks foundation.

18 A. I'm not sure I understand the question.

19 BY MR. DANLEY:

20 Q. So -- what part do you not understand?

21 A. The question.

22 Q. So isn't it accurate that you do not
23 provide any description or opinion in your
24 declaration about incorporating the wood species
25 identification feature of Kambla into the system

1 -- the debarking system that is described in
2 Gagnon?

3 MS. BURKS: Objection. Misstates the
4 record. Lacks foundation.

5 A. I don't discuss Kambla with respect to
6 species identification.

7 BY MR. DANLEY:

8 Q. At all, correct?

9 A. Correct.

10 Q. Okay.

11 A. They don't claim that.

12 MR. DANLEY: I don't have any further
13 questions.

14 MS. BURKS: I have just clarifying
15 questions.

16 Are -- do you want to take a break or
17 can you roll in?

18 MR. DANLEY: I can roll in.

19 EXAMINATION BY MS. BURKS:

20 Q. You stated that Kambla does not claim
21 specie identification. Do you believe that Kambla
22 discusses a method for identifying the species of
23 logs in a stack?

24 MR. DANLEY: Objection. Beyond the
25 scope of his opinion.

1 A. He discusses species. Does that answer
2 the question?

3 BY MS. BURKS:

4 Q. Can you provide more details on how
5 species is discussed within Kambla?

6 MR. DANLEY: Same objection.

7 A. Paragraph 56 discusses it.

8 "Stratification parameters comprise
9 length of the logs within the stack, tree species
10 of the logs in the stack, a routine for volume
11 calculation."

12 So in that instance, species would
13 need to be entered by the operator as would
14 length.

15 BY MS. BURKS:

16 Q. Earlier you mentioned there is a wood
17 identification course as part of the program at --
18 that you are involved in at Mississippi State. Do
19 you recall that conversation?

20 A. Yes.

21 Q. Can you clarify when you say wood
22 identification and the use of AI specifically in
23 wood identification, what "wood" means?

24 A. In that instance, "wood" means lumber or
25 pieces of wood cut from trees.

1 Q. Would the bark have been removed in the
2 AI application that you were discussing
3 previously?

4 A. In the context of Mississippi State
5 University's wood identification, the bark would
6 have been removed.

7 MS. BURK: All right. That's all the
8 questions that I have.

9 MR. DANLEY: Okay.

10 VIDEOGRAPHER: This concludes the
11 deposition. The time is 12:20.

12 (Ended at 12:20 p.m.)
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CERTIFICATE OF COURT REPORTER

I, Todd J. Davis, Court Reporter and
Notary Public in and for the County of Madison,
State of Mississippi, hereby certify that the
foregoing pages contain a true and correct
transcript of the testimony, as taken by me in the
aforementioned matter at the time and place
heretofore stated, as taken by stenotype and later
reduced to typewritten form under my supervision
to the best of my skill and ability by means of
computer-aided transcription.

I further certify that under the
authority vested in me by the State of Mississippi
that the witness was placed under oath by me to
truthfully answer all questions in this matter.

I further certify that I am not in the
employ of or related to any counsel or party in
this matter and have no interest, monetary or
otherwise, in the final outcome of this matter.

Witness my signature and seal this the
25TH day of JUNE, 2026.


TODD J. DAVIS, CSR #1406

My Commission Expires:
March 27, 2029

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3 NICHOLSON MANUFACTURING, LTD. PETITIONER
4 VERSUS CASE NO. PGR2025-00081
5 U.S. PATENT NO. 12,163,947

6 BID GROUP TECHNOLOGIES, LTD. PATENT OWNER

7 CERTIFICATE OF DEPONENT

8 I, RUBIN SHMULSKY, PH.D., certify that I
9 have examined the foregoing pages as to the
10 correctness thereof, and that after reading said
11 pages, I find them to contain a full and true
12 transcript of the testimony as given by me on JUNE
13 23, 2026, except for the list of corrections, if
14 any, attached on a separate sheet with the page
15 number, line number and the desired
16 correction/change. Witness my hand, this the
17 _____ day of _____, 2026.

18 _____
19 RUBIN SHMULSKY, PH.D.

20 CERTIFICATE

21 Subscribed and sworn to before me, this
22 the ____ day of _____, 2026.

23 My Commission Expires: _____

24 _____ Notary Public
25



Reference No.: 14884148

Case: NICHOLSON MANUFACTURING V. BID GROUP TECH

DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury that I have read the entire transcript of my Deposition taken in the captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET hereof, with the understanding that I offer these changes as if still under oath.

Rubin Shmulsky PhD

NOTARIZATION OF CHANGES

(If Required)

Subscribed and sworn to on the _____ day of

_____, 20____ before me,

(Notary Sign)_____

(Print Name) _____ Notary Public,

in and for the State of _____



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