

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ENERCORP SAND SOLUTIONS INC.
Petitioner

V.

SPECIALIZED DESANDERS INC.
Patent Owner

ORAL DEPOSITION OF

DAVID A. SIMPSON

May 8, 2019

Reported by:

Abigail Guerra

Job no: 25094

1 ORAL DEPOSITION OF DAVID A. SIMPSON, produced
2 as a witness at the instance of the Patent Owner, and
3 duly sworn, was taken in the above-styled and numbered
4 cause on the 8th day of May, 2019, from 8:53 a.m. to
5 11:10 a.m., before Abigail Guerra, CSR, in and for the
6 State of Texas, reported by machine shorthand, at the
7 offices of Blank Rome, 717 Texas Avenue, Suite 1400,
8 Houston, Texas, pursuant to the Federal Rules of Civil
9 Procedure and the provisions stated on the record or
10 attached hereto.

A P P E A R A N C E S

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ALSO PRESENT:

Mr. Walter Grollitsch

1 THE REPORTER: Good morning, my name is
2 Abigail Guerra, the court reporter from TransPerfect
3 Legal Solutions. We are here for the matter of Enercorp
4 Sand Solutions, Inc. versus Specialized Desanders.
5 Today's date is May 8, 2019. The time is 8:53 a.m.
6 We're taking the deposition of Mr. David Simpson.

7 Will counsel please voice identify
8 themselves for the record.

9 MR. KESACK: Dan Kesack of Radulescu, LLP,
10 for patent owners, Specialized Desanders. With me is
11 David Radulescu.

12 MR. HALL: James Hall for Enercorp Sand
13 Solutions. With me is Walt Grollitsch. He's IP counsel
14 for Enercorp.

15 DIRECT EXAMINATION

16 BY MR. KESACK:

17 DAVID A. SIMPSON,
18 having been first duly sworn, testified as follows:

19 Q. Good morning again.

20 A. Good morning.

21 Q. Could you please state your full name and
22 address for the record.

23 A. David Alexander Simpson. 5505 Lee, L-E-E,
24 Lane, Farmington, New Mexico.

25 Q. And you've been deposed before, right?

1 A. Yes.

2 Q. About how many times?

3 A. Four, I believe.

4 Q. Before we start, let me just go over a few
5 ground rules with you, okay?

6 A. Yes.

7 Q. You've been administered an oath. And pursuant
8 to that oath, you're obligated to testify truthfully in
9 connection with that deposition.

10 Do you understand that?

11 A. I do understand.

12 Q. Do you understand it's important to give your
13 best, most accurate testimony here in this proceeding?

14 A. Yes, I do.

15 Q. And if you do not understand a question, please
16 let me know. I'll either repeat it or have the court
17 reporter or repeat it.

18 Do you understand?

19 A. I do.

20 Q. And if I ask a question and you don't hear it,
21 let me know. Again, I'll have the court reporter repeat
22 it.

23 Do you understand?

24 A. Yes.

25 Q. What did you do to prepare for today's

1 designation?

2 A. Read through the patent, the patent owner's
3 response, the petition, and the preliminary decision by
4 the board.

5 Q. When you said "patent," which patent did you
6 review?

7 A. The last three digits of '256 issued to
8 Hemstock, et al.

9 Q. Just the '256 patent?

10 A. I read all of it. I looked at the prior art
11 Hemstock and Miller and Davis and the data book.

12 (Reporter clarification.)

13 Q. (BY MR. KESACK) Did you review your
14 declaration?

15 A. I did.

16 Q. Did you prepare with any attorneys for your
17 deposition?

18 A. I spent a few minutes with Mr. Hall.

19 Q. Just a few minutes?

20 A. Probably -- it was less than two hours.

21 Q. Was that yesterday?

22 A. That was yesterday.

23 Q. Was that here?

24 A. Here.

25 Q. You do anything else to prepare for your

1 deposition?

2 A. I did not.

3 Q. Did you speak to anybody?

4 A. No.

5 Q. Did your review of any of the documents you've
6 identified refresh your recollection as to any
7 information?

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

9 Q. The documents here that you just told me about,
10 did any of those documents refresh your recollection as
11 to any fact related to this proceeding?

12 A. Yes.

13 Q. Okay. Which one?

14 A. All of them. It's been nearly nine months
15 since most of them were written.

16 Q. So all the documents refreshed your review?

17 A. (Moving head up and down.)

18 Q. Okay. Thank you.

19 Did you review the additional declarations
20 that were attached to your declaration?

21 A. I'm not sure what you're referring to.

22 Q. Did you review any declarations other than your
23 own in preparation for this deposition?

24 A. No.

25 Q. Has your opinion changed as to anything in your

1 declaration since you wrote it?

2 A. No.

3 Q. I'm going to hand you what is Exhibit 1011.

4 Do you recognize this exhibit?

5 A. I do.

6 Q. Is this the '256 patent you discussed earlier?

7 A. It is.

8 Q. And if I identify it as the '256 patent, you
9 will understand that, correct?

10 A. I will.

11 Q. Okay. Can you turn to Page 7 of the '256
12 patent?

13 A. I'm there.

14 Q. This page of the '256 patent begins with a
15 field of the invention, correct?

16 A. Yes.

17 Q. What is the field of invention identified in
18 the '256 patent?

19 A. It says (as read): "The present invention
20 relates to a system and apparatus for the removal of
21 particles, such as sand from fluid streams produced from
22 a well while minimizing abrasion in the involved
23 equipment."

24 Q. That's an accurate statement, right?

25 A. It's what the patent owner claimed he was

1 inventing, so...

2 Q. And you have no reason to believe that that
3 statement is not accurate, correct?

4 A. I have no reason to believe that.

5 Q. Okay. In Column 2, at about Line 24 and 25 and
6 26, the patent applicant also identified problems that
7 he was trying to solve with his patent; is that correct?

8 A. Yes.

9 Q. And the first problem that the '256 patent was
10 trying to solve was to improve the ease which the vessel
11 can be cleaned, correct?

12 A. Correct.

13 Q. And the '256 patent accomplishes this by having
14 the sand settle closer to the outlet for the solids in
15 the vessel, correct?

16 MR. HALL: Objection. Form.

17 A. That's my understanding of his intent.

18 Q. (BY MR. KESACK) And the second solution is --
19 or the second problem being addressed by the patent is
20 improvement and separation efficiency, correct?

21 A. That's what he claims.

22 Q. And that improvement and separation efficiency
23 is separating sand out of the fluid stream coming into
24 the vessel, correct?

25 MR. HALL: Objection. Form.

1 A. At this point, he really hasn't said that,
2 but -- but I don't know.

3 Q. (BY MR. KESACK) You've reviewed the '256
4 patent, right?

5 A. I did.

6 Q. Does the '256 patent include description of
7 increasing the efficiency of sand falling out of the
8 fluid stream?

9 A. It's my recollection that it does.

10 Q. Does the '256 patent discuss increasing the
11 efficiency of anything else related to separation
12 efficiency?

13 A. Not that I recall.

14 Q. So it's fair to say that the '256 patent, when
15 talking about increasing separation efficiency, is
16 increasing the efficiency of the sand falling out of the
17 fluid stream, correct?

18 MR. HALL: Objection. Form.

19 A. Yes.

20 Q. (BY MR. KESACK) Let's turn to Figure 4. It
21 should be on Page 4.

22 A. All right. Got it.

23 Q. Are you there?

24 A. Oh, there it is. I saw the Figure 5. I didn't
25 see the other 4.

1 Q. You there?

2 A. Yes.

3 Q. Is Figure 4 an embodiment of the '256 patent.

4 Do you understand that?

5 A. Yes.

6 Q. Okay. And in this figure, there is a

7 gas-liquid interface, correct?

8 A. Yes, there is.

9 Q. And that gas-liquid interface is shown starting
10 at the element identified as 26, correct?

11 A. That would be the left-hand end of it, yes.

12 Q. Okay. And so that interface is the horizontal
13 line extending from the element labeled 26 to the,
14 right; is that correct?

15 A. That's the way I interpret it.

16 Q. And element 26 would be the fluid outlet for
17 this vessel, correct?

18 A. Yes.

19 Q. Okay. Do you see the four lines? One includes
20 an arrow that is shown starting at element 29 and ending
21 at this liquid-gas interface?

22 A. Yes.

23 Q. What are those?

24 A. That's a very good question. The implication
25 is, it's the inlet stream. I don't know that for

1 certain.

2 Q. Is it possible that it's the -- showing the
3 stand particles settling out of the fluid stream?

4 A. Not to me. It might have been the intention of
5 the person drawing it.

6 Q. Okay. All of the sand falling out of the fluid
7 stream will be intersecting this liquid-gas interface;
8 is that correct?

9 A. Yes. Any sand that falls out will have -- will
10 fall out onto that surface.

11 Q. So it's not falling out on the portion of the
12 vessel to the right that doesn't have the liquid-gas
13 interface, correct?

14 A. That's not necessarily correct.

15 After it has fallen out of the stream, it
16 will continue to fall. So there will be some of the
17 separation that takes place in the vessel that takes
18 place in that void space.

19 Q. So if it takes place in that void space, what
20 happens to the sand?

21 A. It has a momentum and velocity. So it will
22 tend to continue in the direction that it was moving
23 when it was entrained. And if it separates out, it
24 will, through drag forces, slow down and fall into the
25 gas-liquid interface.

1 Q. And the portion of the gas-liquid interface
2 that is directly at the fluid outlet, will any sand be
3 falling into the liquid at that part?

4 MR. HALL: Objection. Form.

5 A. I see no reason it wouldn't. I don't know that
6 it does.

7 Q. (BY MR. KESACK) If sand fell at that part,
8 would it go out the fluid outlet?

9 A. I don't know.

10 Q. You don't know?

11 A. No.

12 Q. You see the dots in Figure 4 that are labeled
13 "40"?

14 A. Dots labeled? Yes.

15 Q. Also labeled "S"?

16 A. Yes.

17 Q. Is that "S" for sand?

18 A. That's what the document specifies.

19 Q. Okay. Does it shows any sand in the liquid
20 portion?

21 A. No, it does not.

22 Q. Does the patent describe anywhere the sand 40
23 being in suspension with the liquid?

24 A. Not to my recollection.

25 Q. You can put that one aside.

1 I'm going to hand you what's been marked as
2 Exhibit 104.

3 Do you recognize this document?

4 A. I do.

5 Q. Is this the document you identified earlier as
6 the "Hemstock patent"?

7 A. It is.

8 Q. If I refer to it as the '852 patent, will you
9 understand that?

10 A. I will try.

11 MR. RADULESCU: We'll remind you.

12 THE WITNESS: Thank you.

13 Q. (BY MR. KESACK) Using it a lot.

14 So the '852 patent is by the same inventor,
15 correct?

16 A. Yes.

17 Q. Can you go to Figure 3 of the '852 patent,
18 which is on Page 5.

19 A. I'm there.

20 Q. Figure 3 is an embodiment of the '852 patent.
21 Do you understand that?

22 A. I do.

23 Q. Does the Figure 3 of the '852 patent also have
24 a liquid-gas interface?

25 A. It does.

1 Q. Where is that interface?

2 A. It's in two places. On the top drawing, it's
3 to the left, immediately under the inlet nozzle. In the
4 bottom drawing, it's to the right, immediately under the
5 outlet nozzle.

6 Q. And Figure 3 is meant to be connected? That's
7 what the slashed lines means, correct?

8 A. That's my understanding.

9 Q. Is it your understanding that the liquid-gas
10 interface is generally level?

11 A. No, that's not my understanding.

12 On average, over time, as flow happens in
13 the vessel, the average will be at a level surface. Any
14 given moment, it won't be.

15 Q. As depicted in Figure 3, though, it's level in
16 all but two spaces, correct?

17 A. Correct.

18 Q. And you mentioned that the interface is
19 directly below the inlet; is that right?

20 A. Correct.

21 Q. There's actually not any space shown between
22 the liquid and the input, right?

23 A. Correct.

24 Q. Okay. And then if you look at the bottom
25 portion of the figure, there's an element labeled "13."

1 Is that the outlet of the vessel?

2 A. Yes, it is.

3 Q. And the gas-liquid interface, there's shown
4 some space below that outlet before you get to the
5 gas-liquid interface, right?

6 A. Correct.

7 Q. And in Figure 3, the sand is labeled is "32,"
8 also "S," correct?

9 A. Correct.

10 Q. And the liquid is labeled with an "L," correct?

11 A. Yes.

12 Q. And portion 30 is the freeboard portion,
13 correct?

14 A. Yes.

15 Q. And this figure says that 30 has both gas and
16 liquid, correct?

17 MR. HALL: Objection. Form.

18 A. It does not show that. It shows that both gas
19 and liquid exit at 13. I do not see an indication of
20 liquid in the freeboard space.

21 Q. (BY MR. KESACK) Okay. Do you see the label
22 "G, GNL"?

23 A. Oh, I see where it's got two arrows, yes. It's
24 got two connector lines. I didn't see this second one.

25 Q. So that second connector lines indicates to you

1 that there's both gas and liquid in the freeboard
2 portion, correct?

3 A. Correct.

4 (Reporter clarification.)

5 Q. (BY MR. KESACK) And if you look to the left of
6 the outlet, that would be the level portion of the
7 gas-liquid interface, correct?

8 A. That's the way it's being depicted.

9 Q. And that level portion is also below the
10 outlet, No. 13, correct?

11 A. Yes.

12 Q. So the outlet as compared to the inlet, the
13 bottom of the inlet would be below the bottom of the
14 outlet, correct?

15 MR. HALL: Objection. Form.

16 A. It's difficult to make that conclusion from
17 drawing. We don't know if the drawing is to scale; but
18 as a cartoon, yes.

19 Q. (BY MR. KESACK) All right. Can we turn to
20 Column 2 of the '852 patent.

21 A. Column 2. Okay.

22 Q. Could you read that first paragraph to
23 yourself, and let me know when you're done?

24 A. At the top of Column 2?

25 Q. Yes. Just the first paragraph.

1 A. Okay.

2 Q. Paragraph 2 is describing a known prior art
3 system that employs filters through particulates,
4 correct?

5 A. Correct.

6 Q. And Paragraph 2 is also describing one known
7 issue with filter bags, correct?

8 A. Yes.

9 Q. And that issue is that large slugs are common
10 in fluids, in fluid flow. And because of these slugs,
11 the filter bags may fail; is that accurate?

12 A. That is accurate.

13 Q. Okay. Are you aware of anywhere else in the
14 '852 patent that discusses slug flow?

15 A. I am not aware of any.

16 Q. Okay. Are you aware of anywhere else in the
17 '852 patent that discusses using a filter?

18 A. Not that I'm aware.

19 Q. So this issue with slug flow causing filter
20 problems doesn't apply to the rest of the '852 patent,
21 right?

22 A. I can't say that, but I don't have any
23 recollection that it does.

24 Q. Can you flip the page to Column 3? You see the
25 description of Figure 3 in Column 3?

1 A. Yes.

2 Q. The patent describes Figure 3 as a
3 cross-sectional side view of an embodiment of the
4 invention, right?

5 A. That's what it does, yes.

6 Q. So it doesn't describe it as a cartoon, right?

7 A. By cartoon, I mean, a drawing not to scale.

8 Q. But the cross-sectional side view, at least,
9 indicates that it's meant to be an actual embodiment,
10 correct?

11 A. I don't know that.

12 Q. Okay. Are you aware of anywhere in the '852
13 patent that discusses separating solids and liquids?

14 A. I haven't read it in enough detail to be able
15 to answer that question. I could read it now, if you'd
16 like, but it'll take a few minutes.

17 Q. You reviewed the patent yesterday, right?

18 A. I reviewed the '256 patent yesterday.

19 Q. You did not review the '852 patent yesterday?

20 A. I looked at various paragraphs in it that were
21 reviewed to in the other documents.

22 Q. You wrote a declaration in part based on this
23 patent, right?

24 A. I did nine months ago.

25 Q. And sitting here today, you can't recall a

1 single instance of discussing separation of liquids and
2 solids in the '852 patent, correct?

3 A. Correct.

4 Q. And you're not aware of, sitting here today,
5 any description in the '852 patent of sand being in
6 suspension with the liquid; is that correct?

7 A. Not to my recollection, no.

8 Q. If you can go back to Figure 3 for a moment.
9 Where does the sand settle in Figure 3?

10 A. The center section of the vessel.

11 Q. It's a majority of the bottom of the vessel,
12 right?

13 A. Yes.

14 Q. And if you compare Figure 3 of the '852 patent
15 to Figure 4 of the '256 patent, the Figure 3 has --
16 shows sand on a larger portion of the bottom section of
17 the vessel; is that correct?

18 A. That is correct.

19 Q. Okay. You can put that one aside.

20 I'm going to hand to you what's been marked
21 as Exhibit 1005.

22 Do you recognize this document?

23 A. I do.

24 Q. Is this the Davis document you referred to
25 earlier?

1 A. It is.

2 Q. Did you review this document in preparation for
3 this deposition?

4 A. I did.

5 Q. Did you review the whole document or only the
6 cited portions?

7 A. Cited.

8 Q. Is that limited to Page 17 of the document?

9 A. I did read Page 17. I -- there were other
10 references that I noticed, but I did not read the whole
11 document from end to end.

12 Q. Do you remember any other pages that you
13 reviewed?

14 A. I don't.

15 Q. Can you turn to Page 3 of Davis?

16 A. Page 3. Page 3 by your numbering, or Page 3 of
17 the document?

18 Q. Let's use -- I think this is --

19 A. Page 3 of 30?

20 Q. Yeah. Page 3 of 30.

21 A. Okay.

22 Q. Let's use that. In fact, for all the documents
23 we'll use to today, let's refer to where it says "Page X
24 of Y."

25 A. Okay.

1 Q. So at the -- in the second last line of this
2 Page 3 of Davis, there's a description of a Stokes
3 analysis of the translation of a single-rigid sphere
4 through an unbounded, quiescent Newtonian fluid of zero
5 Reynolds number?

6 Do you see that?

7 A. I do.

8 Q. What does quiescent mean in this sentence?

9 A. Calm, quiet, not moving.

10 Q. Is it your understanding that the rest of this
11 document is discussing a nonmoving fluid?

12 A. It is not.

13 Q. Which portion of the document suggests to you
14 that there is fluid that is moving?

15 A. Everything I read in it was talking about
16 nonzero Reynolds number, which means a velocity is not
17 zero.

18 Q. It's specifically referring to the Reynolds
19 number of the particles and of the clear fluid, correct?

20 A. Correct.

21 Q. And so that would be the movement of particles
22 relative to the clear fluid?

23 A. Not necessarily.

24 Q. Okay. So, for example, let's go to Page 17.

25 A. Okay.

1 Q. Do you see a Figure 4?

2 A. I do.

3 Q. So in Figure 4, the sand, which is the dots in
4 the figure, are moving in a downward direction; and the
5 clear fluid, which is labeled as A is moving in an
6 upward direction; is that accurate?

7 A. I'll have to read.

8 Q. Sure.

9 A. Please repeat your question.

10 MR. KESACK: Could you repeat the question
11 for me.

12 (Requested portion read back.)

13 MR. HALL: Objection. Form.

14 A. I'm not certain it is accurate. Because at the
15 beginning of the description Figure 4, it talks about
16 the different regions of the flow field. A flow field
17 would indicate to me that the mass is moving, is
18 flowing.

19 Q. (BY MR. KESACK) Can you point me to what
20 you're referring to?

21 A. It's the beginning of the description of
22 Figure 4 in the caption of Figure 4. The different
23 regions, the flow field during sedimentation in an
24 inclined channel.

25 Q. What is H knot in Figure 4?

1 A. What? Say again?

2 Q. What is H knot in Figure 4?

3 A. It appears to be the height of something.

4 Q. So you don't have an understanding of what H
5 knot is?

6 A. I don't have an understanding of what H knot
7 is.

8 Q. Does Figure 4 show any fluid coming in?

9 A. It does not.

10 Q. Does it show any fluid going out?

11 A. It does not.

12 Q. Does Davis describe any fluid flowing to
13 Figure 4 in the description you just read?

14 A. When he says a flow field, I take it as a flow
15 field, as a flowing fluid.

16 Q. Is it possible that when he says flow field,
17 he's talking about the flow of particles and the flow of
18 the clear liquid?

19 A. Not in my understanding.

20 Q. What's that understanding based on?

21 A. My experience in fluid mechanics. In fluid
22 mechanics when we say flow field, we are talking about a
23 flowing fluid.

24 Q. The portion labeled "C" in this figure, that is
25 suspension, correct?

1 A. Yes.

2 Q. And where it says, (as read), "Enhanced
3 sedimentation," at the top of Page 17, "Sedimentation
4 can be accurately defined as particles falling under the
5 action of gravity through a liquid through which they
6 are suspended"; is that fair?

7 MR. HALL: Objection. Form.

8 A. That is fair.

9 Q. (BY MR. KESACK) And the Davis on Page 17
10 teaches the mechanism by which sedimentation is enhanced
11 by inclining the vessel?

12 A. I'll have to read it.

13 Q. And I'll direct you to the bottom paragraph,
14 and I'll believe you'll find it there.

15 A. Please repeat your question.

16 Q. I'm going to withdraw the question and ask you
17 a slightly different one.

18 The bottom paragraph on Page 17, indicates
19 that the enhancement in the sedimentation rate is
20 because there is a larger surface area for particles to
21 settle on; is that correct?

22 A. That is what it says, yes.

23 Q. And it also says that in a vertical vessel,
24 particles can only settle on the bottom surface,
25 correct?

1 A. Correct.

2 Q. So that -- sorry. Does that indicate to you
3 then that the Figure 4 on Page 17 has a bottom?

4 A. It does not. It indicates that there is a
5 bottom somewhere. I don't know if there is another
6 outlet that's not shown in the drawing. The drawing is
7 not -- is not indicating that to me.

8 Q. The drawing doesn't indicate any outlet
9 anywhere, correct?

10 A. Right.

11 Q. The outlet doesn't indicate any inlet anywhere,
12 correct?

13 A. Correct.

14 Q. And the description in Figure 4 of Davis
15 doesn't indicate any outlet or inlet, correct?

16 A. Correct.

17 Q. So any opinion you have regarding whether
18 there's a possible inlet or outlet is not based on
19 Davis. It's only based on your personal experience; is
20 that correct?

21 A. It's based on my understanding of the term
22 "flow field."

23 Q. So other than the term "flow field," you have
24 no reason to believe that there's an inlet or outlet in
25 the Figure 4; is that correct?

1 A. I have no way to draw any conclusion at all.

2 Q. Does the -- does the small "v" in Figure 4
3 indicate to you that it's referring to a bottom?

4 A. No. It indicates a dimension to me.

5 MR. HALL: Sorry. Counsel, you said small
6 "v"?

7 MR. KESACK: "B" as in boy.

8 Q. (BY MR. KESACK) Do you see the hatched-looking
9 portion of Figure 4, which is labeled capital "E"?

10 A. Yes.

11 Q. That's concentrated sediment, correct?

12 A. That's what it says.

13 Q. And it's shown building up inside of this
14 channel, correct?

15 A. Yes.

16 Q. That's -- that buildup would go all the way to
17 the bottom of a vessel, correct?

18 MR. HALL: Objection. Form.

19 A. I have no way of knowing.

20 Q. (BY MR. KESACK) What else could be underneath
21 the sediment that has settled down?

22 A. A turn, an outlet. There's a segment of the
23 vessel. To imply knowledge of a channel of what happens
24 outsides of this, to extrapolate outside of this, is
25 somewhat irresponsible.

1 Q. Okay. Does your understanding of Figure 4
2 allow for either suspension or clarified liquid to flow
3 through the concentration sediment -- concentrated
4 sediment?

5 MR. HALL: Objection. Form.

6 A. I don't know. I have -- in oil and gas, we
7 have many examples of fluids flowing through solids.

8 Q. (BY MR. KESACK) I'm asking your understanding
9 of the particulate figure here.

10 A. I --

11 Q. Is there -- let me ask you a different
12 question.

13 A. Okay.

14 Q. Is there any description of fluid flowing
15 through the concentration sediment in Figure 4?

16 A. There is not.

17 Q. Do you have any reason to believe fluid is
18 flowing through that sediment?

19 A. I have no reason to believe it is or is not.

20 Q. You seen how the sediment is being shown as a
21 flat, horizontal line?

22 A. I do.

23 Q. Would that flat, horizontal line -- what does
24 that flat, horizontal line indicate to you?

25 A. An accumulation.

1 Q. And that accumulation -- if the vessel
2 continued beyond what's shown here, that accumulation
3 would remain level across the entire channel, correct?

4 MR. HALL: Objection. Form.

5 A. I don't know.

6 Q. (BY MR. KESACK) If the accumulation didn't
7 extend across the entire vessel, that would provide a
8 pathway for liquid to flow, correct?

9 A. Correct.

10 Q. And if there was a turn and an outlet below
11 this, that liquid would tend to flow towards that
12 outlet, correct?

13 A. It would.

14 Q. But the point of Figure 4 is not to drain all
15 the liquid out of the channel, correct?

16 MR. HALL: Objection. Form.

17 A. I don't know that that is the point. It's --
18 the way I interpret the drawing is, it's showing that
19 there are regions of decreasing concentrations of solids
20 as you move away from the solid surface.

21 Q. (BY MR. KESACK) What about Figure 4 indicates
22 that there are decreasing regions of sedimentation -- or
23 of solid?

24 A. The Figure E is a solid. Figure -- or
25 Component C is a suspension indicating a solid suspended

1 in a liquid. D is particle-free fluid level.

2 (Reporter clarification.)

3 A. So that's saying, as I move from the solid
4 concentration towards the clear fluid, I have a
5 decreasing concentration of solids.

6 Q. (BY MR. KESACK) There's only three regions
7 shown?

8 A. Right.

9 Q. Concentrated sediment, the suspension itself,
10 and the clarified fluid?

11 A. Yes.

12 MR. HALL: Objection. Form.

13 Q. (BY MR. KESACK) There's no, for example, 10
14 parts per million? 20 parts per million concentration?
15 30 parts per million concentration? It's just one
16 concentration of the suspension is shown; is that
17 correct?

18 A. I don't think I understand that question.

19 Q. Okay. Region C is not describing as having
20 different concentrations of suspensions, right?

21 A. In this showing, it's shown as a suspension
22 which does not indicate a stratification.

23 Q. And as this section of Davis is directed to
24 sedimentation, the purpose for Figure 4 would be having
25 the particles fall through a liquid in which they are

1 suspended, right?

2 MR. HALL: Objection. Form.

3 A. That is what I see as the value of it, yes.

4 Q. (BY MR. KESACK) And so -- okay.

5 There's no gas in Figure 4, correct?

6 A. I don't know that.

7 Q. There's no gas described in Figure 4; is that
8 correct?

9 A. Region A is a region of particle-free fluid.
10 Fluid means gas or liquid. I do not know what fluid
11 they're specifically talking about.

12 Q. There's no description of Figure 4 indicating
13 that this is flow from a fluid stream produced from an
14 oil well, correct?

15 A. No, there is no indication of that.

16 Q. And nothing in Davis teaches how to improve the
17 ease of cleaning of the horizontal vessel, correct?

18 A. Correct.

19 Q. You can put that aside.

20 I'm going to hand you what's been marked as
21 Exhibit 107.

22 Do you recognize this document?

23 A. I do.

24 Q. Is this the Miller document you referred to
25 earlier?

1 A. It is.

2 Q. Okay. Where is the inlet on Page 1 of Miller?

3 MR. HALL: Objection. Form.

4 A. The inlet is labeled "No. 3."

5 Q. (BY MR. KESACK) Did you review Miller
6 yesterday while preparing for your deposition?

7 A. I mostly studied this drawing.

8 Q. And do you have an understanding for all of the
9 components in this figure?

10 A. I do.

11 Q. What is your understanding of what is coming in
12 the inlet of this figure?

13 MR. HALL: Objection. Form.

14 A. It's a fluid mixture in -- that's dumped into
15 the hopper.

16 Q. (BY MR. KESACK) A fluid mixture.

17 What's in that fluid mixture?

18 A. This particular fluid stream, it's drilling mud
19 returned from the from a drilling well downhole
20 including cuttings and drilling fluids.

21 Q. This is not the hydrocarbons from the well,
22 right?

23 A. There could be hydrocarbons, but it's not part
24 of a production stream.

25 Q. The inlet is not at the end of the vessel; is

1 that correct?

2 MR. HALL: Objection. Form.

3 A. The inlet is at -- is near one end of the
4 vessel.

5 Q. (BY MR. KESACK) It's not at the end, correct?

6 A. Correct.

7 Q. Where is the outlet on this vessel?

8 MR. HALL: Objection. Form.

9 A. The outlet is on the end of the vessel.

10 Q. (BY MR. KESACK) Does it have a number?

11 A. Eight.

12 Q. Is No. 13 an outlet?

13 A. No. 13? No. 13 is also an outlet.

14 Q. What -- what is meant to come out of outlet 13?

15 A. Cleaned fluid.

16 Q. And what's meant to come out of outlet 8?

17 A. Solids, drill cuttings.

18 Q. And so the solid drill cuttings, does it also
19 include mud?

20 A. In order for it to flow, it does include some
21 amount of mud.

22 Q. And you said that that outlet is at the end of
23 the vessel, correct?

24 A. It is.

25 Q. So there's nothing to the right of the outlet

1 in the vessel; is that right?

2 A. Nothing to the right? I don't understand.

3 Q. The vessel doesn't continue pass the outlet.

4 The outlet on the side wall of the vessel are

5 co-extensive; is that correct?

6 A. Correct.

7 Q. What is 8?

8 A. 8 is solids outlet.

9 Q. Is that a pipe?

10 A. Yes.

11 Q. Is 5 a pipe?

12 A. 5? It could be a pipe. It could be a pressure
13 vessel.

14 Q. What's the difference?

15 A. The difference is the code and standard to
16 which they're built. Hydraulically, there is no
17 difference. A pressure vessel is built at to a pressure
18 vessel code, which specifies wall thickness, temperature
19 ratings, nozzle reinforcement, a pipe or a pipeline
20 accessory is a thing -- a piece of equipment that is
21 built to a piping specification as opposed to a pressure
22 vessel specification.

23 Q. Do you know who sets those specifications?

24 A. That's a very big question.

25 Q. Is it generally ASME?

1 A. ASME writes both the boiler pressure vessel
2 code and the piping standards, whether they are
3 incorporated into law is a function of the state
4 legislatures.

5 Q. Based on your experience in the oil and gas
6 industry, is it more expensive to meet a pipe code or a
7 pressure vessel code?

8 A. It's generally more expensive to meet a
9 pressure vessel code.

10 Q. Why is that?

11 A. You typically end up with thicker wall pipe and
12 thicker wall vessel, and you end up with more
13 reenforcement and nozzle, et cetera.

14 Q. You can put Miller aside.

15 Handing you what's been marked as
16 Exhibit 1008.

17 Do you recognize this document?

18 A. I do.

19 Q. Is this the data book you referred to earlier?

20 A. It is.

21 Q. This isn't the whole data book, right?

22 A. That is correct.

23 Q. You chose two chapters of the data book; is
24 that right?

25 A. Correct --

1 Q. Did you make that choice?

2 A. I'm not -- I'm not sure.

3 Q. But you agree with the selection of Section 7
4 and Section 17 as being included?

5 A. I do.

6 Q. Can you turn to Page 41 of the data book?

7 A. Okay.

8 Q. Do you see Figure 1721?

9 A. I do.

10 Q. It's labeled, "multipipes slug catcher"?

11 A. Yeah.

12 Q. The slug capture in Figure 1721 is a separation
13 or is meant for separation; is that correct?

14 A. That is correct.

15 Q. So it's accurately described as a separator; is
16 that correct?

17 A. Yes.

18 Q. And because it's a separator, the goal of the
19 slug catcher is to separate the mix-phased stream into
20 gas-and-liquid phases that are relatively free of each
21 other; is that correct?

22 MR. HALL: Objection. Form.

23 A. That is not correct.

24 Q. (BY MR. KESACK) Can you turn to Page 3 of the
25 data book?

1 A. Okay.

2 Q. Do you see the word "separator"?

3 A. Yes.

4 Q. This is a nomenclature section of the data
5 book?

6 A. It is.

7 Q. And the definition of separator is, (as read):
8 "Vessel used to separate a mix-phased stream into
9 gas-and-liquid phases that are relatively free of each
10 other," correct?

11 A. Right.

12 Q. When you say a slug catcher is a separator,
13 that was not your understanding of separator?

14 A. The terminology is a bit muddled in the field
15 of separators, field catchers, sluggers.

16 Q. You would agree that in the data book, when
17 they're using the word "separator," that's what they
18 mean, right?

19 A. Yes.

20 Q. That's what nomenclature means?

21 A. Yes.

22 MR. HALL: And, counsel, would you please
23 let him finish his answers.

24 Q. (BY MR. KESACK) And just below separator, it
25 describes a slug catcher as a particular separator,

1 right?

2 A. Yes.

3 Q. So you would understand that the slug catcher
4 that we were referring to on Page 41 is the separator as
5 defined here and is also a slug catcher as defined here?

6 A. Right.

7 Q. And I'm going to reask this question. The slug
8 catcher in Figure 1721, the purpose is to separate a
9 mix-phase stream into gas-liquid phases that are
10 relatively free of each other because it's a separator,
11 correct?

12 MR. HALL: Objection. Form.

13 A. It is a slug catcher by the definition you just
14 pointed, which is a particular separator designed to
15 able to absorb sustained inflow of a large liquid of
16 volumes. So a separator is intended to produce a -- how
17 ever many streams it's designed to separate the inlet
18 stream into. The primary purpose of a slug catcher is
19 mitigate the arrival or large slugs. The separation
20 functionality is very secondary.

21 Q. (BY MR. KESACK) Can you turn to Page 36 of the
22 data book?

23 A. Okay.

24 Q. Do you see Figure 1714?

25 A. Yes.

1 Q. Do you see the portion labeled slug?

2 A. I do.

3 Q. Is that your understanding of a slug?

4 A. That is a representation of the slug, yes.

5 Q. And in this representation of a slug, the white
6 space is representative of a gas; is that correct?

7 A. I am not sure. This Figure 1714 has varying
8 representations of what is the liquid and what is the
9 gas. So my expectation would be that the white is gas.

10 Q. Then the portion that has horizontal lines
11 going through it represents liquid; is that correct?

12 A. That -- the best I can tell from this drawing,
13 yes.

14 Q. And are these flow regimes depicted in
15 Figure 1714 familiar to you?

16 A. Yes, they are.

17 Q. When talking about the -- let's turn back to
18 Page 41 this multiple-pipe slug catcher.

19 (Reporter clarification.)

20 Q. (BY MR. KESACK) Is it your understanding that
21 in a production stream, there is an oil well; and there
22 is a processing facility; and there's one or more
23 elements in between as an overall concept of how oil
24 gets to the ground from the processing facility?

25 MR. HALL: Objection. Form.

1 A. Yes.

2 Q. (BY MR. KESACK) Okay. And the multipipe slug
3 catcher shown in Figure 1721, where along that path
4 would you expect to find it?

5 A. As a piping designer, I put them in various
6 locations. I use them to bring together two streams. I
7 use them in front of a plat inlet separator to allow me
8 to reduce the size of the plat inlet separator. If I'm
9 handling the slugs in the slug catcher, I don't need a
10 separator as large.

11 Q. In your -- is it 30 years' of experience?

12 A. I started in 1980 so 39.

13 Q. In your 39 years of experience, have you ever
14 connected a multiple-pipe slug catcher to an oil well?

15 MR. HALL: Objection. Form.

16 A. My experience is primarily in oil and gas. So,
17 no.

18 Q. (BY MR. KESACK) How about to a gas well?

19 A. No.

20 Q. Is there a liquid in a gas well?

21 A. Yes.

22 Q. Of the five, two-phased flow regimes we
23 analyzed earlier, which ones would you understand are
24 capable of coming in the inlet shown on Figure 1721?

25 A. All of them.

1 Q. All of them.

2 Is there a preferred two-phase flow that
3 you would want to use in the piping?

4 A. You would prefer to have flow as mist, but you
5 have no control over that.

6 Q. That's the annular mist?

7 A. What page is that?

8 Q. That is on Page 36?

9 A. 36. Yes.

10 Q. Okay. So let's -- let's use annular mist as a
11 default flow rate for now, understanding that there's
12 other possible flow rates.

13 So let's assume that annular mist is coming
14 in the inlet to the multiple-pipe slug catcher on Figure
15 1721.

16 A. Okay.

17 Q. Do you understand that?

18 A. I do.

19 Q. That annular-mist flow will come into the
20 sloped pipe where the arrows are pointing downward in
21 the five different locations for the five different
22 pipes; is that accurate?

23 A. That is accurate.

24 Q. What direction will that annular mist being
25 flowing when it comes into the pipe?

1 A. An annular mist flows with some amount of
2 liquid to the outside of the pipe. The predominance of
3 the gas, all of the gas and some of the liquid is
4 flowing between the surfaces around the outside of the
5 pipe. When it enters the slug catcher, the slug catcher
6 acts a separator at that point, homogenizing the flow to
7 some extent, allowing slugs to form to some extent.

8 So you've got the fluid stream entering the
9 slug catcher at a right angle to the center line of the
10 slug catcher, which creates an interesting and somewhat
11 chaotic flow regime as it enters the slug catcher.

12 So while it might have been well
13 established as annular flow in the piping coming into
14 it, as I enter the slug catcher, that flow regime
15 changes very dramatically.

16 Q. So when I asked what directional the annular
17 mist be flowing when it comes into the pipe, I think you
18 said downward; is that right?

19 A. In this drawing, yes.

20 Q. And it will turn to either the right or the
21 left; is that correct?

22 A. It -- it will move towards the -- towards the
23 lowest pressure. So it will -- it will fill the -- fill
24 the vessel towards the right, and flow towards the left.

25 Q. In the normal use of a slug catcher, such as

1 the one in Figure 1721?

2 MR. KESACK: 23.

3 THE WITNESS: 21.

4 Q. (BY MR. KESACK) The inlet is meant to be at a
5 constant flow rate, right?

6 A. No. There is nothing constant about a
7 gathering. It changes from microsecond to microsecond.

8 Q. Are you ever turning the inlet off?

9 A. Yes.

10 Q. Why do you turn the inlet off?

11 A. Wells are shut in, plants get maintained,
12 things change from day to day, from hour to hour, from
13 minute to minute.

14 Q. So well shut-in is when the -- the end of life
15 of the well, right?

16 A. No.

17 We shut in wells to work on them. We shut
18 in wells because we don't have a market for the oil.

19 Q. Okay. But it means what the production stream
20 has been shut off?

21 A. It has been shut off, yes.

22 Q. And maintenance, you're turning off the
23 production stream as well?

24 A. Correct.

25 Q. Other than those times where you're not trying

1 to get production stream from the well to the processing
2 plant, are you ever turning the inlet off of just the
3 slug catcher?

4 MR. HALL: Objection. Form.

5 A. I don't know of a time that you would do that.

6 Q. (BY MR. KESACK) Because that would stop the
7 production flow, right?

8 A. Right.

9 Q. So when the annular mist enters the sloped
10 pipe, that is following fluid that was there before and
11 it's just all following?

12 A. Yes.

13 Q. There's not a big, empty space between the
14 inlet and the outlet, right?

15 MR. HALL: Objection. Form.

16 A. Right.

17 Q. (BY MR. KESACK) Once the -- how does the slug
18 catcher accomplish separation between the gas and the
19 liquid?

20 A. Fundamentally, they're a wide place in the
21 line. Some slug catchers that I've designed have had a
22 diverter plate in the flow that causes a rapid change of
23 direction. For the most part, these finger-type or
24 harp-type slug catchers simply have an inlet pipe. So I
25 go from a small diameter inlet to a large-diameter slug

1 catcher, which is a rapid change in velocity, which the
2 gas accommodates more easily than the liquid
3 accommodates and the liquids tend to fall out.

4 Q. And by fall out, the liquids goes to the
5 bottom, and the gas goes to the top?

6 A. Correct.

7 Q. So if we're looking at Page 36 again.

8 A. Yes.

9 Q. This would be either stratified or waved, is
10 how it would look once it's settled out?

11 MR. HALL: Objection.

12 Q. (BY MR. KESACK) Is that right?

13 MR. HALL: Objection. Form.

14 A. Not necessarily. Those are common. Wavy flow
15 is far more common than stratified flow because the gas
16 flowing over the surface of the liquid requires the gas
17 to do work, which that works benefits itself in a wavy
18 flow or in white caps.

19 Q. (BY MR. KESACK) Okay. But once the liquid and
20 the gas have been separated, the flow through the pipes
21 is either going to look like stratified or waved
22 depending on the characteristics?

23 MR. HALL: Objection. Form.

24 A. It's going to tend to.

25 Q. (BY MR. KESACK) When the flow changes from

1 annular mist to a slug, what changes in the slug
2 catcher?

3 MR. HALL: Objection. Form.

4 A. If I can clarify, are you -- you're referring
5 to in the pipe upstream of the slug catcher, it change
6 from an annular mist to a slug?

7 Q. (BY MR. KESACK) Yeah. What's coming in the
8 inlet to the slug catcher?

9 A. Okay. So I have a slug of liquid coming in?

10 Q. Correct?

11 A. That slug of liquid will enter the vessel. If
12 it is a larger slug than the vessel can handle, then it
13 will continue through the vessel out into the process.
14 If it is of a size that the slug catcher is designed to
15 process, then it will raise the fluid level above the
16 outlet pipe and create a froth -- a frothing flow of the
17 gas blowing through the liquid and carrying that froth
18 to the separators.

19 Q. So you said -- you referred to the size of a
20 slug that a vessel can handle?

21 A. Yes.

22 Q. What determines the size of a slug that the
23 vessel can handle?

24 A. That's a design factor that the designer looks
25 at expected slug size and provides volume inside the

1 slug catcher to hold that slug size.

2 Q. Where in the slug catcher in Figure 1721 is
3 that volume you just referred to?

4 A. That is the body -- that is the length of the
5 slugs where it says sloped, those long pipes, that is
6 the volume I'm talking about.

7 Q. So if the -- when you say the slope size is
8 larger than the size that the slug catcher can handle,
9 you're talking about a liquid volume larger than the
10 entire pipe?

11 A. Yes.

12 Q. And in this case, it would be larger than the
13 five pipes?

14 A. Yes.

15 Q. And based on that, if the slug's larger than
16 that, you're just going to have liquid flow in the input
17 and the output and nothing else?

18 A. Yes.

19 Q. And if the liquid volume is less than the
20 entire five pipes, then you're going to have liquid and
21 gas coming out the outlet?

22 MR. HALL: Objection. Form.

23 A. Yes.

24 Q. (BY MR. KESACK) And if there's no slugs and
25 you have just annular flow, you're going to have liquid

1 and gas coming out the outlet too?

2 A. It -- often. The amount of liquid in cabin
3 systems is a function of the effectiveness of well site
4 separation. So with good well site separation, a slug
5 catcher will most often be near empty of liquid, what I
6 refer to as liquid starved. So the evaporation of the
7 liquid in the slug catcher is faster than the inflow, is
8 the normal condition of slug catchers.

9 Q. Let me rephrase.

10 So the normal condition of slug catcher is
11 below the outlet such that gas is only coming out the
12 outlet?

13 A. Yes.

14 Q. And when does liquid rise to the level of the
15 vapor outlet in the slug catcher? Just during slugs?

16 MR. HALL: Objection. Form.

17 A. No. There are times when separators don't do
18 their job, and you end up with the -- with a gas-liquid
19 interface at the outlets.

20 Q. (BY MR. KESACK) When the separator is not
21 doing its job?

22 A. When the separator is not accurately separating
23 the gas, yes.

24 Q. But when the separator is working as intended,
25 the only time that the liquid and gas are both going out

1 the outlet is because of a slug?

2 MR. HALL: Objection. Form.

3 A. Yes.

4 Q. (BY MR. KESACK) And, otherwise, the liquid
5 will be below the outlet because it's further down the
6 pipe?

7 A. Yes.

8 Q. There's nothing in the -- this section of the
9 data book, which is teaching you how to clean solids out
10 of the slug catchers, right?

11 A. No, there is not.

12 Q. Can you flip the page to Page 43.

13 Do you see Figure 1722?

14 A. Yes.

15 Q. Is this also a slug catcher?

16 A. Yes.

17 Q. It's not described as being inclined, right?

18 A. Correct.

19 Q. Does the data book describe any vessel as being
20 inclined that you're aware of?

21 A. Other than the finger-type slug catchers, not
22 that I'm aware of.

23 MR. KESACK: Let's take a break.

24 (A break was taken from 10:00 a.m. to
25 10:14 a.m.)

1 Q. (BY MR. KESACK) So before the break, we were
2 talking about the data book reference, right?

3 A. Correct.

4 Q. And then the multiple-pipe slug catcher in
5 Figure 1721, what kind of Reynolds numbers will the
6 liquids have going through that pipe?

7 MR. HALL: Objection. Form.

8 A. That's going to be all over the map. Reynolds
9 numbers are a function of fluid density, pipe diameter,
10 velocity and viscosity. And as velocity change from the
11 pipe system into the slug catcher, the Reynolds numbers
12 change dramatically. So if I get a large slug, I've got
13 a high density, which is an enumerator; high velocity,
14 which is an enumerator. So I could end up with a very
15 high Reynolds number during the slug event.

16 Q. (BY MR. KESACK) During normal annular mist,
17 for example --

18 MR. HALL: Objection.

19 Q. (BY MR. KESACK) -- is it going to be very low
20 Reynolds numbers? Will it be laminar flow?

21 MR. HALL: Objection. Form.

22 A. It's unlikely to ever be laminar flow. I
23 almost never see laminar flow in real systems.

24 Q. (BY MR. KESACK) And that -- we're not dealing
25 with quiescent flow either, right?

1 MR. HALL: Objection. Form.

2 A. Correct.

3 Q. (BY MR. KESACK) And talking about the '852
4 patent begin, again, which is the prior art Hemstock
5 patent?

6 A. Okay.

7 Q. Will you be dealing with laminar flows of a
8 fluid in that vessel?

9 MR. HALL: Objection. Form.

10 A. I would expect to -- the gas to never be a
11 laminar flow. The liquids may or may or not.

12 Q. (BY MR. KESACK) The gas wouldn't be a
13 quiescent flow either, right?

14 A. No.

15 Q. I'm going to hand you what's been marked
16 Exhibit 1002.

17 Do you recognize this document?

18 A. I do.

19 Q. Is this your declaration that you referred to
20 earlier?

21 A. It is.

22 Q. Did you write this declaration?

23 A. I approved what was in it. There was -- it was
24 written as a collaboration.

25 Q. Lawyers helped you out where you needed it?

1 A. There were times that the lawyers helped me
2 out, yes.

3 Q. Okay.

4 MR. RADULESCU: Do you regret it?

5 THE WITNESS: Never.

6 Q. (BY MR. KESACK) Just like to clear something
7 up. Can you go to Page 7 of your declaration. It's
8 Paragraph 6?

9 A. Page 7 Paragraph 7.

10 Q. Here, you're talking about a patent that you
11 pulled, right?

12 A. Yes.

13 Q. Is that the correct title of your patent?

14 A. Yes.

15 MR. HALL: Are you marking this as an
16 exhibit?

17 MR. KESACK: No.

18 Q. (BY MR. KESACK) I just handed you a document.
19 We're not going to mark it. It's just for you own
20 purposes. Is this your patent?

21 A. Yes, it is.

22 Q. And does the titles match on Paragraph 6?

23 A. Interesting. No, it does not.

24 Q. What's the difference?

25 A. The difference is, this is a different patent.

1 Q. This is a different patent?

2 A. Yes.

3 Q. Does the number match the number in
4 Paragraph 6?

5 A. It does. I apparently made an error.

6 Q. So the title shouldn't include the word
7 "solids," right?

8 A. There is a version of this patent that does
9 include solids, and this is not it.

10 Q. Okay. You can put that aside.

11 Can you turn to Paragraph 28 on Page 13?

12 A. Okay.

13 Q. Is this paragraph here, Understanding of
14 Rationals that May Support a Conclusion of Obviousness?

15 A. Yes.

16 Q. So your understanding, your theories, in this
17 declaration are obviousness and not anticipation?

18 A. Yes.

19 Q. Can you -- we're going to come back to this
20 page in a second. I don't know if you want mark it, but
21 I'd like you to turn to Page 41 of your declaration.

22 A. Okay.

23 Q. You see Section 1.1?

24 A. Yes.

25 Q. What is the bolded language next to 1.1?

1 A. (as read): "A vessel elongated along a
2 longitudinal axis and having a fluid inlet adjacent to
3 the first end of the vessel and a fluid outlet spaced
4 along the longitudinal axis from a fluid inlet towards
5 the second end of the vessel."

6 Q. And what is that?

7 A. It's saying that --

8 Q. I'm not asking you what it describes.

9 A. Oh.

10 Q. Just why are those words there? What is it
11 from?

12 A. It is from the '256 patent.

13 Q. That's one of the claim limitations?

14 A. Yes.

15 Q. Now, below it, you have Paragraphs 91, 92 and
16 93 in this section, and that's where it ends, right?

17 A. Yes.

18 Q. And Paragraph 91 is about the Hemstock
19 reference, right?

20 A. Yes.

21 Q. Paragraph 92 is about Miller, right?

22 A. Yes.

23 Q. And Paragraph 93 is about the data book, right?

24 A. Yes.

25 Q. Now, if you could turn back to Page 13, I'd

1 like to understand what the relationship is between
2 those three paragraphs. So the first rational for
3 obviousness you have is, (as read): "Combining prior
4 art elements according to known method to yield
5 predictable results."

6 Are you suggesting in Paragraphs 91 to 93
7 that you would be combining elements from each of these
8 references together?

9 A. I would be combining Hemstock with either of
10 92 -- either Miller or the data book or both.

11 Q. Okay. So Paragraph 91, you're talking about a
12 horizontal pressure vessel in Hemstock, right?

13 A. Yes.

14 Q. In Paragraph 92, you're talking about an
15 elongated vessel five for Miller, right?

16 A. Yes.

17 Q. And your obviousness opinion, are you suggest
18 using the pressure vessel from Hemstock or the elongated
19 vessel from Miller?

20 A. The pressure vessel from Hemstock.

21 Q. And you wouldn't substitute in the vessel from
22 Miller, right?

23 A. I would not.

24 Q. You wouldn't combine the elongated vessel from
25 Miller with the horizontal-pressure vessel from

1 Hemstock?

2 A. I would not.

3 Q. And when you're looking at the data book,
4 there's multiple-horizontal separators, vessels,
5 elongated-longitudinal access, et cetera. You're not
6 suggest combining any of that with Hemstock, right?

7 MR. HALL: Objection. Form.

8 A. I am not.

9 Q. (BY MR. KESACK) So these three paragraphs,
10 you're not combining elements in the prior art together
11 in any way, right?

12 A. I don't believe that's a true statement because
13 I'm combining the elongated vessel of Hemstock with the
14 inclined vessels of the other two.

15 Q. You're combining them, right?

16 A. Yes.

17 Q. That's what you're saying?

18 So you would take the horizontal vessel of
19 Hemstock and combine it with the inclined vessel of
20 Miller?

21 MR. HALL: Objection. Form.

22 A. Combine it with incline technique.

23 Q. (BY MR. KESACK) Right.

24 So you're not taking the element from
25 Miller? You're taking the technique from Miller?

1 MR. HALL: Objection. Form.

2 A. I am.

3 Q. (BY MR. KESACK) So it's not a prior element?
4 It's a technique?

5 A. (No response.)

6 MR. HALL: Objection. Form.

7 Q. (BY MR. KESACK) So, for example, your third
8 bullet point on Page 13 is the use of known techniques
9 to improve a similar method or product, right?

10 A. Yes.

11 Q. Does that more accurately say?

12 A. It does.

13 Q. So, for example, the second bullet point is
14 simple substitution of one element for another.

15 You're not saying that you're doing that in
16 Paragraphs 91 to 93, right?

17 A. Correct.

18 Q. And there's a bullet point that says, (as
19 read): "Obvious to try to choosing from an finite
20 number of identified predictable solutions."

21 That's not what you're saying here either,
22 right?

23 A. No. It's mostly the used-and-known techniques.

24 Q. And it's your opinion that Hemstock by itself
25 meets limitation 1.1, right?

1 MR. HALL: Objection. Form.

2 A. Yes.

3 Q. (BY MR. KESACK) All right. And you don't need
4 Miller at all to meet limitation 1.1 in Hemstock, right?

5 A. You do not.

6 Q. You don't need the data book at all, right?

7 A. You do not.

8 Q. Do you know why you included these paragraphs
9 here?

10 A. I don't recall.

11 Q. Do they make a difference to your obviousness
12 analysis?

13 A. In retrospect, they don't seem to.

14 Q. Can you turn to Page 43?

15 A. I'm there.

16 Q. There is a Figure 2, which is from the '256
17 patent in the middle of the page, correct?

18 A. Correct.

19 Q. The figure below it, that's a figure that you
20 made and annotated; is that right?

21 A. Yes.

22 Q. And this is Figure 3 from the '852 patent, but
23 rotated; is that right?

24 A. Rotated, and the two halves were combined.

25 Q. When you -- I'll -- strike that.

1 Throughout your declaration, you're talking
2 about taking Hemstock and inclining it?

3 A. Yes.

4 Q. Is this figure what you mean by taking Hemstock
5 and inclining it?

6 MR. HALL: Objection. Form.

7 A. It is.

8 Q. (BY MR. KESACK) Can you turn to Page 47 of
9 your declaration?

10 A. There.

11 Q. About four lines down, there is a sentence that
12 says -- and I'll go slow -- (as read): "A person of
13 ordinary skill in the art would also understand that the
14 device in Figure 17-21 has three modes of operation, one
15 steady state, three liquid starved, and three liquid
16 flooded."

17 Do you see that?

18 A. I do.

19 Q. The No. 2 liquid starve, that's the mode of
20 operation you described as being normal mode of
21 operation for this slug, right?

22 A. Most common, yes.

23 Q. And in the steady-state and liquid-flooded
24 modes of operation, liquid would be coming out the
25 outlet of the slug catcher, right?

1 A. Correct.

2 Q. Can you to Page 59 of your declaration.

3 A. I'm there.

4 Q. This is about dependent Claim 8 of the '256
5 patent, correct?

6 A. Right.

7 Q. Now, you cite Miller in Paragraph 140, correct?

8 A. Correct.

9 Q. And what do you are saying Miller teaches a
10 person of ordinary skill in the art in Paragraph 140?

11 A. The ability to vary the inclination.

12 Q. If you can flip back to Page 43.

13 A. Okay.

14 Q. Looking at the figure, which you said is the
15 inclined vessel of your obviousness opinion, the outlet
16 13 would be connected in some way to the rest of the
17 production stream, right?

18 A. Yes.

19 Q. And the inlet over by "F" would be attached to
20 the oil well, correct?

21 MR. HALL: Objection. Form.

22 A. Yes.

23 Q. (BY MR. KESACK) Now, when you say Miller
24 teaches that you can vary the angle of the sander, if
25 you -- which end would you be changing the elevation of?

1 The left or the right?

2 MR. HALL: Objection. Form.

3 A. The right.

4 Q. (BY MR. KESACK) When you tried to incline the
5 right-hand side, that would cause a problem with
6 connecting the inlet to the well head, right? It
7 wouldn't line up anymore?

8 MR. HALL: Objection. Form.

9 A. It depends how the vessel is connected in.
10 This sort of operation is frequently connected with
11 hoses, which would not cause a problem at all. If it
12 was hard-piped or diagonal, then there's a potential for
13 requiring piping modifications.

14 Q. (BY MR. KESACK) Can you turn to Page 62 of
15 your declaration.

16 A. 62. I don't think so. Oh, there it is.

17 Q. Are you there?

18 A. I'm in.

19 Q. Okay. So at the top of the page, we have
20 dependent claim 14, right?

21 A. Yes.

22 Q. And then in two middle of the page, we have
23 dependent claim 16, right?

24 A. Yes.

25 Q. And, I think, what you intended was the second

1 sentence of Paragraph 148 is dependent claim 15; is that
2 right?

3 MR. HALL: Objection. Form.

4 A. I would have to look at it. Yes.

5 Q. Okay. The sentence after 15, is that intended
6 to be for claim limitation 15 or claim limitation 14?

7 A. The sentence after which?

8 Q. After 15 of the sanding system?

9 A. Ah, okay. I'm referring to dependent claim 15.

10 Q. Okay. So am I right to say then that the only
11 sentence that you included for limitation 14 is the
12 first sentence of Paragraph 148?

13 MR. HALL: Objection. Form.

14 A. I don't understand your question. I'm sorry.

15 Q. (BY MR. KESACK) So in your declaration, you
16 have the claim limitation followed by the paragraph
17 describing why prior art the meets that claim
18 limitation?

19 A. Correct.

20 Q. In this paragraph, you have another claim
21 limitation 15, and you said the stuff below that claim
22 limitation is supporting claim limitation 15, right?

23 A. Right.

24 Q. So the sentence before that in Paragraph 148
25 starting with "Miller discloses..."

1 A. Okay.

2 Q. That sentence is for claim limitation 14,
3 right?

4 A. Yes.

5 Q. That's the only sentence that's for claim
6 limitation because the next sentence is for claim
7 limitation 15; is that right?

8 MR. HALL: Objection. Form.

9 A. I believe that's right. I was becoming
10 confused.

11 Q. (BY MR. KESACK) I was confused too. I just
12 wanted to make sure we got your intent down properly.
13 As long as what I'm saying is accurate, I just wanted to
14 give you a chance to clarify.

15 So based reading now understanding, that's
16 your understanding?

17 A. That's my understanding.

18 Q. Okay. So that first sentence says, (as read):
19 "Miller discloses a solid, liquid settling vessel, the
20 use of an eccentrically located smaller diameter, outlet
21 piping."

22 That's your support from Miller for meeting
23 this claim limitation, right?

24 A. Yes.

25 Q. Does anything in Miller teach that the vessel

1 has a smaller diameter downstream of the fluid outlet?

2 A. No.

3 Q. In fact, the pipe aid isn't downstream of the
4 fluid outlet at all, right?

5 You can use Miller to...

6 A. Yeah.

7 Q. That's fine.

8 A. Could you repeat your question, please?

9 Q. Sure.

10 Let's take a step back. In Miller, where
11 is the fluid outlet?

12 A. The fluid outlet is 13.

13 Q. And the outlet pipe 8 is not downstream of the
14 fluid outlet 13, right?

15 A. No, it isn't.

16 Q. And nothing, otherwise in Miller, is teaching
17 to put outlet piping downstream of the fluid outlet,
18 right?

19 A. Correct.

20 Q. Can you turn to Page 79 of your declaration.

21 A. It looks like a section of it was not stapled
22 properly. 79 -- I'm having a time finding it.

23 Q. It's about five, six pages from the back.

24 A. Yeah, but the stapled aren't holding and things
25 are falling a part.

1 MR. RADULESCU: Colored pictures, big
2 colored pictures. I think it's on the back -- right
3 there. The back of where you have finger. Flip that
4 other side down.

5 A. There we go.

6 Q. (BY MR. KESACK) All right. So here we have
7 six colored figures that you included in your
8 declaration, right?

9 A. Yes.

10 Q. Did you take these pictures?

11 A. I did.

12 Q. Other than Figure 5, you didn't take that
13 picture?

14 A. I drew it; but, yeah.

15 Q. You drew it?

16 A. Yes.

17 Q. How did you draw it?

18 A. Auto CAD.

19 Q. And Picture 5 and 6 are both for a -- why don't
20 you tell me what they're for?

21 A. They're for a pig receiver.

22 Q. By receiver, you mean the pigs have already
23 gone down through the pipeline and are being extracted
24 out through the other side?

25 A. Correct.

1 Q. So the arrow you drew in Figure 5, that's where
2 the flow is coming from, right?

3 A. Yes.

4 Q. And the flow would make a right-hand turn and,
5 I think, there's an arrow going out on the top left?

6 A. Correct.

7 Q. And the pig would not follow that direction?
8 It would come to the receiver; is that correct?

9 A. Correct.

10 Q. And so the -- although, it's labeled eccentric
11 reducer, the volume of it or the cross-section of the
12 pipe is actually increasing in this example?

13 A. That is correct.

14 Q. Same thing for Figure 6, right?

15 A. Correct.

16 Q. In fact, Figure 5 and Figure 6 are the same
17 thing?

18 A. We built Figure 6 from the drawing of Figure 5.

19 Q. Okay. Figures 2, 3, and 4 are also vertical
20 pressure vessels, right?

21 A. Correct.

22 Q. Where in Figure 1 do you mean to point when you
23 have reduced diameter section with quick closure?

24 A. It's almost the center-bottom right under
25 the -- the quick closure is right under the text that

1 you just read.

2 Q. Is it the -- the very large diameter section,
3 or is it is it small diameter pipe coming out?

4 A. The small diameter pipe coming out.

5 Q. So this is another vertical vessel?

6 A. Yes.

7 MR. HALL: I'm going to belatedly object to
8 that last question as misleading, last series of
9 questions.

10 Q. (BY MR. KESACK) Can you go back to Page 19
11 from your declaration?

12 A. I'm there.

13 Q. This is where you're defining terminology that
14 you said has no rigid definitions in the field, right?

15 A. Correct.

16 Q. And this is about what a phase separator is; is
17 that right?

18 A. Yes.

19 Q. So a single-phase separator has one outlet; a
20 two-face separator has two outlets; and three
21 phase-separator would have three outlets, right?

22 MR. HALL: Objection. Form.

23 A. That is -- that's my terminology, yes.

24 Q. (BY MR. KESACK) What do you call a separator
25 that has no outlets?

1 A. Not a separator.

2 Q. Okay. So the way you define separator here is
3 if there is no outlet is it's not a separator; is that
4 right?

5 A. Correct.

6 MR. KESACK: That's all I have. Thank you
7 very much.

8 THE WITNESS: Thank you.

9 MR. HALL: I am going to redirect.

10 FURTHER EXAMINATION

11 BY MR. HALL:

12 Q. Mr. Simpson, looking again on Page 19 of your
13 declaration, and counsel was asking you questions about
14 separators and the number of outlets.

15 Do you remember that?

16 A. Yes.

17 Q. Is it possible to have phase separation in a
18 vessel that doesn't have any outlets?

19 MR. KESACK: Objection. Leading.

20 A. Yes.

21 Q. (BY MR. HALL) And let's turn back to that page
22 that was hard to find, Page 79, of your declaration.
23 The one with the pictures.

24 A. I know. It's -- this is becoming a mess.

25 There we go. Yes.

1 Q. Okay. Look at picture labeled No. 1 at the top
2 left?

3 A. Okay.

4 Q. I was confused. I don't know if you were.
5 Counselor -- counsel had asked you about where the
6 reduced diameter section with quick closure was.

7 Can you identify specifically where the
8 quick closure is?

9 MR. KESACK: Objection to the form.

10 MR. HALL: I'm sorry?

11 MR. KESACK: Objection to the form.

12 A. It is -- if you look at the red typing where
13 the white ends below that, that is called commonly
14 called a Hoover closure or a quick closure.

15 Q. (BY MR. HALL) So I'm going to hand you just
16 this one page. Can you circle where you intended to
17 indicate the reduced diameter? All right. And can you
18 just put your initials out to the side?

19 MR. HALL: Okay. So let's mark that as
20 exhibit -- I don't know where we're at.

21 MR. KESACK: '13 is your last one.

22 MR. HALL: 1014.

23 (Exhibit 1014 marked.)

24 Q. (BY MR. HALL) And, if you would, so we can be
25 clear, can you just draw an arrow from your initials to

1 where you indicated? Thank you.

2 Let's take a look at Exhibit 1001, which is
3 the '256 patent?

4 A. Okay.

5 Q. Can you look at this -- this will be column the
6 on Page 9.

7 A. I'm there.

8 Q. And the paragraph right above the summary of
9 invention.

10 You see that?

11 A. Okay.

12 Q. Go ahead and read through that, please.

13 A. Okay.

14 Q. So one of the stated desires in this paragraph
15 is (as read): "Further improvement and separation
16 efficiency."; is that correct?

17 A. Correct.

18 Q. And turn to -- this will be Page 9, Column 5.
19 And do you see -- can you find Line 27 for me?

20 A. Okay.

21 Q. Do you see that? It starts off -- the portion
22 I want you to read starts off, (as read): "The
23 cross-sectional area of freeboard portion 44," and then
24 please read down to Line 34.

25 A. Okay.

1 Q. What's your understanding of this statement --
2 these statements in this particular few sentences?

3 MR. KESACK: Objection to form.

4 A. He's talking about the area for the raw fluids
5 to flow is at a maximum early in the vessel, close to
6 the inlet, which reduces the velocity of the mix stream.

7 Q. (BY MR. HALL) What does that do to separation
8 efficiency?

9 A. Improve --

10 MR. KESACK: Objection. Leading.

11 A. Improves it.

12 Q. (BY MR. HALL) And you said raw fluids. What
13 did you mean by that?

14 A. Unprocessed fluids from a well.

15 Q. In the '256 patent, what do those fluids
16 include?

17 A. Gas, liquid, and solids.

18 Q. With regard to these statements, we have the
19 raw fluid coming into the vessel. What is the
20 difference as far as the separation mechanism between
21 solid particulates and liquid droplets?

22 MR. KESACK: Objection. Form; and leading;
23 and outside the scope.

24 A. In a raw well fluid stream, that's mostly gas.
25 The difference in the flow of the liquids and the solids

1 is generally one of velocity, and the solids are less
2 able to coalesce into larger particles than the liquids
3 are.

4 Q. (BY MR. HALL) What are the differences in the
5 effect of gravity on solids and liquids on a raw stream
6 like that?

7 MR. KESACK: Objection. Leading; outside
8 the scope.

9 A. It really depends on the size of the droplet
10 and the size of the solid particle. The weight of the
11 element being separated and the density of that element
12 are major factors in settling efficiency.

13 Q. (BY MR. HALL) Do you agree with this statement
14 here that, as a general matter, a larger cross-sectional
15 area gives you a lower velocity for maximum drop out
16 efficiency for particles S and particles L?

17 MR. KESACK: Objection. Form.

18 A. Yes.

19 Q. (BY MR. HALL) So let's look at -- let me make
20 sure I'm done with this one. Let's look at the '852
21 patent, Exhibit 1004.

22 A. Okay.

23 Q. So just look at Figures 3 and 4 briefly,
24 please.

25 A. Okay.

1 Q. And with regard to these figures, is it your
2 understanding that this is -- these figures represent
3 how this device would work at all moments in time?

4 MR. KESACK: Objection. Leading; outside
5 the scope.

6 A. I take it as the inventor's expectation of how
7 it would work and a steady-state flow.

8 Q. (BY MR. HALL) Let's look at the same patent,
9 Column 4, start at Line 55, which is the paragraph at
10 the very bottom of Column 4. Let's take a -- read that
11 first sentence -- few sentences of that paragraph,
12 please.

13 A. Okay.

14 Q. So you had just used the word "steady state,"
15 and this portion of the specification uses the word
16 steady state. What do you mean by that?

17 MR. KESACK: Objection. Form.

18 A. Yeah.

19 Q. (BY MR. HALL) Let me correct that. What do
20 you mean when you use the word "steady state"?

21 A. It's a fairly sloppy shorthand that is
22 frequently used for a situation where from one moment to
23 the next the flows are the same as they were in the
24 first moment. Multifase flow is inherently unstable,
25 and no steady state condition exists for a very, very

1 short period of time. So when we say steady state,
2 we're really looking at two points in time saying that
3 the vessel is in the same condition.

4 Q. Would you expect the vessel described in the
5 '852 patent to be in steady-state operation at all
6 times?

7 A. No.

8 MR. KESACK: Objection. Leading; outside
9 the scope.

10 Q. (BY MR. HALL) Same question for the '256 --

11 MR. KESACK: Same objections.

12 MR. HALL: Hold on. Let me finish.

13 Q. (BY MR. HALL) Same question for the '256.
14 Would you expect -- so let's look at Exhibit 1001 again.

15 A. Okay. I've got...

16 Q. And I lied to you earlier saying we were done
17 with it.

18 A. Here.

19 Q. If you look at Figure 2 --

20 A. Okay.

21 Q. -- would you expect this vessel to be -- to
22 have this gas-liquid interface level at all times during
23 operation?

24 MR. KESACK: Objection. Leading; outside
25 the scope.

1 A. Absolutely not.

2 Q. (BY MR. HALL) Why?

3 A. Because steady-state flow doesn't exist in
4 multiface flow. You have changes in your inlet flow;
5 changes in your gas-liquid ratio from moment to moment;
6 changes in the amount of solids from moment to moment;
7 changes in the velocities from moment to moment.

8 You'll end up with white caps on top of the
9 flow; times when the liquid is completely blown out.
10 Multiface flow is chaotic.

11 Q. Okay. Going back to the '852 patent. Sorry.
12 This is 1004. This is the one we were looking at.

13 A. Okay.

14 Q. Take a look at Column 4, Line 57 again, which
15 we just looked at.

16 A. Uh-huh.

17 Q. It says, (as read): "Typically liquid L out of
18 the fluid stream F accumulates in the belly portion 32
19 to a steady-state level, and then is reentrained, or
20 discharged, with fluids exiting outlet 13."

21 What is your understanding of what
22 reentrained means there?

23 MR. KESACK: Objection. Outside of the
24 scope.

25 A. Coming into the vessel, the gas is carrying the

1 liquids and the solids. When the vessel is in this
2 mythical steady-state condition of Figure 2, it will
3 drop that liquid out at the first end of the vessel
4 accumulate, raise the liquid level, and then the gases
5 will pick that liquid pack up and carry it out the
6 outlet.

7 Q. (BY MR. HALL) And when you say pick the liquid
8 back up, is that reentrainment?

9 MR. KESACK: Objection. Leading.

10 A. Yes, it is.

11 Q. (BY MR. HALL) Take a look at the same patent,
12 Column 2.

13 A. Okay.

14 Q. And starting on Line 7, I'll read it to you.
15 It says, (as read): "Usually multiface flow in oil and
16 gas is unstable. Large flow of fluids followed by gas
17 is common."

18 Do you agree with this statement?

19 A. Absolutely.

20 Q. Are those two sentences -- what they express,
21 is that true in general?

22 A. That is true in general.

23 MR. KESACK: Objection. Leading.

24 Q. (BY MR. HALL) Does it matter -- let me ask it
25 this way: What if you use a separator -- so let me back

1 up.

2 So this paragraph, as you previously
3 testified, relates to the use of a separator with filter
4 bags?

5 A. Correct.

6 Q. Is that statement true when you're talking
7 about using separators with filter bags?

8 A. Which statement?

9 Q. That usually multiface flow in the oil and gas
10 operations are unstable, large flow of fluids followed
11 by gas is common.

12 A. That is true with filter bags without.

13 Q. When you say without filler bags, what is that?

14 A. In a separator vessel as opposed to a filter
15 separator.

16 Q. Let's look at the data book, which I believe
17 is --

18 A. -- 1008.

19 Q. 1008. Thank you.

20 Take a look at Page 41 of 48.

21 A. I'm there.

22 Q. I'm sorry. Take a look at -- yeah, let's go
23 ahead and do this one.

24 You had testified that you don't know of a
25 time when you would turn the inlet off when you weren't

1 shutting in the production stream.

2 Do you recall that?

3 MR. HALL: Objection. Form.

4 A. Yes.

5 MR. HALL: I agree. I may have misstated
6 his testimony.

7 Q. (BY MR. HALL) But you recall the general
8 testimony along those lines?

9 A. I do.

10 Q. What is the normal operating procedure for when
11 you want to remove solids or liquids from a slug
12 location?

13 MR. KESACK: Objection. Form; outside the
14 scope.

15 A. Removing --

16 Q. (BY MR. HALL) Let me correct that.

17 Are you familiar with the normal operating
18 procedure for removing liquids and solids --

19 A. I am.

20 Q. -- from a slug catcher?

21 A. I am.

22 Q. Can you describe that?

23 MR. KESACK: Same objection.

24 A. In the absence of an slug-creating event, like
25 riding a pig, usually we don't remove solids and

1 liquids. When there is a slug-creating event expected,
2 planned, then we will man the valves for the liquid
3 outlet. And as a person hears the on-site of the slug,
4 they will open the liquid outlet to allow that slug to
5 go to tanks or to go to wherever the liquid outlet is
6 directed. And in that process of opening the valve, we
7 frequently get large quantities of solids out at the end
8 of the vessels.

9 Q. (BY MR. HALL) What's the procedure when you
10 aren't expecting a slug?

11 MR. KESACK: Objection to scope.

12 A. Mostly we pretend they're not there.

13 Q. (BY MR. HALL) Have you ever seen a large
14 accumulation of solids in a slug catcher like these?

15 MR. KESACK: Objection. Leading; outside
16 the scope.

17 A. I have.

18 Q. (BY MR. HALL) How did you -- if you know, if
19 you were involved in the procedure, how did you remove
20 the solids?

21 MR. KESACK: Objection to scope.

22 A. We had a pig run open the liquid outlets. It
23 was a six-finger slug catcher. We open the outlets of
24 all of them. Three of them didn't flow at all because
25 they were plugged solid. The others did, and then we

1 removed the solids from the tank.

2 Q. (BY MR. HALL) How did you remove the solids
3 from the tank?

4 MR. KESACK: Objection to scope.

5 A. We open the manhole and went in and shoveled
6 them out.

7 Q. (BY MR. HALL) Before you opened the manhole,
8 what else did you -- did you make any changes to the
9 valve alignment?

10 MR. KESACK: Objection. Leading; scope.

11 A. Yes. You have to shut the inlet valves to the
12 tanks.

13 Q. (BY MR. HALL) So would that be an additional
14 time when you would turn the inlets of the slug catcher
15 off?

16 MR. KESACK: Objection. Leading.

17 A. It's actually the liquid inlet that we shut.
18 We leave the slug catcher in operation.

19 Q. (BY MR. HALL) When you're opening a manhole?

20 A. Yes, because the vapor outlet does not go to
21 the tank. So the vapor outlet is going to the plant to
22 the separator. The liquid outlet is piped separately
23 into the tank.

24 Q. What procedures do you use to make sure it's
25 safe before you open a manhole?

1 MR. KESACK: Objection. Leading; scope.

2 A. There is lockout/tagout to shut the valves, put
3 locks on them. In the case that I'm talking about,
4 there was also these lines came together in another
5 valve. So we had two-valve isolation before we went
6 into the tank.

7 Q. (BY MR. HALL) Okay. And so is the slug
8 catcher isolated before you let someone in?

9 MR. KESACK: Objection. Form.

10 A. No.

11 Q. (BY MR. HALL) It's not?

12 A. No.

13 Q. Okay. Learn something new.

14 Let's go back to '256 patent.

15 A. '256, okay.

16 Q. Take a look at -- well, let me ask you this:
17 Do you recall the claims of this patent starting on
18 Column 7 of Page 10?

19 A. I'm familiar with them. I can't recite them.

20 Q. Okay. Do you recall any limitations related to
21 Reynolds numbers in any of the claims?

22 MR. KESACK: Objection. Leading.

23 A. I do not.

24 MR. HALL: Take a quick break.

25 MR. KESACK: Okay.

1 (A break was taken from 11:05 a.m. to
2 11:07 a.m.)

3 FURTHER EXAMINATION

4 BY MR. KESACK:

5 Q. Could you please turn back to Page 9 of the
6 '256 patent?

7 A. Page 9 of the '256 patent. Okay.

8 Q. Your counsel just asked you some questions
9 about Column 5, Lines about 27 through about 39, right?

10 A. Yes.

11 Q. And this is talking about increasing the
12 separation efficiency of solids and liquids from the
13 fluid flow, right?

14 A. Yes.

15 Q. This is not talking about the separation
16 efficiency of the sand once it's in the belly portion of
17 the vessel, right?

18 A. Right.

19 Q. Would you turn to the '852 patent.

20 A. Hopefully. There it is.

21 Q. And in Column 2, you remember that your counsel
22 asked you questions about the multiphase flow in
23 Column 2?

24 A. Yes.

25 Q. Can you go to Column 6, about Line 32.

1 A. Column 6, Line 32. Okay.

2 Q. You see where it says the Desander is capable
3 of handling multiphase production?

4 A. Yes.

5 Q. Is there any difference between multiphase
6 production and multiphase flow?

7 A. No.

8 Q. So this is saying the Desander can handle
9 multiphase flow?

10 A. Yes.

11 Q. Let's look at the exhibit that we marked as
12 1014.

13 A. Okay.

14 Q. Your counsel indicated that there might have
15 been confusion on Figure 1.

16 A. Yes.

17 Q. Were you confused when I was asking you about
18 Figure 1?

19 A. I wasn't.

20 Q. And can you please turn to the data book?
21 Page 41, please.

22 A. Okay.

23 Q. Remember your counsel asked you some questions
24 about slug catchers?

25 A. Yes.

1 Q. You described a expected slug event, right?

2 A. Yes.

3 Q. If this slug catcher was connected to an oil
4 well directly, would there be such a thing as expected
5 slug events?

6 A. No, there would not.

7 Q. They would be completely random?

8 A. Yes, they would.

9 Q. And this section about slug catchers doesn't
10 contain any discussion about solids, right?

11 A. Right.

12 MR. KESACK: That's all I have.

13 THE REPORTER: Since this is Federal, do
14 you have any other stipulations you want to put on the
15 record?

16 MR. HALL: We'll just request an
17 opportunity to review.

18 (Proceedings concluded at 11:10 a.m.)

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Subscribed and sworn to
before me this____day of_____, 2019.

C E R T I F I C A T I O N

I, Abigail Guerra, a Shorthand Reporter,
within and for the State of Texas, do hereby certify:

That I reported the proceedings in the
within entitled matter, and that the within transcript
is a true record of such proceedings.

I further certify that I am not related, by
blood or marriage, to any of the parties in this matter
and that I am in no way interested in the outcome of
this matter.

IN WITNESS THEREOF, I have hereunto set my
hand this ____ day of _____, 2019.

ABIGAIL GUERRA

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

ENERCOP SAND SOLUTIONS INC.
 Petitioner

V.

SPECIALIZED DESANDERS INC.
 Patent Owner

DATE: May 8, 2019

WITNESS: DAVID A. SIMPSON REF: 25094

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14 DAVID A. SIMPSON

15

16 Subscribed and sworn to before me
this ____ day of _____, 2019.

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18 Notary Public

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