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BEFORE THE IDAHO DEPARTMENT OF LANDS

In the Matter of the Application of )  
Snake River Oil and Gas, LLC for )  
an Order Establishing a Spacing ) AGCY. CASE NO:  
Unit Consisting of the NE 1/4 of ) CC-2024-OGR-01-001  
Section 9 and the NW1/4 of Section ) OAH Case No.  
10, Township 8 North, Range 5 West, ) 24-320-OG-01  
Payette County, Idaho, )  
) )  
Snake River Oil and Gas, LLC, )  
Applicant. )  
\_\_\_\_\_ )

BEFORE

HEARING OFFICER: LESLIE M. HAYES

Date: June 13, 2024  
Location: Fruitland City Hall  
200 S. Whitley  
Fruitland, Idaho 83619

REPORTED BY:  
MONICA M. FUHS, CSR NO. 471  
NOTARY PUBLIC

<p>1 APPEARANCES:</p> <p>2 For the Idaho Department of Lands:</p> <p>3 OFFICE OF THE ATTORNEY GENERAL</p> <p>4 DEPUTY ATTORNEY GENERAL</p> <p>5 BY: MR. HAYDEN S. MAROTZ</p> <p>6 P.O. Box 83720</p> <p>7 Boise, Idaho 83720-0010</p> <p>8 hayden.martoz@ag.idaho.gov</p> <p>9</p> <p>10 For the Snake River Oil &amp; Gas:</p> <p>11 HARDEE PINOL &amp; KRACKE, PLLC</p> <p>12 BY: MR. MICHAEL R. CHRISTIAN</p> <p>13 1487 S. David Lane</p> <p>14 Boise, Idaho 83705</p> <p>15 mike@hpk.law</p> <p>16</p> <p>17 For the Objectors CAIA and Karen Oltman:</p> <p>18 PIOTROWSKI DURAND, PLLC</p> <p>19 (APPEARING VIA ZOOM)</p> <p>20 BY: MR. JAMES M. PIOTROWSKI</p> <p>21 P.O. Box 2864</p> <p>22 Boise, Idaho 83701</p> <p>23 james@idunionlaw.com</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 2</p>	<p>1 E X H I B I T S</p> <p>2 SNAKE RIVER OIL &amp; GAS, LLC</p> <p>3 PAGE/IDTF'D</p> <p>4 Exhibit SR-01 Application Materials 8</p> <p>5 Exhibit SR-02 Certified Mailing Receipts 8</p> <p>6</p> <p>7</p> <p>8 IDAHO DEPARTMENT OF LANDS</p> <p>9 Exhibit IDL-01 Map of Harmon Field Area 114</p> <p>10 Exhibit IDL-02 Mud Log (Depth Intervals) 114</p> <p>11 Exhibit IDL-03 Mud Log (Depth Intervals) 116</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 4</p>
<p>1 I N D E X</p> <p>2 SNAKE RIVER OIL &amp; GAS, LLC</p> <p>3 TESTIMONY OF WADE MOORE: PAGE</p> <p>4 Direct Examination by Mr. Christian 7</p> <p>5 Cross-Examination by Mr. Piotrowski 10</p> <p>6</p> <p>7 TESTIMONY OF DAVID SMITH:</p> <p>8 Direct Examination by Mr. Christian 17</p> <p>9 Cross-Examination by Mr. Piotrowski 79</p> <p>10 Cross-Examination by Mr. Marotz 97</p> <p>11 Redirect Examination by Mr. Christian 103</p> <p>12 Recross-Examination by Mr. Piotrowski 104</p> <p>13</p> <p>14</p> <p>15 IDAHO DEPARTMENT OF LANDS</p> <p>16 TESTIMONY OF JAMES THUM:</p> <p>17 Direct Examination by Mr. Marotz 108</p> <p>18 Cross-Examination by Mr. Piotrowski 120</p> <p>19 Cross-Examination by Mr. Christian 141</p> <p>20 Redirect Examination by Mr. Marotz 151</p> <p>21 Recross-Examination by Mr. Piotrowski 152</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 3</p>	<p>1 P R O C E E D I N G S</p> <p>2</p> <p>3 THE HEARING OFFICER: This is the matter</p> <p>4 before the Idaho Department of Lands in the Matter of</p> <p>5 the Application of Snake River Oil and Gas, LLC, for an</p> <p>6 Order Establishing a Spacing Unit Consisting of the</p> <p>7 NE1/4 of Section 9 and the NW1/4 of Section 10, Township</p> <p>8 8 North, Range 5 West, Payette County, Idaho. Snake</p> <p>9 River Oil and Gas, LLC is the applicant. This is Docket</p> <p>10 No. CC-2024-0GR-01-001. Office of Administrative</p> <p>11 Hearings Case No. 24-320-0G-01.</p> <p>12 I'm the assigned Hearing Officer, Leslie</p> <p>13 Hayes. We are here for the evidentiary hearing starting</p> <p>14 at 1:00 p.m. in the Fruitland City Hall. The public</p> <p>15 comment portion of these proceedings will occur today at</p> <p>16 the same place at 5:00 p.m.</p> <p>17 The parties previously stipulated to admission</p> <p>18 of each other's exhibits. And we deemed openings</p> <p>19 unnecessary. And the order of presentation of evidence</p> <p>20 will be Mr. Christian first presenting on behalf of the</p> <p>21 Applicant. Followed by Objectors. Followed by the Oil</p> <p>22 and Gas Commission's attorney, Mr. Marotz. Also present</p> <p>23 at these proceedings, in addition to Mr. Christian, is</p> <p>24 externs for the Office of Attorney General.</p> <p>25 Mr. Marotz, would you like to introduce your</p> <p style="text-align: right;">Page 5</p>

1 extern.  
 2 MR. MAROTZ: Yes. We have Jennifer  
 3 Shalforen, an extern from the Attorney General's Office.  
 4 James Thum, the oil and gas program manager for the  
 5 Idaho Department of Lands. And I'm representing the  
 6 Idaho Department of Lands, as well.  
 7 THE HEARING OFFICER: For the Office of  
 8 Administrative Hearings we also have present Scott  
 9 Zanzig, one of our administrative law judges. And  
 10 Xavier Suarez, our legal extern for the summer. Neither  
 11 which are impeding within decisional independence. I'm  
 12 the hearing officer and sole decider in this matter.  
 13 Mr. Piotrowski, would like to introduce  
 14 yourself at this time.  
 15 MR. PIOTROWSKI: Sure. James Piotrowski with  
 16 Piotrowski Durand, PLLC, on behalf of Karen Oltman and  
 17 CAIA.  
 18 THE HEARING OFFICER: And then, Mr. Christian,  
 19 would you like to introduce your witnesses that are  
 20 present here today.  
 21 MR. CHRISTIAN: Thank you, Ms. Hearing  
 22 Officer. I have via zoom today Wade Moore, who is a  
 23 land man working for Snake River. And Dave Smith, who  
 24 is a geologist working for Snake River.  
 25 THE HEARING OFFICER: And also present is

1 Richard Brown.  
 2 MR. CHRISTIAN: Oh, yes. And Richard Brown is  
 3 the manager of Snake River Oil and Gas, the Applicant.  
 4 I don't believe he will be testifying, but he is on zoom  
 5 watching the proceedings.  
 6 THE HEARING OFFICER: Okay. With that the  
 7 floor is yours, Mr. Christian.  
 8 MR. CHRISTIAN: The applicant would call Wade  
 9 Moore.  
 10 THE HEARING OFFICER: I will ask the court  
 11 reporter to swear the witness.  
 12  
 13 WADE MOORE,  
 14 first duly sworn to tell the truth relating to said  
 15 cause, testified REMOTELY as follows:  
 16  
 17 DIRECT EXAMINATION  
 18 QUESTIONS BY MR. CHRISTIAN:  
 19 Q. Mr. Moore, are you land man working for Snake  
 20 River?  
 21 A. Yes, sir.  
 22 Q. And how long have you worked for Snake River  
 23 in Idaho?  
 24 A. Next month -- well, for Snake River in  
 25 Idaho -- I have been in Idaho working this area for

1 eleven years. The last four years directly with Snake  
 2 River.  
 3 Q. And you worked for a predecessor operator  
 4 before that?  
 5 A. That's correct.  
 6 Q. Are you -- first of all, did you provide a  
 7 declaration as part of Snake River's application in this  
 8 case? I'm sorry. Let me back up.  
 9 Are you familiar with Snake River's Exhibit  
 10 SR-01, which is the application materials?  
 11 A. Yes, sir.  
 12 Q. And SR-02, which is the certified mailing  
 13 receipts?  
 14 A. Yes, sir.  
 15 Q. Okay. Do the certified mailing receipts in  
 16 SR-02 reflect the mailing of application materials to  
 17 the uncommitted owners in the unit and uncommitted  
 18 adjacent owners?  
 19 A. Yes, they do.  
 20 Q. And were you the person that accomplished  
 21 those mailings?  
 22 A. Yes, I did. On May the 6th.  
 23 Q. And did you also mail the application  
 24 materials and a notice to Payette County?  
 25 A. I did.

1 Q. Can you tell me whether there were -- are  
 2 there any working interest owners in the unit or  
 3 adjacent to the unit other than Snake River?  
 4 A. No, there are no other working interest  
 5 owners.  
 6 Q. Were there any mineral owners you cannot  
 7 locate?  
 8 A. Nope. Everyone was locatable.  
 9 Q. And the uncommitted owners in the area are  
 10 identified on Exhibit SR-01 by number; are they?  
 11 A. Yes.  
 12 Q. And they are indexed to a list, which is on --  
 13 that are on pages six and seven to Exhibit SR-01?  
 14 A. That's correct; yes.  
 15 Q. And so the uncommitted owners are identified  
 16 on the list?  
 17 A. Yes, sir.  
 18 MR. CHRISTIAN: I don't have any further  
 19 questions.  
 20 THE HEARING OFFICER: Mr. Piotrowski, do you  
 21 have any questions for this witness?  
 22 MR. PIOTROWSKI: Yes, I do.  
 23 ///  
 24 ///  
 25 ///

1 CROSS-EXAMINATION  
2 QUESTIONS BY MR. PIOTROWSKI:  
3 Q. Mr. Moore, how did you develop that list? The  
4 list of people you mailed to?  
5 A. Title research.  
6 Q. And you said your list includes all of the  
7 uncommitted owners in the unit. Which unit are you  
8 referring to?  
9 A. The North Harmon unit.  
10 Q. And explain to us why you call it the North  
11 Harmon unit?  
12 A. That is the name the company has added -- put  
13 those two places together. I'm not the one who names  
14 the units.  
15 Q. So when you refer to the Harmon unit -- North  
16 Harmon that is what Snake River Oil and Gas is calling  
17 this area?  
18 A. That's correct.  
19 Q. And how did you go about determining what  
20 would be the outline, the size, of the North Harmon  
21 unit?  
22 A. Again, that is not my area of expertise.  
23 Q. Okay. So you said you looked up the mineral  
24 interest owners in that unit. Did you look those up  
25 yourself?

1 A. Not myself in entirety; no. We had a team  
2 working on it.  
3 Q. But you were involved in that process?  
4 A. Yes.  
5 Q. Okay. And why did you choose to look up  
6 mineral owners adjacent to the North Harmon unit?  
7 A. Those we had of record. What we did with that  
8 is we had two adjacent. And we had -- we had sent  
9 previous leases to these people as well. So this was  
10 nothing new. We had record of these people already.  
11 Q. And did you make the decision that you were  
12 going to send the notice to those who owned property  
13 adjacent to the unit? Or was that somebody else's  
14 decision?  
15 A. It wasn't my decision directly; no.  
16 Q. And, Mr. Moore, do you have any specific  
17 training in interpreting the statutes of the State of  
18 Idaho?  
19 A. I can read as far as --  
20 Q. Okay. Are you familiar with the rules of  
21 statutory instruction that lawyers and hearing officers  
22 typically use?  
23 A. I'm not tracking where you are going.  
24 Q. I'm trying to establish the level of your  
25 familiarity with the relevant law on this is all. I'm

1 just trying to figure out how much you know about the  
2 statute before I ask additional questions.  
3 A. Regarding what?  
4 Q. Mr. Moore, what is the difference between an  
5 uncommitted mineral interest owner and an uncommitted  
6 owner in the unit? If I put those two phrases in front  
7 of you would you understand how they were different?  
8 A. I would title the uncommitted interest owners  
9 to the unit. And the other title speaks for itself.  
10 They are outside of the unit.  
11 Q. And so if somebody were to say to you  
12 uncommitted mineral interest owner, just those words,  
13 that could mean an owner either inside the unit or  
14 outside of the unit or anywhere at all; right?  
15 A. It could.  
16 MR. CHRISTIAN: I'm going to object at this  
17 point. Mr. Piotrowski is asking a land man to offer I  
18 think legal opinion about the meaning of the statute.  
19 Which is certainly a subject for Mr. Piotrowski to argue  
20 to you, madam hearing officer.  
21 THE HEARING OFFICER: Mr. Piotrowski, do you  
22 have a response to that objection?  
23 MR. PIOTROWSKI: Mr. Moore just told us he was  
24 familiar with the relevant law. So I was just following  
25 up with that assuming that he was accurate with that

1 answer. And so, yes, I'm asking him to start telling me  
2 what he understands in the statute.  
3 THE HEARING OFFICER: I can have Mr. Moore  
4 clarify. But I think what he testified to was that he  
5 wasn't entirely sure what you were asking and to ask  
6 your next question. Mr. Moore.  
7 THE WITNESS: Yeah. I have no idea what we  
8 are trying to accomplish here.  
9 THE HEARING OFFICER: So I'm going to sustain  
10 the objection to the extent that you are asking him to  
11 interpret any legal arguments that may govern these  
12 proceedings, Mr. Piotrowski.  
13 MR. PIOTROWSKI: Okay.  
14 THE HEARING OFFICER: But to the extent you  
15 want to question him about how he determined who was an  
16 uncommitted mineral interest and an uncommitted mineral  
17 interest owner for purposes of the mailings you are  
18 welcome to ask those questions.  
19 Q. (BY MR. PIOTROWSKI) Mr. Moore, were you  
20 instructed to send the notices to the adjacent owners?  
21 Or was that a decision that you made in your job as land  
22 man?  
23 A. It was not a decision I made.  
24 Q. Okay. Were you involved at all in the  
25 decision to mail to adjacent landowners? Or did you

1 simply execute that decision?  
2 MR. CHRISTIAN: Objection. Asked and  
3 answered.  
4 MR. PIOTROWSKI: I'm trying to make sure we  
5 are clear.  
6 THE HEARING OFFICER: I'll let him answer that  
7 question. Go ahead, Mr. Moore.  
8 THE WITNESS: I did not make the decision. I  
9 mean, it is the same question. Were they mailed? Yes.  
10 Did I make a decision to mail them? No.  
11 Q. (BY MR. PIOTROWSKI) And in the case where you  
12 sought to identify the holder of a mineral interest you  
13 were able to do so; right?  
14 A. Yes.  
15 Q. And that includes the adjacent owners that you  
16 had to locate? You had no difficulty identifying them  
17 so you could provide them notice; is that fair?  
18 A. That's fair.  
19 Q. And presumably -- you've worked now in Payette  
20 County for a number of years it sounds like. Is that  
21 correct?  
22 A. That's correct.  
23 Q. And It sounds like -- would you say that from  
24 the quality of the Payette County land records you can  
25 identify the mineral interest owners in the surrounding

Page 14

1 land sections if you wished to?  
2 A. If we wish to; sure.  
3 Q. Have you worked in states other than Idaho as  
4 a land man?  
5 A. Yes.  
6 Q. And would you say that in Payette County,  
7 Idaho the accessible land records are good, bad,  
8 average? Do you have an opinion about that?  
9 A. Well, I mean, there is no standard. It  
10 varies. So are they user friendly. Some. I don't  
11 know. It is hard a question to answer. My experience  
12 is there is from zero information online. To Payette  
13 County has information online. It is all over the  
14 board. Each county is different. I mean, I don't know  
15 how to answer that.  
16 Q. Fair enough. Other than the categories you  
17 have already testified that you said you researched and  
18 sent the notice to uncommitted mineral interest owners  
19 in the unit, uncommitted mineral interest owners  
20 adjacent to the unit, and you looked for but determined  
21 there were no working interest owners.  
22 Did you send the notice to any other  
23 categories of people or entities?  
24 A. That was it. Well, Payette County.  
25 Q. Yeah. Besides Payette County. Now, Payette

Page 15

1 County is also a mineral interest owner in this unit;  
2 aren't they?  
3 A. Payette County is not --  
4 Q. Is the City of Fruitland?  
5 A. The City of Fruitland is.  
6 Q. Okay. So you sent it to the City of Fruitland  
7 as an owner. And to Payette County because the statute  
8 requires that. Is that right?  
9 A. That's correct.  
10 MR. PIOTROWSKI: Thank you. That is all the  
11 questions I have.  
12 THE HEARING OFFICER: Thank you, Mr.  
13 Piotrowski. Mr. Marotz, any questions for this witness?  
14 MR. MAROTZ: Not at this time.  
15 THE HEARING OFFICER: Any redirect?  
16 MR. CHRISTIAN: No. Thank you.  
17 THE HEARING OFFICER: May this witness be  
18 excused?  
19 MR. CHRISTIAN: Yes, ma'am.  
20 THE HEARING OFFICER: Mr. Moore, you are  
21 welcome to stay on and listen to these proceedings if  
22 you desire. Otherwise, you are free to leave if you  
23 have other things you would like to do today.  
24 THE WITNESS: All right. Thank you.  
25 THE HEARING OFFICER: Mr. Christian, your next

Page 16

1 witness.  
2 MR. CHRISTIAN: We call David Smith.  
3  
4 DAVID SMITH,  
5 first duly sworn to tell the truth relating to said  
6 cause, testified REMOTELY as follows:  
7  
8 EXAMINATION  
9 QUESTIONS BY MR. CHRISTIAN:  
10 Q. Dave, can you tell us where you're testifying  
11 from?  
12 A. I'm testifying from Houston, Texas.  
13 Q. And what is your occupation?  
14 A. I'm a geologist/geophysicist.  
15 Q. And can you briefly describe your educational  
16 background as it relates to your profession?  
17 A. Sure. I have a bachelor of science in geology  
18 from Virginia Tech in 1983. And I have taken a lot of  
19 additional classes in Houston in geophysics. And  
20 industry courses offered in various geologic and  
21 geophysical topics through the years. Continuing  
22 education and such.  
23 Q. Have you worked in the oil and gas industry as  
24 a geologist and a geophysicist for some time?  
25 A. Yes. Over 40 years. Since the summer of

Page 17

1 1983.  
2 Q. And can you briefly describe your professional  
3 experience?  
4 A. I started actually working in college in  
5 summers --  
6 THE COURT REPORTER: He is going to have to  
7 speak up. I am having a hard time hearing.  
8 THE WITNESS: I will try to turn it up on my  
9 end.  
10 THE HEARING OFFICER: Let's try that,  
11 Mr. Smith. If we need to turn the speakers off here in  
12 the room and do it from the laptop we can do that as  
13 well.  
14 MR. CHRISTIAN: I'll give you the same  
15 instruction I have received many times over the years.  
16 Which is slow down and speak slowly. It is much easier  
17 for the court reporter. I have been yelled at many  
18 times in my career for going too fast.  
19 THE WITNESS: Okay. I will.  
20 Q. (BY MR. CHRISTIAN) All right. I think where  
21 we left off I was asking you to summarize your  
22 professional experience and you started by saying you  
23 did some work while you were still in college.  
24 A. Yes. In the summers I worked on drilling  
25 rigs. And I just mentioned that because it gave me

Page 18

1 real, in my view, valuable insight as to how operations  
2 are conducted in the field. And how well logs are  
3 acquired. And the quality of the data. And so forth.  
4 My first professional job as a geologist was starting in  
5 the summer of '83. And I have been employed in the oil  
6 and gas industry since then. And positions of  
7 increasing responsibility. I have worked at probably  
8 most of the productive oil and gas basins in the United  
9 States. And a lot of basins internationally. My  
10 experience is exploration and development. And also  
11 acquisition and evaluation of producing oil and gas  
12 properties. Specific to the Rockies. I have worked in  
13 Colorado and Utah. Idaho of course. And Oregon.  
14 Starting in the mid to late '90s in this field of area  
15 in Oregon. And in Idaho in 2012.  
16 Q. And do you currently provide geology and  
17 geophysical consulting services to Snake River in Idaho?  
18 A. I do. I'm also a working interest partner in  
19 the project.  
20 Q. And as part of that work are you familiar with  
21 the proposed unit area involved in this proceeding,  
22 which is the NE 1/4 of Section 9 and the NW 1/4 of  
23 Section 10?  
24 A. Yes, I am.  
25 Q. And it sits just to the north of the unit for

Page 19

1 the existing Fallon 1-10 well; is that right?  
2 A. Yes, it does.  
3 Q. And are you familiar with the application  
4 materials in this matter?  
5 A. Yes, I am.  
6 Q. And, in fact, you provided a declaration in  
7 support of the application that is part of the  
8 application materials?  
9 A. Yes. I wrote a declaration based on my  
10 opinions in this area. And also constructed the  
11 exhibits.  
12 Q. And can you -- and we'll get into more depth.  
13 But can you briefly state the conclusions that are set  
14 forth in your declaration?  
15 A. I think the most salient conclusion is that we  
16 feel that we have very strong evidence based on our  
17 experience in the basin -- my experience in the basin --  
18 our 3D seismic data. And the evidence from the local  
19 wells that we have drilled. And the geophysical logs  
20 that we have collected in those wells. And the  
21 production of oil, gas, and condensate in the area and  
22 very locally. That there is a very high likelihood of a  
23 gas pool comprised of Sand A and B. With a general  
24 outline as indicated on the exhibits. And we can get  
25 into specifics I guess.

Page 20

1 Q. Is it your opinion that the unit area that is  
2 proposed reasonably describes an area that is  
3 economically and efficiently drainable by one well into  
4 those sands?  
5 A. Yes.  
6 Q. I want to back up and talk more generally  
7 about the information that you developed to reach your  
8 opinions and how. Can you briefly describe generally  
9 how you acquire information and knowledge about the  
10 geography in the area? I'm sorry, geology in the area?  
11 A. Okay. Well, I was the vice president and  
12 geoscientist with the predecessor company that started  
13 up in here in 2012. And we were partners with that  
14 group. And we became aware of activity in Idaho. And  
15 we became interested in participating with a prior  
16 company, Bridge. And pursued a joint venture with them.  
17 They ultimately became insolvent and we acquired their  
18 properties from them, their leases, and some wells they  
19 had drilled. We, as a team, a pretty large geoscience  
20 team at the time, with a couple of very learned local  
21 gentlemen that helped us to get educated in the basin.  
22 And also with a substantial geoscience team here in  
23 Houston. We tried to become as educated as we could on  
24 the basin. Including lots of field trips. Review of  
25 all of the existing wells that had previously been

Page 21

1 drilled. And tried to understand the complexities of  
2 the basin and how we might ultimately drill a successful  
3 oil and gas well here in this area.  
4 It was my opinion based on the work I have  
5 done in Oregon that we needed to shoot what is called 3D  
6 seismic data. Which is an expensive proposition. But  
7 it allows you to get a very good image of the subsurface  
8 of the earth. And with our partners elected to do so.  
9 And in 2013 we acquired our first 3D seismic survey.  
10 And in subsequent years, 2014 and 2015, we acquired more  
11 of this 3D seismic in the area. And if I might use  
12 analogy. If you could imagine an extremely large chess  
13 board placed above the surface of the earth. At each  
14 one of the corners of the squares is a data point,  
15 common depth point, and we -- with a 3D seismic method  
16 you lay out a very carefully, precisely surveyed in  
17 series of areas that you input energy into the earth  
18 called a source point. And areas where you collect the  
19 reflected energy called a receiver point. And we will  
20 have what is called a spread. The recording equipment.  
21 Which literally has 10,000 to 12,000 microphones. It is  
22 a low frequency microphone call a geophone that will  
23 record those reflections from the subsurface of the  
24 earth. And we will very methodically go through and  
25 put energy using a large sort of a -- it looks like a

Page 22

1 road grader with a vibrator on the back of it. And it  
2 sets the pad down and it puts energy at a certain  
3 frequency called a sweep into the earth. And it is  
4 recorded by all of those different receivers or  
5 geophones around. And this takes months to do this. And  
6 it is expensive. But what it does is it gives you a  
7 very good image where you have sufficient coverage of  
8 what is going on in the subsurface. The other thing it  
9 does is it eliminates a lot of the drilling of  
10 unnecessary wells or dry holes. Or unsuccessful wells.  
11 And the 3D seismic process itself is very low impact to  
12 the ground. And of course we maintain spacings around  
13 minimal distances away from houses and utilities and  
14 water wells and things like that.  
15 Q. Were you responsible for designing the seismic  
16 project that covers the area that includes the proposed  
17 unit in this proceeding?  
18 A. I was. I designed it, bid it out, supervised  
19 it, and oversaw the processing. And did the  
20 interpretation. And was the primary interpreter of it.  
21 Q. Okay. Do you also derive information from  
22 other wells that either Snake River has drilled or  
23 someone else has drilled in the area?  
24 A. Absolutely. We look at all of the available  
25 information. When we began this project of course we

Page 23

1 had not drilled any wells. And what wells had been  
2 drilled were fairly widely scattered. But those were  
3 the wells that we used to help inform our thinking and  
4 drive our interpretations. Since we --  
5 Q. Just briefly can you summarize how you get  
6 information from the drilling of other wells and how  
7 that information is presented?  
8 A. Surely. The old wells might just have a  
9 lithology log where as they were drilling the drillers  
10 would record on a per foot basis the types of rocks that  
11 they were drilling through, i.e., sand at 900 feet to  
12 920 feet. Something like that. Or it shows oil and gas  
13 that they got. Starting in the -- really more in this  
14 basin the '50s is when we started to get more modern  
15 logs. And then there was another scattered population  
16 of wells in the '70s. And then immediately preceding us  
17 was an operator called Bridge that drilled eleven wells.  
18 None of which were successful. But one of which had a  
19 good show of oil and gas. And we ultimately hooked it  
20 up. It was noncommercial. But it gave us confidence  
21 that there was a chance to find commercial oil and gas  
22 in the basin. And the more modern wells have -- after  
23 the well is drilled we will lower geophysical tools into  
24 the well and measure various physical properties of the  
25 rock. There is an induction log which measures the

Page 24

1 ability of electrical current to go through the rock.  
2 There is gamma ray monitor that measures the amount of  
3 gamma ray radiation that comes out which allows you to  
4 make lithological or rock type descriptions. There is a  
5 sonic log which is -- it looks like a little torpedo and  
6 it puts sound into the formation on one end and records  
7 it on the other end and measures the speed as the sound  
8 goes through the rock. There is a density log and a  
9 neutron log that allows you to estimate the porosity of  
10 rock. We put all of these logs together and you can  
11 come up with an interpretation of what is in the  
12 subsurface. Is it a clay stone. Is it a sand. Is it a  
13 basalt. What is it. And so we will use the information  
14 gained from prior operators going back a hundred years.  
15 Some of the wells in this basin are 1902, 1903. And  
16 we'll incorporate all of that information into our  
17 thinking as to what is going on in the geologic history.  
18 And where we might find a sand or a potential reservoir  
19 that has oil and gas in it.  
20 Q. In this case you are primarily targeting what  
21 we called Sands A and B; right?  
22 A. Correct.  
23 Q. And we'll get into this in some more detail.  
24 But the nearby Fallon 1-10 well, for example, did it  
25 encounter those same sands?

Page 25

1 A. Yes, it did. And that was the second well we  
 2 drilled in this area. I think we drilled eight or nine  
 3 wells to the east of here when we drilled the Fallon  
 4 1-10. Immediately prior to that we drilled the Barlow  
 5 1-14 and -- on what we call our calibrated 3D seismic  
 6 survey. And that Fallon 1-10 well was a dual objective  
 7 targeting Sand A and Sand B. And when we drilled the  
 8 well we found at Sand A approximately 12 feet -- which  
 9 is what's called behind pipe right now. It is not being  
 10 produced. It will be produced later when we complete  
 11 the deeper zone. And it is producing oil and gas right  
 12 now from Sand B. And it has produced about 1.2 billion  
 13 cubic feet of natural gas. And I think around 20,000  
 14 barrels of condensate and natural gas liquids. I don't  
 15 recall that number off the top of my head.

16 But to answer that question, using the  
 17 techniques that we do, and the 3D seismic, prior to  
 18 drilling we bought leases, formed a unit, drilled a  
 19 well, all in anticipation of making a discovery in Sands  
 20 A and B, which we subsequently drilled a well and did do  
 21 based on the same techniques that we are using to  
 22 presume to have a pool that is worth developing in this  
 23 proposed new unit.

24 Q. And are there other sands below Sands A and B  
 25 that you wish to explore in a well in the proposed unit?

Page 26

1 A. Yes. We carried, as I said in this area,  
 2 which we call the Harmon area, we carried the Fallon  
 3 1-10 well about 2,000 feet or so deeper than the  
 4 objective A and B specifically. Because this is a --  
 5 what we would call a frontier, a lightly explored basin,  
 6 to see other sands below it. And we got some gas  
 7 shadows in Sand B in the Fallon 1-10 well. And we were  
 8 able to use that information and drill a successful well  
 9 later to the east of this area called the Fallon 1-11.  
 10 Which is productive in those sands. And another reason  
 11 to drill the Fallon 1-10 well deeper was to encounter  
 12 what we predicted would be a basalt sill around 5,000  
 13 feet. I don't recall the exact depth. Which generated  
 14 a very strong seismic response. We wanted to get a  
 15 physical subsurface time/depth pair at that point, which  
 16 helps us with forecasting and predicting our depth of  
 17 the various formations in the area. So in this case  
 18 with the proposed well, and the proposed new unit, we  
 19 would intend to carry the well deeper below Sands A and  
 20 B and sample a deeper section. Primarily Sands D and  
 21 the ones below. We haven't -- assuming that we -- or  
 22 presuming that we can get the unit successfully formed,  
 23 and the drilling permit approved, we would intend to  
 24 drill deeper.

25 Q. Okay. So as a basic matter, with a

Page 27

1 combination of seismic data, and well log information  
 2 from a nearby well, can you correlate from formations  
 3 found in the nearby well to what you would expect to  
 4 find in the proposed unit area?

5 A. Yes.

6 Q. Okay. Can you share your screen with -- I  
 7 want to go through your exhibits, the exhibits to your  
 8 declaration, briefly at first so you can describe for us  
 9 what they are. And then we'll go back through them in  
 10 some detail.

11 A. All right.

12 Q. Rather than go A, B, C, can we start with  
 13 Exhibit C to your declaration, which is, for the record,  
 14 I think it is Exhibit SR-01 at page 17.

15 A. Can you all see that?

16 Q. Yes. Can you just briefly summarize what  
 17 Exhibit C to your declaration illustrates?

18 A. Okay. There is a lot of information on here.  
 19 But I will just start with a few basic things and then  
 20 maybe we can come back to it. Is that right?

21 Q. Yes.

22 A. Okay. So I think the first thing to point  
 23 out. This maroon rectangle that I am outlining with my  
 24 cursor is our proposed 320 acre unit. The proposed new  
 25 unit. And you can see on the exhibit -- and this is

Page 28

1 page 17. Exhibit C. It is annotated in maroon  
 2 "Proposed New Unit Boundary." And there is a lot of  
 3 information here which I'll get to as we develop this.  
 4 But a couple of salient points that I want to cover real  
 5 quickly. There are a couple of extracted what we call  
 6 arbitrary lines. One thing I will point out just for --  
 7 before we get into what all of these colors mean, just  
 8 to give you an idea of the scale, every one of these  
 9 little boxes right here is a bin. And they are 82-1/2  
 10 feet on the square. So if you see that little bin there  
 11 are all of these little stair steps. So that gives you  
 12 some idea of scale. And so we have information from all  
 13 of these thousands of points. And it is literally  
 14 hundreds and thousands of points in the entire survey.  
 15 Just for physical scale this unit is a mile -- roughly a  
 16 mile east/west and half a mile north/south. So that is  
 17 the proposed new unit. The existing Fallon 1-10 is  
 18 denoted with the blue box and this blue dash. This is  
 19 the existing Fallon 1-10 unit boundary. This little  
 20 black square right here is the surface location where  
 21 the Fallon 1-10 well was drilled. This black dash line  
 22 going right here is the path -- the directional path of  
 23 the wellbore in the subsurface. So typically what we do  
 24 when we are drilling a directional well is we'll drill  
 25 down about 1,000 feet or so and start the kick.

Page 29



<p>1 Meaning, you are starting the direction to drill a well                  2 in whatever direction we happen to be going. And then                  3 at around 1,100 or 1,200 feet we'll set what is called                  4 surface casing. The original casing would be the                  5 conductor set to about 200 feet. And then we'll drill                  6 the direction of the well. Where you see this little                  7 value, the 1296, minus 1296, that is the actual                  8 interceptive point where the Fallon 1-10 well encounters                  9 Sand B. It is called a dam. And then this additional                  10 part right here is the extended part of the well down to                  11 a total depth of -- it is covered up. But I think it is                  12 5,300 feet or around there. So that is where the Fallon                  13 1-10 well is.</p> <p>14 Our proposed bottom of the hole location for                  15 the new well in the new unit, presuming that it is                  16 approved, the proposed bottom of the hole location would                  17 be in this area and the area where we encounter Sands A                  18 and B. The surface location would actually be just to                  19 the north of the Fallon 1-10 surface location in the                  20 same pasture on the west side of 95. And there would                  21 also be a slight directional deviation to the west.</p> <p>22 So we'll get back to these colors in a minute.                  23 The red lines are some of the seismic data that I have                  24 selected to demonstrate the area of the presumed gas                  25 pool. There is a north/south line which is delineated</p> <p style="text-align: right;">Page 30</p>	<p>1 you'll see it also will show this little green fault to                  2 the south.</p> <p>3 THE HEARING OFFICER: Mr. Christian, for the                  4 record, can you have him clarify that he was following                  5 the north/south line on Exhibit C when he was referring                  6 to "this line."</p> <p>7 MR. CHRISTIAN: Yes.</p> <p>8 Q. (BY MR. CHRISTIAN) Dave, when you were                  9 discussing the line that extends -- the red line that                  10 extends through both the proposed new well location and                  11 the existing Fallon 1-10 well, that is the north/south                  12 line?</p> <p>13 A. That is the north/south line that is denoted                  14 as Exhibit A.</p> <p>15 Q. And on Exhibit C that line has been labeled                  16 north at the top end of it and south at the bottom end                  17 of it; is that right?</p> <p>18 A. It does. And also at Mr. Thum's suggestion                  19 from improving the original exhibits after he asked for                  20 some additional information, and for additional                  21 labeling, I don't think I had made them sufficiently                  22 clear, he asked that I label them on the exhibit itself.                  23 So you'll see up here on Exhibit C I show that 1 is the                  24 known Sand B gas pool down to the south. 2 is the                  25 presumed gas pool that is untested. And then 3 is the</p> <p style="text-align: right;">Page 32</p>
<p>1 by this line. And there is a west/northwest line,                  2 east/northeast, that runs between these two faults.                  3 Which would be another line.</p> <p>4 Q. And so those arbitrary lines those correlate                  5 with your other two exhibits?</p> <p>6 A. Yes. Exhibit A and B are of this same                  7 arbitrary line, the north/south line, running through                  8 the proposed bottom hole location of the new proposed                  9 well. And also the Fallon 1-10. And A is the entire                  10 line that you see on this map. And B is just a zoomed                  11 in version where you can see a little more detail. And                  12 then one of the following exhibits, I guess D here, D is                  13 this west/east northeast one.</p> <p>14 Q. So each of those -- and we can, for example,                  15 look at one of the other exhibits. Take Exhibit A for                  16 example. So what that shows is essentially a vertical                  17 slice of the seismic data along that line?</p> <p>18 A. That is correct.</p> <p>19 Q. Okay.</p> <p>20 A. Again, going back just to refresh ourselves.                  21 We are going to be looking at this line here. And the                  22 area that you see on the map I selected this outline or                  23 cropped this map such that you see exactly the extent                  24 along this red line, the north to the south, running                  25 through the presumed well and the existing well. And</p> <p style="text-align: right;">Page 31</p>	<p>1 location of the 3D seismic lines and the two previous                  2 lines. And following that number 3 I have a 3 for                  3 following the line. And a 3 for the north/south line.                  4 So that is -- Exhibit A is along that line.</p> <p>5 Q. Okay. And then Exhibit D is going to be along                  6 the -- is going to follow the path of the east/west                  7 line; right?</p> <p>8 A. Exactly. The west/northwest. The                  9 east/southeast. Exhibit D follows along this path.</p> <p>10 Q. And that second line is denoted WNW at the                  11 left end of it and ENE at the lower right end of it.                  12 Is that right?</p> <p>13 A. Yes. That's correct. That stands for                  14 west/northwest. That is the west/northwest end of the                  15 line. And it goes traversing to the east/northeast. It                  16 should east/southeast. That is a typo in there.</p> <p>17 Q. I'm just now realizing that.</p> <p>18 A. I got it correct on Exhibit D here. I was                  19 probably not paying attention there.</p> <p>20 Q. Okay. Before we move onto what I'll call the                  21 seismic slice exhibits for now. Can you just briefly                  22 explain what the different colors show on Exhibit C to                  23 your declaration?</p> <p>24 A. I can. I think it might follow better and be                  25 more understandable if you go to the seismic at this</p> <p style="text-align: right;">Page 33</p>

1 point.  
2 Q. Okay. That's fine. Let's start with Exhibit  
3 A.  
4 THE HEARING OFFICER: Mr. Christian, can I ask  
5 a question to make sure I understand.  
6 MR. CHRISTIAN: Certainly.  
7 THE HEARING OFFICER: So the 1, 2, 3 on  
8 Exhibit A, B, C, and D, they all correlate to the same  
9 thing? The 1's are all 1's. The 2 are all 2's. And  
10 the 3's are all 3's.  
11 MR. CHRISTIAN: Correct.  
12 THE HEARING OFFICER: Okay. So regardless  
13 which map you are going to look at 3 is going to denote  
14 3 on all three, just from different angles, whether  
15 looking down or looking from the side?  
16 MR. CHRISTIAN: I say that. But --  
17 THE WITNESS: No, not exactly.  
18 THE HEARING OFFICER: Okay.  
19 Q. (BY MR. CHRISTIAN) Each one of the exhibits  
20 has a legend at the top which --  
21 A. Exactly.  
22 Q. -- tells you what 1, 2 or 3 means. On Exhibit  
23 A for example, you know, 1 denotes the Fallon 1-10 well.  
24 And, Dave, you can describe it for me.  
25 A. Which one are you on?

Page 34

1 Q. I'm looking at Exhibit A. So I'm trying to  
2 differentiate between what we were doing with Exhibit C.  
3 THE HEARING OFFICER: I think that you  
4 clarified. Follow the legend on each individual  
5 exhibit. Not assume that 1, 2, 3, means the same thing  
6 on each exhibit.  
7 MR. CHRISTIAN: Yes. I apologize for creating  
8 that confusion.  
9 THE WITNESS: With that being said, if I may,  
10 if I can continue the labeling conventions here. So we  
11 are on Exhibit A now. And it is a north/south 3D  
12 seismic line. And it shows number 1, the existing  
13 Fallon 1-10 well on the right. And this is a known  
14 Sand B gas pool. And Sand A gas saturated sand. On  
15 number 2 right here on the left it is the presumed Sand  
16 B gas pool in the proposed new unit. I should have said  
17 A and B. That is A. It should have been denoted Sand A  
18 and Sand B. And then 3 proposed new unit boundaries  
19 (maroon dashed lines). So these are -- that is on the  
20 south side. This would be the common boundary with the  
21 proposed new unit area here on the left. And then this  
22 known reservoir area of Sand A and Sand B here on the  
23 right. And 3, as designated by the legend up here,  
24 proposed new unit boundaries (maroon dashed lines), this  
25 is where this arbitrary line crosses the unit boundary

Page 35

1 on the north. And this is where it crosses the unit  
2 boundary on the south.  
3 And just for clarity I'm going to scroll down  
4 to Exhibit C. So this is that same north/south Exhibit  
5 A line that we were looking at. And that point  
6 indicated on Exhibit A is where it would cross the  
7 presumed -- or proposed north boundary and the proposed  
8 south boundary. And, again, this is about half mile --  
9 it is half mile north/south. The traversal line would  
10 be a little longer since it cuts it obliquely. And then  
11 east/west this is about a mile. And, again, it goes  
12 through the proposed new well and the Fallon 1-10 well.  
13 Q. Okay.  
14 A. So do you want me to talk about what this  
15 shows us? Or do you just want to go by question and  
16 answer?  
17 Q. No. First, you have given some information  
18 about what Exhibit A shows. So I want you to describe  
19 how you interpret what the -- for lack of a better term,  
20 the squiggly lines, which is the seismic -- the  
21 illustration of the seismic data, your interpretation of  
22 what those show?  
23 A. Okay. All right. So the first thing -- this  
24 is the north. This is the south end. And, again, this  
25 part of the seismic line runs through the proposed unit.

Page 36

1 And then this is the existing unit in production. So  
2 what we are looking at. Let's go over to the right-hand  
3 side. And you see this legend. This dimension is  
4 timed. And that is how we record the information as it  
5 comes back. After we put a pulsive energy into the  
6 earth it travels down. And it goes down. And it is  
7 basically unmolested until it senses a boundary of some  
8 type. Something that causes it to reflect some energy  
9 back to the surface where we can then record it. So  
10 some energy is reflected back to the surface. Some  
11 energy is refracted and continues down below. And then  
12 is available to be reflected off of deeper layers. And  
13 so we record that as the time that it takes for these --  
14 this is called a reflection here. Each one of these  
15 events is a reflection. And the first information that  
16 you get from them is structural based on the longer that  
17 it takes the reflection to get back to the surface you  
18 know that it is deeper just in a general sense. The  
19 longer it takes a reflection to come back is -- and you  
20 can imagine it being analogous to a submarine. It is a  
21 common analogy that we use for (inaudible). If you send  
22 out a ping you know what the sound, with the velocity of  
23 water, the velocity of sound is in water, it goes out  
24 until it hits another ship or something. You hear a  
25 ping. And then you hear ping when it comes back. You

Page 37

1 can measure that time. And knowing the velocity of  
2 water you can solve from a distance. If the velocity of  
3 sound and water is -- it's right around 5,000 feet per  
4 second. It depends on temperature and solidity and  
5 things like that. But you know if you make a pulse in  
6 the water, and you hear something come back two seconds  
7 later, you know you have pinged something basically  
8 5,000 feet away because it took a second to get there  
9 and a second to come back.  
10 Q. Okay. So just to clarify then. When you are  
11 sending seismic energy down through the rock you have  
12 got some knowledge of how fast the signal will travel in  
13 a given kind of rock. Am I correct that there is also a  
14 difference in the speed at which the signal will travel  
15 depending on whether you are going through an area that  
16 is saturated with water or not?  
17 A. Yes.  
18 Q. Or with a liquid, let's say?  
19 A. Yes. That is one of the factors that we deal  
20 with in trying to get an accurate depth prediction using  
21 seismic. Because near surface it is generally a little  
22 bit faster than the velocity of water. It might be  
23 around 6,000 feet per second near the surface. And it  
24 gradually increases to 6,100, 6,200 feet per second, as  
25 an average. Getting down to 7,000, 8,000 feet per

Page 38

1 second. But every time you cross a little -- a  
2 different layer of rock it can vary. If you get what is  
3 called a marly layer. It has calcium carbonate in it.  
4 It's like adding lime in it. Calcium carbonate. That  
5 can be faster. But in any case that's -- those are some  
6 of the things that we use to get our depth information.  
7 Q. Okay. Now a couple of features that are  
8 illustrated in the seismic data I'm going to ask you to  
9 explain. Essentially the lines that go from the top to  
10 the bottom. They have a couple of different features.  
11 One is at different times they will bend one way or  
12 another. And there are also areas that are colored  
13 black. More or less black.  
14 A. Yes.  
15 Q. So can you explain what those two things mean?  
16 A. Okay. Let me back up just a little bit and  
17 explain what a trace is before we answer that.  
18 Q. Sure.  
19 A. So each one of these little squiggly lines you  
20 see is called a trace. And that represents reflections  
21 from a particular point in space. And each one of these  
22 represents one of these bins that you see on the map.  
23 So, for example, when you come across here -- I counted  
24 them up the other day. It is actually about 100 traces  
25 on this piece of line that I showed as Exhibit A. You

Page 39

1 can sit here and count them. I think it was 98 or 99.  
2 But each one of these are 82-1/2 feet apart. And so  
3 this is half a mile from here to here. And I measured  
4 this distance many times from where we want to drill  
5 this proposed well to where the Sand B was intercepted  
6 it is about 3,000 feet. So there is probably about 34  
7 or 35 traces in between there. But this is an actual  
8 record of the reflections from that particular point.  
9 That little point on the chessboard. And then as you go  
10 deeper in time those are the reflections from, as you  
11 get deeper in that spot, if you drilled an imaginary  
12 well here, or here, or here. Or where the existing well  
13 is there. And so the first information that we can get  
14 from this, as I said, is structural. You can tell that  
15 this particular event right here is shallower because it  
16 came in -- a reflection of it came in quicker. It is  
17 about 930, 940 milliseconds. And then here in this area  
18 it came in at about 980 milliseconds. So you can tell  
19 that this is deeper. And just as a rule of thumb it is  
20 not exactly accurate. But it gives you some  
21 analogous -- every millisecond is about four feet.  
22 Three-and-a-half to four feet. So from 900 milliseconds  
23 to a 1,000, that is roughly 350 to 400 feet. Something  
24 like that. So this is showing about a 2,000 interval  
25 north to south. Or top to bottom. And it is about -- I

Page 40

1 think it's a mile-and-a-half or so. 8,000, 8,300 feet,  
2 something like that, east/west.  
3 All right. So what -- your question was what  
4 do the little wiggles mean?  
5 Q. Yes.  
6 A. That trace -- what it is saying is that -- and  
7 what you can see there is a lot of -- this little black  
8 thing. That is called a peak. So each trace is where  
9 the geophone -- basically you can think of it as going  
10 up or down. If there is a compressional pulse -- if  
11 you're -- this is -- we are recording the compressional  
12 pulse. The reflection from that. If it is going -- if  
13 the sound is going through something that is harder or  
14 denser it generates a little peak. That is one of these  
15 things. So you can see that this particular bed that  
16 the reflection is coming from is slightly harder than  
17 this right here. This is a trough. So each -- if I  
18 just zoomed in on that. This area on that trace that's  
19 a trough.  
20 Q. So just for clarity. A peak is more or less a  
21 bend to the right in the trace and the trough is a bend  
22 to the left?  
23 A. Exactly. That's the SEG convention.  
24 Q. And now there some areas that are black or  
25 darker. Can you explain why that is?

Page 41

1 A. Okay. So we have talked about what a peak is.  
2 And then what a trough is. And in general -- or in  
3 absolute if something -- if the sound is reflecting off  
4 of something that's -- this is soft above and hard  
5 below. It is going to generate a peak. And the  
6 magnitude of that departure from the zero line is called  
7 amplitude. So this would be a moderate aptitude where  
8 you see a peak like that. When you see a really strong  
9 peak like that that is called high amplitude. That is a  
10 much stronger departure. Or a peak. It is a high  
11 amplitude peak. This is high amplitude trough. And so  
12 something in here is saying that I am very slow and very  
13 not dense. And that is presumed to be the Sand A gas  
14 reservoir. Likewise, below here, something in the Sand  
15 B interval, known to be Sand B interval over here, the  
16 sand is very soft here and harder down here. So  
17 Exhibit -- let me zoom out a little bit. I did the same  
18 line in Exhibit A. Exhibit B is just essentially the  
19 central portion of Exhibit A. It is the same line. And  
20 I just zoomed in on it so that we could look at that in  
21 a little more detail.  
22 Q. Okay. So now that we are on B let's describe  
23 the notation that is on it so it is clear for the  
24 record?  
25 A. Do you want to go back to A?

Page 42

1 Q. I had one other question about A.  
2 A. Let's do it.  
3 Q. Which is getting to the bottom line. Which is  
4 am I correct that part of how you identify a presumptive  
5 sand that you want to explore is looking for strong peak  
6 and trough amplitudes?  
7 A. Yes. Except it's trough/peak. Not a peak/  
8 trough.  
9 Q. Sorry.  
10 A. And, again, this assumes zero phase data. I am  
11 not going to get into the phase of the data. But that  
12 is something also that you need to have to make any kind  
13 of fluid interpretations like we are talking about. And  
14 that is another reason why we purposefully drill deeper  
15 wells sometimes to come into contact the basalt layer.  
16 Because basalt is extremely hard and dense. And you  
17 know that that is going to generate a peak event. And  
18 then you got to make sure your seismic agrees that it is  
19 at the phase that you think it is at.  
20 Q. Okay. So as a general proposition this  
21 seismic slice, like we have in Exhibit A, is a way of  
22 illustrating where you can identify a presumptive gas  
23 sand?  
24 A. Yes. And this is just -- it is called an  
25 arbitrary line because I picked it out on purpose. Not

Page 43

1 arbitrarily. But that is what it is styled as. So that  
2 we can demonstrate various salient features that we will  
3 get to. The location of the proposed new well. And  
4 then run through the existing well where we have some  
5 known subsurface control. But in reality I have the  
6 ability to pull up a line. I can do what is called pull  
7 up a cross line. And just look at all of the cross --  
8 every line. Just dit, dit, dit, dit, dit. And go  
9 through -- roll through thousands of cross lines or end  
10 lines that run this way. Or arbitrary lines that run a  
11 particular direction. So there is actual countless  
12 hours of interpretation that go into figuring out what  
13 the subsurface is presumed to be.  
14 Q. One more question on Exhibit A before we move  
15 to Exhibit B. There are some other lines of different  
16 colors. There is a green line off to the right. And a  
17 purple or maroon line further off to the right. And  
18 then a reddish looking line off to the left that angles.  
19 What do those illustrate that?  
20 A. That's what is called a fault. And what that  
21 is is -- that is where you have -- for example, up here  
22 you can see this particular reflection that I have got  
23 the gold on here. The colors on top of that. These are  
24 interpretations from me. The base data, the actual  
25 recorded process -- recorded, collected, and processed

Page 44

1 data is the black traces. Anything you see on that --  
2 like this is a rise. And this is my interpretation of  
3 that. And actually the software will snap to the  
4 highest amplitude. Or you can pick it manually.  
5 Whatever.  
6 Q. So --  
7 A. And these are just called horizons.  
8 Q. -- just for clarity. Where you have drawn a  
9 line through -- where the software has drawn a line  
10 through one of those amplitude events?  
11 A. Yes. This is what we called a horizon. This  
12 is my interpretation.  
13 Q. Okay.  
14 A. But the software that I use, the  
15 interpretation software, will essentially automatically  
16 pick that in the highest amplitude spot where there is a  
17 trough or a peak.  
18 Q. Okay. Back to the faults. What is the  
19 purpose for identifying and illustrating the faults in  
20 the exhibit?  
21 A. Okay. So as I said earlier, the time  
22 information that you can see, if you are interested in a  
23 particular horizon, this gold one that I'm pointing at,  
24 for example, you can see that it came in -- this  
25 reflection came in later. It is about .98 seconds

Page 45

<p>1 versus over here .934. So this whole horizon would be                  2 shallower over here and deeper over here, etc. Over                  3 here you can see the Sand B horizon as I have                  4 interpreted it. It is higher here. It came in quicker                  5 in time. It goes deeper. And then it comes across the                  6 saddle there. So this is continuous across here. But                  7 you will also see various places where there is sort of                  8 an abrupt termination. And you can see that it is not                  9 just that one reflection. All of these horizons have                  10 essentially terminated there. Likewise over here --                  11 this is an exhibit. I can't move the box. But if I                  12 move this box out of the way you can see that this                  13 horizon here at about 940 milliseconds is offset to                  14 about -- let's see, it is probably about 930. It is                  15 offset to about 950 or 960. So this is the same event.                  16 It crosses this green fault. Now, it is lower over                  17 here. So this is what is called a fault. And this                  18 happens in the subsurface as the basin adjusts. In this                  19 case we have a lot of intrusion of basalt sills and                  20 dikes. Which I think drives some of this local                  21 faulting. Imagine the sedimentary section inflating                  22 from volcanic sills being in place at that depth. It                  23 also -- just as a basin -- there might be some basin                  24 faulting that gradually adjusts. And the sediment will                  25 fail along a particular surface called a fault. And you</p> <p style="text-align: right;">Page 46</p>	<p>1 line A. Exhibit A. And that was where we are mapping                  2 Sand B. This is the green fault on the south. And you                  3 can see this reflection here -- starting up here this                  4 reflection has been faulted to there. This reflection                  5 has been faulted to there. And this reflection has been                  6 faulted to there. And this reflection been faulted to                  7 there. And it continuous. And the fault takes a bend                  8 right there. Likewise, on the north end, you don't have                  9 a whole lot of lines to see here. But this maroon fault                  10 is down to the north. And this is the lowest side. And                  11 this is the highest side. So as much as I would have                  12 liked to going back to Exhibit C, as much as I would                  13 have liked to have disconnected these faults, the green                  14 and the maroon down, and I spent a lot of time trying to                  15 resolve this fault situation in here, they don't. As an                  16 explorationist you like to have one very easy                  17 explanation. And one continuous fault would be that                  18 explanation. But we don't have that. In this case you                  19 can see you're losing structure to the northwest/                  20 northwest. And you also lose sand. You lose the                  21 amplitude. And that is what the state --Mr. Thum asked                  22 me to provide additional information showing this                  23 west/northwest to east/southeast traverse.                  24 Q. Can we move onto Exhibit B.                  25 THE COURT REPORTER: Before we do that can we</p> <p style="text-align: right;">Page 48</p>
<p>1 can determine those by watching the terminations of                  2 these reflections. And then mapping it. And seeing if                  3 it holds together. And these faults are generally at 45                  4 degree angle. If you find something a lot different                  5 than that you probably have a bad data problem or it is                  6 not a fault. But that is part of the interpretation                  7 process is mapping shallow reflectors, middle                  8 reflectors, deep reflectors, all of they way down to see                  9 if your theory -- if that was a fault. If it holds                  10 together or not. In this case I have done that. And                  11 mapped it. And this is a fault right here. This maroon                  12 line on Exhibit A. That is down to the northeast fault.                  13 And this green line right here is a down to the                  14 southwest fault.                  15 And going back to Exhibit C. You can see                  16 where the Exhibit A line was going. And we looked on                  17 the north -- or the left-hand side of it you can see                  18 this maroon fault right here. The little sort of tent                  19 symbol means that's the downthrown side. So the                  20 sediment is higher on this side. On the south side.                  21 And lower on the downthrown side on the north. Likewise                  22 here, this green fault, it's a down to the south fault.                  23 You see a little tent symbol on there. The northern                  24 part of the fault is high. And the southern part is                  25 low. And we are just going to look at those. Again,</p> <p style="text-align: right;">Page 47</p>	<p>1 take a break?                  2 THE HEARING OFFICER: Sure.                  3 (Recess.)                  4 Q. (BY MR. CHRISTIAN) Dave, I think we left off                  5 discussing Exhibit A to your declaration. Which for the                  6 record is Exhibit SR-01 at page 15. Before we go on.                  7 For clarity of the record when you are using the cursor                  8 on your screen to identify something can you identify                  9 where on the page you are in terms of direction and                  10 location so that what you are doing will track in the                  11 transcript?                  12 A. Yes, I can.                  13 Q. Just as a summary of questions before we move                  14 onto Exhibit B. Within the dashed red lines on Exhibit                  15 A to your declaration, which is the proposed unit area                  16 north and south boundaries, the two what you called                  17 horizons that are described within in it, are those what                  18 you have called presumed Sands A and B inside the unit?                  19 A. Yes.                  20 Q. Okay. And is it -- well, I will get the the                  21 ultimate question in a bit. Let's move onto Exhibit B                  22 to your declaration. Which is page 16 of Exhibit SR-01.                  23 I think you described earlier that this is a zoomed in                  24 view of the same information on Exhibit A. But within                  25 the boundary unit. Is that correct?</p> <p style="text-align: right;">Page 49</p>

1 A. It is.  
 2 Q. Actually, it shows the south unit boundary.  
 3 That dashed red line down the middle. And then to the  
 4 right of that is the Fallon 1-10 well. And the sand  
 5 that it intercepts. Right?  
 6 A. Yes.  
 7 Q. Then to the left of the dashed red line, that  
 8 would be from the south boundary of the proposed unit  
 9 configuration toward the north. Just summarize for me  
 10 what that illustrates?  
 11 A. Okay. So the -- one of the sort of principles  
 12 of science that we use in exploration is work from the  
 13 known to the unknown. And the simple to the complex.  
 14 So from the known, what is known on this, we know that  
 15 this is shallower. And this is deeper. And by  
 16 shallower I'm pointing to the top of the exhibit. And  
 17 deeper I'm pointing to the bottom of the exhibit. We  
 18 know that we have good quality 3D -- very excellent  
 19 quality 3D data in this particular area. And we also  
 20 drilled a Fallon 1-10 well here.  
 21 Q. Which is on the right side of the exhibit?  
 22 A. Exactly. And it is a directional well. And  
 23 you can see where it was coming through. I notice that  
 24 had Mr. Thum filed some log sections which I'm looking  
 25 forward to hearing the testimony there. It is basically

Page 50

1 expanded versions. And I'm kind of kicking myself. I  
 2 probably should have put that in. And I didn't. But  
 3 I'm glad he did. But in any case these are what is  
 4 called log curves.  
 5 Q. Well, let me clarify. What you are referring  
 6 to is sort of a jagged orange line that follows along  
 7 the course of the Fallon 1-10 wellbore; is that right?  
 8 A. Yes. I'm referring to that. This jagged  
 9 looking gold/orange line is what is called the gamma  
 10 ray. And it is showing the values in the wellbore  
 11 recorded on a per foot basis all of the way down. And  
 12 the utility of this is where you have the lower gamma  
 13 ray readings. And the scale on this would be low on the  
 14 left. Higher on the right. Higher gamma ray readings  
 15 indicate clay stone or shale typically. Because of the  
 16 potassium in the clay minerals. Lower gamma ray  
 17 readings indicate a lack of radioactive elements. And  
 18 more things that are nonradioactive like quartz. So you  
 19 can see this departure on the gamma ray here where I  
 20 have called it Sand A. And Mr. Thum's exhibits will  
 21 show that in more detail. And then this large departure  
 22 down here is Sand B. This is the large thick Sand B  
 23 unit.  
 24 Q. And you are referring to part of the orange  
 25 line that intersects the area shaded in pink on the

Page 51

1 right side of Exhibit B?  
 2 A. Exactly.  
 3 Q. So just for clarity that orange or gold well  
 4 log line, you have taken information from a well log and  
 5 overlaid it on a picture of seismic information; is that  
 6 right?  
 7 A. I didn't overlay it. I just asked my work  
 8 station to display that. You can ask the software to  
 9 the display a particular log curve you want and what the  
 10 physical readings are. And this is just a good example  
 11 of one that is relatively determined to --  
 12 Q. Okay.  
 13 A. So there is some manipulation on my part.  
 14 It's exactly scaled and raised in units. And you can  
 15 see it on the logs that will be I assume shown later.  
 16 Q. So the area where it intersects the pink,  
 17 which is Sand B, on the right side of Exhibit B, the  
 18 gold line jumps quite a bit further to the left. Why is  
 19 that?  
 20 A. It jumps further to the left because it has  
 21 less gamma ray radiation. That means there is less clay  
 22 minerals. Less potassium basically. And so it is  
 23 showing that this is -- where my cursor is -- I'm  
 24 pointing to where it says the top of Sand B.  
 25 Q. Yes.

Page 52

1 A. And then down you can see that it is still  
 2 departing from the zero line, which is where the  
 3 wellbore is. And then it comes back in below where the  
 4 arrow is. As Mr. Thum's exhibits will show there is a  
 5 portion of the sand below the gas/water contact that is  
 6 water saturated. And you still have sand down there.  
 7 But the event that is most obvious and apparent on the  
 8 seismic data here is the boundary between the gas  
 9 saturated sand above -- and I'm basically moving my  
 10 cursor where I have a pink area described, or a light  
 11 red, and the peak, the underlying peak, which is an  
 12 indication -- the seismic is saying I'm getting a strong  
 13 positive reflection here from something that is  
 14 relatively flat and is higher density and higher  
 15 velocity below than above. And above that where I have  
 16 the Sand B annotation you can see a large trough  
 17 developed. And that says -- the seismic is saying I  
 18 have a lower velocity, a lower density event in here.  
 19 So that is what I map that horizon on. You can see  
 20 where I am starting at the right-hand edge of the  
 21 seismic data and I'm mapping that trough down and  
 22 through the wellbore and then continuing down. And in  
 23 that trough where I am -- the red trough actually  
 24 intersects the top of the blue horizon. That is now  
 25 actually the top of Sand B. And so what happens is you

Page 53

1 actually get a polarity reversal with these sands. When  
 2 you put gas in when they are full of water they are a  
 3 weak/positive reflection. Where I'm showing my cursor  
 4 right now where the blue line is. And then continuing  
 5 to the north. All of a sudden you develop a trough on  
 6 top of it. And the presumption here is -- the  
 7 interpretation is that at this point it becomes gas  
 8 saturated. Not just because of the amplitude and  
 9 presence of a low velocity interval, or presumed low  
 10 velocity interval, presumed gas sand, which would be  
 11 represented by this low velocity interval, but also  
 12 coming out of it the strong peak underneath. You  
 13 always try to take as much of this information and  
 14 incorporating them together as possible. So this trough  
 15 here, with a trough on top, and a peak on the bottom, is  
 16 very indicative oftentimes, not exclusively, but  
 17 oftentimes, by the gas sand. And that is what we tested  
 18 over here, this trough on top of this peak,  
 19 successfully. In the pre-drilling we predicted that we  
 20 would have gas in Sand B and it will be thick. And also  
 21 that we would have gas in Sand A and would not be as  
 22 thick. And so we --  
 23 Q. And you are discussing right now what you  
 24 encountered in the Fallon 1-10 well?  
 25 A. Yes. And then by analogy -- I apologize if I

Page 54

1 have gone too much into the weeds with people. But I do  
 2 want to explain the basis. We didn't just randomly  
 3 select this unit. It is very deliberately determined.  
 4 And the interpretation and the amount of expense that we  
 5 have put into acquiring good 3D data, and the amount of  
 6 time I have spent interpreting it and incorporating it  
 7 with other known information in the basin, allows us I  
 8 think to be as precise as we can. Which is still not  
 9 that precise when you get down to it. It is still -- we  
 10 are listening to the the ground vibrate. So I try to  
 11 push the interpretation as far as I can. But we still  
 12 have to deal with the limits of resolution of the  
 13 seismic method. And so I will try to point those out as  
 14 we go along.  
 15 Q. Okay. As --  
 16 A. Go head.  
 17 Q. I was going to say to summarize what you have  
 18 just been talking about am I correct that you interpret,  
 19 based on how you have notated on Exhibit B, you  
 20 interpret the horizon line at the top to be the top of  
 21 the sand. And the black peak event below to be the --  
 22 where the gas/water contact occurs. Is that right?  
 23 A. Yes. It can be -- in various places it would  
 24 go back to Sand A -- or, excuse me, Exhibit A. In the  
 25 region that I am pointing at now.

Page 55

1 Q. Right.  
 2 A. Where the Fallon 1-10 well is. This is most  
 3 likely a gas/water contact that we are imaging. Because  
 4 it is a very strong trough/peak combination. A very  
 5 strong peak. And it is relatively flat. Going to the  
 6 right, where you can see that the event has some  
 7 structural character, it is climbing, that is -- my  
 8 interpretation that is the base of the sand. And it is  
 9 also a lesser amplitude reflection. Going from a gas  
 10 sand to clay stone is not as strong of a contrast as  
 11 going from a gas sand to a water sand. That is a very  
 12 dramatic reflection. So the interpretation here -- it's  
 13 basically -- it is a combination horizon. Here is the  
 14 gas/water contact presumed and confirmed by the  
 15 geophysical logs running the well. And I'm outlining  
 16 with my cursor this high amplitude peak in the area of  
 17 the Fallon 1-10 to the south of that where the event  
 18 reflection climbs. It is a lower amplitude peak event.  
 19 And that would be a base sand reflection.  
 20 Q. Okay. Just for clarity. Can you just real  
 21 briefly describe what we mean when we say gas/water  
 22 contact?  
 23 A. Certainly. So if you had a jar, a big jar,  
 24 and you put marbles in it, all the same size, more or  
 25 less, and you filled it up about halfway with water, and

Page 56

1 put a big stopper in it, the air would be on top and the  
 2 water would be at a flat level. And that would be the  
 3 air/water interface. Well, the principles of physics  
 4 remain the same in the subsurface as they do on the  
 5 surface. And so that is what happens in a gas reservoir  
 6 at depth. If there is a thick sand that is water  
 7 bearing. The gas will form a -- essentially will keep  
 8 accumulating into the track and pushing the water out  
 9 and it will form a flat surface called a gas/water  
 10 contact. And if you have a sand that is thick enough  
 11 sometimes you can image that with seismic. And we think  
 12 that that is what we are imaging here. And now I have  
 13 moved to Exhibit B. And I say that because we have  
 14 drilled this well. We have logged it. We have found --  
 15 I don't remember exactly. About 90 feet or so or 100  
 16 feet of gas on water. The lower part of the sand is  
 17 water bearing. And Mr. Thum's exhibits will show a  
 18 geophysical log requiring the wellbore. But what was  
 19 predictive using the seismic actually occurring is the  
 20 prevailing truth in the ground. That there is a gas  
 21 accumulation on top of a water bearing lower portion of  
 22 the sand. And it does generate a strong reflection.  
 23 Q. So based on the seismic data that you have  
 24 developed, and your experience in the Fallon 1-10 well,  
 25 you expected to encounter the same condition in presumed

Page 57

1 Sand B within the unit area?  
2 A. I do with some qualifications. Again, the  
3 timed information is useful to determine structure and  
4 whatnot. And depth. Presumed depth. And here you can  
5 see that the gas/water contact is proved -- proven in  
6 the well is in 1388 subsea. I don't remember the  
7 measured depth. And recall that we are -- the surface  
8 elevation here is about 2,150 feet roughly. Plus the  
9 1,388. You are looking at whatever that math is.  
10 3,400, 3,500 feet, 3,600 feet vertical. But the  
11 measured depth is going to be quite a bit more.  
12 Q. I'm going to stop you for just a second so we  
13 can have clarity in the record for the hearing officer's  
14 benefit. So when we have a number that is subsea. That  
15 is a number that is measured -- the number below sea  
16 level; right?  
17 A. Below sea level; right.  
18 Q. When we have a measured depth we are talking  
19 about the distance from the top of the well through the  
20 wellbore to whatever the point is you are measuring;  
21 right?  
22 A. Exactly.  
23 Q. Which in the case of the Fallon 1-10 well, for  
24 example, is not vertical because it is a directional  
25 drilled well; right?

Page 58

1 A. Correct.  
2 Q. And then if you are referring to a true  
3 vertical depth that is the distance from the ground  
4 vertically to the point you are measuring?  
5 A. Exactly.  
6 Q. All right. Please go on.  
7 A. Okay. So the point I wanted to make. You  
8 asked is this area -- and I'm pointing to the area that  
9 I have covered light red -- is this area similar to the  
10 unknown area where we presume a gas pool to exist. And  
11 my answer is yes, with qualifications. And the  
12 similarities are it has the same type of amplitude in  
13 the trough event above. And peak event below. Which  
14 are consistent with a gas bearing sand. As the known  
15 gas pool on the adjacent unit -- existing unit. The  
16 differences are -- I think that this gas/water contact,  
17 which is known to be at 1388 subsea, it is coming in --  
18 if you look at the time annotations on the side it is  
19 coming in at about 1.209 milliseconds. And as you go to  
20 the north you can see that there is sort of a little  
21 kick up. And then you're climbing in structure to the  
22 north. You cross the unit boundary. You just have a  
23 weak, low amplitude peak. And then all of a sudden you  
24 develop this trough amplitude above it. And a strong  
25 peak amplitude below it. But this peak at the area of

Page 59

1 the well is at a higher time -- or a lower time, i.e.,  
2 shallower depth.  
3 Q. When you refer to the well you mean the  
4 proposed well in the new unit?  
5 A. Yes. Proposed new unit well. And I have put  
6 a little box here. So the time of that peak event,  
7 which could be a gas/water contact, or a basin sand  
8 event, based on the strength of it I think it may be a  
9 gas/water contact at 1.186 seconds. So you can see that  
10 is 23 milliseconds higher. And using the time/depth  
11 information we have gathered through multiple wells in  
12 the area the predicted gas water contact would be 1294  
13 subsea. Approximately 100 feet higher than here. And I  
14 make that point just to demonstrate another point to  
15 suggest this is not a common accumulation. It is  
16 probably a -- I presume it to be a gas/sand accumulation  
17 in Sand B. But at a higher elevation. And with a  
18 different gas/water contact. And this pool, presumed  
19 pool, unknown, than the known pool in the Fallon 1-10  
20 existing unit to the south. That is what the seismic  
21 information is telling us.  
22 Q. And have you engaged in the same  
23 interpretation with respect to Sand A above Sand B?  
24 A. Correct. I didn't want to make -- I have  
25 already made these exhibits somewhat complicated and I

Page 60

1 didn't want to make it any more. My thesis would be  
2 that this area, by amplitude, with a strong peak  
3 underneath, high amplitude trough, and I'm pointing to  
4 Exhibit B, under the proposed unit well where it says  
5 Sand A on the left and minus 1139. That would be the  
6 predicted subsurface of top of Sand A. There is a big  
7 trough there. And underneath of that is a strong peak.  
8 I would interpret this to be Sand A gas charge. And  
9 where you lose that trough-peak amplitude coming down  
10 the structure it becomes unproductive at some point. It  
11 is known to be productive over here at the Fallon 1-10.  
12 It is about 12 feet. And, likewise, going to -- so that  
13 is the north/south line looking at the west/northwest to  
14 east/northeast line.  
15 Q. And you are looking at Exhibit C when you say  
16 that?  
17 A. Yes. I'm sorry. I'm looking at Exhibit C.  
18 And I am moving my curser along the west/northwest to  
19 east/southeast line with a 3 on either end of it. It  
20 runs from the northwest corner of the proposed unit to  
21 the southeast corner of the proposed unit. And my  
22 annotation is incorrect. It should say east/southeast.  
23 ESE. Not ENE. But that is the line I'm going to be  
24 looking at as Exhibit D. That is this one here.  
25 Q. Okay. So Exhibit D is a different slice of

Page 61



<p>1 the seismic information through the proposed unit area.                  2 Essentially not exactly at a right angle to the other                  3 Exhibit A. But it is at a different angle from it going                  4 through the unit at a different direction; right?                  5 A. Yes.                  6 Q. Okay. Does it contain the same illustrations                  7 about, for example, the proposed unit boundary? In this                  8 case it would be the east and west boundaries; right?                  9 A. Yes. And so looking at Exhibit D. There is a                  10 legend at the top that says where it is. It is a                  11 west/northwest to east/southeast 3D seismic line showing                  12 number 1 -- these are the reflections that represent the                  13 presumed Sand A gas pool on top of Sand B. And that                  14 trough-peak pair. And the Sand B trough-peak pair                  15 representing that Sand B presumed accumulation. And                  16 then number 2, the annotation number 2, proposed new                  17 unit boundaries displayed on the seismic line (maroon                  18 dash). And I'm using my cursor up and down showing the                  19 one on the east/southeast on the right side annotated by                  20 number 2 within the unit boundary. And then on the left                  21 the unit boundary and the maroon dash also annotated by                  22 a 2. And at the same point here is the amplitude of the                  23 trough and the peak for A. You can see it is clearly                  24 contained within the unit boundaries. And likewise for                  25 the presumed -- or the reflection representing the</p> <p style="text-align: right;">Page 62</p>	<p>1 When you look at countless lines, and look at every one                  2 of these traces, you develop a common interpretation.                  3 And what I see consistently is this termination of                  4 amplitude of the trough-peak event representing the                  5 presumed Sand B gas pool along a particular pattern.                  6 And that is what I have indicated -- going back to                  7 Exhibit C. This black dash line. Sand B Termination                  8 (Black Dash). It is a very linear feature when you look                  9 at the rest of the 3D line. You recall that we have 300                  10 square miles of 3D seismic out here. We are looking at                  11 about maybe one mile square of data right now. But this                  12 consistent termination of amplitude is mappable. And it                  13 does add complexity to my proposed trapping mechanism.                  14 And that to trap this presumed gas pool I'm relying on                  15 this maroon fault here. And I can't even map an event                  16 on the northeast side. There is no amplitude out here.                  17 And then there is another fault here. So I feel good                  18 about the trap along that maroon fault. And as I said I                  19 would have loved if the interpretation showed that this                  20 was one fault. But it doesn't. It clearly doesn't.                  21 And you can look at countless lines through here and you                  22 can see that this maroon fault is separate from this                  23 green fault. So the amplitude does terminate in here.                  24 Q. I just want to make sure for clarity. We are                  25 talking about Exhibit C to your declaration which is</p> <p style="text-align: right;">Page 64</p>
<p>1 presumed Sand B gas pool is contained -- and I'm                  2 pointing to the middle of Exhibit D. And underneath the                  3 number 1. The proposed new unit well is a vertical                  4 black line that the 1 is on top of. And on the top,                  5 just to the left of the line, you see Sand A annotated.                  6 And to the right is a data value minus 1139 subsea. And                  7 there is a trough-peak pair there that I'm interpreting                  8 to represent gas in Sand A. And following the Sand A                  9 event to the left or west/northwest it dies out.                  10 Following it past the proposed new unit well and to the                  11 east the amplitude of the trough event dies out before                  12 you get to the unit boundary. And I have haven't                  13 interpreted it -- or I have interpret it, but it is not                  14 turned on. The peak event underneath -- if you turn on                  15 all horizons you can't see anything. I don't have the                  16 horizon turned on. But you can see the peak event as                  17 strong amplitude dying out to a weak amplitude in either                  18 direction. And likewise below that, still under the                  19 proposed new unit well, you can see where the Sand B                  20 reflection is indicated. And the GW, representing the                  21 presumed gas/water, relatively flat. And you can see                  22 that dying out to the west and to the east. All                  23 consistent and staying within the unit boundaries. And                  24 my interpretation is -- when you look at just one line                  25 you might convince yourself of several of many things.</p> <p style="text-align: right;">Page 63</p>	<p>1 page 17 on SR-01.                  2 A. Yes.                  3 Q. When you say the maroon fault you are                  4 referring to the dark faulted area that sort of trends                  5 from the northwest to the southeast kind of mostly in                  6 the east half of the proposed unit area; right?                  7 A. Yes.                  8 Q. Okay. And then you have described this green                  9 fault. Which is to the northwest that has sort of a                  10 fork shape. Those are two different faults.                  11 A. Yes. There is a little splay on the south                  12 end.                  13 Q. You spoke about a trapping mechanism. First                  14 just generally explain what you mean when you say a                  15 trap?                  16 A. Okay. So let's go back to Exhibit B. A trap                  17 is anything that impedes the gas from escaping from a                  18 reservoir. And a reservoir or a pool is, in this basin,                  19 typically in the sandstone. Going back to the marble                  20 analogy. In the pore space between the marbles, which                  21 would represent our sand, gas can accumulate as it is                  22 generated from deeper organic material. And it will                  23 generally escape unless it is trapped somehow. And if                  24 it is trapped in a porous medium, like a sandstone, and                  25 that could be structural like here, this is basically a</p> <p style="text-align: right;">Page 65</p>

1 little what we call a saddle or a little low spot. It  
2 gets higher more on the side of the structure here. So  
3 there is impermeable clay stones above that prevent the  
4 gas from escaping. In this case I think, if we are  
5 proposing a new unit well, part of the trap is this  
6 maroon fault here. It doesn't show you all of the  
7 evidence. But there is a large amount of evidence for  
8 the existence of this maroon fault.  
9 Q. And you are pointing to the left side of  
10 Exhibit B?  
11 A. Yes. I'm on Exhibit B.  
12 Q. On the left side that is where you are  
13 identifying the fault? It kind of dies into the label  
14 proposed new unit well; right?  
15 A. Yes.  
16 Q. All right. So your view is that that fault  
17 acts as a trap on the north -- to the north?  
18 A. Yes. Again going back to the exhibit. So  
19 here you can see a clear displacement of this reflector.  
20 And this reflector down to here. And this reflector  
21 comes down here. Going back to Exhibit C. We were  
22 looking at this fault. Which is down to the north. And  
23 I'm pointing to the maroon colored fault that runs along  
24 the northern portion of the proposed unit. And it is  
25 very clear, but it does what is called dying out. Which

Page 66

1 means it stops being a fault and there is no offset on  
2 reflections above or below beyond this point. But the  
3 salient point -- and that could be a leak for this trap.  
4 But the salient point is the amplitude also terminates  
5 there. And it is very close to my Sand B determination  
6 that I can map on the eastern part of this feature and  
7 well to the southeast. That was also demonstrated with  
8 Exhibit D where you can see the -- this map has the  
9 amplitude of -- and you asked me to explain this  
10 earlier, and this is probably an appropriate time, what  
11 these colors mean. So over here on the right is the  
12 color bar scale. And zero on the low end is dark blue  
13 going to the lighter blues. And then the hot colors is  
14 the red. And these are 3,000 amplitude units on the  
15 high end. So this would be a strong amplitude. Or a  
16 weak amplitude. The higher the number and the hotter  
17 the color the stronger the amplitude. So what you see  
18 is a large area of high amplitude. And I am mapping the  
19 amplitude of the peak. And I have denoted that just  
20 generally with this large outline as being the  
21 approximate boundaries of the presumed Sand B gas pool  
22 (orange dash) based on amplitude strength of the peak.  
23 And specifically looking at an example of that. Let's  
24 look at the Exhibit D. The west/northeast to  
25 east/southeast line. And both of the lines by the way

Page 67

1 intersect and cross at the presumed -- or the proposed  
2 bottom of the hole location. But lets look at that  
3 amplitude character along that line of the Sand B event.  
4 We'll just go down to that.  
5 Q. So now we are looking at Exhibit D, which is  
6 page 18 of Exhibit SR-01.  
7 A. Yes. I'm starting in the middle of the  
8 exhibit where the proposed new unit well is. It is  
9 denoted by a black line going down through Sand A and to  
10 the Sand B reflection. And we are looking at the peak  
11 of it where you see a GW. Presumed gas/water. You can  
12 see that -- if you blew up on that you can see that  
13 these are high amplitude trough. High amplitude peak.  
14 And the peak event gradually just fades out. And  
15 then it -- it is still there but very weak.  
16 Q. And you have indicated going toward the west;  
17 correct?  
18 A. Going towards the west/northwest; correct.  
19 Q. So is it -- am I correct that the green line  
20 below it, and the maroon line above it, are correlated  
21 with the two faults that you have shown on Exhibit C?  
22 A. They are.  
23 Q. Okay. So is it your interpretation that the  
24 combination of the two faults, and the decreasing  
25 amplitude in between them, that combination of things is

Page 68

1 what acts as a trap to the north and the northwest?  
2 A. Yes. And I'm going go back to Exhibit C. So  
3 the lack of amplitude in this region to me suggests that  
4 there is no strong -- there is no strong reflectivity in  
5 there. Either a trough or a peak. If you looked at the  
6 amplitude of the trough event and the peak event they  
7 are strong in this area where I have drawn the orange  
8 outline. And it just fades out. And so my  
9 interpretation is that the sand essentially pinches out.  
10 And that is somewhat confirmed by going back to Exhibit  
11 D. If you look at the character of this reflection.  
12 Where this trough just sort of loses amplitude and then  
13 goes into a weak peak. The sand terminates. This is  
14 the exact same type of response that we get a trough-  
15 peak pair terminating into a weak peak at the edge of  
16 the sand when we go -- when we map the edge of the sand  
17 to the south. And that is supported by the fact that --  
18 at pre-drill we said we are going to have a thick Sand  
19 B. There was -- Bridge had drilled a well called May in  
20 Section 13 a couple of miles to the east of here. It  
21 had no sand in the B section. And we propose this is  
22 the trap for the Fallon 1-10. This stratigraphic  
23 termination. And we were successful in finding A and B.  
24 And both A and B have a stratigraphic termination to the  
25 east. And I think that is because there are

Page 69

1 probably fluvial sands that run similar to the --  
2 THE COURT REPORTER: Slow down again. You  
3 tend to get going.  
4 THE WITNESS: Sorry. The remark I was making  
5 is that the -- on Exhibit D, the termination of this  
6 trough-peak pair, where I am pointing, to me indicates  
7 the stratigraphic termination, or we call it a pinch  
8 out, of Sand B. So this would be a stratigraphic trap.  
9 And I see this same seismic character elsewhere in the  
10 basin in the local area. And it is documented and  
11 proven by the lack of Sand B in wells to the east. And  
12 the lack of Sand A in the wells to the east. Small  
13 samples size. But nonetheless six or seven wells.  
14 Q. (BY MR. CHRISTIAN) Okay. If you can go back  
15 to your Exhibit C for me. So we have discussed your  
16 views on the trapping mechanisms to the north and  
17 northeast and to the northwest. And I think you had  
18 started referring to your interpretation of how it  
19 worked to the south. Can you expand on that?  
20 A. Yes. So I think if we go Exhibit A. This  
21 north/south line. What you'll see is that there is a  
22 high area to the south in the existing Fallon 1-10 unit  
23 and well. And then there is a saddle or a low area in  
24 this area. I am basically running my cursor near the  
25 common boundary between the proposed new unit and the

1 interpret every little bubble and wiggle. But when you  
2 look at the mapping, the trough, and the peak, and  
3 various other attributes, we use what is called AVO.  
4 Which stands for amplitude versus offset. It is another  
5 way of looking at the seismic data. It helps in  
6 determining whether you think gas may be present or not  
7 without getting into the details of how we do it.  
8 Q. Okay. I think we have -- you'll correct me if  
9 I'm wrong. I think we have discussed it a fair amount  
10 of length your interpretation of the data to reach  
11 conclusions about the presence of hydrocarbons. And the  
12 trapping mechanisms with respect to Sands A and B in the  
13 proposed unit area. The last thing I want to talk about  
14 is you indicated that there is -- there are some  
15 presumed sands at greater depth that you would wish to  
16 explore. Can you, let's say, on Exhibit A, identify  
17 what you are talking about?  
18 A. All right. On Exhibit A, under the number 1  
19 where it says Fallon 1-10 existing well, starting just  
20 under that label, and going down, you cross where I have  
21 identified the reflection associated with Sand A and  
22 Sand B. We discussed those at great length. Underneath  
23 that, continuing deeper, you see the curve. That sort  
24 of jagged looking gold curve again is the gamma ray.  
25 And the regions that I'm pointing to there is a lot of

1 north edge of the existing Fallon 1-10 unit. And then  
2 you come back up as you go north onto a separate  
3 structure. So let's look at that on Exhibit A.  
4 Q. So when you are referring to a saddle you mean  
5 an area -- a lower area?  
6 A. A lower area; right. If you could imagine  
7 this as two peaks. Here is a peak. And I'm pointing to  
8 the structure that the Fallon 1-10 is on. And here is a  
9 neighboring peak where the proposed unit well is. And  
10 there is a low area in between. We call that a saddle.  
11 And so what you see is that the amplitude -- I'm now  
12 pointing to the area of the proposed new unit well. And  
13 you can see that the amplitude of the trough is present,  
14 the trough-peak pair, at the proposed unit well. And  
15 then going to the south the amplitude of the peak  
16 diminishes dramatically, as does the amplitude of the  
17 trough, until you get to the unit boundary. And  
18 likewise the amplitude of the trough and the peak  
19 associated with Sand A also diminishes to the south. So  
20 the trapping mechanism to the south, and going back to  
21 Exhibit C, it is low to the south in this area. And it  
22 is also low to the southwest. The structure dips away  
23 from this -- from the green fault and maroon fault to  
24 the southwest. And you can see that there is -- there  
25 is lot of noise to the data. You can't literally

1 character to the gamma ray curve. There is a lot of  
2 sands down here. And when we drilled the Fallon 1-10 we  
3 specifically wanted to sample this and be able to test  
4 it and run our higher resolution geophysical logs across  
5 it and see what's the quality of these sands. Is there  
6 good porosity. Are they thick sands. Are they thin.  
7 Those sorts of thing. Is there any gas there. Is there  
8 any oil there. And we also wanted to drill deeper to  
9 sample the slope, which is deeper than this arbitrary  
10 line shows, to get a time/depth pair. Which we did.  
11 But we found some gas shows. And a gas show is a small  
12 amount of gas not commercial. But when you are drilling  
13 a well you get some gas coming out of the rock as you  
14 are drilling it. We were able to correlate those gas --  
15 (Screen froze.)  
16 (Recess.)  
17 THE HEARING OFFICER: We are back on the  
18 record.  
19 Q. (BY MR. CHRISTIAN) Dave, do I have you?  
20 A. Yes.  
21 Q. I think where we left off I had asked you  
22 about your interpretation of the -- what I'll call the  
23 secondary sands at greater depth below Sands A and B.  
24 A. Yes.  
25 Q. And you had begun discussing those. I think

<p>1 you were looking at Exhibit A. You had discussed                  2 encountering them in the Fallon 1-10 well, and gas                  3 shows, and the gamma log indication that is shown on                  4 Exhibit A. And I think that is where we left off. And                  5 I think you had said that you were seeing the same                  6 trough-peak indications within the unit boundary. Do I                  7 have that right?                  8 A. Are you talking about below A and B?                  9 Q. Yes.                  10 A. Okay. Yeah, to my recollection, I'm not sure                  11 where I lost you all. And where I froze up on the                  12 internet on this end. But I recollect your question was                  13 why do you want to drill below them. And I was making                  14 the point that that is what we did with the Fallon 1-10                  15 as part of our exploration strategy in this basin to                  16 learn more. And we think we are good at finding gas in                  17 the sands. But, you know, practically oil in a sand is,                  18 to the seismic method, not really apparent in terms of                  19 an amplitude anomaly. You might be able to map a                  20 structural trap. But you may get some sort of amplitude                  21 anomaly. So to be thorough and to try to minimize waste                  22 and maximize economic efficiency a lot of times we like                  23 to drill wells deeper because the incremental cost is                  24 not that high. And see what is happening below us. And                  25 sample those sands and learn more about the whole</p> <p style="text-align: right;">Page 74</p>	<p>1 And it is south of the proposed unit boundary of the new                  2 unit.                  3 Q. So based on all of the discussion that we have                  4 just engaged in over the last hour-and-a-half or so, do                  5 you have an opinion about whether the proposed unit area                  6 appropriately describes, at least for Sands A and B, an                  7 area that would be economically and efficiently drained                  8 by one well?                  9 A. I do. I think that it is the most logical                  10 unit to cover the presumed gas pool comprised of Sand A                  11 and B, and cover it, and be economical and efficient to                  12 develop that.                  13 Q. And based on your experience with exploring                  14 and producing those sands in other wells, and the                  15 information you have described here, do you believe that                  16 the proposed unit area will aid in the orderly                  17 development of the pool as a whole?                  18 MR. PIOTROWSKI: Objection. Calls for a legal                  19 conclusion.                  20 THE HEARING OFFICER: Do you have a response                  21 to that objection?                  22 MR. CHRISTIAN: It's a factual opinion.                  23 MR. PIOTROWSKI: I'm not aware of factual                  24 opinions.                  25 THE HEARING OFFICER: Can you read the</p> <p style="text-align: right;">Page 76</p>
<p>1 geology of the basin. We did that with the Fallon 1-10.                  2 And we got some gas shows. I'm pointing at Exhibit A in                  3 an area around 1.3 seconds. And you can see the gamma                  4 ray curve has got a lot of character to it. That is the                  5 Sand B interval. We had some gas shows here to the east                  6 of this area extending and correlating with this area of                  7 mapping to the east. The area gets structurally higher.                  8 We have some amplitude anomalies there where we proposed                  9 a new unit, the unit was granted, and we drilled a new                  10 well, Fallon 1-11, which was successful, and is                  11 currently producing gas. And similarly we would propose                  12 if this new unit is granted, and the drilling permit is                  13 approved, we would propose to drill some distance below                  14 Sands A and B to test the deeper stratigraphic section.                  15 Q. The trapping mechanisms that you described                  16 with respect to Sands A and B, do you generally                  17 interpret them to apply to the deeper sands that you                  18 might encounter?                  19 A. Yes. They do the -- the maroon fault and the                  20 green fault do continue deeper with depth and could be                  21 proposed trapping elements.                  22 Q. And likewise do you have the same saddle                  23 elements to the south?                  24 A. Yes. And looking at Exhibit A you can see the                  25 same structural saddle as evident in the deeper section.</p> <p style="text-align: right;">Page 75</p>	<p>1 question back to me.                  2 (Record read back.)                  3 THE HEARING OFFICER: I'm going to allow it.                  4 If you can go ahead and answer the question, Mr. Smith.                  5 THE WITNESS: I believe it will. If I may                  6 refer to Exhibit C. Our proposed unit again is denoted                  7 with the maroon dash as a 320 acre unit roughly. I'm                  8 not exact sure of the exact section size here. But it                  9 is about 320. You can see that the amplitude is very                  10 clearly centered on both of those quarter sections. And                  11 in terms of, as a non-legal person, how it would be                  12 consistent with orderly development of the pool it is                  13 immediately adjacent to the existing Fallon 1-10 unit.                  14 And the people involved in the Fallon 1-10 unit, the                  15 mineral owners, are receiving revenues from Sand B                  16 production currently. In the future they will receive                  17 revenues from Sand A when we have depleted the deeper                  18 Sand B and cover up the hole and complete at Sand A.                  19 Likewise, the mineral owners encompassed within the                  20 proposed new unit would be receiving revenue from their                  21 share of the production from the -- if they are there --                  22 Sand B and Sand A pool. And there is no gaps. There is                  23 nobody left out. It is all -- it is seamless in terms                  24 of adjacent -- the units are adjacent to each other.                  25 Q. (BY MR. CHRISTIAN) One of the --</p> <p style="text-align: right;">Page 77</p>

1 A. So the answer would be yes.  
 2 Q. Okay. The last question. One of the  
 3 objectors, Ms. Oltman, are you familiar with where her  
 4 property lies adjacent to the unit?  
 5 A. From talking with you on the phone -- I'm  
 6 using Exhibit C. My understanding is that her land,  
 7 just to be clear, is not within the outlines of the  
 8 proposed unit, but would be adjacent. And somewhere  
 9 adjacent on the east boundary towards the north side  
 10 about where that purple fault is moving through. Am I  
 11 correct in saying it? Or is it further north?  
 12 Q. Well, let's assume it is right where you  
 13 indicated. If that's the case, based on your  
 14 interpretation of the data that you have developed,  
 15 would her minerals be impacted by the proposed unit  
 16 area?  
 17 A. Her minerals would not be impacted. I believe  
 18 that commercial Sand A and B reserves, if present, would  
 19 be trapped on the south side of this maroon fault that  
 20 I'm -- maroon/brown fault I'm running my cursor on. It  
 21 runs near the northern boundary of the presumed unit, or  
 22 proposed unit, and curves around to the south. And  
 23 her -- if her acreage is where I am moving my cursor,  
 24 outside of the proposed unit, and adjacent to it, her  
 25 minerals would be across at least one fault and possibly

Page 78

1 two and not impacted by any development for a presumed  
 2 well. Or assumed well.  
 3 MR. CHRISTIAN: That is all the questions I  
 4 have.  
 5 THE HEARING OFFICER: Thank you. Mr.  
 6 Piotrowski, do you have questions for this witness?  
 7 MR. PIOTROWSKI: I do.  
 8  
 9 EXAMINATION  
 10 QUESTIONS BY MR. PIOTROWSKI:  
 11 Q. Mr. Smith, you have Exhibit C of your  
 12 declaration on the screen. That is a perfect place to  
 13 start. So you said with respect to that maroon fault.  
 14 This designation on Exhibit C. Your cursor is on it  
 15 there. It is your opinion that that fault acts as a  
 16 trap for both Sands A and B? This area?  
 17 A. Yes.  
 18 Q. And the areas -- so to the northeast of that  
 19 fault -- to your knowledge -- to the best estimate you  
 20 can make on the data we have for your interpretation  
 21 there was no hydrocarbons associated --  
 22 MR. COURT REPORTER: I'm sorry. I lost you.  
 23 There was no what?  
 24 Q. (BY MR. PIOTROWSKI) Let me try it again.  
 25 Mr. Smith, is it correct that you believe that to the

Page 79

1 north and east generally of the brown marked fault on  
 2 Exhibit C there are no hydrocarbons at the depth of  
 3 Sands A and B?  
 4 A. I am not mapping any amplitudes there that  
 5 would be consistent with Sand A or B.  
 6 Q. Okay. And if you would please go up to  
 7 Exhibit A. So looking at Exhibit A. You explained  
 8 this is -- in this graph here, this image here, the  
 9 numbers in the right-hand column running from .900 to  
 10 about 1.420 roughly. That is milliseconds; right?  
 11 A. It's actually expressed in seconds. 1.4  
 12 seconds. But, yes, if you look at the (inaudible)  
 13 .000 that would be milliseconds; correct.  
 14 Q. Okay. This -- I'm not sure whether to call  
 15 this a chart or graph or what I call this thing.  
 16 A. It is called an arbitrary seismic line. So it  
 17 is excised from the seismic volume.  
 18 Q. And it looks like this goes down to 1.425  
 19 seconds; is that right?  
 20 A. Yes.  
 21 Q. And could you tell me what depth that is  
 22 roughly?  
 23 A. Well, from the Fallon 1-10 wellbore you can  
 24 see where I have actually entered what is called a top  
 25 for Sand A and Sand B. And then those are the subsea

Page 80

1 values. You would add about 2,150 feet as the  
 2 approximate surface location. And then going down  
 3 further I have got another top at 1,932 at about 1.33  
 4 seconds. Plus 2,150. That is 4,000 feet. And you have  
 5 about another 100 milliseconds of data. So it would be  
 6 about 4,400 feet roughly to the bottom of what you can  
 7 see.  
 8 Q. Okay. And did I understand your testimony  
 9 correctly that at the Fallon 1-10 well you were able to  
 10 make contact with some salt layer?  
 11 A. It may have sounded like salt. But what I  
 12 said is basalt. B-a-s-a-l-t. Basalt.  
 13 Q. Right. And Fallon 1-10 drilled down to that  
 14 basalt layer?  
 15 A. Down to it and through it. Or at least into  
 16 it. Yes.  
 17 Q. And how far down ultimately did that well  
 18 reach? Do you know?  
 19 A. About, I believe, 5,300, 5,400, 5,500.  
 20 Q. Okay.  
 21 A. If that line wasn't on it -- I could look at  
 22 my work station and tell you exactly. It was to 5,442.  
 23 Q. Okay. Now back to --  
 24 A. And basalt is at 5,306 measure depth. So it  
 25 looks like we just drilled into it.

Page 81

1 Q. Okay. Now, if we go back to Exhibit A,  
2 please. This only shows down to that 1.425 roughly  
3 second mark, which you said is approximately 4,400 feet;  
4 right?  
5 A. Yeah, roughly.  
6 Q. Okay. And let's go to Exhibit B, if we could.  
7 This is a larger view of that same north/south 3-D  
8 seismic line; correct?  
9 A. Yes.  
10 Q. In this case we are looking not quite as deep  
11 on this one; right?  
12 A. Not quite as deep and not quite as shallow.  
13 You can see it runs from about --  
14 Q. Oh, I see. Yeah.  
15 A. -- 1.02 down to 1.32. And looking at Exhibit  
16 A it covers, where my cursor is, from maybe about here  
17 and to here. Well, you can --  
18 Q. Okay.  
19 A. So basically I changed -- on the display I  
20 changed the -- what is called the inches per second of  
21 data displayed and the trace density. How many traces  
22 per inch. I basically zoomed in on this area in the  
23 center part of -- so Exhibit B is zoomed in, if you  
24 will, or enlarged, and interpreted part of Exhibit A.  
25 Q. Okay. Thank you. Now let's -- all right. I

Page 82

1 think I understand. If we go down to Exhibit C. And  
2 this is the amplitude map which shows the strength of  
3 the -- or the amplitude of the reflective inlets; right?  
4 A. It is the amplitude of the peak event.  
5 Q. Okay.  
6 A. This specific event here.  
7 Q. Excellent. All right. Now, looking at  
8 Exhibit C. So to the best of your knowledge, at least  
9 in the area and the depths where you did find Sands A  
10 and B, and likely hydrocarbon deposits, you are not  
11 getting similar amplitudes in that northeast corner  
12 beyond the brown fault. And it looks like -- I mean,  
13 kind of all four corners have much lower amplitude  
14 figures. Is that correct?  
15 A. Generally speaking, yes.  
16 Q. Okay. Now I'm not nearly as mathematically  
17 inclined as I wish as.  
18 THE COURT REPORTER: Mr. Piotrowski, I am  
19 losing you again.  
20 MR. PIOTROWSKI: That's okay. Because I was  
21 scrambling.  
22 Q. (MR. PIOTROWSKI) Mr. Smith, do you -- when  
23 you are making your interpretations do you apply a sort  
24 of standard of proof or a confidence interval or  
25 anything like that that would explain or qualify the

Page 83

1 strength of your confidence in your conclusions?  
2 A. Yeah, I would say, to the extent that I can,  
3 we try to -- for example, referring back to an exhibit  
4 here. I will map the amplitude of this trough event.  
5 Which represents the top of the sand. And map this peak  
6 event. Which represents, in my opinion, the presumed  
7 gas/water boundary. And I wouldn't just map it on this  
8 volume. This is a merged volume with this --  
9 THE COURT REPORTER: Hold on, Mr. Smith. Speak  
10 up just a little bit. A merged volume with this --  
11 THE WITNESS: This particular volume that is  
12 displayed here is called the Killebrew-Willow merge.  
13 That's the Killebrew seismic -- reading seismic survey,  
14 which this area is. And the Willow reading survey,  
15 which is our original survey. 3-D survey. It is  
16 centered about eight or so miles to the east of here.  
17 And I have processed each of them, the surveys,  
18 individually and collectively. And when they were  
19 collectively processed together and merged it allows you  
20 to sort of do an apples to apples comparison. And we  
21 have kept the same parameters in terms of source spacing  
22 and receiver spacing --  
23 Q. (BY MR. PIOTROWSKI) Sir, I'm going to  
24 interrupt you. Because I think you are far off from my  
25 question. Which is really pretty simple in this case.

Page 84

1 A. Okay. Go ahead.  
2 Q. In Exhibit C. Please scroll down to Exhibit  
3 C. You have input lines here. One is the presumed Sand  
4 B gas pool line. Do you see that?  
5 A. Yes.  
6 Q. And is it your opinion, to the best of your  
7 scientific ability, that that represents the most likely  
8 extent of the Sand B gas pool based on the data known to  
9 you?  
10 A. Looking at this particular map, yes. And as I  
11 was trying to elaborate a little bit I also --  
12 Q. I'm going to stop you there because you  
13 answered my question. And Mr. Christian can certainly  
14 ask additional questions after I am done. What I just  
15 want to know is that your best estimate of the location  
16 of a Sand B gas pool when it's expressed on a two  
17 conventional map?  
18 A. Yes. With the caveat that you try to  
19 incorporate a lot of different interpretations of the  
20 data. This is the peak event. And you can see I have,  
21 for example here, I think where you are going is,  
22 probably this --  
23 Q. No. Please, sir, don't guess where I am  
24 going. I'm just trying to get answers to the questions  
25 I am actually asking.

Page 85

1 A. And I'm trying to answer it.  
2 Q. Okay. Well, your caveat -- what is your  
3 caveat to the answer you gave me previously?  
4 A. My caveat is that we examine a lot of  
5 different processing of the data. There is not one  
6 unique volume that we interpret from. I have  
7 approximately 20 volumes right here of the data that had  
8 been processed with different assumptions, and  
9 parameters, migrations, offsets, stacks, and so forth.  
10 And I tried to put that together. And when I draw these  
11 outlines they change from one map to the next. And if I  
12 pulled up my work station I can show you probably eight  
13 different outlines that I have done. The commonality is  
14 this very strong amplitude region in the middle where  
15 there is the trough SI amplitude and peak SI amplitude.  
16 If you look at each one of those amplitude maps there is  
17 a difference in character. And so the time just before  
18 I was doing the exhibit, or to create the exhibits, this  
19 was my best guess at the time. But it does change over  
20 time. I have got probably eight different outlines of  
21 this. The commonality is this is a very strong area in  
22 the center, particularly where we want to drill, and the  
23 character around the edges does change if you are  
24 mapping the peak or the trough. And there is noise  
25 involved with this. Not everything is as precise as we

Page 86

1 would like it to be in seismic interpretation. But even  
2 if this was the extent of the pool nobody would drill a  
3 well here. And actually if there is gas in this one  
4 little spot --  
5 Q. Sir, are you answering -- is this part of your  
6 caveat to the question you are providing an answer? Or  
7 are you providing me with a different topic?  
8 A. I don't know. I am just trying to --  
9 Q. I'm asking you --  
10 A. -- answer your question.  
11 Q. Mr. Smith, I am going to ask at this point to  
12 please answer the question I ask. You know, if there is  
13 something in the record that is inaccurate please let us  
14 know that. I'm trying to get the facts into the record.  
15 And I'm not looking to have a full explanation of how  
16 the interpretive process is done. All I'm asking you  
17 is, at the moment you prepared Exhibit C, was that what  
18 you think is the best estimate of the location of that  
19 gas leak? Or have you improved on that estimate since  
20 then?  
21 A. I would just go back to if I looked at another  
22 attribute that I mapped the trough, or whatever, the  
23 outline might be a little bit different. But the  
24 commonality is what I stated. Where the amplitudes are  
25 strong. I have high confidence in this region. I have

Page 87

1 less confidence as you get into the weaker amplitudes.  
2 Q. Okay.  
3 A. My confidence is strong that this area would  
4 be gas productive. And less so as you get into these  
5 cooler colors where the amplitude is weaker. Based on  
6 the peak event. Or the trough event is going to look a  
7 little bit different. And another geophysicist might  
8 draw this particular line somewhat differently. And  
9 most likely would draw it somewhat differently than I  
10 have.  
11 Q. So is the conclusion that is expressed on this  
12 document as the presumed Sand B gas pool does that  
13 depend considerably on how you choose to interpret the  
14 data. Is that why a geologist would draw a different  
15 line?  
16 THE COURT REPORTER: I'm sorry, I am having  
17 trouble with the question.  
18 Q. (BY MR. PIOTROWSKI) Mr. Smith, is it true  
19 that your experience and your skill and your  
20 interpretation are -- might be different than another  
21 geologist's interpretation based on their skill and  
22 experience and may result in slightly different lines  
23 than those you draw on Exhibit C?  
24 A. Absolutely.  
25 Q. Okay.

Page 88

1 A. 100 percent.  
2 Q. All right. So in fact those lines could just  
3 as easily from another geologist be drawn and either  
4 show either a larger or smaller presumed Sand B pool?  
5 A. Yes.  
6 Q. And the process by which you choose to make  
7 those interpretations is it to some extent subjective  
8 based on your experience, your intuition, on what you  
9 see from the data?  
10 A. Well, I would say I try to be as objective as  
11 possible. But there is noise in the system. Again, I  
12 go back to what I said earlier about -- recall that we  
13 are essentially listening at the surface with geophones  
14 and trying to determine what is the truth at 3,600 feet  
15 below the surface. And so I try to do it as objectively  
16 as possible by processing the data multiple times,  
17 interpreting lots of different events, and then  
18 aggregating all of that information and coming up with  
19 an interpretation. How other interpreters or geologists  
20 or geophysicists would do it would probably be similar,  
21 but somewhat different. And so they would move those  
22 lines around to a certain extent. But I think people  
23 with similar experience to myself, experienced  
24 geophysical interpreters with 3D seismic data, would  
25 come up with a similar interpretation. Does that answer

Page 89

1 your question?  
2 Q. It does. One of things we are trying to  
3 accomplish here is translating your field of geology, in  
4 particular, seismic survey --  
5 THE COURT REPORTER: Hold on. Mr. Piotrowski,  
6 I am having a hard time understanding you.  
7 Q. (BY MR. PIOTROWSKI) One of the things we are  
8 trying to do here, Mr. Smith, is translate between your  
9 field and my field. One of the standards that we often  
10 use in the law, and what is familiar to most lawyers and  
11 most lay people, is we talk about whether something is  
12 more likely to be true or more likely to be false. Just  
13 that simple.  
14 Is it fair to say that based on your  
15 understanding of the data, your experience with this  
16 type of data, and your study of a particular geology  
17 involved here, that it is more likely true than not true  
18 that the Sand B gas pool is in fact in the approximate  
19 location and of the approximate shape you have drawn on  
20 Exhibit C?  
21 A. Yes. I would say the confidence level of  
22 where it is diminishes as the amplitudes get weaker  
23 towards the boundaries. The highest confidence is  
24 strongest where the amplitude of this peak event is  
25 strong. And the other attributes that I mentioned.

Page 90

1 The mapping. We will map the far offsets and the  
2 medium offsets and so forth and put it all together.  
3 But as I understand my charge in creating a proposed  
4 unit and outline to the people that I work with is that  
5 it needs to be the best unit size that economically and  
6 efficiently can be tested and developed. And most  
7 efficiently and economically drained by one well. And  
8 also that it must incorporate the geographic systems.  
9 And so --  
10 Q. Sir, where did you get the instruction that it  
11 must incorporate the geographic land survey system?  
12 A. I believe it was in one of the orders from the  
13 state. Or at least as I interpret it being a non-  
14 lawyer.  
15 Q. So you have got a -- I think you called it a  
16 maroon line. The proposed new unit boundary. Do you  
17 see that?  
18 A. Yes.  
19 Q. And did you put that maroon line there solely  
20 because it incorporates or makes reference to the  
21 geographic land survey quarter section system?  
22 A. It's a neat fit with it; yes. It encompasses  
23 the majority of the -- it fits on the amplitude nicely.  
24 Q. Okay. And it is basically two quarter  
25 sections; is that right?

Page 91

1 A. Yes.  
2 Q. And that is 320 acres; correct?  
3 A. Yes.  
4 Q. And are you aware, sir, that the statute  
5 presumes 640 acres in unit size?  
6 A. I am. And I'm also aware it provides for  
7 exceptions --  
8 Q. Sir, I simply asked if you were aware that it  
9 presumes 640 acre size. I didn't ask for commentary.  
10 A. I am, yes.  
11 Q. Now, are you aware that it is also possible if  
12 you are going to seek a unit size other than the  
13 standard spacing unit size that a unit can be restricted  
14 by depth?  
15 A. To be honest with you, Mr. Piotrowski, I'm not  
16 sure of all of the unit qualifications and whatnot.  
17 Q. Okay. The unit you have proposed is it --  
18 this two quarter acres -- or two quarter section unit  
19 did you base that on the geological studies that you  
20 undertook as you testified about today?  
21 A. Yes.  
22 Q. And based on the data and the charts you have  
23 presented to us today?  
24 A. Yes. And I know I have gone on longwinded.  
25 But there is a lot more work that goes into this than is

Page 92

1 not presented. But that is the best shape of a proposed  
2 unit using geographic boundaries that to me encompasses  
3 the amplitude feature that we want to test.  
4 Q. The previous exhibits that we looked at.  
5 Exhibits A and B -- well, Exhibit A went down to a time  
6 of 1.4 seconds. And back to Exhibit C. As you said  
7 there are different ways you can draw Exhibit C. Is it  
8 based on the data that you found down to that depth of  
9 1.4 seconds? Or is it based on something else?  
10 A. Well, this proposed -- and I don't know if I  
11 should have called it that or not. But that is what we  
12 are proposing is based on the reflections associated  
13 with Sands A and B.  
14 Q. Okay.  
15 A. And not specific to anything deeper. I was  
16 just making a point that our exploration strategy is to  
17 drill deep.  
18 Q. Okay. And so there may be Sands C and D and  
19 multiple sands below that as well. It is possible.  
20 Right?  
21 A. Evidence would indicate so based on the Fallon  
22 1-10 well that there are other sands below there; yes.  
23 That is why we want to take the well deeper.  
24 Q. And the Fallon well you said got to a base of  
25 about 5.400 feet.

Page 93



1 A. 5,432.  
 2 Q. 5,432. That's right.  
 3 A. Measured depth.  
 4 Q. And it's possible you will drill deeper than  
 5 that as well; isn't it?  
 6 A. Yes.  
 7 Q. Now, sir, do you understand the relationship  
 8 between a spacing unit and an integration? Or a  
 9 unitized well?  
 10 A. Can you rephrase your question?  
 11 Q. Sure. The company you work with here has  
 12 presented in this case a spacing unit application. And  
 13 at some point it may be necessary to integrate the  
 14 mineral interests in that area before drilling and  
 15 extraction can occur. Correct?  
 16 A. Yes, sir.  
 17 Q. And is it your understanding that integration  
 18 will happen within an entire spacing unit?  
 19 A. Yes.  
 20 Q. Okay. And so by applying the space units you  
 21 have you are also suggesting, are you not, that  
 22 eventually when we get to that point this will also be  
 23 the unit in which integration of mineral interests will  
 24 occur?  
 25 A. Well, that is my understanding that that is

Page 94

1 what we usually do. I would assume we would do that  
 2 here as well.  
 3 Q. Okay. Below the 4,400 foot mark, below the  
 4 1.42 seconds, on the exhibits you have put here, have  
 5 you done a detailed study of what other pools or  
 6 reservoirs of gas or oil might exist?  
 7 A. Are you referring to a particular exhibit?  
 8 Q. No, sir. I'm asking you if below -- you  
 9 testified today about depths down to about 4,400 feet.  
 10 Plus a little more from the Fallon well. And I'm  
 11 wondering if you undertaken any study or investigation  
 12 below those depths the under the proposed unit here?  
 13 A. Yes, I have.  
 14 Q. Okay. But you haven't chosen to present those  
 15 to this hearing; correct?  
 16 A. No, I have not. There is a lot of information  
 17 that I have learned here that I haven't presented today.  
 18 Q. I'm sure there is, sir. If we ignore for a  
 19 moment -- take a step back. You said that the proposed  
 20 spacing unit here you said is appropriately described as  
 21 one that could be drained by one well. Do you recall  
 22 saying so?  
 23 A. In my declaration?  
 24 Q. In your testimony 20 minutes ago.  
 25 A. Yeah, I believe I said that. Or something to

Page 95

1 that effect.  
 2 Q. In fact, as we look at Exhibit C, the area of  
 3 the well, the well placed at the location you marked,  
 4 that well would actually drain an area, based on your  
 5 current data, that is significantly smaller than the  
 6 proposed unit; correct?  
 7 A. You mean based on the areal extent of the  
 8 amplitude?  
 9 Q. Yes. Well, based on your study here. Where  
 10 you believe the pool is is less than 320 acres; right?  
 11 A. Yes.  
 12 Q. Okay. And so --  
 13 A. For example, the north side of that maroon  
 14 fault I don't think would be drained by this well.  
 15 Q. Okay. That is all I was trying to get at.  
 16 And do you think that the areas -- do you think that any  
 17 areas beyond, so to the southwest of what you have  
 18 marked as the pool boundary, and so south of that green  
 19 fault, the two green faults, do you think that those  
 20 areas would be drained at all if you were to drill to  
 21 Sands A and B in a designated location?  
 22 A. I don't think I can answer that question  
 23 confidently one way or the other. It's possible. I  
 24 will say it is probably a little bit unlikely. It is a  
 25 long way. That unit is about one mile from east to

Page 96

1 west. So you are talking about a long way there.  
 2 Q. And the low amplitudes in that southwest  
 3 corner would also indicate there is less likelihood of  
 4 hydrocarbons there; right?  
 5 A. Yes.  
 6 MR. PIOTROWSKI: Thank you, sir, that is all  
 7 the questions I have.  
 8 THE WITNESS: Okay.  
 9 THE HEARING OFFICER: Mr. Marotz.  
 10 MR. MARTOZ: Yes. Just a few.  
 11  
 12 CROSS-EXAMINATION  
 13 QUESTIONS BY MR. MAROTZ:  
 14 Q. Mr. Smith, how are you?  
 15 A. I'm fine. How are you?  
 16 Q. I'm well. Just a few questions for you. In  
 17 Exhibit SR-01, within your declaration, which is  
 18 Attachment D, Paragraph 18. That would be on page 13 of  
 19 the PDF, I believe. You state, "Based on rigorous  
 20 interpretation of the seismic data I conclude the 320  
 21 acre geographic unit encompassing the above described 2  
 22 quarter sections is the best fit to cover the lands  
 23 underlain by the presumed pool at the primary objective  
 24 Sand B." Is that correct?  
 25 A. Yes.

Page 97

1 Q. So first question related to that is, could  
2 you give me an estimated vertical distance between that  
3 primary objective sand, Sand B, and the secondary  
4 objective sand, Sand A?  
5 A. They are pretty close together. I can give  
6 you the top -- if I refer to Exhibit A, and it is also  
7 within Exhibit B, Sand A, my estimated top is 1139  
8 subsea. And so the base would be maybe 40 or 50 feet  
9 below that. Call it 1180 or 1190. And the then top of  
10 Sand B is predicted to be 1254. So between the two tops  
11 you are looking at 120 feet or so. 122 feet. And  
12 between the base of Sand A, which we don't know how  
13 thick this sand could be, it is 12 feet, maybe 15 feet,  
14 in the Fallon 1-10. I think it is going to be thicker  
15 here because of the amplitude strength. So I think it  
16 may be 30 feet. Possibly 40 foot gross. So call it  
17 1180 subsea for the base of Sand A. And that would give  
18 you about 70 feet to the top of Sand B.  
19 Q. Okay. Thank you.  
20 A. So maybe 70 feet between the two. Seventy to  
21 80 feet roughly.  
22 Q. And then your interpretation in Paragraph 18  
23 of your declaration. I don't know if there is a need go  
24 back to it. But that interpretation, does that equally  
25 apply to Sand A? Or is that just specific to Sand B?

Page 98

1 A. Sand A is very similar. And they may -- you  
2 know, again, I go back to there is a lot of detail that  
3 you can see when you drill and log something with the  
4 geophysical logs that is below seismic resolution. But  
5 the amplitude extent of A is very similar to B. So  
6 whether they are -- pool A and pool B is separate I  
7 couldn't tell you. Or if it's -- A is just the upper  
8 part of a reservoir, and B is the lower part, I couldn't  
9 tell you. But the amplitude, when I map the amplitudes  
10 up there, they are well described by this unit. And the  
11 other thing that I like about it is the units about each  
12 other. If we go to sand -- or Exhibit C. This proposed  
13 unit boundary as outlined it is immediately adjacent  
14 with a unit that has A and B in it. And, you know,  
15 owners within here -- there is no gaps. If you own land  
16 in this area you are going to be in that well or this  
17 well. One or the other.  
18 Q. Perfect. And I think you have already  
19 answered my next question. So forgive me if it is a  
20 little redundant. I'm just want to make sure I'm  
21 running down my list thoroughly.  
22 Could you briefly summarize the key  
23 similarities and differences between Sand A and Sand B  
24 as it relates to your interpretation of the seismic data  
25 here?

Page 99

1 A. Certainly. Again, moving from the known to  
2 the unknown. We know based on drilling the Fallon 1-10  
3 well that we have a gas reservoir or pool at Sand B  
4 here. And we are producing that. And we have made 1.2  
5 BCF from it and continuing to produce --  
6 THE COURT REPORTER: Mr. Smith, again, you  
7 need to speak up a little and lean forward like you did  
8 right there.  
9 THE WITNESS: To answer the question. You  
10 asked about the similarities. We know from drilling the  
11 Fallon 1-10 well -- prior to drilling the well we had  
12 predicted that we would have a pay sand at Sand A  
13 level -- I named this sand before we drilled anything  
14 out of it. I call that Sand A and I call that Sand B  
15 just based on seismic reflections.  
16 Q. (BY MR. MAROTZ) And just to be clear. When  
17 you say a pay sand. Pay meaning hydrocarbon?  
18 A. Yes. Gas -- in this case gas/condensate-  
19 bearing sand. We call that a pay sand. I should be  
20 more correct in the terminology. Prior to drilling we  
21 had an objective Sand A. We presumed that gas -- the  
22 gas saturated sand would be here. We named it A in the  
23 drilling prognosis and permit. And when I gave the  
24 tops -- formation tops predictions. As I do with all of  
25 these permits to drill a well. Post-drilling and post

Page 100

1 drilling a well. Drilling a well we had gas shows in A  
2 and B. I believe Mr. Thum has made some exhibits that  
3 are part of the record that he may be going through.  
4 And the geophysical measurements we took in the well  
5 logs prove that there is a gas bearing sand there at B  
6 and A associated with these reflections in this  
7 particular character that we are mapping. We then  
8 completed the well and had produced about 1.2 BCF of  
9 gas. 1.2 billion cubic feet of gas from that zone. And  
10 so it has proven that this seismic character is  
11 associated with a low velocity, low density, gas bearing  
12 sandstone. We take that same seismic character and  
13 extend it around that wellbore to the north to a  
14 slightly structurally higher location and we see the  
15 similar characteristics at Sand B. Similarly, with the  
16 Fallon 1-10 Sand A, we found, I think it is 12 or 15  
17 feet, I haven't looked at the log there recently, of gas  
18 bearing sand that has not been tested. But by analogy  
19 it produced -- or it had gas shows when we drill through  
20 it. And it has the same geophysical log characters. A  
21 good porosity, a good resistivity, that we associated  
22 with this here. So this is very, very likely going to  
23 be productive as well. And we can follow that event  
24 down on the next neighboring feature. And its amplitude  
25 increases of the trough and peak. And so we can map not

Page 101

1 just on this volume -- in this window it shows what this  
2 seismic volume is. But as I said earlier I have about,  
3 I think, 15 or 20 of these. It varies on the survey.  
4 And I mapped the same events on all of those surveys.  
5 And you develop confidence if the anomalous behavior is  
6 found on multiple different processes. And you look at  
7 it in different ways. So when you have that repetition  
8 that this is the anomalous behavior at Sand A and Sand  
9 B, and it is similar to known productive areas or  
10 seismic character at Sand A and B in the Fallon well,  
11 and not just here, but in some of the -- nearly all of  
12 the 16 other wells that we have drilled -- 15 other  
13 wells that we have drilled in the basin. So you develop  
14 confidence. And you can describe that areal extent by  
15 amplitude maps of the different horizons. The trough  
16 and the peak. And so I have probably gone on too long.  
17 But the seismic character in the area of the proposed  
18 unit that we would like to form of the Sand A  
19 reflections, and Sand B reflections, are very similar to  
20 what has been proven to be productive in the immediately  
21 adjacent unit to the south. And we feel like there is  
22 very high likelihood that we will have gas pools at A  
23 and B. And we have mapped the areal extent of those.  
24 And they seem to concentrate and have a core area that  
25 is entirely within this proposed unit. If you look at

Page 102

1 the trough or peak, when we are processing it, it might  
2 extend a little bit here or there. But in the main it  
3 is very well-centered in this -- and I'm moving my  
4 cursor around the area of highest peak amplitude --  
5 MR. PIOTROWSKI: I am going to object. We are  
6 well beyond answering the question here. We are running  
7 into a long narrative. Object there is no pending  
8 question.  
9 THE WITNESS: I was trying to be thorough and  
10 I probably have gone too far.  
11 THE HEARING OFFICER: That's okay, Mr. Smith.  
12 I'll sustain the objection. Mr. Martoz, do you have any  
13 further questions?  
14 MR. MAROTZ: I have nothing further for  
15 Mr. Smith. Thank you.  
16 THE HEARING OFFICER: Mr. Christian, any  
17 redirect?  
18 MR. CHRISTIAN: Very brief.  
19  
20 REDIRECT EXAMINATION  
21 QUESTIONS BY MR. CHRISTIAN:  
22 Q. Mr. Smith, are you aware of any other  
23 geologist and geophysicists with more experience in the  
24 southwest Idaho basin in terms of developing information  
25 and interpreting it and putting it into practice than

Page 103

1 you?  
2 A. Using the 3-D seismic method I would say there  
3 are none. I would be probably the most premiere expert.  
4 In terms of fieldwork and studying the basin there are a  
5 lot of people that have been studying this area longer  
6 than I have in outcropping the field examining wells in  
7 other areas. As to the area that we are exploring in I  
8 would say that I am probably the best expert you could  
9 find.  
10 MR. CHRISTIAN: That is all I have. Thank  
11 you.  
12 THE HEARING OFFICER: Thank you. Mr.  
13 Piotrowski, anything further from you?  
14 MR. PIOTROWSKI: Just two quick questions if I  
15 could.  
16  
17 RE-CROSS-EXAMINATION  
18 QUESTIONS BY MR. PIOTROWSKI:  
19 Q. Mr. Smith, are you aware of any reason why  
20 using a different space unit would result in waste of  
21 hydrocarbons?  
22 A. Could you remind me again, Mr. Piotrowski,  
23 legally how waste is defined.  
24 Q. It is the venting or loss of otherwise  
25 comparable hydrocarbons.

Page 104

1 A. And your question regarding waste is --  
2 Q. Does the size or shape of the unit have any  
3 effect on whether a particular well causes or results in  
4 waste?  
5 A. Again, I believe there is something in the  
6 statute or the regulatory body that says you don't want  
7 to drill unnecessary wells. And you don't want the  
8 spacing unit to be smaller than could be effectively  
9 drained efficiently and economically by one well. So,  
10 for example, a 160 acre unit, in my view, would not be  
11 appropriate because it would be too small to cover the  
12 area. A 640 -- and I don't know if I'm on the right  
13 ground here legally. But the 640 would probably be too  
14 large because it would include quite a bit of  
15 unproductive acreage.  
16 Q. Sir, that wouldn't result in waste of  
17 hydrocarbons; would it? You are not going to start  
18 wasting hydrocarbons just because the spacing unit is  
19 larger; are you?  
20 A. Again, that is why I asked you about waste.  
21 I'm not really sure of context of waste in the context  
22 that you are asking me.  
23 Q. Sir, one of the bases -- one of the legal  
24 bases to change a spacing unit size is if the -- one of  
25 the basis to amend a spacing unit is if the existing

Page 105

1 spacing unit results in waste. But the contours of a  
2 spacing unit -- will the shape or size of the spacing  
3 unit change whether or not a particular well has to vent  
4 hydrocarbons into the atmosphere?  
5 A. Well, we are not going to be venting any  
6 hydrocarbons. It is not something we would do or are  
7 allowed to do.  
8 Q. Okay. And so in that sense of waste the size  
9 of the spacing unit has no effect on whether or not you  
10 or the companies you work with are going to be  
11 discharging gas into the air; right?  
12 A. All I can say is -- and I don't control the  
13 well head operations. But we are not going to be  
14 venting any gas. As to definition of waste in the  
15 statutes or the regulatory body I don't know that I can  
16 comment on that. I'm not as up on the definition.  
17 Q. As long as the spacing units proposed -- I'm  
18 sorry. Okay. Thank you. That is all I have.  
19 MR. CHRISTIAN: I have nothing. Thank you.  
20 THE HEARING OFFICER: All right. I think we  
21 are done with you, Mr. Smith. May this witness be  
22 excused?  
23 MR. CHRISTIAN: Yes.  
24 THE HEARING OFFICER: All right. You are  
25 welcome to stay and listen if you desire. But if you  
Page 106

1 have other things you would like to do you are welcome  
2 to log off as well, Mr. Smith.  
3 THE WITNESS: Thank you.  
4 THE HEARING OFFICER: Do you have any  
5 additional witnesses?  
6 MR. CHRISTIAN: The applicant has no other  
7 witnesses.  
8 THE HEARING OFFICER: Okay. Mr. Piotrowski,  
9 do you have any witnesses that you desire to call?  
10 MR. PIOTROWSKI: We do not plan to call any  
11 witnesses.  
12 THE HEARING OFFICER: Mr. Marotz, do you have  
13 any witnesses?  
14 MR. MAROTZ: Yes. We would like to call  
15 Mr. James Thum.  
16 THE HEARING OFFICER: Okay. While we are  
17 getting ready to do Mr. Thum why don't we take our 4:00  
18 break. A quick ten minute break.  
19 MR. MAROTZ: Sounds good to us.  
20 THE HEARING OFFICER: So we'll be off the  
21 record.  
22 (Recess.)  
23 THE HEARING OFFICER: Back on the record. But  
24 before we start do you want to turn down the volume of  
25 the online people now that Mr. Smith is done testifying.  
Page 107

1 So if Mr. Piotrowski has an objection or when it is his  
2 turn to ask questions we don't have as much  
3 interference.  
4 Mr. Marotz, the floor is yours.  
5 MR. MAROTZ: Thank you. We'll call Mr. James  
6 Thum from the Idaho Department of Lands.  
7  
8 JAMES THUM,  
9 first duly sworn to tell the truth relating to said  
10 cause, testified as follows:  
11  
12 DIRECT EXAMINATION  
13 QUESTIONS BY MR. MAROTZ:  
14 Q. Thank you. Mr. Thum, can you please state for  
15 me your full legal name?  
16 A. James Arthur Thum.  
17 Q. And are you currently employed?  
18 A. Yes, I am.  
19 Q. And where are you currently employed?  
20 A. The Idaho Department of Lands in Boise, Idaho.  
21 Q. And what is your current position title with  
22 the department?  
23 A. I am the oil and gas program manager.  
24 Q. How long have you fulfilled those duties?  
25 A. Since January of 2016. So approximately eight  
Page 108

1 years and five months.  
2 Q. And do you hold any higher education, degrees,  
3 certificates? What are those in and when did you earn  
4 them?  
5 A. I have a bachelor of science degree in  
6 geology, which I got in 1981. And a master of science  
7 in geophysics that I got in 1983.  
8 Q. Prior to your work with the department did you  
9 have any experience in the oil and gas industry?  
10 A. Yes, I do. I have over 30 years experience in  
11 both USA and international onshore and offshore oil and  
12 gas exploration and development projects. As well as  
13 geothermal, coal bed methane, and underground gas  
14 storage operations and development. This experience  
15 includes design and management of seismic field  
16 operations, seismic data processing sequences,  
17 geophysical modeling, and the integration of geological  
18 data with geophysical data to interpret geologic  
19 conditions and the presence of hydrocarbons in the  
20 subsurface.  
21 Q. So when an application to establish a spacing  
22 unit is filed with the Department of Lands do you have a  
23 role in evaluating that application?  
24 A. Yes, I do.  
25 Q. And what is your role in that process?  
Page 109

<p>1 A. I review the application to ensure it contains  2 all of the requirements of a spacing request as defined  3 in Idaho Code 47-3. I evaluate the application for the  4 technical content, its completeness, and whether the  5 submitted information is sufficient for the department  6 to consider the request for spacing. Especially if it  7 varies from state spacing as defined in the statute.  8 Once that information is received and complete my role  9 is to evaluate the technical aspects of the data to make  10 a determination regarding the geographic extent of the  11 proposed unit. In other words, does the data support  12 the applicant's request for spacing.  13 Q. Very good. And based on your training,  14 education, and experience, what information do you need  15 in your role to determine whether the proposed spacing  16 unit can be efficiently and effectively drained by one  17 well?  18 A. Typically in a mature oil and gas producing  19 basin, with hundreds or thousands of wells, and  20 long-term production history for each formation,  21 accurate estimates can be determined from that type of  22 information. However, the Western Snake River Basin is  23 one of the most recently discovered conventional  24 producing areas in the country. Consequently that  25 volume of technical information does not exist.</p> <p style="text-align: right;">Page 110</p>	<p>1 proposed unit to the northwest corner to assist in  2 evaluation of the spacing request.  3 Q. And did Snake River provide that information?  4 A. Yes. Snake River submitted revised  5 application materials addressing my request on May 3 of  6 2024.  7 Q. And have you had the opportunity to review  8 Snake River's exhibits in this matter SR-01 and SR-02?  9 A. Yes, I have.  10 Q. And did you listen to Mr. Smith's testimony  11 today?  12 A. Yes, I did.  13 Q. Did you listen to Mr. Wade Moore's testimony?  14 A. Yes, I did.  15 Q. Are you familiar, generally speaking, with the  16 types of geologic and seismic data that Snake River  17 submitted in support of its application?  18 A. Yes, I am.  19 Q. And based on your training, education, and  20 experience, is this the type of testing and data an  21 accepted method in the oil and gas industry for  22 determining the existence of subsurface hydrocarbons and  23 the probable productive limits of a prospective pool of  24 hydrocarbons?  25 A. Yes. In my experience it is the primary</p> <p style="text-align: right;">Page 112</p>
<p>1 Instead we must utilize available geologic and  2 geophysical data, such as seismic, to make a reasonable  3 estimate of the size of the hydrocarbon accumulation.  4 Here we have the advantage of good quality, three-  5 dimensional seismic surveys, and a well in close  6 proximity which produces from the same formation in a  7 similar style of hydrocarbon trap. From this  8 information the department can determine whether or not  9 the applicant's geologic interpretation is reasonable  10 for the basin and the unit size is appropriate for that  11 interpretation.  12 Q. Thank you. And have you had the opportunity  13 to review Snake River Oil and Gas, LLC's application in  14 this matter?  15 A. Yes, I have.  16 Q. And as part of that review did you request  17 additional information from Snake River?  18 A. Yes, I did. I requested clarification on  19 SR-01 Exhibit A to better identify the leased and  20 unleased parcels on the map of the proposed unit. On  21 the seismic profile submitted as Exhibit SR-01 I asked  22 for better labeling of the target sands. On the seismic  23 amplitude map I requested additional labeling on the  24 mapped feature. And finally I asked for a second  25 seismic profile from the southeast corner of the</p> <p style="text-align: right;">Page 111</p>	<p>1 method for estimating the subsurface limits of a  2 possible hydrocarbon accumulation. Particularly in the  3 absence of a large number of surrounding wells that are  4 drilled to and are producing or have produced from the  5 target formations.  6 Q. And in your experience is this methodology  7 consistent with development of other pools in the Harmon  8 field area?  9 A. Yes, it is consistent with all wells drilled  10 in Payette County since the first three-dimensional  11 seismic survey was completed in approximately 2012. It  12 is also consistent with conventional hydrocarbon field  13 development methodology utilized around the world.  14 Q. And so it is safe to say, given your responses  15 so far, that based on your training, education, and  16 experience, you are not only capable of reading this  17 information, but also independently interpreting this  18 geologic evidence attached to Snake River's application?  19 A. Yes, I am.  20 Q. Excellent. So next I would like to cover the  21 exhibits that the department has submitted in this  22 matter.  23 THE HEARING OFFICER: Mr. Marotz, I'm going to  24 change the screen so that I can see Mr. Piotrowski.  25 Q. (BY MR. MAROTZ) Now we'll walk through the</p> <p style="text-align: right;">Page 113</p>

Hearing June 13, 2024

1 exhibits the department has submitted in this matter.  
2 So starting with IDL-01. Which is pulled up on the  
3 screen right now. What does this exhibit depict?  
4 A. IDL-01 is a map of the Harmon field area  
5 showing the proposed spacing unit, as well as existing  
6 spacing units.  
7 Q. And to be clear the proposed spacing unit is  
8 highlighted there in yellow and with a kind of turquois  
9 dashed boundary?  
10 A. That's correct.  
11 Q. Are there any other nonstandard size spacing  
12 units in the Harmon field area?  
13 A. Yes. In referring to IDL-01, Unit E, is a  
14 480 acre unit, where the Dutch Lane 1-13 well was  
15 drilled and is producing from the C and D stands. Unit  
16 A is a 300 acre unit encompassing the Fallon 1-10 well  
17 which produces in the B Sand. Also one of the target  
18 sands in this proposed unit.  
19 Q. And both of those units are labeled and  
20 depicted on this map; correct?  
21 A. That's correct.  
22 Q. So is it safe to say that a nonstandard size  
23 spacing unit like the one proposed in this current  
24 application is consistent with the historical  
25 development in Harmon field?

Page 114

1 A. Yes, it is consistent.  
2 Q. Next we'll move on to IDL-02. What does that  
3 exhibit depict?  
4 A. This is a depth interval from approximately  
5 3,590 feet measured depth to approximately 3,750 feet  
6 measured depth of the mud log, which is depicted on the  
7 left. And a density neutron triple combo well log  
8 depicted on the right for the Fallon 1-10. And that  
9 well is U.S. well number 11-075-20032. It shows the  
10 interval of the A Sand as it was encountered in the  
11 Fallon 1-10 well.  
12 Q. And for reference these logs are all publicly  
13 available on the department's website; correct?  
14 A. Yes, it is.  
15 Q. And the Fallon 1-10 well is the well  
16 immediately to the south of the proposed spacing unit?  
17 A. That is correct.  
18 Q. And so how does this data from the Fallon 1-10  
19 well inform your understanding of the probable presence  
20 of hydrocarbons in Sand A under the proposed spacing  
21 unit in this application?  
22 A. The mud log on the left side of Exhibit IDL-02  
23 is constructed from rock fragments ground by the drill  
24 bit as it encounters the subsurface formation. Any  
25 hydrocarbons encountered are detected and noted on the

Page 115

1 mud log. This log indicates that there were quote,  
2 unquote, shows, or the presence of hydrocarbon within  
3 the A Sand interval. On the right side of Exhibit  
4 IDL-02 is the density neutron triple combo well log  
5 through the A Sand interval. The curves on the well log  
6 are generated from geophysical data gathered for  
7 measuring tools, or commonly referred to as logging  
8 tools, which are lowered into the well once it has been  
9 drilled. The response of the logging tools through the  
10 A Sand interval, in combination with the mud log  
11 information, indicates the likely presence of the A  
12 Sand. In addition, the measurements indicate the A Sand  
13 likely contains hydrocarbons. The presence of  
14 hydrocarbons in this interval in the spacing unit  
15 directly south of the proposed unit increases the  
16 likelihood that hydrocarbons will be present in the same  
17 interval within the proposed 320 acre unit.  
18 Q. Excellent. And finally we have IDL-03. And  
19 what does this exhibit depict?  
20 A. Similar to Exhibit IDL-02, this is a depth  
21 interval from approximately 3,710 feet measured depth to  
22 approximately 4,000 feet measured depth of the mud log,  
23 which is depicted on the left. And the density neutron  
24 triple combo well log depicted on the right for the  
25 Fallon 1-10, which is U.S. well number 11-075-20032, it

Page 116

1 shows the interval of the B Sand as it was encountered  
2 in the Fallon 1-10 well.  
3 Q. And so same question as for IDL-02. How does  
4 this data inform your understanding of the probable  
5 presence of hydrocarbons within the Sand B formation  
6 under the proposed spacing unit?  
7 A. The well logs depicted in Exhibit IDL-03 are  
8 from the same well logs for the Fallon 1-10, but from a  
9 depth interval covering the B Sand. The mud log on the  
10 left side of Exhibit IDL-03 is constructed from rock  
11 fragments ground by the drill bit as it encounters the  
12 subsurface formation. The hydrocarbons again are noted  
13 as detected on the mud log. This indicates there were  
14 shows or the presence of hydrocarbons within the B Sand  
15 interval. On the right side of Exhibit IDL-03 is the  
16 density neutron triple combo well log through the B Sand  
17 interval. The curves on the well log are generated from  
18 geophysical data gathered from measuring tools that had  
19 been lowered into the drilled hole. The response of the  
20 logging tools through the B Sand interval, in  
21 combination with the mud log information, indicates the  
22 likely presence of the B Sand. In addition,  
23 measurements indicate the B Sand likely contains  
24 hydrocarbons. And as you'll note on this log this well  
25 was drilled and completed and is producing from the B

Page 117

1 Sand interval. And based on our last information  
 2 reported to the state it has produced approximately 1.2  
 3 billion cubic feet of gas. Approximately 19,869 barrels  
 4 of condensate. And approximately 11,000 barrels of  
 5 water. And that producing interval was between February  
 6 of 2022 and March of 2024.  
 7 Q. And that is data from just above the lower  
 8 purple line where it says BC, BW, BCFG?  
 9 A. That's correct.  
 10 Q. And so likewise the presence of hydrocarbons  
 11 and production in this interval within the Fallon 1-10  
 12 would increase the likelihood of hydrocarbons in the  
 13 same formation of the proposed unit; is that correct?  
 14 A. That's correct.  
 15 Q. And so based on your review of the application  
 16 and exhibits and testimony in this matter have you  
 17 received sufficient information to make a recommendation  
 18 with respect to this spacing application?  
 19 A. Yes, I have.  
 20 Q. And what is your recommendation?  
 21 A. Based on the information submitted by the  
 22 applicant, the supplemental information requested by the  
 23 department, and the well log information for the Fallon  
 24 1-10 well directly to the south, the department feels  
 25 the geologic information presents a reasonable

Page 118

1 interpretation of the probable configuration of the  
 2 hydrocarbon trap in the proposed spacing unit.  
 3 Therefore, the department recommends the request for the  
 4 spacing unit be approved.  
 5 Q. And what leads you to that recommendation?  
 6 A. The geophysical information presented by the  
 7 applicant integrates well and is supported by the well  
 8 log information analyzed by the department for the  
 9 closest producing well in the same productive sandstone  
 10 reservoirs. The well log information for the Fallon  
 11 1-10 is productive or likely productive in the case of  
 12 the A Sand and supports the likelihood of hydrocarbons  
 13 in the same interval in the proposed unit. The seismic  
 14 profiles and seismic amplitude maps submitted for the  
 15 proposed unit exhibit seismic responses in the intervals  
 16 consistent with the A Sand and B Sand in the spacing  
 17 unit encompassing the Fallon 1-10 well. The seismic  
 18 responses are within the same interval in the proposed  
 19 unit as the currently producing unit for the Fallon 1-10  
 20 well. They indicate a probable productive limit of the  
 21 pool within the proposed unit. Therefore, in the  
 22 department's opinion, the proposed unit is appropriate.  
 23 The integration of the data supports the  
 24 likelihood that the proposed unit is based on a  
 25 reasonable geologic interpretation consistent with a

Page 119

1 known geology of the Western Snake River Basin. Based  
 2 on the known but limited production data for the Harmon  
 3 Field and the Western Snake River Basin. It is also  
 4 likely that the probable hydrocarbon accumulation within  
 5 the proposed unit would be efficiently and economically  
 6 drained by one well.  
 7 MR. MAROTZ: Thank you, Mr. Thum. I have  
 8 nothing further.  
 9 THE HEARING OFFICER: Okay. Mr. Piotrowski  
 10 and Mr. Christian do you have a preference who goes  
 11 next?  
 12 MR. PIOTROWSKI: No preference.  
 13 MR. CHRISTIAN: I have no preference. I'm  
 14 happy to let Mr. Piotrowski go first.  
 15 THE HEARING OFFICER: Okay. Mr. Piotrowski,  
 16 the floor is yours.  
 17 MR. PIOTROWSKI: Thank you.  
 18  
 19 CROSS-EXAMINATION  
 20 QUESTIONS BY MR. PIOTROWSKI:  
 21 Q. Mr. Thum, I'm looking here -- still up on the  
 22 screen is Exhibit IDL-03. Do you see that?  
 23 A. I do.  
 24 Q. And it looks like -- I'm looking at the  
 25 right-hand side of that exhibit and I see number 4000

Page 120

1 towards the bottom of the chart on the right. Does that  
 2 indicate the depth of that bit of data?  
 3 A. I'm sorry? I didn't catch your last word.  
 4 Q. Sure. Does that 4000, is that the depth of  
 5 the well of the data from that point?  
 6 A. This is only a partial display. As I said in  
 7 my testimony this is only the portion that covers the B  
 8 Sand in the Fallon 1-10 well.  
 9 Q. Right. And I'm just saying it looks like it  
 10 runs from -- well, a little west of 3750. Which I see  
 11 towards the top of that page. Down to a little west of  
 12 4000 at the bottom of that page. So for this document  
 13 does is that indicating the well depth where this data  
 14 was obtained?  
 15 A. Yes, it does.  
 16 Q. Okay. And is the same thing true for Exhibit  
 17 IDL-02 if those numbers in the middle of the density  
 18 neutron log relate to the depth of the well where that  
 19 data is coming from?  
 20 A. For that interval of the log; yes.  
 21 Q. Okay. And it looks like the deepest part of  
 22 the well I see here is this 4000 on IDL-03; is that  
 23 correct?  
 24 A. Yes, it is.  
 25 Q. Okay. And that is the well depth, right, as

Page 121

1 opposed to the depth below sea?  
2 A. That is incorrect. It says at the top that  
3 the total depth of this well was drilled to 5,434 feet  
4 measured depth. As I stated the 4,000 foot is the  
5 bottom of the interval we are displaying.  
6 Q. And you don't have any indication -- you  
7 didn't go any deeper than that in these exhibits; right?  
8 A. I did not.  
9 Q. Okay. And your testimony today is based on  
10 what you -- in part on what you saw in these exhibits;  
11 right?  
12 A. That's correct.  
13 Q. Okay. How big are the reservoirs or pools of  
14 natural gas below 5,500 feet for this tract of land?  
15 THE COURT REPORTER: I apologize. To make  
16 sure I got that question can you repeat it?  
17 A. (BY MR. PIOTROWSKI) What size, shape, and  
18 shade are the reservoirs or pools of hydrocarbons below  
19 5,500 feet?  
20 A. I don't have that geological information.  
21 Q. So without that data you can't come to a  
22 conclusion about that; is that fair?  
23 A. Yes. That was not part of the request so I  
24 did not evaluate that.  
25 Q. Are you recommending that a spacing unit be  
Page 122

1 approved for all depths in this case?  
2 A. I believe it is appropriate for the sandstones  
3 that were asked in the request. And that is all we  
4 evaluated.  
5 Q. Are you recommending a spacing unit that goes  
6 to all depths?  
7 A. I'm recommending a spacing unit for the A and  
8 the B Sand.  
9 Q. Okay. So would you agree to accomplish that it  
10 would be appropriate to limit the spacing unit to a  
11 depth of approximately 5,434 feet?  
12 A. I can't make that assessment right now.  
13 Q. What do you mean you can't make that  
14 assessment?  
15 A. That wasn't part of the request.  
16 Q. Okay. So you haven't evaluated anything below  
17 5,400 feet, have you, for this application?  
18 A. I have not.  
19 Q. I'm sorry, I didn't hear that.  
20 A. I have not.  
21 Q. Okay. And so it is entirely possible, we  
22 don't know one way or the other, whether, in fact, there  
23 is another pool of hydrocarbons down there that extends  
24 under the whole 640 acre unit that would normally be the  
25 default spacing unit under Idaho law; is that correct?  
Page 123

1 A. Can you repeat that question?  
2 Q. Sure. Do you agree with me that Idaho law,  
3 the law that you helped administer, expresses a default  
4 of 640 acre spacing units?  
5 A. 640 acres is a default unit for statewide  
6 wells. But that is not what was requested here.  
7 Q. In fact, you administered -- I believe I heard  
8 your testimony that part of your obligations are to  
9 administer the Oil and Gas Conservation Act; right?  
10 A. I work with the rest of the department to do  
11 that.  
12 Q. Okay. So are you familiar for instance with  
13 Idaho Code Section 47-317?  
14 A. I am.  
15 Q. And are you familiar with Subsection (3)(b)  
16 that says every directional well and vertical well  
17 drilled for gas shall be located in a spacing unit  
18 consisting of a 640 acre governmental section or lot or  
19 a tract?  
20 A. I don't have the statute in front of me. But  
21 I --  
22 Q. You are not sure whether that is what the  
23 statute provides? Or are you --  
24 A. No, I'm assuming that what you are reading is  
25 correct. But I don't have that in front of me to  
Page 124

1 confirm that.  
2 Q. Okay. So what is happening here is the  
3 applicant is asking for a variation from the normal  
4 640 acre unit; right?  
5 A. That's correct.  
6 Q. That is not just for statewide units. All gas  
7 wells are supposed to be on 640 acre spacing units;  
8 correct?  
9 A. Not if an applicant comes in and requests a  
10 variance. Which they are allowed to under 47-317.  
11 Q. Right. And to get a variance the Department  
12 of Lands would have to find that that variance --  
13 THE COURT REPORTER: I'm sorry. If you could  
14 slow down a little. I am having a hard time.  
15 MR. PIOTROWSKI: Sure.  
16 Q. (BY MR. PIOTROWSKI) In the same section of  
17 Idaho Code 47-317, in Subsection 5, I'll read it to you.  
18 And I'll you ask you to assume I'm reading it  
19 accurately. "To authorize an amendment, the department  
20 shall find that such amendment would assist in  
21 preventing the waste of oil and gas, avoid drilling of  
22 unnecessary wells, or protect correlative rights."  
23 Does that sound familiar to you?  
24 A. Yes, it does.  
25 Q. In this particular case in what way would  
Page 125



1 going from a 640 acre unit to a 320 acre unit avoid or  
 2 prevent the waste of oil and gas?  
 3 A. I can't answer that.  
 4 Q. There is no way in which that would avoid  
 5 waste; is there?  
 6 A. I can't answer that.  
 7 Q. Are you aware of any way which a smaller unit  
 8 in this case avoids waste?  
 9 A. It is. But as I stated in the beginning of my  
 10 testimony we do not have the luxury of hundreds or  
 11 thousands of wells to understand how drainage will occur  
 12 from a well. And the only way we can do that is to  
 13 gather additional information through additional wells.  
 14 So I can't make that assessment.  
 15 Q. If a 640 acre unit was approved in this case,  
 16 instead of 320 acre unit, let's say it was the two  
 17 quarter sections just north of the requested unit, would  
 18 that cause waste of oil and gas?  
 19 A. I can't answer that question.  
 20 Q. Okay. You don't know the answer to that  
 21 question; do you?  
 22 A. Again, we don't have a lot of geologic  
 23 information here. So that would be pure speculation on  
 24 my part.  
 25 Q. So would the size -- so you could always

Page 126

1 speculate on how the spacing unit size might or might  
 2 not affect waste. Is that what you are saying?  
 3 A. I'm not going to speculate on that.  
 4 Q. And if you were to say anything on that topic  
 5 it would be speculation; right?  
 6 A. If you put it that way I suppose so.  
 7 Q. Would the size of the spacing unit in this  
 8 case have any impact on healthy wells an operator is  
 9 eventually allowed to drill?  
 10 A. I don't know. I can't predict what the  
 11 operator is going to want to drill in the future. I'm  
 12 not privy to that information.  
 13 Q. So was the desire to avoid drilling  
 14 unnecessary wells a factor in your conclusion that this  
 15 is an appropriate application and should be granted?  
 16 A. That is speculation on my part.  
 17 Q. It would be speculative for you to address the  
 18 drilling of unnecessary wells? Or do you mean  
 19 speculative as to what you rely on?  
 20 A. For any future wells I can only speculate on  
 21 that.  
 22 Q. Okay. So you don't know what wells might  
 23 eventually get drilled on this piece of land; right?  
 24 A. No, I'm saying in the entire field I don't  
 25 know what wells will be drilled.

Page 127

1 Q. Okay. When it comes to this particular pool  
 2 of reservoir -- or reservoir hydrocarbons does the size  
 3 of the spacing unit change the number of wells that will  
 4 have to be drilled to access the B and A Sands that have  
 5 been talked about in this hearing?  
 6 A. Based on the information presented today, and  
 7 in the application, I think the one well would be  
 8 appropriate to drain that. But, again, this is  
 9 speculation. You never know what you are going to  
 10 encounter until you drill a well.  
 11 Q. But as we sit here today regardless of the  
 12 size of the spacing unit this pool that Mr. Smith  
 13 identified for us can be drained by one well regardless  
 14 of which spacing unit it might be in; right?  
 15 A. It likely could.  
 16 Q. Okay. And in this case if we change the  
 17 spacing unit from 640 to 320 acres does that in any way  
 18 protect correlative rights?  
 19 A. It depends on what is found in the well.  
 20 Q. What do you understand to be a correlative  
 21 right? I'm sorry, let me withdraw that. Are you  
 22 familiar with the statutory definition of correlative  
 23 rights?  
 24 A. Yes, I am.  
 25 Q. Okay. And that definition provides

Page 128

1 correlative rights are the opportunity of each owner in  
 2 a pool to produce his just and equitable share of oil  
 3 and gas without waste; correct?  
 4 A. That is my understanding; yes.  
 5 Q. Now, if the spacing unit is 640 acres will any  
 6 of the owners of those 640 acres in any way be denied  
 7 the ability to produce their oil and gas?  
 8 A. That is speculation on my part.  
 9 Q. Well, I mean, so you don't know whether it  
 10 would result in any impact on correlative rights to  
 11 choose a bigger or a smaller spacing unit in this case;  
 12 is that fair?  
 13 A. For the information presented this is  
 14 appropriate. In any sense when you drill a well you can  
 15 be surprised. You may be find something else. So there  
 16 may be something that is found in the well when it is  
 17 drilled that may create an opportunity in another part  
 18 of the section where somebody else could drill. But we  
 19 don't know that until the well is drilled. But for what  
 20 was applied for this is appropriate.  
 21 Q. And so as far as you can tell right now is it  
 22 true that you don't know whether changing the spacing  
 23 unit size will affect anyone's correlative rights or  
 24 not; do you?  
 25 A. For what is presented this is appropriate.

Page 129

1 Q. Sir, that is not the question I asked. You  
2 don't know whether it will affect anyone's correlative  
3 rights; do you?  
4 A. Well, you are speculating on the future. And  
5 no one knows what is going to happen when you drill a  
6 well.  
7 Q. And because you don't know what is going to  
8 happen you cannot make any prediction one way or the  
9 other about what will happen to correlative rights if  
10 the spacing unit is either approved or denied?  
11 A. Again, that is speculation. But for this  
12 information this will --  
13 Q. Sir, I'm just trying to reach an agreement  
14 with you. That it is speculation to make those  
15 assessments about future correlative rights; right?  
16 A. Yes, I suppose so. I'm trying to --  
17 Q. That's it. I'm sorry.  
18 A. I'm just trying to understand you're  
19 questioning. That is all.  
20 Q. Okay. So in order to authorize an amendment  
21 from the 640 acres default Idaho Code 41-317, Subsection  
22 5, says to authorize an amendment, the department shall  
23 find that such an amendment would assist in preventing  
24 the waste of oil and gas, or avoid drilling of  
25 unnecessary wells, or protect correlative rights. And  
Page 130

1 is it true, as you just testified, that guessing whether  
2 this spacing unit would do any of those things would  
3 require to you engage in speculation that goes beyond  
4 the scientific data that is available to you right now;  
5 is that right?  
6 A. We have limited scientific data in this basin.  
7 So we have to go with what we know. And that is what we  
8 are doing.  
9 Q. So to reach a conclusion about the items I  
10 just listed off it is just not something you can do with  
11 the data that is available. You would need more data to  
12 reach that conclusion. Right?  
13 A. No. As I said, for the data presented this is  
14 the best conclusion.  
15 Q. So has the department in fact found that a 320  
16 acre spacing unit in this case will prevent waste of oil  
17 and gas? Is there such a finding they made?  
18 A. That is a recommendation; yes.  
19 Q. Did you conclude that in fact a smaller  
20 spacing unit will prevent waste in this case?  
21 A. Yes.  
22 Q. Have you made such a finding?  
23 A. Yes, I believe it will.  
24 Q. In what way will it reduce waste? Explain  
25 that to me, please.  
Page 131

1 THE HEARING OFFICER: Mr. Piotrowski, we have  
2 an objection.  
3 MR. MAROTZ: I object that the ultimate  
4 finding to be made by the department rests with the  
5 administrator. The department has yet to make a finding  
6 on that issue yet. And it would be not material for  
7 Mr. Thum to say whether a finding has been made or not.  
8 THE HEARING OFFICER: Mr. Piotrowski, do you  
9 have a response to that objection?  
10 MR. PIOTROWSKI: Oh, I'll happily rephrase my  
11 question.  
12 THE HEARING OFFICER: Okay. Please do.  
13 Q. (BY MR. PIOTROWSKI) Mr. Thum, do you believe  
14 that a smaller spacing unit in this case will reduce  
15 waste of oil and gas?  
16 A. I believe for the sands that were requested,  
17 yes, it will.  
18 Q. How will it reduce waste?  
19 A. Because --  
20 Q. In your opinion.  
21 A. Because it will define the limits of the  
22 proposed pool where no other wells can be drilled.  
23 Just this one well.  
24 Q. If the unit was large it would still limit to  
25 just one well; wouldn't it?  
Page 132

1 A. That is speculation. It depends on what this  
2 well finds.  
3 Q. And is it possible, speculation wise, that we  
4 will drill more than one well --  
5 THE COURT REPORTER: Mr. Piotrowski, you need  
6 to lean forward again and not lean back. Try again.  
7 Q. (BY MR. PIOTROWSKI) Mr. Thum, I am having a  
8 hard time understanding why the size of the spacing unit  
9 affects waste. Can you explain that to me in simple  
10 layman's terms?  
11 A. Because it defines a size -- a geographic size  
12 for appropriate development of this pool.  
13 Q. And if we -- were you done? I didn't mean to  
14 step you on you. I wanted to make sure you were done  
15 with your answer.  
16 A. Yes, I'm done.  
17 Q. And if this unit were instead doubled in size,  
18 still focusing on the A and B Sands, but let's say we  
19 went with the 640 acre spacing unit, would it result --  
20 can you explain to me in simple terms how that would  
21 cause the waste of oil and gas?  
22 A. Again, you are asking me to speculate on  
23 future geology. I can't do that.  
24 Q. And you believe that this spacing unit were  
25 less than 640 acres, instead of 320, that it would  
Page 133

1 necessarily result in drilling more wells than it would  
 2 if you just left the 320 acre unit?  
 3 A. I don't know. That is speculation. That is  
 4 an operator decision.  
 5 Q. In your opinion will approving a larger  
 6 spacing unit result in drilling more wells?  
 7 A. I don't have an opinion on that.  
 8 Q. Do you believe that anybody will use their  
 9 right to develop their oil and gas resources if the  
 10 hearing officer and the board approves, the commission  
 11 approves, a 640 acre unit?  
 12 A. I can't predict what they would approve.  
 13 Q. I'm saying if it were to be approved would you  
 14 believe it would harm anybody's correlative rights?  
 15 A. I can't say.  
 16 Q. You are unable to say "yes" or "no" to that  
 17 question?  
 18 A. Yeah, I can't answer that.  
 19 Q. Okay. If we can take a look please at --  
 20 maybe somebody can pull it up. I certainly can if  
 21 necessary. Maybe it is not necessary. Do you recall  
 22 Exhibit C that Mr. Smith testified about? Which is the  
 23 amplitude strength map?  
 24 A. Yes.  
 25 Q. And do you agree with the conclusions and

Page 134

1 opinions expressed by Mr. Smith in where he placed the  
 2 various elements on that map in Exhibit C?  
 3 A. I don't have the luxury of all of the data  
 4 that Mr. Smith constructed that map. As I stated  
 5 earlier I believe that his conclusions are a reasonable  
 6 interpretation of the geological and geophysical data in  
 7 the basin.  
 8 Q. And so if his conclusions are reasonable then  
 9 would you also agree that the proposed spacing unit is  
 10 larger than it needs to be in order to drain Sands A and  
 11 B?  
 12 A. I believe it is appropriate.  
 13 Q. Do you believe that the people in the  
 14 northeast corner of that proposed unit have any oil and  
 15 gas in Sands A and B?  
 16 A. I don't know. The well has not been drilled.  
 17 Q. According to Mr. Smith -- do you agree with  
 18 Mr. Smith that with those low amplitudes, and that fault  
 19 line that is marked in brown in Exhibit C, make it  
 20 extremely unlikely that northeast corner contains any  
 21 hydrocarbons in Sands A and B?  
 22 A. As presented, yes, that is likely correct.  
 23 Q. So Mr. Smith's opinion on that you believe is  
 24 a reasonable one?  
 25 A. I do.

Page 135

1 Q. Okay. Do you have -- why is it that you think  
 2 it is appropriate to draw the spacing unit in a  
 3 rectangle when we are trying to define a natural  
 4 feature?  
 5 A. Because that is how spacing works.  
 6 Q. What do you mean by that is how spacing works?  
 7 A. It a geographic boundary for a geologic  
 8 description. And that is virtually impossible to do  
 9 with a geographic boundary.  
 10 Q. Sir, I've owned a lot of real estate in the  
 11 State of Idaho over the years. None has solid section  
 12 lines. Do you think there was some problem in  
 13 geographically describing that property?  
 14 A. I believe the statute says that units shall be  
 15 described using geographic boundaries. So that is how  
 16 it is done in every state in the union.  
 17 Q. In fact, the statute says the geographic  
 18 boundary of a unit shall be described in accordance with  
 19 the Public Land Survey System. Do you believe that is  
 20 correct?  
 21 A. Yeah, that sounds like a correct reading.  
 22 Q. Now, couldn't you describe something in  
 23 accordance with the Public Land Survey System by  
 24 referencing a spacing unit by identifying township and  
 25 range, et cetera, and then using metes and bounds, and

Page 136

1 measure it just like we all do for both commercial and  
 2 real estate property?  
 3 A. Metes and bounds are different from point of  
 4 call. And point of call is generally used as a  
 5 geographic boundary.  
 6 Q. Is it possible to describe a land mass, a  
 7 service area, in accordance with the Public Land Survey  
 8 System, when that area that you are describing is not  
 9 precisely coextensive with the section lines?  
 10 A. I don't understand what you are asking.  
 11 Q. Well, let's say I bought a round piece of  
 12 property. It's a circle. On the surface it is  
 13 described as a circle. And obviously it is not going to  
 14 be coextensive with a section. Would it be possible to  
 15 provide a geographic description of the location of that  
 16 circle in accordance with the Public Land Survey System?  
 17 A. That is not how units are described.  
 18 Q. Could you describe my hypothetical circle in  
 19 accordance with the Public Land Survey System?  
 20 A. But you don't describe units that way.  
 21 Q. Sir, that is not what I'm asking you. I'm  
 22 asking you if you picked a unit and you decide I want a  
 23 circular unit could you describe that unit in accordance  
 24 with the Public Land Survey System?  
 25 A. I suppose you could. But it is not how it is

Page 137

1 done anywhere.  
 2 Q. Okay. Now, the statute here in Idaho says you  
 3 will describe -- the unit shall be described in  
 4 accordance with the Public Land Survey System. And if  
 5 the unit --  
 6 THE COURT REPORTER: Hold on, Mr. Piotrowski.  
 7 Slow down.  
 8 MR. PIOTROWSKI: It's a long question and I  
 9 went too fast.  
 10 THE COURT REPORTER: Yes, you did.  
 11 Q. (BY MPIOTROWSKI) When you describe something  
 12 in accordance with a Public Land Survey System does that  
 13 mean you have to make all of your borders right on the  
 14 section lines?  
 15 A. I believe that is how the statute is  
 16 interpreted; yes.  
 17 Q. And, in fact, in your exhibit didn't you just  
 18 show us several spacing units that don't follow section  
 19 lines?  
 20 A. I don't believe so. I think they all follow  
 21 section lines.  
 22 Q. If we can take a look at your Exhibit IDL-01.  
 23 If you look at what is labeled as Unit A. Do you see  
 24 that?  
 25 A. Yes, I do.

Page 138

1 Q. Now, there is a dashed red line that was an  
 2 earlier unit, spacing unit, boundary; correct?  
 3 MR. BROWN: I'm not talking. I'm just  
 4 listening to the zoom call.  
 5 THE HEARING OFFICER: Mr. Brown, can you mute  
 6 yourself.  
 7 Q. (BY MR. PIOTROWSKI) So the red dotted line  
 8 around Unit A it followed the section lines; right?  
 9 A. Yes, it did.  
 10 Q. Other than the Payette River which happens to  
 11 be the state line in this case.  
 12 A. That's right.  
 13 Q. And the purple line inside Unit A, what is  
 14 that one for? That is an approved integrations unit.  
 15 That doesn't follow the section lines; does it?  
 16 A. That can be described as the -- I believe the  
 17 northern 1/2 of -- I think that's Section 16 -- northern  
 18 1/2 of the NE 1/4 of Section 16. And the NE 1/4 of the  
 19 NW 1/4 of Section 16. So, yes, it is using section  
 20 lines.  
 21 Q. So you just described that unit in accordance  
 22 with the Public Land Survey System; right?  
 23 A. More or less.  
 24 Q. And you can still do that even if the unit was  
 25 not square or rectangle? You could still do that if you

Page 139

1 use precise measurements; couldn't you?  
 2 A. I have never seen any drawn that way.  
 3 Q. Okay. Now, in fact, if we look -- still  
 4 looking at Unit A. There is even a smaller dotted red  
 5 line. Do you see that one?  
 6 A. I do. But that is not an existing unit.  
 7 Q. Well, what is that?  
 8 A. That is a withdrawn unit boundary.  
 9 Q. So is that a unit that was approved and then  
 10 later withdrawn? Or was that a unit that was applied  
 11 for and withdrawn before it was approved?  
 12 A. It was withdrawn before it was approved.  
 13 Q. Okay. So in Unit A we found a unit that is  
 14 described in part as portions of a quarter section;  
 15 right? The north half of the east half of whatever?  
 16 A. I believe that's correct; yes.  
 17 Q. Okay. And do you believe that that particular  
 18 decision is consistent with the statute that you have to  
 19 apply and enforce?  
 20 A. Yes. I believe it is appropriate; yes.  
 21 Q. Is there anything in the statute that says a  
 22 spacing unit needs to be rectangular? Does it use the  
 23 word rectangular?  
 24 A. I'm not aware of that wording; no.  
 25 Q. And nothing in that statute says that units

Page 140

1 need to be square either; do they?  
 2 A. I'm not aware of that wording in the statute  
 3 either.  
 4 Q. Okay. And so what is required though is that  
 5 you be able to describe the property in accordance with  
 6 the Public Land Survey System. I think we agree on that  
 7 much. Is that right?  
 8 A. It doesn't say -- it doesn't use the word  
 9 property. I'm aware of that.  
 10 Q. I'm sorry, the Public Land Survey System. So  
 11 other than that statement that says that the unit shall  
 12 be described in accordance with that system is there any  
 13 other statutory guidance that you are aware of about  
 14 what shape or what size, other than 640 acres, the  
 15 spacing units should be?  
 16 A. No. Unless you want to read it to me.  
 17 Q. Yeah, I'm not aware of any. That is why I'm  
 18 asking you. Are you aware of any?  
 19 A. No. And I don't have the statute in front of  
 20 me.  
 21 Q. Okay.  
 22 MR. PIOTROWSKI: Thank you, Mr. Thum. I  
 23 appreciate your patience. That is all I have.  
 24 THE HEARING OFFICER: Mr. Christian.  
 25

Page 141

1 CROSS-EXAMINATION  
 2 QUESTIONS BY MR. CHRISTIAN:  
 3 Q. Good afternoon, Mr. Thum. I want to go back  
 4 through some of the statutory sections that Mr.  
 5 Piotrowski discussed with you. Because I think he left  
 6 some things out.  
 7 MR. PIOTROWSKI: Object to the commentary.  
 8 Can we strike that from the record, please?  
 9 THE HEARING OFFICER: It is stricken. Just  
 10 the commentary about leaving things out. You can prove  
 11 any point you would like to through the testimony of  
 12 this witness.  
 13 MR. CHRISTIAN: Thank you, madam hearing  
 14 officer. I would also like to ask that Mr. Piotrowski  
 15 refrain from cutting either me off or a witness off  
 16 when they are speaking. He has been doing it today. He  
 17 has done it before.  
 18 MR. PIOTROWSKI: When I need to make an  
 19 objection I'll raise my objection. Other than that I'll  
 20 do my best.  
 21 THE HEARING OFFICER: Thank you, Mr.  
 22 Piotrowski.  
 23 Q. (BY MR. CHRISTIAN) Mr. Thum, Mr. Piotrowski  
 24 referred you to section -- Subsection 3 of 47-317 in  
 25 Idaho Code. Which is the section that deals with the  
 Page 142

1 spacing configurations; right?  
 2 A. That's correct.  
 3 Q. Now, I will read to you the first part of  
 4 Section 3. It says, "In the absence of an order by the  
 5 department establishing spacing units, or authorizing  
 6 different well density patterns for particular pools or  
 7 parts thereof, the following requirements shall apply."  
 8 Do you understand that to mean that default spacing  
 9 system applies in the absence of an order establishing a  
 10 spacing unit or units?  
 11 A. I do.  
 12 Q. Okay. Now, Subsection B of 47-317 says -- and  
 13 I think Mr. Piotrowski may have read you part of this as  
 14 well -- that a directional or vertical gas well shall be  
 15 located in a spacing unit consisting of a 640 acre  
 16 governmental section or lot or tract, or combination of  
 17 lots and tracts substantially equivalent thereto.  
 18 Do you understand that to mean that ordinarily  
 19 a default spacing section for a gas well -- or a spacing  
 20 unit for a vertical gas well is a standard 640 acre  
 21 unit?  
 22 A. I do.  
 23 Q. Okay. So in this instance the applicant has  
 24 requested a different kind of -- an order establishing a  
 25 spacing unit that straddles two sections; right?  
 Page 143

1 A. That's correct.  
 2 Q. It is the NE 1/4 section of Section 9 and the  
 3 NW 1/4 section of Section 10. In the absence of an  
 4 order do you agree that the formation that is at issue  
 5 here, Sands A and Sand B accumulations that the  
 6 applicant is focused on, would be split up between  
 7 Sections 9 and 10?  
 8 MR. PIOTROWSKI: Objection. Leading.  
 9 THE WITNESS: Can you repeat the question.  
 10 THE HEARING OFFICER: Let me rule on the  
 11 objection. Do you want to respond?  
 12 MR. CHRISTIAN: I asked him if he agrees with  
 13 what I have described.  
 14 MR. PIOTROWSKI: That is a leading question.  
 15 MR. CHRISTIAN: It doesn't direct him to  
 16 answer "yes" or "no."  
 17 MR. PIOTROWSKI: It is still a leading  
 18 question.  
 19 THE HEARING OFFICER: Mr. Piotrowski, let me  
 20 rule on this. We have a lot of leeway in administrative  
 21 proceedings. Including asking leading questions. But  
 22 this witness is asking on cross-examination, which  
 23 leading questions are also permissible.  
 24 MR. PIOTROWSKI: The witness is not hostile to  
 25 Mr. Christian or his client. The witness is in line  
 Page 144

1 with his client. That is why it is an inappropriate  
 2 leading question.  
 3 THE HEARING OFFICER: Mr. Piotrowski, the  
 4 rules of evidence do not apply to these proceedings.  
 5 I'm got to permit the question to stand as asked. I  
 6 will ask the court reporter to read it back, please.  
 7 MR. CHRISTIAN: How about if I just reask the  
 8 question.  
 9 THE HEARING OFFICER: That works as well.  
 10 Q. (BY MR. CHRISTIAN) Mr. Thum, do you  
 11 understand that in the absence of an order establishing  
 12 spacing units that the formation at issue here would be  
 13 split between two different sections?  
 14 A. I do.  
 15 Q. So if it were to be produced based on default  
 16 spacing it would require two wells to produce the  
 17 formation rather than one; right?  
 18 A. As long as they were in legal locations; yes.  
 19 Q. Yes. You would have to comply with setback  
 20 requirements and that sort of thing?  
 21 A. Correct.  
 22 Q. So does that tell you whether the requested  
 23 spacing unit may prevent the drilling of unnecessary  
 24 wells?  
 25 A. Yes, it could potentially do that. Again, as  
 Page 145

1 I stated, it depends on what the well finds.  
 2 Q. Sure. Mr. Piotrowski also asked you about  
 3 correlative rights. Let's assume the spacing order that  
 4 the applicant request was not granted. And that the  
 5 applicant had to go drill into the formation, let's say,  
 6 through a spacing unit that was the entirety of Section  
 7 9. Based on Mr. Smith's testimony is it -- do you  
 8 understand that outside of the NE 1/4 section of Section  
 9 9 the rest of the section would not be prospective for  
 10 Sands A and B? The portions of Sands A and B that are  
 11 being pursued by the applicant here?  
 12 A. Potentially, yes. That's correct.  
 13 Q. Okay. So at least based on the information  
 14 that Mr. Smith has presented, and the interpretations he  
 15 has offered in his testimony, three-quarters of that --  
 16 of the default unit being Section 9 would be  
 17 nonproductive?  
 18 A. That's correct.  
 19 Q. However, because of the way the statute  
 20 applies, revenue from a well, encompassing all of  
 21 Section 9, would be shared among all of the property  
 22 owners of Section 9; right?  
 23 A. That's correct.  
 24 Q. Okay. So the correlative rights of the folks  
 25 in the NE 1/4 section of Section 9 would be impacted?  
 Page 146

1 A. Potentially, yes.  
 2 Q. Okay. You had a discussion with Mr.  
 3 Piotrowski about the description of the unit in  
 4 accordance with the Public Land Survey System.  
 5 What do you understand the Public Land Survey  
 6 System to include? Let me ask the question different  
 7 way. How do you understand the Public Land Survey  
 8 System to describe land?  
 9 A. By section.  
 10 Q. Or portions thereof?  
 11 A. Yes.  
 12 Q. Quarter sections, for example?  
 13 A. Yes.  
 14 Q. Like we are talking about here. So it's true  
 15 that the proposed unit area anyway is described in  
 16 accordance with the Public Land Survey System?  
 17 A. That's correct.  
 18 Q. Okay. And the statute just says -- it is  
 19 47-317(2). Mr. Piotrowski also read it to you. It says  
 20 the units established by the department shall be  
 21 geographic. What do you understand that to mean?  
 22 A. That they do not follow --  
 23 MR. PIOTROWSKI: Objection. This is a legal  
 24 question that he is asking. He is asking for a  
 25 statement about a legislative addendum. What was meant  
 Page 147

1 by the legislature by those choice of words.  
 2 MR. CHRISTIAN: Mr. Piotrowski asked a number  
 3 of questions asking Mr. Thum to interpret 47-317. And  
 4 I'm merely following up on that.  
 5 MR. PIOTROWSKI: And I disagree that he is  
 6 qualified to answer those questions.  
 7 THE HEARING OFFICER: I agree, Mr. Piotrowski,  
 8 you did spend asking a number of questions on what --  
 9 how a spacing unit shall described vis-a-vis geographic  
 10 boundaries. Even including circular spacing units as an  
 11 example. So I'm going to permit these questions.  
 12 MR. CHRISTIAN: You can answer the question.  
 13 THE WITNESS: Can you read the question back  
 14 to me, please.  
 15 MR. CHRISTIAN: I can ask the question again.  
 16 Q. (BY MR. CHRISTIAN) I read to you the line  
 17 that said these units established by the department  
 18 shall be geographic. And I asked you what your  
 19 understanding of that was.  
 20 A. That you would use sections or portions of  
 21 sections to make those descriptions.  
 22 Q. In your experience in the industry, as you  
 23 have described in response to Mr. Marotz's questions, is  
 24 it ordinary to describe a spacing unit by reference to  
 25 an interpreted geologic boundary of a pool?  
 Page 148

1 A. Never in my experience; no.  
 2 Q. I understand I think there is one place in the  
 3 country in south Louisiana where they attempted to do it  
 4 and then everybody just fights about it all of the time.  
 5 MR. PIOTROWSKI: Objection. Foundation.  
 6 Q. (BY MR. CHRISTIAN) Do you have any  
 7 understanding about that?  
 8 A. I have worked there, but never had to draw a  
 9 unit boundary like that.  
 10 Q. Mr. Piotrowski asked you about waste. And you  
 11 may recall -- do you recall his questions to Mr. Smith  
 12 about the same subject?  
 13 A. Vaguely, yes.  
 14 Q. Okay. He talked about the escape or releasing  
 15 of gas above ground. Do you understand -- are you  
 16 familiar with the definition of waste in Idaho Oil and  
 17 Gas Conservation Act?  
 18 A. Yes.  
 19 Q. And with respect to gas it includes a  
 20 component that relates to operating or producing a well  
 21 in a manner that results in decreased pressure, or  
 22 otherwise results in a diminishment of the ultimate  
 23 amount of the resource to be produced; right?  
 24 A. That's correct.  
 25 Q. And Mr. Piotrowski left that out of his  
 Page 149

1 discussion; right?  
 2 A. I don't remember.  
 3 Q. If a unit is drawn excessively large or  
 4 excessively small could it result in what I would call  
 5 underground waste? In other words, the drilling of  
 6 wells in such a manner and pattern that the ultimate  
 7 recovery of the resource may be diminished?  
 8 A. In general, yes, that is correct.  
 9 Q. Okay. In your view, based on the information  
 10 that you received from the applicant, and the testimony  
 11 that has been presented here today, is it your view that  
 12 the proposed unit area is a reasonable configuration to  
 13 produce the overall resource in the area in an efficient  
 14 manner?  
 15 A. As I stated in my testimony, yes, that is  
 16 correct.  
 17 MR. CHRISTIAN: I think that's all I have.  
 18 THE HEARING OFFICER: Before I ask Mr. Marotz  
 19 or Mr. Piotrowski if they have anything left -- well,  
 20 let me ask that question and about how much. Because we  
 21 are at the breaking point. I don't want to get all  
 22 motherly on you. But we are getting a little bit tense  
 23 and grumpy here. So I think a break could be useful.  
 24 But if there is only a couple follow-up questions then I  
 25 think we could probably wrap this up, take a break, and  
 Page 150

1 open it up to public comment, if any.  
 2 MR. MAROTZ: I have about four or five  
 3 questions.  
 4 THE HEARING OFFICER: Okay. Mr. Piotrowski,  
 5 do you have a rough estimate of how much time you would  
 6 need.  
 7 MR. PIOTROWSKI: I may or may not ask one  
 8 question.  
 9 THE HEARING OFFICER: Okay. So let's go ahead  
 10 and power through your four or five questions and Mr.  
 11 Piotrowski's maybe one question. And then we'll break  
 12 if necessary.  
 13  
 14 REDIRECT EXAMINATION  
 15 QUESTIONS BY MR. MAROTZ:  
 16 Q. So, Mr. Thum, spacing units, as you understand  
 17 them, describe an area on the surface; correct?  
 18 A. That's correct.  
 19 Q. And oil and gas reserves are beneath the  
 20 surface?  
 21 A. That's correct.  
 22 Q. So is it, in your training, experience, and  
 23 education, is it possible to know with any level of  
 24 certainty the boundaries of a subsurface reservoir that  
 25 would allow you to draw a meaningful line on the surface  
 Page 151

1 that corresponds exactly to where that pool is below the  
 2 ground?  
 3 A. It is not. Based on the nature of the data  
 4 acquired. And that is why you space appropriately to  
 5 allow for those uncertainties.  
 6 Q. And in the event that information gleaned from  
 7 a well in the spacing unit shows that the unit is either  
 8 larger or -- or the subsurface reservoir, rather, is  
 9 either larger or smaller than the spacing that it should  
 10 provide, the department has mechanisms to update the  
 11 size of those spacing units, depending on the evidence;  
 12 correct?  
 13 A. That is correct.  
 14 MR. MAROTZ: Thank you. That is all I have.  
 15 THE HEARING OFFICER: Mr. Piotrowski, the  
 16 floor is yours.  
 17  
 18 RE-CROSS-EXAMINATION  
 19 QUESTIONS BY MR. PIOTROWSKI:  
 20 Q. Mr. Thum, you're aware, aren't you, that it is  
 21 appropriate to, under the statutes in this case, to ask  
 22 the spacing unit be either not located within the  
 23 boundaries of a section, or not within a quarter  
 24 section, or even a quarter-quarter section, pursuant to  
 25 Idaho Code 47-317(4)(c); is that right?  
 Page 152

1 A. I don't have that section of code in front of  
 2 me. So I can't confirm that.  
 3 Q. Do you recall seeing that section that allows  
 4 to define the spacing unit down to a quarter-quarter  
 5 section level?  
 6 A. I don't recall that wording.  
 7 MR. PIOTROWSKI: Thank you. That is all.  
 8 THE HEARING OFFICER: Thank you, Mr.  
 9 Piotrowski. Do we have anybody from the public here  
 10 that wants to provide public testimony, Mr. Piotrowski,  
 11 on behalf of your client CAIA? Did you want to speak?  
 12 MR. PIOTROWSKI: No. I do not want to speak  
 13 on behalf of the client. In fact, I understood the  
 14 evidentiary portion of this hearing will be over at 5:00  
 15 p.m. I'm already well past my next appointment. Are we  
 16 simply continuing the hearing into the public section?  
 17 In the past these have been separate proceedings.  
 18 THE HEARING OFFICER: I just assumed that we  
 19 were going to roll into the public portion of the  
 20 proceedings to the extent the public could join us at  
 21 this point in time since the evidentiary portion went  
 22 long.  
 23 MR. PIOTROWSKI: Well, I have nothing to add  
 24 in the public section.  
 25 THE HEARING OFFICER: Are you here to testify  
 Page 153

1 on behalf of the public?  
 2 MS. NITZ: No, I am not.  
 3 THE HEARING OFFICER: Okay. So seeing that  
 4 there is no one outside of the City Hall room waiting to  
 5 testify I'm comfortable closing these proceedings with  
 6 the evidentiary portion and the public comment portion.  
 7 Given that these proceedings are technically open until  
 8 the 17th I will permit the commission or the department  
 9 to accept public written comment until the 17th. At  
 10 which point the proceedings, the public comment portion,  
 11 will be closed.  
 12 All right. Anything else from anybody else?  
 13 MR. MAROTZ: I would ask if the hearing  
 14 officer would accept some post-hearing statements from  
 15 the parties. We can do it on an expedited basis just to  
 16 make sure we have clarified our issues. I believe there  
 17 is some matters that would be better put on paper to  
 18 assist you.  
 19 THE HEARING OFFICER: Yes. Absolutely. So,  
 20 Mr. Piotrowski, written closings have been requested.  
 21 I'm going to grant that request. At this point in time  
 22 I ask that they be submitted no later than the 17th  
 23 given our statutory deadline. I will accept them after  
 24 5:00 on the 17th to the extent the parties need that  
 25 amount of time. At that point the evidentiary record


Page 154

1 will close, thus starting the statutory 30 day clock for  
 2 my decision to issue. The department has requested a  
 3 copy of the transcript. I would like one as well.  
 4 Mr. Christian, would you like a copy of the transcript?  
 5 MR. CHRISTIAN: Yes, please.  
 6 THE HEARING OFFICER: Mr. Piotrowski, would  
 7 you like a copy of the transcript.  
 8 MR. PIOTROWSKI: No, thank you.  
 9 MR. CHRISTIAN: Madam hearing officer, on the  
 10 subject of post-hearing statements if I might. We have  
 11 already given you a lot. And I wonder if we might limit  
 12 them to something like five pages, exclusive of  
 13 certificates of services and signature blocks and that  
 14 kind of thing. We ought to be able to say what we need  
 15 to say that quickly. Especially since we got to file it  
 16 in four days.  
 17 THE HEARING OFFICER: I'm comfortable with  
 18 that to the extent someone thinks they need more than  
 19 that it is fine by me. I always forget that people are  
 20 more purposed than I ever was in practice. And I would  
 21 never file anything longer than five pages for the most  
 22 part. So thank you for that. So parties are to attempt  
 23 to keep their filings to five pages. Not strictly  
 24 enforced. But if I get 50 pages I will probably be  
 25 striking some portions of it.

Page 155

1 Okay. With that we are in recess. Thank you.  
 2 (Zoom recording stopped; subsequent to which,  
 3 proceedings concluded at 5:30 p.m.)  
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Page 156

1 REPORTER'S CERTIFICATE  
 2 I, MONICA M. FUHS, CSR No. 471, Certified  
 3 Shorthand Reporter, certify: That the foregoing  
 4 proceedings were taken before me at the time and place  
 5 therein set forth, at which time the witness was put  
 6 under oath by me;  
 7 That the testimony and all objections made were  
 8 recorded stenographically by me and transcribed by me or  
 9 under my direction;  
 10 That the foregoing is a true and correct record  
 11 of all testimony given, to the best of my ability;  
 12 I further certify that I am not a relative or  
 13 employee of any attorney or party, nor am I financially  
 14 interested in the action.  
 15 IN WITNESS WHEREOF, I set my hand and seal this  
 16 24th day of June, 2024.  
 17  
 18  
 19  
 20  
 21   
 22 MONICA M. FUHS, CSR  
 23 Notary Public  
 24 1109 W. Main Street, #220  
 25 Boise, Idaho 83702  
 My commission expires August 3, 2024

Page 157



[& - 1:00]

<b>&amp;</b>	<b>1,932</b> 81:3	<b>1.32.</b> 82:15	<b>12,000</b> 22:21
<b>&amp;</b> 2:10,11 3:2 4:2	<b>1-10</b> 20:1 25:24 26:4,6 27:3,7 27:11 29:17,19 29:21 30:8,13 30:19 31:9 32:11 34:23 35:13 36:12 50:4,20 51:7 54:24 56:2,17 57:24 58:23 60:19 61:11 69:22 70:22 71:1,8 72:19 73:2 74:2,14 75:1 77:13,14 80:23 81:9,13 93:22 98:14 100:2,11 101:16 114:16 115:8,11,15,18 116:25 117:2,8 118:11,24 119:11,17,19 121:8	<b>1.33</b> 81:3 <b>1.4</b> 80:11 93:6 93:9 <b>1.42</b> 95:4 <b>1.420</b> 80:10 <b>1.425</b> 80:18 82:2 <b>1/2</b> 139:17,18 <b>1/4</b> 1:6 19:22 19:22 139:18 139:18,19 144:2,3 146:8 146:25 <b>10</b> 1:8 3:5 5:7 19:23 144:3,7 <b>10,000</b> 22:21 <b>100</b> 39:24 57:15 60:13 81:5 89:1 <b>103</b> 3:11 <b>104</b> 3:12 <b>108</b> 3:17 <b>11,000</b> 118:4 <b>11-075-20032</b> 115:9 116:25 <b>1109</b> 157:23 <b>1139</b> 61:5 63:6 98:7 <b>114</b> 4:9,10 <b>116</b> 4:11 <b>1180</b> 98:9,17 <b>1190</b> 98:9 <b>12</b> 26:8 61:12 98:13 101:16	<b>120</b> 3:18 98:11 <b>122</b> 98:11 <b>1254</b> 98:10 <b>1294</b> 60:12 <b>1296</b> 30:7,7 <b>13</b> 1:18 69:20 97:18 <b>1388</b> 58:6 59:17 <b>141</b> 3:19 <b>1487</b> 2:13 <b>15</b> 49:6 98:13 101:16 102:3 102:12 <b>151</b> 3:20 <b>152</b> 3:21 <b>16</b> 49:22 102:12 139:17 139:18,19 <b>160</b> 105:10 <b>17</b> 3:8 28:14 29:1 65:1 <b>17th</b> 154:8,9,22 154:24 <b>18</b> 68:6 97:18 98:22 <b>19,869</b> 118:3 <b>1902</b> 25:15 <b>1903</b> 25:15 <b>1981</b> 109:6 <b>1983</b> 17:18 18:1 109:7 <b>1:00</b> 5:14
<b>0</b>			
<b>000</b> 80:13 <b>01</b> 1:8 4:4,9 5:11 8:10 9:10 28:14 49:6,22 65:1 68:6 97:17 111:19 111:21 112:8 114:2,4,13 138:22 <b>01-001</b> 1:6 5:10 <b>02</b> 4:5,10 8:12 8:16 112:8 115:2,22 116:4 116:20 117:3 121:17 <b>03</b> 4:11 116:18 117:7,10,15 120:22 121:22			
<b>1</b>			
<b>1</b> 32:23 34:7,22 34:23 35:5,12 62:12 63:3,4 72:18 <b>1's</b> 34:9,9 <b>1,000</b> 29:25 40:23 <b>1,100</b> 30:3 <b>1,200</b> 30:3 <b>1,388</b> 58:9			

[2 - 79]

<b>2</b>	35:18,23 61:19	55:5 62:11	<b>5,432</b> 94:1,2
<b>2</b> 32:24 34:7,9 34:22 35:5,15 62:16,16,20,22 97:21 147:19 <b>2's</b> 34:9 <b>2,000</b> 27:3 40:24 <b>2,150</b> 58:8 81:1 81:4 <b>20</b> 86:7 95:24 102:3 <b>20,000</b> 26:13 <b>200</b> 1:20 30:5 <b>2012</b> 19:15 21:13 113:11 <b>2013</b> 22:9 <b>2014</b> 22:10 <b>2015</b> 22:10 <b>2016</b> 108:25 <b>2022</b> 118:6 <b>2024</b> 1:6,18 112:6 118:6 157:16,25 <b>2024-0gr</b> 5:10 <b>220</b> 157:23 <b>23</b> 60:10 <b>24-320</b> 1:8 <b>24-320-0g</b> 5:11 <b>24th</b> 157:16 <b>2864</b> 2:21	82:7 84:15	64:9,10 89:24	<b>5,434</b> 122:3
	104:2 112:5	<b>4</b>	123:11
	124:15 142:24	<b>4</b> 152:25	<b>5,442</b> 81:22
	143:4 157:25	<b>4,000</b> 81:4	<b>5,500</b> 81:19
	<b>3's</b> 34:10,10	116:22 122:4	122:14,19
	<b>3,000</b> 40:6	<b>4,400</b> 81:6 82:3	<b>5.400</b> 93:25
	67:14	95:3,9	<b>50</b> 98:8 155:24
	<b>3,400</b> 58:10	<b>40</b> 17:25 98:8	<b>50s</b> 24:14
	<b>3,500</b> 58:10	98:16	<b>5:30</b> 156:3
	<b>3,590</b> 115:5	<b>400</b> 40:23	<b>6</b>
	<b>3,600</b> 58:10	<b>4000</b> 120:25	<b>6,000</b> 38:23
	89:14	121:4,12,22	<b>6,100</b> 38:24
	<b>3,710</b> 116:21	<b>41-317</b> 130:21	<b>6,200</b> 38:24
	<b>3,750</b> 115:5	<b>45</b> 47:3	<b>640</b> 92:5,9
	<b>30</b> 98:16	<b>47-3</b> 110:3	105:12,13
	109:10 155:1	<b>47-317</b> 124:13	123:24 124:4,5
	<b>300</b> 64:9	125:10,17	124:18 125:4,7
	114:16	142:24 143:12	126:1,15
	<b>320</b> 28:24 77:7	147:19 148:3	128:17 129:5,6
	77:9 92:2	152:25	130:21 133:19
	96:10 97:20	<b>471</b> 1:24 157:2	133:25 134:11
	116:17 126:1	<b>480</b> 114:14	141:14 143:15
	126:16 128:17	<b>5</b>	143:20
	131:15 133:25	<b>5</b> 1:8 5:8	<b>6th</b> 8:22
	134:2	125:17 130:22	<b>7</b>
	<b>32245</b> 157:20	<b>5,000</b> 27:12	<b>7</b> 3:4
	<b>34</b> 40:6	38:3,8	<b>7,000</b> 38:25
	<b>35</b> 40:7	<b>5,300</b> 30:12	<b>70</b> 98:18,20
<b>350</b> 40:23	81:19	<b>70s</b> 24:16	
<b>3750</b> 121:10	<b>5,306</b> 81:24	<b>79</b> 3:9	
<b>3d</b> 20:18 22:5,9	<b>5,400</b> 81:19		
22:11,15 23:11	123:17		
26:5,17 33:1			
35:11 50:18,19			
<b>3</b>			
<b>3</b> 32:25 33:2,2			
33:3 34:7,13			
34:14,22 35:5			

[8 - addendum]

<b>8</b>	<b>98</b> 40:1 45:25	123:9	114:16 116:17
<b>8</b> 1:8 4:4,5 5:8	<b>980</b> 40:18	<b>accomplished</b>	123:24 124:4
<b>8,000</b> 38:25	<b>99</b> 40:1	8:20	124:18 125:4,7
41:1	<b>a</b>	<b>accordance</b>	126:1,1,15,16
<b>8,300</b> 41:1	<b>ability</b> 25:1	136:18,23	131:16 133:19
<b>80</b> 98:21	44:6 85:7	137:7,16,19,23	134:2,11
<b>82-1/2</b> 29:9	129:7 157:11	138:4,12	143:15,20
40:2	<b>able</b> 14:13 27:8	139:21 141:5	<b>acreage</b> 78:23
<b>83</b> 19:5	73:3,14 74:19	141:12 147:4	105:15
<b>83619</b> 1:21	81:9 141:5	147:16	<b>acres</b> 92:2,5,18
<b>83701</b> 2:22	155:14	<b>accumulate</b>	96:10 124:5
<b>83702</b> 157:24	<b>above</b> 22:13	65:21	128:17 129:5,6
<b>83705</b> 2:14	42:4 53:9,15	<b>accumulating</b>	130:21 133:25
<b>83720</b> 2:6	53:15 59:13,24	57:8	141:14
<b>83720-0010</b> 2:7	60:23 66:3	<b>accumulation</b>	<b>act</b> 124:9
<b>9</b>	67:2 68:20	57:21 60:15,16	149:17
<b>9</b> 1:7 5:7 19:22	97:21 118:7	62:15 111:3	<b>action</b> 157:14
144:2,7 146:7	149:15	113:2 120:4	<b>activity</b> 21:14
146:9,16,21,22	<b>abrupt</b> 46:8	<b>accumulations</b>	<b>acts</b> 66:17 69:1
146:25	<b>absence</b> 113:3	144:5	79:15
<b>90</b> 57:15	143:4,9 144:3	<b>accurate</b> 12:25	<b>actual</b> 30:7
<b>900</b> 24:11	145:11	38:20 40:20	40:7 44:11,24
40:22 80:9	<b>absolute</b> 42:3	110:21	<b>actually</b> 18:4
<b>90s</b> 19:14	<b>absolutely</b>	<b>accurately</b>	30:18 39:24
<b>920</b> 24:12	23:24 88:24	125:19	45:3 50:2
<b>930</b> 40:17	154:19	<b>acquire</b> 21:9	53:23,25 54:1
46:14	<b>abut</b> 99:11	<b>acquired</b> 19:3	57:19 80:11,24
<b>934</b> 46:1	<b>accept</b> 154:9,14	21:17 22:9,10	85:25 87:3
<b>940</b> 40:17	154:23	152:4	96:4
46:13	<b>accepted</b>	<b>acquiring</b> 55:5	<b>add</b> 64:13 81:1
<b>95</b> 30:20	112:21	<b>acquisition</b>	153:23
<b>950</b> 46:15	<b>access</b> 128:4	19:11	<b>added</b> 10:12
<b>960</b> 46:15	<b>accessible</b> 15:7	<b>acre</b> 28:24 77:7	<b>addendum</b>
<b>97</b> 3:10	<b>accomplish</b>	92:9 97:21	147:25
	13:8 90:3	105:10 114:14	

[adding - answer]

<p><b>adding</b> 39:4  <b>addition</b> 5:23  116:12 117:22  <b>additional</b> 12:2  17:19 30:9  32:20,20 48:22  85:14 107:5  111:17,23  126:13,13  <b>address</b> 127:17  <b>addressing</b>  112:5  <b>adjacent</b> 8:18  9:3 11:6,8,13  13:20,25 14:15  15:20 59:15  77:13,24,24  78:4,8,9,24  99:13 102:21  <b>adjusts</b> 46:18  46:24  <b>administer</b>  124:3,9  <b>administered</b>  124:7  <b>administrative</b>  5:10 6:8,9  144:20  <b>administrator</b>  132:5  <b>admission</b> 5:17  <b>advantage</b>  111:4  <b>affect</b> 127:2  129:23 130:2</p>	<p><b>affects</b> 133:9  <b>afternoon</b>  142:3  <b>ag.idaho.gov</b>  2:8  <b>agcy</b> 1:5  <b>aggregating</b>  89:18  <b>ago</b> 95:24  <b>agree</b> 123:9  124:2 134:25  135:9,17 141:6  144:4 148:7  <b>agreement</b>  130:13  <b>agrees</b> 43:18  144:12  <b>ahead</b> 14:7  77:4 85:1  151:9  <b>aid</b> 76:16  <b>air</b> 57:1,3  106:11  <b>allow</b> 77:3  151:25 152:5  <b>allowed</b> 106:7  125:10 127:9  <b>allows</b> 22:7  25:3,9 55:7  84:19 153:3  <b>amend</b> 105:25  <b>amendment</b>  125:19,20  130:20,22,23</p>	<p><b>amount</b> 25:2  55:4,5 66:7  72:9 73:12  149:23 154:25  <b>amplitude</b> 42:7  42:9,11,11  45:4,10,16  48:21 54:8  56:9,16,18  59:12,23,24,25  61:2,3,9 62:22  63:11,17,17  64:4,12,16,23  67:4,9,14,15,16  67:17,18,19,22  68:3,13,13,25  69:3,6,12  71:11,13,15,16  71:18 72:4  74:19,20 75:8  77:9 83:2,3,4  83:13 84:4  86:14,15,15,16  88:5 90:24  91:23 93:3  96:8 98:15  99:5,9 101:24  102:15 103:4  111:23 119:14  134:23  <b>amplitudes</b>  43:6 80:4  83:11 87:24  88:1 90:22  97:2 99:9</p>	<p>135:18  <b>analogous</b>  37:20 40:21  <b>analogy</b> 22:12  37:21 54:25  65:20 101:18  <b>analyzed</b> 119:8  <b>angle</b> 47:4 62:2  62:3  <b>angles</b> 34:14  44:18  <b>annotated</b> 29:1  62:19,21 63:5  <b>annotation</b>  53:16 61:22  62:16  <b>annotations</b>  59:18  <b>anomalies</b> 75:8  <b>anomalous</b>  102:5,8  <b>anomaly</b> 74:19  74:21  <b>answer</b> 13:1  14:6 15:11,15  26:16 36:16  39:17 59:11  77:4 78:1 86:1  86:3 87:6,10  87:12 89:25  96:22 100:9  126:3,6,19,20  133:15 134:18  144:16 148:6  148:12</p>
--	---	---	--

[answered - areas]

<p><b>answered</b> 14:3 85:13 99:19</p> <p><b>answering</b> 87:5 103:6</p> <p><b>answers</b> 85:24</p> <p><b>anticipation</b> 26:19</p> <p><b>anybody</b> 134:8 153:9 154:12</p> <p><b>anybody's</b> 134:14</p> <p><b>anyone's</b> 129:23 130:2</p> <p><b>anyway</b> 147:15</p> <p><b>apart</b> 40:2</p> <p><b>apologize</b> 35:7 54:25 122:15</p> <p><b>apparent</b> 53:7 74:18</p> <p><b>appearances</b> 2:1</p> <p><b>appearing</b> 2:19</p> <p><b>apples</b> 84:20,20</p> <p><b>applicant</b> 1:12 5:9,21 7:3,8 107:6 118:22 119:7 125:3,9 143:23 144:6 146:4,5,11 150:10</p> <p><b>applicant's</b> 110:12 111:9</p> <p><b>application</b> 1:3 4:4 5:5 8:7,10 8:16,23 20:3,7</p>	<p>20:8 94:12 109:21,23 110:1,3 111:13 112:5,17 113:18 114:24 115:21 118:15 118:18 123:17 127:15 128:7</p> <p><b>applied</b> 129:20 140:10</p> <p><b>applies</b> 143:9 146:20</p> <p><b>apply</b> 75:17 83:23 98:25 140:19 143:7 145:4</p> <p><b>applying</b> 94:20</p> <p><b>appointment</b> 153:15</p> <p><b>appreciate</b> 141:23</p> <p><b>appropriate</b> 67:10 105:11 111:10 119:22 123:2,10 127:15 128:8 129:14,20,25 133:12 135:12 136:2 140:20 152:21</p> <p><b>appropriately</b> 76:6 95:20 152:4</p> <p><b>approve</b> 134:12</p>	<p><b>approved</b> 27:23 30:16 75:13 119:4 123:1 126:15 130:10 134:13 139:14 140:9 140:11,12</p> <p><b>approves</b> 134:10,11</p> <p><b>approving</b> 134:5</p> <p><b>approximate</b> 67:21 81:2 90:18,19</p> <p><b>approximately</b> 26:8 60:13 82:3 86:7 108:25 113:11 115:4,5 116:21 116:22 118:2,3 118:4 123:11</p> <p><b>aptitude</b> 42:7</p> <p><b>arbitrarily</b> 44:1</p> <p><b>arbitrary</b> 29:6 31:4,7 35:25 43:25 44:10 73:9 80:16</p> <p><b>area</b> 4:9 7:25 9:9 10:17,22 19:14,21 20:10 20:21 21:1,2 21:10,10 22:3 22:11 23:16,23 26:2 27:1,2,9</p>	<p>27:17 28:4 30:17,17,24 31:22 35:21,22 38:15 40:17 41:18 49:15 50:19 51:25 52:16 53:10 56:16 58:1 59:8,8,9,10,25 60:12 61:2 62:1 65:4,6 67:18 69:7 70:10,22,23,24 71:5,5,6,10,12 71:21 72:13 75:3,6,6,7 76:5 76:7,16 78:16 79:16 82:22 83:9 84:14 86:21 88:3 94:14 96:2,4 99:16 102:17 102:24 103:4 104:5,7 105:12 113:8 114:4,12 137:7,8 147:15 150:12,13 151:17</p> <p><b>areal</b> 96:7 102:14,23</p> <p><b>areas</b> 22:17,18 39:12 41:24 79:18 96:16,17 96:20 102:9 104:7 110:24</p>
--	--	---	---

[argue - b]

<p><b>argue</b> 12:19  <b>arguments</b>  13:11  <b>arrow</b> 53:4  <b>arthur</b> 108:16  <b>asked</b> 14:2  32:19,22 48:21  52:7 59:8 67:9  73:21 92:8  100:10 105:20  111:21,24  123:3 130:1  144:12 145:5  146:2 148:2,18  149:10  <b>asking</b> 12:17  13:1,5,10  18:21 85:25  87:9,16 95:8  105:22 125:3  133:22 137:10  137:21,22  141:18 144:21  144:22 147:24  147:24 148:3,8  <b>aspects</b> 110:9  <b>assessment</b>  123:12,14  126:14  <b>assessments</b>  130:15  <b>assigned</b> 5:12  <b>assist</b> 112:1  125:20 130:23  154:18</p>	<p><b>associated</b>  71:19 72:21  79:21 93:12  101:6,11,21  <b>assume</b> 35:5  52:15 78:12  95:1 125:18  146:3  <b>assumed</b> 79:2  153:18  <b>assumes</b> 43:10  <b>assuming</b> 12:25  27:21 124:24  <b>assumptions</b>  86:8  <b>atmosphere</b>  106:4  <b>attached</b>  113:18  <b>attachment</b>  97:18  <b>attempt</b> 155:22  <b>attempted</b>  149:3  <b>attention</b> 33:19  <b>attorney</b> 2:3,4  5:22,24 6:3  157:13  <b>attribute</b> 87:22  <b>attributes</b> 72:3  90:25  <b>august</b> 157:25  <b>authorize</b>  125:19 130:20  130:22</p>	<p><b>authorizing</b>  143:5  <b>automatically</b>  45:15  <b>available</b> 23:24  37:12 111:1  115:13 131:4  131:11  <b>average</b> 15:8  38:25  <b>avo</b> 72:3  <b>avoid</b> 125:21  126:1,4 127:13  130:24  <b>avoids</b> 126:8  <b>aware</b> 21:14  76:23 92:4,6,8  92:11 103:22  104:19 126:7  140:24 141:2,9  141:13,17,18  152:20</p> <p style="text-align: center;"><b>b</b></p> <p><b>b</b> 4:1 20:23  25:21 26:7,12  26:20,24 27:4  27:7,20 28:12  30:9,18 31:6  31:10 32:24  34:8 35:14,16  35:17,18,22  40:5 42:15,15  42:18,22 44:15  46:3 48:2,24  49:14,18,21</p>	<p>51:22,22 52:1  52:17,17,24  53:16,25 54:20  55:19 57:13  58:1 60:17,23  61:4 62:13,14  62:15 63:1,19  64:5,7 65:16  66:10,11 67:5  67:21 68:3,10  69:19,21,23,24  70:8,11 72:12  72:22 73:23  74:8 75:5,14  75:16 76:6,11  77:15,18,22  78:18 79:16  80:3,5,25  81:12 82:6,23  83:10 85:4,8  85:16 88:12  89:4 90:18  93:5,13 96:21  97:24 98:3,7  98:10,18,25  99:5,6,8,14,23  100:3,14 101:2  101:5,15 102:9  102:10,19,23  114:17 117:1,5  117:9,14,16,20  117:22,23,25  119:16 121:7  123:8 124:15  128:4 133:18</p>
--	---	---	---

[b - bid]

<p>135:11,15,21 143:12 144:5 146:10,10 <b>bachelor</b> 17:17 109:5 <b>back</b> 8:8 21:6 23:1 25:14 28:9,20 30:22 31:20 37:5,9 37:10,17,19,25 38:6,9 39:16 42:25 45:18 47:15 48:12 53:3 55:24 64:6 65:16,19 66:18,21 69:2 69:10 70:14 71:2,20 73:17 77:1,2 81:23 82:1 84:3 87:21 89:12 93:6 95:19 98:24 99:2 107:23 133:6 142:3 145:6 148:13 <b>background</b> 17:16 <b>bad</b> 15:7 47:5 <b>bar</b> 67:12 <b>barlow</b> 26:4 <b>barrels</b> 26:14 118:3,4 <b>basalt</b> 25:13 27:12 43:15,16</p>	<p>46:19 81:12,12 81:14,24 <b>base</b> 44:24 56:8 56:19 92:19 93:24 98:8,12 98:17 <b>based</b> 20:9,16 22:4 26:21 37:16 55:19 57:23 60:8 67:22 76:3,13 78:13 85:8 88:5,21 89:8 90:14 92:22 93:8,9,12,21 96:4,7,9 97:19 100:2,15 110:13 112:19 113:15 118:1 118:15,21 119:24 120:1 122:9 128:6 145:15 146:7 146:13 150:9 152:3 <b>bases</b> 105:23 105:24 <b>basic</b> 27:25 28:19 <b>basically</b> 37:7 38:7 41:9 50:25 52:22 53:9 56:13 65:25 70:24 82:19,22 91:24</p>	<p><b>basin</b> 20:17,17 21:21,24 22:2 24:14,22 25:15 27:5 46:18,23 46:23 55:7 60:7 65:18 70:10 74:15 75:1 102:13 103:24 104:4 110:19,22 111:10 120:1,3 131:6 135:7 <b>basins</b> 19:8,9 <b>basis</b> 24:10 51:11 55:2 105:25 154:15 <b>bc</b> 118:8 <b>bcf</b> 100:5 101:8 <b>bcfg</b> 118:8 <b>bearing</b> 57:7,17 57:21 59:14 100:19 101:5 101:11,18 <b>bed</b> 41:15 109:13 <b>began</b> 23:25 <b>beginning</b> 126:9 <b>begun</b> 73:25 <b>behalf</b> 5:20 6:16 153:11,13 154:1 <b>behavior</b> 102:5 102:8</p>	<p><b>believe</b> 7:4 76:15 77:5 78:17 79:25 81:19 91:12 95:25 96:10 97:19 101:2 105:5 123:2 124:7 131:23 132:13,16 133:24 134:8 134:14 135:5 135:12,13,23 136:14,19 138:15,20 139:16 140:16 140:17,20 154:16 <b>bend</b> 39:11 41:21,21 48:7 <b>beneath</b> 151:19 <b>benefit</b> 58:14 <b>best</b> 79:19 83:8 85:6,15 86:19 87:18 91:5 93:1 97:22 104:8 131:14 142:20 157:11 <b>better</b> 33:24 36:19 111:19 111:22 154:17 <b>beyond</b> 67:2 83:12 96:17 103:6 131:3 <b>bid</b> 23:18</p>
--	---	--	---

[big - called]

<p><b>big</b> 56:23 57:1 61:6 122:13 <b>bigger</b> 129:11 <b>billion</b> 26:12 101:9 118:3 <b>bin</b> 29:9,10 <b>bins</b> 39:22 <b>bit</b> 38:22 39:16 42:17 49:21 52:18 58:11 84:10 85:11 87:23 88:7 96:24 103:2 105:14 115:24 117:11 121:2 150:22 <b>black</b> 29:20,21 39:13,13 41:7 41:24 45:1 55:21 63:4 64:7,8 68:9 <b>blew</b> 68:12 <b>blocks</b> 155:13 <b>blue</b> 29:18,18 53:24 54:4 67:12 <b>blues</b> 67:13 <b>board</b> 15:14 22:13 134:10 <b>body</b> 105:6 106:15 <b>boise</b> 2:7,14,22 108:20 157:24 <b>borders</b> 138:13</p>	<p><b>bottom</b> 30:14 30:16 31:8 32:16 39:10 40:25 43:3 50:17 54:15 68:2 81:6 121:1,12 122:5 <b>bought</b> 26:18 137:11 <b>boundaries</b> 35:18,24 49:16 62:8,17,24 63:23 67:21 90:23 93:2 136:15 148:10 151:24 152:23 <b>boundary</b> 29:2 29:19 35:20,25 36:2,7,8 37:7 49:25 50:2,8 53:8 59:22 62:7,20,21 63:12 70:25 71:17 74:6 76:1 78:9,21 84:7 91:16 96:18 99:13 114:9 136:7,9 136:18 137:5 139:2 140:8 148:25 149:9 <b>bounds</b> 136:25 137:3 <b>box</b> 2:6,21 29:18 46:11,12</p>	<p>60:6 <b>boxes</b> 29:9 <b>break</b> 49:1 107:18,18 150:23,25 151:11 <b>breaking</b> 150:21 <b>bridge</b> 21:16 24:17 69:19 <b>brief</b> 103:18 <b>briefly</b> 17:15 18:2 20:13 21:8 24:5 28:8 28:16 33:21 56:21 99:22 <b>brown</b> 7:1,2 78:20 80:1 83:12 135:19 139:3,5 <b>bubble</b> 72:1 <b>bw</b> 118:8</p> <hr/> <p style="text-align: center;"><b>c</b></p> <hr/> <p><b>c</b> 5:1 28:12,13 28:17 29:1 32:5,15,23 33:22 34:8 35:2 36:4 47:15 48:12 61:15,17 64:7 64:25 66:21 68:21 69:2 70:15 71:21 77:6 78:6 79:11,14 80:2</p>	<p>83:1,8 85:2,3 87:17 88:23 90:20 93:6,7 93:18 96:2 99:12 114:15 134:22 135:2 135:19 152:25 <b>caia</b> 2:17 6:17 153:11 <b>calcium</b> 39:3,4 <b>calibrated</b> 26:5 <b>call</b> 7:8 10:10 17:2 22:22 26:5 27:2,5 29:5 33:20 66:1 70:7 71:10 73:22 80:14,15 98:9 98:16 100:14 100:14,19 107:9,10,14 108:5 137:4,4 139:4 150:4 <b>called</b> 22:5,18 22:19,20 23:3 24:17 25:21 26:9 27:9 30:3 30:9 37:14 39:3,20 41:8 42:6,9 43:24 44:6,20 45:7 45:11 46:17,25 49:16,18 51:4 51:9,20 57:9 66:25 69:19</p>
---	---	---	--



[called - classes]

<p>72:3 80:16,24 82:20 84:12 91:15 93:11 <b>calling</b> 10:16 <b>calls</b> 76:18 <b>capable</b> 113:16 <b>carbonate</b> 39:3 39:4 <b>career</b> 18:18 <b>carefully</b> 22:16 <b>carried</b> 27:1,2 <b>carry</b> 27:19 <b>case</b> 1:5,7 5:11 8:8 14:11 25:20 27:17 39:5 46:19 47:10 48:18 51:3 58:23 62:8 66:4 78:13 82:10 84:25 94:12 100:18 119:11 123:1 125:25 126:8,15 127:8 128:16 129:11 131:16,20 132:14 139:11 152:21 <b>casing</b> 30:4,4 <b>catch</b> 121:3 <b>categories</b> 15:16,23 <b>cause</b> 7:15 17:6 108:10 126:18 133:21</p>	<p><b>causes</b> 37:8 105:3 <b>caveat</b> 85:18 86:2,3,4 87:6 <b>cc</b> 1:6 5:10 <b>center</b> 82:23 86:22 <b>centered</b> 77:10 84:16 103:3 <b>central</b> 42:19 <b>certain</b> 23:2 89:22 <b>certainly</b> 12:19 34:6 56:23 85:13 100:1 134:20 <b>certainty</b> 151:24 <b>certificate</b> 157:1 <b>certificates</b> 109:3 155:13 <b>certified</b> 4:5 8:12,15 157:2 <b>certify</b> 157:3,12 <b>cetera</b> 136:25 <b>chance</b> 24:21 <b>change</b> 86:11 86:19,23 105:24 106:3 113:24 128:3 128:16 <b>changed</b> 82:19 82:20</p>	<p><b>changing</b> 129:22 <b>character</b> 56:7 68:3 69:11 70:9 73:1 75:4 86:17,23 101:7 101:10,12 102:10,17 <b>characteristics</b> 101:15 <b>characters</b> 101:20 <b>charge</b> 61:8 91:3 <b>chart</b> 80:15 121:1 <b>charts</b> 92:22 <b>chess</b> 22:12 <b>chessboard</b> 40:9 <b>choice</b> 148:1 <b>choose</b> 11:5 88:13 89:6 129:11 <b>chosen</b> 95:14 <b>christian</b> 2:12 3:4,8,19 5:20 5:23 6:18,21 7:2,7,8,18 9:18 12:16 14:2 16:16,19,25 17:2,9 18:14 18:20 32:3,7,8 34:4,6,11,16,19 35:7 49:4</p>	<p>70:14 73:19 76:22 77:25 79:3 85:13 103:16,18,21 104:10 106:19 106:23 107:6 120:10,13 141:24 142:2 142:13,23 144:12,15,25 145:7,10 148:2 148:12,15,16 149:6 150:17 155:4,5,9 <b>chrstian</b> 3:11 <b>circle</b> 137:12 137:13,16,18 <b>circular</b> 137:23 148:10 <b>city</b> 1:19 5:14 16:4,5,6 154:4 <b>clarification</b> 111:18 <b>clarified</b> 35:4 154:16 <b>clarify</b> 13:4 32:4 38:10 51:5 <b>clarity</b> 36:3 41:20 45:8 49:7 52:3 56:20 58:13 64:24 <b>classes</b> 17:19</p>
--	---	---	---

[clay - condensate]

<p><b>clay</b> 25:12 51:15,16 52:21 56:10 66:3 <b>clear</b> 14:5 32:22 42:23 66:19,25 78:7 100:16 114:7 <b>clearly</b> 62:23 64:20 77:10 <b>client</b> 144:25 145:1 153:11 153:13 <b>climbing</b> 56:7 59:21 <b>climbs</b> 56:18 <b>clock</b> 155:1 <b>close</b> 67:5 98:5 111:5 155:1 <b>closed</b> 154:11 <b>closest</b> 119:9 <b>closing</b> 154:5 <b>closings</b> 154:20 <b>coal</b> 109:13 <b>code</b> 110:3 124:13 125:17 130:21 142:25 152:25 153:1 <b>coextensive</b> 137:9,14 <b>collect</b> 22:18 <b>collected</b> 20:20 44:25 <b>collectively</b> 84:18,19</p>	<p><b>college</b> 18:4,23 <b>color</b> 67:12,17 <b>colorado</b> 19:13 <b>colored</b> 39:12 66:23 <b>colors</b> 29:7 30:22 33:22 44:16,23 67:11 67:13 88:5 <b>column</b> 80:9 <b>combination</b> 28:1 56:4,13 68:24,25 116:10 117:21 143:16 <b>combo</b> 115:7 116:4,24 117:16 <b>come</b> 25:11 28:20 37:19 38:6,9 39:23 43:15 71:2 89:25 122:21 <b>comes</b> 25:3 37:5,25 46:5 53:3 66:21 125:9 128:1 <b>comfortable</b> 154:5 155:17 <b>coming</b> 41:16 50:23 54:12 59:17,19 61:9 73:13 89:18 121:19</p>	<p><b>comment</b> 5:15 106:16 151:1 154:6,9,10 <b>commentary</b> 92:9 142:7,10 <b>commercial</b> 24:21 73:12 78:18 137:1 <b>commission</b> 134:10 154:8 157:25 <b>commission's</b> 5:22 <b>common</b> 22:15 35:20 37:21 60:15 64:2 70:25 <b>commonality</b> 86:13,21 87:24 <b>commonly</b> 116:7 <b>companies</b> 106:10 <b>company</b> 10:12 21:12,16 94:11 <b>comparable</b> 104:25 <b>comparison</b> 84:20 <b>complete</b> 26:10 77:18 110:8 <b>completed</b> 101:8 113:11 117:25</p>	<p><b>completeness</b> 110:4 <b>complex</b> 50:13 <b>complexities</b> 22:1 <b>complexity</b> 64:13 <b>complicated</b> 60:25 <b>comply</b> 145:19 <b>component</b> 149:20 <b>compressional</b> 41:10,11 <b>comprised</b> 20:23 76:10 <b>concentrate</b> 102:24 <b>conclude</b> 97:20 131:19 <b>concluded</b> 156:3 <b>conclusion</b> 20:15 76:19 88:11 122:22 127:14 131:9 131:12,14 <b>conclusions</b> 20:13 72:11 84:1 134:25 135:5,8 <b>condensate</b> 20:21 26:14 100:18 118:4</p>
---	---	--	---

[condition - correlative]

<p><b>condition</b> 57:25  <b>conditions</b>  109:19  <b>conducted</b> 19:2  <b>conductor</b> 30:5  <b>confidence</b>  24:20 83:24  84:1 87:25  88:1,3 90:21  90:23 102:5,14  <b>confidently</b>  96:23  <b>configuration</b>  50:9 119:1  150:12  <b>configurations</b>  143:1  <b>confirm</b> 125:1  153:2  <b>confirmed</b>  56:14 69:10  <b>confusion</b> 35:8  <b>consequently</b>  110:24  <b>conservation</b>  124:9 149:17  <b>consider</b> 110:6  <b>considerably</b>  88:13  <b>consistent</b>  59:14 63:23  64:12 77:12  80:5 113:7,9  113:12 114:24  115:1 119:16</p>	<p>119:25 140:18  <b>consistently</b>  64:3  <b>consisting</b> 1:6  5:6 124:18  143:15  <b>constructed</b>  20:10 115:23  117:10 135:4  <b>consulting</b>  19:17  <b>contact</b> 43:15  53:5 55:22  56:3,14,22  57:10 58:5  59:16 60:7,9  60:12,18 81:10  <b>contain</b> 62:6  <b>contained</b>  62:24 63:1  <b>contains</b> 110:1  116:13 117:23  135:20  <b>content</b> 110:4  <b>context</b> 105:21  105:21  <b>continue</b> 35:10  75:20  <b>continues</b>  37:11  <b>continuing</b>  17:21 53:22  54:4 72:23  100:5 153:16</p>	<p><b>continuous</b>  46:6 48:7,17  <b>contours</b> 106:1  <b>contrast</b> 56:10  <b>control</b> 44:5  106:12  <b>convention</b>  41:23  <b>conventional</b>  85:17 110:23  113:12  <b>conventions</b>  35:10  <b>convince</b> 63:25  <b>cooler</b> 88:5  <b>copy</b> 155:3,4,7  <b>core</b> 102:24  <b>corner</b> 61:20  61:21 83:11  97:3 111:25  112:1 135:14  135:20  <b>corners</b> 22:14  83:13  <b>correct</b> 8:5  9:14 10:18  14:21,22 16:9  25:22 31:18  33:13,18 34:11  38:13 43:4  49:25 55:18  59:1 60:24  68:17,18,19  72:8 78:11  79:25 80:13</p>	<p>82:8 83:14  92:2 94:15  95:15 96:6  97:24 100:20  114:10,20,21  115:13,17  118:9,13,14  121:23 122:12  123:25 124:25  125:5,8 129:3  135:22 136:20  136:21 139:2  140:16 143:2  144:1 145:21  146:12,18,23  147:17 149:24  150:8,16  151:17,18,21  152:12,13  157:10  <b>correctly</b> 81:9  <b>correlate</b> 28:2  31:4 34:8  73:14  <b>correlated</b>  68:20  <b>correlating</b>  75:6  <b>correlative</b>  125:22 128:18  128:20,22  129:1,10,23  130:2,9,15,25  134:14 146:3  146:24</p>
---	---	--	---

[corresponds - days]

<p><b>corresponds</b> 152:1  <b>cost</b> 74:23  <b>count</b> 40:1  <b>counted</b> 39:23  <b>countless</b> 44:11 64:1,21  <b>country</b> 110:24 149:3  <b>county</b> 1:9 5:8 8:24 14:20,24 15:6,13,14,24 15:25 16:1,3,7 113:10  <b>couple</b> 21:20 29:4,5 39:7,10 69:20 150:24  <b>course</b> 19:13 23:12,25 51:7  <b>courses</b> 17:20  <b>court</b> 7:10 18:6 18:17 48:25 70:2 79:22 83:18 84:9 88:16 90:5 100:6 122:15 125:13 133:5 138:6,10 145:6  <b>cover</b> 29:4 76:10,11 77:18 97:22 105:11 113:20  <b>coverage</b> 23:7  <b>covered</b> 30:11 59:9</p>	<p><b>covering</b> 117:9  <b>covers</b> 23:16 82:16 121:7  <b>create</b> 86:18 129:17  <b>creating</b> 35:7 91:3  <b>cropped</b> 31:23  <b>cross</b> 3:5,9,10 3:18,19 10:1 36:6 39:1 44:7 44:7,9 59:22 68:1 72:20 97:12 120:19 142:1 144:22  <b>crosses</b> 35:25 36:1 46:16  <b>csr</b> 1:24 157:2 157:21  <b>cubic</b> 26:13 101:9 118:3  <b>current</b> 25:1 96:5 108:21 114:23  <b>currently</b> 19:16 75:11 77:16 108:17,19 119:19  <b>curser</b> 28:24 49:7 52:23 53:10 54:3 56:16 61:18 62:18 70:24 78:20,23 79:14 82:16 103:4</p>	<p><b>curve</b> 52:9 72:23,24 73:1 75:4  <b>curves</b> 51:4 78:22 116:5 117:17  <b>cuts</b> 36:10  <b>cutting</b> 142:15</p> <hr/> <p><b>d</b></p> <hr/> <p><b>d</b> 3:1 5:1 27:20 31:12,12 33:5 33:9,18 34:8 61:24,25 62:9 63:2 67:8,24 68:5 69:11 70:5 82:7 84:15 93:18 97:18 104:2 114:15  <b>dam</b> 30:9  <b>dark</b> 65:4 67:12  <b>darker</b> 41:25  <b>dash</b> 29:18,21 62:18,21 64:7 64:8 67:22 77:7  <b>dashed</b> 35:19 35:24 49:14 50:3,7 114:9 139:1  <b>data</b> 19:3 20:18 22:6,14 28:1 30:23 31:17 36:21 39:8</p>	<p>43:10,11 44:24 45:1 47:5 50:19 53:8,21 55:5 57:23 63:6 64:11 71:25 72:5,10 78:14 79:20 81:5 82:21 85:8,20 86:5,7 88:14 89:9,16 89:24 90:15,16 92:22 93:8 96:5 97:20 99:24 109:16 109:18,18 110:9,11 111:2 112:16,20 115:18 116:6 117:4,18 118:7 119:23 120:2 121:2,5,13,19 122:21 131:4,6 131:11,11,13 135:3,6 152:3  <b>date</b> 1:18  <b>dave</b> 6:23 17:10 32:8 34:24 49:4 73:19  <b>david</b> 2:13 3:7 17:2,4  <b>day</b> 39:24 155:1 157:16  <b>days</b> 155:16</p>
--	---	--	--

[deadline - describe]

<p><b>deadline</b> 154:23</p> <p><b>deal</b> 38:19 55:12</p> <p><b>deals</b> 142:25</p> <p><b>decide</b> 137:22</p> <p><b>decider</b> 6:12</p> <p><b>decision</b> 11:11 11:14,15 13:21 13:23,25 14:1 14:8,10 134:4 140:18 155:2</p> <p><b>decisional</b> 6:11</p> <p><b>declaration</b> 8:7 20:6,9,14 28:8 28:13,17 33:23 49:5,15,22 64:25 79:12 95:23 97:17 98:23</p> <p><b>decreased</b> 149:21</p> <p><b>decreasing</b> 68:24</p> <p><b>deemed</b> 5:18</p> <p><b>deep</b> 47:8 82:10 82:12 93:17</p> <p><b>deeper</b> 26:11 27:3,11,19,20 27:24 37:12,18 40:10,11,19 43:14 46:2,5 50:15,17 65:22 72:23 73:8,9 74:23 75:14,17</p>	<p>75:20,25 77:17 93:15,23 94:4 122:7</p> <p><b>deepest</b> 121:21</p> <p><b>default</b> 123:25 124:3,5 130:21 143:8,19 145:15 146:16</p> <p><b>define</b> 132:21 136:3 153:4</p> <p><b>defined</b> 104:23 110:2,7</p> <p><b>defines</b> 133:11</p> <p><b>definition</b> 106:14,16 128:22,25 149:16</p> <p><b>degree</b> 47:4 109:5</p> <p><b>degrees</b> 109:2</p> <p><b>deliberately</b> 55:3</p> <p><b>delineated</b> 30:25</p> <p><b>demonstrate</b> 30:24 44:2 60:14</p> <p><b>demonstrated</b> 67:7</p> <p><b>denied</b> 129:6 130:10</p> <p><b>denote</b> 34:13</p> <p><b>denoted</b> 29:18 32:13 33:10 35:17 67:19</p>	<p>68:9 77:6</p> <p><b>denotes</b> 34:23</p> <p><b>dense</b> 42:13 43:16</p> <p><b>denser</b> 41:14</p> <p><b>density</b> 25:8 53:14,18 82:21 101:11 115:7 116:4,23 117:16 121:17 143:6</p> <p><b>departing</b> 53:2</p> <p><b>department</b> 1:1 2:2 3:15 4:8 5:4 6:5,6 108:6 108:20,22 109:8,22 110:5 111:8 113:21 114:1 118:23 118:24 119:3,8 124:10 125:11 125:19 130:22 131:15 132:4,5 143:5 147:20 148:17 152:10 154:8 155:2</p> <p><b>department's</b> 115:13 119:22</p> <p><b>departure</b> 42:6 42:10 51:19,21</p> <p><b>depend</b> 88:13</p> <p><b>depending</b> 38:15 152:11</p> <p><b>depends</b> 38:4 128:19 133:1</p>	<p>146:1</p> <p><b>depict</b> 114:3 115:3 116:19</p> <p><b>depicted</b> 114:20 115:6,8 116:23,24 117:7</p> <p><b>depleted</b> 77:17</p> <p><b>deposits</b> 83:10</p> <p><b>depth</b> 4:10,11 20:12 22:15 27:13,15,16 30:11 38:20 39:6 46:22 57:6 58:4,4,7 58:11,18 59:3 60:2,10 72:15 73:10,23 75:20 80:2,21 81:24 92:14 93:8 94:3 115:4,5,6 116:20,21,22 117:9 121:2,4 121:13,18,25 122:1,3,4 123:11</p> <p><b>depths</b> 83:9 95:9,12 123:1 123:6</p> <p><b>deputy</b> 2:4</p> <p><b>derive</b> 23:21</p> <p><b>describe</b> 17:15 18:2 21:8 28:8 34:24 36:18 42:22 56:21</p>
--	--	---	---

[describe - discussed]

<p>102:14 136:22  137:6,18,20,23  138:3,11 141:5  147:8 148:24  151:17  <b>described</b>  49:17,23 53:10  65:8 75:15  76:15 95:20  97:21 99:10  136:15,18  137:13,17  138:3 139:16  139:21 140:14  141:12 144:13  147:15 148:9  148:23  <b>describes</b> 21:2  76:6  <b>describing</b>  136:13 137:8  <b>description</b>  136:8 137:15  147:3  <b>descriptions</b>  25:4 148:21  <b>design</b> 109:15  <b>designated</b>  35:23 96:21  <b>designation</b>  79:14  <b>designed</b> 23:18  <b>designing</b>  23:15</p>	<p><b>desire</b> 16:22  106:25 107:9  127:13  <b>detail</b> 25:23  28:10 31:11  42:21 51:21  99:2  <b>detailed</b> 95:5  <b>details</b> 72:7  <b>detected</b>  115:25 117:13  <b>determination</b>  67:5 110:10  <b>determine</b> 47:1  58:3 89:14  110:15 111:8  <b>determined</b>  13:15 15:20  52:11 55:3  110:21  <b>determining</b>  10:19 72:6  112:22  <b>develop</b> 10:3  29:3 54:5  59:24 64:2  76:12 102:5,13  134:9  <b>developed</b> 21:7  53:17 57:24  78:14 91:6  <b>developing</b>  26:22 103:24  <b>development</b>  19:10 76:17</p>	<p>77:12 79:1  109:12,14  113:7,13  114:25 133:12  <b>deviation</b> 30:21  <b>dies</b> 63:9,11  66:13  <b>difference</b> 12:4  38:14 86:17  <b>differences</b>  59:16 99:23  <b>different</b> 12:7  15:14 23:4  33:22 34:14  39:2,10,11  44:15 47:4  60:18 61:25  62:3,4 65:10  85:19 86:5,8  86:13,20 87:7  87:23 88:7,14  88:20,22 89:17  89:21 93:7  102:6,7,15  104:20 137:3  143:6,24  145:13 147:6  <b>differentiate</b>  35:2  <b>differently</b> 88:8  88:9  <b>difficulty</b> 14:16  <b>dikes</b> 46:20  <b>dimension</b> 37:3</p>	<p><b>dimensional</b>  111:5 113:10  <b>diminished</b>  150:7  <b>diminishes</b>  71:16,19 90:22  <b>diminishment</b>  149:22  <b>dips</b> 71:22  <b>direct</b> 3:4,8,17  7:17 108:12  144:15  <b>direction</b> 30:1  30:2,6 44:11  49:9 62:4  63:18 157:9  <b>directional</b>  29:22,24 30:21  50:22 58:24  124:16 143:14  <b>directly</b> 8:1  11:15 116:15  118:24  <b>disagree</b> 148:5  <b>discharging</b>  106:11  <b>disconnected</b>  48:13  <b>discovered</b>  110:23  <b>discovery</b>  26:19  <b>discussed</b> 70:15  72:9,22 74:1  142:5</p>
--	---	---	---

[discussing - east]

<p><b>discussing</b> 32:9 49:5 54:23 73:25 <b>discussion</b> 76:3 147:2 150:1 <b>displacement</b> 66:19 <b>display</b> 52:8,9 82:19 121:6 <b>displayed</b> 62:17 82:21 84:12 <b>displaying</b> 122:5 <b>distance</b> 38:2 40:4 58:19 59:3 75:13 98:2 <b>distances</b> 23:13 <b>dit</b> 44:8,8,8,8,8 <b>docket</b> 5:9 <b>document</b> 88:12 121:12 <b>documented</b> 70:10 <b>doing</b> 35:2 49:10 86:18 131:8 142:16 <b>dotted</b> 139:7 140:4 <b>doubled</b> 133:17 <b>downthrown</b> 47:19,21 <b>drain</b> 96:4 128:8 135:10</p>	<p><b>drainable</b> 21:3 <b>drainage</b> 126:11 <b>drained</b> 76:7 91:7 95:21 96:14,20 105:9 110:16 120:6 128:13 <b>dramatic</b> 56:12 <b>dramatically</b> 71:16 <b>draw</b> 86:10 88:8,9,14,23 93:7 136:2 149:8 151:25 <b>drawn</b> 45:8,9 69:7 89:3 90:19 140:2 150:3 <b>drill</b> 22:2 27:8 27:11,24 29:24 30:1,5 40:4 43:14 69:18 73:8 74:13,23 75:13 86:22 87:2 93:17 94:4 96:20 99:3 100:25 101:19 105:7 115:23 117:11 127:9,11 128:10 129:14 129:18 130:5 133:4 146:5</p>	<p><b>drilled</b> 20:19 21:19 22:1 23:22,23 24:1 24:2,17,23 26:2,2,3,4,7,18 26:20 29:21 40:11 50:20 57:14 58:25 69:19 73:2 75:9 81:13,25 100:13 102:12 102:13 113:4,9 114:15 116:9 117:19,25 122:3 124:17 127:23,25 128:4 129:17 129:19 132:22 135:16 <b>drillers</b> 24:9 <b>drilling</b> 18:24 23:9 24:6,9,11 26:18 27:23 29:24 54:19 73:12,14 75:12 94:14 100:2,10 100:11,20,23 100:25 101:1,1 125:21 127:13 127:18 130:24 134:1,6 145:23 150:5 <b>drive</b> 24:4 <b>drives</b> 46:20</p>	<p><b>dry</b> 23:10 <b>dual</b> 26:6 <b>duly</b> 7:14 17:5 108:9 <b>durand</b> 2:18 6:16 <b>dutch</b> 114:14 <b>duties</b> 108:24 <b>dying</b> 63:17,22 66:25</p>
<b>e</b>			
<p><b>e</b> 3:1 4:1 5:1,1 114:13 <b>earlier</b> 45:21 49:23 67:10 89:12 102:2 135:5 139:2 <b>earn</b> 109:3 <b>earth</b> 22:8,13 22:17,24 23:3 37:6 <b>easier</b> 18:16 <b>easily</b> 89:3 <b>east</b> 26:3 27:9 29:16 31:2,13 33:6,9,15,16 36:11 41:2 48:23 61:14,19 61:22 62:8,11 62:19 63:11,22 65:6 67:25 69:20,25 70:11 70:12 75:5,7 78:9 80:1 84:16 96:25</p>			

**[east - evaluate]**

140:15 <b>eastern</b> 67:6 <b>easy</b> 48:16 <b>economic</b> 74:22 <b>economical</b> 76:11 <b>economically</b> 21:3 76:7 91:5 91:7 105:9 120:5 <b>edge</b> 53:20 69:15,16 71:1 <b>edges</b> 86:23 <b>educated</b> 21:21 21:23 <b>education</b> 17:22 109:2 110:14 112:19 113:15 151:23 <b>educational</b> 17:15 <b>effect</b> 96:1 105:3 106:9 <b>effectively</b> 105:8 110:16 <b>efficiency</b> 74:22 <b>efficient</b> 76:11 150:13 <b>efficiently</b> 21:3 76:7 91:6,7 105:9 110:16 120:5 <b>eight</b> 26:2 84:16 86:12,20	108:25 <b>either</b> 12:13 23:22 61:19 63:17 69:5 89:3,4 130:10 141:1,3 142:15 152:7,9,22 <b>elaborate</b> 85:11 <b>elected</b> 22:8 <b>electrical</b> 25:1 <b>elements</b> 51:17 75:21,23 135:2 <b>elevation</b> 58:8 60:17 <b>eleven</b> 8:1 24:17 <b>eliminates</b> 23:9 <b>else's</b> 11:13 <b>employed</b> 19:5 108:17,19 <b>employee</b> 157:13 <b>encompassed</b> 77:19 <b>encompasses</b> 91:22 93:2 <b>encompassing</b> 97:21 114:16 119:17 146:20 <b>encounter</b> 25:25 27:11 30:17 57:25 75:18 128:10 <b>encountered</b> 54:24 115:10	115:25 117:1 <b>encountering</b> 74:2 <b>encounters</b> 30:8 115:24 117:11 <b>ene</b> 33:11 61:23 <b>energy</b> 22:17 22:19,25 23:2 37:5,8,10,11 38:11 <b>enforce</b> 140:19 <b>enforced</b> 155:24 <b>engage</b> 131:3 <b>engaged</b> 60:22 76:4 <b>enlarged</b> 82:24 <b>ensure</b> 110:1 <b>entered</b> 80:24 <b>entire</b> 29:14 31:9 94:18 127:24 <b>entirely</b> 13:5 102:25 123:21 <b>entirety</b> 11:1 146:6 <b>entities</b> 15:23 <b>equally</b> 98:24 <b>equipment</b> 22:20 <b>equitable</b> 129:2 <b>equivalent</b> 143:17	<b>escape</b> 65:23 149:14 <b>escaping</b> 65:17 66:4 <b>ese</b> 61:23 <b>especially</b> 110:6 155:15 <b>essentially</b> 31:16 39:9 42:18 45:15 46:10 57:7 62:2 69:9 89:13 <b>establish</b> 11:24 109:21 <b>established</b> 147:20 148:17 <b>establishing</b> 1:5 5:6 143:5,9 143:24 145:11 <b>estate</b> 136:10 137:2 <b>estimate</b> 25:9 79:19 85:15 87:18,19 111:3 151:5 <b>estimated</b> 98:2 98:7 <b>estimates</b> 110:21 <b>estimating</b> 113:1 <b>et</b> 136:25 <b>evaluate</b> 110:3 110:9 122:24
--	---	---	---



**[evaluated - exhibits]**

<b>evaluated</b> 123:4,16 <b>evaluating</b> 109:23 <b>evaluation</b> 19:11 112:2 <b>event</b> 40:15 43:17 46:15 53:7,18 55:21 56:6,17,18 59:13,13 60:6 60:8 63:9,11 63:14,16 64:4 64:15 68:3,14 69:6,6 83:4,6 84:4,6 85:20 88:6,6 90:24 101:23 152:6 <b>events</b> 37:15 45:10 89:17 102:4 <b>eventually</b> 94:22 127:9,23 <b>everybody</b> 149:4 <b>evidence</b> 5:19 20:16,18 66:7 66:7 93:21 113:18 145:4 152:11 <b>evident</b> 75:25 <b>evidentiary</b> 5:13 153:14,21 154:6,25	<b>exact</b> 27:13 69:14 77:8,8 <b>exactly</b> 31:23 33:8 34:17,21 40:20 41:23 50:22 52:2,14 57:15 58:22 59:5 62:2 81:22 152:1 <b>examination</b> 3:4,5,8,9,10,11 3:12,17,18,19 3:20,21 7:17 10:1 17:8 79:9 97:12 103:20 104:17 108:12 120:19 142:1 144:22 151:14 152:18 <b>examine</b> 86:4 <b>examining</b> 104:6 <b>example</b> 25:24 31:14,16 34:23 39:23 44:21 45:24 52:10 58:24 62:7 67:23 84:3 85:21 96:13 105:10 147:12 148:11 <b>excellent</b> 50:18 83:7 113:20 116:18	<b>except</b> 43:7 <b>exceptions</b> 92:7 <b>excessively</b> 150:3,4 <b>excised</b> 80:17 <b>exclusive</b> 155:12 <b>exclusively</b> 54:16 <b>excuse</b> 55:24 <b>excused</b> 16:18 106:22 <b>execute</b> 14:1 <b>exhibit</b> 4:4,5,9 4:10,11 8:9 9:10,13 28:13 28:14,17,25 29:1 31:6,15 32:5,14,15,22 32:23 33:4,5,9 33:18,22 34:2 34:8,22 35:1,2 35:5,6,11 36:4 36:4,6,18 39:25 42:17,18 42:18,19 43:21 44:14,15 45:20 46:11 47:12,15 47:16 48:1,12 48:24 49:5,6 49:14,14,21,22 49:24 50:16,17 50:21 52:1,17 55:19,24 57:13 61:4,15,17,24	61:25 62:3,9 63:2 64:7,25 65:16 66:10,11 66:18,21 67:8 67:24 68:5,6,8 68:21 69:2,10 70:5,15,20 71:3,21 72:16 72:18 74:1,4 75:2,24 77:6 78:6 79:11,14 80:2,7,7 82:1,6 82:15,23,24 83:1,8 84:3 85:2,2 86:18 87:17 88:23 90:20 93:5,6,7 95:7 96:2 97:17 98:6,7 99:12 111:19 111:21 114:3 115:3,22 116:3 116:19,20 117:7,10,15 119:15 120:22 120:25 121:16 134:22 135:2 135:19 138:17 138:22 <b>exhibits</b> 5:18 20:11,24 28:7 28:7 31:5,12 31:15 32:19 33:21 34:19 51:20 53:4
---	---	---	---

[exhibits - fallon]

<p>57:17 60:25 86:18 93:4,5 95:4 101:2 112:8 113:21 114:1 118:16 122:7,10 <b>exist</b> 59:10 95:6 110:25 <b>existence</b> 66:8 112:22 <b>existing</b> 20:1 21:25 29:17,19 31:25 32:11 35:12 37:1 40:12 44:4 59:15 60:20 70:22 71:1 72:19 77:13 105:25 114:5 140:6 <b>expand</b> 70:19 <b>expanded</b> 51:1 <b>expect</b> 28:3 <b>expected</b> 57:25 <b>expedited</b> 154:15 <b>expense</b> 55:4 <b>expensive</b> 22:6 23:6 <b>experience</b> 15:11 18:3,22 19:10 20:17,17 57:24 76:13 88:19,22 89:8 89:23 90:15</p>	<p>103:23 109:9 109:10,14 110:14 112:20 112:25 113:6 113:16 148:22 149:1 151:22 <b>experienced</b> 89:23 <b>expert</b> 104:3,8 <b>expertise</b> 10:22 <b>expires</b> 157:25 <b>explain</b> 10:10 33:22 39:9,15 39:17 41:25 55:2 65:14 67:9 83:25 131:24 133:9 133:20 <b>explained</b> 80:7 <b>explanation</b> 48:17,18 87:15 <b>exploration</b> 19:10 50:12 74:15 93:16 109:12 <b>explorationist</b> 48:16 <b>explore</b> 26:25 43:5 72:16 <b>explored</b> 27:5 <b>exploring</b> 76:13 104:7 <b>expressed</b> 80:11 85:16 88:11 135:1</p>	<p><b>expresses</b> 124:3 <b>extend</b> 101:13 103:2 <b>extended</b> 30:10 <b>extending</b> 75:6 <b>extends</b> 32:9,10 123:23 <b>extent</b> 13:10,14 31:23 84:2 85:8 87:2 89:7 89:22 96:7 99:5 102:14,23 110:10 153:20 154:24 155:18 <b>extern</b> 6:1,3,10 <b>externs</b> 5:24 <b>extracted</b> 29:5 <b>extraction</b> 94:15 <b>extremely</b> 22:12 43:16 135:20</p> <p style="text-align: center;"><b>f</b></p> <p><b>fact</b> 20:6 69:17 89:2 90:18 96:2 123:22 124:7 131:15 131:19 136:17 138:17 140:3 153:13 <b>factor</b> 127:14 <b>factors</b> 38:19 <b>facts</b> 87:14 <b>factual</b> 76:22 76:23</p>	<p><b>fades</b> 68:14 69:8 <b>fail</b> 46:25 <b>fair</b> 14:17,18 15:16 72:9 90:14 122:22 129:12 <b>fairly</b> 24:2 <b>fallon</b> 20:1 25:24 26:3,6 27:2,7,9,11 29:17,19,21 30:8,12,19 31:9 32:11 34:23 35:13 36:12 50:4,20 51:7 54:24 56:2,17 57:24 58:23 60:19 61:11 69:22 70:22 71:1,8 72:19 73:2 74:2,14 75:1 75:10 77:13,14 80:23 81:9,13 93:21,24 95:10 98:14 100:2,11 101:16 102:10 114:16 115:8 115:11,15,18 116:25 117:2,8 118:11,23 119:10,17,19 121:8</p>
---	---	--	--

[false - followed]

<p><b>false</b> 90:12  <b>familiar</b> 8:9  11:20 12:24  19:20 20:3  78:3 90:10  112:15 124:12  124:15 125:23  128:22 149:16  <b>familiarity</b>  11:25  <b>far</b> 11:19 55:11  81:17 84:24  91:1 103:10  113:15 129:21  <b>fast</b> 18:18  38:12 138:9  <b>faster</b> 38:22  39:5  <b>fault</b> 32:1  44:20 46:16,17  46:25 47:6,9  47:11,12,14,18  47:22,22,24  48:2,7,9,15,17  64:15,17,18,20  64:22,23 65:3  65:9 66:6,8,13  66:16,22,23  67:1 71:23,23  75:19,20 78:10  78:19,20,25  79:13,15,19  80:1 83:12  96:14,19  135:18</p>	<p><b>faulted</b> 48:4,5,6  48:6 65:4  <b>faulting</b> 46:21  46:24  <b>faults</b> 31:2  45:18,19 47:3  48:13 65:10  68:21,24 96:19  <b>feature</b> 64:8  67:6 93:3  101:24 111:24  136:4  <b>features</b> 39:7  39:10 44:2  <b>february</b> 118:5  <b>feel</b> 20:16 64:17  102:21  <b>feels</b> 118:24  <b>feet</b> 24:11,12  26:8,13 27:3  27:13 29:10,25  30:3,5,12 38:3  38:8,23,24,25  40:2,6,21,22,23  41:1 57:15,16  58:8,10,10  60:13 61:12  81:1,4,6 82:3  89:14 93:25  95:9 98:8,11  98:11,13,13,16  98:18,20,21  101:9,17 115:5  115:5 116:21  116:22 118:3</p>	<p>122:3,14,19  123:11,17  <b>field</b> 4:9 19:2  19:14 21:24  90:3,9,9 104:6  109:15 113:8  113:12 114:4  114:12,25  120:3 127:24  <b>fieldwork</b>  104:4  <b>fight</b> 149:4  <b>figure</b> 12:1  <b>figures</b> 83:14  <b>figuring</b> 44:12  <b>file</b> 155:15,21  <b>filed</b> 50:24  109:22  <b>filings</b> 155:23  <b>filled</b> 56:25  <b>finally</b> 111:24  116:18  <b>financially</b>  157:13  <b>find</b> 24:21  25:18 28:4  47:4 83:9  104:9 125:12  125:20 129:15  130:23  <b>finding</b> 69:23  74:16 131:17  131:22 132:4,5  132:7</p>	<p><b>finds</b> 133:2  146:1  <b>fine</b> 34:2 97:15  155:19  <b>first</b> 5:20 7:14  8:6 17:5 19:4  22:9 28:8,22  36:17,23 37:15  40:13 65:13  98:1 108:9  113:10 120:14  143:3  <b>fit</b> 91:22 97:22  <b>fits</b> 91:23  <b>five</b> 109:1  151:2,10  155:12,21,23  <b>flat</b> 53:14 56:5  57:2,9 63:21  <b>floor</b> 7:7 108:4  120:16 152:16  <b>fluid</b> 43:13  <b>fluvial</b> 70:1  <b>focused</b> 144:6  <b>focusing</b>  133:18  <b>folks</b> 146:24  <b>follow</b> 33:6,24  35:4 101:23  138:18,20  139:15 147:22  150:24  <b>followed</b> 5:21  5:21 139:8</p>
--	---	--	--

[following - gas]

<p><b>following</b> 12:24 31:12 32:4 33:2,3 63:8,10 143:7 148:4 <b>follows</b> 7:15 17:6 33:9 51:6 108:10 <b>foot</b> 24:10 51:11 95:3 98:16 122:4 <b>forecasting</b> 27:16 <b>foregoing</b> 157:3,10 <b>forget</b> 155:19 <b>forgive</b> 99:19 <b>fork</b> 65:10 <b>form</b> 57:7,9 102:18 <b>formation</b> 25:6 100:24 110:20 111:6 115:24 117:5,12 118:13 144:4 145:12,17 146:5 <b>formations</b> 27:17 28:2 113:5 <b>formed</b> 26:18 27:22 <b>forth</b> 19:3 20:14 86:9 91:2 157:5</p>	<p><b>forward</b> 50:25 100:7 133:6 <b>found</b> 26:8 28:3 57:14 73:11 93:8 101:16 102:6 128:19 129:16 131:15 140:13 <b>foundation</b> 149:5 <b>four</b> 8:1 40:21 40:22 83:13 151:2,10 155:16 <b>fragments</b> 115:23 117:11 <b>free</b> 16:22 <b>frequency</b> 22:22 23:3 <b>friendly</b> 15:10 <b>front</b> 12:6 124:20,25 141:19 153:1 <b>frontier</b> 27:5 <b>froze</b> 73:15 74:11 <b>fruitland</b> 1:19 1:21 5:14 16:4 16:5,6 <b>fuhs</b> 1:24 157:2 157:21 <b>fulfilled</b> 108:24 <b>full</b> 54:2 87:15 108:15</p>	<p><b>further</b> 9:18 44:17 52:18,20 78:11 81:3 103:13,14 104:13 120:8 157:12 <b>future</b> 77:16 127:11,20 130:4,15 133:23</p> <hr/> <p style="text-align: center;"><b>g</b></p> <hr/> <p><b>g</b> 5:1 <b>gained</b> 25:14 <b>gamma</b> 25:2,3 51:9,12,14,16 51:19 52:21 72:24 73:1 74:3 75:3 <b>gaps</b> 77:22 99:15 <b>gas</b> 1:4,11 2:10 3:2 4:2 5:5,9 5:22 6:4 7:3 10:16 17:23 19:6,8,11 20:21,23 22:3 24:12,19,21 25:19 26:11,13 26:14 27:6 30:24 32:24,25 35:14,14,16 42:13 43:22 53:5,8 54:2,7 54:10,17,20,21 55:22 56:3,9</p>	<p>56:11,14,21 57:5,7,9,16,20 58:5 59:10,14 59:15,16 60:7 60:9,12,16,18 61:8 62:13 63:1,8,21 64:5 64:14 65:17,21 66:4 67:21 68:11 72:6 73:7,11,11,12 73:13,14 74:2 74:16 75:2,5 75:11 76:10 84:7 85:4,8,16 87:3,19 88:4 88:12 90:18 95:6 100:3,18 100:18,21,22 101:1,5,9,9,11 101:17,19 102:22 106:11 106:14 108:23 109:9,12,13 110:18 111:13 112:21 118:3 122:14 124:9 124:17 125:6 125:21 126:2 126:18 129:3,7 130:24 131:17 132:15 133:21 134:9 135:15 143:14,19,20 149:15,17,19</p>
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[gas - going]

<p>151:19  <b>gather</b> 126:13  <b>gathered</b> 60:11  116:6 117:18  <b>general</b> 2:3,4  5:24 20:23  37:18 42:2  43:20 150:8  <b>general's</b> 6:3  <b>generally</b> 21:6  21:8 38:21  47:3 65:14,23  67:20 75:16  80:1 83:15  112:15 137:4  <b>generate</b> 42:5  43:17 57:22  <b>generated</b>  27:13 65:22  116:6 117:17  <b>generates</b>  41:14  <b>gentlemen</b>  21:21  <b>geographic</b>  91:8,11,21  93:2 97:21  110:10 133:11  136:7,9,15,17  137:5,15  147:21 148:9  148:18  <b>geographically</b>  136:13</p>	<p><b>geography</b>  21:10  <b>geologic</b> 17:20  25:17 109:18  111:1,9 112:16  113:18 118:25  119:25 126:22  136:7 148:25  <b>geological</b>  92:19 109:17  122:20 135:6  <b>geologist</b> 6:24  17:14,24 19:4  88:14 89:3  103:23  <b>geologist's</b>  88:21  <b>geologists</b>  89:19  <b>geology</b> 17:17  19:16 21:10  75:1 90:3,16  109:6 120:1  133:23  <b>geophone</b>  22:22 41:9  <b>geophones</b> 23:5  89:13  <b>geophysical</b>  17:21 19:17  20:19 24:23  56:15 57:18  73:4 89:24  99:4 101:4,20  109:17,18</p>	<p>111:2 116:6  117:18 119:6  135:6  <b>geophysicist</b>  17:14,24 88:7  <b>geophysicists</b>  89:20 103:23  <b>geophysics</b>  17:19 109:7  <b>geoscience</b>  21:19,22  <b>geoscientist</b>  21:12  <b>geothermal</b>  109:13  <b>getting</b> 38:25  43:3 53:12  72:7 83:11  107:17 150:22  <b>give</b> 18:14 29:8  98:2,5,17  <b>given</b> 36:17  38:13 113:14  154:7,23  155:11 157:11  <b>gives</b> 23:6  29:11 40:20  <b>glad</b> 51:3  <b>gleaned</b> 152:6  <b>go</b> 10:19 14:7  22:24 25:1  28:7,9,12  33:25 36:15  37:2 39:9 40:9  42:25 44:8,12</p>	<p>49:6 55:14,16  55:24 59:6,19  65:16 68:4  69:2,16 70:14  70:20 71:2  77:4 80:6 82:1  82:6 83:1 85:1  87:21 89:12  98:23 99:2,12  120:14 122:7  131:7 142:3  146:5 151:9  <b>goes</b> 25:8 33:15  36:11 37:6,23  46:5 69:13  80:18 92:25  120:10 123:5  131:3  <b>going</b> 11:12,23  12:16 13:9  18:6,18 23:8  25:14,17 29:22  30:2 31:20,21  33:5,6 34:13  34:13 36:3  38:15 39:8  41:9,12,13  42:5 43:11,17  47:15,16,25  48:12 55:17  56:5,9,11  58:11,12 61:12  61:23 62:3  64:6 65:19  66:18,21 67:13</p>
--	---	---	---

[going - hearing]

<p>68:9,16,18 69:2,10,18 70:3 71:15,20 72:20 77:3 81:2 84:23 85:12,21,24 87:11 88:6 92:12 98:14 99:16 101:3,22 103:5 105:17 106:5,10,13 113:23 126:1 127:3,11 128:9 130:5,7 137:13 148:11 153:19 154:21 <b>gold</b> 44:23 45:23 51:9 52:3,18 72:24 <b>good</b> 15:7 22:7 23:7 24:19 50:18 52:10 55:5 64:17 73:6 74:16 101:21,21 107:19 110:13 111:4 142:3 <b>govern</b> 13:11 <b>governmental</b> 124:18 143:16 <b>grader</b> 23:1 <b>gradually</b> 38:24 46:24 68:14</p>	<p><b>grant</b> 154:21 <b>granted</b> 75:9 75:12 127:15 146:4 <b>graph</b> 80:8,15 <b>great</b> 72:22 <b>greater</b> 72:15 73:23 <b>green</b> 32:1 44:16 46:16 47:13,22 48:2 48:13 64:23 65:8 68:19 71:23 75:20 96:18,19 <b>gross</b> 98:16 <b>ground</b> 23:12 55:10 57:20 59:3 105:13 115:23 117:11 149:15 152:2 <b>group</b> 21:14 <b>grumpy</b> 150:23 <b>guess</b> 20:25 31:12 85:23 86:19 <b>guessing</b> 131:1 <b>guidance</b> 141:13 <b>gw</b> 63:20 68:11</p>	<p>140:15,15 <b>halfway</b> 56:25 <b>hall</b> 1:19 5:14 154:4 <b>hand</b> 37:2 47:17 53:20 80:9 120:25 157:15 <b>happen</b> 30:2 94:18 130:5,8 130:9 <b>happening</b> 74:24 125:2 <b>happens</b> 46:18 53:25 57:5 139:10 <b>happily</b> 132:10 <b>happy</b> 120:14 <b>hard</b> 15:11 18:7 42:4 43:16 90:6 125:14 133:8 <b>hardee</b> 2:11 <b>harder</b> 41:13 41:16 42:16 <b>harm</b> 134:14 <b>harmon</b> 4:9 10:9,11,15,16 10:20 11:6 27:2 113:7 114:4,12,25 120:2 <b>hat</b> 32:22 <b>hayden</b> 2:5</p>	<p><b>hayden.martoz</b> 2:8 <b>hayes</b> 1:16 5:13 <b>head</b> 26:15 55:16 106:13 <b>healthy</b> 127:8 <b>hear</b> 37:24,25 38:6 123:19 <b>heard</b> 124:7 <b>hearing</b> 1:16 5:3,12,13 6:7 6:12,18,21,25 7:6,10 9:20 11:21 12:20,21 13:3,9,14 14:6 16:12,15,17,20 16:25 18:7,10 32:3 34:4,7,12 34:18 35:3 49:2 50:25 58:13 73:17 76:20,25 77:3 79:5 95:15 97:9 103:11,16 104:12 106:20 106:24 107:4,8 107:12,16,20 107:23 113:23 120:9,15 128:5 132:1,8,12 134:10 139:5 141:24 142:9 142:13,21 144:10,19 145:3,9 148:7</p>
	<b>h</b>		
	<p><b>h</b> 4:1 <b>half</b> 29:16 36:8 36:9 40:3,22 41:1 65:6 76:4</p>		

[hearing - illustration]

<p>150:18 151:4,9  152:15 153:8  153:14,16,18  153:25 154:3  154:13,14,19  155:6,9,10,17  <b>hearings</b> 5:11  6:8  <b>help</b> 24:3  <b>helped</b> 21:21  124:3  <b>helps</b> 27:16  72:5  <b>high</b> 20:22 42:9  42:10,11 47:24  56:16 61:3  67:15,18 68:13  68:13 70:22  74:24 87:25  102:22  <b>higher</b> 46:4  47:20 51:14,14  53:14,14 60:1  60:10,13,17  66:2 67:16  73:4 75:7  101:14 109:2  <b>highest</b> 45:4,16  48:11 90:23  103:4  <b>highlighted</b>  114:8  <b>historical</b>  114:24</p>	<p><b>history</b> 25:17  110:20  <b>hits</b> 37:24  <b>hold</b> 84:9 90:5  109:2 138:6  <b>holder</b> 14:12  <b>holds</b> 47:3,9  <b>hole</b> 30:14,16  31:8 68:2  77:18 117:19  <b>holes</b> 23:10  <b>honest</b> 92:15  <b>hooked</b> 24:19  <b>horizon</b> 45:11  45:23 46:1,3  46:13 53:19,24  55:20 56:13  63:16  <b>horizons</b> 45:7  46:9 49:17  63:15 102:15  <b>hostile</b> 144:24  <b>hot</b> 67:13  <b>hotter</b> 67:16  <b>hour</b> 76:4  <b>hours</b> 44:12  <b>houses</b> 23:13  <b>houston</b> 17:12  17:19 21:23  <b>hpk.law</b> 2:15  <b>hundred</b> 25:14  <b>hundreds</b>  29:14 110:19  126:10</p>	<p><b>hydrocarbon</b>  83:10 100:17  111:3,7 113:2  113:12 116:2  119:2 120:4  <b>hydrocarbons</b>  72:11 79:21  80:2 97:4  104:21,25  105:17,18  106:4,6 109:19  112:22,24  115:20,25  116:13,14,16  117:5,12,14,24  118:10,12  119:12 122:18  123:23 128:2  135:21  <b>hypothetical</b>  137:18</p> <hr/> <p style="text-align: center;"><b>i</b></p> <hr/> <p><b>i.e.</b> 24:11 60:1  <b>idaho</b> 1:1,9,21  2:2,7,14,22  3:15 4:8 5:4,8  6:5,6 7:23,25  7:25 11:18  15:3,7 19:13  19:15,17 21:14  103:24 108:6  108:20,20  110:3 123:25  124:2,13  125:17 130:21</p>	<p>136:11 138:2  142:25 149:16  152:25 157:24  <b>idea</b> 13:7 29:8  29:12  <b>identified</b> 9:10  9:15 72:21  128:13  <b>identify</b> 14:12  14:25 43:4,22  49:8,8 72:16  111:19  <b>identifying</b>  14:16 45:19  66:13 136:24  <b>idl</b> 4:9,10,11  114:2,4,13  115:2,22 116:4  116:18,20  117:3,7,10,15  120:22 121:17  121:22 138:22  <b>idtf'd</b> 4:3  <b>idunionlaw.c...</b>  2:23  <b>ignore</b> 95:18  <b>illustrate</b> 44:19  <b>illustrated</b> 39:8  <b>illustrates</b>  28:17 50:10  <b>illustrating</b>  43:22 45:19  <b>illustration</b>  36:21</p>
--	---	--	---

[illustrations - instructed]

<p><b>illustrations</b> 62:6</p> <p><b>image</b> 22:7 23:7 57:11 80:8</p> <p><b>imaginary</b> 40:11</p> <p><b>imagine</b> 22:12 37:20 46:21 71:6</p> <p><b>imaging</b> 56:3 57:12</p> <p><b>immediately</b> 24:16 26:4 77:13 99:13 102:20 115:16</p> <p><b>impact</b> 23:11 127:8 129:10</p> <p><b>impacted</b> 78:15 78:17 79:1 146:25</p> <p><b>impedes</b> 65:17</p> <p><b>impeding</b> 6:11</p> <p><b>impermeable</b> 66:3</p> <p><b>impossible</b> 136:8</p> <p><b>improved</b> 87:19</p> <p><b>improving</b> 32:19</p> <p><b>inaccurate</b> 87:13</p> <p><b>inappropriate</b> 145:1</p>	<p><b>inaudible</b> 37:21 80:12</p> <p><b>inch</b> 82:22</p> <p><b>inches</b> 82:20</p> <p><b>inclined</b> 83:17</p> <p><b>include</b> 105:14 147:6</p> <p><b>includes</b> 10:6 14:15 23:16 109:15 149:19</p> <p><b>including</b> 21:24 144:21 148:10</p> <p><b>incorporate</b> 25:16 85:19 91:8,11</p> <p><b>incorporates</b> 91:20</p> <p><b>incorporating</b> 54:14 55:6</p> <p><b>incorrect</b> 61:22 122:2</p> <p><b>increase</b> 118:12</p> <p><b>increases</b> 38:24 101:25 116:15</p> <p><b>increasing</b> 19:7</p> <p><b>incremental</b> 74:23</p> <p><b>independence</b> 6:11</p> <p><b>independently</b> 113:17</p> <p><b>indexed</b> 9:12</p> <p><b>indicate</b> 51:15 51:17 93:21 97:3 116:12</p>	<p>117:23 119:20 121:2</p> <p><b>indicated</b> 20:24 36:6 63:20 64:6 68:16 72:14 78:13</p> <p><b>indicates</b> 70:6 116:1,11 117:13,21</p> <p><b>indicating</b> 121:13</p> <p><b>indication</b> 53:12 74:3 122:6</p> <p><b>indications</b> 74:6</p> <p><b>indicative</b> 54:16</p> <p><b>individual</b> 35:4</p> <p><b>individually</b> 84:18</p> <p><b>induction</b> 24:25</p> <p><b>industry</b> 17:20 17:23 19:6 109:9 112:21 148:22</p> <p><b>inflating</b> 46:21</p> <p><b>inform</b> 24:3 115:19 117:4</p> <p><b>information</b> 15:12,13 21:7 21:9 23:21,25 24:6,7 25:13 25:16 27:8</p>	<p>28:1,18 29:3 29:12 32:20 36:17 37:4,15 39:6 40:13 45:22 48:22 49:24 52:4,5 54:13 55:7 58:3 60:11,21 62:1 76:15 89:18 95:16 103:24 110:5,8 110:14,22,25 111:8,17 112:3 113:17 116:11 117:21 118:1 118:17,21,22 118:23,25 119:6,8,10 122:20 126:13 126:23 127:12 128:6 129:13 130:12 146:13 150:9 152:6</p> <p><b>inlets</b> 83:3</p> <p><b>input</b> 22:17 85:3</p> <p><b>inside</b> 12:13 49:18 139:13</p> <p><b>insight</b> 19:1</p> <p><b>insolvent</b> 21:17</p> <p><b>instance</b> 124:12 143:23</p> <p><b>instructed</b> 13:20</p>
---	--	--	--



[instruction - killebrew]

<p><b>instruction</b> 11:21 18:15 91:10 <b>integrate</b> 94:13 <b>integrates</b> 119:7 <b>integration</b> 94:8,17,23 109:17 119:23 <b>integrations</b> 139:14 <b>intend</b> 27:19,23 <b>intercepted</b> 40:5 <b>interceptive</b> 30:8 <b>intercepts</b> 50:5 <b>interest</b> 9:2,4 10:24 12:5,8 12:12 13:16,17 14:12,25 15:18 15:19,21 16:1 19:18 <b>interested</b> 21:15 45:22 157:14 <b>interests</b> 94:14 94:23 <b>interface</b> 57:3 <b>interference</b> 108:3 <b>international</b> 109:11 <b>internationally</b> 19:9</p>	<p><b>internet</b> 74:12 <b>interpret</b> 13:11 36:19 55:18,20 61:8 63:13 72:1 75:17 86:6 88:13 91:13 109:18 148:3 <b>interpretation</b> 23:20 25:11 36:21 44:12 45:2,12,15 47:6 54:7 55:4 55:11 56:8,12 60:23 63:24 64:2,19 68:23 69:9 70:18 72:10 73:22 78:14 79:20 87:1 88:20,21 89:19,25 97:20 98:22,24 99:24 111:9,11 119:1 119:25 135:6 <b>interpretations</b> 24:4 43:13 44:24 83:23 85:19 89:7 146:14 <b>interpreted</b> 46:4 63:13 82:24 138:16 148:25 <b>interpreter</b> 23:20</p>	<p><b>interpreters</b> 89:19,24 <b>interpreting</b> 11:17 55:6 63:7 89:17 103:25 113:17 <b>interpretive</b> 87:16 <b>interrupt</b> 84:24 <b>intersect</b> 68:1 <b>intersects</b> 51:25 52:16 53:24 <b>interval</b> 40:24 42:15,15 54:9 54:10,11 75:5 83:24 115:4,10 116:3,5,10,14 116:17,21 117:1,9,15,17 117:20 118:1,5 118:11 119:13 119:18 121:20 122:5 <b>intervals</b> 4:10 4:11 119:15 <b>introduce</b> 5:25 6:13,19 <b>intrusion</b> 46:19 <b>intuition</b> 89:8 <b>investigation</b> 95:11 <b>involved</b> 11:3 13:24 19:21 77:14 86:25</p>	<p>90:17 <b>issue</b> 132:6 144:4 145:12 155:2 <b>issues</b> 154:16 <b>items</b> 131:9</p>
			<b>j</b>
			<p><b>jagged</b> 51:6,8 72:24 <b>james</b> 2:20,23 3:16 6:4,15 107:15 108:5,8 108:16 <b>january</b> 108:25 <b>jar</b> 56:23,23 <b>jennifer</b> 6:2 <b>job</b> 13:21 19:4 <b>join</b> 153:20 <b>joint</b> 21:16 <b>judges</b> 6:9 <b>jumps</b> 52:18,20 <b>june</b> 1:18 157:16</p>
			<b>k</b>
			<p><b>karen</b> 2:17 6:16 <b>keep</b> 57:7 155:23 <b>kept</b> 84:21 <b>key</b> 99:22 <b>kick</b> 29:25 59:21 <b>kicking</b> 51:1 <b>killebrew</b> 84:12 84:13</p>

**[kind - leslie]**

<b>kind</b> 38:13 43:12 51:1 65:5 66:13 83:13 114:8 143:24 155:14 <b>know</b> 12:1 15:11,14 34:23 37:18,22 38:5 38:7 43:17 50:14,18 74:17 81:18 85:15 87:8,12,14 92:24 93:10 98:12,23 99:2 99:14 100:2,10 105:12 106:15 123:22 126:20 127:10,22,25 128:9 129:9,19 129:22 130:2,7 131:7 134:3 135:16 151:23 <b>knowing</b> 38:1 <b>knowledge</b> 21:9 38:12 79:19 83:8 <b>known</b> 32:24 35:13,22 42:15 44:5 50:13,14 50:14 55:7 59:14,17 60:19 61:11 85:8 100:1 102:9 120:1,2	<b>knows</b> 130:5 <b>kracke</b> 2:11  <b>I</b>  <b>I</b> 81:12 <b>label</b> 32:22 66:13 72:20 <b>labeled</b> 32:15 114:19 138:23 <b>labeling</b> 32:21 35:10 111:22 111:23 <b>lack</b> 36:19 51:17 69:3 70:11,12 <b>land</b> 6:23 7:19 12:17 13:21 14:24 15:1,4,7 78:6 91:11,21 99:15 122:14 127:23 136:19 136:23 137:6,7 137:16,19,24 138:4,12 139:22 141:6 141:10 147:4,5 147:7,8,16 <b>landowners</b> 13:25 <b>lands</b> 1:1 2:2 3:15 4:8 5:4 6:5,6 97:22 108:6,20 109:22 125:12 <b>lane</b> 2:13 114:14	<b>laptop</b> 18:12 <b>large</b> 21:19 22:12,25 51:21 51:22 53:16 66:7 67:18,20 105:14 113:3 132:24 150:3 <b>larger</b> 82:7 89:4 105:19 134:5 135:10 152:8,9 <b>late</b> 19:14 <b>law</b> 6:9 11:25 12:24 90:10 123:25 124:2,3 <b>lawyer</b> 91:14 <b>lawyers</b> 11:21 90:10 <b>lay</b> 22:16 90:11 <b>layer</b> 39:2,3 43:15 81:10,14 <b>layers</b> 37:12 <b>layman's</b> 133:10 <b>leading</b> 144:8 144:14,17,21 144:23 145:2 <b>leads</b> 119:5 <b>leak</b> 67:3 87:19 <b>lean</b> 100:7 133:6,6 <b>learn</b> 74:16,25 <b>learned</b> 21:20 95:17	<b>leased</b> 111:19 <b>leases</b> 11:9 21:18 26:18 <b>leave</b> 16:22 <b>leaving</b> 142:10 <b>leeway</b> 144:20 <b>left</b> 18:21 33:11 35:15,21 41:22 44:18 47:17 49:4 50:7 51:14 52:18,20 61:5 62:20 63:5,9 66:9,12 73:21 74:4 77:23 115:7,22 116:23 117:10 134:2 142:5 149:25 150:19 <b>legal</b> 6:10 12:18 13:11 76:18 77:11 105:23 108:15 145:18 147:23 <b>legally</b> 104:23 105:13 <b>legend</b> 34:20 35:4,23 37:3 62:10 <b>legislative</b> 147:25 <b>legislature</b> 148:1 <b>length</b> 72:10,22 <b>leslie</b> 1:16 5:12
---	--	--	--

**[lesser - log]**

<b>lesser</b> 56:9 <b>level</b> 11:24 57:2 58:16,17 90:21 100:13 151:23 153:5 <b>lies</b> 78:4 <b>light</b> 53:10 59:9 <b>lighter</b> 67:13 <b>lightly</b> 27:5 <b>liked</b> 48:12,13 <b>likelihood</b> 20:22 97:3 102:22 116:16 118:12 119:12 119:24 <b>likely</b> 56:3 83:10 85:7 88:9 90:12,12 90:17 101:22 116:11,13 117:22,23 119:11 120:4 128:15 135:22 <b>likewise</b> 42:14 46:10 47:21 48:8 61:12 62:24 63:18 71:18 75:22 77:19 118:10 <b>lime</b> 39:4 <b>limit</b> 119:20 123:10 132:24 155:11 <b>limited</b> 120:2 131:6	<b>limits</b> 55:12 112:23 113:1 132:21 <b>line</b> 29:21 30:25 31:1,1,3 31:7,7,10,17,21 31:24 32:5,6,9 32:9,12,13,15 33:3,3,4,7,10 33:15 35:12,25 36:5,9,25 39:25 42:6,18 42:19 43:3,25 44:6,7,8,16,17 44:18 45:9,9 47:12,13,16 48:1 50:3,7 51:6,9,25 52:4 52:18 53:2 54:4 55:20 61:13,14,19,23 62:11,17 63:4 63:5,24 64:7,9 67:25 68:3,9 68:19,20 70:21 73:10 80:16 81:21 82:8 85:4 88:8,15 91:16,19 118:8 135:19 139:1,7 139:11,13 140:5 144:25 148:16 151:25 <b>linear</b> 64:8	<b>lines</b> 29:6 30:23 31:4 33:1,2 35:19,24 36:20 39:9,19 44:9 44:10,10,15 48:9 49:14 64:1,21 67:25 85:3 88:22 89:2,22 136:12 137:9 138:14 138:19,21 139:8,15,20 <b>liquid</b> 38:18 <b>liquids</b> 26:14 <b>list</b> 9:12,16 10:3,4,6 99:21 <b>listed</b> 131:10 <b>listen</b> 16:21 106:25 112:10 112:13 <b>listening</b> 55:10 89:13 139:4 <b>literally</b> 22:21 29:13 71:25 <b>lithological</b> 25:4 <b>lithology</b> 24:9 <b>little</b> 25:5 29:9 29:10,11,19 30:6 31:11 32:1 36:10 38:21 39:1,16 39:19 40:9 41:4,7,14 42:17,21 47:18	47:23 59:20 60:6 65:11 66:1,1 72:1 84:10 85:11 87:4,23 88:7 95:10 96:24 99:20 100:7 103:2 121:10 121:11 125:14 150:22 <b>llc</b> 1:4,11 3:2 4:2 5:5,9 <b>llc's</b> 111:13 <b>local</b> 20:18 21:20 46:20 70:10 <b>locally</b> 20:22 <b>locatable</b> 9:8 <b>locate</b> 9:7 14:16 <b>located</b> 124:17 143:15 152:22 <b>location</b> 1:19 29:20 30:14,16 30:18,19 31:8 32:10 33:1 44:3 49:10 68:2 81:2 85:15 87:18 90:19 96:3,21 101:14 137:15 <b>locations</b> 145:18 <b>log</b> 4:10,11 24:9,25 25:5,8 25:9 28:1
--	--	--	--

[log - mailings]

<p>50:24 51:4                      52:4,4,9 57:18                      74:3 99:3                      101:17,20                      107:2 115:6,7                      115:22 116:1,1                      116:4,5,10,22                      116:24 117:9                      117:13,16,17                      117:21,24                      118:23 119:8                      119:10 121:18                      121:20  <b>logged</b> 57:14  <b>logging</b> 116:7,9                      117:20  <b>logical</b> 76:9  <b>logs</b> 19:2 20:19                      24:15 25:10                      52:15 56:15                      73:4 99:4                      101:5 115:12                      117:7,8  <b>long</b> 7:22 96:25                      97:1 102:16                      103:7 106:17                      108:24 110:20                      138:8 145:18                      153:22  <b>longer</b> 36:10                      37:16,19 104:5                      155:21  <b>longwinded</b>                      92:24</p>	<p><b>look</b> 10:24 11:5                      23:24 31:15                      34:13 42:20                      44:7 47:25                      59:18 63:24                      64:1,1,8,21                      67:24 68:2                      69:11 71:3                      72:2 80:12                      81:21 86:16                      88:6 96:2                      102:6,25                      134:19 138:22                      138:23 140:3  <b>looked</b> 10:23                      15:20 47:16                      69:5 87:21                      93:4 101:17  <b>looking</b> 31:21                      34:15,15 35:1                      36:5 37:2 43:5                      44:18 50:24                      51:9 58:9                      61:13,15,17,24                      62:9 64:10                      66:22 67:23                      68:5,10 72:5                      72:24 74:1                      75:24 80:7                      82:10,15 83:7                      85:10 87:15                      98:11 120:21                      120:24 140:4  <b>looks</b> 22:25                      25:5 80:18</p>	<p>81:25 83:12                      120:24 121:9                      121:21  <b>lose</b> 48:20,20                      61:9  <b>loses</b> 69:12  <b>losing</b> 48:19                      83:19  <b>loss</b> 104:24  <b>lost</b> 74:11                      79:22  <b>lot</b> 17:18 19:9                      23:9 28:18                      29:2 41:7                      46:19 47:4                      48:9,14 71:25                      72:25 73:1                      74:22 75:4                      85:19 86:4                      92:25 95:16                      99:2 104:5                      124:18 126:22                      136:10 143:16                      144:20 155:11  <b>lots</b> 21:24                      89:17 143:17  <b>louisiana</b> 149:3  <b>loved</b> 64:19  <b>low</b> 22:22                      23:11 47:25                      51:13 54:9,9                      54:11 59:23                      66:1 67:12                      70:23 71:10,21                      71:22 97:2</p>	<p>101:11,11                      135:18  <b>lower</b> 24:23                      33:11 46:16                      47:21 51:12,16                      53:18,18 56:18                      57:16,21 60:1                      71:5,6 83:13                      99:8 118:7  <b>lowered</b> 116:8                      117:19  <b>lowest</b> 48:10  <b>luxury</b> 126:10                      135:3</p> <hr/> <p style="text-align: center;"><b>m</b></p> <hr/> <p><b>m</b> 1:16,24 2:20                      157:2,21  <b>ma'am</b> 16:19  <b>madam</b> 12:20                      142:13 155:9  <b>made</b> 13:21,23                      32:21 60:25                      100:4 101:2                      131:17,22                      132:4,7 157:7  <b>magnitude</b>                      42:6  <b>mail</b> 8:23 13:25                      14:10  <b>mailed</b> 10:4                      14:9  <b>mailing</b> 4:5                      8:12,15,16  <b>mailings</b> 8:21                      13:17</p>
--	---	--	---

**[main - measure]**

<b>main</b> 103:2 157:23 <b>maintain</b> 23:12 <b>majority</b> 91:23 <b>make</b> 11:11 14:4,8,10 25:4 34:5 38:5 43:12,18 59:7 60:14,24 61:1 64:24 79:20 81:10 89:6 99:20 110:9 111:2 118:17 122:15 123:12 123:13 126:14 130:8,14 132:5 133:14 135:19 138:13 142:18 148:21 154:16 <b>makes</b> 91:20 <b>making</b> 26:19 70:4 74:13 83:23 93:16 <b>man</b> 6:23 7:19 12:17 13:22 15:4 <b>management</b> 109:15 <b>manager</b> 6:4 7:3 108:23 <b>manipulation</b> 52:13 <b>manner</b> 149:21 150:6,14	<b>manually</b> 45:4 <b>map</b> 4:9 31:10 31:22,23 34:13 39:22 53:19 64:15 67:6,8 69:16 74:19 83:2 84:4,5,7 85:10,17 86:11 91:1 99:9 101:25 111:20 111:23 114:4 114:20 134:23 135:2,4 <b>mappable</b> 64:12 <b>mapped</b> 47:11 87:22 102:4,23 111:24 <b>mapping</b> 47:2,7 48:1 53:21 67:18 72:2 75:7 80:4 86:24 91:1 101:7 <b>maps</b> 86:16 102:15 119:14 <b>marble</b> 65:19 <b>marbles</b> 56:24 65:20 <b>march</b> 118:6 <b>mark</b> 82:3 95:3 <b>marked</b> 80:1 96:3,18 135:19 <b>marly</b> 39:3	<b>maroon</b> 28:23 29:1 35:19,24 44:17 47:11,18 48:9,14 62:17 62:21 64:15,18 64:22 65:3 66:6,8,23 68:20 71:23 75:19 77:7 78:19,20 79:13 91:16,19 96:13 <b>marotz</b> 2:5 3:10,17,20 5:22,25 6:2 16:13,14 97:9 97:13 100:16 103:14 107:12 107:14,19 108:4,5,13 113:23,25 120:7 132:3 150:18 151:2 151:15 152:14 154:13 <b>marotz's</b> 148:23 <b>martoz</b> 97:10 103:12 <b>mass</b> 137:6 <b>master</b> 109:6 <b>material</b> 65:22 132:6 <b>materials</b> 4:4 8:10,16,24 20:4,8 112:5	<b>math</b> 58:9 <b>mathematically</b> 83:16 <b>matter</b> 1:3 5:3 5:4 6:12 20:4 27:25 111:14 112:8 113:22 114:1 118:16 <b>matters</b> 154:17 <b>mature</b> 110:18 <b>maximize</b> 74:22 <b>mean</b> 12:13 14:9 15:9,14 29:7 39:15 41:4 56:21 60:3 65:14 67:11 71:4 83:12 96:7 123:13 127:18 129:9 133:13 136:6 138:13 143:8,18 147:21 <b>meaning</b> 12:18 30:1 100:17 <b>meaningful</b> 151:25 <b>means</b> 34:22 35:5 47:19 52:21 67:1 <b>meant</b> 147:25 <b>measure</b> 24:24 38:1 81:24 137:1
--	---	---	---

**[measured - near]**

<b>measured</b> 40:3 58:7,11,15,18 94:3 115:5,6 116:21,22 122:4	<b>methodically</b> 22:24	77:15,19 94:14 94:23	48:24 49:13,21 89:21 115:2
<b>measurements</b> 101:4 116:12 117:23 140:1	<b>methodology</b> 113:6,13	<b>minerals</b> 51:16 52:22 78:15,17 78:25	<b>moved</b> 57:13
<b>measures</b> 24:25 25:2,7	<b>microphone</b> 22:22	<b>minimal</b> 23:13	<b>moving</b> 53:9 61:18 78:10,23 100:1 103:3
<b>measuring</b> 58:20 59:4 116:7 117:18	<b>microphones</b> 22:21	<b>minimize</b> 74:21	<b>mpiotrowski</b> 138:11
<b>mechanism</b> 64:13 65:13 71:20	<b>mid</b> 19:14	<b>minus</b> 30:7 61:5 63:6	<b>mud</b> 4:10,11 115:6,22 116:1 116:10,22 117:9,13,21
<b>mechanisms</b> 70:16 72:12 75:15 152:10	<b>middle</b> 47:7 50:3 63:2 68:7 86:14 121:17	<b>minute</b> 30:22 107:18	<b>multiple</b> 60:11 89:16 93:19 102:6
<b>medium</b> 65:24 91:2	<b>migrations</b> 86:9	<b>modeling</b> 109:17	<b>mute</b> 139:5
<b>mentioned</b> 18:25 90:25	<b>mike</b> 2:15	<b>moderate</b> 42:7	<b>n</b>
<b>merely</b> 148:4	<b>mile</b> 29:15,16 29:16 36:8,9 36:11 40:3 41:1 64:11 96:25	<b>modern</b> 24:14 24:22	<b>n</b> 3:1 5:1
<b>merged</b> 84:8,10 84:19	<b>miles</b> 64:10 69:20 84:16	<b>moment</b> 87:17 95:19	<b>name</b> 10:12 108:15
<b>metes</b> 136:25 137:3	<b>millisecond</b> 40:21	<b>monica</b> 1:24 157:2,21	<b>named</b> 100:13 100:22
<b>methane</b> 109:13	<b>milliseconds</b> 40:17,18,22 46:13 59:19 60:10 80:10,13 81:5	<b>monitor</b> 25:2	<b>names</b> 10:13
<b>method</b> 22:15 55:13 74:18 104:2 112:21 113:1	<b>mineral</b> 9:6 10:23 11:6 12:5,12 13:16 13:16 14:12,25 15:18,19 16:1	<b>month</b> 7:24	<b>narrative</b> 103:7
		<b>months</b> 23:5 109:1	<b>natural</b> 26:13 26:14 122:14 136:3
		<b>moore</b> 3:3 6:22 7:9,13,19 10:3 11:16 12:4,23 13:3,6,19 14:7 16:20	<b>nature</b> 152:3
		<b>moore's</b> 112:13	<b>ne</b> 1:6 19:22 139:18,18 144:2 146:8,25
		<b>motherly</b> 150:22	<b>ne1/4</b> 5:7
		<b>move</b> 33:20 44:14 46:11,12	<b>near</b> 38:21,23 70:24 78:21

**[nearby - objection]**

<b>nearby</b> 25:24 28:2,3 <b>nearly</b> 83:16 102:11 <b>neat</b> 91:22 <b>necessarily</b> 134:1 <b>necessary</b> 94:13 134:21 134:21 151:12 <b>need</b> 18:11 43:12 98:23 100:7 110:14 131:11 133:5 141:1 142:18 151:6 154:24 155:14,18 <b>needed</b> 22:5 <b>needs</b> 91:5 135:10 140:22 <b>neighboring</b> 71:9 101:24 <b>neither</b> 6:10 <b>neutron</b> 25:9 115:7 116:4,23 117:16 121:18 <b>never</b> 128:9 140:2 149:1,8 155:21 <b>new</b> 11:10 26:23 27:18 28:24 29:2,17 30:15,15 31:8 32:10 35:16,18 35:21,24 36:12	44:3 60:4,5 62:16 63:3,10 63:19 66:5,14 68:8 70:25 71:12 75:9,9 75:12 76:1 77:20 91:16 <b>nicely</b> 91:23 <b>nine</b> 26:2 <b>nitz</b> 154:2 <b>noise</b> 71:25 86:24 89:11 <b>non</b> 77:11 91:13 <b>noncommercial</b> 24:20 <b>nonproductive</b> 146:17 <b>nonradioactive</b> 51:18 <b>nonstandard</b> 114:11,22 <b>nope</b> 9:8 <b>normal</b> 125:3 <b>normally</b> 123:24 <b>north</b> 1:8 5:8 10:9,10,15,20 11:6 19:25 29:16 30:19,25 31:7,24 32:5 32:11,13,16 33:3 35:11 36:1,4,7,9,24 40:25 47:17,21	48:8,10 49:16 50:9 54:5 59:20,22 61:13 66:17,17,22 69:1 70:16,21 71:1,2 78:9,11 80:1 82:7 96:13 101:13 126:17 140:15 <b>northeast</b> 31:2 31:13 33:15 47:12 61:14 64:16 67:24 70:17 79:18 83:11 135:14 135:20 <b>northern</b> 47:23 66:24 78:21 139:17,17 <b>northwest</b> 31:1 33:8,14,14 48:19,20,23 61:13,18,20 62:11 63:9 65:5,9 68:18 69:1 70:17 112:1 <b>notary</b> 1:25 157:22 <b>notated</b> 55:19 <b>notation</b> 42:23 <b>note</b> 117:24 <b>noted</b> 115:25 117:12	<b>notice</b> 8:24 11:12 14:17 15:18,22 50:23 <b>notices</b> 13:20 <b>number</b> 9:10 14:20 26:15 33:2 35:12,15 58:14,15,15 62:12,16,16,20 63:3 67:16 72:18 113:3 115:9 116:25 120:25 128:3 148:2,8 <b>numbers</b> 80:9 121:17 <b>nw</b> 19:22 139:19 144:3 <b>nw1/4</b> 1:7 5:7
<b>o</b>			
<b>o</b> 5:1 <b>o1</b> 9:13 <b>oah</b> 1:7 <b>oath</b> 157:6 <b>object</b> 12:16 103:5,7 132:3 142:7 <b>objection</b> 12:22 13:10 14:2 76:18,21 103:12 108:1 132:2,9 142:19 142:19 144:8 144:11 147:23 149:5			

[objections - okay]

<b>objections</b> 157:7	13:3,9,14 14:6 16:12,15,17,20	<b>og</b> 1:8	49:20 50:11
<b>objective</b> 26:6 27:4 89:10 97:23 98:3,4 100:21	16:25 18:10 32:3 34:4,7,12 34:18 35:3 49:2 73:17	<b>ogr</b> 1:6	52:12 55:15
<b>objectively</b> 89:15	76:20,25 77:3 79:5 97:9	<b>oh</b> 7:2 82:14 132:10	56:20 59:7 61:25 62:6
<b>objectors</b> 2:17 5:21 78:3	103:11,16 104:12 106:20	<b>oil</b> 1:4,11 2:10 3:2 4:2 5:5,9 5:21 6:4 7:3 10:16 17:23 19:5,8,11 20:21 22:3 24:12,19,21 25:19 26:11 73:8 74:17 95:6 108:23 109:9,11 110:18 111:13 112:21 124:9 125:21 126:2 126:18 129:2,7 130:24 131:16 132:15 133:21 134:9 135:14 149:16 151:19	65:8,16 68:23 70:14 72:8 74:10 78:2 80:6,14 81:8 81:20,23 82:1 82:6,18,25 83:5,16,20 85:1 86:2 88:2 88:25 91:24 92:17 93:14,18 94:20 95:3,14 96:12,15 97:8 98:19 103:11 106:8,18 107:8 107:16 120:9 120:15 121:16 121:21,25 122:9,13 123:9 123:16,21 124:12 125:2 126:20 127:22 128:1,16,25 130:20 132:12 134:19 136:1 138:2 140:3,13 140:17 141:4 141:21 143:12 143:23 146:13 146:24 147:2 147:18 149:14 150:9 151:4,9
<b>obligations</b> 124:8	106:24 107:4,8 107:12,16,20 107:23 113:23		
<b>obliquely</b> 36:10	120:9,15 132:1 132:8,12 134:10 139:5 141:24 142:9 142:14,21 144:10,19 145:3,9 148:7 150:18 151:4,9 152:15 153:8 153:18,25 154:3,14,19 155:6,9,17	<b>okay</b> 7:6 8:15 10:23 11:5,20 13:13,24 16:6 18:19 21:11 23:21 27:25 28:6,18,22 31:19 33:5,20 34:2,12,18 36:13,23 38:10 39:7,16 42:1 42:22 43:20 45:13,18,21	
<b>obtained</b> 121:14			
<b>obvious</b> 53:7			
<b>obviously</b> 137:13			
<b>occupation</b> 17:13			
<b>occur</b> 5:15 94:15,24 126:11			
<b>occurring</b> 57:19			
<b>occurs</b> 55:22	<b>officer's</b> 58:13		
<b>offer</b> 12:17	<b>officers</b> 11:21		
<b>offered</b> 17:20 146:15	<b>offset</b> 46:13,15 67:1 72:4		
<b>office</b> 2:3 5:10 5:24 6:3,7	<b>offsets</b> 86:9 91:1,2		
<b>officer</b> 1:16 5:3 5:12 6:7,12,18 6:22,25 7:6,10 9:20 12:20,21	<b>offshore</b> 109:11 <b>oftentimes</b> 54:16,17		



[okay - particular]

<p>154:3 156:1  <b>old</b> 24:8  <b>oltman</b> 2:17          6:16 78:3  <b>once</b> 110:8          116:8  <b>ones</b> 27:21  <b>online</b> 15:12,13          107:25  <b>onshore</b> 109:11  <b>open</b> 151:1          154:7  <b>openings</b> 5:18  <b>operating</b>          149:20  <b>operations</b> 19:1          106:13 109:14          109:16  <b>operator</b> 8:3          24:17 127:8,11          134:4  <b>operators</b>          25:14  <b>opinion</b> 12:18          15:8 21:1 22:4          76:5,22 79:15          84:6 85:6          119:22 132:20          134:5,7 135:23  <b>opinions</b> 20:10          21:8 76:24          135:1  <b>opportunity</b>          111:12 112:7          129:1,17</p>	<p><b>opposed</b> 122:1  <b>orange</b> 51:6,9          51:24 52:3          67:22 69:7  <b>order</b> 1:5 5:6          5:19 130:20          135:10 143:4,9          143:24 144:4          145:11 146:3  <b>orderly</b> 76:16          77:12  <b>orders</b> 91:12  <b>ordinarily</b>          143:18  <b>ordinary</b>          148:24  <b>oregon</b> 19:13          19:15 22:5  <b>organic</b> 65:22  <b>original</b> 30:4          32:19 84:15  <b>ought</b> 155:14  <b>outcropping</b>          104:6  <b>outline</b> 10:20          20:24 31:22          67:20 69:8          87:23 91:4  <b>outlined</b> 99:13  <b>outlines</b> 78:7          86:11,13,20  <b>outlining</b> 28:23          56:15  <b>outside</b> 12:10          12:14 78:24</p>	<p>146:8 154:4  <b>overall</b> 150:13  <b>overlaid</b> 52:5  <b>overlay</b> 52:7  <b>oversaw</b> 23:19  <b>own</b> 99:15  <b>owned</b> 11:12          136:10  <b>owner</b> 12:5,6          12:12,13 13:17          16:1,7 129:1  <b>owners</b> 8:17,18          9:2,5,6,9,15          10:7,24 11:6          12:8 13:20          14:15,25 15:18          15:19,21 77:15          77:19 99:15          129:6 146:22</p> <hr/> <p style="text-align: center;"><b>p</b></p> <hr/> <p><b>p</b> 5:1  <b>p.m.</b> 5:14,16          153:15 156:3  <b>p.o.</b> 2:6,21  <b>pad</b> 23:2  <b>page</b> 3:3 4:3          28:14 29:1          49:6,9,22 65:1          68:6 97:18          121:11,12  <b>pages</b> 9:13          155:12,21,23          155:24  <b>pair</b> 27:15          62:14,14 63:7</p>	<p>69:15 70:6          71:14 73:10  <b>paper</b> 154:17  <b>paragraph</b>          97:18 98:22  <b>parameters</b>          84:21 86:9  <b>parcels</b> 111:20  <b>part</b> 8:7 19:20          20:7 30:10,10          36:25 43:4          47:6,24,24          51:24 52:13          57:16 66:5          67:6 74:15          82:23,24 87:5          99:8,8 101:3          111:16 121:21          122:10,23          123:15 124:8          126:24 127:16          129:8,17          140:14 143:3          143:13 155:22  <b>partial</b> 121:6  <b>participating</b>          21:15  <b>particular</b>          39:21 40:8,15          41:15 44:11,22          45:23 46:25          50:19 52:9          64:5 84:11          85:10 88:8          90:4,16 95:7</p>
---	---	--	--

[particular - piotrowski]

<p>101:7 105:3  106:3 125:25  128:1 140:17  143:6  <b>particularly</b>  86:22 113:2  <b>parties</b> 5:17  154:15,24  155:22  <b>partner</b> 19:18  <b>partners</b> 21:13  22:8  <b>parts</b> 143:7  <b>party</b> 157:13  <b>past</b> 63:10  153:15,17  <b>pasture</b> 30:20  <b>path</b> 29:22,22  33:6,9  <b>patience</b>  141:23  <b>pattern</b> 64:5  150:6  <b>patterns</b> 143:6  <b>pay</b> 100:12,17  100:17,19  <b>payette</b> 1:9 5:8  8:24 14:19,24  15:6,12,24,25  15:25 16:3,7  113:10 139:10  <b>paying</b> 33:19  <b>pdf</b> 97:19  <b>peak</b> 41:8,14  41:20 42:1,5,8</p>	<p>42:9,10,11  43:5,7,7,17  45:17 53:11,11  54:12,15,18  55:21 56:4,5  56:16,18 59:13  59:23,25,25  60:6 61:2,7,9  62:14,14,23  63:7,14,16  64:4 67:19,22  68:10,13,14  69:5,6,13,15,15  70:6 71:7,9,14  71:15,18 72:2  74:6 83:4 84:5  85:20 86:15,24  88:6 90:24  101:25 102:16  103:1,4  <b>peaks</b> 71:7  <b>pending</b> 103:7  <b>people</b> 10:4  11:9,10 15:23  55:1 77:14  89:22 90:11  91:4 104:5  107:25 135:13  155:19  <b>percent</b> 89:1  <b>perfect</b> 79:12  99:18  <b>permissible</b>  144:23</p>	<p><b>permit</b> 27:23  75:12 100:23  145:5 148:11  154:8  <b>permits</b> 100:25  <b>person</b> 8:20  77:11  <b>phase</b> 43:10,11  43:19  <b>phone</b> 78:5  <b>phrases</b> 12:6  <b>physical</b> 24:24  27:15 29:15  52:10  <b>physics</b> 57:3  <b>pick</b> 45:4,16  <b>picked</b> 43:25  137:22  <b>picture</b> 52:5  <b>piece</b> 39:25  127:23 137:11  <b>pinch</b> 70:7  <b>pinches</b> 69:9  <b>ping</b> 37:22,25  37:25  <b>pinged</b> 38:7  <b>pink</b> 51:25  52:16 53:10  <b>pinol</b> 2:11  <b>piotrowski</b>  2:18,20 3:5,9  3:12,18,21  6:13,15,15,16  9:20,22 10:2  12:17,19,21,23</p>	<p>13:12,13,19  14:4,11 16:10  16:13 76:18,23  79:6,7,10,24  83:20,22 88:18  90:5,7 92:15  97:6 103:5  104:13,14,18  104:22 107:8  107:10 108:1  113:24 120:9  120:12,14,15  120:17,20  122:17 125:15  125:16 132:1,8  132:10,13  133:5,7 138:6  138:8 139:7  141:22 142:5,7  142:14,18,22  142:23 143:13  144:8,14,17,19  144:24 145:3  146:2 147:3,19  147:23 148:2,5  148:7 149:5,10  149:25 150:19  151:4,7 152:15  152:19 153:7,9  153:10,12,23  154:20 155:6,8  <b>piotrowski's</b>  151:11  <b>piotrowski</b>  83:18 84:23</p>
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**[pipe - presence]**

<p><b>pipe</b> 26:9</p> <p><b>place</b> 5:16 46:22 79:12 149:2 157:4</p> <p><b>placed</b> 22:13 96:3 135:1</p> <p><b>places</b> 10:13 46:7 55:23</p> <p><b>plan</b> 107:10</p> <p><b>please</b> 59:6 80:6 82:2 85:2 85:23 87:12,13 108:14 131:25 132:12 134:19 142:8 145:6 148:14 155:5</p> <p><b>pllc</b> 2:11,18 6:16</p> <p><b>plus</b> 58:8 81:4 95:10</p> <p><b>point</b> 12:17 22:14,15,18,19 27:15 28:22 29:6 30:8 34:1 36:5 39:21 40:8,9 54:7 55:13 58:20 59:4,7 60:14 60:14 61:10 62:22 67:2,3,4 74:14 87:11 93:16 94:13,22 121:5 137:3,4 142:11 150:21 153:21 154:10</p>	<p>154:21,25</p> <p><b>pointing</b> 45:23 50:16,17 52:24 55:25 59:8 61:3 63:2 66:9 66:23 70:6 71:7,12 72:25 75:2</p> <p><b>points</b> 29:4,13 29:14</p> <p><b>polarity</b> 54:1</p> <p><b>pool</b> 20:23 26:22 30:25 32:24,25 35:14 35:16 59:10,15 60:18,19,19 62:13 63:1 64:5,14 65:18 67:21 76:10,17 77:12,22 85:4 85:8,16 87:2 88:12 89:4 90:18 96:10,18 97:23 99:6,6 100:3 112:23 119:21 123:23 128:1,12 129:2 132:22 133:12 148:25 152:1</p> <p><b>pools</b> 95:5 102:22 113:7 122:13,18 143:6</p> <p><b>population</b> 24:15</p>	<p><b>pore</b> 65:20</p> <p><b>porosity</b> 25:9 73:6 101:21</p> <p><b>porous</b> 65:24</p> <p><b>portion</b> 5:15 42:19 53:5 57:21 66:24 121:7 153:14 153:19,21 154:6,6,10</p> <p><b>portions</b> 140:14 146:10 147:10 148:20 155:25</p> <p><b>position</b> 108:21</p> <p><b>positions</b> 19:6</p> <p><b>positive</b> 53:13 54:3</p> <p><b>possible</b> 54:14 89:11,16 92:11 93:19 94:4 96:23 113:2 123:21 133:3 137:6,14 151:23</p> <p><b>possibly</b> 78:25 98:16</p> <p><b>post</b> 100:25,25 154:14 155:10</p> <p><b>potassium</b> 51:16 52:22</p> <p><b>potential</b> 25:18</p> <p><b>potentially</b> 145:25 146:12 147:1</p>	<p><b>power</b> 151:10</p> <p><b>practically</b> 74:17</p> <p><b>practice</b> 103:25 155:20</p> <p><b>pre</b> 54:19 69:18</p> <p><b>preceding</b> 24:16</p> <p><b>precise</b> 55:8,9 86:25 140:1</p> <p><b>precisely</b> 22:16 137:9</p> <p><b>predecessor</b> 8:3 21:12</p> <p><b>predict</b> 127:10 134:12</p> <p><b>predicted</b> 27:12 54:19 60:12 61:6 98:10 100:12</p> <p><b>predicting</b> 27:16</p> <p><b>prediction</b> 38:20 130:8</p> <p><b>predictions</b> 100:24</p> <p><b>predictive</b> 57:19</p> <p><b>preference</b> 120:10,12,13</p> <p><b>premiere</b> 104:3</p> <p><b>prepared</b> 87:17</p> <p><b>presence</b> 54:9 72:11 109:19 115:19 116:2</p>
--	--	--	--

[presence - productive]

<p>116:11,13  117:5,14,22  118:10  <b>present</b> 5:22  6:8,20,25  71:13 72:6  78:18 95:14  116:16  <b>presentation</b>  5:19  <b>presented</b> 24:7  92:23 93:1  94:12 95:17  119:6 128:6  129:13,25  131:13 135:22  146:14 150:11  <b>presenting</b> 5:20  <b>presents</b>  118:25  <b>president</b> 21:11  <b>pressure</b>  149:21  <b>presumably</b>  14:19  <b>presume</b> 26:22  59:10 60:16  <b>presumed</b>  30:24 31:25  32:25 35:15  36:7 42:13  44:13 49:18  54:9,10 56:14  57:25 58:4  60:18 62:13,15</p>	<p>62:25 63:1,21  64:5,14 67:21  68:1,11 72:15  76:10 78:21  79:1 84:6 85:3  88:12 89:4  97:23 100:21  <b>presumes</b> 92:5  92:9  <b>presuming</b>  27:22 30:15  <b>presumption</b>  54:6  <b>presumptive</b>  43:4,22  <b>pretty</b> 21:19  84:25 98:5  <b>prevailing</b>  57:20  <b>prevent</b> 66:3  126:2 131:16  131:20 145:23  <b>preventing</b>  125:21 130:23  <b>previous</b> 11:9  33:1 93:4  <b>previously</b> 5:17  21:25 86:3  <b>primarily</b>  25:20 27:20  <b>primary</b> 23:20  97:23 98:3  112:25  <b>principles</b>  50:11 57:3</p>	<p><b>prior</b> 21:15  25:14 26:4,17  100:11,20  109:8  <b>privy</b> 127:12  <b>probable</b>  112:23 115:19  117:4 119:1,20  120:4  <b>probably</b> 19:7  33:19 40:6  46:14 47:5  51:2 60:16  67:10 70:1  85:22 86:12,20  89:20 96:24  102:16 103:10  104:3,8 105:13  150:25 155:24  <b>problem</b> 47:5  136:12  <b>proceeding</b>  19:21 23:17  <b>proceedings</b>  5:15,23 7:5  13:12 16:21  144:21 145:4  153:17,20  154:5,7,10  156:3 157:4  <b>process</b> 11:3  23:11 44:25  47:7 87:16  89:6 109:25</p>	<p><b>processed</b>  44:25 84:17,19  86:8  <b>processes</b> 102:6  <b>processing</b>  23:19 86:5  89:16 103:1  109:16  <b>produce</b> 100:5  129:2,7 145:16  150:13  <b>produced</b>  26:10,10,12  101:8,19 113:4  118:2 145:15  149:23  <b>produces</b> 111:6  114:17  <b>producing</b>  19:11 26:11  75:11 76:14  100:4 110:18  110:24 113:4  114:15 117:25  118:5 119:9,19  149:20  <b>production</b>  20:21 37:1  77:16,21  110:20 118:11  120:2  <b>productive</b>  19:8 27:10  61:11 88:4  101:23 102:9</p>
---	---	---	---

[productive - putting]

<p>102:20 112:23 119:9,11,11,20 <b>profession</b> 17:16 <b>professional</b> 18:2,22 19:4 <b>profile</b> 111:21 111:25 <b>profiles</b> 119:14 <b>prognosis</b> 100:23 <b>program</b> 6:4 108:23 <b>project</b> 19:19 23:16,25 <b>projects</b> 109:12 <b>proof</b> 83:24 <b>properties</b> 19:12 21:18 24:24 <b>property</b> 11:12 78:4 136:13 137:2,12 141:5 141:9 146:21 <b>propose</b> 69:21 75:11,13 <b>proposed</b> 19:21 21:2 23:16 26:23,25 27:18 27:18 28:4,24 28:24 29:2,17 30:14,16 31:8 31:8 32:10 35:16,18,21,24 36:7,7,12,25</p>	<p>40:5 44:3 49:15 50:8 60:4,5 61:4,20 61:21 62:1,7 62:16 63:3,10 63:19 64:13 65:6 66:14,24 68:1,8 70:25 71:9,12,14 72:13 75:8,21 76:1,5,16 77:6 77:20 78:8,15 78:22,24 91:3 91:16 92:17 93:1,10 95:12 95:19 96:6 99:12 102:17 102:25 106:17 110:11,15 111:20 112:1 114:5,7,18,23 115:16,20 116:15,17 117:6 118:13 119:2,13,15,18 119:21,22,24 120:5 132:22 135:9,14 147:15 150:12 <b>proposing</b> 66:5 93:12 <b>proposition</b> 22:6 43:20 <b>prospective</b> 112:23 146:9</p>	<p><b>protect</b> 125:22 128:18 130:25 <b>prove</b> 101:5 142:10 <b>proved</b> 58:5 <b>proven</b> 58:5 70:11 101:10 102:20 <b>provide</b> 8:6 14:17 19:16 48:22 112:3 137:15 152:10 153:10 <b>provided</b> 20:6 <b>provides</b> 92:6 124:23 128:25 <b>providing</b> 87:6 87:7 <b>proximity</b> 111:6 <b>public</b> 1:25 5:14 136:19,23 137:7,16,19,24 138:4,12 139:22 141:6 141:10 147:4,5 147:7,16 151:1 153:9,10,16,19 153:20,24 154:1,6,9,10 157:22 <b>publicly</b> 115:12 <b>pull</b> 44:6,6 134:20</p>	<p><b>pulled</b> 86:12 114:2 <b>pulse</b> 38:5 41:10,12 <b>pulsive</b> 37:5 <b>pure</b> 126:23 <b>purple</b> 44:17 78:10 118:8 139:13 <b>purpose</b> 43:25 45:19 <b>purposed</b> 155:20 <b>purposefully</b> 43:14 <b>purposes</b> 13:17 <b>pursuant</b> 152:24 <b>pursued</b> 21:16 146:11 <b>push</b> 55:11 <b>pushing</b> 57:8 <b>put</b> 10:12 12:6 22:25 25:10 37:5 51:2 54:2 55:5 56:24 57:1 60:5 86:10 91:2,19 95:4 127:6 154:17 157:5 <b>puts</b> 23:2 25:6 <b>putting</b> 103:25</p>
---	--	---	--

[qualifications - receiving]

<b>q</b>	126:21 130:1	<b>quote</b> 116:1	<b>ready</b> 107:17
<b>qualifications</b>	132:11 134:17	<b>r</b>	<b>real</b> 19:1 29:4
58:2 59:11	138:8 144:9,14	<b>r</b> 2:12 5:1	56:20 136:10
92:16	144:18 145:2,5	<b>radiation</b> 25:3	137:2
<b>qualified</b> 148:6	145:8 147:6,24	52:21	<b>reality</b> 44:5
<b>qualify</b> 83:25	148:12,13,15	<b>radioactive</b>	<b>realizing</b> 33:17
<b>quality</b> 14:24	150:20 151:8	51:17	<b>really</b> 24:13
19:3 50:18,19	151:11	<b>raise</b> 142:19	42:8 74:18
73:5 111:4	<b>questioning</b>	<b>raised</b> 52:14	84:25 105:21
<b>quarter</b> 77:10	130:19	<b>randomly</b> 55:2	<b>reask</b> 145:7
91:21,24 92:18	<b>questions</b> 7:18	<b>range</b> 1:8 5:8	<b>reason</b> 27:10
92:18 97:22	9:19,21 10:2	136:25	43:14 104:19
126:17 140:14	12:2 13:18	<b>rather</b> 28:12	<b>reasonable</b>
147:12 152:23	16:11,13 17:9	145:17 152:8	111:2,9 118:25
152:24,24	49:13 79:3,6	<b>ray</b> 25:2,3	119:25 135:5,8
153:4,4	79:10 85:14,24	51:10,13,14,16	135:24 150:12
<b>quarters</b>	97:7,13,16	51:19 52:21	<b>reasonably</b>
146:15	103:13,21	72:24 73:1	21:2
<b>quartz</b> 51:18	104:14,18	75:4	<b>recall</b> 26:15
<b>question</b> 13:6	108:2,13	<b>reach</b> 21:7	27:13 58:7
13:15 14:7,9	120:20 142:2	72:10 81:18	64:9 89:12
15:11 26:16	144:21,23	130:13 131:9	95:21 134:21
34:5 36:15	148:3,6,8,11,23	131:12	149:11,11
41:3 43:1	149:11 150:24	<b>read</b> 11:19	153:3,6
44:14 49:21	151:3,10,15	76:25 77:2	<b>receipts</b> 4:5
74:12 77:1,4	152:19	125:17 141:16	8:13,15
78:2 84:25	<b>quick</b> 104:14	143:3,13 145:6	<b>receive</b> 77:16
85:13 87:6,10	107:18	147:19 148:13	<b>received</b> 18:15
87:12 88:17	<b>quicker</b> 40:16	148:16	110:8 118:17
90:1 94:10	46:4	<b>reading</b> 84:13	150:10
96:22 98:1	<b>quickly</b> 29:5	84:14 113:16	<b>receiver</b> 22:19
99:19 100:9	155:15	124:24 125:18	84:22
103:6,8 105:1	<b>quite</b> 52:18	136:21	<b>receivers</b> 23:4
117:3 122:16	58:11 82:10,12	<b>readings</b> 51:13	<b>receiving</b> 77:15
124:1 126:19	82:12 105:14	51:14,17 52:10	77:20

**[recently - remotely]**

<b>recently</b> 101:17 110:23 <b>recess</b> 49:3 73:16 107:22 156:1 <b>recollect</b> 74:12 <b>recollection</b> 74:10 <b>recommendat...</b> 118:17,20 119:5 131:18 <b>recommending</b> 122:25 123:5,7 <b>recommends</b> 119:3 <b>record</b> 11:7,10 22:23 24:10 28:13 32:4 37:4,9,13 40:8 42:24 49:6,7 58:13 73:18 77:2 87:13,14 101:3 107:21 107:23 142:8 154:25 157:10 <b>recorded</b> 23:4 44:25,25 51:11 157:8 <b>recording</b> 22:20 41:11 156:2 <b>records</b> 14:24 15:7 25:6 <b>recovery</b> 150:7	<b>recross</b> 3:12,21 104:17 152:18 <b>rectangle</b> 28:23 136:3 139:25 <b>rectangular</b> 140:22,23 <b>red</b> 30:23 31:24 32:9 49:14 50:3,7 53:11 53:23 59:9 67:14 139:1,7 140:4 <b>reddish</b> 44:18 <b>redirect</b> 3:11 3:20 16:15 103:17,20 151:14 <b>reduce</b> 131:24 132:14,18 <b>redundant</b> 99:20 <b>refer</b> 10:15 60:3 77:6 98:6 <b>reference</b> 91:20 115:12 148:24 <b>referencing</b> 136:24 <b>referred</b> 116:7 142:24 <b>referring</b> 10:8 32:5 51:5,8,24 59:2 65:4 70:18 71:4 84:3 95:7 114:13	<b>reflect</b> 8:16 37:8 <b>reflected</b> 22:19 37:10,12 <b>reflecting</b> 42:3 <b>reflection</b> 37:14,15,17,19 40:16 41:12,16 44:22 45:25 46:9 48:3,4,4,5 48:6 53:13 54:3 56:9,12 56:18,19 57:22 62:25 63:20 68:10 69:11 72:21 <b>reflections</b> 22:23 39:20 40:8,10 47:2 62:12 67:2 93:12 100:15 101:6 102:19 102:19 <b>reflective</b> 83:3 <b>reflectivity</b> 69:4 <b>reflector</b> 66:19 66:20,20 <b>reflectors</b> 47:7 47:8,8 <b>refracted</b> 37:11 <b>refrain</b> 142:15 <b>refresh</b> 31:20 <b>regarding</b> 12:3 105:1 110:10	<b>regardless</b> 34:12 128:11 128:13 <b>region</b> 55:25 69:3 86:14 87:25 <b>regions</b> 72:25 <b>regulatory</b> 105:6 106:15 <b>relate</b> 121:18 <b>related</b> 98:1 <b>relates</b> 17:16 99:24 149:20 <b>relating</b> 7:14 17:5 108:9 <b>relationship</b> 94:7 <b>relative</b> 157:12 <b>relatively</b> 52:11 53:14 56:5 63:21 <b>releasing</b> 149:14 <b>relevant</b> 11:25 12:24 <b>rely</b> 127:19 <b>relying</b> 64:14 <b>remain</b> 57:4 <b>remark</b> 70:4 <b>remember</b> 57:15 58:6 150:2 <b>remind</b> 104:22 <b>remotely</b> 7:15 17:6
--	--	---	--

[repeat - right]

<p><b>repeat</b> 122:16 124:1 144:9</p> <p><b>repetition</b> 102:7</p> <p><b>rephrase</b> 94:10 132:10</p> <p><b>reported</b> 1:23 118:2</p> <p><b>reporter</b> 7:11 18:6,17 48:25 70:2 79:22 83:18 84:9 88:16 90:5 100:6 122:15 125:13 133:5 138:6,10 145:6 157:3</p> <p><b>reporter's</b> 157:1</p> <p><b>represent</b> 62:12 63:8 65:21</p> <p><b>represented</b> 54:11</p> <p><b>representing</b> 6:5 62:15,25 63:20 64:4</p> <p><b>represents</b> 39:20,22 84:5 84:6 85:7</p> <p><b>request</b> 110:2,6 110:12 111:16 112:2,5 119:3 122:23 123:3 123:15 146:4</p>	<p>154:21</p> <p><b>requested</b> 111:18,23 118:22 124:6 126:17 132:16 143:24 145:22 154:20 155:2</p> <p><b>requests</b> 125:9</p> <p><b>require</b> 131:3 145:16</p> <p><b>required</b> 141:4</p> <p><b>requirements</b> 110:2 143:7 145:20</p> <p><b>requires</b> 16:8</p> <p><b>requiring</b> 57:18</p> <p><b>research</b> 10:5</p> <p><b>researched</b> 15:17</p> <p><b>reserves</b> 78:18 151:19</p> <p><b>reservoir</b> 25:18 35:22 42:14 57:5 65:18,18 99:8 100:3 128:2,2 151:24 152:8</p> <p><b>reservoirs</b> 95:6 119:10 122:13 122:18</p> <p><b>resistivity</b> 101:21</p> <p><b>resolution</b> 55:12 73:4</p>	<p>99:4</p> <p><b>resolve</b> 48:15</p> <p><b>resource</b> 149:23 150:7 150:13</p> <p><b>resources</b> 134:9</p> <p><b>respect</b> 60:23 72:12 75:16 79:13 118:18 149:19</p> <p><b>respond</b> 144:11</p> <p><b>response</b> 12:22 27:14 69:14 76:20 116:9 117:19 132:9 148:23</p> <p><b>responses</b> 113:14 119:15 119:18</p> <p><b>responsibility</b> 19:7</p> <p><b>responsible</b> 23:15</p> <p><b>rest</b> 64:9 124:10 146:9</p> <p><b>restricted</b> 92:13</p> <p><b>rests</b> 132:4</p> <p><b>result</b> 88:22 104:20 105:16 129:10 133:19 134:1,6 150:4</p> <p><b>results</b> 105:3 106:1 149:21</p>	<p>149:22</p> <p><b>revenue</b> 77:20 146:20</p> <p><b>revenues</b> 77:15 77:17</p> <p><b>reversal</b> 54:1</p> <p><b>review</b> 21:24 110:1 111:13 111:16 112:7 118:15</p> <p><b>revised</b> 112:4</p> <p><b>richard</b> 7:1,2</p> <p><b>right</b> 12:14 14:13 16:8,24 18:20 20:1 25:21 26:9,11 28:11,20 29:9 29:20,22 30:10 32:17 33:7,11 33:12 35:13,15 35:23 36:23 37:2 38:3 40:15 41:3,17 41:21 44:16,17 47:11,13,18 48:8 50:4,5,21 51:7,14 52:1,6 52:17 53:20 54:4,23 55:22 56:1,6 58:16 58:17,21,25 59:6 62:2,4,8 62:19 63:6 64:11 65:6 66:14,16 67:11</p>
--	---	---	---



[right - sand]

71:6 72:18 74:7 78:12 80:9,10,19 81:13 82:4,11 82:25 83:3,7 86:7 89:2 91:25 93:20 94:2 96:10 97:4 100:8 105:12 106:11 106:20,24 114:3 115:8 116:3,24 117:15 120:25 121:1,9,25 122:7,11 123:12 124:9 125:4,11 127:5 127:23 128:14 128:21 129:21 130:15 131:4,5 131:12 134:9 138:13 139:8 139:12,22 140:15 141:7 143:1,25 145:17 146:22 149:23 150:1 152:25 154:12 <b>rights</b> 125:22 128:18,23 129:1,10,23 130:3,9,15,25 134:14 146:3 146:24	<b>rigorous</b> 97:19 <b>rigs</b> 18:25 <b>rise</b> 45:2 <b>river</b> 1:4,11 2:10 3:2 4:2 5:5,9 6:23,24 7:3,20,22,24 8:2 9:3 10:16 19:17 23:22 110:22 111:13 111:17 112:3,4 112:16 120:1,3 139:10 <b>river's</b> 8:7,9 112:8 113:18 <b>road</b> 23:1 <b>rock</b> 24:25 25:1 25:4,8,10 38:11,13 39:2 73:13 115:23 117:10 <b>rockies</b> 19:12 <b>rocks</b> 24:10 <b>role</b> 109:23,25 110:8,15 <b>roll</b> 44:9 153:19 <b>room</b> 18:12 154:4 <b>rough</b> 151:5 <b>roughly</b> 29:15 40:23 58:8 77:7 80:10,22 81:6 82:2,5 98:21	<b>round</b> 137:11 <b>rule</b> 40:19 144:10,20 <b>rules</b> 11:20 145:4 <b>run</b> 44:4,10,10 70:1 73:4 <b>running</b> 31:7 31:24 56:15 70:24 78:20 80:9 99:21 103:6 <b>runs</b> 31:2 36:25 61:20 66:23 78:21 82:13 121:10  <b>s</b>  <b>s</b> 1:20 2:5,13 4:1 5:1 81:12 <b>saddle</b> 46:6 66:1 70:23 71:4,10 75:22 75:25 <b>safe</b> 113:14 114:22 <b>salient</b> 20:15 29:4 44:2 67:3 67:4 <b>salt</b> 81:10,11 <b>sample</b> 27:20 73:3,9 74:25 <b>samples</b> 70:13 <b>sand</b> 20:23 24:11 25:12,18 26:7,7,8,12	27:7 30:9 32:24 35:14,14 35:14,15,17,18 35:22,22 40:5 42:13,14,15,16 43:5,23 46:3 48:2,20 50:4 51:20,22,22 52:17,24 53:5 53:6,9,16,25 54:10,17,20,21 55:21,24 56:8 56:10,11,11,19 57:6,10,16,22 58:1 59:14 60:7,16,17,23 60:23 61:5,6,8 62:13,13,14,15 63:1,5,8,8,19 64:5,7 65:21 67:5,21 68:3,9 68:10 69:9,13 69:16,16,18,21 70:8,11,12 71:19 72:21,22 74:17 75:5 76:10 77:15,17 77:18,18,22,22 78:18 80:5,25 80:25 84:5 85:3,8,16 88:12 89:4 90:18 97:24 98:3,3,4,4,7,10 98:12,13,17,18
---	---	--	---

[sand - see]

<p>98:25,25 99:1  99:12,23,23  100:3,12,12,13  100:14,14,17  100:19,19,21  100:22 101:5  101:15,16,18  102:8,8,10,18  102:19 114:17  115:10,20  116:3,5,10,12  116:12 117:1,5  117:9,14,16,20  117:22,23  118:1 119:12  119:16,16  121:8 123:8  144:5  <b>sands</b> 21:4  25:21,25 26:19  26:24,24 27:6  27:10,19,20  30:17 49:18  54:1 70:1  72:12,15 73:2  73:5,6,23,23  74:17,25 75:14  75:16,17 76:6  76:14 79:16  80:3 83:9  93:13,18,19,22  96:21 111:22  114:18 128:4  132:16 133:18  135:10,15,21</p>	<p>144:5 146:10  146:10  <b>sandstone</b>  65:19,24  101:12 119:9  <b>sandstones</b>  123:2  <b>saturated</b>  35:14 38:16  53:6,9 54:8  100:22  <b>saw</b> 122:10  <b>saying</b> 18:22  41:6 42:12  53:12,17 78:11  95:22 121:9  127:2,24  134:13  <b>says</b> 52:24  53:17 61:4  62:10 72:19  105:6 118:8  122:2 124:16  130:22 136:14  136:17 138:2  140:21,25  141:11 143:4  143:12 147:18  147:19  <b>scale</b> 29:8,12  29:15 51:13  67:12  <b>scaled</b> 52:14  <b>scattered</b> 24:2  24:15</p>	<p><b>science</b> 17:17  50:12 109:5,6  <b>scientific</b> 85:7  131:4,6  <b>scott</b> 6:8  <b>scrambling</b>  83:21  <b>screen</b> 28:6  49:8 73:15  79:12 113:24  114:3 120:22  <b>scroll</b> 36:3 85:2  <b>sea</b> 58:15,17  122:1  <b>seal</b> 157:15  <b>seamless</b> 77:23  <b>second</b> 26:1  33:10 38:4,8,9  38:23,24 39:1  58:12 82:3,20  111:24  <b>secondary</b>  73:23 98:3  <b>seconds</b> 38:6  45:25 60:9  75:3 80:11,12  80:19 81:4  93:6,9 95:4  <b>section</b> 1:7,7  5:7,7 19:22,23  27:20 46:21  69:20,21 75:14  75:25 77:8  91:21 92:18  124:13,18</p>	<p>125:16 129:18  136:11 137:9  137:14 138:14  138:18,21  139:8,15,17,18  139:19,19  140:14 142:24  142:25 143:4  143:16,19  144:2,2,3,3  146:6,8,8,9,16  146:21,22,25  146:25 147:9  152:23,24,24  153:1,3,5,16,24  <b>sections</b> 15:1  50:24 91:25  97:22 126:17  142:4 143:25  144:7 145:13  147:12 148:20  148:21  <b>sediment</b> 46:24  47:20  <b>sedimentary</b>  46:21  <b>see</b> 27:6 28:15  28:25 29:10  30:6 31:10,11  31:22,23 32:1  32:23 37:3  39:20,22 41:7  41:15 42:8,8  44:22 45:1,22  45:24 46:3,7,8</p>
---	---	---	--

[see - side]

<p>46:12,14 47:8  47:15,17,23  48:3,9,19  50:23 51:19  52:15 53:1,16  53:19 56:6  58:5 59:20  60:9 62:23  63:5,15,16,19  63:21 64:3,22  66:19 67:8,17  68:11,12,12  70:9,21 71:11  71:13,24 72:23  73:5 74:24  75:3,24 77:9  80:24 81:7  82:13,14 85:4  85:20 89:9  91:17 99:3  101:14 113:24  120:22,25  121:10,22  138:23 140:5  <b>seeing</b> 47:2  74:5 153:3  154:3  <b>seek</b> 92:12  <b>seem</b> 102:24  <b>seen</b> 140:2  <b>seg</b> 41:23  <b>seismic</b> 20:18  22:6,9,11,15  23:11,15 26:5  26:17 27:14</p>	<p>28:1 30:23  31:17 33:1,21  33:25 35:12  36:20,21,25  38:11,21 39:8  43:18,21 52:5  53:8,12,17,21  55:13 57:11,19  57:23 60:20  62:1,11,17  64:10 70:9  72:5 74:18  80:16,17 82:8  84:13,13 87:1  89:24 90:4  97:20 99:4,24  100:15 101:10  101:12 102:2  102:10,17  104:2 109:15  109:16 111:2,5  111:21,22,25  112:16 113:11  119:13,14,15  119:17  <b>select</b> 55:3  <b>selected</b> 30:24  31:22  <b>send</b> 11:12  13:20 15:22  37:21  <b>sending</b> 38:11  <b>sense</b> 37:18  106:8 129:14</p>	<p><b>senses</b> 37:7  <b>sent</b> 11:8 15:18  16:6  <b>separate</b> 64:22  71:2 99:6  153:17  <b>sequences</b>  109:16  <b>series</b> 22:17  <b>service</b> 137:7  <b>services</b> 19:17  155:13  <b>sessions</b> 77:10  <b>set</b> 20:13 30:3,5  157:5,15  <b>setback</b> 145:19  <b>sets</b> 23:2  <b>seven</b> 9:13  70:13  <b>seventy</b> 98:20  <b>several</b> 63:25  138:18  <b>shade</b> 122:18  <b>shaded</b> 51:25  <b>shadows</b> 27:7  <b>shale</b> 51:15  <b>shalforen</b> 6:3  <b>shallow</b> 47:7  82:12  <b>shallower</b>  40:15 46:2  50:15,16 60:2  <b>shape</b> 65:10  90:19 93:1  105:2 106:2</p>	<p>122:17 141:14  <b>share</b> 28:6  77:21 129:2  <b>shared</b> 146:21  <b>ship</b> 37:24  <b>shoot</b> 22:5  <b>shorthand</b>  157:3  <b>show</b> 24:19  32:1,23 33:22  36:22 51:21  53:4 57:17  66:6 73:11  86:12 89:4  138:18  <b>showed</b> 39:25  64:19  <b>showing</b> 40:24  48:22 51:10  52:23 54:3  62:11,18 114:5  <b>shown</b> 52:15  68:21 74:3  <b>shows</b> 24:12  31:16 35:12  36:15,18 50:2  73:10,11 74:3  75:2,5 82:2  83:2 101:1,19  102:1 115:9  116:2 117:1,14  152:7  <b>si</b> 86:15,15  <b>side</b> 30:20  34:15 35:20</p>
--	---	---	--

[side - sound]

<p>37:3 47:17,19 47:20,20,21 48:10,11 50:21 52:1,17 59:18 62:19 64:16 66:2,9,12 78:9 78:19 96:13 115:22 116:3 117:10,15 120:25 <b>signal</b> 38:12,14 <b>signature</b> 155:13 157:20 <b>significantly</b> 96:5 <b>sill</b> 27:12 <b>sills</b> 46:19,22 <b>similar</b> 59:9 70:1 83:11 89:20,23,25 99:1,5 101:15 102:9,19 111:7 116:20 <b>similarities</b> 59:12 99:23 100:10 <b>similarly</b> 75:11 101:15 <b>simple</b> 50:13 84:25 90:13 133:9,20 <b>simply</b> 14:1 92:8 153:16 <b>sir</b> 7:21 8:11,14 9:17 84:23</p>	<p>85:23 87:5 91:10 92:4,8 94:7,16 95:8 95:18 97:6 105:16,23 130:1,13 136:10 137:21 <b>sit</b> 40:1 128:11 <b>sits</b> 19:25 <b>situation</b> 48:15 <b>six</b> 9:13 70:13 <b>size</b> 10:20 56:24 70:13 77:8 91:5 92:5 92:9,12,13 105:2,24 106:2 106:8 111:3,10 114:11,22 122:17 126:25 127:1,7 128:2 128:12 129:23 133:8,11,11,17 141:14 152:11 <b>skill</b> 88:19,21 <b>slice</b> 31:17 33:21 43:21 61:25 <b>slight</b> 30:21 <b>slightly</b> 41:16 88:22 101:14 <b>slope</b> 73:9 <b>slow</b> 18:16 42:12 70:2 125:14 138:7</p>	<p><b>slowly</b> 18:16 <b>small</b> 70:12 73:11 105:11 150:4 <b>smaller</b> 89:4 96:5 105:8 126:7 129:11 131:19 132:14 140:4 152:9 <b>smith</b> 3:7 6:23 17:2,4 18:11 77:4 79:11,25 83:22 84:9 87:11 88:18 90:8 97:14 100:6 103:11 103:15,22 104:19 106:21 107:2,25 128:12 134:22 135:1,4,17,18 146:14 149:11 <b>smith's</b> 112:10 135:23 146:7 <b>snake</b> 1:4,11 2:10 3:2 4:2 5:5,8 6:23,24 7:3,19,22,24 8:1,7,9 9:3 10:16 19:17 23:22 110:22 111:13,17 112:3,4,8,16 113:18 120:1,3</p>	<p><b>snap</b> 45:3 <b>soft</b> 42:4,16 <b>software</b> 45:3,9 45:14,15 52:8 <b>sole</b> 6:12 <b>solely</b> 91:19 <b>solid</b> 136:11 <b>solidity</b> 38:4 <b>solve</b> 38:2 <b>somebody</b> 11:13 12:11 129:18 134:20 <b>somewhat</b> 60:25 69:10 88:8,9 89:21 <b>sonic</b> 25:5 <b>sorry</b> 8:8 21:10 43:9 61:17 70:4 79:22 88:16 106:18 121:3 123:19 125:13 128:21 130:17 141:10 <b>sort</b> 22:25 46:7 47:18 50:11 51:6 59:20 65:4,9 69:12 72:23 74:20 83:23 84:20 145:20 <b>sorts</b> 73:7 <b>sought</b> 14:12 <b>sound</b> 25:6,7 37:22,23 38:3 41:13 42:3</p>
---	--	---	---

[sound - start]

<p>125:23  <b>sounded</b> 81:11  <b>sounds</b> 14:20  14:23 107:19  136:21  <b>source</b> 22:18  84:21  <b>south</b> 29:16  30:25 31:7,24  32:2,5,11,13,16  32:24 33:3  35:11,20 36:2  36:4,8,9,24  40:25 47:20,22  48:2 49:16  50:2,8 56:17  60:20 61:13  65:11 69:17  70:19,21,22  71:15,19,20,21  75:23 76:1  78:19,22 82:7  96:18 102:21  115:16 116:15  118:24 149:3  <b>southeast</b> 33:9  33:16 48:23  61:19,21,22  62:11,19 65:5  67:7,25 111:25  <b>southern</b> 47:24  <b>southwest</b>  47:14 71:22,24  96:17 97:2  103:24</p>	<p><b>space</b> 39:21  65:20 94:20  104:20 152:4  <b>spacing</b> 1:5 5:6  84:21,22 92:13  94:8,12,18  95:20 105:8,18  105:24,25  106:1,2,2,9,17  109:21 110:2,6  110:7,12,15  112:2 114:5,6  114:7,11,23  115:16,20  116:14 117:6  118:18 119:2,4  119:16 122:25  123:5,7,10,25  124:4,17 125:7  127:1,7 128:3  128:12,14,17  129:5,11,22  130:10 131:2  131:16,20  132:14 133:8  133:19,24  134:6 135:9  136:2,5,6,24  138:18 139:2  140:22 141:15  143:1,5,8,10,15  143:19,19,25  145:12,16,23  146:3,6 148:9  148:10,24</p>	<p>151:16 152:7,9  152:11,22  153:4  <b>spacings</b> 23:12  <b>speak</b> 18:7,16  84:9 100:7  153:11,12  <b>speakers</b> 18:11  <b>speaking</b> 83:15  112:15 142:16  <b>speaks</b> 12:9  <b>specific</b> 11:16  19:12 83:6  93:15 98:25  <b>specifically</b>  27:4 67:23  73:3  <b>specifics</b> 20:25  <b>speculate</b> 127:1  127:3,20  133:22  <b>speculating</b>  130:4  <b>speculation</b>  126:23 127:5  127:16 128:9  129:8 130:11  130:14 131:3  133:1,3 134:3  <b>speculative</b>  127:17,19  <b>speed</b> 25:7  38:14  <b>spend</b> 148:8</p>	<p><b>spent</b> 48:14  55:6  <b>splay</b> 65:11  <b>split</b> 144:6  145:13  <b>spoke</b> 65:13  <b>spot</b> 40:11  45:16 66:1  87:4  <b>spread</b> 22:20  <b>square</b> 29:10  29:20 64:10,11  139:25 141:1  <b>squares</b> 22:14  <b>squiggly</b> 36:20  39:19  <b>sr</b> 4:4,5 8:10,12  8:16 9:10,13  28:14 49:6,22  65:1 68:6  97:17 111:19  111:21 112:8,8  <b>stacks</b> 86:9  <b>stair</b> 29:11  <b>stand</b> 145:5  <b>standard</b> 15:9  83:24 92:13  143:20  <b>standards</b> 90:9  <b>stands</b> 33:13  72:4 114:15  <b>start</b> 13:1  28:12,19 29:25  34:2 79:13  105:17 107:24</p>
--	--	--	---

[started - subsurface]

<p><b>started</b> 18:4,22 21:12 24:14 70:18 <b>starting</b> 5:13 19:4,14 24:13 30:1 48:3 53:20 68:7 72:19 114:2 155:1 <b>state</b> 11:17 20:13 48:21 91:13 97:19 108:14 110:7 118:2 136:11 136:16 139:11 <b>stated</b> 87:24 122:4 126:9 135:4 146:1 150:15 <b>statement</b> 141:11 147:25 <b>statements</b> 154:14 155:10 <b>states</b> 15:3 19:9 <b>statewide</b> 124:5 125:6 <b>station</b> 52:8 81:22 86:12 <b>statute</b> 12:2,18 13:2 16:7 92:4 105:6 110:7 124:20,23 136:14,17 138:2,15 140:18,21,25</p>	<p>141:2,19 146:19 147:18 <b>statutes</b> 11:17 106:15 152:21 <b>statutory</b> 11:21 128:22 141:13 142:4 154:23 155:1 <b>stay</b> 16:21 106:25 <b>staying</b> 63:23 <b>stenographic...</b> 157:8 <b>step</b> 95:19 133:14 <b>steps</b> 29:11 <b>stipulated</b> 5:17 <b>stone</b> 25:12 51:15 56:10 <b>stones</b> 66:3 <b>stop</b> 58:12 85:12 <b>stopped</b> 156:2 <b>stopper</b> 57:1 <b>stops</b> 67:1 <b>storage</b> 109:14 <b>straddles</b> 143:25 <b>strategy</b> 74:15 93:16 <b>stratographic</b> 69:22,24 70:7 70:8 75:14 <b>street</b> 157:23</p>	<p><b>strength</b> 60:8 67:22 83:2 84:1 98:15 134:23 <b>stricken</b> 142:9 <b>strictly</b> 155:23 <b>strike</b> 142:8 <b>striking</b> 155:25 <b>strong</b> 20:16 27:14 42:8 43:5 53:12 54:12 56:4,5 56:10 57:22 59:24 61:2,7 63:17 67:15 69:4,4,7 86:14 86:21 87:25 88:3 90:25 <b>stronger</b> 42:10 67:17 <b>strongest</b> 90:24 <b>structural</b> 37:16 40:14 56:7 65:25 74:20 75:25 <b>structurally</b> 75:7 101:14 <b>structure</b> 48:19 58:3 59:21 61:10 66:2 71:3,8,22 <b>studies</b> 92:19 <b>study</b> 90:16 95:5,11 96:9</p>	<p><b>studying</b> 104:4 104:5 <b>style</b> 111:7 <b>styled</b> 44:1 <b>suarez</b> 6:10 <b>subject</b> 12:19 149:12 155:10 <b>subjective</b> 89:7 <b>submarine</b> 37:20 <b>submitted</b> 110:5 111:21 112:4,17 113:21 114:1 118:21 119:14 154:22 <b>subsea</b> 58:6,14 59:17 60:13 63:6 80:25 98:8,17 <b>subsection</b> 124:15 125:17 130:21 142:24 143:12 <b>subsequent</b> 22:10 156:2 <b>subsequently</b> 26:20 <b>substantial</b> 21:22 <b>substantially</b> 143:17 <b>subsurface</b> 22:7,23 23:8 25:12 27:15</p>
---	---	--	---

[subsurface - techniques]

<p>29:23 44:5,13 46:18 57:4 61:6 109:20 112:22 113:1 115:24 117:12 151:24 152:8 <b>successful</b> 22:2 24:18 27:8 69:23 75:10 <b>successfully</b> 27:22 54:19 <b>sudden</b> 54:5 59:23 <b>sufficient</b> 23:7 110:5 118:17 <b>sufficiently</b> 32:21 <b>suggest</b> 60:15 <b>suggesting</b> 94:21 <b>suggestion</b> 32:18 <b>suggests</b> 69:3 <b>summarize</b> 18:21 24:5 28:16 50:9 55:17 99:22 <b>summary</b> 49:13 <b>summer</b> 6:10 17:25 19:5 <b>summers</b> 18:5 18:24 <b>supervised</b> 23:18</p>	<p><b>supplemental</b> 118:22 <b>support</b> 20:7 110:11 112:17 <b>supported</b> 69:17 119:7 <b>supports</b> 119:12,23 <b>suppose</b> 127:6 130:16 137:25 <b>supposed</b> 125:7 <b>sure</b> 6:15 13:5 14:4 15:2 17:17 34:5 39:18 43:18 49:2 64:24 74:10 77:8 80:14 92:16 94:11 95:18 99:20 105:21 121:4 122:16 124:2,22 125:15 133:14 146:2 154:16 <b>surely</b> 24:8 <b>surface</b> 22:13 29:20 30:4,18 30:19 37:9,10 37:17 38:21,23 46:25 57:5,9 58:7 81:2 89:13,15 137:12 151:17 151:20,25</p>	<p><b>surprised</b> 129:15 <b>surrounding</b> 14:25 113:3 <b>survey</b> 22:9 26:6 29:14 84:13,14,15,15 90:4 91:11,21 102:3 113:11 136:19,23 137:7,16,19,24 138:4,12 139:22 141:6 141:10 147:4,5 147:7,16 <b>surveyed</b> 22:16 <b>surveys</b> 84:17 102:4 111:5 <b>sustain</b> 13:9 103:12 <b>swear</b> 7:11 <b>sweep</b> 23:3 <b>sworn</b> 7:14 17:5 108:9 <b>symbol</b> 47:19 47:23 <b>system</b> 89:11 91:11,21 136:19,23 137:8,16,19,24 138:4,12 139:22 141:6 141:10,12 143:9 147:4,6 147:8,16</p>	<p><b>systems</b> 91:8 <b>t</b> <b>t</b> 4:1 81:12 <b>take</b> 31:15 49:1 54:13 93:23 95:19 101:12 107:17 134:19 138:22 150:25 <b>taken</b> 17:18 52:4 157:4 <b>takes</b> 23:5 37:13,17,19 48:7 <b>talk</b> 21:6 36:14 72:13 90:11 <b>talked</b> 42:1 128:5 149:14 <b>talking</b> 43:13 55:18 58:18 64:25 72:17 74:8 78:5 97:1 139:3 147:14 <b>target</b> 111:22 113:5 114:17 <b>targeting</b> 25:20 26:7 <b>team</b> 11:1 21:19,20,22 <b>tech</b> 17:18 <b>technical</b> 110:4 110:9,25 <b>technically</b> 154:7 <b>techniques</b> 26:17,21</p>
--	---	--	--

[tell - thoroughly]

<p><b>tell</b> 7:14 9:1 17:5,10 40:14 40:18 80:21 81:22 99:7,9 108:9 129:21 145:22 <b>telling</b> 13:1 60:21 <b>tells</b> 34:22 <b>temperature</b> 38:4 <b>ten</b> 107:18 <b>tend</b> 70:3 <b>tense</b> 150:22 <b>tent</b> 47:18,23 <b>term</b> 36:19 110:20 <b>terminate</b> 64:23 <b>terminated</b> 46:10 <b>terminates</b> 67:4 69:13 <b>terminating</b> 69:15 <b>termination</b> 46:8 64:3,7,12 69:23,24 70:5 70:7 <b>terminations</b> 47:1 <b>terminology</b> 100:20 <b>terms</b> 49:9 74:18 77:11,23</p>	<p>84:21 103:24 104:4 133:10 133:20 <b>test</b> 73:3 75:14 93:3 <b>tested</b> 54:17 91:6 101:18 <b>testified</b> 7:15 13:4 15:17 17:6 92:20 95:9 108:10 131:1 134:22 <b>testify</b> 153:25 154:5 <b>testifying</b> 7:4 17:10,12 107:25 <b>testimony</b> 3:3,7 3:16 50:25 81:8 95:24 112:10,13 118:16 121:7 122:9 124:8 126:10 142:11 146:7,15 150:10,15 153:10 157:7 157:11 <b>testing</b> 112:20 <b>texas</b> 17:12 <b>thank</b> 6:21 16:10,12,16,24 79:5 82:25 97:6 98:19 103:15 104:10</p>	<p>104:12 106:18 106:19 107:3 108:5,14 111:12 120:7 120:17 141:22 142:13,21 152:14 153:7,8 155:8,22 156:1 <b>theory</b> 47:9 <b>thereof</b> 143:7 147:10 <b>thereto</b> 143:17 <b>thesis</b> 61:1 <b>thick</b> 51:22 54:20,22 57:6 57:10 69:18 73:6 98:13 <b>thicker</b> 98:14 <b>thin</b> 73:6 <b>thing</b> 23:8 28:22 29:6 34:9 35:5 36:23 41:8 72:13 73:7 80:15 99:11 121:16 145:20 155:14 <b>things</b> 16:23 23:14 28:19 38:5 39:6,15 41:15 51:18 63:25 68:25 90:2,7 107:1 131:2 142:6,10</p>	<p><b>think</b> 12:18 13:4 18:20 20:15 26:2,13 28:14,22 30:11 32:21 33:24 35:3 40:1 41:1 41:9 43:19 46:20 49:4,23 55:8 57:11 59:16 60:8 66:4 69:25 70:17,20 72:6 72:8,9 73:21 73:25 74:4,5 74:16 76:9 83:1 84:24 85:21 87:18 89:22 91:15 96:14,16,16,19 96:22 98:14,15 99:18 101:16 102:3 106:20 128:7 136:1,12 138:20 139:17 141:6 142:5 143:13 149:2 150:17,23,25 <b>thinking</b> 24:3 25:17 <b>thinks</b> 155:18 <b>thorough</b> 74:21 103:9 <b>thoroughly</b> 99:21</p>
--	---	--	---



[thousands - trough]

<p><b>thousands</b>                  29:13,14 44:9                  110:19 126:11  <b>three</b> 34:14                  40:22 111:4                  113:10 146:15  <b>thum</b> 3:16 6:4                  48:21 50:24                  101:2 107:15                  107:17 108:6,8                  108:14,16                  120:7,21 132:7                  132:13 133:7                  141:22 142:3                  142:23 145:10                  148:3 151:16                  152:20  <b>thum's</b> 32:18                  51:20 53:4                  57:17  <b>thumb</b> 40:19  <b>time</b> 6:14 16:14                  17:24 18:7                  21:20 27:15                  37:13 38:1                  39:1 40:10                  45:21 46:5                  48:14 55:6                  59:18 60:1,1,6                  60:10 67:10                  73:10 86:17,19                  86:20 90:6                  93:5 125:14                  133:8 149:4                  151:5 153:21</p>	<p>154:21,25                  157:4,5  <b>timed</b> 37:4 58:3  <b>times</b> 18:15,18                  39:11 40:4                  74:22 89:16  <b>title</b> 10:5 12:8,9                  108:21  <b>today</b> 5:15 6:20                  6:22 16:23                  92:20,23 95:9                  95:17 112:11                  122:9 128:6,11                  142:16 150:11  <b>together</b> 10:13                  25:10 47:3,10                  54:14 84:19                  86:10 91:2                  98:5  <b>told</b> 12:23  <b>took</b> 38:8 101:4  <b>tools</b> 24:23                  116:7,8,9                  117:18,20  <b>top</b> 26:15 32:16                  34:20 39:9                  40:25 44:23                  50:16 52:24                  53:24,25 54:6                  54:15,18 55:20                  55:20 57:1,21                  58:19 61:6                  62:10,13 63:4                  63:4 80:24                  81:3 84:5 98:6</p>	<p>98:7,9,18                  121:11 122:2  <b>topic</b> 87:7                  127:4  <b>topics</b> 17:21  <b>tops</b> 98:10                  100:24,24  <b>torpedo</b> 25:5  <b>total</b> 30:11                  122:3  <b>toward</b> 50:9                  68:16  <b>towards</b> 68:18                  78:9 90:23                  121:1,11  <b>township</b> 1:8                  5:7 136:24  <b>trace</b> 39:17,20                  41:6,8,18,21                  82:21  <b>traces</b> 39:24                  40:7 45:1 64:2                  82:21  <b>track</b> 49:10                  57:8  <b>tracking</b> 11:23  <b>tract</b> 122:14                  124:19 143:16  <b>tracts</b> 143:17  <b>training</b> 11:17                  110:13 112:19                  113:15 151:22  <b>transcribed</b>                  157:8</p>	<p><b>transcript</b>                  49:11 155:3,4                  155:7  <b>translate</b> 90:8  <b>translating</b>                  90:3  <b>trap</b> 64:14,18                  65:15,16 66:5                  66:17 67:3                  69:1,22 70:8                  74:20 79:16                  111:7 119:2  <b>trapped</b> 65:23                  65:24 78:19  <b>trapping</b> 64:13                  65:13 70:16                  71:20 72:12                  75:15,21  <b>travel</b> 38:12,14  <b>travels</b> 37:6  <b>traversal</b> 36:9  <b>traverse</b> 48:23  <b>traversing</b>                  33:15  <b>trends</b> 65:4  <b>tried</b> 21:23                  22:1 86:10  <b>triple</b> 115:7                  116:4,24                  117:16  <b>trips</b> 21:24  <b>trouble</b> 88:17  <b>trough</b> 41:17                  41:19,21 42:2                  42:11 43:6,7,8</p>
--	--	--	--

[trough - unit]

<p>45:17 53:16,21 53:23,23 54:5 54:14,15,18 56:4 59:13,24 61:3,7,9 62:14 62:14,23 63:7 63:11 64:4 68:13 69:5,6 69:12,14 70:6 71:13,14,17,18 72:2 74:6 84:4 86:15,24 87:22 88:6 101:25 102:15 103:1 <b>true</b> 59:2 88:18 90:12,17,17 121:16 129:22 131:1 147:14 157:10 <b>truth</b> 7:14 17:5 57:20 89:14 108:9 <b>try</b> 18:8,10 54:13 55:10,13 74:21 79:24 84:3 85:18 89:10,15 133:6 <b>trying</b> 11:24 12:1 13:8 14:4 35:1 38:20 48:14 85:11,24 86:1 87:8,14 89:14 90:2,8 96:15 103:9 130:13,16,18</p>	<p>136:3 <b>turn</b> 18:8,11 63:14 107:24 108:2 <b>turned</b> 63:14 63:16 <b>turquoise</b> 114:8 <b>two</b> 10:13 11:8 12:6 31:2,5 33:1 38:6 39:15 49:16 65:10 68:21,24 71:7 79:1 85:16 91:24 92:18,18 96:19 98:10,20 104:14 126:16 143:25 145:13 145:16 <b>type</b> 25:4 37:8 59:12 69:14 90:16 110:21 112:20 <b>types</b> 24:10 112:16 <b>typically</b> 11:22 29:23 51:15 65:19 110:18 <b>typo</b> 33:16</p>	<p><b>ultimately</b> 21:17 22:2 24:19 81:17 <b>unable</b> 134:16 <b>uncertainties</b> 152:5 <b>uncommitted</b> 8:17,17 9:9,15 10:7 12:5,5,8 12:12 13:16,16 15:18,19 <b>under</b> 61:4 63:18 72:18,20 95:12 115:20 117:6 123:24 123:25 125:10 152:21 157:6,9 <b>underground</b> 109:13 150:5 <b>underlain</b> 97:23 <b>underlying</b> 53:11 <b>underneath</b> 54:12 61:3,7 63:2,14 72:22 <b>understand</b> 12:7 22:1 34:5 81:8 83:1 91:3 94:7 126:11 128:20 130:18 137:10 143:8 143:18 145:11 146:8 147:5,7 147:21 149:2</p>	<p>149:15 151:16 <b>understandable</b> 33:25 <b>understanding</b> 78:6 90:6,15 94:17,25 115:19 117:4 129:4 133:8 148:19 149:7 <b>understands</b> 13:2 <b>understood</b> 153:13 <b>undertaken</b> 95:11 <b>undertook</b> 92:20 <b>union</b> 136:16 <b>unique</b> 86:6 <b>unit</b> 1:6 5:6 8:17 9:2,3 10:7 10:7,9,11,15,21 10:24 11:6,13 12:6,9,10,13,14 15:19,20 16:1 19:21,25 21:1 23:17 26:18,23 26:25 27:18,22 28:4,24,25 29:2,15,17,19 30:15 35:16,18 35:21,24,25 36:1,25 37:1 49:15,18,25 50:2,8 51:23</p>
	<p><b>u</b></p>		
	<p><b>u.s.</b> 115:9 116:25 <b>ultimate</b> 49:21 132:3 149:22 150:6</p>		

[unit - variance]

55:3 58:1 59:15,15,22 60:4,5,20 61:4 61:20,21 62:1 62:4,7,17,20,21 62:24 63:3,10 63:12,19,23 65:6 66:5,14 66:24 68:8 70:22,25 71:1 71:9,12,14,17 72:13 74:6 75:9,9,12 76:1 76:2,5,10,16 77:6,7,13,14,20 78:4,8,15,21,22 78:24 91:4,5 91:16 92:5,12 92:13,13,16,17 92:18 93:2 94:8,12,18,23 95:12,20 96:6 96:25 97:21 99:10,13,14 102:18,21,25 104:20 105:2,8 105:10,18,24 105:25 106:1,2 106:3,9 109:22 110:11,16 111:10,20 112:1 114:5,7 114:13,14,15 114:16,18,23 115:16,21	116:14,15,17 117:6 118:13 119:2,4,13,15 119:17,19,19 119:21,22,24 120:5 122:25 123:5,7,10,24 123:25 124:5 124:17 125:4 126:1,1,7,15,16 126:17 127:1,7 128:3,12,14,17 129:5,11,23 130:10 131:2 131:16,20 132:14,24 133:8,17,19,24 134:2,6,11 135:9,14 136:2 136:18,24 137:22,23,23 138:3,5,23 139:2,2,8,13,14 139:21,24 140:4,6,8,9,10 140:13,13,22 141:11 143:10 143:15,20,21 143:25 145:23 146:6,16 147:3 147:15 148:9 148:24 149:9 150:3,12 152:7 152:7,22 153:4	<b>united</b> 19:8 <b>unitized</b> 94:9 <b>units</b> 10:14 52:14 67:14 77:24 94:20 99:11 106:17 114:6,12,19 124:4 125:6,7 136:14 137:17 137:20 138:18 140:25 141:15 143:5,10 145:12 147:20 148:10,17 151:16 152:11 <b>unknown</b> 50:13 59:10 60:19 100:2 <b>unleased</b> 111:20 <b>unmolested</b> 37:7 <b>unnecessary</b> 5:19 23:10 105:7 125:22 127:14,18 130:25 145:23 <b>unproductive</b> 61:10 105:15 <b>unquote</b> 116:2 <b>unsuccessful</b> 23:10 <b>untested</b> 32:25 <b>update</b> 152:10	<b>upper</b> 99:7 <b>usa</b> 109:11 <b>use</b> 11:22 22:11 25:13 27:8 37:21 39:6 45:14 50:12 72:3 90:10 134:8 140:1,22 141:8 148:20 <b>used</b> 24:3 137:4 <b>useful</b> 58:3 150:23 <b>user</b> 15:10 <b>using</b> 22:25 26:16,21 38:20 49:7 57:19 60:10 62:18 78:6 93:2 104:2,20 136:15,25 139:19 <b>usually</b> 95:1 <b>utah</b> 19:13 <b>utilities</b> 23:13 <b>utility</b> 51:12 <b>utilize</b> 111:1 <b>utilized</b> 113:13
			<b>v</b>
			<b>vaguely</b> 149:13 <b>valuable</b> 19:1 <b>value</b> 30:7 63:6 <b>values</b> 51:10 81:1 <b>variance</b> 125:10,11,12

[variation - wells]

<p><b>variation</b> 125:3  <b>varies</b> 15:10  102:3 110:7  <b>various</b> 17:20  24:24 27:17  44:2 46:7  55:23 72:3  135:2  <b>vary</b> 39:2  <b>velocity</b> 37:22  37:23 38:1,2  38:22 53:15,18  54:9,10,11  101:11  <b>vent</b> 106:3  <b>venting</b> 104:24  106:5,14  <b>venture</b> 21:16  <b>version</b> 31:11  <b>versions</b> 51:1  <b>versus</b> 46:1  72:4  <b>vertical</b> 31:16  58:10,24 59:3  63:3 98:2  124:16 143:14  143:20  <b>vertically</b> 59:4  <b>vibrate</b> 55:10  <b>vibrator</b> 23:1  <b>vice</b> 21:11  <b>view</b> 19:1 49:24  66:16 82:7  105:10 150:9  150:11</p>	<p><b>views</b> 70:16  <b>virginia</b> 17:18  <b>virtually</b> 136:8  <b>vis</b> 148:9,9  <b>volcanic</b> 46:22  <b>volume</b> 80:17  84:8,8,10,11  86:6 102:1,2  107:24 110:25  <b>volumes</b> 86:7</p> <hr/> <p style="text-align: center;"><b>w</b></p> <hr/> <p><b>w</b> 157:23  <b>wade</b> 3:3 6:22  7:8,13 112:13  <b>waiting</b> 154:4  <b>walk</b> 113:25  <b>want</b> 13:15  21:6 28:7 29:4  36:14,15,18  40:4 42:25  43:5 52:9 55:2  60:24 61:1  64:24 72:13  74:13 85:15  86:22 93:3,23  99:20 105:6,7  107:24 127:11  137:22 141:16  142:3 144:11  150:21 153:11  153:12  <b>wanted</b> 27:14  59:7 73:3,8  133:14</p>	<p><b>wants</b> 153:10  <b>waste</b> 74:21  104:20,23  105:1,4,16,20  105:21 106:1,8  106:14 125:21  126:2,5,8,18  127:2 129:3  130:24 131:16  131:20,24  132:15,18  133:9,21  149:10,16  150:5  <b>wasting</b> 105:18  <b>watching</b> 7:5  47:1  <b>water</b> 23:14  37:23,23 38:2  38:3,6,16,22  53:5,6 54:2  55:22 56:3,11  56:14,21,25  57:2,3,6,8,9,16  57:17,21 58:5  59:16 60:7,9  60:12,18 63:21  68:11 84:7  118:5  <b>way</b> 39:11  43:21 44:10  46:12 47:8  51:11 67:25  72:5 96:23,25  97:1 123:22</p>	<p>125:25 126:4,7  126:12 127:6  128:17 129:6  130:8 131:24  137:20 140:2  146:19 147:7  <b>ways</b> 93:7  102:7  <b>weak</b> 54:3  59:23 63:17  67:16 68:15  69:13,15  <b>weaker</b> 88:1,5  90:22  <b>website</b> 115:13  <b>weeds</b> 55:1  <b>welcome</b> 13:18  16:21 106:25  107:1  <b>wellbore</b> 29:23  51:7,10 53:3  53:22 57:18  58:20 80:23  101:13  <b>wells</b> 20:19,20  21:18,25 23:10  23:10,14,22  24:1,1,3,6,8,16  24:17,22 25:15  26:3 43:15  60:11 70:11,12  70:13 74:23  76:14 102:12  102:13 104:6  105:7 110:19</p>
--	---	--	---

[wells - zoomed]

<p>113:3,9 124:6                  125:7,22                  126:11,13                  127:8,14,18,20                  127:22,25                  128:3 130:25                  132:22 134:1,6                  145:16,24                  150:6  <b>went</b> 93:5                  133:19 138:9                  153:21  <b>west</b> 1:8 5:8                  29:16 30:20,21                  31:1,13 33:6,8                  33:14,14 36:11                  41:2 48:23                  61:13,18 62:8                  62:11 63:9,22                  67:24 68:16,18                  97:1 121:10,11  <b>western</b> 110:22                  120:1,3  <b>whatnot</b> 58:4                  92:16  <b>whereof</b> 157:15  <b>whitley</b> 1:20  <b>widely</b> 24:2  <b>wiggle</b> 72:1  <b>wiggles</b> 41:4  <b>willow</b> 84:12                  84:14  <b>window</b> 102:1  <b>wise</b> 133:3</p>	<p><b>wish</b> 15:2 26:25                  72:15 83:17  <b>wished</b> 15:1  <b>withdraw</b>                  128:21  <b>withdrawn</b>                  140:8,10,11,12  <b>witness</b> 7:11                  9:21 13:7 14:8                  16:13,17,24                  17:1 18:8,19                  34:17 35:9                  70:4 77:5 79:6                  84:11 97:8                  100:9 103:9                  106:21 107:3                  142:12,15                  144:9,22,24,25                  148:13 157:5                  157:15  <b>witnesses</b> 6:19                  107:5,7,9,11,13  <b>wnw</b> 33:10  <b>wonder</b> 155:11  <b>wondering</b>                  95:11  <b>word</b> 121:3                  140:23 141:8  <b>wording</b>                  140:24 141:2                  153:6  <b>words</b> 12:12                  110:11 148:1                  150:5</p>	<p><b>work</b> 18:23                  19:20 22:4                  50:12 52:7                  81:22 86:12                  91:4 92:25                  94:11 106:10                  109:8 124:10  <b>worked</b> 7:22                  8:3 14:19 15:3                  17:23 18:24                  19:7,12 70:19                  149:8  <b>working</b> 6:23                  6:24 7:19,25                  9:2,4 11:2                  15:21 18:4                  19:18  <b>works</b> 136:5,6                  145:9  <b>world</b> 113:13  <b>worth</b> 26:22  <b>wrap</b> 150:25  <b>written</b> 154:9                  154:20  <b>wrong</b> 72:9  <b>wrote</b> 20:9</p>	<p>136:21 141:17  <b>years</b> 8:1,1                  14:20 17:21,25                  18:15 22:10                  25:14 109:1,10                  136:11  <b>yelled</b> 18:17  <b>yellow</b> 114:8</p>
			<b>z</b>
			<p><b>zanzig</b> 6:9  <b>zero</b> 15:12 42:6                  43:10 53:2                  67:12  <b>zone</b> 26:11                  101:9  <b>zoom</b> 2:19 6:22                  7:4 42:17                  139:4 156:2  <b>zoomed</b> 31:10                  41:18 42:20                  49:23 82:22,23</p>
			<b>x</b>
			<p><b>x</b> 3:1 4:1  <b>xavier</b> 6:10</p>
			<b>y</b>
			<p><b>yeah</b> 13:7                  15:25 74:10                  82:5,14 84:2                  95:25 134:18</p>