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

CMS CEPCOR, LTD., and CMS)
CEPCOR AMERICANS, LLC,)Case No. IPR2024-01380
Petitioners,)Patent No. 9,827,568
vs.)
SANDVIK INTELLECTUAL PROPERTY)Case No. IPR2024-01381
AB,)Patent No. 11,014,090
Patent Owner.)
_____)

CONTINUED DEPOSITION OF
DAVID SMITH, VOLUME III
December 3, 2025
(Pages 1 - 87)

REPORTED BY:
COLLEEN P. DOHERTY, CSR 345
Notary Public
JOB No. 7774766

1 CONTINUED DEPOSITION OF DAVID SMITH was taken on
2 behalf of the Patent Owner, at the offices of Veritext
3 Idaho, located at 1109 Main Street, Suite 220, Boise,
4 Idaho, commencing at 11:01 a.m., on December 3, 2025,
5 before Colleen P. Doherty, Certified Shorthand Reporter
6 and Notary Public within and for the State of Idaho, in
7 the above-entitled matter.

8
9 APPEARANCES:

10 For the Petitioner, CMS Cepcor, LTD., and CMS Cepcor
11 Americas, LLC:

12 BEUSSE SANKS

13 BY MR. TERRY M. SANKS

14 157 E. New England Avenue, Suite 375

15 Winter Park, Florida 32789

16 tsanks@firstiniplaw.com
17

18 For the Patent Owner, Sandvik Intellectual Property AB:

19 MORRISON & FOERSTER, LLP

20 BY MR. MEHRAN ARJOMAND

21 BY MR. JEFFREY YOUNG

22 707 Wilshire Blvd., 60th Floor

23 Los Angeles, California 90017

24 marjomand@mofo.com

25 jeffreyyoung@mofo.com (Present Remotely)

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I N D E X

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E X H I B I T S

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Exhibit 2021 Copy of E. L. Sanborn, Crusher, Patent 1,402,255, 1/3/1922	29
Exhibit 2022 Copy of US Patent 3,813,047, Torrence, et al, Spider Bearing Assembly for Gyratory Crushers, 5/28/1974	40
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Exhibit 1016 Copy of Piepho Patent (8 pages)	60
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Exhibit 1053 Copy of Coxhill Patent	57
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DAVID SMITH,
first duly sworn to tell the truth relating to said
cause, testified as follows:
EXAMINATION (Continued):
QUESTIONS BY MR. ARJOMAND:
Q. Good morning.
A. Good morning.
Q. Please state and spell your name for the
record.
A. David Smith, D-a-v-i-d, S-m-i-t-h.
Q. Mr. Smith, do you understand that you've taken
an oath to tell the truth today?
A. Yes.
Q. Is there any reason that you cannot give
complete and accurate testimony today?
A. No.
Q. Aside from these proceedings, I know you've
taken depositions before; is that correct?
A. That's correct.
Q. And we've been through two depositions in
these proceedings, and I believe you know the ground
rules. But I think it would be worthwhile just for me
just to repeat them. I'll ask you a question.
Mr. Sanks here will make an objection. And then you may
answer my question, unless it relates to privilege or

1 confidential information. Does that make sense to you?

2 A. It does.

3 Q. We can take a break whenever you need to, but
4 we can't take a break on a pending question. Do you
5 understand that?

6 A. Yes.

7 Q. And during cross-examination, you cannot speak
8 to Mr. Sanks about the subject matter in your testimony.
9 Do you understand that as well?

10 A. Yes.

11 Q. Wonderful. So this deposition relates to two
12 IPR proceedings. One is IPR2024-01380, related to the
13 568 patent. The other proceeding is IPR2024-01381,
14 related to the 090 patent. Does that line up with your
15 recollection of the two proceedings?

16 A. Now, I don't have the numbers in front of me,
17 but that sounds correct.

18 Q. Okay. Thank you. The testimony today will be
19 directed to both proceedings, unless my question is
20 specifically directed to one or the other proceeding.
21 Does that make sense to you?

22 A. Sure.

23 Q. Mr. Smith, what did you do to prepare for your
24 deposition today?

25 A. So outside of preparing my reports, I had a

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1 conversation with Mr. Sanks yesterday, and I went back
2 and reread my reports.

3 Q. And how long was your conversation with
4 Mr. Sanks?

5 A. I believe it was about half an hour.

6 Q. Okay. And did you speak with anyone else,
7 besides Mr. Sanks, regarding today's deposition,
8 excluding your family?

9 A. No.

10 Q. And you indicated that you reviewed your
11 reports; is that correct?

12 A. That's correct.

13 Q. Those would be your third declaration in the
14 two proceedings; is that correct?

15 A. That's correct.

16 Q. And how long did you review each declaration?

17 A. I probably spent about an hour-and-a-half
18 going over the two of them.

19 Q. Okay. Aside from your two declarations that
20 you reviewed, did you review any other documents in
21 preparation for today's deposition?

22 A. Not since issuing my reports a few days ago.

23 MR. ARJOMAND: Okay. So let me place in front
24 of you what has been previously marked as Exhibit 1049,
25 in the 01380 proceeding. This is the third declaration

1 of David Smith.

2 And also, let me place in front of you what
3 has been previously marked as Exhibit 1051 in the 01381
4 proceeding. It's the third declaration of Mr. David
5 Smith.

6 (Exhibits 1049 and 1051 referenced.)

7 Q. (BY MR. ARJOMAND) Are Exhibits 1049 and 1051
8 the reports you reviewed in preparation for today's
9 deposition?

10 A. They appear to be, yes.

11 Q. Great. So let me direct you to Exhibit 1049.
12 I would like you to go to the last page of your third
13 declaration, page 76. Is that your signature on the
14 last page, Mr. Smith?

15 A. It is.

16 Q. And in preparation for today's deposition, as
17 you reviewed Exhibit 1049, did you notice any errors
18 that you would like to correct today?

19 A. No, I didn't.

20 Q. Since you've prepared this declaration on
21 November 24th, 2025, as set forth on page 76 of your
22 third declaration, is there anything that you would like
23 to change with respect to Exhibit 1049?

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

25 Q. So turning to page 75 and 76 of Exhibit 1049,

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1 you have a conclusion at paragraph 63. Do you see that?

2 A. I do.

3 Q. And you conclude that in your opinion, the
4 claims, the challenge claims of the 568 patent would
5 have been obvious to a person of ordinary skill in the
6 art. Do you see that?

7 A. Yes.

8 Q. And when you refer to the challenge claims of
9 the 568 patent, are you referring to the claims that
10 were presented by patent owner in its revised motion to
11 amend?

12 A. Yes.

13 Q. Okay. And your conclusion that those claims
14 are obvious, is based on your analysis as set forth in
15 Exhibit 1049; right?

16 A. That's correct.

17 Q. What I'm trying to get at is, does Exhibit
18 1049 encapsulate all your thinking as to why the revised
19 motion to amend claims are unpatentable as obvious?

20 A. I believe so. You know, as you know, this has
21 been going on for quite some time. This is my third
22 declaration. The claims have changed. But I believe
23 everything is set forth in this report.

24 Q. So the claims did change between your first
25 two declarations and this third declaration, Exhibit

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1 1049; is that correct?

2 A. So I had a first declaration that addressed
3 the original claims. I had a second declaration that
4 amended, but that addressed amended claims. And then
5 this third declaration that addresses a further
6 amendment to those claims.

7 Q. Okay. Let me direct you to paragraph 10 of
8 Exhibit 1049. It's on page 3.

9 A. Okay.

10 Q. In paragraph 10, of Exhibit 1049, you rely on
11 an effective filing date of August 2nd, 2012; is that
12 correct?

13 A. Yes.

14 Q. And your obviousness analysis in Exhibit
15 1049 -- strike that.

16 So let me now direct you to paragraph 16.

17 A. Okay.

18 Q. Take a second to review paragraph 16.

19 A. (Witness complying.) Okay.

20 Q. Your obviousness analysis in Exhibit 1049 was
21 based on the level of skill set forth in paragraph 16;
22 is that correct?

23 A. That's correct.

24 Q. If during today's deposition, I were to refer
25 to a person of ordinary skill in the art, or POSITA, as

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1 of the priority date with respect to the 01380
2 proceeding, you would understand that to be the POSITA,
3 in paragraph 16, of Exhibit 1049, as of 2012; is that
4 correct?

5 A. That's correct.

6 Q. Mr. Smith, what did you do to prepare Exhibit
7 1049?

8 A. I read through the revised motion to amend,
9 and the changes to the claims. I read through the
10 declaration of Dr. Kytomaa. I've reviewed prior art,
11 and I analyzed the claims in light of the prior art, in
12 light of the knowledge of a person of ordinary skill,
13 and then presented my analysis in this report.

14 Q. You indicated that you reviewed prior art.
15 Which prior art references did you review in preparing
16 Exhibit 1049?

17 A. Well, there are a number of them. They are
18 all listed in the report.

19 Q. As you sit here today, do you recall any prior
20 art references that you reviewed that are not set forth
21 in your report?

22 A. I've reviewed lots of prior art references
23 that are not in this report. But the ones that I've
24 relied on are in this report.

25 Q. Do you recall which prior art references you

Page 10

1 reviewed for this proceeding, that are not in Exhibit
2 1049?

3 A. There are some that are in my other
4 declaration for the 090 patent. But as far as art that
5 I've relied on, it is all listed in the declaration.

6 Q. As you sit here today, can you name me any
7 references that you can recall that you've reviewed in
8 preparation of Exhibit 1049, but that are not listed in
9 Exhibit 1049?

10 A. Are you asking for art that I read that I
11 didn't rely on?

12 Q. That's right.

13 A. I don't have those off the top of my head, no.

14 Q. As you sit here today, you can't recall a
15 single reference that you might have looked at, but did
16 not rely upon in preparing Exhibit 1049?

17 A. I don't know why I would commit those to
18 memory. So, no, I don't. I don't recall.

19 Q. Okay. Did you review the prosecution history
20 of the 568 patent in preparing Exhibit 1049?

21 A. I have reviewed it. I did not specifically go
22 back through it again.

23 Q. Do you recall when you reviewed the
24 prosecution history of the 568 patent?

25 A. Not specifically.

1 Q. Well, was it before the preparation of your
2 first declaration in the 01380 proceeding?

3 A. I did review it at that time, yes.

4 Q. Do you recall if you've reviewed the
5 prosecution history since then?

6 A. I have reviewed portions of it. I don't
7 believe I've reviewed the entirety of it.

8 Q. And do you recall if you reviewed any portions
9 of the prosecution history in preparing Exhibit 1049,
10 that's in front of you?

11 A. I don't think I looked at that, specifically.

12 Q. Did you review any dictionary definitions in
13 preparing Exhibit 1049?

14 A. I don't believe I did. If I did, they are
15 listed in the report, but I don't recall doing that for
16 this declaration.

17 Q. Did you work with anyone else in preparing
18 Exhibit 1049?

19 A. I did.

20 Q. Who did you work with?

21 A. Jon Marshall.

22 Q. Anyone else?

23 A. No.

24 Q. Did you work with counsel in preparing your
25 report, Exhibit 1049?

1 A. I reviewed it with counsel.

2 Q. And how many hours would you say, you spent in
3 preparing Exhibit 1049?

4 A. I don't recall.

5 Q. Was it 10 hours?

6 A. At least.

7 Q. 20 hours?

8 A. Probably.

9 Q. 30 hours?

10 A. I can't say.

11 Q. Okay. All right. Let's shift over to Exhibit
12 1051, in the 01381 proceeding. This is your third
13 declaration in that proceeding. And let me direct you
14 to page 103.

15 A. Okay.

16 Q. Is that your signature, Mr. Smith --

17 A. It is.

18 Q. -- on page 103? And when you said that you
19 reviewed your report in preparation for today's
20 deposition, did that refer to Exhibit 1051, that's in
21 front of you right now?

22 A. Yes, Exhibit 1051 is one of the reports that I
23 reviewed in preparation for this deposition.

24 Q. In reviewing Exhibit 1051 in preparation for
25 today's deposition, did you notice any errors?

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1 A. No, I didn't.

2 Q. And then since you've prepared your third
3 declaration, Exhibit 1051, as of November 25th, 2025, is
4 there anything that you would like to change with
5 respect to Exhibit 1051?

6 A. No, not that I'm aware of.

7 Q. Okay. Now, turning to paragraph 83 of your
8 declaration which is on page 103. You conclude that the
9 challenged claims of the 090 patent would have been
10 obvious to a person of ordinary skill in the art. Do
11 you see that?

12 A. I do.

13 Q. And I wanted to ask you with respect to
14 Exhibit 1051, if your -- if this report, Exhibit 1051,
15 encapsulates all your thinking as to why the claims that
16 are set forth in Exhibit 1051 are obvious?

17 A. I believe so. As we discussed with the
18 previous declaration, this is the third declaration.
19 Each one addressing amendments, or the first one
20 addressing the original claims. The second one
21 addressing the first amendments. And this one
22 addressing the revised amendments. I do believe all of
23 the information and opinions are contained in this
24 declaration for the revised claims, amended claims.

25 Q. And just to be clear, you also believe that

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1 all the information and opinions are contained in
2 Exhibit 1049 for the revised claims in the 568 patent;
3 is that correct?

4 A. I believe so. The declarations should, in my
5 opinion, show in detail why each of the amended claims
6 for each of the two patents are invalid.

7 Q. And when you refer to declarations, you are
8 referring to Exhibit 1049 and Exhibit 1051 in front of
9 you?

10 A. That's correct.

11 Q. All right. Now, let me now direct you to
12 paragraph 9 of Exhibit 1051. Would it be fair to say,
13 Mr. Smith, that in preparing Exhibit 1051, you relied on
14 a priority date of November 12th, 2013?

15 A. That's correct.

16 Q. Now, do you recall if you used the same
17 priority date in your other declarations in the 01381
18 proceeding?

19 A. My recollection is that the priority date for
20 at least one of them is different than it was in
21 previous declarations, but I don't recall which ones,
22 specifically.

23 Q. Okay. But as you sit here today, you are
24 testifying that the claims are obvious in the 090
25 patent, based on a November 12th, 2013 priority date; is

1 that correct?

2 A. That's the date that I used in my analysis
3 based on the prior art. And I think it would have been
4 obvious even before that, but that's the date that I was
5 told is the priority date for the patents --

6 Q. Okay.

7 A. -- or for this patent.

8 Q. So let me direct you to paragraph 16 of your
9 declaration, in Exhibit 1051. Take a minute to read
10 that paragraph.

11 A. Okay.

12 Q. Your obvious analysis in Exhibit 1051, was
13 based on the level of skill as set forth in paragraph
14 16; is that correct?

15 A. Yes.

16 Q. So if I were to refer to a POSITA as in the
17 priority date of the 0381 proceeding, you would
18 understand that to be a POSITA, in paragraph 16, of
19 Exhibit 1051, as of 2013; correct?

20 A. That's correct.

21 Q. Mr. Smith, what did you do to prepare Exhibit
22 1051?

23 A. So again, I reviewed the revised motion to
24 amend the claims. I reviewed the declaration of
25 Dr. Kytomaa. I reviewed various prior art references

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1 and compared them to the claims, and then presented my
2 analysis in this report.

3 Q. And in terms of reviewing prior art
4 references, do you recall reviewing any prior art
5 references that are not cited in Exhibit 1051, in
6 preparing Exhibit 1051?

7 A. Sure. Similar to my preparation for Exhibit
8 1049, there were a number of prior art references that I
9 reviewed that I didn't rely on for my analysis. But
10 that I could have used, say, but were not relied on for
11 the specific combinations and teachings of the prior art
12 that I've identified in this declaration.

13 Q. Do you recall what those references were as
14 you sit here today?

15 A. Not specifically, no.

16 Q. Did you review the prosecution history of the
17 090 patent in preparing Exhibit 1051?

18 A. I have reviewed it in the past. I don't think
19 I went through it, specifically, for this declaration,
20 but I have reviewed it in the past.

21 Q. Okay. And did you review any dictionary
22 definitions in preparing Exhibit 1051?

23 A. I don't think that I reviewed any dictionary
24 definitions, or relied on that for this declaration.

25 Q. And did you work with anyone else in preparing

1 Exhibit 1051?

2 A. Yes, again, I worked with Jon Marshall.

3 Q. Is Jon Marshall someone on your team?

4 A. He is, yes.

5 Q. Okay. Is he an attorney?

6 A. He's not, no. He's a mechanical engineer.

7 Q. Okay. And did you confer with counsel in
8 preparing Exhibit 1051?

9 A. I did.

10 Q. And how long did you spend overall in
11 preparing Exhibit 1051?

12 A. I don't know, specifically.

13 Q. Roughly, 20 to 30 hours?

14 A. Probably.

15 Q. That would be on top of the 20 to 30 hours
16 that you spent preparing Exhibit 1049, in the 01380
17 proceeding?

18 A. I think between Jon and I, that's probably
19 accurate.

20 Q. Okay.

21 A. Or at least a good estimate.

22 Q. All right. Let me now direct you to pages 43
23 and 45 of Exhibit 1051. Let me know when you are there.

24 A. You said 43 and 45?

25 Q. Yes.

Page 18

1 A. Okay.

2 Q. Do you see that those pages are showing
3 Figures 1 and 2 of the 090 patent?

4 A. So Figure 1 is shown on page 43, and Figure 2
5 is shown on page 44.

6 Q. So in both figures on pages 43 and 44, you've
7 annotated the sleeve element in purple. Do you see
8 that?

9 A. I do.

10 Q. Do you understand the sleeve to be a coupling
11 structure?

12 A. A coupling structure?

13 Q. Yes.

14 A. I'm not sure I thought of it that way.

15 Q. Okay. How did you think of it?

16 A. I've referred to it as a sleeve.

17 Q. Well, let me ask you. What's your
18 understanding of a sleeve?

19 A. So in the context of these patents, a sleeve
20 is fit over an end of the shaft. And is intermediate
21 between the shaft and the bearing that the shaft rotates
22 in.

23 Q. So is the sleeve a wear element, in your
24 opinion, with respect to Figures 1 and 2 of this 090
25 patent?

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1 A. I think that's reasonable. I believe that's
2 discussed in the patent.

3 Q. So turning to Figure 2, on page 44, of Exhibit
4 1051, the sleeve is shown in purple. And the main shaft
5 is shown in yellow. Do you see that?

6 A. I do.

7 Q. And there is that interface between the sleeve
8 and the main shaft; is that correct?

9 A. What do you mean by interface?

10 Q. Well, how do you understand the sleeve and the
11 main shaft to relate to each other, in Figure 2, of the
12 090 patent?

13 A. My understanding is that the sleeve is press
14 fit on the -- or an interference fit on the main shaft.

15 Q. Okay. And would a POSITA looking at Figure 2
16 of the 090 patent, understand the relative amount of
17 lateral loading as compared to torque loading at the
18 interface between the sleeve and the shaft?

19 A. I don't think reading the patent, that the
20 relative amounts of those loads would -- are described
21 in the patent. And a person of ordinary skill in the
22 art, if they were to do a full analysis, could probably
23 determine those. But just looking at it, I don't think
24 you could reasonably quantify those based on the
25 figures.

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1 Q. So sitting as a person of ordinary skill in
2 the art, would you understand that the lateral loading
3 would be less than the torque loading for a gyratory
4 rock crusher?

5 A. Can you say that one more time?

6 Q. Yeah, let me say it in a better way. So
7 sitting as a person of ordinary skill in the art, would
8 you understand that the lateral loading would be less
9 than the torque loading at the sleeve shaft interface in
10 a gyratory rock crusher?

11 A. So that's a difficult question to answer as
12 you've asked it. Because the sleeve goes all the way
13 around the shaft as the rock crusher is working, I would
14 expect that there are instances where a force is applied
15 in a lateral direction that could be quite high on one
16 side, and have no force on the other side.

17 Q. Uh-huh.

18 A. And I would imagine that at times, there are
19 torsional loads applied, and those probably vary based
20 on various factors.

21 Q. But based on your knowledge of gyratory rock
22 crushers, how would you understand the relative amounts
23 to be between the lateral loading, versus the torque
24 loading at this interface between the sleeve and the
25 shaft and the gyratory rock crusher?

Page 21

1 A. As I explained, the loads vary from no load to
2 high loads in lateral -- in the lateral direction. And
3 they probably vary -- the torsional loads probably vary
4 as well. Torsional loads are measured in different
5 units than lateral loads. So they're not an
6 apples-to-apples comparison. So I'm not quite sure how
7 to answer your question.

8 Q. How are lateral loads measured, Mr. Smith?

9 A. I expect them to be measured in a force unit
10 such as pounds.

11 Q. And what about a torque load?

12 A. It would probably be in a torsional unit such
13 as foot pounds.

14 Q. So let me direct you back to page 43 of
15 Exhibit 1051. There is shown at Figure 1, of the 090
16 patent. And as we previously discussed, the sleeve is
17 shown in purple. And the shaft is shown in yellow. And
18 then there is an element that is shown in pink. What
19 element is that, Mr. Smith?

20 A. My recollection, and I don't have the patent
21 in front of me, is that that's the bearing housing.

22 Q. All right. So what is the role of the bearing
23 housing in a gyratory rock crusher, Mr. Smith?

24 A. I would say, it is to constrain the motion of
25 the top end of the main shaft.

Page 22

1 Q. When you say that it's to constrain the motion
2 of the top end of the shaft, what type of motion is
3 being constrained in a rock -- gyratory rock crusher
4 bearing assembly?

5 A. So that would be keeping the shaft from moving
6 laterally outside of the bearing housing. It would
7 constrain it, so that it can -- stays in that lateral
8 position.

9 Q. So given that answer, would you understand
10 that the lateral loading in a gyratory rock crusher with
11 respect to that sleeve shaft interface, would be higher
12 than a torque loading for that interface?

13 A. So we've previously discussed lateral loading
14 and torque loading, and how it's not an apples-to-apples
15 comparison. And that the loading could be very high on
16 one side, and could be nothing on the other side. So I
17 don't know how to answer that question.

18 Q. Well, what I'm trying to understand,
19 Mr. Smith, is -- well, strike that.

20 It seemed from your previous testimony, that
21 you had indicated that the bearing assembly would
22 provide some type of lateral constraint. I'm trying to
23 understand what would be the torsional constraint in a
24 gyratory rock crusher with respect to the bearing
25 assembly?

1 A. So the torsional constraint is probably
2 dependent on -- I don't know that I would call it a
3 torsional constraint. The torsional loads that are
4 transferred from the bearing, to the sleeve, to the
5 shaft, are going to be dependent on the particular
6 materials that are used for each one. They are going to
7 be dependent on the normal loads for each one. And it
8 will be dependent on, you know, the size of the shaft,
9 because that will affect --

10 Well, I don't know that it would be dependent
11 on the size of the shaft. I would have to think about
12 that some more. But it's at least dependent on the
13 normal loads, and the friction coefficient, which is
14 based on the materials that are used, which are not
15 described in the patent.

16 Q. All right. Let's take as a given, Figure 1,
17 in page 43, of Exhibit 1051, and assume that the type of
18 material being crushed is standard. The size of the
19 gyratory rock crusher is standard. What I'm trying to
20 understand from you, is that based on what you are
21 seeing in Figure 1, of the 090 patent, would the lateral
22 load be relatively higher than the torsional load, given
23 what I've assumed to be normal set of operations?

24 A. So I don't know what you mean, when you say a
25 standard size for the shaft, or standard size for the

1 rock crusher, or standard materials. I've seen rock
2 crushers that are bigger than a room, or rock crushers
3 that are significantly smaller than that.

4 You know, the type of material you are
5 crushing, is not what I was talking about when I talked
6 about the materials. That would be the actual material
7 that the shaft is made of, that the bearing is made of,
8 that the sleeves are made of. And those can vary. They
9 are not described in the patent. So I don't know how to
10 answer that question.

11 Q. So you hold yourself out to be an expert on
12 gyratory rock crushers; is that correct, Mr. Smith?

13 A. Yes.

14 Q. And you understand how gyratory rock crushers
15 operate; correct?

16 A. I understand that there are different
17 varieties and different sizes of rock crushers. I'm
18 familiar with many of them; more familiar with some, and
19 less familiar with others.

20 Q. Okay. And as you sit here today, you can't
21 tell me whether the relative amount of lateral load of
22 loading would be higher than the torque loading at the
23 shaft sleeve interface in a gyratory rock crusher?

24 A. So again, the question is not an
25 apples-to-apples comparison. So to say, you know, one

1 is higher than the other. Is like this apple more
2 appley than this orange? I don't know how to answer
3 your question. There are different units of
4 measurement. You know, is one higher than the other,
5 then one probably has a higher number. But they are
6 different units, measuring different things.

7 Q. Let me see if I can ask the question in a
8 slightly different way, Mr. Smith. You had previously
9 testified that your understanding in the context of
10 these patents, is that a sleeve is an intermediate
11 between the shaft and the bearing. And that the shaft
12 rotates within the sleeve; is that correct?

13 A. No, the shaft doesn't rotate in the sleeve.
14 It's an interference fit.

15 Q. Okay.

16 A. So they should be stationary relative to one
17 another.

18 Q. Okay. So can you explain to me, what you
19 meant by the sleeve is an intermediate between the shaft
20 and the bearing?

21 A. Sure. You have, on the inside, you have the
22 shaft. On the outside of the shaft, you have the
23 sleeve. And then outside of the sleeve, you have the
24 bearing. So the sleeve is in between the shaft and the
25 bearing.

1 Q. What is the role of the sleeve in that
2 arrangement?

3 A. I would imagine it has multiple roles. But it
4 at least, as we mentioned before, is a wear component.
5 And it interacts with the bearing assembly, and rotates
6 within the bearing assembly, at least those functions.

7 Q. What do you mean that it interacts with the
8 bearing assembly?

9 A. I inspect the bearing contact.

10 Q. And what do you mean that it rotates within
11 the bearing assembly?

12 A. That would be as the shaft rotates, the sleeve
13 is -- essentially has an interference fit with the
14 shaft, so they are not intended to rotate relative to
15 each other. But the shaft and the sleeve both rotate
16 within the bearing.

17 Q. You indicated that the sleeve has
18 other -- strike that.

19 You indicated that the sleeve has several
20 roles. Are there any other roles that you can think of
21 as you sit here today?

22 A. And so as described in the 090 patent, you
23 know, there are -- I think there are holes in the sleeve
24 that are used for possibly for dismounting, but -- so
25 there may be other functions of parts of the sleeve, or

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1 of the sleeve, in general.

2 Q. So let me direct you to Exhibit 1049, that's
3 in front of you. This is your third declaration in the
4 01380 proceeding. And, specifically, can you go to page
5 37? Let me know when you are there.

6 A. Okay.

7 Q. So on page 37, there is shown at the top,
8 Figure 2, of the 568 patent; is that correct?

9 A. That's correct.

10 Q. So taking a look at Figure 2, Mr. Smith, would
11 a POSITA understand that there would be a relative
12 motion between the sleeve that's in purple, and the
13 bearing assembly that's in pink?

14 A. Yes, I would expect there would be motion
15 between those two components.

16 Q. And then can you go back one page, to page 36
17 of Exhibit 1049?

18 A. Okay.

19 Q. And that shows at the top, Figure 1, of the
20 568 patent; is that correct?

21 A. That's correct.

22 Q. So taking a look at the main shaft 107, that's
23 shown in yellow, on page 36, of Exhibit 1049. Do you
24 see that?

25 A. I do.

1 Q. Would you understand that that main shaft
2 gyrates along, or about an axis, as well as rotating
3 about its own longitudinal axis?

4 A. As we -- I guess reading the patent, it
5 doesn't specifically talk about that. I expect that
6 that's probably what happens, but it's not specifically
7 discussed in the patent.

8 Q. I see. But your understanding or -- strike
9 that.

10 POSITA's understanding on Figure 1, of the 568
11 patent, would be that there are two rotations associated
12 with the main shaft 107. One is a gyratory motion about
13 an axis, and then a separate rotation about the shaft's
14 own longitudinal axis?

15 A. I would expect that to be the case.

16 MR. ARJOMAND: Okay. Let's take a quick
17 five-minute break.

18 (Recess.)

19 MR. ARJOMAND: Should we go back on the
20 record?

21 (Exhibit 1021/"2021" marked.)

22 Q. (BY MR. ARJOMAND) Mr. Smith, let me place in
23 front of you, a new exhibit. We'll mark this as Exhibit
24 2021. It's the Sanborn patent.

25 Mr. Smith, are you familiar with the Sanborn

1 patent?

2 A. I might have seen it, but I don't know that
3 I've studied it in great detail.

4 Q. Do you recall in what capacity, you saw the
5 Sanborn patent?

6 A. Not specifically.

7 Q. Do you recall reviewing the Sanborn patent in
8 preparing Exhibit 1049, the 01380 proceeding?

9 A. I don't specifically recall.

10 Q. All right. Do you recall reviewing the
11 Sanborn patent in preparing for today's deposition?

12 A. The figure on the front looks familiar. But I
13 don't know that I've specifically relied on this, or
14 specifically reviewed it.

15 Q. Do you know if the Sanborn patent was
16 considered in the prosecution of the 568 patent?

17 A. Off the top of my head, I don't know. If you
18 have a copy of the patent, we can look.

19 Q. But as you sit here today, you don't recall
20 one way or the other?

21 A. I have a pretty good memory, but not that
22 good.

23 Q. Okay. All right. I want to ask you a few
24 questions about how the Sanborn operates. Would it make
25 sense for you to review the patent for a few minutes,

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1 first?

2 A. You know, as I've said, I don't think I've
3 specifically reviewed this one. So, you know, I may be
4 able to glean something in a few minutes. But I'm not
5 confident I would have a perfect understanding of how it
6 works.

7 Q. Well, it's only about three or four columns
8 long before you get to the claims on the second page.
9 Do you want to just take a moment to read the patent, if
10 that would help you?

11 A. I can take a moment to read it. But,
12 typically, when I go through this, it's more than just
13 glancing through it. You have to look at the numbers,
14 and find them on the image, and figure out how it all
15 works. So normally, there is a lot more analysis that
16 goes into understanding a patent, than just reading
17 through it.

18 So it would probably take quite a bit of
19 analysis before I would be comfortable answering
20 questions about a reference that I'm not terribly
21 familiar with.

22 Q. Okay. So why don't you take whatever time you
23 need to read the first two pages, because that's the
24 length of the patent. And then I can ask you questions
25 after that.

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1 A. Okay. (Witness complying.) Okay. I've read
2 through the patent.

3 Q. All right. Let me direct you, Mr. Smith, to
4 Figure 1 of Sanborn sole figure. And do you see element
5 15, I believe, that's the shaft? The reference number
6 is on the lower left.

7 A. Okay.

8 Q. Does shaft 15 in Sanborn rotate?

9 MR. SANKS: I'm going to object to this
10 question on the grounds that Mr. Smith -- it's supposed
11 to be directed towards our last filing, which includes
12 his exhibits. And he's already testified that Sanborn
13 was not something he considered. It's not included in
14 his exhibits.

15 Therefore, if you want to ask questions about
16 this, this should be something coming from your expert.
17 I mean, even though it was cited -- it was referenced in
18 both of the patents at issue. It wasn't even cited by
19 the examiner. So to expect him to now be able to spend
20 time here, and try to do an analysis for you to answer
21 questions. I think it's completely outside of scope.

22 So just to let you know, every time you ask a
23 question about it, I'm going to object to it again, on
24 the same grounds.

25 MR. ARJOMAND: Okay. Terry, I know that you

1 will -- you intend to object to the questions relating
2 to Sanborn. I would just say, that under the rules of
3 the Patent Trial and Appeal Board, the speaking
4 objection that you just gave is inappropriate. The only
5 objections that you can make on record, are form,
6 foundation, and privilege.

7 There is no mechanism in an IPR deposition to
8 provide a lengthy objection like you did. Which I think
9 to some extent, can be viewed as arguably, coaching
10 Mr. Smith. So if you intend to make objections with
11 respect to my questions on Sanborn, I ask you just to
12 make an objection based on the rules as provided in the
13 PTAB guidelines. Does that make sense?

14 MR. SANKS: Fair enough.

15 Q. (BY MR. ARJOMAND) You are not directing
16 Mr. Smith to not answer the question; are you?

17 MR. SANKS: There was nothing in there I
18 directed him or coached him. I would tell you to go
19 ahead and ask your questions.

20 Q. (BY MR. ARJOMAND) Okay. Go ahead and answer,
21 Mr. Smith.

22 A. If we would look at the second page, line
23 63-ish. It says, "the frame, though formed in sections
24 to permit of the assembling or removal of the crusher
25 head and its associated parts on the rigid upstanding

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1 shaft 15." I'm sorry. That just says, it's rigid.
2 That doesn't say, it's stationary or not.

3 It says, "an upright rigid shaft 15 is
4 securely fixed at its upper and lower ends in arch 14
5 and in the base 10 respectively." That's on page 1,
6 lines 87 to 91-ish.

7 Q. So, Mr. Smith, based on the passages that you
8 just read in Sanborn, is it your understanding that
9 shaft 15 of Sanborn rotates?

10 MR. SANKS: Objection as to form.

11 THE WITNESS: Again, I've only just read
12 through this. And my very basic understanding would
13 suggest that it doesn't, but I'm not 100 percent sure.

14 Q. (BY MR. ARJOMAND) Okay. Let me direct you
15 back to the sole figure of Sanborn. At the bottom left,
16 there is a reference to No. 20 that refers to a sleeve.
17 Do you see that?

18 A. I see the No. 20, and it does call it a
19 sleeve, which is eccentric, at the top of page 2, line
20 1.

21 Q. Is it your understanding that sleeve 20 and
22 shaft 15 rotate together?

23 MR. SANKS: Objection; form.

24 THE WITNESS: So my basic understanding just
25 on reading this just now, would be that sleeve 20

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1 rotates around the shaft 15.

2 Q. (BY MR. ARJOMAND) Okay. And now, let me
3 direct you to element 16, in the sole figure of Sanborn.
4 The reference numeral is at the top right. And there is
5 also a reference numeral at the bottom left of to 16?

6 A. Okay.

7 Q. Do you see that?

8 A. I do see that.

9 Q. Do you know what element 16 is?

10 A. So the patent on page 1, starting around line
11 91. "For this purpose it is preferred to taper the ends
12 of shaft 15 and surround them with correspondingly
13 shaped bushings 16." So I would say, that it's a
14 bushing.

15 Q. Okay. And what is your understanding of what
16 a bushing is?

17 MR. SANKS: Objection; form.

18 THE WITNESS: Yeah, I would probably have to
19 dig into this a little more to understand that. Because
20 usually, a bushing has to do with rotation, and I'm not
21 sure how that's being used here.

22 Q. (BY MR. ARJOMAND) Do you understand that
23 bushing 16 rotates?

24 MR. SANKS: Objection; form.

25 THE WITNESS: Like I said, I would have to

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1 study this a little more. Based on my reading that I
2 just did, I can't tell you with any certainty.

3 Q. (BY MR. ARJOMAND) Does bushing 16 secure the
4 shaft 15 from rotation?

5 MR. SANKS: Objection; form.

6 THE WITNESS: Does it secure it from rotation?
7 I don't recall reading anything like that.

8 Q. (BY MR. ARJOMAND) Does sleeve 20 rotate,
9 Mr. Smith, in Sanborn?

10 MR. SANKS: Objection; form.

11 THE WITNESS: On page 2, around line 58, it
12 says, "In operation the rotary movements of the
13 eccentric sleeve 20 imparted to it by the driving shaft
14 23." So I would say that the sleeve 20 is moving.

15 Q. So turning back to page 1, lines 91 through 97
16 of Sanborn. It describes the bushing 16. Do you see
17 that?

18 MR. SANKS: Objection; form.

19 THE WITNESS: It does talk about the bushing
20 there.

21 Q. (BY MR. ARJOMAND) So turning to Figure 1 of
22 Sanborn, what do you understand the bushing 16 is doing
23 in that figure?

24 MR. SANKS: Objection; form.

25 THE WITNESS: Like I said before, I don't know

1 based on my cursory reading. It says that it's there,
2 but I don't know what its purpose is specifically.
3 Maybe if I studied the patent more, I could figure that
4 out. But based on my understanding of it at this point,
5 which is very minimal, I can't tell you for sure.

6 Q. (BY MR. ARJOMAND) In reviewing the Sanborn
7 patent, does it refresh your recollection if you've ever
8 considered this patent in preparing any of your
9 declarations in these proceedings?

10 A. I don't --

11 MR. SANKS: Objection; form.

12 THE WITNESS: I don't think I've read through
13 this patent before today.

14 (Exhibit 1050 referenced.)

15 Q. (BY MR. ARJOMAND) Okay. All right. Let me
16 place in front of you what was previously marked as
17 Exhibit 1050, in the 01380 proceeding. And this is the
18 Torrence patent.

19 Do you recognize Exhibit 1050, Mr. Smith?

20 A. I do.

21 Q. Did you review it in preparing your third
22 declaration, Exhibit 1049 in the 01380 proceeding?

23 A. I did.

24 Q. And did you review it -- strike that.

25 Did you review the Torrence patent in

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1 preparing for your deposition today?

2 A. I didn't review it after submitting my
3 declarations, no.

4 Q. Would it be fair to say, that you understand
5 the Torrence patent, Mr. Smith?

6 A. I've been through it, and have a good
7 understanding of it, I think. I guess we'll see, based
8 on the questions that you ask.

9 Q. Okay. All right. Let me ask you. Does the
10 Torrence patent include a wear sleeve?

11 A. Well, the Torrence patent includes replaceable
12 wear sleeve 44.

13 Q. Does the Torrence patent include a bushing?

14 A. It includes a bushing 46.

15 Q. Is bushing 46 in the Torrence patent tapered?

16 A. I would have to go back through and look to
17 see if the bushing 46 is tapered. The bushing 46 here
18 is analogous to the bearing assembly that we talked
19 about in the other patents, and the patent at issue.

20 Q. In the 568 patent?

21 A. Yes.

22 Q. Okay. But I wanted to know, is it your
23 understanding that the bushing 46 is tapered in the
24 Torrence patent?

25 A. I would have to go through and look for that.

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1 I don't know one way or the other.

2 Q. Please, do.

3 A. Please, do.

4 MR. SANKS: Do you have column 5?

5 THE WITNESS: I don't.

6 MR. ARJOMAND: Hold on. One second.

7 Q. (BY MR. ARJOMAND) So looking at Exhibit 1050
8 it seems that on the second to final page, it doesn't
9 fully show columns 5 and 6. I understand from checking
10 the USPTO website, that that's how Exhibit 1050 was
11 submitted. However, we can take a quick break, and I
12 will try to see if I can provide you with a full copy of
13 the Torrence patent that shows columns 5 and 6 on the
14 last page.

15 A. Okay.

16 MR. ARJOMAND: Let's go off the record.

17 (Recess.)

18 MR. ARJOMAND: Back on the record.

19 Q. (BY MR. ARJOMAND) So during the break, we
20 were able to obtain a full copy of the Torrence patent,
21 Mr. Smith. In front of you is that full copy. Does it
22 include all the columns of the Torrence patent?

23 A. It includes columns 1 to 6. It appears to be
24 complete.

25 Q. Great.

1 MR. ARJOMAND: Let's, for the record, mark
2 that as Exhibit 2022.

3 (Exhibit 2022 marked.)

4 MR. ARJOMAND: And, Ms. Court Reporter,
5 previously, we had marked the Sanborn reference as
6 Exhibit 1021. That should have been marked as Exhibit
7 2021.

8 (Exhibit 1021 re-marked as 2021.)

9 Q. (BY MR. ARJOMAND) So, Mr. Smith, before the
10 break, we were discussing, bushing 46 in the Torrence
11 patent. And I asked you, do you know if bushing 46 is
12 tapered?

13 A. Just looking through it, I don't see anything
14 that would suggest that that is tapered.

15 Q. Let me direct you to Figure 2 of Torrence.
16 Does that suggest to you that bushing 46 is tapered?

17 A. Looking at the figure, there may be a slight
18 taper. But, you know, it doesn't -- I didn't see
19 anything in the specification that would say that. And
20 I can't say, you know, that the figure is drawn to
21 scale, or perfect. But there does seem to be a gap
22 between the sleeve and the bushing on the right-hand
23 side of the sleeve, towards the top.

24 Q. So as you sit here today, is your
25 understanding that bushing 46 is tapered?

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1 A. It's possible based on Figure 2. But again, I
2 didn't see anything in the specification that would
3 specifically call that out.

4 Q. So is it that you just don't know?

5 A. Well, it doesn't seem to be called out in the
6 specification. And, you know, based on the figure, you
7 know, it could be, you know, as long as the figure is,
8 you know, drawn to scale and accurate, but...

9 Q. I guess what I'm trying to understand is that,
10 you relied on the Torrence patent in Exhibit 1049; is
11 that correct?

12 A. I did.

13 Q. And you had testified previously that you
14 reviewed the Torrence patent --

15 A. I did.

16 Q. -- in preparing Exhibit 1049?

17 A. Uh-huh.

18 Q. So I'm asking a simple question. What is your
19 position on whether bushing 46 is tapered or not, as you
20 sit here today?

21 A. Whether bushing 46 is tapered or not, doesn't
22 impact my opinions.

23 Q. Okay. But whether it impacts your opinions or
24 not, I'm trying to ask you, based on your understanding
25 of the Torrence patent, having spent time reviewing it,

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1 and drafting a report that's based on it. Is it your
2 understanding that bushing 46 is tapered or not?

3 MR. SANKS: Object to form.

4 THE WITNESS: You know, looking at Figure 2,
5 it could be. But there is nothing in the specification
6 that would specifically call that out that I've seen.

7 Q. (BY MR. ARJOMAND) So you are not willing to
8 say one way or another at this point, whether bushing 46
9 is tapered?

10 A. It's not important to my opinions, and it's
11 not specifically called out in the specification. You
12 know, there might be some slight taper based on the
13 figure. But, you know, that assumes that the figure is
14 accurate and drawn to scale.

15 Q. Why is bushing 46 not important to your
16 opinion?

17 A. I said, whether or not it's tapered is not
18 important to my opinion.

19 Q. Okay. So can you explain that to me?

20 A. Because I -- there is not a limitation in the
21 568 patent that requires the bearing that the sleeve
22 rotates in to be tapered.

23 Q. Okay. Any other reason why you don't think
24 that the taper or not of bushing 46 is unimportant for
25 your analysis?

1 A. In my analysis, I compared the prior art to
2 the claims. The claims don't talk about a taper on that
3 part of the crusher. They talk about a taper on the
4 shaft and on the sleeve, which is different from the
5 bushing or bearing assembly.

6 Q. Okay. So let me direct you to column 3 of the
7 Torrence patent.

8 A. Okay.

9 Q. Actually, strike that.

10 Let me direct you to Figure 2 of the Torrence
11 patent. Do you see the reference numeral 46, with a
12 reference line, with the arrow pointing to the bushing?

13 A. I do.

14 Q. And do you see that same element being
15 referenced with reference numeral 52?

16 A. I do.

17 Q. So now, turning to column 3, at lines 49
18 through 55, there is a reference to bushing 46 and a
19 bearing sleeve 52. Do you see that?

20 A. Okay. So the bushing 46, has the components
21 of a radial flange 48, and a bearing sleeve 52.

22 Q. I would like to understand why the same
23 element in Figure 2, is referred to with two different
24 reference numerals, bushing 46 and bearing sleeve 52 in
25 here?

1 A. Well, reading this portion that you identified
2 in column 3, includes a bushing 46 having a radial
3 flange 48. And bearing sleeve 52 projects downwardly
4 from flange 48. So it's taking the bushing 46, and
5 identifying two different components of that bushing.

6 Q. I see. So bushing 46, includes the flange 48
7 and the bearing sleeve 52. Is that how you understand
8 it?

9 A. That's how I would understand it.

10 Q. And what's your understanding -- or strike
11 that.

12 How would a person of ordinary skill in the
13 art understand the difference between the bearing sleeve
14 52 and the wear sleeve 44?

15 A. As the shaft is rotated eccentrically, the
16 sleeve moves -- the sleeve 44 moves within the bushing
17 46 with the portion 52. And this also, in column 3,
18 does describe bearing sleeve 52 as somewhat hourglass in
19 shape.

20 Q. So based on that description of that hourglass
21 in shape, do you now understand bushing 46 to have a
22 taper?

23 A. I would say that that is correct, yeah.

24 Q. Okay. And what is -- how would a person of
25 ordinary skill in the art understand the purpose of that

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1 hourglass shape of the bearing sleeve 52 to be?

2 A. I'm sorry. I didn't understand that question.

3 Q. Let me ask that again. What is the purpose of
4 the hourglass shape of the bearing sleeve 52, in your
5 opinion?

6 A. In column 3, starting around line 61 or 62, it
7 says -- it's talking about the hourglass shape. It
8 says, "This permits the gyratory action of shaft 18 with
9 sleeve 52 and results in wear sleeve 44 making contact
10 above fulcrum 30 with sleeve 52 on one side thereof
11 while a gap is open between sleeve 44 and sleeve 52 on
12 the other side thereof."

13 Q. Okay. So what is the purpose of the
14 hourglass-shaped bearing sleeve, in your opinion?

15 A. So I would say that it constrains the gyratory
16 motion of the shaft and sleeve, allowing it to move in a
17 gyratory motion, but constraining it, so that it
18 doesn't -- so that it stays within that bearing.

19 Q. So can you explain to me how shaft 18 rotates
20 relative to the bushing 46 in the Torrence patent?

21 A. So in Torrence, it describes the fulcrum, or
22 the point about which the gyratory motion occurs. And
23 the shaft rotates in a gyratory fashion. And the
24 fulcrum is at, you know, near the bottom portion of the
25 bushing 46. And so the portion of the shaft and sleeve

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1 that extend above that, rotate within the hourglass
2 section of the bushing. So that it -- the surfaces of
3 the sleeve and the bushing are in contact when it's
4 tilted towards that side. And they are -- there is a
5 gap when it's tilted away from the other side.

6 Q. So based on that description of the operation
7 of the Torrence shaft and bushing, what do you
8 understand the purpose of the hourglass shape of the
9 bearing sleeve to be, Mr. Smith?

10 A. I would say that the purpose of that is to
11 allow the gyratory motion of the shaft. And provide
12 support for the gyratory motion -- provide support for
13 the top portion of the shaft, while it's going through
14 the gyratory motion.

15 Q. Mr. Smith, why is element 46 described as a
16 bushing, in your opinion?

17 A. I would say, because the shaft and sleeve
18 rotate within it.

19 Q. Now, let me direct you, Mr. Smith, to element
20 58 and 62 of Torrence. Do you see those?

21 A. Okay.

22 Q. What is the role of element 62 and 58 in
23 Torrence?

24 A. 62 is described as an annular or lubricant
25 collecting groove. 58 is described as a seal.

1 Q. So do you understand what the roles of 62 and
2 58 are in Torrence?

3 A. I would probably have to go back and look.
4 That's not really something I was focused on when
5 putting my report together.

6 Q. Do you want to take a minute to look?

7 A. I can do that. (Witness complying.) So the
8 Torrence reference talks about a lubricant reservoir.

9 Q. Uh-huh.

10 A. And the lubricant collecting groove, and the
11 seal 58 are towards the bottom of that reservoir, to
12 prevent lubricant, I would assume, from -- I guess, to
13 maintain the lubricant in its desired location.

14 Q. So let me direct you to Figure 4 of Torrence,
15 Mr. Smith.

16 A. Okay.

17 Q. Do you see the reference to shaft 18 and wear
18 sleeve 44?

19 A. I do.

20 Q. And do you see the reference to elements 62
21 and 58?

22 A. I do.

23 Q. So can you explain the interface between
24 elements 62 and 58 with respect to the wear sleeve 44
25 and shaft 18?

1 A. So they are positioned towards the lower
2 portion of the sleeve, on the outside of the sleeve, and
3 below the sleeve 52 of the bushing 46.

4 Q. And -- strike that.

5 Figure 4 shows wear sleeve 44 in contact with
6 elements 58. Do you see that?

7 A. I do.

8 Q. Can you explain that contact to me?

9 A. I'm not sure what you mean.

10 Q. How is element 58 -- or strike that.

11 How are elements 58 contacting the wear sleeve
12 in 44, Figure 4?

13 A. I'm still not sure I understand. They are
14 shown in contact. And you are asking, how they are in
15 contact?

16 Q. Yeah. What -- can you explain the interface
17 between elements 58 and wear sleeve 44?

18 A. I would say, that the seals 58 are in contact
19 with wear sleeve 44.

20 Q. Is the contact a rigid contact?

21 A. So I don't think it says this specifically,
22 but I would expect that the seals 58 are flexible in
23 nature. So that as the gyratory motion occurs, they
24 maintain contact with the sleeve 44. Those are also
25 positioned very close to the fulcrum, where there is

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1 very little side-to-side variation as the shaft moves in
2 a gyratory fashion. And so because there is very little
3 motion in there, probably flexible, and most likely
4 flexible, then they would maintain contact as it
5 rotates.

6 MR. ARJOMAND: Okay. Let's take a break.

7 (Lunch recess.)

8 Q. (BY MR. ARJOMAND) So before the lunch break,
9 Mr. Smith, we were talking about the Torrence patent.
10 And let me direct you to Figure 2 of that patent.

11 A. Okay.

12 Q. So you had testified about the fulcrum point
13 30. And in Figure 2, it shows two different axes; axis
14 X, Y, and axis W, Z, going through fulcrum 30. Do you
15 see that?

16 A. I do.

17 Q. Can you explain to me these two axes?

18 A. My understanding is that axis X, Y, is the
19 axis about which the gyratory motion occurs. And axis
20 W, Z, is the axis of the shaft around which it rotates.

21 Q. So earlier in the deposition, we were speaking
22 about in a gyratory rock crusher, the main shaft having
23 two types of rotation. So taking a look at Figure 2 of
24 the Torrence patent, would you say that there are two
25 types of rotation that shaft 18 is experiencing?

1 A. I would, yes.

2 Q. And what would be those two types of rotation?

3 A. As I just said, it experiences gyratory
4 rotation around axis X, Y. And then it rotates around
5 axis W, Z, which is the axis of the shaft.

6 Q. And before the lunch break, we had spoken
7 about how the bearing sleeve 52 was hourglass in shape.
8 Do you recall that?

9 A. I do.

10 Q. Is that hourglass shape for the gyratory
11 rotation around axis X, Y?

12 A. So it does say that the bearing sleeve 52 is
13 somewhat hourglass in shape. And that this promotes the
14 gyratory action of shaft 18. So, yes, I believe that's
15 correct.

16 Q. So what would happen in Torrence if bearing
17 sleeve 52 was not hourglass shaped?

18 A. In what regard?

19 Q. Would shaft 18, for example, still be able to
20 rotate in a gyratory fashion?

21 A. What shape is it, if it's not hourglass shape?

22 Q. Oh, I see where you are going. Let's assume
23 for the purposes of my hypothetical, that bearing sleeve
24 52 is not tapered at all.

25 A. Okay.

1 Q. How would that impact the rotation of shaft
2 18?

3 A. Depending on the spacing, I would think that
4 it would likely change the wear point. You would
5 probably get more wear on the sleeve in the bushing
6 faster if it were not hourglass shaped.

7 Q. And would it impact the flow of lubricant in
8 Torrence if bearing sleeve 52 was not tapered in
9 Torrence?

10 A. It might. I mean, you would probably have to
11 adjust the seals as well, so that they continue to seal
12 and keep the lubricant where it's supposed to be.

13 Q. Why would you need to adjust the seals?

14 A. I would expect that there would be more
15 clearance to allow the gyratory motion to occur.

16 Q. I'm not sure I follow.

17 A. So there would probably be more clearance
18 towards the bottom of the bushing 46, between the
19 bushing and the wear sleeve 44, to allow the gyratory
20 motion. And so you would have to adjust the seals to
21 maintain the fluid reservoir.

22 Q. How would you adjust the seals to maintain the
23 fluid reservoir?

24 A. I think that's something that could easily be
25 done, depending on the actual shape and size of the

1 bushing and the wear sleeve, and the clearance that is
2 needed.

3 Q. But what would you do, specifically,
4 Mr. Smith?

5 A. To redesign this whole thing?

6 Q. Yes.

7 A. I don't know. I haven't really thought about
8 that.

9 Q. Okay. Fair enough. So going back to the
10 hourglass shape of bearing sleeve 52, how do you
11 understand that shape to vary from the top of bearing
12 sleeve 52, at the top of Figure 2, to the end of bearing
13 sleeve 52, at the bottom of Figure 52 -- or Figure 2?

14 A. If we look at column 3, starting at around
15 line 55. "The space enclosed by the inner periphery of
16 the bearing sleeve 52 is hourglass in shape. That is
17 (see Figure 2) the diameter of the space within the
18 sleeve 52 is a minimum in a transverse plane normal to
19 the fulcrum point 30, and the diameter becomes
20 progressively slightly larger in both axial directions
21 from the fulcrum 30."

22 Q. So looking at Figure 2, can you explain that
23 to me?

24 A. Yeah. So if we start at the top of the
25 bushing 46, if we're looking at a cross-sectional

1 diameter of that bushing, the diameter gradually
2 decreases from the top, to the line where the fulcrum 30
3 is located. And then below the line where the fulcrum
4 30 is located, the diameter of the cross-section will
5 start to increase again. That's how you get the
6 hourglass. The diameter is shrinking to a middle, and
7 expanding again below that.

8 Q. So if you were taking a look at bearing sleeve
9 52, in Figure 2, is the diameter of the bearing sleeve,
10 where the reference No. 52 is shown, larger than the
11 diameter of the bearing sleeve where 46 is shown?

12 A. So the internal diameter where -- at the
13 height where 52 is on the right-hand side, would be
14 smaller than the diameter of the internal surface where
15 46 is. Because both of those are above fulcrum 30. And
16 so the diameter is going to increase as you go up from
17 there. So from the line where the fulcrum 30 is, you
18 first reach 52, and then you reach 46. And so the
19 diameter is increasing as you go up.

20 Q. But isn't Figure 50 -- excuse me -- isn't
21 Figure 2 showing the bearing sleeve getting thinner as
22 you go from the point associated with reference numeral
23 52 towards, for example, reference numeral 66?

24 A. So are we talking about the thickness of the
25 sleeve, or the dimension of the diameter of the internal

1 surface? Because those are two different things. I
2 thought we were talking about the diameter of the
3 internal surface.

4 Q. I see. I see. So can you explain the
5 relationship again, between both the diameter of the
6 internal surface, and the thickness of the sleeve, as
7 the sleeve progresses from -- the bearing sleeve
8 progresses from top to bottom?

9 A. Sure. And again, this is different from the
10 sleeve that's on the shaft.

11 Q. Right.

12 A. But this bushing if we start at the horizontal
13 line that contains the point that 30 is indicating. As
14 we move up from that line, the internal diameter of that
15 bushing 46 will increase in dimension as you go up. And
16 it will -- the wall thickness of that bushing will
17 correspondingly decrease, at least until you get to the
18 flange portion at the top.

19 Q. Okay. And then can you explain the
20 relationship of the internal diameter and the thickness
21 of the bearing sleeve 52 below fulcrum point 32?

22 A. Sure. So below the horizontal line that
23 contains the point 30, the fulcrum point. The
24 specification says that the diameter, the internal
25 diameter increases as you move down from that line as

1 well. This is how you get the hourglass shape, right.
2 The line where fulcrum 30 is, that is the narrowest
3 point of the internal surface of the bushing.

4 And then as we move away from that line,
5 either up or down, the diameter gets bigger
6 progressively. And because the outside surface of the
7 bushing appears to be flat, the wall thickness would
8 decrease as you move away from that line, at least until
9 you get to the flange portion, near the top.

10 Q. Okay. Let me direct you to Figure 1 of
11 Torrence. So do you see element 42 in Figure 1? It's
12 at the top left.

13 A. I do.

14 Q. And do you know what that element is,
15 Mr. Smith?

16 A. 42 is described as a hub.

17 Q. So if you go back to Figure 2, it's also
18 shown, specifically, hub 42, at the middle left. Do you
19 see that?

20 A. The number indicating the hub?

21 Q. Yes.

22 A. Yes, I see that.

23 Q. All right. So what is your understanding of
24 the role of the hub in Torrence?

25 A. I guess I'm not sure I understand the

1 question. What is the function of it?

2 Q. Yes.

3 A. It is a structural component that holds the
4 bushing 46, and inside of which, the shaft rotates.

5 Q. Does it house any other elements, Mr. Smith?
6 Specifically, does hub 42 house any elements?

7 A. I would say, that there are other elements
8 within the hub 42, yes.

9 Q. What are those other elements?

10 A. They are indicated in the figure. But you
11 have the seals that we talked about. You have the fluid
12 reservoir. You have vent tubes. And possibly, other
13 components as well.

14 Q. In your review of gyratory rock crusher
15 patents for this proceeding, do you know of any other
16 reference that has a similar hub design that's set forth
17 in Torrence?

18 A. That's not something I've specifically looked
19 for.

20 Q. But as you sit here today, do you recall any
21 other gyratory rock crusher patent having the hub design
22 similar to Torrence?

23 A. Again, that's not something I looked for. So
24 there could be, but I don't have a specific
25 recollection.

1 (Exhibit 1053 referenced.)

2 Q. (BY MR. ARJOMAND) All right. Let me place in
3 front of you what has been previously marked as Exhibit
4 1053 in the 01381 proceeding. This is the Coxhill 800
5 patent.

6 Are you familiar with this patent, Mr. Smith?

7 A. I am.

8 Q. Did you review Coxhill 800 in preparing your
9 third declaration, Exhibit 1051, in the 01381
10 proceeding?

11 A. I did.

12 Q. And did you review the Coxhill 800 patent in
13 preparation for today's deposition?

14 A. I haven't gone through it since submitting my
15 report a few days ago.

16 Q. Do you believe you have a good understanding
17 of Coxhill 800?

18 A. At least the portions I relied on for my
19 report. I have certainly gone through it.

20 Q. Okay. Let me direct you to Figure 1 of
21 Coxhill 800.

22 A. Okay.

23 Q. In the middle of Figure 1, there is a shaft
24 33. Do you see that?

25 A. I do.

1 Q. And in the upper portion of the shaft, there
2 is a sleeve 36. Do you see that?

3 A. There is a sleeve 36 on the shaft, yes.

4 Q. Can you please describe the shape of the inner
5 surface of the sleeve 36, beginning to the top of the
6 sleeve to its bottom end?

7 A. So the cross-sectional shape of the inner
8 surface is a circle. And the diameter of that circle is
9 constant from the top from moving down, to a point,
10 saying, the lower probably fourth wear that diameter of
11 the cross-sectional shape starts to increase. Another
12 way of saying that, is that it would have a flat wall
13 from the top, moving downward. And then towards the
14 bottom, that wall flares or tapers out.

15 Q. Thank you. And can you please describe the
16 shape of the outer surface of the shaft 33, beginning at
17 its top end, down to the bottom end of the sleeve 36?

18 A. So the shaft would have a shape to, of the
19 outside surface of the shaft would have a shape to match
20 the inside surface of the sleeve.

21 Q. Does Coxhill 800, in Figure 1, show a taper
22 extending from the top end of the shaft 33, or the top
23 end of the sleeve 36?

24 A. No, it does not. No, that's why I combine
25 this with other references in my analysis.

1 Q. Okay. Mr. Smith, would you agree that the
2 region -- strike that.

3 Would you agree the region, the sleeve 36 that
4 is fitted over the shaft 33 in Figure 1, is primarily
5 cylindrical?

6 A. The outside surface of the shaft is primarily
7 cylindrical, starting from the top, and moving downwards
8 towards the bottom of where the sleeve is on the shaft.
9 It does start to taper outward.

10 Q. But you would agree, that the majority of the
11 interface between the shaft 33 and sleeve 36 in Coxhill
12 800, Figure 1, is cylindrical?

13 A. That's correct.

14 Q. Okay. Let me have you go back to the Torrence
15 patent, specifically, Figure 2. Can you please describe
16 the shape of the inner surface of the wear sleeve 44,
17 beginning from the top of the sleeve to its bottom end?

18 A. Sure. Similarly here, the inside surface of
19 the wear sleeve is generally cylindrical. It has a
20 circular cross-section that is the constant from the
21 top, down to the lower part, where it, again, tapers
22 outward.

23 Q. Okay. And can you please describe the shape
24 of the outer surface of the shaft 18 in Torrence,
25 beginning at its top end, down to the bottom end of the

1 wear sleeve 44?

2 A. The shaft is -- has a shape, so that it
3 matches the inside surface of the sleeve.

4 Q. So now, having taken a look at both Coxhill
5 800 and Torrence, would you agree that the fit between
6 the sleeve 44 and shaft 18, in Figure 2, of Torrence, is
7 similar to the fit between the sleeve 36 and shaft 33 in
8 Coxhill 800, Figure 1?

9 A. I think that's a reasonable comparison. They
10 have a very similar shape.

11 Q. Does Torrence Figure 2 show a taper extending
12 from the top end of the shaft 18, or the top end of the
13 sleeve 44?

14 A. No, it does not. And again, that's why it has
15 been combined with other pieces of prior art.

16 Q. Okay. And then would you agree that the
17 majority of the interface between shaft 44, in Torrence,
18 and sleeve 18, in Torrence, is cylindrical?

19 A. Yes, I would agree that the majority of it is
20 cylindrical.

21 (Exhibit 1016 referenced.)

22 Q. (BY MR. ARJOMAND) Let me place in front of
23 you another exhibit. And this has been previously
24 marked in the 1016, in the 01380 proceeding. This is
25 the Piepho patent. It has also been previously marked

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1 in the 01381 proceeding.

2 Are you familiar with the Piepho patent,
3 Mr. Smith?

4 A. I would say so.

5 Q. Okay. And did you review it in preparing your
6 third declaration in both of these proceedings?

7 A. At least portions of it.

8 Q. Okay. Do you recall which portions you
9 reviewed?

10 A. A lot of those are cited in my declarations.

11 Q. You don't recall reviewing the entirety of
12 Piepho in preparing your declarations in both
13 proceedings?

14 A. No, I don't believe I sat down and read it
15 from start to finish this time. I have done that
16 previously, but not specifically for putting these
17 declarations together.

18 Q. Do you recall reviewing the Piepho patent in
19 preparation for today's deposition?

20 A. Not since submitting my report, my
21 declarations last week.

22 Q. So can you describe in your own words, how the
23 coal pulverizer in Piepho operates?

24 A. So described generally in column 1, starting
25 around line 19. It shows, Figure 1 shows a cross

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1 section of a B&W type EL pulverizer generally depicted
2 as numeral 2. These devices are used to crush coal for
3 burning in a furnace or boiler. This type of pulverizer
4 has a stationary top ring 4, one rotating bottom ring 6,
5 and one set of balls 8 that comprise the grinding
6 elements. The pressure required for efficient grinding
7 is obtained from externally adjustable dual purpose
8 springs 10. The bottom ring 6 is driven by the yoke 12
9 which is attached to a vertical main shaft assembly 14
10 of the pulverizer. The top ring 4 is held stationary by
11 the dual purpose springs 10. The raw coal is fed into
12 the grinding zone where it mixes with partially ground
13 coal that forms a circulating load. The pulverizing air
14 causes the coal to circulate through the grinding
15 elements where some of it is pulverized in each pass
16 through the row of balls 8. As the coal becomes fine
17 enough to be picked up by the air it is carried to the
18 classifier where coal of a desired fines is separated
19 from the stream entering the classifier and is carried
20 out with the air. The oversized material is returned to
21 the grinding zone."

22 Q. So thank you, Mr. Smith. That wasn't quite in
23 your own words, but can maybe focus a little bit more on
24 Figure 1, trying to understand exactly how this coal
25 pulverizer works.

1 So where would the coal come in to the
2 apparatus of Figure 1?

3 A. My understanding is the coal comes in through
4 the top.

5 Q. And do you know if the coal at that point has
6 already been crushed?

7 A. And I would expect that to some point. It has
8 been. It's not one solid block.

9 Q. Uh-huh.

10 A. It has to be of a certain size to at least
11 fit, and be able to be acted upon by the pulverizing
12 balls.

13 Q. Okay. So it's fed into the apparatus of
14 Figure 1. Does it go down through that hopper-shaped
15 portion of Figure 1?

16 A. That's my understanding.

17 Q. Okay. And then where is it delivered from
18 that hopper-shaped portion of Figure 1 -- strike that.

19 After the hopper-shape portion of Figure 1,
20 where does the coal land in Figure 1?

21 A. So it goes down through the bottom of that
22 hopper, and into a section below that, where it can be
23 crushed and pulverized by the balls that are shown in
24 circles.

25 Q. So is it -- strike that.

1 Is the coal below those balls, or above those
2 balls, or in between those balls; do you know?

3 A. So it says that some of it is pulverized, and
4 each pass through the row of balls. And I will point
5 out, that this Piepho patent is really related to the
6 main shaft, and it discusses a piece of prior art, and
7 it's not in great detail. So there is not a whole lot
8 of information on it in the patent, but there is a
9 little bit, which we read.

10 Q. Yeah, I understand that. But how would a
11 person of ordinary skill in the art, looking at the
12 Piepho patent, understand what happens to the coal after
13 it exits the hopper and lands near the balls 8?

14 A. I guess just reading the Piepho patent, there
15 is a lot of ambiguity there. You would probably have to
16 go back and look more specifically at this type of
17 pulverizer that it's talking about to really get a solid
18 understanding of how that piece of prior art works.

19 Q. So as you sit here today, you are saying that
20 a person of ordinary skill in the art wouldn't know
21 how -- what happens to the coal once it exits the hopper
22 and proceeds towards the balls 8?

23 A. You know, based on the disclosure of the
24 Piepho reference, there is very little about how that
25 specifically works. So they could, you know, if they

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1 wanted to, go back and, you know, find more information
2 on the particular pulverizer that's referenced here, and
3 shown in Figure 1 as prior art. But the patent says
4 very little about it.

5 Q. Okay. I want to ask you, as an expert in this
6 field, how do you understand what happens to the coal
7 once it exits the hopper, and goes towards the balls 8?

8 MR. SANKS: Objection; form.

9 THE WITNESS: So I'm not terribly familiar
10 with that particular coal pulverizer. I've never seen
11 one in person. I've used this particular reference to
12 talk about the main shaft, and the tapered section of
13 the main shaft. So I don't want to guess, and I don't
14 particularly know. I don't specifically know exactly
15 how it works, because it's not described in great detail
16 in this reference.

17 Q. (BY MR. ARJOMAND) Okay. All right. Let's
18 direct your attention to the main shaft 14, since you
19 just referenced that in your previous response. How
20 does the main shaft 14 rotate in Piepho Figure 1? Maybe
21 I should ask that question a little differently, because
22 that was a little vague.

23 Looking at picture Piepho Figure 1, would a
24 POSITA understand that the shaft 14 rotates about its
25 longitudinal axis?

1 A. I don't think the Piepho referenced one way or
2 the other. And I don't want to speculate as to whether
3 it does or not. It's not something that I've actually
4 looked at.

5 Q. So how do you understand, Mr. Smith, the
6 rotation of the main shaft 14, in Figure 1, in Piepho?

7 A. I'm sorry. Can you repeat that?

8 Q. Sure. How do you understand the main shaft of
9 14, in Figure 1, Piepho?

10 A. Like I said, I don't believe it -- the
11 reference discusses the rotation, or whether or not that
12 shaft rotates. It's more talking about the shape of the
13 shaft, and the tapered section, and the benefits of
14 that, and also, a coating that can be put on it.

15 Q. So as you sit here today, you don't know
16 whether main shaft 14, of Figure 1, of Piepho rotates?

17 A. I know there are elements of the prior art
18 shown in Figure 1 that rotate. I'm not sure whether or
19 not the main shaft, itself, rotates, or whether other
20 parts rotate around the main shaft.

21 Q. Mr. Smith, do you know what forces act on the
22 shaft 14 during the operation of the coal pulverizer, in
23 Figure 1, in Piepho?

24 A. That's not an analysis I've specifically done.
25 I would imagine there are numerous forces that act on

1 the main shaft during operation. But the reference
2 certainly doesn't talk about that, and that's not an
3 analysis I've done at this point.

4 Q. All right. Well, let me direct you to yoke
5 12, Mr. Smith, in Figure 1, in Piepho. How do you
6 understand the operation of yoke 12?

7 A. It says, the bottom ring 6 is driven by the
8 yoke 12, which is attached to a vertical main shaft
9 assembly 14 of the pulverizer.

10 Q. So what's your understanding of the operation
11 of yoke 12, in Figure 1, of Piepho, Mr. Smith?

12 A. I'm sorry. Can you repeat that?

13 Q. Sure. So what's your understanding of the
14 operation of yoke 12, in Figure 1, of Piepho?

15 A. Sorry. Can you say that one more time for me?

16 Q. Sure. What is your understanding of the
17 operation of yoke 12, in Figure 1, of Piepho?

18 A. Based on the disclosure, I would say, that
19 yoke 12 drives the bottom ring 6.

20 Q. What does that mean, Mr. Smith?

21 A. What does that mean? I would say that the
22 yoke 6 -- or sorry -- the yoke causes the bottom ring 6
23 to rotate.

24 Q. How does yoke 12 cause the bottom ring 6 to
25 rotate?

1 A. Now, the reference doesn't specifically
2 disclose that. And again, I haven't done that research
3 to determine that.

4 Q. Okay. Let me now direct you to yoke bushing
5 18, Figure 1, of Piepho.

6 A. Okay.

7 Q. What is the purpose of yoke bushing 18 in
8 Piepho?

9 A. So bushing 18 is an interference fit on the
10 upper taper 25 of the shaft.

11 Q. Are you waiting for a question from me,
12 Mr. Smith, or are you still pondering the remainder of
13 your answer to the previous question?

14 A. Did I not fully answer the question?

15 Q. No. The question that I asked is, what is the
16 purpose of yoke bushing 18 in Piepho? You explained
17 that bushing 18 is an interference fit on the upper
18 taper 25 of the shaft. And I'm trying to understand
19 what the purpose of yoke bushing 18 is, not its
20 location.

21 A. Sure. So the bushing interacts with other
22 components to -- it was part of the structure of the
23 machine and holding things together.

24 Q. What other components do you mean?

25 A. Well, again, it's not described in the

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1 reference. But it looks like it interacts with the yoke
2 12, you know, which it says is attached to the main
3 shaft assembly 14, which is where the bushing is on the
4 shaft.

5 Q. You said, it looks like it interacts with yoke
6 12, which it says is attached to the main shaft assembly
7 14. What is attached to the main shaft assembly 14 in
8 your previous answer, Mr. Smith?

9 A. Yoke assembly 12.

10 Q. Okay. So you understand yoke assembly 12 to
11 be attached to the main shaft 14?

12 A. Yes, that's what it says in column 1, around
13 line 26, 27.

14 Q. Looking at Figure 1 of Piepho, would you
15 understand that yoke 12 is attached to the main shaft 14
16 via yoke bushing 18?

17 A. I would say that that is part of it, yeah.
18 That they are interacting near the top of the shaft.

19 Q. So would it be fair to say, that yoke
20 12 -- strike that.

21 Would it be fair to say that yoke bushing 18
22 connects yoke 12 to the main shaft 14?

23 A. I don't know that I would describe it that
24 way. And I don't know that that's what's doing the
25 connecting. I think it is -- it's probably part of it,

1 but I don't know that that's the only part of it.

2 Q. What is part of it, Mr. Smith?

3 A. The bushing and the yoke are part of the
4 connecting it to the shaft. But there is also the nut
5 36 on top, and the other components that also interact,
6 I would imagine, form that connection.

7 Q. I see. But you would say that at least in
8 part, yoke bushing 18 connects yoke 12 to the main shaft
9 14, in Figure 1, of Piepho?

10 A. All this reference says, is that the yoke 12
11 and the bottom ring 6 is driven by yoke 12, which is
12 attached to a vertical main shaft assembly 14 of the
13 pulverizer.

14 Q. Okay. I understand what Piepho says,
15 Mr. Smith. But I'm also looking at Figure 1, of Piepho.
16 And I'm asking what your understanding would be with
17 respect to whether yoke bushing 18 connects yoke 12 to
18 the main shaft 14, at least with itself, and maybe other
19 elements that you've identified?

20 A. Yeah, it's not clear from Figure 1 exactly how
21 that's done.

22 Q. How what is done, Mr. Smith?

23 A. How that connection is made.

24 Q. Which connection? I apologize. It's
25 just because we're having a transcript here, we have to

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1 be kind of clear exactly what you are referring to, when
2 you talk about connection, or that, or this.

3 So I'm trying to understand what is the role
4 of yoke bushing 18, in Figure 1, of Piepho?

5 A. And so the Piepho reference doesn't
6 specifically state what the role is. It talks about how
7 it is put onto the shaft, and why that's better than a
8 non-tapered fit on the shaft. But it doesn't
9 specifically state how that is used in the prior art
10 shown in Figure 1.

11 Q. So would it be fair to say, as you sit here
12 today, you don't know what the role of yoke bushing 18
13 is, in Figure 1, in Piepho?

14 A. I don't know exactly how it's used in the
15 prior art that's referenced in Piepho.

16 Q. Okay. You said, exactly. So I want to
17 understand, what is it that you do know about how yoke
18 bushing 18 was used in Figure 1 of Piepho?

19 A. So I've looked at the Piepho reference. I
20 haven't studied the exact pulverizer that's referenced
21 in Figure 1. And so based on the figure, and based on
22 the disclosure of this reference, you know, I can't tell
23 you. I could probably go and study that, and figure it
24 out. But that's not something I've done at this point.

25 Q. Okay. Looking at Piepho, Figure 1, would a

1 person of ordinary skill in the art understand that
2 there is relative motion between the yoke bushing 18 and
3 the yoke 12?

4 A. Just looking at the figure, I don't think -- I
5 don't think you can tell, and it's not described in this
6 reference.

7 Q. So is your answer to my question, "I don't
8 know," Mr. Smith?

9 A. Well, you said, can you tell from the figure?
10 And I said, no, you can't tell from the figure.

11 Q. Well, would a person of ordinary skill in the
12 art, looking at Figure 1 of Piepho, understand that
13 there is relative motion between the yoke bushing 18 and
14 the yoke 12, Mr. Smith?

15 MR. SANKS: Object; form.

16 THE WITNESS: I don't think a person of
17 ordinary skill in the art, looking at Figure 1, would
18 know one way or the other, without looking at the
19 specific piece of prior art, that is shown in Figure 1,
20 and described as prior art. It is not actually the
21 invention that is talked about in the Piepho reference.
22 It's where the invention of Piepho is used, or an
23 application for that.

24 Q. (BY MR. ARJOMAND) Would a person of ordinary
25 skill in the art understand that there is relative

1 motion between the yoke bushing 18 and the main shaft 14
2 in Piepho?

3 A. So Piepho talks about yoke bushing 18 being an
4 interference fit with the tapered portion of the shaft.
5 So you would not expect relative motion between those
6 two components.

7 Q. How would a person of ordinary skill in the
8 art understand that yoke bushing 18 drives the yoke 12,
9 in Piepho?

10 A. So it does say, that the present invention
11 provides an intervening material between the shaft end
12 25 and the mating bore in yoke 18 fitted within the bore
13 of yoke 12 to prevent fretting damage. But I don't know
14 from that, whether it's driving yoke 12, or whether yoke
15 12 is rotating on the bushing.

16 Q. So is your answer, that a person of ordinary
17 skill in the art, would not know that the yoke bushing
18 18 drives the yoke 12, in Piepho?

19 A. I think you would have to have a better
20 understanding of the particular piece of prior art shown
21 in Figure 1 to understand that.

22 Q. So you keep referring to the piece of prior
23 art shown in Figure 1. Mr. Smith, do you know of the
24 prior art that's shown in Figure 1?

25 A. I remember looking at it a while back, but I

1 don't have a perfect recollection of it.

2 Q. What do you recall reviewing Mr. Smith?

3 A. I remember going to the website, and looking
4 at different pulverizers that they have, and
5 locating -- trying to locate the one referenced here.
6 And I believe there were some videos, or the like, on
7 that. But it's been several months.

8 Q. So were you looking at coal pulverizers that
9 were made by the assignee of the Piepho patent, the
10 Babcock & Wilcox Company?

11 A. I believe so.

12 Q. And did you provide, in your earlier reports,
13 what you found with regard to your search of the prior
14 art that's mentioned in Piepho?

15 A. I would have to go back and look. I don't
16 recall.

17 Q. So is it your understanding, that the prior
18 art that's mentioned in Piepho is available to a person
19 of ordinary skill in the art?

20 A. I would imagine that there is at least some
21 information on it.

22 Q. Okay. So you understand that an obviousness
23 analysis includes the knowledge of a person of ordinary
24 skill in the art; right?

25 A. It does.

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1 Q. So when I ask you questions about how a person
2 of ordinary skill in the art would understand the
3 operation of the coal pulverizer in Piepho, your
4 testimony that you don't know, it doesn't seem to
5 be -- strike that.

6 So when I'm asking you questions about what a
7 person of ordinary skill in the art knows when looking
8 at Piepho, it includes that knowledge; correct?

9 A. It should.

10 Q. Right. So I'm asking you, how would a person
11 of ordinary skill in the art, for example, understand
12 whether there the yoke bushing 18 drives the yoke 12, in
13 Piepho?

14 MR. SANKS: Objection; form.

15 THE WITNESS: So my understanding is that a
16 person of ordinary skill is a hypothetical person that
17 understands or has -- knows all of the prior art. And
18 this is not a specific question that I have addressed in
19 my research. And so I don't have a specific answer for
20 you. If asked, I could probably take time and go find
21 that. But it's not something that I have specifically
22 looked at in this analysis.

23 Q. (BY MR. ARJOMAND) Okay. Does the yoke
24 bushing 18 transmit torque to yoke 12, in Piepho?

25 A. Again, I am not sure on that. I would have to

1 look up exactly how that's used in that prior art.

2 Q. Okay. Let me see if I can try to encapsulate
3 what we've discussed for the past 30 minutes or so. So
4 I'm just going to ask you a bunch of questions, and you
5 let me know what your answer is to these questions based
6 on what we've discussed.

7 So the first question. Would a person of
8 ordinary skill in the art, looking at Piepho, know
9 whether main shaft 14 rotates?

10 A. I believe a person of ordinary skill in the
11 art could figure that out. I haven't done that at this
12 point.

13 Q. Okay. Would a person of ordinary skill in the
14 art, looking at Piepho, understand whether yoke 12
15 rotates?

16 A. So it says, bottom ring 6 is driven by yoke
17 12. So I would expect that yoke 12 does rotate.

18 Q. Okay. So would a person of ordinary skill in
19 the art, looking at Piepho, understand whether yoke
20 bushing 18 rotates?

21 A. Yoke bushing 18 is an interference fit with
22 the shaft 25. And if the shaft is rotating, I would
23 expect the bushing is rotating. If the shaft is not
24 rotating, I would expect the bushing is not rotating.
25 And as I said before, I haven't -- I haven't looked into

1 that. Although, I expect I could figure that out, if I
2 was asked to.

3 Q. Well, Mr. Smith, just to be clear, I am asking
4 you; right?

5 A. Right, you are asking me if I know right now.
6 You're not asking me, to go and do the research, and
7 figure it out.

8 Q. Yes.

9 A. Right, and I haven't done the research yet.

10 Q. Okay. And then would a person of ordinary
11 skill in the art, looking at Piepho, understand whether
12 there is relative motion between the yoke bushing 18 and
13 the yoke 12?

14 A. So again, that's not a question I've addressed
15 at this point. So I don't have a good answer for you.
16 I expect I could figure it out, but it's not something
17 I've addressed at this point.

18 Q. Okay. And how would a person of ordinary
19 skill in the art understand the role of main shaft 14,
20 in Piepho -- or strike that.

21 To a person of ordinary skill in the art, what
22 would be the role of main shaft 14, in Piepho?

23 A. Are you talking about the prior art reference
24 that's cited in Piepho? Because Piepho is directed to
25 strain relief main shaft assembly. So Piepho is

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1 directed to the main shaft, itself, which is then used
2 in a piece of prior art.

3 Q. Right, I am speaking about the operation of
4 the main shaft 14, in Piepho. How would a person of
5 ordinary skill in the art understand the operation of
6 main shaft 14, or main shaft 25, in a coal pulverizer,
7 Mr. Smith?

8 A. So again, the coal pulverizer is a piece of
9 prior art, where this main shaft is implemented. You
10 know, I haven't personally done the research to figure
11 out exactly how that is implemented. I've been more
12 looking at how the bushing is put on the shaft, and how
13 that interacts. Which is closely -- and more closely in
14 line with the actual disclosure of the Piepho reference.

15 Q. And how would a person of ordinary skill in
16 the art understand the operation of yoke 12, in Piepho?

17 A. Again, there is a yoke 12 that's described as
18 part of a piece of prior art, in Piepho. Again, I
19 haven't studied that prior art, and so I'm not sure how
20 to answer your question.

21 Q. Okay. And how would a person of ordinary
22 skill in the art, understand yoke bushing 18, in Piepho?

23 A. So Piepho talks about yoke bushing 18 being an
24 interference fits on the upper taper 25 of the main
25 shaft. It talks about how it can be a non-tapered

1 portion, or a tapered portion, but that tapered is
2 preferable. It talks about a ceramic coating. But the
3 bushing 18 is an interference fit on the main shaft.

4 Q. How would a person of ordinary skill in the
5 art understand the operation of yoke bushing 18, in
6 Piepho?

7 A. They would understand, based on the disclosure
8 of Piepho, that there is a yoke bushing 18 that is an
9 interference fits on the end of the main shaft.

10 Q. Mr. Smith, you keep explaining what it is.
11 I'm asking you how a person of ordinary skill in the art
12 would understand what it does? So I'm asking you
13 whether --

14 A. So what --

15 Q. -- how would a person of ordinary skill in the
16 art -- sorry. How would a person of ordinary skill in
17 the art, understand the operation of yoke bushing 18, if
18 you will?

19 A. So if you are asking how yoke bushing 18 is
20 implemented in the piece of prior art referenced in
21 Piepho? Again, I haven't undertaken that research at
22 this point. The Piepho reference, itself, talks about
23 how that is an interference fit on the end of the shaft.

24 MR. ARJOMAND: Okay. Let's take a break.

25 (Recess.)

1 MR. ARJOMAND: Back on the record.

2 Q. (BY MR. ARJOMAND) Mr. Smith, during the
3 break, did you speak with counsel regarding the subject
4 matter of your testimony?

5 A. No.

6 (Exhibit 1056 referenced.)

7 Q. (BY MR. ARJOMAND) Let me place in front of
8 you, what has been previously marked as Exhibit 1056, in
9 the 01381 proceeding. It's the Yagi reference.

10 Are you familiar with this patent, Mr. Smith?

11 A. I am.

12 Q. And did you review it in preparing your third
13 declaration in the 01381 proceeding?

14 A. I have reviewed it during this case. And I
15 certainly reviewed portions of it during the preparation
16 of my third declaration. But it's probably been a few
17 minutes since I sat down and read it from start to
18 finish.

19 Q. Okay. And did you review it in preparing for
20 your deposition today?

21 A. Not specifically, no.

22 Q. Okay. But you have an understanding of the
23 Yagi reference?

24 A. I have been through it before, yes.

25 Q. Okay. Let me direct you to Figure 7. And

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1 just to orient you regarding Figure 7, there is a
2 discussion of it at column 8, starting at line 22. And
3 you might take a minute to review that. And then I'll
4 ask you a few questions about it.

5 A. (Witness complying.) Okay.

6 Q. All right. So can you explain Figure 7 to me,
7 Mr. Smith?

8 A. So Figure 7 is a diagram showing a general
9 configuration of a rotating machine, for which a tapered
10 coupling structure is used. And it shows the driver on
11 one side, which is something that would cause rotation.
12 And the driven equipment to be something that is
13 rotating.

14 Q. And what is 230?

15 A. 230 is identified as a coupling structure.

16 Q. Okay. So in column 8, lines 22 through 38, it
17 talks about a coupling structure 10, 50, and 70. Do you
18 see that?

19 A. I do.

20 Q. And if you go to, for example, Figure 5C, it
21 refers to a coupling structure 70 having a tapered shaft
22 60, and a correspondingly tapered hub. Do you see that?

23 A. Are you reading from somewhere when you say
24 that, or are you just looking at the figure?

25 Q. I was just looking at Figure 5C -- strike

1 that -- Figure 5A, I should say.

2 A. Okay. Can you say that again, while I'm
3 looking at the right figure?

4 Q. Sure. So if you want to take a look at column
5 6 of Yagi, around lines 36 through 40. It talks about a
6 "coupling structure 70 comprises a tapered shaft 60 and
7 the hub 30."

8 A. Okay.

9 Q. So would you understand that coupling
10 structure 70 to be an example of what would be the
11 element 230 in Figure 70?

12 A. I think it could be, yes.

13 Q. And would you understand in Figure 5A of Yagi,
14 that the tapered shaft and the hub have a tapered fit?

15 A. Yes, both the shaft, the outside surface of
16 the shaft, and the inside surface of the hub are
17 tapered.

18 Q. Okay. And so would a person of ordinary skill
19 in the art looking at Figure 7 of Yagi, understand that
20 the tapered fit in Yagi is to be used as part of the
21 coupling structure of 230?

22 A. It can be, yes.

23 Q. Okay. And considering, again, the interface,
24 for example, in Figure 5A of Yagi, between the tapered
25 shaft 60 and the correspondingly tapered hub 30, would a

1 POSITA understand that amount of torque would be more
2 than the amount of lateral loading at that tapered
3 interface?

4 A. I guess it depends on how it's implemented.

5 Q. Okay.

6 A. I don't think it -- I don't recall it talking
7 about comparing the lateral force and the torque force.
8 You know, again, as we talked about at the beginning,
9 those are different units of measurement. But I don't
10 think Yagi talks about how it's compared, and it would
11 really depend on how it's implemented, what the
12 magnitudes of the lateral force and the torque force
13 would be.

14 MR. ARJOMAND: Okay. All right. Let me take
15 about five minutes to look over my notes. But I think
16 we can wrap this up soon.

17 (Recess.)

18 MR. ARJOMAND: Mr. Smith, I don't have any
19 further questions on cross-examination. I pass the
20 witness to you, Terry.

21 MR. SANKS: No questions.

22 MR. ARJOMAND: Then we're done. Thank you,
23 Mr. Smith.

24 (Deposition concluded at 3:50 p.m.)

25 (Signature requested.)

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I, COLLEEN P. DOHERTY, CSR No. 345, Certified
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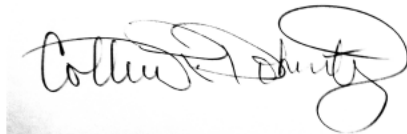
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That the testimony and all objections made were
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I further certify that I am not a relative or
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IN WITNESS WHEREOF, I set my hand and seal this
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COLLEEN P. DOHERTY, CSR 345

Notary Public

1109 West Main Street, Suite 220

Boise, Idaho 83702

My commission expires September 7, 2029.

1 MR. TERRY M. SANKS

2 tsanks@firstiniplaw.com

3 December 4, 2025

4 RE: CMS Cepcor v. Sandvik Intellectual Property AB

5 12/3/2025, David Smith (#7774766)

6 The above-referenced transcript is available for
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CMS Cepcor v. Sandvik Intellectual Property AB
David Smith (#7774766)

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have read the foregoing transcript, I have made any
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