

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

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BAKER HUGHES INCORPORATED and  
BAKER HUGHES OILFIELD OPERATIONS, INC.  
Petitioners

v.

PACKERS PLUS ENERGY SERVICES INC.,  
Patent Owner

Case IPR2016-00596 - Patent 7,134,505  
Case IPR2016-00597 - Patent 7,543,634  
Case IPR2016-00598 - Patent 7,861,774  
Case IPR2016-00650 - Patent 6,907,936  
Case IPR2016-00656 - Patent 8,657,009  
Case IPR2016-00657 - Patent 9,074,451

ORAL VIDEOTAPED DEPOSITION

ALI DANESHY

November 9, 2016

ORAL VIDEOTAPED DEPOSITION OF ALI DANESHY, produced as a witness at the instance of the Respondent and duly sworn, was taken in the above-styled and numbered cause on the 9th day of November, 2016, from 9:27 a.m. to 2:56 p.m., before Keith L. Vincent, Certified Shorthand Reporter in and for the State of Texas, reported by computerized stenotype machine at the offices of Norton Rose Fulbright, 1301 McKinney Street, Suite 5100, Houston, Texas 77010, pursuant to the Federal Rules of Civil Procedure and the provisions stated on the record or attached hereto.

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1 APPEARANCES  
2  
3 FOR THE PETITIONERS:  
4 Mr. Mark T. Garrett  
5 Mr. Eagle Robinson  
6 Norton Rose Fulbright, LLP  
7 94 San Jacinto Boulevard, Suite 1100  
8 Austin, Texas 78701-4255  
9 Telephone: 512-474-5201  
10 E-mail: mark.garrett@nortonrosefulbright.com  
11 eagle.robinson@nortonrosefulbright.com  
12  
13 FOR THE RESPONDENT:  
14 Mr. Justin Nemunaitis  
15 Caldwell Cassidy Curry  
16 2101 Cedar Springs Road, Suite 1000  
17 Dallas, Texas 75201  
18 Telephone: 214-888-4853  
19 E-mail: jnemunaitis@caldwellcc.com  
20  
21 ALSO PRESENT:  
22 Mr. Darin Duphorne  
23 Mr. Andrew Jones, Videographer  
24  
25

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4 Examination by Mr. Nemunaitis: 4  
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7 EXHIBITS  
8 (None offered)  
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1 PROCEEDINGS  
2 THE VIDEOGRAPHER: We are on the record.  
3 Today's date is November the 9, 2016. The time is  
4 9:27 a.m. This is the beginning of deposition of  
5 Dr. Ali Daneshy. Can I have all the attorneys identify  
6 themselves for the record.  
7 MR. NEMUNAITIS: Justin Nemunaitis on  
8 behalf of Rapid Completions.  
9 MR. GARRETT: Mark Garrett on behalf of  
10 Petitioners.  
11 MR. ROBINSON: Eagle Robinson on behalf of  
12 Petitioners.  
13 MR. GARRETT: And we have with us in the  
14 room Darin Duphorne, who is in-house counsel for  
15 Petitioners.  
16 ALI DANESHY,  
17 having been first duly sworn, testified as follows:  
18 EXAMINATION  
19 MR. NEMUNAITIS:  
20 Q. Could you please state your name.  
21 A. Ali Daneshy.  
22 Q. And you're a doctor, right?  
23 A. Yes.  
24 Q. Where did you get your PhD?  
25 A. University of Missouri - Rolla.

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1 Q. Are you an employee of Baker Hughes?  
2 A. No.  
3 Q. But you were hired by them to offer some  
4 opinions in these proceedings on the patents at issue,  
5 correct?  
6 A. Yes.  
7 Q. Have you ever been deposed before?  
8 A. Yes.  
9 Q. About how many times?  
10 A. I can't remember. Two, three, four times  
11 maybe.  
12 Q. Do you know if any of those were patent cases  
13 or IPR proceedings?  
14 A. No.  
15 Q. No, they were not?  
16 A. They were not.  
17 Q. You're probably a little bit familiar with this  
18 process, but I'll go over some ground rules in case you  
19 have some questions before we start. I'm going to keep  
20 going and ask my questions, but I'll take a break every  
21 hour or so. If you want to take a break at some other  
22 time, just let me know and we'll take one. The one  
23 exception to that would be if I ask you a question, I'd  
24 like to get an answer before we take the break. Sound  
25 fair?

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1 A. Sure.

2 **Q. I think the court reporter mentioned this**

3 **before we started, but it's helpful if we don't talk**

4 **over each other. So I'm going to try to, you know, stop**

5 **and listen to you; and I'd ask that you do the same for**

6 **me. Okay?**

7 A. Okay.

8 **Q. And also the court reporter can't take down a**

9 **nod of the head or an "uh-huh," "huh-uh" sort of**

10 **response. So if you can try to phrase your answers so**

11 **they're clear that he can take them on the record, that**

12 **would be helpful. Okay?**

13 A. Okay.

14 **Q. And at times, one of your attorneys here, the**

15 **attorneys for Baker Hughes may say "Objection, form",**

16 **something like that, to one of my questions. But if**

17 **that happens, you can still answer the question, as long**

18 **as your attorney doesn't instruct you not to answer.**

19 **Does that make sense?**

20 A. If that's the rule, that's the rule.

21 **Q. And lastly, there's a number of overlapping**

22 **proceedings that you're being deposed about today.**

23 **I think there's six proceedings on these instituted**

24 **IPRs. So at times I may ask the same question but tweak**

25 **it a little bit to ask about one patent versus another.**

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1 **I'm not trying to be repetitive and waste your time.**

2 **I just want to make clear we have a clear Q&A on the**

3 **record, if that makes sense.**

4 A. Okay.

5 **Q. Could you tell me at a high level what your**

6 **experience has been in the oil-and-gas industry?**

7 A. I have been active in the oil-and-gas industry

8 since 1969, continuously.

9 **Q. Can you tell me what your experience has been**

10 **with hydraulic fracking?**

11 A. All of that period, I've been engaged in

12 hydraulic fracking.

13 **Q. What sort of work have you do with hydraulic**

14 **fracking?**

15 A. I have done laboratory research, theoretical

16 research, operations, and taught courses, published

17 papers.

18 **Q. Do you ever advise companies on how to design a**

19 **fracturing job for a particular well?**

20 A. Yes.

21 **Q. About how much of your work over the last few**

22 **years has been that sort of work?**

23 A. It's hard to put number on it. When I consult

24 for a company, I do different tasks for them; and a part

25 of it could be design of a fracturing treatment. So

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1 I cannot give you a number.

2 **Q. When did you start advising companies on**

3 **fracturing work for a particular well?**

4 A. Just as soon as I was -- I got into oil-and-gas

5 industry in 1969.

6 **Q. And that's something you've done throughout**

7 **your entire career, more or less?**

8 A. Off and on, yes.

9 **Q. Do you generally keep up to speed to advances**

10 **or changes in technology in the hydraulic fracturing**

11 **space?**

12 MR. GARRETT: Objection, form.

13 **Q. You can answer the question.**

14 A. To the extent practical, yes.

15 **Q. And why do you try to do that?**

16 MR. GARRETT: Same objection.

17 A. I think people who are in this business, if

18 they want to continue staying, you know, well-informed,

19 they need to be abreast of what is available out there.

20 Again, to the extent possible.

21 **Q. Do you think you're an expert in the field of**

22 **the '774 patent that's at issue in these proceedings?**

23 A. Can you tell me what '774 patent is, please.

24 **Q. Sure. I can give you a copy of that.**

25 A. Yes, I understand this patent.

Page 9

1 **Q. So would you say you're an expert in the field**

2 **of the '774 patent?**

3 A. Yes.

4 **Q. If you could think back to what you were doing**

5 **in 2001, do you think you would have been an expert in**

6 **the field of the '774 patent at that time?**

7 A. It's very difficult for me to go back to 2001;

8 but, yeah, I could have given you an expert opinion at

9 that time also, yes.

10 **Q. Why do you say it's difficult to go back to**

11 **2001.**

12 A. I wasn't quite sure what your question was.

13 I thought that could also mean that, did I know this

14 patent at that time. I did not know this patent detail

15 at that time; but, yeah, I could have reviewed it and

16 given you an expert opinion.

17 **Q. Right. Are you familiar with the term**

18 **plug-and-perf fracturing?**

19 A. Yes, I am.

20 **Q. What does that term mean to you?**

21 A. Setting your plug to isolate a section of the

22 wellbore, perforating upstream of the plug, and then

23 fracturing it.

24 **Q. Are you familiar with the term open-hole**

25 **ball-drop fracturing?**

<p style="text-align: right;">Page 10</p> <p>1 A. Yes.</p> <p>2 <b>Q. And that's a fracturing technique where packers</b></p> <p>3 <b>are used to provide zonal isolation and balls are used</b></p> <p>4 <b>to open sleeves to fracture through the open-hole</b></p> <p>5 <b>segment. Fair?</b></p> <p>6 A. I wasn't catching the details. That's a</p> <p>7 process in which you have sleeves inside a liner, you</p> <p>8 drop a ball. When the ball seats in its designated</p> <p>9 location, it slides open a sleeve and opens a port</p> <p>10 through which you fracture the formation.</p> <p>11 <b>Q. It's possible to do open-hole ball-drop</b></p> <p>12 <b>fracturing using packers to isolate the zones. Would</b></p> <p>13 <b>you agree with that?</b></p> <p>14 A. Yes.</p> <p>15 <b>Q. And would it be okay if today, just so we have</b></p> <p>16 <b>a shorthand name to talk about that particular type of</b></p> <p>17 <b>fracturing, to call that open-hole ball-drop fracturing?</b></p> <p>18 A. Okay. But open-hole ball-drop fracturing has</p> <p>19 got multiple systems attached to it. I usually call</p> <p>20 those ball-activated sliding sleeves.</p> <p>21 <b>Q. Let me ask you this. Just so we have</b></p> <p>22 <b>something -- there's a catchy name for plug-and-perf</b></p> <p>23 <b>fracturing, and most people know what that is. I'd like</b></p> <p>24 <b>to have a shorthand name that we can use for the rest of</b></p> <p>25 <b>the day to talk about the type of fracturing technique</b></p>	<p style="text-align: right;">Page 12</p> <p>1 <b>want to have -- I'm going to be asking you a bunch of</b></p> <p>2 <b>questions today and I want to have a name that I can use</b></p> <p>3 <b>so I don't need to explain this concept in every</b></p> <p>4 <b>question I ask.</b></p> <p>5 A. I understand. My intent is to make sure</p> <p>6 I understand your question so I give you the answer to</p> <p>7 the correct question that you intend, not what</p> <p>8 I understood it to mean.</p> <p>9 <b>Q. Right. For purposes of this deposition today,</b></p> <p>10 <b>if I use the phrase "ball-activated sleeve fracturing,"</b></p> <p>11 <b>can we agree that that means a type of fracturing where</b></p> <p>12 <b>you use ball-activated sleeves and packers to provide</b></p> <p>13 <b>zonal isolation?</b></p> <p>14 MR. GARRETT: Same objection.</p> <p>15 A. Okay. But as we go -- okay. Let's proceed</p> <p>16 until we get to a point where I need clarification, and</p> <p>17 then I will ask for it.</p> <p>18 <b>Q. Sure. Absolutely.</b></p> <p>19 <b>When did you first learn about</b></p> <p>20 <b>ball-activated sleeve fracturing?</b></p> <p>21 A. I can't remember.</p> <p>22 <b>Q. Do you know if it was before 2001?</b></p> <p>23 A. Possibly.</p> <p>24 <b>Q. And was it possible it was after 2001?</b></p> <p>25 A. I was aware of open-hole fracturing by sliding</p>
<p style="text-align: right;">Page 11</p> <p>1 <b>where you use ball-activated sleeves and packers to</b></p> <p>2 <b>provide isolation?</b></p> <p>3 A. That's a very good description. Good.</p> <p>4 <b>Q. Okay.</b></p> <p>5 A. Ball-activated sliding sleeves is just the</p> <p>6 right term. Thank you.</p> <p>7 <b>Q. Okay. So if I refer to ball-activated sleeve</b></p> <p>8 <b>fracturing, we can agree that that refers to a type of</b></p> <p>9 <b>fracturing where you're using ball-activated sleeves and</b></p> <p>10 <b>packers to provide zonal isolation?</b></p> <p>11 A. The zonal isolation is provided by packers.</p> <p>12 Ball-activated sliding sleeves is to direct a fluid into</p> <p>13 a particular port within the liner and into the</p> <p>14 formation.</p> <p>15 <b>Q. Right. I agree with that. So if we use -- I'm</b></p> <p>16 <b>just asking this question. If I use the term</b></p> <p>17 <b>"ball-activated sleeve fracturing" today, will you</b></p> <p>18 <b>understand that to mean a fracturing technique where</b></p> <p>19 <b>you're using ball-activated sleeves and packers for</b></p> <p>20 <b>zonal isolation?</b></p> <p>21 MR. GARRETT: Objection, form.</p> <p>22 A. Repeat your question again, please. I want to</p> <p>23 make sure I get the details correct.</p> <p>24 <b>Q. Sure. I'm not trying to quibble with you on</b></p> <p>25 <b>how these systems work or anything like that. I just</b></p>	<p style="text-align: right;">Page 13</p> <p>1 sleeves, by using sliding sleeves. I was aware of that.</p> <p>2 But you attached a particular combination ball-activated</p> <p>3 sliding sleeves with open-hole packers. That is not the</p> <p>4 name which was used at that time. The sliding sleeves</p> <p>5 generally were called port collars; and the packers, of</p> <p>6 course, were used for isolating zones.</p> <p>7 <b>Q. When was the first time you can remember</b></p> <p>8 <b>hearing about a system that used both ball-activated</b></p> <p>9 <b>sliding sleeves and open-hole packers to do fracturing?</b></p> <p>10 A. I can't remember. It is a long time ago.</p> <p>11 <b>Q. But you're not sure if it's before or after</b></p> <p>12 <b>2001?</b></p> <p>13 A. No. After you have been in the industry for</p> <p>14 50 years and read as many papers and have as many</p> <p>15 discussions, sometimes events, the time of events become</p> <p>16 blurred occasionally.</p> <p>17 <b>Q. Do you ever advise companies on whether to use</b></p> <p>18 <b>ball-activated sleeve fracturing versus some</b></p> <p>19 <b>alternative?</b></p> <p>20 A. Yes, I have.</p> <p>21 <b>Q. And how often do you recommend ball-activated</b></p> <p>22 <b>sleeve fracturing?</b></p> <p>23 MR. GARRETT: Objection. 611(b).</p> <p>24 A. That is such a broad question that -- because</p> <p>25 there's so many elements involved in that</p>

<p style="text-align: right;">Page 14</p> <p>1 decision-making process. If you are prepared for a 2 dissertation, then we can go ahead; but I have 3 recommended it. Correct. Yes, I have. And when I make 4 that recommendation, it is because a number of 5 parameters that are involved in that decision-making 6 have been satisfied.</p> <p>7 <b>Q. What would you say are the main fracturing 8 techniques that you consider when talking to a client 9 about what type of fracturing technique to use on a 10 well?</b></p> <p>11 MR. GARRETT: Objection. 611(b).</p> <p>12 A. Techniques are generally divided into open-hole 13 liner completions and cemented liner completions. You 14 start from that point; and then for each, you branch off 15 into available systems.</p> <p>16 <b>Q. And what parameters do you consider when 17 deciding between open-hole versus cemented liners?</b></p> <p>18 MR. GARRETT: Same objection.</p> <p>19 A. Borehole stability, well stability, and 20 properties of the formation. There are too many 21 parameters involved in that decision. Making that 22 decision sometimes takes one, two, sometimes even 23 three days to look at all of the parameters that are 24 involved and then arrive at what system is a good 25 compromise for that environment.</p>	<p style="text-align: right;">Page 16</p> <p>1 they actually have changed -- the way oil-and-gas 2 reservoirs are produced. A particular aspect of this 3 was application of some of the automated systems, remote 4 sensing, remote control, all of which was for the 5 purpose of controlling the flow stream out of an 6 oil-and-gas well. The main emphasis in those 7 applications is to control the flow of excessive water. 8 These types of completions are generally very expensive 9 and they are deployed in prolific reservoirs where 10 you're expecting flow rates in excess of several 11 thousand barrels of oil per day. The article is 12 specifically written for that particular application.</p> <p>13 <b>Q. Is there some examples of formations or an 14 explanation in here along the lines of what you just 15 told me?</b></p> <p>16 A. I provide examples of this application, for 17 example. I give -- in the paper I show an example of a 18 system like that because it was used in Saudi Arabia, as 19 an example. When you publish an article, the cases that 20 you refer in the article generally are somewhat limited 21 to what the company either has published before or gives 22 you permission to publish, to include in the article, 23 because of copyrights. So the example which is in this 24 paper is from Saudi Arabian reservoir, the full system. 25 The example of the full system is from a Saudi Arabian</p>
<p style="text-align: right;">Page 15</p> <p>1 <b>Q. I just handed you an exhibit marked 2 Exhibit 2002. Could you tell me what this is?</b></p> <p>3 A. This is an article I wrote for an encyclopedia 4 which was published by ENI&amp;I.</p> <p>5 <b>Q. Why did you write this article?</b></p> <p>6 A. They asked me to.</p> <p>7 <b>Q. Do you know why they asked you as opposed to 8 someone else?</b></p> <p>9 A. They considered me an expert in the area.</p> <p>10 <b>Q. Who is the intended audience for this article?</b></p> <p>11 A. General public.</p> <p>12 <b>Q. When you say general public, do you mean 13 laypersons or people that are actually working in the 14 oil-and-gas business?</b></p> <p>15 A. This is an encyclopedia which is published and 16 is available to anyone who wants to access it. 17 Obviously you accessed it, and you are not in the 18 oil-and-gas business the same as I am.</p> <p>19 <b>Q. Right. What was your purpose in writing this 20 article?</b></p> <p>21 A. They asked me to write it, and I wrote it.</p> <p>22 <b>Q. What is the article Exhibit 2002 about?</b></p> <p>23 A. Exhibit 2002 is about describing new 24 technologies that were being introduced into the 25 oil-and-gas business and basically could change -- and</p>	<p style="text-align: right;">Page 17</p> <p>1 reservoir, and it is shown on page 199 and it says 2 typical well completion in Shaybah Field. And Shaybah 3 Field is in Saudi Arabia. The intent of this article 4 was to discuss what led to development of this and the 5 different components and a description of those 6 components.</p> <p>7 <b>Q. When was the last time you read this article?</b></p> <p>8 A. Well, just now you gave it to me.</p> <p>9 <b>Q. I mean besides today.</b></p> <p>10 A. I read it last week also.</p> <p>11 <b>Q. There's a copyright date on this of 2007. Is 12 that about when this was written?</b></p> <p>13 A. If it says 2007, the copyright, that's when it 14 was published, yes.</p> <p>15 <b>Q. I just handed you Exhibit 1005. Can you tell 16 me what that is?</b></p> <p>17 A. That's one of my declarations.</p> <p>18 <b>Q. Can you turn to Paragraph 28 on page 11.</b></p> <p>19 A. Okay.</p> <p>20 <b>Q. You see the second sentence that begins "In 21 cased completions." Do you see that?</b></p> <p>22 A. Okay.</p> <p>23 <b>Q. And the sentence says: "In cased completions, 24 casing (or liner) is cemented -- the annulus between the 25 casing and the wall of the wellbore is filled with</b></p>

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