

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

**IN RE: IPR2023-00473, IPR2023-00474
U.S. Patent No. 11,007,583**

**VIKING DRILL & TOOL, INC.,
Petitioner,
vs.
HONGJIA WANG,
Patent Owner.**

-----/

**DEPONENT: DR. STEVEN R. SCHMID
DATE: Tuesday, September 26, 2023
TIME: 8:57 a.m. Central
LOCATION: Zoom Video Conference
REPORTER: Shari J. Pavlovich, CSR-5926
VIDEOGRAPHER: Bailey Wellman
Job No.: 26100**

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Appearing for Hongjia Wang, Patent Owner

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1 Tuesday, September 26, 2023

2 About 8:57 a.m. Central

3 - - -

4 VIDEOGRAPHER: Good morning. We
5 are now on the record at 8:57 a.m. Central Time
6 on Tuesday, September 26th, 2023. This begins
7 the videotape deposition of Steven R. Schmid
8 taken in the matter of Viking Drill & Tool,
9 Inc. versus Hongjia Wang. We are taking this
10 dep remotely.

11 My name is Bailey Wellman, your
12 remote videographer today. The court reporter
13 is Shari Pavlovich. We are both representing
14 Fortz Legal Support.

15 As a courtesy, will everyone who
16 is not speaking, please mute your audio. And
17 remember to unmute your audio when you are
18 ready to speak.

19 Counsel, will you please state
20 your name and whom you represent, after which
21 our court reporter will swear in the witness.

22 MR. CUNNINGHAM: Hi, my name is
23 Kelly Cunningham of Ervin Cohen and Jessup,
24 representing the Plaintiffs. In fact, I guess
25 in this case it's Hongjia Wang, Patent Owner.

1 **MR. VANDENBURGH: And Derek**
2 **Vandenburg of the Carlson Caspers law firm,**
3 **representing the Petitioner, Viking.**

4 - - -

5 **DR. STEVEN R. SCHMID,**
6 **having affirmed or been duly sworn, was**
7 **examined and testified as follows:**

8 **EXAMINATION**

9 **BY MR. CUNNINGHAM:**

10 **Q Well, good morning, Mr. Schmid. Could you, I**
11 **guess, starting off, could you spell your first**
12 **and last names for the record?**

13 **A Sure. Steven, S-T-E-V-E-N. The last name is**
14 **Schmid, S-C-H-M-I-D.**

15 **Q Good. And have you been deposed before,**
16 **Mr. Schmid?**

17 **A Yes, I have.**

18 **Q And how many times have you been deposed**
19 **before?**

20 **A I don't really know. It's more than 50, I'm**
21 **sure.**

22 **Q Oh. And are they depositions in the capacity**
23 **of an expert witness?**

24 **A Usually, yes.**

25 **Q How many times have you been deposed as a fact**

1 witness?

2 A I don't know.

3 Q Can you give me a ballpark?

4 A It might be as many as ten, but probably closer

5 to five.

6 Q Okay. In what type of case have you been

7 deposed as a fact witness?

8 A Well, I was employed by a company called

9 Triodyne, Inc. If I was working as an engineer

10 on a case, I may have to give testimony about

11 the nature of experiments that were performed,

12 things of that nature. But I would not provide

13 expert testimony in those circumstances.

14 Q You said you would have testified. Did you

15 testify on the nature of experiments being

16 taken?

17 A A few times, yes.

18 Q And any other type of fact witness testimony

19 you've given in depositions before?

20 A I can't recall anything else.

21 Q Have you ever testified as a fact witness

22 regarding any mechanical engineering mechanism?

23 A Let me backtrack a little. My wife did have a

24 lawsuit against an insurance company for

25 failure to pay her benefits. And I did testify

1 as a fact witness there, but it's not related
2 to engineering at all.

3 Q Sure.

4 A So but I think other than that, it's -- it's
5 all been related to either patent or product
6 liability investigations.

7 Q Okay. Has it ever involved hardware?

8 A I think all I deal with is hardware.

9 Q Has it ever been involving tools?

10 A I don't know if I was deposed with respect to
11 tools. I've worked on tools, as you'll see.

12 Q Have you been deposed regarding any drill bit
13 technology in the past?

14 A I don't know that I've been deposed on that
15 topic.

16 Q And --

17 A I don't think I have.

18 Q All right. Well, anyway, let's back up for a
19 second and just talk about depositions.

20 Obviously, you're familiar with
21 the deposition process. If I ask you
22 questions, I'll ask that you wait for my
23 answer -- wait for the end of my question for
24 you to answer.

25 Do you understand that?

1 A Yes, I do.

2 Q And when it comes to answers we need something
3 verbal, like a "yes" or "no", or something like
4 that so the court reporter can take down your
5 testimony; correct?

6 A I understand, yes.

7 Q And obviously, if you need to take a break,
8 obviously, finish the answer that you might be
9 giving. And then let's take a break after that
10 answer. Okay?

11 We don't usually take a break
12 between the question and answer. Do you
13 understand that?

14 A Yes, I do.

15 Q And is there any reason today that your
16 testimony can't -- cannot be relied upon as
17 truthful?

18 A No, I don't believe so.

19 Q You're not on any medication that would affect
20 that?

21 A No.

22 Q Of course, if I ask a question that you don't
23 understand, of course, just ask me to clarify,
24 and I'll certainly attempt to clarify my
25 question.

1 Do you understand that?

2 A Yes, I do.

3 Q Do you understand you're being asked to be
4 deposed today in your capacity as an expert
5 witness for the Petitioner, Viking Drill &
6 Tool?

7 A I understand.

8 Q And based on your retention as an expert
9 witness, you've prepared a declaration in this
10 matter.

11 Do you understand that?

12 A I think it's two declarations.

13 Q Declaration for two different petitions;
14 correct?

15 A I believe that's correct, yes.

16 Q So if I refer to one declaration as the
17 declaration for the '473 matter, you understand
18 that to be for the petition that ends with the
19 numbers '473; correct?

20 A I understand, yes.

21 Q And then the other one, I'll refer to as the
22 '474 declaration, perhaps.

23 Is that fine with you?

24 A Yes.

25 Q In preparation for your deposition today, have

1 you spoke with anybody?

2 A Yes, I have.

3 Q Who is this?

4 A So I had a meeting yesterday with Counsel.

5 Q Do you recall who?

6 A Mr. Vandenburg, I think. Ms. Trichi was there

7 for part of the time. Mr. Daniels.

8 Q How long was that?

9 MR. VANDENBURGH: Just, I'll

10 correct the record there, Mitch Williams.

11 THE WITNESS: Mitch Williams,

12 I'm sorry. Sorry, Mitch. It was on the order

13 of -- well, in the morning. So on the order of

14 three hours, I would say.

15 BY MR. CUNNINGHAM:

16 Q Anything else you can recall?

17 A Not really.

18 Q Any other meetings with any Counsel?

19 A No.

20 Q Did you review any documents for your

21 deposition today?

22 A Yes, I did.

23 Q And what was that?

24 A I basically reviewed my, you know, the

25 declarations.

1 Q Your '473 and '474 declarations?

2 A That's correct.

3 Q Did you review any of the Exhibits to the
4 declaration?

5 A If necessary, I did, yes.

6 Q Okay. Which Exhibits did you recall reviewing?

7 A Well, for example, the Wang '900 application,
8 and the '583 Patents. I recall referring to
9 those.

10 Q Anything else?

11 A I recall last night I reviewed the section of
12 the "Tool and Manufacturing Engineer's
13 Handbook" that relates to drills.

14 Q And what did you review within the section that
15 relates to drills?

16 A Just cursing -- you know, just a review of the
17 subject matter that's covered. You know, I may
18 have referred to other patents, as well.
19 Nothing jumps out at me as being particularly
20 consequential.

21 Q Which other patents?

22 A They're the ones that are described in the
23 declarations.

24 So do you want me to list them?

25 Q Sure.

1 A So there's the Wang application. There's the
2 Bannister Patent, last three numbers are '186.
3 The Welty patent, '532; Chinese patent by Zhou;
4 Gentry patent, last three numbers are '215;
5 Durfee patent, last three numbers are '929;
6 Korb, last three numbers are '458.

7 And I think there's a few
8 others, but I think those are predominantly the
9 ones I looked at. And some of these, more than
10 others. Some just barely.

11 Q So you say you haven't been -- have you ever
12 been retained as an expert regarding any drill
13 bit technology?

14 A Yes, I have.

15 Q Okay. And what was that case or cases?

16 A I'm not sure it was a case. There was an issue
17 of a drill designer who was pursuing a patent
18 protection. And I was retained to provide a
19 scientific rationale for the design that they
20 were pursuing and why it worked so well on
21 bone, because it was a bone drill.

22 Q And do you recall the name of the matter?

23 A Again, I don't know that there was a matter.
24 They were pursuing a patent, which they were
25 successful in receiving.

1 I was just there to provide a
2 rationale for the design options, the design
3 features that they were incorporating.

4 Q Do you recall the inventor's name?

5 A I believe it is Scott Campbell and John
6 Campbell, who are a father and son team.
7 They're from Australia.

8 Q Was that on behalf of any company? Do you
9 remember a company name?

10 A It was their company. I believe at the time
11 they didn't form their company yet. They later
12 formed a company.

13 Right now I can't remember the
14 name of the company. It's something -- it's on
15 the tip of my tongue. I'll remember it. I'm
16 sure I'll remember it in a minute.

17 Q And what was your conclusion as to why it
18 worked so well on bone?

19 A So bone is a unique composite material. The
20 outer core is very brittle.

21 And they were using pretty much
22 a direct application of merchant theory to
23 change the rake angle across the radius of the
24 drill bit, so that you could induce
25 more plasticity in this brittle material and

1 have a more even cut and a better cut from a
2 biological standpoint.

3 That's the case in a nutshell.

4 Q Roughly when was that?

5 A It's around ten years ago. It was before I
6 started serving the U.S. government. So I'm
7 going to guess around 2012.

8 Q Let's go back to your education for a moment.

9 Where did you get your
10 undergraduate degree?

11 A Illinois Institute of Technology, 1986.

12 Q And what was the degree in?

13 A It was Bachelor of Science in mechanical
14 engineering, with honors.

15 Q And did you have any further educational
16 experience?

17 A Yes, I have.

18 Q What was that?

19 A I have received my Master's degree part time at
20 Northwestern University. I received it in
21 1989.

22 After that I received a Ph.D.
23 from Northwestern University. Both of those
24 degrees are in mechanical engineering. I
25 received my Ph.D. in 1993.

1 Q What was your focus in your Master's program?

2 A Master's program was a methodology for upper
3 bound modeling of metal cutting, and a sheet
4 metal forming operation. But mostly metal
5 cutting, with wave removal as the topic.

6 Q As far as your doctorate, what did you focus on
7 in your doctorate degree?

8 A My Ph.D. thesis was entitled "Lubrication with
9 Emulsions." It was a study of the travelogical
10 conditions in metal forming, especially metal
11 rolling.

12 Q What did you do after you graduated with your
13 Doctorate?

14 A I accepted a position as an assistant professor
15 at the University of Notre Dame.

16 Q What classes did you teach there?

17 A I would teach design of machinery,
18 manufacturing, tribology, those types of
19 courses. Graduate-level courses in metal
20 forming and metal cutting.

21 I've taught ethics. I've taught
22 solid mechanics. I've taught dynamics. So I
23 teach a variety of courses.

24 Q Do you ever teach any classes in a drill bit
25 technology?

1 A It's part of the manufacturing courses I teach.

2 Q And you say "teach", is it now or back then?
3 I'm still -- I guess, let's focus on assistant
4 professor at Notre Dame.

5 How long were you a assistant
6 professor at Notre Dame?

7 A Six years.

8 Q And while a professor at Notre Dame --
9 assistant professor at Notre Dame, did you have
10 an occasion to teach any classes on drill bit
11 technology?

12 A So it's part of the manufacturing courses I
13 would teach.

14 Q Did you ever teach classes on drill bit design?

15 A There's levels of this. But I would say there
16 were not courses on drill bit design, but the
17 topic did come up.

18 Drill bit design features was
19 something that was discussed from time to time,
20 yes.

21 Q And what did you do after being a professor --
22 assistant professor at Notre Dame for six
23 years?

24 A As is the normal case, in the sixth year
25 there's a tenure decision. And I was given

1 tenure and the title of associate professor.

2 Q And for how many years were you an associate
3 professor?

4 A Not sure exactly. Probably around ten, then
5 was promoted to full professor.

6 Q Did your roles change any when you went from
7 assistant professor to associate professor?

8 A Well, they always do. You're asked to serve on
9 more committees. You're asked to provide more
10 leadership on larger research efforts.

11 So the roles naturally change.
12 But that's in the progression of a career, as
13 well.

14 Q Did you continue to teach any classes in your
15 time as an associate professor?

16 A Always.

17 Q And did you teach any classes on manufacturing
18 processes?

19 A Always, yes.

20 Q Any that included drill bit design, drill bit
21 manufacturing?

22 A Yes.

23 Q Did you ever teach on actually making any drill
24 bits?

25 A Yes.

1 Q And what type of classes would that have
2 involved?

3 A So in the manufacturing course, there's a
4 philosophy that, actually, I was one of the
5 early advocates for, to bring your research
6 into the classroom, to engage and inspire
7 undergraduates.

8 So my research projects were
9 brought into the manufacturing courses from
10 time to time. And those dealt with metal
11 cutting and drilling.

12 Q But did it ever involve drill bit design?

13 A Yes, it did.

14 Q Have you ever made any drill bits of your own?

15 A I don't believe so, no.

16 Q Have any of your grad students ever made drill
17 bits of their own while under your supervision?

18 A I don't believe so, but it's possible.

19 Q And you were made full professor in about
20 roughly what year?

21 A I'm going to guess it was around 2006, 2008.
22 If you have my résumé, it should have the date
23 on there. I don't even remember.

24 Q Let's go head and pull that up, if you have a
25 copy of your CV.

1 A I do not.

2 Q Oh, yeah. I have one right in front of me.
3 See this?

4 Kidding. I wish I could get you
5 a copy of the CV. But maybe we can get to that
6 a little bit later in the day when my staff
7 arrives.

8 A The CV speaks for itself. The dates, I
9 believe, on the CV are accurate.

10 VIDEOGRAPHER: They did upload
11 some Exhibits. I should be able to pull it up
12 here. One moment.

13 MR. CUNNINGHAM: Great.
14 (Deposition Exhibit 1 was
15 marked for identification.)

16 BY MR. CUNNINGHAM:

17 Q Are you able to see this, Professor Schmid?

18 A Yes.

19 Q Great.

20 MR. CUNNINGHAM: So and, could
21 you give him the control of this, maybe?

22 BY MR. CUNNINGHAM:

23 Q Do you have the ability to control this with
24 the computer you have there, Mr. Schmid?

25 A I do.

1 VIDEOGRAPHER: Yeah, I just gave
2 you permission. So any time you want to take
3 control, you can just click inside the
4 document.

5 BY MR. CUNNINGHAM:

6 Q So we've been talking about some of this here,
7 as well. I think that maybe -- does anything
8 here fresh your recollection of when you became
9 full professor at Notre Dame?

10 A No. In this version of my résumé, I don't have
11 the dates there for my academic titles.

12 If it's critical for you, I can
13 find that out.

14 Q Okay. So how long were you the -- a full
15 professor at Notre Dame?

16 A I'm going to guess it's around ten years. I
17 was at Notre Dame for a total of 26.

18 Q Okay. And what did you do next?

19 A I took the position of -- while at Notre Dame I
20 had a few positions I took, such as a National
21 Science Foundation and the Advanced
22 Manufacturing National Program office.

23 But in 2020, January 1st, I left
24 Notre Dame and took the position of
25 Belk-Woodward distinguished professor at the

1 University of North Carolina at Charlotte.

2 Q What month was that?

3 A January 1st was my first day at UNC Charlotte.

4 Q So how did you handle the COVID era, just a few
5 months later?

6 A I was on campus for two months, then the campus
7 shut down.

8 Q Yeah. Then did a lot of teaching like we're
9 doing right now on Zoom?

10 A I'm very good at Zoom.

11 Q Okay. As a professor at University of North
12 Carolina, what -- what have been your roles?
13 Teaching?

14 A Absolutely, teaching, conducting research,
15 pursuing larger funding initiatives, and
16 leading multidisciplinary groups in larger
17 research initiatives, as well.

18 Q What was the impetus for leaving Notre Dame and
19 going to the University of North Carolina?

20 A So that's a great question. And it's a little
21 complicated.

22 But in a nutshell, I had a whole
23 lot of friends at UNC Charlotte -- Scott Smith
24 Tony Schmitz and others. You know, I had many
25 friends there. And at Notre Dame I was always

1 doing single investigator grants.

2 So going to Charlotte let me
3 pursue center-type activities, large group
4 activities. And that was exciting to me. And
5 I would be there with, you know, a faculty of
6 my friends.

7 Q So as an expert witness, you've done most of
8 your expert witness work while you were a
9 professor at Notre Dame?

10 A No. I think most of my expert witness work was
11 before I went to Notre Dame.

12 Q Tell me about that. So more than -- what is
13 it, more than 28 years ago?

14 A Yes.

15 Q And what capacity?

16 A When I had graduated from Illinois Institute of
17 Technology, I was recruited by a professor at
18 IIT to work at his company, Triodyne, Inc.

19 And Triodyne was -- it had three
20 major business foci. One was to provide expert
21 witness services for accident investigations,
22 industrial accidents; to provide safety
23 consulting to industry and government; and
24 especially a machine tool manufacturer.

25 So most of my testifying was

1 during my four to six years at Triodyne,
2 depending on how you want to label the years.

3 Q Talking between 1990 and 1993, something like
4 that?

5 A 1986 to around 1991, 1992. So I wasn't working
6 full time anymore.

7 But if there was a case where I
8 needed to testify, I would go and testify for a
9 day. So you know, the end date of Triodyne is
10 kind of blurry.

11 Q And while at Notre Dame did you -- you said you
12 worked outside of Notre Dame, as well? On
13 various projects were you retained by any
14 companies at that time?

15 A Okay. So I don't understand your question --
16 if you want me to talk about testifying or if
17 you want to talk about positions I took while
18 at Notre Dame.

19 Q How about outside positions you took outside of
20 Notre Dame?

21 A So I was the first faculty fellow at the
22 Advanced Manufacturing National Program office.

23 You know, the head of that
24 office has gone on record as saying that I
25 played a pivotal role in the design of the

1 Manufacturing USA program.

2 I also served as a program
3 director at the National Science Foundation,
4 where I reorganized the manufacturing programs
5 at NSF and established some long-standing
6 practices.

7 Q And what years were you in each of those
8 positions?

9 A So in -- you can see on the second page of my
10 CV, that I was at the Advanced Manufacturing
11 National Program office from 2012 to 2013.

12 Where's my NSF? Oh, number 3 on
13 the first page. It was the program director at
14 the National Science Foundation. That was 2016
15 to 2019.

16 Looks like I don't have a
17 closing date on there. I wonder if this is an
18 old version of my CV.

19 Q That certainly can happen.

20 So you worked back at
21 Triodyne -- I don't see anything here where it
22 says that you worked with any kind of tooling
23 or machining parts as an expert.

24 A So the only mention of Triodyne is on page 2,
25 item number 7. I only have four lines there.

1 I was pretty young in those
2 days. So I don't see a reason to really
3 emphasize it on my current curriculum vitae.

4 Q Well, same thing with, I guess, all of these
5 experiences here in section 2 of your CV that
6 span from page 1 to page 2.

7 Is there anything in here
8 referring to drill bit technology or machine
9 tool technology of any sort?

10 A Nothing that detailed. I'm happy to expand
11 upon it if you ask me.

12 But look, I spent 26 years at
13 Notre Dame. I have, really, four lines
14 describing it. So it's very generally what --
15 you know, what I was doing.

16 Q So do you have any -- do you have any patents
17 in your name?

18 A I do have a few patents, yes.

19 Q What are the technologies?

20 A So at Triodyne I was working on wheelchair
21 technology. I think there's one, maybe two on
22 wheelchairs.

23 At Notre Dame there were some
24 manufacturing approaches associated with
25 orthopedic implants when I was working with

1 those companies. But in general, I did not
2 pursue patents. Notre Dame didn't really want
3 their faculty doing intellectual property
4 development.

5 I think that's changed; but at
6 the time there was a greater focus on academic
7 pursuits; not, like, startup company type of
8 activities.

9 Q On page 5 of your CV I see that you talk about
10 books and book chapters; and then it goes on to
11 publications on page 7; conference papers on
12 page 10.

13 Is there anything here involving
14 drill bit technology?

15 A Oh, my gosh, yes.

16 Q Can you direct me to any of those?

17 A So first of all, I write the world's most
18 popular manufacturing textbook, that's
19 "Manufacturing Engineering and Technology."

20 I also write the world's second
21 most popular manufacturing textbook. That's
22 "Manufacturing Processes for Engineering
23 Materials." I have --

24 I've recently completed, it's
25 not out yet, but this "Schey's tribology in

1 Metalworking" is -- my understanding is it's
2 being printed right now by the American Society
3 for Materials, ASM.

4 That has a whole chapter on
5 machining, with sections on drilling. So quite
6 a bit of this has to do with drilling.

7 MR. CUNNINGHAM: Bailey, do you
8 have the publication -- not the publication,
9 I'm sorry. But the list of previous
10 testimonies that Mr. Schmid testified to,
11 called "previous testimonies"? Let me see if I
12 can figure out which Exhibit that is. Hold on.

13 VIDEOGRAPHER: Okay, thank you.
14 That will help. I'm going to look through the
15 list, though.

16 MR. VANDENBURGH: Actually, I
17 don't think there was any disclosure of any
18 previous testimonies.

19 BY MR. CUNNINGHAM:

20 Q Is that correct? Do you recall producing any
21 list of previous testimonies to Counsel in this
22 case?

23 A I have such a list available for the previous
24 five years, but I think that's what's generally
25 requested. But I don't know if I submitted it

1 or not.

2 MR. CUNNINGHAM: Derek, I'd like
3 a copy of that if that's okay.

4 MR. VANDENBURGH: Do you want to
5 take a break now? Or do you want to deal with
6 it in a break?

7 MR. CUNNINGHAM: I don't believe
8 it was ever included with his CV. I don't know
9 that we ever received anything like that.

10 MR. VANDENBURGH: Again, you
11 want to deal with it right now, or a little
12 later today?

13 MR. CUNNINGHAM: We can take a
14 break now and see if Mr. Schmid or you can come
15 up with a copy for us.

16 MR. VANDENBURGH: Sounds good.

17 MR. CUNNINGHAM: Let's go off
18 the record.

19 VIDEOGRAPHER: Off the record at
20 9:38 a.m.

21 (Short recess taken at 9:36
22 a.m.)

23 VIDEOGRAPHER: We are back on
24 the record at 9:46 a.m.

25

(Back on the record at 9:46
a.m.)

MR. CUNNINGHAM: Off the record,
Mr. Vandenburg mentioned that he doesn't
believe that there's a PTO rule requiring the
list of previous instances of deposition
testimony or instances of retention as expert.

And moreover, couldn't locate a
copy of it, in any event, during the break; is
that accurate?

MR. VANDENBURGH: Just to
clarify, I'm not aware of a rule. I don't
affirmatively know there isn't one, but I don't
know that there is one.

MR. CUNNINGHAM: All right. So
I guess I'll ask questions about your
deposition testimony without seeing a list.

But just for the record, if
there is one, this is kind of in the form of an
expert report. If there is one, it'd be nice
to obtain one as soon as possible. Possibly
have some opportunity, if both parties can
agree, to depose him on that with that in my
hands.

But in the meantime, let me go

1 ahead and ask him some questions about this.

2 BY MR. CUNNINGHAM:

3 Q You said you've testified upwards of 50 times
4 in your career; is that correct?

5 A I don't think you indicated we're back on the
6 record.

7 MR. CUNNINGHAM: Are we back on
8 the record?

9 COURT REPORTER: Yes, sir.

10 THE WITNESS: That's correct. I
11 think that's a reasonable estimate.

12 BY MR. CUNNINGHAM:

13 Q Okay. And little more difficult to do without
14 the list in front of me. But did you ever
15 testify concerning drill bit design, previous
16 to today?

17 A I don't recall any occurrences involving drill
18 bit technology.

19 Q How about drill bit design?

20 A I don't recall any testimony on that subject
21 matter, no.

22 Q How about drill bit manufacturing?

23 A I don't think there was deposition testimony,
24 no.

25 Q How about your understanding of what a twist

1 drill is?

2 A I don't recall any testimony on twist drills.

3 Q Or any testimony on step drills?

4 A I don't recall any testimony on drilling.

5 Q I understand you might have one or both of your

6 declarations in front of you; is that correct?

7 A That's correct. I have both.

8 Q Could you open up the '473 declaration, to

9 page 14?

10 A Yes.

11 Q Paragraph 13 you identify "a person of ordinary

12 skill in the art."

13 Do you see that?

14 A Yes.

15 Q Would you read through that to yourself and

16 tell me how you arrived at that opinion?

17 A (Witness reviewing document.) So the question

18 is, how I arrived at the opinion?

19 Q "Of what a person of ordinary skill in the art"

20 would be in paragraphs 13 and 14, actually, of

21 your '473 declaration.

22 A Well, it's based on my experience and my

23 education and my activities.

24 Q Did you review the subject patent, the '583

25 Patent, before determining this, a person

1 skilled in the art definition?

2 A I definitely read the patent before working on
3 this declaration.

4 Q Did you arrive at this declaration? Or did
5 your Counsel arrive at this definition?

6 A So there are portions that are heavily
7 dependent on the discussions I had with
8 Counsel.

9 Q Like what?

10 A Well, so, for example, you know, the factors
11 that may be considered in determining the level
12 of ordinary skill. I don't have those
13 memorized.

14 So you know, things like that,
15 which I understand to be accurate and truthful,
16 you know, were done with the assistance of
17 Counsel.

18 But on the other hand, 14 is
19 absolutely my description of what a person of
20 ordinary skill in the art would entail.

21 Q Have you ever attended a trade show regarding
22 drill bit technology?

23 A I've been at trade shows where there are drill
24 bits, where there is drilling discussed. I'm
25 not aware of a drilling-only trade show.

1 Q What do you mean by "being contacted by tooling
2 suppliers"?

3 What does that mean, in your
4 opinion?

5 A So I assume you mean in paragraph 14?

6 Q Yes.

7 A Where I say a person of ordinary skill in the
8 art:

9 "Would typically work in a team with
10 machinists and would be aware of
11 developments in the field of machine
12 tools, particularly drill bits, for
13 example, by attending trade shows
14 being contacted by tooling suppliers,
15 purchasing consumables for their
16 company, and by reading patents and
17 trade journals."

18 You're worried about the
19 prepositional phrase "being contacted by
20 tooling suppliers"?

21 Q What does that mean, in your opinion?

22 A When you're an engineer, you will be
23 contacted -- it seems almost daily, but it's
24 not that often -- by tooling suppliers to see
25 if they have any products that would meet your

1 needs. And they will try to make you aware of
2 them and make a sale.

3 Q "Purchasing consumables for their company,"
4 what do you mean by that?

5 A Well, like drill bits are a good consumable.
6 Inserts, you know, things like this are
7 generally the things that the engineers will
8 have to fill out a requisition request.

9 I'm not talking about things
10 like paper or notebooks. That's stuff that
11 wouldn't be something that a engineer would be
12 worried about. That just happens.

13 Q You state in paragraph 16 that:

14 "As of November 2019 (or
15 February 2016), I met the
16 qualifications of a person having
17 ordinary skill in the art."

18 Do you see that?

19 A Yes.

20 Q And what do you base that on?

21 A Well, I base that on the definition in 14.

22 Q And why do you say "as of November 2019 (or
23 February 2016)"?

24 A I think those are important dates for this
25 case.

1 Q Do you understand that -- what the difference
2 between the two dates are and why they're
3 important?

4 A I think --

5 MR. VANDENBURGH: I'll object to
6 the extent it calls for a legal conclusion, but
7 you can answer.

8 THE WITNESS: I thought there
9 were application dates or publication dates
10 that correspond to these.

11 BY MR. CUNNINGHAM:

12 Q Do you know which ones?

13 A No, I do not. Well, now that I'm looking, I
14 can tell you that the Wang Patent
15 application -- Wang looks like a patent.

16 So it looks, like, the '583
17 Patent has a file date of November 2019. So I
18 suspect that's where that number comes from.

19 And if I look at the Wang patent
20 application, I see a filing date of
21 February 2016. So I suspect that's where those
22 two dates came from.

23 Q So I can ask you to look at paragraph 29 of
24 your '473 declaration. You state:

25 "I also understand that objective

1 indicators of non-obviousness must be
2 considered in evaluating obviousness
3 when present ..."

4 Did you review or evaluate any
5 secondary considerations or objective
6 indicators, like secondary considerations in
7 reaching your conclusions?

8 A I think a few have been -- have been discussed
9 in this matter. I think part of this will be
10 what I call a secondary consideration. Maybe a
11 primary consideration to someone else; right?

12 So it might be better to discuss
13 them -- to discuss the issues and then
14 categorize them.

15 Q Did you evaluate any commercial success of any
16 products in arriving at any of your opinions in
17 your declarations?

18 A So I'm a mechanical engineer. My area isn't
19 marketing. So I have not worried about that
20 area.

21 I think, you know, engineers, we
22 don't have the training to even evaluate this.
23 If an engineer is going to talk about
24 marketing, it's kind of unusual, I would say.

25 Q And did you evaluate any copying that has

1 occurred in relation to the patented subject
2 matter in arriving at any of your opinions?

3 A So I'm not aware of any copying. I think
4 that's a strong word.

5 You know, I think it's got a
6 built-in allegation that I'm uncomfortable
7 with.

8 Q Reading on in paragraph 29, I see you say:

9 "A long-felt but unmet need in a
10 particular industry."

11 Do you -- did you evaluate any
12 argument of there being a long-felt, unmet need
13 in this particular industry regarding the
14 subject matter of the invention?

15 A I don't recall there being any -- any real
16 argument about there being an unmet need in
17 this industry.

18 Q And reading further, it says:

19 "And whether others in the field
20 praised the invention."

21 Did you consider or evaluate any
22 praise of the invention in this case?

23 A So again, I think that's going into the area of
24 marketing. It's not really -- unless we're
25 talking about technical issues, it's not my

1 background.

2 Q Did you evaluate any Viking product in arriving
3 at your -- in arriving at your opinions in this
4 case?

5 A Not to my knowledge.

6 Q Did you evaluate any product by Matco in
7 arriving at your opinions?

8 A Not to my knowledge.

9 Q Did you evaluate any real-world drill bit, like
10 an actual drill bit that you hold in your hand.
11 You hold the drill bit in your hand in
12 evaluating and arriving at your opinions in
13 this case?

14 A Well, of course. But not any particular
15 manufacturer or any particular product.

16 Q Did you ever have any of the Viking prior art
17 references that had been identified in --
18 strike that.

19 MR. CUNNINGHAM: Shari, could
20 you put on the screen, I guess, what's called
21 tab 03, A03?

22 VIDEOGRAPHER: One moment.

23 BY MR. CUNNINGHAM:

24 Q For lack of a better process, Professor Schmid,
25 instead of handing you a copy of the '583 Wang

1 Patent, we have to, like, put it up here on the
2 screen.

3 If you can take control of it,
4 of the screen, you can review it some.

5 Otherwise, do you have any
6 materials before you?

7 A I have this Patent in hard copy.

8 Q Perfect. Okay, that might be easier for you.
9 Or you can scroll around on the screen if you
10 wish.

11 MR. CUNNINGHAM: I'd like this
12 marked as -- I don't even know if we've marked
13 the previous documents. Let's stop for just a
14 second on the record.

15 Let's go ahead and make the '473
16 Declaration of Schmid, which I believe we put
17 on the screen as Exhibit 1. And I believe the
18 '583 Wang patent here should be Exhibit 2.

19 Let me back up. I think this
20 should be Exhibit 3. I think we did put up the
21 CV. Is that correct?

22 VIDEOGRAPHER: Yes. So the CV
23 should be 1?

24 MR. CUNNINGHAM: Yeah. If I can
25 make that 1; his Declaration 2; then this as

1 **Exhibit 3.**

2 **VIDEOGRAPHER: Okay.**

3 **(Deposition Exhibits 2 and 3**
4 **were marked for**
5 **identification.)**

6 **MR. VANDENBURGH: I'm sorry, can**
7 **you say that again, Kelly? I didn't write that**
8 **down right.**

9 **MR. CUNNINGHAM: So the CV is**
10 **Exhibit 1. The Declaration of the '473 --**
11 **declaration of Steven R. Schmid is Exhibit 2.**
12 **And the '583 patent here is Exhibit 3.**

13 **BY MR. CUNNINGHAM:**

14 **Q And I understand that the witness has a copy of**
15 **this at his fingertips, as well.**

16 **So whether you scroll on the**
17 **screen or look at your -- the copy you have in**
18 **your hands, could you turn to the claims at the**
19 **end of the Patent.**

20 **I take it you've reviewed these**
21 **Patent claims?**

22 **A I have.**

23 **Q So I take it, probably not difficult to know**
24 **what an operation portion comprising a cone**
25 **portion, and a cylinder portion actually**

1 affixed to the cone portion, refers to in claim
2 one.

3 Do you mind -- you know, do you
4 read that portion of the claim?

5 A I see it, yes.

6 Q And what's your opinion of the operation
7 portion?

8 MR. VANDENBURGH: Objection,
9 vague.

10 THE WITNESS: I'm in favor of
11 operation portions. I'm not sure what you're
12 asking me.

13 BY MR. CUNNINGHAM:

14 Q What's your opinion of what that refers to as a
15 claim term?

16 A When you're talking about twist drills like it
17 says in the line right above it, I think this
18 is a portion that's actually doing the material
19 removal.

20 Q And the shank portion?

21 A The shank portion is what you attach -- it's
22 how the machine grips the drill bit. It's the
23 portion that gets attached to a chuck or other
24 feature in your machine.

25 Q And then the spiral flute, what's your opinion

1 of a spiral flute, as referred to there in
2 claim one?

3 A I think that's pretty obvious. That's -- every
4 twist drill will have one, at least one.

5 Q More often two or three?

6 A I think that's correct.

7 Q Okay.

8 A By definition, it's got to be there.

9 And let me say -- I think it
10 will come up. I understand the language as
11 used in the reports here. We should recognize
12 that it's not really a spiral.

13 Strictly speaking, it's helical.
14 But I understand that those words have been
15 used interchangeably in this matter.

16 Q What's your opinion of the difference between
17 spiral and helical?

18 A Strictly speaking, spirals are planar shapes.
19 Helicals are, like, a three-dimensional spiral.

20 Q Explain that a little bit more. What do you
21 mean by that?

22 A I know it's in one of my declarations. So give
23 me a minute, and I'll find it for you.

24 Q Take your time. I've turned to page 47 and 48,
25 by the way, in case that --

1 A I was almost there. Okay, so you know.

2 Q I'd like to hear it in your own words.

3 A I think I told you a spiral is, a planar shape
4 and a helix is like a three-dimensional spiral.
5 You also have progression out of the plank.

6 Q But you would agree that both of the drawings
7 on page 48, those are also in a plane, those
8 spirals?

9 A So again, if you read the description just
10 before that sketch, right, that that term is
11 used. But strictly speaking, it should be
12 called a helix.

13 Q And in your opinion, that's true whether it
14 would be along a cylindrical surface or along a
15 conical surface?

16 A Yes. This is high school geometry, yes.

17 Q Pretty conventional?

18 So a spiral flute is
19 conditionally referred to as a helical flute?

20 A It is referred to as a helical flute. But
21 strictly speaking, the shape is helical, not
22 spiral.

23 Q So the next claim element in claim one is a
24 plurality of composite cutting blade groups.

25 What's your opinion of what a

1 cutting blade group is?

2 MR. VANDENBURGH: I'll object as
3 calling for a legal conclusion.

4 But you can go ahead.

5 THE WITNESS: I think in this
6 case, it really means that along your entire
7 cutting surface there are discontinuous
8 portions. And these discontinuous portions --
9 each discontinuous portion is considered a
10 blade.

11 BY MR. CUNNINGHAM:

12 Q With reference to figure 3, if you can turn to
13 figure 3. And if the -- yes.

14 So now that figure 3 is on the
15 screen, what do you -- what is your opinion as
16 to what a composite cutting blade group is in
17 figure 3?

18 A So again, there's only one drill bit. But what
19 is discussed is how -- that you have these,
20 call them steps, call them portions, that are
21 discrete.

22 You know, the terminology I
23 would use is that their derivative with respect
24 to position is discontinuous.

25 But that's going to -- you're

1 going to ask me about that, and I'll have to
2 explain it, anyway.

3 But what it means is that you've
4 got these different layers, and they -- so the
5 composite cutting blade group refers to these
6 multiple stacks of geometry. Instead of having
7 just one continuous curve on its first
8 derivative, this one is discontinuous on its
9 first derivative.

10 Q All right. And it says the cutting blade
11 groups are formed "sequentially".

12 What is your opinion as to what
13 is meant by being formed "sequentially"?

14 MR. VANDENBURGH: Objection,
15 calls for a legal conclusion.

16 THE WITNESS: One after the
17 other.

18 BY MR. CUNNINGHAM:

19 Q Can you refer to particular numbers on --
20 element numbers here on figure 3 when you say
21 that?

22 MR. VANDENBURGH: Same
23 objection.

24 (No response from witness.)
25

1 BY MR. CUNNINGHAM:

2 Q So what is one after another? What reference
3 numerals are one after another?

4 A So there's not numbers on sequential cutting
5 blade groups. There are just -- there's some
6 that have cutting blades in between the
7 numbered ones.

8 Q Which numbers? In between which two numbers?
9 That's all I'm asking.

10 A Well, for example, 143 and 144 would be a
11 cutting blade. I believe that's -- let me
12 check this.

13 It has a major cutting edge and
14 a minor cutting edge, a cutting tip, and a top
15 blade.

16 (Witness reviewing document.)

17 Right.

18 So 143 is likely your top blade.
19 So I would say if you look at 146 and 148, that
20 gives you your major cutting edge and minor
21 cutting edge.

22 Right below the bullet for 148
23 would be another major cutting edge and minor
24 cutting edge. Below that would be another
25 major cutting edge and minor cutting edge.

1 And I'm not real sure where 145
2 is pointing.

3 Q How about the next term? It says not only are
4 the composite cutting blade groups
5 sequentially, they're also formed spirally.

6 What's your opinion what is
7 meant spirally?

8 MR. VANDENBURGH: Calls for a
9 legal conclusion, objection.

10 THE WITNESS: I think that's
11 going to be a topic of discussion all day.
12 Because it's used to mean different things at
13 different times.

14 But here, I believe what's
15 discussed is that you have a helical metal
16 removal flute, metal extraction flute.

17 And these cutting surfaces are
18 the intersection of these steps on the helical
19 flute. And they form because the helix is a --
20 they mean -- okay.

21 So they're saying spiral, but it
22 really forms a helical pattern on your drill
23 bit.

24 So here, I've got to say, there
25 is no spiral pattern. We've got to say

1 helical, but we understand that the
2 terminologies are interchangeable in this case.

3 BY MR. CUNNINGHAM:

4 Q I take it you mean helical along line 131; is
5 that correct?

6 A I'm not sure where 131 is pointing to, but it
7 looks like it is. Looks like that's right.

8 Q It's the leading edge of the surface of the
9 chip-removing flute; is that correct?

10 A That's correct.

11 Q And it's your position that's not essential to
12 the patenting of this invention. It's pretty
13 conventional; is that correct?

14 A No, no. I think that the -- I think this is
15 something that has meant different things at
16 different times.

17 Q Well, in this case, is it pretty conventional
18 to have a spiral line along a spiral flute like
19 this?

20 A I don't know how you can do anything else. But
21 again, it's -- so we have to -- we have to
22 recognize, every time you're going to use the
23 term "spiral", I'm going to say, strictly
24 speaking, it's a helix.

25 So we have to recognize that --

1 you know, unless you tell me, you know, that we
2 understand this, that we're going to call these
3 helixes, spirals, for the purposes of this
4 deposition, I'm going to have to correct you
5 every time you use the term incorrectly.

6 Q All right. So a helical flute is formed -- is
7 identified as Roman numeral IV. Do you see
8 that?

9 A That's correct.

10 Q And along the cutting edge of helical formed
11 flute Roman numeral IV is a -- lies a helical
12 line 131.

13 Do you see that? Is that
14 correct?

15 A If that's what 131 is pointing to. It's a
16 discontinuous curve made up of a number of line
17 segments.

18 Q Yet still helical, in your opinion?

19 A It generally follows a helical pattern.

20 Q So you seem to acknowledge a different
21 interpretation, also, of this term "spirally",
22 in your paragraph 99 of your declaration.

23 Can you turn to paragraph 99?

24 A Okay, I'm there.

25 Q So in paragraph 99, you refer to not this

1 helical line 131, but to the slanted nature of
2 the cutting blade groups that you diagram on
3 page 54 immediately after -- or within the
4 paragraph, itself.

5 Do you see that?

6 A Yes.

7 Q So you're saying that's not -- that seems to be
8 an inaccurate interpretation of the term
9 "spirally" here, and when it refers to the
10 cutting blade -- composite cutting blade
11 groups?

12 A No. I think both are true.

13 Q So when it says "a plurality" -- and I'm
14 reading from claim one, again:

15 "A plurality of composite cutting
16 blade groups formed sequentially and
17 spirally on a cone portion exterior."

18 Do you interpret that "spirally"
19 as meaning along the helical line referred in
20 figure 3 as 131?

21 Or referring to the slants that
22 you identify in your paragraph 99 and your
23 diagram of paragraph -- of figure 3 in that
24 paragraph?

25 MR. VANDENBURGH: Object as a

1 compound question, as well as calling for a
2 legal conclusion, I think.

3 BY MR. CUNNINGHAM:

4 Q I'll revise the question, then.

5 Again, the claim language is, in
6 claim one:

7 "A plurality of composite cutting
8 blade groups formed sequentially and
9 spirally."

10 So what's your interpretation of
11 the term "spirally" in this instance?

12 MR. VANDENBURGH: Objection,
13 calls for a legal conclusion.

14 THE WITNESS: And we'll say,
15 again, it's not a spiral, really. So let's --
16 you know, until you tell me that, you know,
17 you're going to use the terms interchangeably,
18 I'll keep telling you it's following a helical
19 pattern.

20 But I think this is exactly as
21 stated earlier, right, that you get a spiral
22 associated with the flute.

23 But over here if you have
24 slanted cutting blades, right, because we're
25 not going to talk about cutting points, then

1 you -- that's also consistent with this misuse
2 of the term "spiral".

3 It is a common use of the word
4 spiral. I don't intend to be overly critical.
5 Just if I'm going to use exact language, I've
6 got to keep saying that.

7 BY MR. CUNNINGHAM:

8 Q I don't mind if, for the ease of the
9 deposition, let's agree -- I would agree that
10 the term "helical" and "spiral" are
11 interchangeable, for the purpose of the
12 deposition.

13 At least you can agree that
14 helical is a type of spiral. That sounds like
15 what I understand your declaration to refer to,
16 is that it was a particular type of spiral,
17 that's called a helical or a helix.

18 And would you agree, so we can
19 just get -- I can use the term from the claim,
20 and you can then acknowledge that I've agreed
21 and stipulated that "helical" and "spirally"
22 are interchangeable for purposes of this
23 deposition.

24 A It may cause confusion when talking about
25 radial clearance, but I can point that out when

1 the time comes. So I'll agree to your
2 definitions.

3 Q So going back to this, let's ask -- I'll ask
4 the question, again:

5 "A plurality of composite cutting
6 blade groups formed sequentially and
7 spirally" is the claim term in claim
8 one.

9 What does the term "spirally" in
10 that claim term refer to, in your opinion?

11 MR. VANDENBURGH: Objection,
12 calls for a legal conclusion.

13 But you can answer.

14 THE WITNESS: So in the -- so in
15 this -- in this statement it says that:

16 "Each of the plurality of composite
17 cutting blade groups comprising
18 conical first step surface" --

19 Right? Which would refer to a
20 surface, a major cutting edge, defined by the
21 intersection of the conical first step surface
22 and the sidewall of the spiral flute.

23 So it's discussing surfaces,
24 like the inclined surfaces in paragraph 99.
25 And it's talking about cutting edges, like this

1 segmented line following a roughly helical
2 spiral pattern, as we discussed previously.

3 So it is confusing language in
4 that it's referring to both at once.

5 BY MR. CUNNINGHAM:

6 Q And I see here in paragraph 99, you equate the
7 slants as:

8 "Resulting from axial relief of the
9 conical portions of the cutting blade
10 groups."

11 Do you see that in the end of
12 your paragraph 99?

13 A I do see that, yes.

14 Q And you say that you:

15 "Also interpret the term as
16 encompassing this 'slant' or axial
17 relief."

18 Is that correct?

19 A That's correct.

20 Q Is axial relief a conventional feature of these
21 types of drills or step drills?

22 A I don't think it's uncommon.

23 Q What do you mean by that?

24 A I mean, that it's appeared in literature. And
25 my understanding is it's appeared in commercial

1 products, as well.

2 Q Have you ever designed step drills?

3 A So I'm -- I have given this considerable
4 thought. And my answer to the question is,
5 kind of.

6 Q Okay. Can you explain that?

7 A So in the companies that I've performed
8 research with, there is a whole class of
9 tooling that -- and two times where I've
10 performed research on alternate methods to
11 achieve the goals of forming a step drill.

12 So one version uses sheet metal
13 forming to get the outline of a shape of a step
14 drill.

15 Another one uses a conventional
16 step drill but has a unique feature to let you
17 change the direction of the drill during a
18 drilling operation. So in effect, you can have
19 it turn and drill around a corner.

20 So there are at least two cases
21 where I've -- where I've been involved in the
22 design of step drills.

23 Q And is axial relief even necessary in a step
24 drill if you're drilling into sheet metal?

25 A No, I never drilled into sheet metal. Okay.

1 But the answer to -- so I don't
2 know if you were implying that it was a
3 continuation of your previous question.

4 But the answer is: A lot of
5 times you don't want it, because one of the
6 ways -- one of the similar drills like this are
7 used to produce holes of a desired nominal
8 diameter in sheet metal.

9 Q So you're saying that normally you don't want a
10 axial relief in a step drill for that purpose?

11 A "Normally" is a little bit, you know, up for
12 debate.

13 But I would say that there are
14 many that don't have the slanted steps, that
15 don't have the axial relief, that will not have
16 a radial relief because they are trying to
17 establish a nominal hole size in sheet metal.

18 Q And the figure in figure 3 there, would that
19 create -- be useful for creating a nominal hole
20 of nominal hole size in any diameter short of
21 the larger diameter identified at element Roman
22 numeral V?

23 A I think the correct answer to that question is
24 maybe.

25 Q Can you explain that?

1 A Well, I look at some of the surfaces like 144.
2 And there looks to be a significant thickness
3 where you could hold a constant diameter, or
4 roughly a constant diameter.

5 So you know, depending on the
6 thickness of the material you're working on, it
7 could be that you could produce a constant
8 diameter hole with this kind of drill.

9 Q Any other surfaces along there that would serve
10 the same purpose?

11 A Like I just said, it depends on your work piece
12 thickness.

13 Q Did you ever use a step drill to drill into
14 deep work pieces?

15 A Not to my knowledge -- well, wait a second.
16 Step drills, yes.

17 Q And when?

18 A Oh, well, so having reconsidered the question
19 you asked me, not being restricted to the
20 figure 3, I think it's a very common practice.

21 I've probably been doing that
22 since my parents let me anywhere near a drill.

23 Q You'd drill into deep work pieces that exceeded
24 the thickness of any particular step on the
25 step drill?

1 A I believe that's correct.

2 Q Any time other than just being a kid when your

3 parents weren't watching?

4 A This is what I mean -- I think it's commonly

5 done.

6 Q You'd still need the helical flute to get rid

7 of the chips when you do that; is that correct?

8 A If you don't have a chip extraction flute, it's

9 not a drill bit.

10 Q And if the chip extraction flute is short, it's

11 only a short drill bit; is that correct?

12 A I think you answered your own question. Your

13 predicate has a supposition for the answer.

14 Q You'd agree with that?

15 A If it's a short drill, it's a short drill.

16 Q No. If it's a short helical flute, regardless

17 of the length of the drill.

18 Is that correct?

19 A So you're suggesting if you have a long bar and

20 a short helical flute, that somehow there being

21 a long shank makes it be a long drill?

22 Q I'd say a drill isn't useful at any point where

23 there is no chip-extracting flute; is that

24 correct?

25 A So it's not drilling unless you're removing

1 material. And to remove material on a drill
2 bit, you have to have a chip extraction flute.

3 Q Otherwise, you can't go any deeper into the
4 material than that; is that correct?

5 A You have no chip extraction, you're not going
6 to go anywhere. It's not going to be useful at
7 all.

8 Q Going back to your paragraph 99, though, you
9 can see that you also interpret the term
10 spirally as "encompassing the slant" described
11 there in paragraph 99:

12 "Resulting from axial relief of the
13 conical portion of the cutting blade
14 groups."

15 Do you see that?

16 A Yes.

17 Q So you agree that one interpretation of
18 "spirally" in this claim term, is the slants
19 that result from axial relief in the conical
20 portions; is that correct?

21 A That's what it says in my report, yes.

22 Q So I won't bore you with going through the
23 other claim terms, except for the very last
24 claim term, if you look at end of claim one.
25 At line 40, in my version of the patent there,

1 in line 40 -- it's line 39, it starts:

2 "The diameter of the last cutting
3 blade group located at the rear end
4 of the cone portion immediately
5 adjacent to the cylinder portion is
6 equal to the cylinder portion
7 diameter."

8 Do you see that?

9 A Yes.

10 Q Can you -- what's your opinion of what that's
11 trying to refer to?

12 A You have to have a transition between your
13 conical section and your cylindrical section;
14 right? So it's not -- it's kind of a blended
15 profile; right? So that there's not a really
16 big jump or a large overlap between those two
17 sections.

18 Q And why would that be important in your
19 opinion?

20 A I don't know that it is.

21 Q What would the effect be if the diameter of the
22 cylinder portion is much greater than the
23 diameter of the last cutting blade group?

24 A It would just limit the hole depth that you
25 could drill.

1 Q You couldn't drill past that last diameter,
2 that last cutting blade group. Is that what
3 you're saying?

4 A With enough force you can do anything. But I
5 think it would be clearly the intent that you
6 would have that as a limit to the penetration
7 of your bit.

8 Q And what if the diameter of the cylinder
9 portion is smaller than the diameter of the
10 last cutting blade group? Could you drill deep
11 into a material with that?

12 A I think we've seen that. I think that you --
13 that we have this in a number of the patents in
14 this case; right?

15 So you can -- you can see
16 exactly that circumstance. And I believe you
17 can go fairly deep with such a drill bit, yes.

18 Q Where are we seeing that in the prior art?

19 A So if you look at page 63 -- oh, wait a minute.
20 That's got the cylinder portion being large.
21 The shank is smaller; right?

22 So I may be -- I may have
23 misspoken. Instead of the cylinder, I mean the
24 shank.

25 If you look at page 74 of my

1 '473 Declaration, I think you can see in the
2 Gentry drill bit that the cylinder section is a
3 smaller diameter than the last cutting blade.

4 Q And you're saying Gentry would be useful for
5 drilling into deep work pieces?

6 A I don't think I said that. And I think if we
7 recognize that the shank, which is 14 in this
8 figure on page 74, is where the machine tool
9 will hold this drill bit, I don't think you can
10 drill very deep with this one.

11 Q Any others?

12 A I think on page 76 you can see the same thing
13 in the Durfee patent.

14 Q Any others?

15 A Looks like on page 77 it's in Korb.

16 Q And 78 is Korb, also?

17 A I think that's correct.

18 Q Actually, let's go back to page 63.

19 In fact, if you can scroll down
20 also to figure five.

21 A In this patent, you mean?

22 Q Actually, in the patent that's on the screen,
23 it would be figure 7. That one right there.

24 Okay. If we look at this
25 closely, how deep of a hole could be drilled by

1 the drill bit in figure 7?

2 A So if we assume that it's a very soft material,
3 so cutting forces aren't going to break the
4 drill, right, that the torques are going to be
5 limited by the strength of the material that
6 you're drilling; right?

7 You understand what I'm saying?
8 With deep holes this is a concern, perhaps;
9 right?

10 So this -- it's already even
11 showing this, that you can go deeper than the
12 conical section. Okay. So if you went to
13 fully enclose the flute, you would not be able
14 to extract -- you would not be able to remove
15 material anymore because the cylinder section
16 would form a seal in the hole.

17 And you could maybe get a little
18 bit further, but you're going to be limited to
19 the depth of the flute -- to the length of the
20 flute.

21 Q The chip would get crowded in the flute and
22 wouldn't have any way to get extracted? Is
23 that what you're saying?

24 A I think you're ready for graduate school. Yes.

25 Q I doubt that. But so you're saying you

1 couldn't get the entire cylinder -- likely, you
2 could not get the entire cylinder into the work
3 piece because chips would start crowding up in
4 the flute.

5 And, of course, in this
6 particular drill bit configuration, the flute
7 doesn't extend out to the end of the cylinder.

8 Is that the reason?

9 A Again, there's other reasons; right? But I'm
10 saying clearly, that would limit how deep of a
11 hole you could make.

12 MR. CUNNINGHAM: Shari, can you
13 put up tab 14, A14. And mark that as the next
14 Exhibit Number, presumably Exhibit 4.

15 (Deposition Exhibit 4 was
16 marked for identification.)

17 VIDEOGRAPHER: One moment.

18 BY MR. CUNNINGHAM:

19 Q So Professor Schmid, do you recognize this
20 document?

21 A Yes, I do.

22 Q And do you have a copy of that there in front
23 of you? Or is this going to work off the
24 digital version?

25 A I have a hard copy.

1 Q Great. So that would be good. If we can
2 actually put up --

3 MR. CUNNINGHAM: Shari, if you
4 could perhaps move the screen to page 6, scroll
5 down to page 6 for the witness?

6 BY MR. CUNNINGHAM:

7 Q Or maybe Professor Schmid, you just scroll down
8 to there.

9 So page 6 shows figure 5, do you
10 see that?

11 A I see that, yes.

12 Q And in our hard copy versions, we can actually
13 turn to page 15, or at least I guess maybe your
14 version might not have the page numbers at the
15 bottom. So I'd go to paragraph 6.

16 A Do you want me to move. Okay, you've got it.
17 Good.

18 MR. CUNNINGHAM: Actually,
19 Shari, if you could, move back to the page 6 so
20 we can -- because we'll be bouncing back
21 between words on the later pages and this image
22 on page 6. Right there. That's good. Thank
23 you.

24 BY MR. CUNNINGHAM:

25 Q So if Professor Schmid and I, and only

1 Professor Schmid and I, turn to paragraph 6, we
2 could read from there. Just read the entire
3 paragraph. It's just one long sentence.

4 Really doesn't have a period. It says:

5 "An efficient twist drill for layered
6 drill comprises a drill bit body,
7 wherein the drill bit body comprises
8 a shank portion" --

9 And then if you don't mind, down
10 to the last it says:

11 "The flutes divide main cutting
12 blades into a plurality of first
13 cutting blades and second cutting
14 blades."

15 Do you -- you've read this
16 patent application; is that correct?

17 A I have.

18 Q And can you point to first cutting blades and
19 second cutting blades on this figure 5 that's
20 on the screen? Or at least identify the
21 reference that refers to them?

22 A According to page 15, second column, last line,
23 five is the first cutting blade; right? There
24 are plurality of first cutting blades. And 6
25 refers to second cutting blades.

1 Q Can you see those on page 6, figure 5; correct?

2 A The numbers are there, yes.

3 Q The next phrase in paragraph 6 says:

4 "And connecting lines of the first
5 cutting blades and the second cutting
6 blades form a step-like structure."

7 Do you see that?

8 A I see that, yes.

9 Q What's your understanding in figure 5 of what
10 it refers to as the "step-like structure"?

11 A Well, I think we all know what a step is. I
12 hope; right?

13 So I think it's telling you that
14 it's got a step-like structure. It's got
15 parallel surfaces connected to each other. And
16 they increase in diameter from left to right.
17 I think that's pretty much a step-like
18 structure.

19 Q So if I were to go to the left of 5, I see a --
20 I guess, what I call a cylindrical -- a flat
21 surface that would be another 6.

22 So you see a step. So 5 and 6
23 join to form one step along a step-like
24 structure. Is that what you see in figure 5?

25 MR. VANDENBURGH: Objection,

1 vague, compound.

2 BY MR. CUNNINGHAM:

3 Q Okay. So when you refer to -- strike that,
4 then.

5 So when you refer to figure 5,
6 do you agree, then, that surfaces 5 and 6
7 combine to form one step in a step-like
8 structure? Is that what you understand the
9 patentee to be defining?

10 A I'm sorry, I was distracted. Can you repeat
11 the question?

12 Q So looking at figure 5, you're saying the
13 step-like structure is formed by a plurality
14 of -- references 5 and 6. Five and 6 refer --
15 identified in figure 5 as one single step?

16 A So what's confusing about this is, 6 doesn't
17 point to a surface. It looks to be pointing to
18 a cutting tip; right?

19 So I'm hesitant -- I read to you
20 what the language of the patent describes.
21 But 6 isn't pointing to what it describes. 6
22 is pointing to a, you know, to a point, not to
23 a surface on this drill bit.

24 Q Do you understand what 6 should be pointing to?

25 A So it says that it's a second cutting blade 6

1 forms a step-like structure. But it's not
2 pointing to a cutting blade. It's cutting to
3 the intersection of two blades.

4 It's pointing to a point, not to
5 a surface. So this -- it may not mean
6 anything. I think we all understand what a
7 step-like structure is.

8 Q Okay. And then four paragraphs down, it says:

9 "Preferably, connecting lines of the
10 flutes to form a spiral structure."

11 A Can you tell me where that is?

12 Q In paragraph 10.

13 A Paragraph 10, okay. Yes.

14 Q Do you understand what was meant by this
15 language in paragraph 10?

16 A Recognizing the -- the examination and the
17 other actions, I believe I have an
18 understanding, yes.

19 Q Do you have an understanding what "flutes" mean
20 here in this paragraph?

21 A I believe that it is referring to -- so it's --
22 if you were to draw a straight line -- or place
23 a straight line on top of the jagged lines that
24 are in the cross-section. The connecting lines
25 of the flutes, right, so each of these angled

1 lines can have a gap in there that you consider
2 a flute. But it's not a chip extraction flute.

3 Q Correct. Okay. So you're saying basically,
4 you know, I think later in the patent when we
5 get to the detailed description of reference
6 numeral 4 is where we refer to these flutes; is
7 that correct?

8 A I'm sorry, you died off there. I'm not sure
9 what you asked me.

10 Q Let's get out of the summary. Let's get out of
11 the summary and go to the detailed description,
12 if you don't mind. I'll come back to the
13 summary.

14 So in paragraph 31, in what's
15 referred to as the "Detailed Description of the
16 Embodiments." Paragraph 31:

17 "A plurality of flutes 4" is
18 identified and described.

19 Do you see that?

20 A Yes.

21 Q "A plurality of flutes 4 distributed in
22 parallel and at intervals are
23 symmetrically arranged along a flank
24 surface 3."

25 Do you see that?

1 A I see that.

2 Q And what's your interpretation of that in
3 reference to figure 5?

4 A So I'm going to tell you that it's telling you
5 that the flutes are parallel. Intervals are
6 symmetrically arranged.

7 I don't know, symmetrically
8 about what? I'm not sure what they're talking
9 about there.

10 They could mean evenly spaced,
11 but symmetrically is not the proper term here.
12 So I guess my quick answer is, I'm not real
13 sure what they mean.

14 Q But you see in figure 5, a reference numeral 4.
15 Do you see that?

16 A Yes.

17 Q Do you see that it's pointing to a groove that
18 is on the cone surface?

19 A Maybe it's pointing to the groove. It's hard
20 to tell.

21 But you know, I'm happy to
22 assume that if you want me to.

23 Q There are plurality of these grooves on the
24 cone surface?

25 A I agree. So what I'm confused about is they

1 say "are symmetrically arranged." Right?

2 "Along a flank surface 3." And I don't know
3 what they mean by "symmetrically arranged".

4 I don't know what axis they're
5 referring to, which would be an axis of
6 symmetry. I don't know what that means.

7 Q But they're arranged along the flank surface 3,
8 do you see that?

9 A "Symmetrically arranged along the flank
10 surface."

11 But again, what was -- I'm not
12 sure what the term "symmetrically" means.

13 Q I'm just focusing on the flutes, themselves, at
14 the present time. And there's a plurality of
15 them?

16 A Okay, yes.

17 Q And in paragraph 35, if you turn to
18 paragraph 35, in the second line of
19 paragraph 35, there's an "or".

20 Do you see the "or"?

21 A I do.

22 Q After the "or", the phrase is:

23 "The connecting lines of the flutes
24 form a spiral structure."

25 So what's your understanding of

1 what "the connecting lines" are referring to
2 here?

3 A I think you are -- you can't separate the
4 sentence.

5 Q Go ahead.

6 A I just said, I think you can't separate the
7 sentence.

8 Q Okay.

9 A I think that:

10 "The flutes of the present disclosure
11 may be arc-shaped flutes adapted to a
12 radiant of the flank surface" --

13 Q What --

14 A -- it tries to get -- I'm sorry, I thought I
15 was still answering.

16 Q Go ahead, continue.

17 A Okay. So it's, "arc-shaped flutes adapted to a
18 radiant of the flank surface." And then it's
19 describing a alternative or an elaboration of
20 that definition, to say that:

21 "The connecting lines of the flutes
22 form a spiral structure."

23 So I think that if you read the
24 patent prosecution, that this is discussing a
25 radial clearance, which then leads to a spiral

1 structure as in Shibata figure 3.

2 Q The prosecuting history refers to a radial
3 clearance?

4 A It fills Shibata figure 3, as describing
5 spiral. And that was not a point of contention
6 in the -- in the prosecution.

7 Q That refers to the first half of that sentence
8 in paragraph 35?

9 A I think there's quite a bit of confusion as to
10 how to use the word "or". And there's a little
11 bit of confusion because there's not a period
12 at the end of this sentence.

13 But I think that the confusion
14 is that some people are using the word "or" to
15 interpret this statement as having two
16 unrelated descriptions. Like, have a piece of
17 fruit. You can have an apple or an orange.
18 Now you have two different alternatives.

19 But there's another way of
20 interpreting the word "or", and that's to say,
21 Have a Honey Crisp or a kind of apple; right?
22 Where it's a clarification of the first of the
23 alternatives.

24 A whole lot of confusion is
25 going into this. I think the only really sound

1 conclusion you can make about this is that this
2 paragraph is inartfully written, that it's
3 confusing from the beginning, and that nobody
4 is making claim that this is a really clear
5 paragraph.

6 But when I read it, I see it as
7 the second half of this sentence that doesn't
8 have a period, is I'm trying to clarify the
9 first portion of the sentence, which is a
10 proper use of the word "or."

11 Q So how does the phrase "or the connecting lines
12 of the flutes form a spiral structure", how
13 does that clarify the first phrase of that
14 sentence?

15 A "The flutes of the present disclosure may
16 be arc-shaped flutes adapted to a radian
17 of the flank surface" -- as shown in
18 Shibata figure 3 -- "or the connecting
19 lines of the flutes form a spiral
20 structure" -- as shown in Shibata figure
21 3.

22 They're saying the same thing.

23 Q So what's your understanding, then, of what it
24 means to -- the first phrase, what's your
25 understanding of:

1 "The flutes of the present disclosure
2 may be arc-shaped flutes adapted to a
3 radian of the flank surface."

4 A I'm sorry, is there a question?

5 Q Yeah. What's your -- what's your opinion --
6 what's your interpretation of the sentence,
7 phrase:

8 "The flutes of the present disclosure
9 may be arc-shaped flutes adapted to a
10 radian of the flank surface"?

11 A Mention, if you know where the Shibata figure 3
12 is in my declaration, if you know a page
13 number, it will get me there faster.
14 Otherwise, I will go find it because that will
15 explain.

16 Q I can refer --

17 MR. CUNNINGHAM: So Shari, could
18 you put up on the screen, Exhibit 1015?

19 VIDEOGRAPHER: One moment.

20 MR. CUNNINGHAM: It's down on
21 the list.

22 BY MR. CUNNINGHAM:

23 Q All right. Professor Schmid, you have control
24 of that screen. Could you scroll to your
25 figure 3 of Shibata?

1 VIDEOGRAPHER: Are we marking
2 this or has this been marked?

3 MR. CUNNINGHAM: Let's mark this
4 as the next Exhibit, Exhibit 5.

5 (Deposition Exhibit 5 was
6 marked for identification.)

7 THE WITNESS: I'd rather refer
8 to my Declaration, since this is going to be
9 Japanese script in a second that I can't
10 translate.

11 BY MR. CUNNINGHAM:

12 Q Okay.

13 A Okay. If you go to declaration '473, page 61.

14 Q I'm there.

15 A So if you refer to this paragraph 35:

16 "The flutes of the present disclosure
17 may be arc-shaped flutes adapted to a
18 radian of the flank surface."

19 So you can see number 17 is an
20 "arc-shaped flute adapted to a radian of the
21 flank surface", or the connecting lines of the
22 flutes form a spiral structure.

23 This surface, 17, is a portion
24 of a spiral. So it's referring to Shibata
25 figure 3.

1 Q And you've seen other interpretations of this
2 sentence. What's your opinion of the other
3 interpretations of this sentence?

4 A It's only -- there's other interpretations,
5 only when the people completely ignore the
6 prosecution history of this patent.

7 Q Going back to paragraph 31 of the '900
8 application.

9 A Yes.

10 Q So we've already discussed how it introduces
11 "plurality of flutes 4", the first cutting
12 blades 6 and second -- I'm sorry, "first
13 cutting blades 5, second cutting blades 6."

14 I believe it's the last full
15 sentence says:

16 "The second cutting blades 6 are
17 parallel to an axis line of the drill
18 bit body or an angle of 0-20 degrees
19 is formed between the second cutting
20 blade 6 and the axis of the drill bit
21 body so that" the tail -- "so that
22 tail ends of the second cutting
23 blades 6 are inclined downwards, and
24 only" start -- "and only starting
25 ends of the second cutting blades

(the tops of the first cutting blades) touch the workpieces during cutting as shown in figure 13."

What's your interpretation of that sentence, by the way?

A So when I look at figure 13 it looks -- it's a small angle. My eyes aren't as good when I was 20, but it sure looks like an axial relief.

But it says -- let's look at this, again:

"Second cutting blade 6 are parallel to an axis line of the drill bit body."

Parallel to an axis line, the axis of the drill bit is, you know, the center line on the sketches.

"Or an angle of 0-20 degrees is formed between the second cutting blades 6 and the axis line of the drill bit body."

So this is saying that you can have this -- this kind of axial relief; right? And that's what it means here when:

"Only the starting ends of the second cutting blades ... touch the

workpieces during cutting."

Right, that they are
incorporating relief.

Q And you also already identified axial relief is
a slant, that is one interpretation of the term
"spirally" or "helically"; is that correct?

MR. VANDENBURGH: Objection,
calls for a legal conclusion, and misstates his
prior testimony.

THE WITNESS: I don't think I
said that.

BY MR. CUNNINGHAM:

Q Oh. So show me where the axial relief is in
figure 13.

A All right, show figure 13.

MR. CUNNINGHAM: Could the court
reporter put back up Exhibit 4 and scroll down
to page 14.

BY MR. CUNNINGHAM:

Q Go ahead, Dr. Schmid.

A So like I say, my eyes aren't as good as they
used to be. But if you draw lines parallel to
the axis line of the drill bit body, you can
see the phantom lines -- which, in the old days
when we had draftsmen, I mean, I was trained as

1 a draftsman.

2 But this dashed line in -- you
3 know, horizontal line going through the
4 mid-section of the drill bit, right, that
5 indicates the center line or the axis line of
6 the drill bit body.

7 So if we draw lines parallel to
8 that horizontal line, right, it says:

9 "An angle of 0-20 degrees is formed
10 between the second cutting blade 6
11 and the axis line of the drill bit
12 body. The tail ends of the second
13 cutting blade 6 are inclined
14 downwards and only starting ends of
15 the second cutting blades, (i.e.,
16 tops of the first cutting blades)
17 touch the workpiece during cutting,
18 as shown in figure 13."

19 Wow, is that ever a confusing
20 statement. So first of all, if all of the --
21 you know, so go back to what they said was
22 first and second cutting, you know, the first
23 and second cutting blades.

24 And we had this confusion before
25 where we didn't know if 6 was pointing to a tip

1 or to a surface. And here, it looks like they
2 mean it to be a surface. Okay?

3 But it seems to be that all of
4 them are second cutting blade 6, not
5 sequential; right? So okay, but then it says
6 that the angle can be zero to 20 degrees is
7 formed between the second cutting blade 6 and
8 the axis line of the drill bit body.

9 That means they can be
10 horizontal, which is maybe why they look
11 horizontal to me. They can have a slight angle
12 up to 20 degrees with respect to the drill bit
13 body.

14 But if you have an angle of
15 20 degrees, which would be an axial relief,
16 meaning that the diameter decreases as you go
17 away from the tip of the drill, then you would
18 only have the -- you would only have the
19 starting end of the second cutting blades touch
20 the workpiece during cutting.

21 So that's what they're
22 describing here.

23 MR. CUNNINGHAM: Shari, could
24 you pull up Exhibit A18, please. And mark it
25 as Exhibit 6, I guess.

(Deposition Exhibit 6 was
marked for identification.)

BY MR. CUNNINGHAM:

Q And Professor Schmid, do you have a hard copy
of the Zhou Patent?

If you could take control of
this screen version, and show me where it
discloses composite cutting blade groups that
are formed spirally.

A Give me one second.

MR. CUNNINGHAM: Also, while
he's looking, Shari, could you also put up -- I
believe it's Exhibit 2, A02 and mark that as
depo Exhibit 7.

(Deposition Exhibit 7 was
marked for identification.)

BY MR. CUNNINGHAM:

Q So Professor Schmid, for your convenience, I've
placed up your '474 Declaration --

A Okay.

Q -- which refers to this Zhou Patent.

A We can go to page 76 of this one.

Q Okay. I'm there. So my question for you is:
Where in the Zhou Patent does it disclose
composite cutting blade groups that are formed

1 spirally?

2 A So you can see the composite cutting blade
3 groups clearly; right? So we don't have to
4 talk about that.

5 Q Okay.

6 A So as I describe in paragraph 133 which is
7 fairly long; right? That the longitudinal axis
8 is not clearly shown; right? But that a slant
9 would be obvious to someone who knows anything
10 about drill bits.

11 You know, a person of ordinary
12 skill in the art. And that in the context of
13 this patent, the back angle refers to axial
14 relief of the conical surface. I think you
15 know, like I state there, I guess it's in
16 paragraph 134, everybody would recognize the
17 need for this axial relief.

18 Q But you agree there's no reference specifically
19 to axial relief in the Zhou Patent?

20 A So I'm going to say that wasn't the focus of
21 the patent. So it's not surprising if it's not
22 mentioned.

23 I think a person of ordinary
24 skill in the art would recognize the need for
25 this.

1 Q And where is the disclosure in Zhou that the
2 composite cutting blade groups are formed
3 sequentially?

4 A Really? How could you not form them
5 sequentially? I mean, I guess that's -- you
6 know, the word "sequential" means one after the
7 other.

8 How could you not do that?

9 Q You're saying that your two arrows in your copy
10 of figure 3 on that page 76 shows two composite
11 cutting blade groups, one after another; is
12 that correct?

13 A That's correct.

14 Q And that's a disclosure of them being formed
15 sequentially?

16 A That's -- there's a sequence of them, yes.

17 Q And what do you understand the purpose of Zhou
18 to have been?

19 A Zhou's main focus is having uneven depths of
20 cuts on opposite sides or on competing groups
21 of these cutting blades.

22 I think you can see that on my
23 Declaration, page 77.

24 Q And what was Zhou going for when he did this
25 invention?

1 A So not sure I quoted it here. So I do talk
2 about this in paragraph 124; right? And we can
3 refer to the section of the Zhou Patent that
4 discusses this.

5 But I think every patent is
6 going to talk about improved cutting, improved
7 dimensions, reduced forces, reduced power. I
8 think that's generally what has been the need
9 of industry.

10 Q And what does Zhou refer to, then, in -- in his
11 patent about the need he was attempting to
12 meet?

13 A So again, I just am referring to my
14 paragraph 124. I don't have the Zhou Patent in
15 front of me. So I can't answer that question
16 succinctly right now.

17 MR. CUNNINGHAM: Would you mind
18 scrolling through the patent on the screen, the
19 Zhou patent that's on the screen?

20 Shari, could you put back
21 Exhibit -- I believe it's five. That one.
22 Yes.

23 BY MR. CUNNINGHAM:

24 Q So I believe there's an English translation
25 here of Zhou. And if you could read through it

1 to refresh your recollection as to what need
2 Zhou was attempting to meet with his invention.

3 A (Witness reviewing document.) So I quote
4 section 2 to point out that it is direct to
5 improvements in standard twist drills. If you
6 look at paragraph 3; right? It talks about the
7 need to increase drilling efficiency and drill
8 bit life.

9 And if you look at paragraph 5,
10 an object of this model is:

11 "To provide a twist drill which
12 exhibits a further significant
13 reduction in drilling axial
14 resistance and torque, and thereby
15 achieves significantly increased
16 drilling efficiency and drill life."

17 So I think those are the
18 benefits. I think that's the question you
19 asked me.

20 Q Sure. Do you see anything else in the Zhou
21 Patent referencing what needs he was attempting
22 to meet?

23 A So you know, I guess given the, you know, the
24 question you asked is pretty open. I'm not
25 really sure what you're referring to.

1 Can you direct me to a section
2 you think I've skipped?

3 Q Have you read through paragraph 14 of the Zhou
4 Patent?

5 A I think I just read this. I just read this to
6 you.

7 Q You read from paragraph 3.

8 A Okay. So is the language the same? No, I read
9 that but also if we go to paragraph 14, I
10 believe I read the point about that the:

11 "Cutting edge segmentation,
12 asymmetrical edge heights, which are
13 intended to achieve a further
14 reduction in the drilling axial
15 resistance and torque" --

16 Right?

17 "So that swarf is separated and
18 expelled more smoothly, making it
19 possible to further increase drilling
20 efficiency and drill bit durability."

21 Q All right. And then paragraph 29.

22 A You want me to read this paragraph for you into
23 the record?

24 Q Just, have you read these paragraphs before
25 today?

1 A I've read this patent, yes.

2 Q While we're on the '474 declaration, could --
3 and that subject matter, could --

4 MR. CUNNINGHAM: Shari, could
5 you put up Exhibit A19, the Welty patent?

6 VIDEOGRAPHER: One moment.
7 (Deposition Exhibit 8 was
8 marked for identification.)

9 BY MR. CUNNINGHAM:

10 Q So Professor Schmid, have you seen this patent
11 before?

12 A I have read the patent, yes.

13 Q So where in this patent is there any disclosure
14 of a composite cutting blade group that is
15 formed spirally?

16 A So you can see that there are composite blades
17 here. I know there's only three. But Welty is
18 pretty clear that the larger the drill bit, the
19 more steps you can have.

20 So the teachings of Welty are
21 clear, that you can have a composite cutting
22 blade group.

23 Q And can you point to a composite cutting blade
24 group in Welty, looking at figure 1?

25 A So how about, so let's see, did he

1 differentiate between surfaces? I would say 24
2 shows the two surfaces.

3 Q And how does Welty -- or does Welty disclose
4 cutting blade groups that are formed spirally?

5 A I think if you -- if you looked at the left
6 side, it looks like it's -- like, it's a spiral
7 but it really is a trick of the projection.

8 I don't think that they are
9 spiral.

10 Q Are they formed sequentially?

11 A Oh, they're sequential.

12 Q But no forming spirally?

13 A There's a multiple -- right. There's multiple
14 cutting groups on the Welty drill.

15 Q Formed sequentially, but not formed spirally;
16 is that correct?

17 A I think that's correct.

18 Q What need was Welty trying to meet in his
19 invention?

20 A I don't have the Welty Patent in front of me.

21 Q Sharing the screen. If you can scroll through
22 that and refresh your recollection, or look at
23 your Declaration, perhaps.

24 A So and again, so if you look at page 69 of
25 my -- which one? 69 of the '473 Declaration,

1 right, it discloses:

2 "A much smaller amount of power for
3 operation, "reduces breakage by only
4 allowing the cutting edge of the body
5 to come into contact with the work."

6 Right? So I think that answers
7 the question. We have to remember, this is
8 1940.

9 Q Is that the only need being met by Welty that
10 you recall?

11 A I thought there was more, but I don't have it
12 quoted in my -- in my Declaration. At least --
13 well, let me check.

14 I don't have anything in my
15 Declaration, and I don't have the Welty Patent
16 in front of me.

17 Q It's on the screen. If you don't mind just
18 reading through it, it's pretty short. And
19 your recollection of what the Welty Patent is
20 trying to meet.

21 A Looks like he is trying to improve the accuracy
22 of the diameters, much smaller power. It's
23 constructed to obviate binding during drilling,
24 to reduce breakage of the drill on the job.

25 Q Is there anything else in there, Dr. Schmid,

1 that you see?

2 A That's the standard rationale for improvements
3 in drills.

4 MR. CUNNINGHAM: All right.
5 Shari, could you put up on the screen, A17 and
6 mark that as the next Exhibit.

7 (Deposition Exhibit 9 was
8 marked for identification.)

9 BY MR. CUNNINGHAM:

10 Q All right. Dr. Schmid, I believe you've
11 reviewed the Bannister Patent; is that correct?

12 A That's correct.

13 Q And could you identify where in Bannister it
14 discloses a composite cutting blade group?

15 A So you can see, there's a first step and a
16 second step. These are so that there's a
17 plurality of cutting edges, composite cutting
18 edge groups.

19 Q Could you identify in figure 2 where a
20 composite cutting blade group is in Bannister?

21 A One, two.

22 Q Can you identify them by reference numerals?

23 A Oh, maybe not. 22 -- 22 and 23, perhaps.

24 Q And is there anything in Bannister that
25 discloses that the composite cutting blade

1 groups are formed spirally?

2 A So there's a recognition that where these
3 cutting edge groups intersect with the flute,
4 there will be a helical direction to them;
5 right?

6 They will follow the surface of
7 the helix. But here -- but here it's very
8 shallow. So it's very difficult to see; right?

9 Q It's your understanding that helical flutes
10 form a helix or form a curve on both sides of
11 the helical flute?

12 A I'm sorry, what are you asking me? If the
13 helical -- if the helix is a helix on both
14 sides?

15 Q Yeah, strike that.

16 Is there any other disclosure,
17 written or in diagrams, of the composite
18 cutting blade groups being formed spirally?

19 You can read through the patent.
20 I think you have control here.

21 A Okay. (Witness reviewing document.) So I
22 don't think he uses the term "spiral" or
23 "helical". I think the focus was on something
24 else.

25 Q Did you read through for terms like "slant" or

1 "relief", other phrases that we've decided are
2 relative to the in -- relevant for the
3 interpretation of spirally?

4 A Well, I think -- I think there's a discussion
5 of 24 right where the last cutting edge is
6 preferably beveled, which is giving you an
7 axial relief.

8 He doesn't use the term, but
9 that's what you -- that's what you are
10 achieving.

11 Q Okay. Then so then what was the need or needs,
12 in your understanding, that Bannister was
13 attempting to meet with his invention?

14 A So you have to realize, this is so far back,
15 that it's almost unrelated to what's being done
16 today.

17 But the intent was to produce a
18 drill that lasts longer, takes smaller torque,
19 smaller force, smaller power. And so that's
20 the goal of all of these patents, really, when
21 you look at them.

22 Q And this one in particular, as far as your
23 understanding?

24 A So I think there was an idea to -- you know, so
25 he's got a -- an axial clearance; right?

1 Which -- right? Which produces a spiral shape
2 axially; right?

3 Talks about his improved drill.
4 And I thought this was where he talked about
5 crushing, which is a little confusing, as well.
6 Let me see.

7 You can see on -- oh, I don't
8 know the page. There's a two on top and a
9 page 3 on the bottom. There's a discussion
10 here about starting on page 9 --

11 Q Starting at line nine?

12 A On line 9 it talks about:

13 "Accordingly, will produce short
14 chips. The first, or small drill
15 unit and the outer or largest drill
16 unit are preferably ground to a
17 bevelled or conical cutting edge
18 whereby, when drilling soft metals,
19 such as soft steel, copper, and the
20 like, long spiral chips are
21 produced."

22 Right? And you can -- it
23 continues, giving the rationale for why this is
24 beneficial, being that:

25 "These long spiral chips thus formed

1 take with them the short chips formed
2 by the cutting edges which are
3 substantially normal to the axis of
4 the drill and thus rid the hole of
5 the short chips which might otherwise
6 clog it."

7 Q So reading that, does that help you understand
8 what need Bannister was going after in his
9 invention?

10 A Well, I think every -- every drill bit patent
11 is looking to improve the efficiency of the
12 drilling operations.

13 It's all -- they're all going to
14 talk about eliminating breakage, reducing
15 forces, reducing torques. That's what they do.

16 Q Did you find anything else in here as to
17 identify the needs Bannister was attempting to
18 meet with his invention?

19 A So there were discussions in there about having
20 accurate placement of the holes and the need
21 for the small central section.

22 You know, but I think a person
23 of ordinary skill in the art would understand
24 all of this, anyway.

25 Q I'm trying to -- let's go off the record for a

1 little while. Maybe take a break? I mean,
2 it's probably your 1:00. Want to take a short
3 lunch break, Derek?

4 MR. VANDENBURGH: Yeah. It's
5 actually noon our time; but our lunches are
6 here. So we wouldn't mind taking our lunch
7 break now.

8 VIDEOGRAPHER: Off the record at
9 12:02 p.m.

10 (Short recess taken at 12:02
11 p.m.)

12 VIDEOGRAPHER: We are back on
13 the record at 12:47 p.m.

14 (Back on the record at 12:47
15 p.m.)

16 BY MR. CUNNINGHAM:

17 Q Professor Schmid, did you happen to talk to
18 anybody during lunch today?

19 A I did.

20 Q Did you talk to that guy, Derek Vandenburg?

21 A I did.

22 Q Did you guys have anything -- did you talk
23 about this deposition?

24 A No, not at all.

25 Q Okay.

1 A He's pretty sure the Vikings are going to beat
2 the Bears, though.

3 Q Let's not get into that right now. I'm not
4 going to be asking you a question about the
5 Vikings and the Bears.

6 Getting back to the topics, so
7 when was the first time you've ever used a
8 twist drill?

9 A It was a long, long time ago. I mean, you
10 know, this is early, you know, teenage years or
11 earlier.

12 Q Yeah. How about a step drill, when was the
13 first time you used a step drill?

14 A I think teenage years or earlier.

15 Q So you've known about both for about 50 years,
16 45 years?

17 A You know, you're in the ballpark, yes. A
18 number of decades.

19 Q You've never taught to incorporate the features
20 of a step drill on the tip of a twist drill?

21 A I'm sorry, I don't know the difference, the
22 step drill is a twist drill.

23 Q Go ahead and explain why a step drill is a
24 twist drill.

25 A So you know, if you understand where the

terminology comes from, it was because you know, like 150 years ago, it would be a bar that would have a groove machined into it or it would be a cross section that would have a groove that was then twisted into the shape of a drill bit. Hence the term twist drill. But if you look at things like the tooling manufacturing engineer's hand back I even have the page in, you know, in my -- in my declaration, twist drills, step drills, anything that's not the helical flutes, they're all treated at the same -- at the same time. You know, the definition of a twist drill, is that it should have at least one flute, and at least two cutting points. That's certainly the case for a step drill, as well. If you want to make a distinction between them, I'm happy to make that distinction, but you know, it's not -- it's not really one that's usually of importance.

Q And is a step drill a twist drill if it has the straight flute?

A Right. It doesn't matter.

Q Doesn't have to twist, no more twisting required for a step drill to be a twist drill?

1 A So like I say, the term comes from that
2 practice of twisting your bar stock to form
3 your helix. So that term now is the general
4 term for all of your drill bits. You know,
5 there's some others that have their own terms,
6 but you know, twist drill is a blanket term for
7 a lot of them.

8 Q You were saying a step drill is just a type of
9 twist drill?

10 A I think that's fair to say.

11 Q But have you ever taken the multi-step features
12 of a typical step drill and incorporated them
13 onto the end of a standard twist drill?

14 A I have not.

15 Q Do you know anyone who has?

16 A Do I know anyone who has? I don't know of any
17 offhand.

18 Q Have you ever taught that in your classes?

19 A I don't believe so, no.

20 Q Have you ever had a grad student take on a
21 project in which he or she would put a
22 plurality grooves in the cone portion of a step
23 drill or a cone portion -- excuse me, of a
24 twist drill? Let me strike that.

25 Have you had any grad student

1 whose project would be to put plurality of
2 grooves on the tip end of a twist drill?

3 A I don't believe so.

4 Q What's the difference between a spiral flute,
5 which you like to call a helical flute, and a
6 straight flute?

7 A So I think we discussed that we would use
8 spiral and helical interchangeably in this
9 matter, right, even though strictly speaking
10 they're not the same. But you know, clearly
11 you can have -- we have some illustrations of
12 straight flutes in some of the drills that are
13 in the declaration.

14 Q Why would a designer use one type of flute over
15 a different type of flute? Why would a --
16 strike that.

17 Why would a designer or
18 manufacturer of a twist drill use a straight
19 flute or a helical flute?

20 A Well, so there can be reasons. Right? So for
21 example, if I can find it fairly quickly
22 because we talked about it when we talked about
23 the cylinder and shank portions.

24 But, well, you know, so I'm
25 looking at -- well, but these are inclined so

1 they really are helical, too. But if you look
2 at -- yeah, so I see I'm looking at page 77 and
3 that one's a helical flute.

4 Page 77 is a -- shows a straight
5 flute but it looks like it might be just a
6 large helix. Looks like it might be helix, as
7 well. Why would you want to do it in a gun
8 drill where you don't have helical teeth?
9 Right? Where your flute is straight to aid in
10 chip removal over long distances. You know,
11 you may not want to have -- you may not be able
12 to have a helix.

13 Q So gun drills, I see also they're oftentimes
14 straight. Is it your understanding is because
15 it helps with the chip removal?

16 A Gun drills are their own -- you know, have
17 their own special considerations. But you
18 know, oddly enough, they're considered to be
19 drill bits, as well. To be twist drills, as
20 well; right? But yes, gun drills realize that
21 they're designed to go to very deep holes, very
22 large depths to diameter ratios.

23 So they will have features that
24 are not always present on other drill bits,
25 like, high pressure fluid delivery through the

1 interior of your drill bit.

2 That does happen with other
3 types of drills, but it's not -- it's not as
4 common as with if you're drilling very deep
5 holes.

6 Q And in step drills, why would a designer of a
7 step drill incorporate a helical flute or a
8 straight flute? What are some of the
9 considerations?

10 A So if I look at -- I just had the pages.

11 Well, if you look at page 78 of
12 my declaration, that looks to be a -- a groove
13 that has not been twisted around the -- around
14 the axis. But it's hard to tell from the
15 figure. It may actually be a spiral. Just
16 with not as -- not as large of an angle. But
17 you know, if your intent here like we said was
18 to cut a hole of known diameter in a thin work
19 piece, then chip extraction isn't as big a
20 concern, because you can you know, it's not
21 never going to be a deep hole. So if that's
22 the case, then, having the spiral is not --
23 there's not a clear reason why you would do
24 that if it -- if it had any extra cost
25 associated with it.

1 Q A straight flute is usually a cheaper way to
2 create a flute than a spiral flute?

3 A I'll say it can be. You know, I can think in
4 my mind, like, the current trend of doing it
5 through additive manufacturing. Added
6 manufacturing doesn't care. So you know,
7 that's just one that jumped to mind. But I'd
8 say it can be.

9 Q So can we put back up -- particular tab A18.
10 I'm not sure why it was marked as an Exhibit
11 but A18.

12 VIDEOGRAPHER: Yeah, Exhibit 6.

13 MR. CUNNINGHAM: Thank you.

14 BY MR. CUNNINGHAM:

15 Q So this is the Zhou Patent, again. So in what
16 way is the Zhou Patent configured to crush
17 cutting chips into finer chips?

18 A I'm sorry, can you repeat the question?

19 Q Sure. I'm asking you with respect to Zhou here
20 it's on the screen, in what way is Zhou
21 configured to crush cutting chips into finer
22 chips?

23 A Okay. So Zhou does not use that language. But
24 a person of ordinary skill in the art would
25 recognize that an asymmetrical distribution of

1 heights would lead to this production of finer
2 chips. And this is discussed on page 87 of my
3 '474 declaration.

4 Q Anything else in Zhou that would cause Zhou to
5 crush cutting chips into finer chips?

6 A Well, so I think you can read the brief
7 paragraphs of this -- of this section starting
8 on page 87; right?

9 So Zhou teaches a spiral flute
10 configured to chop finer chips and the drills
11 are configured to create finer chips. So I
12 think this is absolutely one of the rationales
13 to Zhou's design.

14 MR. CUNNINGHAM: I think apart
15 from some questions over his previous
16 testimonies that I haven't had a chance to
17 review, I think I can conclude the deposition
18 for today. And look into the rule to see
19 whether we're really entitled to some of that
20 other information.

21 MR. VANDENBURGH: Yeah. I mean,
22 that's fine. We'll take a break because I want
23 to consider whether we have any questions.

24 I will say, I'm -- I don't think
25 we are obligated. We've sort of been checking

1 in the interim and we haven't found anything.
2 But we're also not trying to hide anything. If
3 you want to ask him further questions you are
4 certainly welcome to do that.

5 MR. CUNNINGHAM: I kind of asked
6 in the dark as much as I could. If I had some
7 at my fingertips --

8 MR. VANDENBURGH: I don't know
9 if you specifically asked him about his
10 testimony in the last five years. And I
11 think -- because I think that what I heard is
12 that the vast majority of his expert witness
13 work was back at the beginning of his career in
14 the late '80s and early '90s.

15 BY MR. CUNNINGHAM:

16 Q Have you been deposed in the past -- I'm still
17 on the record?

18 VIDEOGRAPHER: Yes.

19 BY MR. CUNNINGHAM:

20 Q So Dr. Schmid, have you been deposed in the
21 past five years?

22 A I believe so, yes. I know so, yes.

23 Q And what was the subject -- how many times?

24 A That, I'm not sure of. But it's not many.

25 This is not my -- this is not my career path.

1 I don't do this all the time.

2 Q What was the subject matter of those
3 depositions?

4 A So one that I remember clearly because it was
5 during the COVID time which was quite unusual.
6 There were depositions and trial testimony,
7 trial during the time of COVID involving the
8 metal on metal lawsuits associated with Biomet
9 total hip replacements. So I remember
10 testifying on that.

11 That was all tribological issues
12 associated with those implants. Past that, I
13 can't recall any because, you know, there was
14 no real activity during -- during the COVID
15 time.

16 So but then, when I remembered
17 offhand because it was quite unusual doing a
18 trial with a jury with COVID protections in
19 place.

20 Q Right. What district court was that before?

21 A It was the City of St. Louis. It was a stone's
22 throw from the Arch. So I can give you a case
23 caption when I get to my office.

24 Q And how many other times have you been deposed
25 in the past five years?

1 A This is what I don't recall. But I know -- you
2 know, there's reports that you write. And I
3 can't -- I don't remember when I've given a
4 report only, or when there was testimony, as
5 well.

6 So I can't recall offhand. But
7 I do have a list. I maintain a list for, you
8 know, a five-year duration.

9 Q And so can you just give me an estimate of how
10 many?

11 A Five or fewer. I think you guys know by now,
12 my job's not to do testifying. My job is to be
13 a professor and do research.

14 Q Can you recall any others, other than the metal
15 on metal lawsuit for Biomet?

16 A I don't recall any other depositions as I sit
17 here, and certainly not trial testimony.

18 Q All right.

19 MR. CUNNINGHAM: Well, you know,
20 Derek, if I could, at some point if you feel
21 like it's something within the scope of
22 disclosure, be nice to have that.

23 Didn't get much other
24 disclosure, other than the declaration and his
25 CV. So if that's something that can be

provided to us, I'd appreciate it.

And with that, I don't think I have any other questions other than in that area.

MR. VANDENBURGH: All right. Let's go off the record. And we'll take, like, a 15-minute break. And I'll come back and see if we have any questions.

VIDEOGRAPHER: Off the record at 1:11 p.m.

(Short recess taken at 1:11 p.m.)

VIDEOGRAPHER: We are back on the record at 1:29 p.m.

(Back on the record at 1:29 p.m.)

- - -

EXAMINATION

BY MR. VANDENBURGH:

Q Can we put back up the -- I believe it's Exhibit 4, the '808 and specifically figure 13.

Dr. Schmid, I want to ask some follow-up questions about the last sentence of paragraph 31 of the '808 application.

This is the one that starts:

1 "The second cutting blades 6 are
2 parallel to an axis line of the drill
3 bit body, or an angle of 0-20
4 degrees."

5 Do you have your paper copy?

6 And do you see that sentence?

7 A I do have it. You're saying paragraph 31?

8 Q I believe it's paragraph 31, last sentence.

9 A Yes, okay.

10 Q So you were asked some questions about this and
11 how it is depicted in figure 13. I'm just
12 hoping you can clarify what surface you believe
13 this is saying is either parallel to the axis
14 or at an angle of 0-20 degrees.

15 A Yes. Well, as I was trying to describe before,
16 this -- you know, this center line over here,
17 shows the axis of the drill. And we have the
18 problem of we know that this surface, the one
19 that's inclined at roughly 45 degrees from the
20 horizontal is surface 5.

21 Surface 6 seems to point to the
22 corner instead of the flat surface that is
23 mostly horizontal. But that's the surface
24 we're talking about. And that's the one that
25 can be at an angle of 0-20 degrees.

1 I'm saying maybe my old eyes
2 don't show an angle between this axis of the
3 drill and this surface, but it can be zero.
4 Zero is consistent with the patent. But it
5 could be as much as 20 degrees, which would be
6 quite pronounced.

7 Q Okay. And I believe you used the term "axial
8 relief" to describe that sort of angling of
9 that surface; is that correct?

10 MR. CUNNINGHAM: Objection,
11 leading.

12 THE WITNESS: That's correct,
13 yes.

14 MR. CUNNINGHAM: Objection,
15 leading.

16 BY MR. VANDENBURGH:

17 Q Is the type of axial relief that you believe is
18 being referenced relative to this figure 13,
19 the same as the axial relief shown in figure 3
20 of the '583 patent where the composite cutting
21 blade groups are shown as being slanted?

22 A No. It's not the same.

23 MR. CUNNINGHAM: Same
24 objections.
25

1 BY MR. VANDENBURGH:

2 Q I then wanted to ask you a little bit about
3 your testimony regarding the Welty patent.

4 MR. VANDENBURGH: And can we put
5 up whichever Exhibit is Welty? I believe it's
6 Exhibit 8. And if we can put up the figures.
7 Put up the first page of this Exhibit.

8 VIDEOGRAPHER: I'm not sure that
9 I'm on the right page.

10 MR. VANDENBURGH: Who's got
11 control?

12 BY MR. VANDENBURGH:

13 Q Dr. Schmid, I believe you indicated that you
14 did not believe that the Welty patent disclosed
15 spirally-formed cutting blade groups, as we're
16 using that term for the purpose of this
17 proceeding.

18 Would you like to clarify that
19 testimony?

20 MR. CUNNINGHAM: Again, leading,
21 objection.

22 THE WITNESS: So yes. So I was
23 confused at first when I went, took a quick
24 look at this without studying it better.

25 See, you know, this shading over

1 here is, like, a 1938 style of how to do
2 drawings. And I was confused thinking that
3 this was supposed to be a three-dimensional
4 view. But it clearly isn't, because
5 cross-hatching like this means you're taking a
6 section.

7 You're seeing a planar view of
8 the hole that the drill would make. So what
9 this clearly is showing is that you have -- the
10 holes may be aligned, but clearly the flutes
11 are offset, which makes them spiral.

12 BY MR. VANDENBURGH:

13 Q And then finally, you were asked about the
14 Bannister patent.

15 MR. VANDENBURGH: I believe
16 that's Exhibit 9, if we could put that Exhibit
17 up.

18 BY MR. VANDENBURGH:

19 Q And you were asked about what portions of the
20 Bannister disclosure indicate that Bannister's
21 drill has spirally-formed cutting blade groups,
22 as we're using that term for the purpose of
23 this proceeding.

24 And you were asked what portions
25 of his disclosure indicated that. Do you

1 believe there are portions that you did not
2 mention in your original testimony?

3 MR. CUNNINGHAM: Objection,
4 leading.

5 THE WITNESS: There was a
6 paragraph from a -- from my declaration that I
7 wanted to point out. And I had it set aside.
8 And now, of course, I shuffled the -- put the
9 report back together, so give me one second.

10 So on page 2 -- I think page 2.
11 So here you see:

12 "The first, or small drill units and
13 the outer or largest drill unit are
14 preferably ground to a bevelled or
15 conical cutting edge."

16 So this is what I quote in my
17 paragraph 111 of my declaration.

18 So this -- even though he
19 doesn't use the terms, this does give you a
20 spiral surface. Right? So this gives you a
21 spiral or axial clearance, as it reads in this
22 paragraph.

23 BY MR. VANDENBURGH:

24 Q All right. In addition to that, if you would
25 read the sentence on page 2, left-hand column,

1 starting at line 72, and continuing on to the
2 right-hand column.

3 Can you read that sentence,
4 please to yourself?

5 MR. CUNNINGHAM: Objection,
6 leading.

7 THE WITNESS: Yes.

8 BY MR. VANDENBURGH:

9 Q And have you read up to the right-hand -- top
10 of the right-hand column, as well?

11 A Oh, you mean, left side, to the top of the
12 right?

13 Q Correct.

14 A Yes.

15 Q What does that sentence mean to you?

16 MR. CUNNINGHAM: Objection,
17 leading.

18 THE WITNESS: So we discussed
19 this one, as well, that the surface has a
20 relief behind it, you know, so for the axial
21 clearance. So you don't get the rubbing and
22 you don't get the high torques associated with
23 the rubbing. Right? So he says "preferably
24 bevelled", that gives you a spiral surface.

25 MR. VANDENBURGH: Okay. I have

1 no further questions.

2 MR. CUNNINGHAM: I have a couple
3 questions.

4 - - -

5 RE-EXAMINATION

6 BY MR. CUNNINGHAM:

7 Q During the break did you speak with your
8 attorney?

9 A I did.

10 MR. CUNNINGHAM: That's all.
11 Thank you.

12 MR. VANDENBURGH: All right. I
13 believe that is it. We will reserve the right
14 to review and sign before any notary.

15 And I don't know if we have
16 anything else to discuss, do we, on the record,
17 Kelly?

18 MR. CUNNINGHAM: No. Other
19 than, I guess, the court reporter, I'd like the
20 rough, and then the final version along with --
21 we don't -- well, I'll take the video. I asked
22 for the video. I'll take the video.

23 VIDEOGRAPHER: This concludes
24 today's deposition. The time is 1:41 p.m. We
25 are off the record.

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(Deposition concluded at 1:41
p.m. Central)

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CERTIFICATE

STATE OF MICHIGAN

COUNTY OF WAYNE

I do hereby certify the witness, whose attached testimony was taken in the above matter, was first duly sworn to tell the truth; the testimony contained herein was reduced to writing in the presence of the witness, by means of stenography; afterwards transcribed; and is a true and complete transcript of the testimony given. I further certify that I am not connected by blood or marriage with any of the parties, their attorneys or agents, and that I am not interested directly, indirectly or financially in the matter of controversy. In witness whereof, I have hereunto set my hand at Westland, Michigan, October 10, 2023.

Shari J. Pavlovich

Shari J. Pavlovich, CSR-5926

Notary Public, Wayne County, Michigan

My commission expires 4/14/2025

DEPOSITION ERRATA SHEET

Our Assignment No.: 26100

Case Caption: Viking Drill & Tool, Inc. v. Hongjia Wang

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.

Signed on the ____ day of _____, 2023.

DR. STEVEN R. SCHMID

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