

Examination by COMMISSION AMPOMAH

1

PUBLIC HEARING

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

Pecos Hall, 1st Floor, Wendell Chino Building

1220 S. Saint Francis Drive

Santa Fe, New Mexico

TRANSCRIPT OF PROCEEDINGS

April 7, 2025

9:01 a.m.

HEARD BEFORE: HEARING OFFICER RIPLEY HARWOOD

COMMISSION MEMBERS:

GERASIMOS ROZATOS, Chair

BAYLEN LAMKIN, Member

DR. WILLIAM AMPOMAH, Member

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Examination by COMMISSION AMPOMAH

2

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Examination by COMMISSION AMPOMAH

3

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INDEX

PAGE

11 FRANK MAREK

12 Examination By Mr. Padilla 28

Examination By Commissioner Lamkin 40

13 Examination By Mr. Moander 107

Examination By Commissioner Ampomah 109

14 Examination By Mr. Padilla 121

15 GALEN DILLEWYN

16 Examination By Ms. Shaheen 134

Examination By Commissioner Lamkin 146

17 Examination By Mr. Moander 197

Examination By Mr. Beck 198

18 Examination By Mr. Lamkin 204

Examination By Dr. Ampomah 205

19 Examination By Ms. Shaheen 221

20 JOSEPH McSHANE

21 Examination By Ms. Shaheen 225

22 Certificate of Completion 246

Examination by COMMISSION AMPOMAH

4

EXHIBITS

EXHIBIT	DESCRIPTION	PAGE
Revised Exhibit H		34
Exhibit S		48
Exhibit 11		72
Exhibit 12		107
Exhibits F and Revised F		145
Exhibits F and Revised F-8		146
Exhibit G and Revised G		228

Page 4

Examination by COMMISSION AMPOMAH

5

1 CHAIRMAN RAZATOS: I am Gerasimos
2 Razatos. I am the acting chair, the acting director
3 for the Oil Conservation Division. And I'm also the
4 acting chair for the Oil Conservation Commission. I
5 just want to make sure that you-all can hear me in
6 Pecos Hall. Can someone just let me know that they
7 can hear me?

8 UNIDENTIFIED SPEAKER: Yes.

9 UNIDENTIFIED SPEAKER: We can hear
10 you.

11 CHAIRMAN RAZATOS: Excellent. Thank
12 you.

13 This is the continuation of our hearing
14 for -- that was set for April 7 through the 11th.
15 It is the Oil Conservation Commission hearing that
16 we have. I am under the weather, so I am in my
17 office on -- I will be on the Teams platform for the
18 meeting. I did want to bring our meeting to a start
19 and get it started for us today.

20 So I'd like to do a roll call. As I said,
21 I'm Gerasimos Razatos. I am the acting division
22 director for the Oil Conservation Division. And I'm
23 also the acting commission chair for the Oil
24 Conservation Commission.

25 I will now switch it over to Commissioner

Page 5

Examination by COMMISSION AMPOMAH

6

1 Ampomah.

2 I'll switch it over to you for roll call.

3 COMMISSIONER AMPOHAM: Thank you.

4 Good morning. My name is Dr. William
5 Ampomah, professor for engineering from New Mexico
6 Tech and also designee of the NMT faculty. Thank
7 you.

8 CHAIRMAN RAZATOS: Excellent, thank
9 you.

10 Then, Mr. Rankin.

11 COMMISSIONER LAMKIN: I don't know if
12 you wanted to call Greg or myself.

13 CHAIRMAN RAZATOS: I was -- well,
14 let's do -- let's do you right now for the actual
15 hearing, and then I'll also get Commissioner Bloom
16 as well. I'll be leaving him last.

17 COMMISSIONER LAMKIN: Okay. Adam
18 Rankin, designated commissioner of public lands.

19 CHAIRMAN RAZATOS: Excellent, thank
20 you.

21 And Commissioner Bloom.

22 COMMISSIONER BLOOM: Yes, good
23 morning, everyone. I'm Greg Bloom. I'm the
24 assistant commissioner for Mineral Resources, the
25 New Mexico State Land Office. I'm the designee of

Page 6

Examination by COMMISSION AMPOMAH

7

1 the commissioner of Public Lands. I'll be stepping
2 out -- the meeting after we finish up some
3 preliminary matters. I'm not participating in the
4 Goodnight Empire case. Mr. Lamkin will be hearing
5 that for the Land Office.

6 Thank you.

7 CHAIRMAN RAZATOS: Excellent. Thank
8 you, Commissioner Bloom.

9 So that brings our meeting to the -- to
10 its start. The next item on the agenda is the
11 approval of the April 7 through the 11th, 2025,
12 agenda. Can I get a motion to approve the agenda?

13 COMMISSIONER BLOOM: I so move.

14 CHAIRMAN RAZATOS: Excellent. So our
15 agenda is approved for today.

16 Our third item is the approval of the
17 March 11 and March 20, 2025, meeting minutes. Were
18 there anything that we needed to discuss for the
19 meeting minutes? If not, can I get a motion to
20 approve?

21 COMMISSIONER BLOOM: Mr. Chair, I
22 have not had time to review the March 11th meeting
23 minutes. I'd just like to go over those and check
24 them against my notes. If we could do that at a
25 future meeting, I'd appreciate it.

Page 7

Examination by COMMISSION AMPOMAH

8

1 CHAIRMAN RAZATOS: Okay. We could
2 potentially move them. Okay. Are you okay with
3 March 20th meeting notes, Commissioner?

4 COMMISSIONER BLOOM: Mr. Chair, I am,
5 and I would move to approve those.

6 CHAIRMAN RAZATOS: Okay.
7 Commissioner Ampomah, are you okay with the meeting
8 minutes?

9 COMMISSIONER AMPOHAM: Yes. And I
10 second.

11 CHAIRMAN RAZATOS: Okay. So we'll
12 approve the March 20th Commission minutes.

13 Commissioner Bloom, maybe in two weeks if
14 you can pop back on for the next phase of the
15 hearing that we have scheduled, and hopefully we can
16 get the March 11th meeting minutes approved at that
17 point. Is that okay?

18 COMMISSIONER BLOOM: Absolutely, Mr.
19 Chair. Thank you for the --

20 CHAIRMAN RAZATOS: Excellent, thank
21 you.

22 Sheila, we'll approve the March 20th
23 Commission minutes, and we'll move the approval of
24 the March 11th Commission minutes to our next
25 meeting in two weeks.

Page 8

Examination by COMMISSION AMPOMAH

9

1 MS. APODACA: Okay.

2 CHAIRMAN RAZATOS: Excellent, thank
3 you.

4 Okay. That takes us now to our pending
5 cases. The first case that we have for today is
6 Case Number 24683, which is the application of the
7 Western Environmental Law Center, Citizens Caring
8 for the Future, Conservation Voters New Mexico
9 Education Fund, Diné C.A.R.E., Earthworks, Naeva,
10 New Mexico Interfaith Power and Light, and San Juan
11 Citizens Alliance, and the Sierra Club, to amend
12 19.15.2, 19.15.5, 19.15.8, 19.15.9 and 19.15.25 of
13 the New Mexico Administrative Code. The matter to
14 be heard is a status conference.

15 Are all the parties present?

16 I always usually start when I'm there on
17 the left-hand side -- I mean on the right-hand side
18 of the screen. So in this instance, I will start
19 with --

20 Mr. Rankin, is that you? I can't see very
21 well.

22 COMMISSIONER LAMKIN: Good morning,
23 Mr. Chair. Adam Rankin appearing on behalf of Oxy
24 in this case.

25 CHAIRMAN RAZATOS: Excellent, thank

Page 9

Examination by COMMISSION AMPOMAH

10

1 you.

2 Who's next to you? I apologize.

3 COMMISSIONER LAMKIN: My colleague,
4 Mr. Nathan Jurgensen, who is actually not appearing
5 in that case with me, but he is sitting next to me.

6 CHAIRMAN RAZATOS: Okay. Great.

7 Well, let's just say who else is here for
8 the -- for the Case Number 24683? It will just make
9 it easier.

10 Ms. Fox.

11 MS. FOX: Good morning,
12 Commissioners. Thank you, Chair.

13 Commission, my name is Tannis Fox. I'm a
14 lawyer with Western Environmental Law Center
15 representing applicants in the matter. With me
16 today is Morgan O'Grady and online is Matt Nykiel.

17 CHAIRMAN RAZATOS: Excellent, thank
18 you, Ms. Fox.

19 Mr. Tremaine?

20 MR. TREMAINE: Good morning,
21 Mr. Chair, Commissioners. My name is Jesse Tremaine
22 representing the Oil Conservation Division.

23 CHAIRMAN RAZATOS: Excellent.
24 Anybody on the platform that I may have missed?

25 MR. CLOUTIER: Good morning,

Page 10

Examination by COMMISSION AMPOMAH

11

1 Mr. Chair. Andrew Cloutier and Ann Tripp of Hinkle
2 Shanor on behalf of Independent Petroleum
3 Association of New Mexico.

4 CHAIRMAN RAZATOS: Excellent. Thank
5 you, sir.

6 Anybody else?

7 MR. SUAZO: Yes. Good morning
8 Mr. Chair, Commissioners. This is Miguel Suazo with
9 Beatty & Wozniak appearing on behalf of the New
10 Mexico Oil and Gas Association.

11 CHAIRMAN RAZATOS: Excellent. Thank
12 you, Mr. Suazo.

13 Anybody else?

14 MR. SAYER: Mr. Chair, this is
15 Mattias Sayer appearing on behalf of EOG.

16 CHAIRMAN RAZATOS: Excellent, thank
17 you, Mr. Sayer. Appreciate it.

18 Anybody else, just to make sure we get
19 everybody?

20 Perfect. I believe we had left it off,
21 Ms. Fox and Mr. Tremaine, you were leading the
22 conversations the last time we had met. So which
23 one of you would like to start for us?

24 MR. TREMAINE: Mr. Chair, this is
25 Jesse Tremaine. I circulated this morning an

Page 11

Examination by COMMISSION AMPOMAH

12

1 updated draft, Third Amended Notice that includes
2 some new dates. The goal of that was to represent
3 to the Commission that I think we largely have
4 agreement on the direct and rebuttal filing dates,
5 which were the primary drivers of previous
6 discussions about scheduling.

7 It's been -- I also caught that we needed
8 to change another date or two in there, but it's
9 been pointed out to me that we actually need to
10 address a couple of other residual April dates that
11 I did not catch. And I believe Ms. Fox has some
12 comment on those.

13 CHAIRMAN RAZATOS: Okay. Ms. Cox.

14 Thank you, Mr. Tremaine.

15 MS. FOX: Thank you, Mr. Chair,
16 members of the Commission. The proposal now is --
17 you might recall at the last meeting, the Commission
18 set the hearing date for October 20th of this -- of
19 this year. We hope that the hearing will go only
20 two weeks, but we've set aside three.

21 And the parties have agreed, I believe, to
22 filing direct testimony and exhibits on July 25th
23 and filing rebuttal testimony exhibits on
24 September 5th.

25 And then preliminary to that, applicants

Page 12

Examination by COMMISSION AMPOMAH

13

1 have committed to filing an amended complaint,
2 amended application on April 25th. That date hasn't
3 changed from what we proposed during the -- during
4 the last status conference.

5 And so what we would intend to do is when
6 we file that amended application, we will file an
7 amended notice of hearing with the dates that I just
8 identified, along with any significant changes to
9 our proposals. And we appreciate all the parties'
10 coordination on these dates.

11 CHAIRMAN RAZATOS: Excellent.

12 Ms. Fox, I do have a question for you. You stated
13 October -- starting October the 20th, correct, that
14 you'll be --

15 MS. FOX: October 20th.

16 CHAIRMAN RAZATOS: Okay, yes.

17 So, Mr. Tremaine, your amended Exhibit B
18 has that the hearing begins October the 14th.

19 MR. TREMAINE: Yes, Mr. Chair. That
20 was -- I did not catch that that needed to change --

21 CHAIRMAN RAZATOS: Okay.

22 MR. TREMAINE: -- when I updated. So
23 my thinking was, we just needed to update the direct
24 testimony and rebuttal dates. And then I saw the
25 other April date and changed that, but I think there

Page 13

Examination by COMMISSION AMPOMAH

14

1 actually is still another April date that needs to
2 be updated. And then I neglected -- or did not
3 notice that we needed to change that hearing date.

4 CHAIRMAN RAZATOS: So should we set
5 this to come back next -- in two weeks to have
6 another scheduling conference?

7 MR. TREMAINE: Mr. Chair, I would say
8 no. I believe that we have -- we've settled
9 everything that the parties had concerns with,
10 resolved that by agreement. And so I think we can
11 just make those updates. As Ms. Fox indicated, as
12 the Petitioner, they will have -- they're submitting
13 a revised petition here by April 25th. So the
14 Commission will have that, an updated one along with
15 that petition as an exhibit to that petition in a
16 couple weeks.

17 CHAIRMAN RAZATOS: Okay. So then if
18 I am hearing everything correctly, we are set to go
19 to get this ball rolling, right?

20 MS. FOX: Mr. Chair, we are set to
21 go.

22 CHAIRMAN RAZATOS: Excellent. Okay.
23 It will be monumental for all of us, and it's a good
24 task that we're going to be on. So if there's
25 nothing else for this one, I think we are kind of

Page 14

Examination by COMMISSION AMPOMAH

15

1 set. We'll get all the paperwork from you-all.
2 Once you finalize it, you'll submit it to the
3 Commission. And we are going to start having
4 deadlines, people, so let's definitely make sure
5 that we get it all straightened and the Commission
6 has its work cut out.

7 But thank you, everybody. We appreciate
8 it. If there's no other comments on this one --

9 COMMISSIONER AMPOMAH: Mr. Chair? So
10 this is --

11 CHAIRMAN RAZATOS: Yes.

12 COMMISSIONER AMPOMAH: -- Dr.
13 Ampomah. I want to be sure. Are we set on
14 October 20th to when?

15 CHAIRMAN RAZATOS: Well, as Ms. Fox
16 stated, they've initially set it for two weeks, so
17 for sure, October 20th through probably the 31st,
18 which is a two-week stint. Is that doable, Doctor,
19 with your schedule?

20 COMMISSIONER AMPOMAH: Yeah, that is
21 doable, but if we get into the full week, then I'm
22 not available.

23 CHAIRMAN RAZATOS: Okay. So I think
24 what we do is, let's start it on the 20th, like
25 we've set. And then if we have some scheduling

Page 15

Examination by COMMISSIONER AMPOMAH

16

1 issues or if we see that it gets a little out of
2 hand, we can pick a date at that time. Or we can
3 just not meet a specific date if you -- if you have
4 a date that you can't do.

5 COMMISSIONER AMPOMAH: Thank you.

6 CHAIRMAN RAZATOS: Is that okay?

7 COMMISSIONER BLOOM: Mr. Chair?

8 CHAIRMAN RAZATOS: Yeah. Go ahead,
9 Commissioner.

10 COMMISSIONER BLOOM: Yeah, thank you,
11 Mr. Chair. I've already reserved that week of
12 November 3rd. I don't know if other people did as
13 well in the case we needed. I guess leave it there
14 and we can see if there's a few days that
15 Dr. Ampomah could meet that week if necessary.

16 Dr. Ampomah, do you need to be off the
17 entire week?

18 COMMISSIONER AMPOMAH: No. I can be
19 around, let's say, at the earlier portion of the
20 week, probably up until Wednesday. And I have to --
21 I do have international travel.

22 CHAIRMAN RAZATOS: Okay.

23 COMMISSIONER BLOOM: Very good. I'll
24 leave it reserved on my schedule and . . .

25 CHAIRMAN RAZATOS: Yeah, let's leave

Page 16

Examination by COMMISSION AMPOMAH

17

1 it on the schedule as needed.

2 Ms. Fox and Mr. Tremaine, let's try to
3 make the two weeks if we possibly can. Okay?

4 Excellent. I see the back of your heads
5 nodding. I've got the back side view this time.
6 So, great, thank you, all.

7 Okay. If nothing else on this particular
8 case, we can move on to our actual case. Thank you,
9 everybody.

10 COMMISSIONER BLOOM: I'm going to
11 step out. Thank you, all. Take care.

12 CHAIRMAN RAZATOS: Thank you,
13 Commissioner Bloom.

14 Okay. We're going to switch over now to
15 our second case for the day. It is Consolidated
16 Cases by Goodnight Midstream and Empire New Mexico.

17 They are Case Numbers 24123, 23614 through
18 17, Case Number 23775, and Case Numbers 24018
19 through 24020 and 24025. This is the matter to be
20 heard by the Commission. It's the continuation of
21 the evidentiary hearing.

22 I'll just start off as always to make sure
23 that all of our parties are present. I will start
24 again on the right-hand side of the room with Mr. --
25 Adam, your last name?

Page 17

Examination by COMMISSION AMPOMAH

18

1 COMMISSIONER LAMKIN: Rankin.

2 CHAIRMAN RAZATOS: Rankin. Thank
3 you, Mr. Rankin. My apologies.

4 COMMISSIONER LAMKIN: No problem.

5 Good morning, Mr. Chair, Commissioners.
6 Adam Rankin with the Santa Fe office of Holland &
7 Hart appearing on behalf of Goodnight Midstream and
8 Permian, LLC, in the cases. And to my right is my
9 colleague Mr. Nathan Jurgensen, who is also
10 appearing in these cases as well.

11 CHAIRMAN RAZATOS: Thank you, sir.

12 Mr. Padilla, we'll switch over to you.

13 MR. PADILLA: Mr. Chairman, Ernest L.
14 Padilla for Empire. With me are Dana Hardy and
15 Sharon Shaheen.

16 CHAIRMAN RAZATOS: Excellent, thank
17 you.

18 We'll go to the back table, next to
19 Ms. Shaheen.

20 MS. SHAHEEN: That is our client
21 here.

22 CHAIRMAN RAZATOS: Oh, I forgot.
23 Yes, my apologies. Thank you, Ms. Shaheen.

24 MS. SHAHEEN: No worries.

25 CHAIRMAN RAZATOS: I am under the

Page 18

Examination by COMMISSION AMPOMAH

19

1 weather. I apologize for that.

2 Mr. Beck, we'll move on to you.

3 MR. BECK: Good morning,
4 Commissioners. Matt Beck, Peifer Law Firm, on
5 behalf of Rice Operating Company and Permian Line
6 Service, LLC.

7 CHAIRMAN RAZATOS: Excellent, thank
8 you.

9 MR. MOANDER: Good morning,
10 Mr. Chair, Commissioners. Chris Moander on behalf
11 the New Mexico Oil Conservation Division.

12 CHAIRMAN RAZATOS: Excellent,
13 Mr. Moander. Thank you.

14 On the platform, who do we have?

15 MR. SUAZO: Good morning, Mr. Chair,
16 Commissioners, and Mr. Hearing Examiner. This is
17 Miguel Suazo with Beatty & Wozniak, appearing today
18 on behalf of Pilot Water.

19 CHAIRMAN RAZATOS: Excellent.
20 Anybody else on the platform?

21 I believe that's all of us. So everybody
22 is present.

23 Mr. Hearing Officer, we transfer the
24 hearing over to you. Thank you.

25 HEARING OFFICER HARWOOD: Okay.

Page 19

Examination by COMMISSION AMPOMAH

20

1 Thank you, Chairman Razatos. Sorry you're under the
2 weather. The weather this week is supposed to be
3 great, so hopefully you'll improve along with it.

4 Do we have -- Ms. Apodaca, do we have a
5 court reporter present and typing?

6 MS. APODACA: Yes, we do.

7 HEARING OFFICER HARWOOD: Is that
8 Kendra Tellez?

9 THE REPORTER: Yes.

10 HEARING OFFICER HARWOOD: Good
11 morning, Kendra. Nice to see you again.

12 All right. Okay. So Mr. -- Chairman
13 Razatos did all the heavy lifting, and I do have
14 from Ms. Hardy an email from March 25th setting out
15 the order of your next five and last five witnesses.
16 Correct?

17 MS. HARDY: That's correct.

18 HEARING OFFICER HARWOOD: Ms. Hardy,
19 let me ask you: Is this first witness Deacon
20 Marek -- is that synonymous with the Frank Marek in
21 this unopposed motion that's pending?

22 MS. HARDY: It is, yes. Thank you.

23 HEARING OFFICER HARWOOD: Okay. All
24 right. So with that preamble, let me ask the
25 parties, are there any preliminary matters?

Page 20

Examination by COMMISSION AMPOMAH

21

1 MS. HARDY: I had one, Mr. Examiner.
2 I don't know if Mr. Rankin has any, but . . .

3 HEARING OFFICER HARWOOD: Okay.

4 MS. HARDY: And I wanted to raise
5 this at this point for the Commission's
6 consideration, and I know we're not to our closing
7 arguments yet. But Empire would prefer to have oral
8 closing arguments rather than written, and I don't
9 know what the Commission's position is on that. I
10 think, you know, Empire would like to have a
11 decision as soon as possible due to the ongoing
12 injection into its unitized interval.

13 And in these cases, occasionally we do
14 written closings, and occasionally we do oral
15 closings. And here, we wanted to request an oral
16 closing so that we can avoid waiting for transcripts
17 and then waiting for briefing deadlines and a
18 written closing. But I understand that's up to the
19 Commission, but wanted to mention that issue for
20 the -- consideration today.

21 HEARING OFFICER HARWOOD: Okay.
22 Thanks. Have you discussed that with your
23 opponents --

24 MS. HARDY: I have not --

25 HEARING OFFICER HARWOOD: -- Mr.

Page 21

1 Rankin?

2 MS. HARDY: -- had a chance to do
3 that.

4 HEARING OFFICER HARWOOD: Okay.
5 What's Goodnight's delight?

6 COMMISSIONER LAMKIN: Well, we had
7 previously kind of discussed it some time ago, about
8 what we all thought. And I think at that time we
9 were thinking, given the nature of the case and the
10 importance of it and the record that would need to
11 be established, that at least as to findings of fact
12 and conclusions of law, that it would be beneficial,
13 both to the Commission in its review of the
14 extensive record and the facts and evidence, and to
15 any appellate court reviewing the record, to have
16 each party's final presentation of the findings of
17 fact and conclusions of law.

18 And in addition to having that, I think it
19 would be also helpful for the Commission and for any
20 reviewing Court to have the parties' positions on
21 the legal issues that are entwined with this -- with
22 this case.

23 So I don't disagree with Ms. Hardy, that I
24 think we could do an oral closing. But I do,
25 however, believe it would be important for the

1 Commission to have written findings of fact and
2 conclusions of law and have some representation on
3 the record of the -- what the parties' views are on
4 the standards -- applicable for each of these cases
5 and the evidentiary burden, which has been an issue
6 that's been discussed throughout the preliminaries
7 of this case.

8 So I'll just say, you know, in short, to
9 sum, that I have no problem summering orally the
10 arguments and -- legal arguments at the conclusion,
11 but I do believe I would -- I would lobby for
12 written findings of fact and conclusions and at
13 least a legal brief, some kind of legal closing so
14 that the Commission has that to consider.

15 HEARING OFFICER HARWOOD: Ms. Hardy?

16 MS. HARDY: Mr. Examiner, I think
17 that oral closings would be most expedient. I think
18 that that sounds like it's fine with Goodnight.

19 Findings of fact and conclusions of law,
20 in other cases I know that the Commission has
21 actually ruled and then requested them from the
22 parties. I've had that happen.

23 But we don't object to providing written
24 findings and conclusions. We just do want to
25 expedite as quickly as possible a final decision in

Examination by COMMISSION AMPOMAH

24

1 this matter, given the impact that's happening to
2 Empire.

3 HEARING OFFICER HARWOOD: Okay.
4 Thank you.

5 MR. MOANDER: Mr. Hearing Officer?

6 HEARING OFFICER HARWOOD: Yes, OCD.

7 MR. MOANDER: I'm sorry.

8 HEARING OFFICER HARWOOD: Mr.
9 Moander, go ahead.

10 MR. MOANDER: I'm sitting in the back
11 seats here.

12 OCD's perspective, I prefer oral closings.
13 They can be -- I think they're more effective, but I
14 also would support the idea of submitting
15 conclusions of law and findings of fact as well so
16 there's a paper roadmap. So this sounds like we're
17 in the ballpark. OCD is pretty flexible on this.

18 HEARING OFFICER HARWOOD: Okay.
19 Thank you. I guess I should round out the field by
20 asking Pilot and Rice.

21 Mr. Beck for Rice.

22 MR. BECK: I imagine that my closing
23 will be pretty brief. So you probably don't need
24 the benefit of a paragraph or two written down from
25 me.

Page 24

Examination by COMMISSION AMPOMAH

25

1 HEARING OFFICER HARWOOD: Okay.

2 Mr. Suazo?

3 MR. SUAZO: I think what Mr. Rankin
4 and Ms. Hardy and Mr. Moander have proposed is
5 reasonable. And Pilot's very much in the same
6 position as Mr. Beck's client. So I think -- you
7 know, I agree with him and Mr. Rankin.

8 HEARING OFFICER HARWOOD: Okay.

9 Thank you.

10 Mr. Chairman, I guess my thoughts are that
11 we should maybe discuss this on a break. My
12 concern -- we don't need to rule at this time on
13 this. We've got time to think about this. And why
14 don't -- I guess my thoughts on the subject, at
15 least preliminarily, is let's see where we are at
16 the end of this, whether we're down to 5:00 p.m. on
17 day whatever, the last day of the hearing, you know,
18 or whether there's time for oral argument.

19 But anyway, why don't we discuss it -- the
20 Commission discuss it, and we'll get back to you on
21 it, as they say.

22 MS. HARDY: Thank you.

23 HEARING OFFICER HARWOOD: All right.

24 Now, there's a motion -- an unopposed Motion for
25 Leave to File Amended Testimony of Frank J., AKA

Page 25

Examination by COMMISSION AMPOMAH

26

1 "Deacon", Marek.

2 My understanding, Mr. Rankin, is it's
3 unopposed?

4 COMMISSIONER LAMKIN: Yeah,
5 Mr. Hearing Officer, I -- Goodnight does not oppose
6 the submission of the revised testimony. It's
7 mostly in the nature of correcting, updating some
8 details, and referring now to updated testimony from
9 Empire.

10 So we don't have a problem with the
11 revisions, and I'll be able to cross Mr. Marek on
12 his revisions that he's proposed.

13 HEARING OFFICER HARWOOD: Okay. The
14 motion says, "Several clarifying technical
15 corrections to his previous submitted testimony."

16 So, all right, if the motion's unopposed,
17 it will be granted, and the Commission will accept
18 the corrected self-affirmed statement of Frank J.
19 Marek for filing.

20 Any further preliminary matters?

21 COMMISSIONER LAMKIN: Just to
22 coattail on Ms. Hardy's email that she sent out last
23 week, we have an update on our end in terms of our
24 witness availability. We have -- one of our main
25 witnesses -- one of first two witnesses, his wife --

Page 26

Examination by COMMISSION AMPOMAH

27

1 he's now a father, so he is going to be unavailable
2 this week. If we get to -- which I anticipate we
3 would get to him in our order, so we've had to
4 re-sequence our witnesses a little bit because of
5 that.

6 And I'm happy to send it in an email, but
7 I'm also happy just to state I gave Ms. Hardy what
8 our witness -- what I believe our witness order
9 would be, at first our first four witnesses. I
10 believe it would be Mr. Nate Alleman, Mr. John
11 McBeath, Dr. Jim Davidson, and then Mr. Bill
12 Knights.

13 And then from there, hopefully Mr. McGuire
14 be able to step in when we resume the following
15 week.

16 So that -- that's our -- what I anticipate
17 our witness order to be at this point.

18 HEARING OFFICER HARWOOD: All right.
19 Okay. Thanks. Of course, the most important things
20 have already been taken care of. You let Ms. Hardy
21 and Empire know, so . . .

22 All right. Anything further before we
23 proceed to your next witness? Ms. Hardy?
24 Mr. Padilla? Ms. Sheehan?

25 MR. PADILLA: Mr. Harwood, Mr. Marek

Page 27

Direct Examination by Mr. Padilla

28

1 should be online. He's going to testify remotely.

2 HEARING OFFICER HARWOOD: Oh, okay.
3 Great.

4 All right. There you are, Mr. Marek. All
5 right. You're unmuted. Are you ready to proceed,
6 Mr. Marek? Or is it doctor?

7 FRANK MAREK: It's not doctor. It is
8 mister. Thank you, though.

9 HEARING OFFICER HARWOOD: If you'll
10 please raise your right hand, sir.

11 FRANK MAREK
12 having been first duly sworn, testified as follows:

13 CHAIRMAN RAZATOS: All right.
14 Mr. Padilla.

15 DIRECT EXAMINATION
16 BY MR. PADILLA:

17 Q. Mr. Marek, for the record, please state
18 your name.

19 A. My name is Frank J. Marek.

20 Q. Mr. Marek, what is your profession?

21 A. I am a consulting petroleum reservoir
22 engineer.

23 Q. Can you give the Commission a background
24 of your education --

25 A. Yes, sir.

Page 28

Direct Examination by Mr. Padilla

29

1 Q. -- as an engineer?

2 A. Yes. I received a BS degree in petroleum
3 engineering from Texas A&M University in May of
4 1977. And I have been a registered professional
5 engineer since 1983.

6 Q. Tell the Commission what your work
7 experience has been in terms of a petroleum
8 engineer.

9 A. I started my career in Beeville, Texas,
10 for a company called Hughes and Hughes Oil and Gas
11 where I was a petroleum engineer. And then I moved
12 up to Dallas in 1981 and worked briefly for a
13 company called Butte Resources Company as a Rocky
14 Mountain district engineer.

15 And then in 1982, I joined Cornell Oil
16 Company in Dallas as a reservoir engineering
17 manager, and I was there from 1982 to 1984. And the
18 gentleman who hired me at Cornell was named William
19 M. Cobb, and he left shortly after I joined Cornell
20 to form William M. Cobb & Associates, petroleum
21 engineering consulting firm. And I joined him as
22 the first employee in December of 1984.

23 And I was with Cobb & Associates for my
24 entire career until I -- our firm, Cobb &
25 Associates, merged with another consulting firm,

Page 29

Direct Examination by Mr. Padilla

30

1 Haas Petroleum Consulting to form Haas & Cobb
2 Petroleum Consultants, and I've been with that firm
3 as a senior technical adviser since 2024.

4 Q. Mr. Marek, do you belong to any industry
5 organizations?

6 A. Yes, sir. I have been a member of the
7 Society of Petroleum Engineers, commonly called the
8 SPE, for over 50 years. And I have been a -- also
9 been a member of the Society of Petroleum Evaluation
10 Engineers -- that's referred to as the SPEE -- since
11 1985. I had leadership positions -- many leadership
12 positions in both of those organizations.

13 Q. Mr. Marek, what does a petroleum
14 evaluation engineer do?

15 A. Yes. The SPEE is almost a subset of the
16 SPE. And the Society of Petroleum Evaluation
17 Engineers deals wholly with the area of our industry
18 that's involved in evaluating oil and gas
19 properties.

20 Q. Mr. Marek, have you had any experience
21 with the Eunice Monument South Unit?

22 A. I have. Back in August of 1987 at Cobb &
23 Associates, we prepared a report for a client
24 looking at investing in Eunice Monument Unit, and
25 that original report in August of '87, we studied

Page 30

Direct Examination by Mr. Padilla

31

1 waterflooding the EMSU on 80-acre well spacing. And
2 then in April of '88, we did a follow-up study for
3 that same client, looking at down-spacing to 40-acre
4 spacing and waterflooding the EMSU with 80-acre
5 five-spot patterns.

6 Q. Mr. Marek, what other experience do you
7 have with Grayburg's and Andres oil developments?

8 A. Well, I have been involved in many of the
9 major producing fields in the Permian Basin,
10 including the Wasson, Levelland, Slaughter, Means,
11 Seminole, the North and South Cowden, Goldsmith,
12 Dune, Waddell, Big Lake, Garza, and many others over
13 the -- over my career.

14 And specifically, Wasson, Means, Seminole,
15 and Slaughter, I've been involved with CO2 studies
16 and evaluations, meaning CO2 tertiary oil recovery
17 for those fields, among some others.

18 Q. And those fields where you have had CO2
19 pressure recovery, do any -- did any of those
20 assignments deal with ROZ residual zones?

21 A. Yes. And all of those fields that I
22 mentioned are San Andres producing fields.

23 Q. Can you tell the Commission why you were
24 retained in this case -- in these cases, I should
25 say?

Page 31

Direct Examination by Mr. Padilla

32

1 A. Yes, sir. I was retained to form and give
2 an opinion on the effect of commercial water
3 injection operations into the unitized Grayburg,
4 San Andres interval at EMSU.

5 MR. PADILLA: Mr. Chairman, we tender
6 Mr. Marek as an expert in petroleum engineering.

7 HEARING OFFICER HARWOOD: Any
8 objection from Goodnight?

9 COMMISSIONER LAMKIN: No objection.

10 HEARING OFFICER HARWOOD: Any
11 objection from OCD?

12 MR. MOANDER: No objection.

13 MR. PADILLA: Rice?

14 MR. BECK: No objection.

15 HEARING OFFICER HARWOOD: Pilot?

16 MR. SUAZO: No objections.

17 HEARING OFFICER HARWOOD: All right.
18 Mr. Marek will be so recognized.

19 Q (By Mr. Padilla) Mr. Marek, did you prepare
20 a self-affirmed statement labeled Exhibit A for
21 introduction in these consolidated cases?

22 A. Yes.

23 Q. And did you have any changes on your
24 original self-affirmed statement?

25 A. Yes, sir.

Direct Examination by Mr. Padilla

33

1 Q. What were those changes?

2 A. The changes deal with page 2 of my
3 self-affirmed statement. The first change would be
4 up in the text in the second full paragraph where I
5 refer to the -- a reprocessed NuTech log evaluation
6 that has a deepest oil saturation of minus 1,851.5
7 subsea depth.

8 And the other changes pertain to the
9 depths shown toward the middle of the page. There's
10 a table of four -- or three depth entries that I
11 have revised slightly, based upon revised
12 perforation data furnished by Empire.

13 The first change is the minus 748 subsea
14 depth. That was revised from a previous value of
15 minus 728. The second entry, minus 761, is
16 unchanged from the original statement. The third
17 entry, minus 1,928, subsea depth is the deepest
18 injection perv in the Ryno saltwater disposal well.
19 And that was revised from minus 2,013 in my previous
20 statement, again based on data provided by Empire.
21 And the last entry, the minus 1,851.5, as I
22 mentioned earlier, that is the depth -- the deepest
23 oil that was seen on the reprocessed NuTech log.

24 Q. Mr. Marek, did you also have a
25 typographical error on -- I believe it was the

Page 33

Direct Examination by Mr. Padilla

34

1 second bullet?

2 A. Oh, the . . .

3 Q. You had well number 669, and that should
4 have been well number 679, correct?

5 A. Yes, sir. I did as corrected on the
6 revised statement, as you just pointed out. But in
7 the previous one, there was a typo.

8 Q. Did any of the changes that you made have
9 any effect on your conclusions?

10 A. No.

11 MR. PADILLA: Mr. Examiner, we tender
12 Exhibit H, as corrected, for admission.

13 HEARING OFFICER HARWOOD: You said
14 Exhibit A?

15 MR. PADILLA: H.

16 HEARING OFFICER HARWOOD: H. Any
17 objection, Mr. Rankin?

18 COMMISSIONER LAMKIN: Mr. Hearing
19 Officer, no objection to the admission of Empire's
20 revised Exhibit H.

21 HEARING OFFICER HARWOOD: It will be
22 admitted.

23 (Exhibit H admitted into evidence.)

24 Q (By Mr. Padilla) Mr. Marek, let's go to a
25 PowerPoint presentation that you have to summarize

Page 34

Direct Examination by Mr. Padilla

35

1 your testimony as expressed in the self-affirmed
2 statement as corrected.

3 A. Yes, sir. Is this --

4 Q. Let me address, you have -- the first
5 relevant slide is slide number 2. What you have --
6 you have it labeled as Introduction. Tell us about
7 that.

8 A. Yes, I was asked to express my opinion
9 regarding saltwater disposal operations within the
10 San Andres interval. That would be the commercial
11 saltwater disposal operations at EMSU.

12 And the second bullet item, I'm just
13 reiterating here the defined unitized interval at
14 EMSU. It's defined as the lower limit of the
15 San Andres up to the top of the Grayburg formation.
16 So it covers the entire Grayburg, San Andres
17 interval.

18 And then my last bullet item there is: In
19 my 48 years of experience, I have never seen an
20 instance where an outside party was allowed to
21 inject water into a unitized interval.

22 Q. Let's go on to the next bullet point. Oh,
23 slide, I'm sorry.

24 A. That's okay.

25 Q. What is this?

Page 35

Direct Examination by Mr. Padilla

36

1 A. Exhibit E-1 is -- this map shows a line of
2 cross section toward the -- toward the bottom
3 central part of the map going from A to A-prime.
4 And it connects wells that are going to be shown in
5 following cross sections.

6 Q. Let's move on to the next slide.

7 A. This is a cross section, a structural
8 cross section that shows the wells from the previous
9 map. And these are well logs displayed in a
10 structural fashion.

11 And you can see the Ryno saltwater
12 disposal well is the well on the left. And the --
13 in my view, it's a -- it's an orange line, connects
14 the top of the Grayburg zone. And then there's a
15 green line that connects the top of the San Andrews
16 zone in each of these well logs.

17 And there's also a line depicting the base
18 of the San Andres, which we can see from the Ryno
19 well log. And the other wells, or at least the 658
20 and 660, those logs did not go deep enough to see
21 the base of the San Andres.

22 Q. Mr. Marek, you didn't pick the tops of the
23 Grayburg or San Andres, right?

24 A. That is correct.

25 Q. Let's go on to the next slide, please.

Page 36

Direct Examination by Mr. Padilla

37

1 What are you showing --

2 A. All right. You have a --

3 Q. -- here, Mr. Marek?

4 A. This is a similar display to what we saw
5 on the previous slide, except these well logs now
6 are hung on the top of the Grayburg formation. So
7 there is no structure involved here, if this is what
8 we call a stratigraphic cross section.

9 And there is a note at the bottom of this
10 slide, and that same note was in the previous slide
11 that says, "The log sections are based on NuTech's
12 original analysis."

13 So the Ryno well log is the original
14 NuTech log, not the reprocessed log.

15 Q. Mr. Marek, what conclusions did you reach?
16 If we can go on to the final slide, please.

17 A. Okay. Well, oil saturations calculated
18 from logs and core data indicated there is an ROZ in
19 the San Andres reservoir.

20 Secondly --

21 Q. Go --

22 A. Yes, sir.

23 Q. Let me ask you: What is your definition
24 of ROZ, residual oil zone?

25 A. Residual oil zone, in my years of

Page 37

Direct Examination by Mr. Padilla

38

1 experience, I would define that as a zone containing
2 oil saturation that is below what would
3 traditionally be the waterflood target in these big
4 reservoirs. And for many, many years, those zones
5 were ignored. In fact, that was not the -- what you
6 would say easy oil to get.

7 And as time went on, these -- and CO2
8 enhanced recovery came in to play, it was recognized
9 that these ROZ zones had oil in them that could be
10 recovered by CO2 injection and add to the value, of
11 course, of the property.

12 Q. In the San Andres, according to your cross
13 sections, do you see an ROZ in that interval?

14 A. Yes, sir. We see it in the core data, but
15 most notably, maybe it is in the Ryno NuTech log
16 itself. You see oil saturation well into the
17 San Andres reservoir.

18 Q. What is the second bullet shown on this
19 Conclusions?

20 A. Well, based on the perforations in the
21 Ryno saltwater disposal well, that well is disposing
22 of water into the ROZ that we see in Well 679 core
23 and in the Ryno well log itself.

24 Q. What is contained -- what conclusion do
25 you reach on the last bullet point on this slide?

Page 38

Direct Examination by Mr. Padilla

39

1 A. Well, the high water disposal rates that
2 are occurring at EMSU can cause higher pressure in
3 the ROZ and a higher potential for hydraulic
4 fracturing and vertical communication. All of those
5 would be detrimental to future ROZ operations. And
6 these same factors could also have -- or will have a
7 negative impact on the current field operations in
8 the traditional Grayburg producing zone.

9 In addition, the higher pressures will
10 also reduce the efficiency of any future CO2
11 tertiary oil recovery project, because it would
12 cause more CO2 required to produce the oil than it
13 would at lower pressures.

14 Q. Can you explain to the Commission why you
15 could have a detrimental effect on the Grayburg
16 producing zone through commercial and saltwater
17 injection?

18 A. Well, if commercial injection causes high
19 enough pressures, that can cause vertical fractures
20 and cause the disposed water to be diverted into the
21 producing Grayburg zone, which would be very --
22 could be very detrimental to the future production
23 operations there and would certainly cause the wells
24 to produce at higher water volumes, which is never a
25 good thing.

Page 39

Cross-Examination by Mr. Rankin

40

1 MR. PADILLA: Mr. Examiner, that
2 concludes our summary of the testimony of Mr. Marek.
3 And we pass the witness for cross.

4 HEARING OFFICER HARWOOD: All right.
5 Thank you, Mr. Padilla.

6 Goodnight?

7 COMMISSIONER LAMKIN: Thank you,
8 Mr. Hearing Officer.

9 CROSS-EXAMINATION

10 BY MR. RANKIN:

11 Q. Good morning, Mr. Marek. How are you
12 today?

13 A. Good, thank you.

14 Q. Good. I do have some questions for you,
15 and I want to take some time to walk through them,
16 get myself organized a moment here.

17 I'm going to pull up on my screen -- and
18 let me know when you can see it -- your resume.

19 A. Yes, I can see it.

20 Q. I'm going to start at the top. This was
21 actually from your original Exhibit H that was filed
22 back in August, but I think it's the same
23 information. And I've highlighted a few things here
24 because I just want to remind myself to ask you
25 about them, but I'm going to scroll back down to the

Page 40

1 bottom.

2 You include some of your technical
3 presentations and some of the work you've done.
4 Have you ever done any research or presented any
5 papers on residual oil zones?

6 A. No.

7 Q. Other than your work for Empire in this
8 case, have you ever been involved in evaluating a
9 potential residual oil zone?

10 A. Yes.

11 Q. Which ones?

12 A. Well, when I was at Cornell Oil Company,
13 we had a producing property called the Cornell Unit
14 in the Wasson field, and we did internal studies of
15 the potential for CO2 injection, which included what
16 we at the time called a transition zone at the
17 Cornell Unit.

18 Q. When you were with Cornell, that was --
19 when was that? I don't remember seeing them on your
20 resume. Oh, okay, between '82 and '85?

21 A. Yes, sir.

22 Q. So back -- that was very early in terms
23 of -- I mean, people weren't referring to these
24 zones as residual oil zones at that time, correct?

25 A. No. As I stated previously, we called it

1 a transition zone at the time.

2 Q. Okay. And don't people still distinguish
3 between a transition zone and a residual oil zone?

4 A. I don't know.

5 Q. Okay. But other than that evaluation for
6 Cornell, did you do any work evaluating a potential
7 residual oil zone?

8 A. Over the years, we've had the opportunity
9 to help clients look at acquiring properties. And
10 then on several occasions, I don't remember the
11 specifics, but those properties would have CO2
12 enhanced recovery potential. And we attempted to
13 help them evaluate those.

14 Q. But anything that was specifically
15 referred to identified as a residual oil zone?

16 A. I don't remember.

17 Q. Are you familiar with the term a
18 greenfield residual oil zone?

19 A. I've heard the term, but I'm not familiar
20 with it.

21 Q. Okay.

22 A. Deeply familiar with it.

23 Q. Are you -- are you aware that Empire's
24 experts consider the San Andres and the EMSU to be a
25 greenfield residual oil zone?

Cross-Examination by Mr. Rankin

43

1 A. I don't -- I don't know.

2 Q. What is your understanding of what a
3 greenfield residual oil zone is?

4 A. I don't know.

5 Q. For the work that you've done helping
6 clients identify potential CO2 opportunities, have
7 any of those been on the Central Basin Platform on
8 the Permian Basin?

9 A. Yes.

10 Q. Which ones?

11 A. I've -- we've looked at, I guess -- I
12 think we mentioned them earlier with Mr. Padilla,
13 but there's been many of the fields that we've
14 evaluated over the years that have had CO2 enhanced
15 recovery. That would be, you know, Seminole. I'm
16 pulling back up the list.

17 There's Wasson, Levelland, Slaughter,
18 Means, Seminole, North and South Cowden, Goldsmith,
19 and others.

20 Q. And all those that you just mentioned are
21 on -- they're not on the west side of the Central
22 Basin Platform, right?

23 A. No.

24 Q. They're all on the eastern margin,
25 correct?

Page 43

Cross-Examination by Mr. Rankin

44

1 A. I believe that's correct.

2 Q. Okay. To your recollection, have you ever
3 evaluated a potential ROZ or a CO2 tertiary recovery
4 project in the San Andres on the western side of the
5 Central Basin Platform?

6 A. Not that I recall.

7 Q. Are you aware of any projects that are
8 currently developing San Andres interval on the
9 western side of the Central Basin Platform?

10 A. No.

11 Q. Going back to the beginning of your career
12 in the -- in the '70s with Hughes and Hughes, you
13 got a long history of preparing annual reserve
14 reports, preparing reserve reports for companies and
15 while you've been at Cobb, correct?

16 A. Yes. Some of my career certainly has been
17 involved with annual reserve reports and certainly
18 some of that at Cobb & Associates.

19 Q. In addition to doing reserve reports, you
20 also have an extensive background in doing economic
21 analyses and evaluations of projects in the oil and
22 gas industry, correct?

23 A. Correct.

24 Q. Yeah. And I've highlighted some of those
25 references here. So back with Cornell, you, in

Page 44

Cross-Examination by Mr. Rankin

45

1 fact, helped them develop an economic analysis of
2 their anticipated CO2 project in a West Texas
3 property that looked at CO2 supply, CO2 issues,
4 right?

5 A. Yes.

6 Q. And you also, for them, developed annual
7 internal reserve reports and also supervised the
8 preparation of external third-party company reserve
9 reports, correct?

10 A. Yes.

11 Q. And then into the present, from '85 to the
12 present, your resume states that you specialize, in
13 fact, in CO2 reserve evaluation and economic
14 analysis, right?

15 A. Yes.

16 Q. And that you also specialize in CO2
17 enhanced oil recovery feasibility and performance
18 analysis, right?

19 A. Correct.

20 Q. And simulation studies, correct?

21 A. Yes.

22 Q. Okay. Have you done a specific, like a
23 formal reserve evaluation for a project that was
24 specified as a -- as a residual oil zone project?

25 A. Not that I recall.

Cross-Examination by Mr. Rankin

46

1 Q. Have you ever done an economic analysis
2 for a project that was specified as a residual oil
3 project?

4 A. Not that I recall.

5 Q. Have you ever conducted a CO2 enhanced oil
6 recovery feasibility or performance analysis for a
7 project that was specified to be an ROZ project?

8 A. Not that I recall.

9 Q. In your testimony, you state -- and I'll
10 go to your -- I'll switch over to what was filed on
11 Friday -- on Friday, I believe, which is the
12 amendments to your August 2024 testimony. And --
13 actually, I think I'll stick with the original one
14 that I was working off of here, Exhibit H.

15 You state that your first experience
16 working on the EMSU was in August of 1987, right?

17 A. Correct.

18 Q. And that was working on a Cobb report for
19 a client evaluating the waterflood potential in the
20 EMSU, right?

21 A. Yes.

22 Q. So that report was focused on evaluating
23 the -- what was the main pay zone in the Grayburg
24 and partially in the Penrose, right?

25 A. Primarily the Grayburg.

Page 46

Cross-Examination by Mr. Rankin

47

1 Q. Okay. And I'm going to go ahead and pull
2 that up.

3 This -- I'm going to -- I don't know if
4 you can see it. It states here at the top, "Cobb &
5 Associates 1987." Is this the report that you're
6 referring to?

7 A. I believe it is.

8 Q. Okay. And I'll just note for the record
9 that it was -- this version of this report was
10 produced to Goodnight by Empire, and it's got the
11 Bates labels at the bottom. It's a 47-page
12 document.

13 COMMISSIONER LAMKIN: Mr. Hearing
14 Officer, at this time I would move the admission of
15 this Exhibit S, Goodnight Cross Exhibit Number -- I
16 believe it's Number 10 in sequence, for purposes of
17 the record.

18 HEARING OFFICER HARWOOD: Any
19 objection, Mr. Padilla?

20 MR. PADILLA: No objection.

21 HEARING OFFICER HARWOOD: Mr.
22 Moander?

23 MR. MOANDER: No objection from OCD,
24 Mr. Hearing Officer.

25 HEARING OFFICER HARWOOD: Thank you.

Page 47

Cross-Examination by Mr. Rankin

48

1 Mr. Beck?

2 MR. BECK: No objection.

3 HEARING OFFICER HARWOOD: Mr. Suazo?

4 MR. SUAZO: No objection from Pilot.

5 HEARING OFFICER HARWOOD: All right.

6 It will be admitted.

7 (Exhibit S admitted into evidence.)

8 Q (By Commissioner Lamkin) Mr. Marek, I just
9 wanted to ask you a couple of questions about this
10 report. Since you are familiar with it and you were
11 part of the team that helped prepare it, correct?

12 A. Yes.

13 Q. Okay. I'm going to skip down to a page
14 here that I've got some highlighting on. And this
15 is one of the questions I want to ask you about.

16 Back when you were doing this evaluation,
17 you looked at a number of things, one of which was
18 what pressure information was available for the EMSU
19 at the time. And I've highlighted here an entry
20 where you identified -- or the Cobb report
21 identifies that records that you were able to obtain
22 from the New Mexico -- from New Mexico show that the
23 initial pressure for the EMSU was at 1450-psi at
24 minus 250 feet subsea, right?

25 A. I believe that's what it says. Could I

Page 48

1 ask you to --

2 Q. Zoom in?

3 A. -- zoom in just a bit? My old eyes are
4 having trouble with that.

5 Q. That's fair. I had to get myself a new
6 prescription since the last time I was before the
7 Commission so I can see better, but I -- I'm with
8 you on that. So I'll make it bigger.

9 Can you see that a little better?

10 A. Much better. Thank you.

11 Q. Okay. Now, the question was, I guess,
12 that -- the pressure that was identified in the EMSU
13 was at 1450-psi at minus 250 subsea depth, correct?

14 A. Yes, sir.

15 Q. Is there any reason to believe that minus
16 250 subsea depth is incorrect and that it was
17 actually measured at plus 250 feet subsea?

18 A. I don't have an opinion on that.

19 Q. But based on Cobb's analysis and reporting
20 and evaluation as reflected in this report, Cobb
21 identified that pressure to be measured at a depth
22 minus 250 subsea, agree?

23 A. Well, I agree that's what I read there. I
24 certainly don't remember that from that many years
25 ago.

1 Q. That's reasonable. It's been a long time,
2 I understand.

3 Do you recall, Mr. Marek, being able to
4 locate much in the way of pressure data on the EMSU,
5 whether it was you who prepared this report?

6 A. I don't recall.

7 Q. I'm going to go to the next page here
8 where some of -- some of that is actually discussed.

9 This next section of this report says an
10 OOIP -- just so you and I are on the same page, is a
11 short -- or acronym for original oil in place; is
12 that correct?

13 A. Yes, sir.

14 Q. Okay. So at the next section here where
15 it is titled "Original Oil in Place Based on Data
16 Obtained Since 1983," I've highlighted a sentence
17 that says, "Due to the lack of pressure data, no
18 material balance projection could be prepared for
19 EMSU." Did I read that correctly?

20 A. Yes.

21 Q. Now, does that refresh your recollection
22 on whether Cobb was able to identify much in the way
23 of pressure data on the EMSU?

24 A. Well, it just reminds me that there wasn't
25 much, if any, data available.

1 Q. And Cobb would have done a pretty thorough
2 job trying to locate pressure data in order to do
3 its job, wouldn't it?

4 A. Well, at the time, our client did not own
5 the property, so we -- and, again, this is from a
6 memory, but the data that we acquired was primarily
7 from public sources. The operator -- or the party
8 we were working for did not own and operate the
9 unit. So I -- that could have contributed to us
10 having difficulty getting pressure data.

11 Q. Was your client a working interest owner
12 in the unit?

13 A. You know, I don't remember if they were at
14 the time or if they were looking to acquire a
15 working interest.

16 Q. You would agree with me that having
17 sufficient, accurate pressure data would be critical
18 to preparing a model on production in the EMSU?

19 A. Yes.

20 Q. Skipping down a couple of pages here,
21 there's an entry here where I believe the section is
22 talking about the geology, a description of the
23 reservoir and the geology. Okay? I've highlighted
24 an entry that I wanted to just bring to your
25 attention and ask you to comment on.

1 Here, the sentence I've highlighted says,
2 "An accurate prediction of injection" -- this is on
3 page 9 of this document. "An accurate prediction of
4 injection and production performance for any
5 waterflood operation requires an accurate
6 description of the reservoir, including both rock,
7 property, and fluid property data." Did I read that
8 correctly?

9 A. Yes, sir.

10 Q. And you would agree that, to be reliable,
11 a prediction of EMSU injection and production, the
12 geologic parameters would need to be accurate?

13 A. Well, the better the data, the better
14 answer.

15 Q. Right. Okay. If you're using -- if
16 you're modeling the EMSU, you would want your model
17 to, as closely as possible, reflect the actual data,
18 the geologic data that's available; would you agree?

19 A. Yes.

20 Q. At page 17 here, I'm going to scroll down,
21 where there's some more discussion about the geology
22 here.

23 This section here that says, "Reservoir
24 Stratification," Cobb identified -- or characterized
25 the Grayburg here as follows, quote, "The

1 examination" -- this is page 13 of the -- of this
2 report, quote, "Examination of logs and core data
3 indicate that the EMSU will behave as a heterogenous
4 stratified system." Did I read that correctly?

5 A. Yes, sir.

6 Q. So because it's heterogenous and
7 stratified, because it's important to have accurate
8 geological inputs, Cobb created its model using 20
9 different layers to evaluate the Grayburg waterflood
10 requirements, correct?

11 A. Yes.

12 Q. And that's the next thing I've got
13 highlighted here. At the bottom of page 13, I've
14 excluded the first part of that sentence, but
15 basically it says, quote, "Utilizing a V factor of
16 0.75, a 20-layer 80-acre pattern, five-spot model
17 has been developed to predict EMSU waterflood
18 performance." Did I read that correctly?

19 A. Yes.

20 Q. And I'm not going to go into the details
21 here, but in this report, Cobb identifies, based on
22 the data available, 20 layers with different
23 permeabilities and porosity values for each of those
24 20 layers; is that correct?

25 A. Yes.

Cross-Examination by Mr. Rankin

54

1 Q. Okay. And then based on that data and
2 information, Cobb prepared an economic evaluation of
3 the potential waterflood performance in the
4 Grayburg, right?

5 A. That data . . .

6 Q. That -- I apologize, I didn't mean to cut
7 you off. As part of this report -- as part of this
8 1987 report, Cobb prepared an economic analysis,
9 correct?

10 A. Yes.

11 Q. Okay. Now, I'll scroll down to that where
12 some of that is discussed. And when you prepared
13 this economic analysis, even back at the time in
14 1987, Cobb evaluated different pricing scenarios,
15 correct?

16 A. Based on what this report says, yes. I
17 certainly don't remember that --

18 Q. Okay.

19 A. -- specifically.

20 Q. So at the bottom of page 18, here, we get
21 into the economic evaluation of the waterflood and
22 the Grayburg. And I've highlighted here that -- the
23 part that I was interested in. And in sum, this
24 report reflects that Cobb had done a couple of
25 different pricing scenarios. Do you agree?

Page 54

1 A. Yes.

2 Q. And one of those pricing scenarios was a
3 flat price case where, as I've highlighted here, it
4 says that, "The cash flow projections are presented
5 for the EMSU waterflood utilizing both flat prices
6 and escalated prices." Did I read that right?

7 A. Yes.

8 Q. And then for the -- it goes on to say,
9 "For the flat price case, oil and gas prices and
10 operating costs are held constant over the projected
11 30-year life." Did I read that correct?

12 A. Yes.

13 Q. Is that -- is it -- is it relatively
14 standard when evaluating -- when conducting economic
15 evaluations to include a flat price scenario?

16 A. It's very common.

17 Q. Okay. And is that because when you're
18 conducting economic evaluations, you want to have --
19 understanding a potential pricing to evaluate the
20 economics?

21 A. The flat price case stems many times from
22 the -- SEC would require flat price projections for
23 public companies. So that's one reason it was very
24 common to do flat price projections.

25 Q. And is that because it's a fairly

1 conservative approach?

2 A. It could be conservative or the opposite,
3 actually.

4 Q. Sure. Depending on the economic
5 environment at the time of the evaluation, right?

6 A. Yes.

7 Q. In other words, you know, future might
8 look very uncertain and actually not very positive
9 for oil and gas production, in which case a flat
10 price would be very conservative, right?

11 A. Well, if one expected prices to increase
12 over time, the flat price case would be
13 conservative. If there was risk in the market and
14 one expected prices might fall, then the flat price
15 case could be optimistic.

16 Q. Now, when you run -- you have extensive
17 background running economic models and evaluations
18 of oil and gas projects, right? When you run your
19 economic evaluations, do you -- do you generally
20 recommend to your clients that you run them at
21 different pricing scenarios?

22 A. We would typically run what the clients
23 preferred. They would specify what they wanted to
24 see.

25 Q. Okay. Do you-all make a recommendation in

Cross-Examination by Mr. Rankin

57

1 terms of running at least more than one pricing
2 scenario?

3 A. Generally, no.

4 Q. Okay. Now, the -- you also did a
5 follow-up study in 1988 for the same client on the
6 EMSU, correct?

7 A. Yes.

8 Q. And that one was evaluating infield
9 drilling downspacing to 40 acres right with a
10 80-acre five-spot pattern for waterflood, right?

11 A. Correct.

12 Q. Since that 1988 report, have you done any
13 additional -- have you had any further additional
14 experience with the EMSU since 1988?

15 A. Not that I recall, until Empire contacted
16 us.

17 Q. Okay. How about anything on the west side
18 of the Central Basin Platform?

19 A. Oh, gosh, I'd have to -- I'd have to look
20 through my projects list. I just don't know.

21 Q. As we're sitting here today, based off
22 your -- what you can recall, can you think of any
23 projects that you worked on on the west side of the
24 Central Basin Platform?

25 A. Not specifically.

Page 57

1 Q. Okay. I'm going to pull up another
2 exhibit here that was produced to us in our
3 discovery, Mr. Marek, with Empire. And it's got the
4 Bates labels on the bottom as well, and I'm going to
5 represent to you that this was produced to us as
6 part of the discovery. It's a chain of emails
7 between yourself and some members from Empire, going
8 back into -- I'll scroll down. It's 17 pages. It's
9 the complete document that we received, and it goes
10 back to an email in -- I'll zoom in a little bit so
11 you can see it better -- September of 2022. Do you
12 see that highlighting I've got there?

13 A. I do.

14 Q. Do you recall being contacted by Empire on
15 that date -- or actually sending an email to Empire
16 folks on that date?

17 A. I don't remember it specifically, but
18 maybe if we look deeper, we'll see if it jogs my
19 memory.

20 Q. Okay.

21 A. I see what you have on the screen, though,
22 no doubt.

23 Q. Okay. So here it's an email from you to
24 different folks at Empire dated December 4, 2022.
25 It says here that you attached PDF copies of prior

1 reports presumably that Cobb had done, as stated in
2 the subject line, for the EMSU. And then you
3 reflect to them that you did get permission from the
4 prior client to provide this to them.

5 Do you -- do you recall providing those
6 Cobb reports to Empire at that time?

7 A. Well, I do now, yes, that I see this.

8 Q. Do you recall what the -- how did that
9 come about? Did they reach out to you to ask for
10 them?

11 A. I'm trying to remember the time sequence
12 of things. It seems I was contacted by Empire. You
13 see Mr. Pritchard's name there, that they -- I don't
14 remember if they had acquired it at the time or if
15 they were looking to acquire the EMSU at the time.

16 Q. Okay. And the prior Cobb reports that you
17 referred to that you attached, would those have been
18 the 1987 and 1988 reports that we just referred to?

19 A. They would have to have been. There's no
20 other reports.

21 Q. Okay. That was my next question, so thank
22 you.

23 Okay. So you don't recall what generated
24 this email other than likely, that they reached out
25 to you and asked if they could have them, and you

1 provided it to them, correct?

2 A. Yes.

3 Q. Okay. But there was no other -- no other
4 discussion or engagement beyond you providing them
5 those reports, correct?

6 A. Not that I recall.

7 Q. So I'll scroll up here to the next page,
8 and we fast forward almost a year.

9 And you see here, I've got another email
10 from Mr. Mike Morrisett, again, from Empire dated
11 Tuesday, August 8, 2023. It's sent to you and two
12 other folks at Cobb as well. Do you see -- can you
13 see that on your screen?

14 A. I do.

15 Q. Do you recall this email from
16 Mr. Morrisett?

17 A. Can you zoom in a bit and let me read it?

18 Q. Sure.

19 A. I don't remember. I mean, I see what's
20 written here. I'm thinking this has to maybe be
21 when Empire was looking to acquire the EMSU, just by
22 the nature of the text here. But I don't remember
23 with great detail.

24 Q. That's understandable. Lots happened
25 since this time.

Cross-Examination by Mr. Rankin

61

1 So I've highlighted here in particular,
2 again, the language I wanted to point out.
3 Mr. Morrisett emailed you and your colleagues --
4 these were your colleagues, right? Mr. Don Bailey
5 and Mr. Robert Williams, correct?

6 A. Yes.

7 Q. Okay. And Mr. Morrisett emailed you and
8 he says that he's got a special project that he
9 would like to discuss with you. "We're going to
10 need reservoir, production, geology, expert
11 testimony," et cetera, et cetera, on something,
12 right? But you don't -- as you sit here today, you
13 don't recall that email, off the top of your head?

14 A. No.

15 Q. Okay. So you don't recall, as you sit
16 here, what they were inquiring about at that time?

17 A. I do not.

18 Q. Okay. I'll scroll further up here, just
19 through here. There's some discussions back and
20 forth about times to meet or discuss their requests.
21 Okay? Mr. Bailey, your colleague, responds that
22 Cobb does believe that they can help Empire both
23 with the near-term -- this must have been based
24 after the call, okay -- with both the near-term
25 EMSU, SWD issues, and the follow-up EMSU waterflood

Page 61

Cross-Examination by Mr. Rankin

62

1 optimization study. Just -- your understanding of
2 SWD would be saltwater disposal, right?

3 A. Yes.

4 Q. Okay. And then the next point here,
5 asking whether they -- whether Empire was able to
6 collect data to share with us on near-term EMSU
7 saltwater disposal issues and do they have a list of
8 deliverables for Cobb on the SWD issues. Do you see
9 that?

10 A. I see it.

11 Q. Do you recall this email of Cobb asking
12 for these details from Empire?

13 A. I do not recall it specifically.

14 Q. Okay. Do you recall around this time
15 having discussions with Empire about potentially
16 doing some work for them on the EMSU?

17 A. I don't recall specific conversations, no.

18 Q. Okay. Do you recall generally having
19 discussions with your colleagues at Empire about
20 potentially doing some work for them at this time?

21 A. No, I just -- I don't recall any.

22 Q. That's fair. But you have no reason --
23 obviously these were emails that were from and to
24 Cobb and your colleagues, including yourself and
25 Empire, correct?

Page 62

1 A. Oh, yes, correct.

2 Q. Now, in fact, you did respond on
3 August 24, 2023, about your availability to discuss
4 these issues with Empire and your colleagues, saying
5 that you were available. But you don't recall the
6 results of those discussions or your availability on
7 that day, do you?

8 A. Well, if you scroll up slightly. Who did
9 that email go to? Oh, it's there. This is
10 internal -- no, Mike Morrisett, I see.

11 No, I mean, other than acknowledging I see
12 what's there, I don't have a specific recollection
13 of it.

14 Q. Okay. Now, a few days after this, okay,
15 on August 31st, Ms. Lucy King with Empire emails the
16 same group, okay, and directs -- directly to
17 Mr. Bailey, your colleague. And she states -- and
18 I've highlighted the language here -- that, "We are
19 evaluating our strategy for opposing the saltwater
20 disposal in and offset the Eunice Monument South
21 Units and Arrowhead Grayburg unit."

22 She goes on to say that there is a hearing
23 set for September 2023. They've asked for a
24 continuance to December. And then she says, "While
25 your input would be invaluable, we are uncertain of

Cross-Examination by Mr. Rankin

64

1 what to request from you. We know that year-end
2 reserve season is here. We will contact you when we
3 have a better view of what Cobb & Associates can
4 contribute."

5 So at this point, Mr. Marek, do you -- at
6 this point, you still don't have a recollection of
7 any specific or general discussions with Empire, but
8 what they're seeking or asking from Cobb at this
9 point?

10 A. No. I mean, obviously, this was brewing
11 back then, I guess the saltwater disposal issue.
12 But specifically, I don't, you know, recall more
13 than that.

14 Q. So then following this Thursday,
15 August 31st email, Mr. Darrell Davis with Empire
16 sends an email to the group and to you specifically
17 stating that, "We would like for Cobb & Associates
18 to conduct a study to determine a range of oil in
19 place volumes for the San Andres residual oil zone,
20 which lies beneath Empire Petroleum operated Eunice
21 Monument oilfield. We have core and log data which
22 can be used in this evaluation along with geologic
23 maps of the Grayburg formation." Did I read that
24 correctly?

25 A. Yes.

Page 64

Cross-Examination by Mr. Rankin

65

1 Q. Do you recall having this email -- again,
2 receiving this email from Mr. Davis?

3 A. I don't recall it specifically, but I have
4 no doubt it occurred.

5 Q. Do you recall having discussions with
6 Empire about their request for you or Cobb to
7 prepare an oil -- an oil in place volume analysis
8 for the EMSU in the San Andres?

9 A. I do not recall having that discussion,
10 but if -- that study obviously has not occurred.

11 Q. Okay. But you don't recall in that
12 discussion and you don't recall them asking that
13 work to be done, do you?

14 A. The "work" being?

15 Q. An oil in place --

16 A. Ask me specifically, please.

17 Q. Yeah. As you sit here, you don't recall
18 being asked to do an oil in place volume analysis
19 for the San Andres residual oil zone in the EMSU?

20 A. We were not asked to do that, that's
21 correct.

22 Q. Well, actually, I guess I'm saying it
23 looks like -- I'm saying you were asked, because
24 this email from Mr. Davis asks you to do it, right?
25 He says, "We would like for Cobb & Associates to

Page 65

Cross-Examination by Mr. Rankin

66

1 conduct a study to determine a range of oil in place
2 volumes for the San Andres residual oil zone."

3 A. Okay. Well, I see that, but it never
4 occurred. And I don't remember why it did not, but
5 that study never occurred.

6 Q. Okay. Okay. But you agree with me that
7 Empire did ask for that study from Cobb &
8 Associates.

9 A. That's what I see there.

10 Q. Okay. And then Mr. Davis goes on to say
11 that this study and exhibits, including an affidavit
12 for the hearing and writeup and figures and so
13 forth, would need to be completed by late
14 October 2023, so that it can be ready for this
15 November hearing. Okay?

16 Again, but you don't recall those
17 timeframes, as you sit here today?

18 A. No.

19 Q. Okay. Now, following, you did respond to
20 Mr. Davis and you said -- and this is on Wednesday,
21 September 13th. Okay? You said to Mr. Davis,
22 asking for a meeting to discuss it. You were a bit
23 confused because you had understood the EMSU -- you
24 were asking whether the project that they're asking
25 for you to do was to quantify the ROZ, right?

Page 66

Cross-Examination by Mr. Rankin

67

1 A. Please -- now, I was reading the email,
2 I'm sorry. Would you please restate your question.

3 Q. Sure. Sure. Let me give you a moment to
4 read it, Mr. Marek. So I don't want to force -- you
5 know, force you to speed read.

6 So this is an email from you to Mr. Davis
7 and the same group, maybe some additional folks,
8 looks like, on September 13, 2023. And you write --
9 you respond to Mr. Davis from that request to -- for
10 Cobb to prepare an oil in place analysis. And
11 you're asking for a meeting to discuss the request.
12 You say that you're a bit confused. And you ask
13 whether what they're asking for you to do is to
14 quantify the ROZ. Right?

15 A. Right, yes.

16 Q. And then you ask for them to clarify
17 whether this would be a separate project from
18 evaluating the EMSU injection well issues which came
19 up the previous month, right?

20 A. Yes.

21 Q. And then you're asking about this November
22 hearing and whether it's for both the ROZ issue --
23 or whether it's either for the ROZ issue or for the
24 saltwater disposal well issues, right?

25 A. Yes.

Page 67

Cross-Examination by Mr. Rankin

68

1 Q. And then you're asking for a Teams call to
2 clarify what they want, right?

3 A. Yes.

4 Q. So then in response, Mr. Davis sends an
5 email to you and the same group on the same day.
6 And he explains that the SWD wells are injecting
7 into the San Andres, which is what Empire contends
8 is the ROZ. So they need an estimate for the OOIP,
9 which is the original oil in place, for the ROZ to
10 show that we want to protect the EOR reserve
11 potential. Did I read that correctly?

12 A. Yes.

13 Q. So then after explaining that and the
14 connection between the two, you guys proposed a
15 meeting by email. And the next series of emails is
16 about trying to get that set up. Okay?

17 A. All right.

18 Q. The -- you can see that -- again, you're
19 responding trying to get a meeting set up with them
20 to discuss. Mr. Davis responds a 1:00 time works
21 for that same day -- or for a future day. And then
22 Mr. Davis responds on Saturday, September 23rd,
23 which is about ten days after that last series of
24 emails where you were discussing the clarifications
25 of what Empire is wanting.

Page 68

Cross-Examination by Mr. Rankin

69

1 About ten days later, on September 23rd,
2 Mr. Davis follows up to you and the -- and your
3 colleagues at Cobb and says, "If there's anything
4 else you need from us, let us know, as our
5 geologist, Nick, will be out Tuesday through Friday
6 of next week. As you know, the affidavit has to be
7 notarized, and we need a copy of the presenter's
8 resume attached to it. We appreciate your help."
9 Did I read that correctly?

10 A. Yes.

11 Q. So at some point here, you guys decided
12 what your testimony was going to be, right? What
13 your agreement was, what your task was as of this
14 date on September 23rd in 2023, correct?

15 A. I don't know if that's correct. I'm not
16 sure that we knew exactly at that point in time.

17 Q. Okay. Very good. The rest of these
18 emails here are just some discussions about the data
19 that they provided. And for whatever reason, I --
20 that list of core data -- this is another email from
21 you on September 25th to the Empire team restating
22 the list of core data that they provided to you, but
23 for whatever reason, it didn't -- it didn't show up
24 in the document we received. So I don't know what
25 it was.

Page 69

Cross-Examination by Mr. Rankin

70

1 But basically, you say unless there's any
2 more data, you have what you need. And then on the
3 next response, Empire's geologist, Mr. Cestari
4 indicates that he meant to send you the core for the
5 RR Bell Number 4, so he provided that to you, okay,
6 in this email. And that's dated September 25th.

7 And then so beyond that, Mr. Marek,
8 there's just some discussions about the details or
9 understanding any corrections or there's some issues
10 around the depths in the core for RR Bell 4, but
11 there's no more technical discussions in this email
12 chain. Okay?

13 Do you recall any of those discussions
14 with Mr. Cestari?

15 A. Not specifically.

16 Q. Okay. Do you remember generally having
17 email discussions with him trying to understand or
18 making sure you understood the data that was
19 provided to you?

20 A. To the extent that you're showing me those
21 emails, certainly I -- that -- I remember that
22 occurred, but --

23 Q. Okay.

24 A. -- I don't have many of the specifics in
25 mind.

Page 70

Cross-Examination by Mr. Rankin

71

1 Q. Okay.

2 COMMISSIONER LAMKIN: Mr. Hearing
3 Officer, I would move the admission of this document
4 that has Bates Numbers on it. It's a 17-page email
5 chain that was produced to us in discovery by Empire
6 as Goodnight Cross Exhibit Number 11.

7 MR. PADILLA: I'm going to object
8 because I don't see the point that these exhibits
9 have, other than they show that apparently oil in
10 place studies were never conducted by Cobb. I don't
11 know that it's relevant, essentially.

12 COMMISSIONER LAMKIN: I'm going to
13 get to that in a little bit.

14 HEARING OFFICER HARWOOD: Well,
15 you're proposing the exhibit now, so what's your
16 position on its relevance?

17 COMMISSIONER LAMKIN: Well,
18 Mr. Hearing Officer, Mr. Marek is an expert. Has
19 been almost 50 years doing economic analyses and
20 reserve reports on a wide range of projects,
21 especially in the Central Basin Platform. He was
22 asked to do an original oil in place analysis
23 specific to the San Andres ROZ, and he didn't do it.
24 Instead he prepared a two-page report and -- which
25 he relies entirely, solely on NuTech's analysis for

Page 71

Cross-Examination by Mr. Rankin

72

1 oil saturations.

2 And I want to point out that there was
3 discussions. There was requests for him to do
4 something, and Mr. Marek didn't do it. I think it's
5 important and relevant to the Commission's
6 consideration of the -- of the weight of -- overall
7 weight of Empire's testimony in this case.

8 HEARING OFFICER HARWOOD: Okay.

9 Well, the objection is overruled. It does go to the
10 weight, not the admissibility of the document.

11 So it will be admitted.

12 (Exhibit 11 admitted into evidence.)

13 HEARING OFFICER HARWOOD: I don't
14 necessarily need to hear from anybody else unless
15 there are others that have specific things that
16 they're burning to express about this exhibit. All
17 right.

18 Before we proceed with this, I see it's
19 almost 10:30.

20 COMMISSIONER LAMKIN: Yeah.

21 CHAIRMAN RAZATOS: Why don't we take
22 a midmorning break. This seems like a reasonable
23 place.

24 COMMISSIONER LAMKIN: Great time.

25 HEARING OFFICER HARWOOD: All right.

Page 72

Cross-Examination by Mr. Rankin

73

1 So let's take ten minutes.

2 (Recess was taken from 10:28 a.m. until 10:42 a.m.)

3 HEARING OFFICER HARWOOD: Okay.

4 Mr. Rankin, go ahead.

5 COMMISSIONER LAMKIN: Thank you.

6 Q (By Commissioner Lamkin) Mr. Marek, we just
7 left off discussing this email chain that we marked
8 as Goodnight Cross Exhibit Number 11, and it was an
9 email chain that -- the last email on it was
10 December 1, 2023. But the last email involving you
11 and Empire was September 25, 2023. Okay?

12 And subsequent to this email chain, you
13 prepared --

14 Thank you, yeah.

15 Subsequent to this email chain in
16 September of 2023 that we were just reviewing, you
17 prepared testimony for Empire in these cases
18 initially. And I'm sharing on my screen your
19 original testimony in these cases. I'll scroll
20 through it. But you prepared some testimony in this
21 case that's marked as Exhibit D. That was initially
22 signed and dated October 16, 2023. And it was in
23 the -- these cases before they were referred to the
24 Commission.

25 Do you recall preparing that testimony

Page 73

1 back in October of 2023?

2 Maybe you're on mute, Mr. Marek.

3 A. My apologies. Can you scroll down a bit
4 so I can see?

5 Q. Sure. So this -- you'll see that the
6 caption here identifies the applications of
7 Goodnight Midstream for approval of saltwater
8 disposal wells. And then it lists only four cases,
9 and that's because this testimony was provided and
10 prepared prior to the additional cases that were
11 added when this matter was referred to the
12 Commission.

13 You'll see it identifies your
14 self-affirmed statement. I've highlighted a couple
15 things I wanted to discuss with you. I'll get to
16 that in a moment. But you'll see your signature
17 here with your engineer stamp and then a date of
18 October 16, 2023. And it's marked as Exhibit D-1.

19 Do you recall preparing this version of
20 your testimony back in October of 2023?

21 A. Generally, yes.

22 Q. Okay. Now, in this version of your
23 testimony, you -- in paragraph 3 highlighted here,
24 you state that you were asked to evaluate the impact
25 of saltwater disposal operations within the

1 San Andres interval at the EMSU in Lea County, New
2 Mexico, correct?

3 A. Yes.

4 Q. Okay. Now, in this original testimony,
5 you say that you were asked to evaluate the impact
6 of saltwater disposal, but it's barely -- it's
7 barely two pages of written text, correct?

8 A. Correct.

9 Q. And as part of that analysis, the first
10 thing you identified is -- is you identified the
11 definition of the unitized interval in the EMSU, and
12 you pull the language from the unit agreement or the
13 unit order, which identifies that the unitized
14 interval is from the Grayburg essentially down into
15 and includes the San Andres, correct?

16 A. Yes.

17 Q. Okay. Then you looked at these well logs
18 that were interpreted by NuTech, including the
19 Goodnight Ryno SWD Number 1, and then you looked at
20 the EMSU 679 and 660 and then the RR Bell Number 4,
21 correct?

22 A. Yes.

23 Q. And then based on those wells and the logs
24 that you were given by Empire, you prepared two
25 cross sections that you reviewed, essentially, in

Cross-Examination by Mr. Rankin

76

1 your -- in your summary slides today, correct?

2 A. Yes. I did not prepare those cross
3 sections, but they are certainly part of my
4 testimony.

5 Q. Okay. Who did prepare the cross sections?

6 A. I don't recall which individual at Empire
7 prepared them, but that came from someone at Empire.

8 Q. But you reviewed the logs and the cross
9 sections and adopted them as presented to you,
10 correct?

11 A. Yes.

12 Q. So after looking at that cross section --
13 those two cross sections that were prepared, one was
14 a structural cross section and the second one was a
15 stratigraphic where it's hung on the Grayburg,
16 right?

17 A. Yes.

18 Q. And after identifying those logs, you say
19 that the logs show oil saturation throughout the
20 entire San Andres interval, correct?

21 A. Yes.

22 Q. Now, this is your original testimony, so
23 this is referring to the original -- I'm going to
24 call it the original NuTech petrophysical analysis
25 of these wells, correct?

Page 76

1 A. Yes.

2 Q. And your new testimony that we just
3 reviewed today uses -- you refer to NuTech's revised
4 or updated petrophysical analysis, correct?

5 A. Yes, reprocessed data.

6 Q. Now, based on your review in particular of
7 the Ryno SWD Number 1, you state that that well
8 shows oil saturation throughout the entire
9 San Andres interval, top to base, correct?

10 A. In the original NuTech log, yes.

11 Q. Okay. So I'll just scroll down here, and
12 you attached Exhibits D-2 and D-4. And in the
13 original, which is one I attached here, I'm just
14 going to -- it's hard to see. Okay? It's not a
15 great quality image.

16 A. Sure.

17 Q. And I may take a moment to pull up a
18 better quality one. But can you see the log headers
19 here?

20 A. Yes.

21 Q. And when you're talking about oil
22 saturations, which -- are you talking -- which track
23 are we looking at?

24 A. Oh, up on these, I actually would refer
25 you to -- it's an Excel file that's got the actual

Cross-Examination by Mr. Rankin

78

1 raw data from the NuTech log. That's what I
2 referred to so that I could see a specific depth and
3 a specific oil saturation. I did not rely on these
4 difficult-to-read PDFs.

5 Q. Okay. Yeah, they're hard to read. Let me
6 see if I can pull up a better image.

7 Mr. Marek, this is the original testimony
8 of Mr. Joseph McShane, who's Empire's geologist.
9 And it's marked as Exhibit G in this case. Okay?
10 It's the same case that your testimony has been
11 submitted in. And it was submitted -- this is the
12 version of Mr. McShane's testimony that was filed
13 back in August of 2024. Okay?

14 I'll just slowly scroll through so you
15 can -- I'm not sure if you previously reviewed this
16 at all, but I'll scroll through it so you can see
17 the date at the end where Mr. McShane signs it.
18 Okay? It's dated 8/21/2024. So this is his
19 statement in that time.

20 Mr. McShane, as part of his testimony,
21 also refers to NuTech's -- the original analysis of
22 NuTech and the Ryno SWD Number 1 well. And this is
23 the best image I could find among Empire's materials
24 that's part of their testimony that has a better --
25 a better quality image.

Page 78

Cross-Examination by Mr. Rankin

79

1 Okay. But I guess here is the -- NuTech's
2 analysis of the San Andres EMSU. It's Mr. McShane's
3 original Exhibit G-3(i). You'll see it's the
4 Goodnight Ryno well. And then they've -- he's
5 identified callouts of well saturations at depths
6 that you can't read.

7 But generally, is -- this is the log
8 interpretation that you were originally relying on
9 for your statement that there's oil saturations in
10 the Ryno in the San Andres from top to base,
11 correct?

12 A. Well, I don't recall reviewing this
13 specific exhibit, but it was the original Ryno
14 NuTech log that I relied upon to make that
15 statement.

16 Q. Okay. So looking at this, the oil
17 saturation track here, this oil saturation is the
18 basis for your statement that there was oil
19 saturation in the San Andres based on NuTech's log
20 analysis from top to base, correct?

21 A. Not from this specific exhibit you're
22 showing. My opinion was based on the original
23 NuTech analysis. I did not receive it in this form
24 that we're looking at.

25 Q. Okay. So --

Page 79

1 A. That I recall.

2 Q. Okay. But you got it in digits, in
3 digitized format? So actually like numbers for oil
4 saturations?

5 A. On the original NuTech interpretation, I
6 do not recall getting them in digital form. On the
7 reprocessed NuTech, I did get that in digital form.

8 Q. Okay. I'm just a little confused
9 because -- so in your original testimony, you refer
10 to this cross section in your testimony as the basis
11 for your statement that there's oil saturations from
12 the top of the San Andres to the base, correct?

13 A. Yes.

14 Q. Okay. So I -- to make this easier, I
15 pulled -- sorry for scrolling through this. I
16 pulled a better visual of this same NuTech original
17 log analysis or log image that was part of the same
18 set of testimony submitted by Empire, and that's
19 Mr. McShane's Exhibit G-3i. Okay?

20 A. Okay.

21 Q. Do you have any reason to believe that
22 this Exhibit G-3i is different than what is
23 reflected in your cross section in Exhibit -- I
24 believe it's Exhibit H?

25 MR. PADILLA: Mr. Examiner, I'm going

Cross-Examination by Mr. Rankin

81

1 to object to this line of questioning. Mr. Marek
2 has already said that he didn't rely on this cross
3 section.

4 HEARING OFFICER HARWOOD: Well, it's
5 been represented that he did in his original report.
6 I think that's what Mr. Rankin is trying to get to
7 the bottom of.

8 So it will be overruled.

9 Q. So in this -- in this testimony,
10 Mr. Marek, back in October of 2023, you were given
11 this cross section prepared by Empire, and there's a
12 track here that, as I understand, shows water
13 saturation and oil saturation. And my
14 understanding, when I read this testimony, was that
15 your -- you were referring to this log image of
16 NuTech's analysis for the statement that there's oil
17 saturation in the San Andres from the top of the
18 San Andres to the base; is that -- is that not
19 correct?

20 A. I believe it is correct.

21 Q. Okay. Okay. So looking at this, then,
22 this track where I got my cursor, this is the track
23 that would represent to you that there's oil
24 saturations from the top to the base of the
25 San Andres in the EMSU, correct?

Page 81

Cross-Examination by Mr. Rankin

82

1 A. Well, I'm not seeing your cursor, I
2 apologize.

3 Q. Sorry, it's a little hard to see. I'm
4 trying to make -- I'm making a blue box now around
5 where that is. This is the interval from the top of
6 the San Andres where the green bar is down to the
7 base at the top of the Glorieta; is that right?

8 A. That is correct.

9 Q. Okay. And it's this track that
10 represents, in your understanding, the oil
11 saturations through that interval, correct?

12 A. I believe that's correct.

13 Q. Okay. Very good. Now, this opinion that
14 you prepared back in October 2023 -- okay -- that
15 the Ryno SWD well shows oil saturations throughout
16 the entire San Andres interval from top to base,
17 that's solely based on NuTech's interpretation of
18 that log, correct?

19 A. The original interpretation, yes.

20 Q. Yes. Okay. And at that time, as you
21 prepared this testimony in October '23, did you not
22 conduct an independent assessment of NuTech's log
23 interpretation for the Ryno SWD as part of your
24 analysis at that time, did you?

25 A. I did not.

1 Q. In fact, you did not conduct an
2 independent assessment of any of NuTech's
3 interpretations as part of your analysis, did you?

4 A. That's correct.

5 Q. Did you talk with NuTech's technician who
6 performed the analysis before you prepared your
7 October '23 testimony?

8 A. I did not.

9 Q. Did you talk with NuTech's technician
10 before you prepared your recently revised testimony?

11 A. I did not.

12 Q. Did you review NuTech's testimony before
13 preparing your October 2023 statement?

14 A. Nu -- I'm sorry, no, I guess not. I have
15 not seen NuTech's testimony.

16 Q. Did you review NuTech's revised testimony
17 that has been submitted to the Commission as part of
18 your -- in preparation for your revised testimony
19 that you recently submitted?

20 A. I did not.

21 Q. Did you conduct a separate or independent
22 evaluation to arrive at your own independent opinion
23 about whether the oil saturation -- whether there
24 might be oil saturations across the entire San
25 Andres interval and the EMSU?

Cross-Examination by Mr. Rankin

84

1 A. I'm not sure that I totally understood
2 your question. Would you please repeat it.

3 Q. Sure. You did not conduct an evaluation
4 to arrive at your own independent opinion about what
5 the oil saturations might be across the entire
6 San Andres interval within the EMSU, agree?

7 A. My opinion was based on the revised NuTech
8 analysis that was provided to me. I did no
9 independent analysis on that issue.

10 Q. Okay. So I'll skip over to your amended
11 testimony, which is the attachment which was
12 Exhibit A to Empire's motion that they filed on
13 Friday asking to revise your testimony. Okay? It
14 provides a redline of your changes explaining -- or
15 showing what the changes were. And then following
16 that redline document is a -- is the clean version
17 of that document that actually has your signature on
18 it, scrolling through that here with some
19 highlighting that I want to kind of walk through
20 with you as well.

21 When I get to the bottom here, it's got
22 your signature, and it's dated 4/2/2025, correct?

23 A. Correct.

24 Q. Okay. So as I understand you to say, for
25 your -- this revised testimony that has just been

Page 84

1 submitted to the Commission, you didn't do your own
2 independent evaluation of what the oil saturations
3 might be across the San Andres and the EMSU.
4 Instead you relied on NuTech's analysis that made
5 that determination, correct?

6 A. Yes.

7 Q. Okay. And based on NuTech's analysis,
8 then, you looked at that cross section in your
9 exhibits, and it's Exhibit H-2, right? And you're
10 looking at the Ryno, and you see in the third track
11 from the left, I think it's the depth track, there's
12 a little fuchsia box on that depth track. Do you
13 see that?

14 A. Yes.

15 Q. It's hard to see. Is it your
16 understanding that that fuchsia box represents the
17 perforation interval of the Ryno well?

18 A. I believe that's correct.

19 Q. Okay. And that perforation interval, you
20 know, is the same interval that you identified as
21 the interval that has these oil saturations,
22 correct?

23 A. I'm sorry, repeat that again.

24 Q. Sure. The interval where the Ryno has
25 these perforations, right, for disposal is the same

Cross-Examination by Mr. Rankin

86

1 interval that you identified as having those oil
2 saturations within the San Andres, correct?

3 A. Yes.

4 Q. Okay. And that's -- and that's the basis
5 for your opinion that Goodnight is injecting into a
6 zone that is a documented ROZ, correct?

7 A. Yes.

8 Q. Okay. And it's also the basis for your
9 opinion that water is being injected into the
10 unitized portion of the San Andres interval,
11 correct?

12 A. Yes.

13 Q. Okay. Now, in Mr. McShane's original --
14 now, did you review any of Empire's testimony that
15 was submitted as part of this case?

16 A. Not Mr. McShane's, that I recall.

17 Q. Okay. I'm showing here again
18 Mr. McShane's Exhibit G-3i. Okay? And you'll see
19 that Mr. McShane has -- reflects here a
20 calculation -- this is Mr. McShane's original
21 testimony, his original Exhibit G-3i, and he's
22 conducted a calculation where he's identified an oil
23 in place value, okay, on a section basis. Do you
24 see that, where I've highlighted?

25 He says, "The Ryno SWD has a 91.5 million

Page 86

Cross-Examination by Mr. Rankin

87

1 barrel per section of oil in place calculation." Is
2 that your -- do you see that there?

3 A. I do.

4 Q. Okay. Now, Mr. McShane -- you told me and
5 testified that your revised testimony that was just
6 admitted to the record is based on NuTech's revised
7 petrophysical or reprocessed calculation for the
8 Ryno, correct?

9 A. Yes.

10 Q. I'm just going to pull up Mr. McShane's
11 revised testimony where he's done that calculation
12 again.

13 Let me know when you can see my screen
14 again, Mr. Marek.

15 A. I see it.

16 Q. Okay. Do you see -- again, it says
17 Exhibit G-3i is a similar representation on this
18 exhibit -- this is Mr. McShane's revised
19 Exhibit G-3, and I can just scroll up to the top of
20 this document so you can see that this is the
21 revised self-affirmed statement of Mr. McShane for
22 Empire. It's a revised Exhibit G. It was filed
23 December 5, 2024. Okay?

24 I'll go back to that page. You'll see
25 here that he's done -- based on NuTech's updated or

Page 87

Cross-Examination by Mr. Rankin

88

1 reprocessed analysis for the Ryno, he's recalculated
2 the oil in place value for this well, and it's now
3 15.62 million barrels per section. Do you see that?

4 A. Yes.

5 Q. So he, Mr. McShane, and based on NuTech's
6 analysis, went from 91.5 million barrels per section
7 down to 15.62 million barrels per section, agree?

8 A. Yes.

9 Q. Just doing a quick calculation, that's a
10 reduction of 82 -- more than 82 percent in the oil
11 in place based on that revised petrophysical
12 analysis. Would you disagree with that?

13 A. I haven't done the math, but if your math
14 is correct, I agree with your statement.

15 Q. Now, in your statement that you submitted
16 today, you use the same language here. This is,
17 again, your -- I'm sharing your revised, amended
18 statement. You say that, "The NuTech process log
19 for the Ryno SWD 1 well shows oil saturation" -- of
20 Mr. McShane's -- your exhibit here that you referred
21 to is the same old exhibit, right? It has not been
22 updated to show NuTech's reprocessed log image for
23 this cross section, correct?

24 A. That's correct. And it's noted at the
25 bottom of that exhibit.

Page 88

1 Q. Right.

2 A. Yeah.

3 Q. So I'm going to pull up Mr. McShane's
4 revised testimony, Exhibit G-3i, which shows the
5 well log image for the revised or updated
6 reprocessed NuTech analysis. It doesn't show the
7 tops of the San Andres here, but is it still your
8 opinion that NuTech's revised, reprocessed
9 petrophysical analysis for the Ryno SWD Number 1
10 still shows oil saturations throughout the entire
11 interval of the San Andres?

12 A. No, that's not correct.

13 Q. Okay. What is your -- how would you
14 revise your statement, then?

15 A. The revised NuTech log shows oil down to
16 minus 1,851.5. The base of the San Andres is minus
17 1,952. So there is an interval, roughly 100 feet in
18 the lowest part of the San Andres that has no oil
19 saturation. It's 100 percent water saturation.

20 Q. Okay. So you were just correct to say
21 that in your opinion, there's oil saturations in the
22 San Andres down to -- down to basically 100 feet
23 short of the base of the San Andres?

24 A. Yes, approximately.

25 Q. Are you using an oil saturation cutoff for

1 your determination that there are oil saturations
2 down to that depth?

3 A. No.

4 Q. Okay. So you're not making any cutoffs,
5 right? That -- 1 percent oil saturation would
6 qualify under your interpretation that there's oil
7 saturation throughout that interval, correct?

8 A. Yes.

9 Q. Now, Mr. McShane's statement down here
10 that I'm showing on Exhibit G-3 has a table at the
11 bottom left. Do you see this table down here?

12 A. Yes.

13 Q. And it's got -- it's got the San Andres
14 indicated here. It says, "Zone," and then it's got
15 different column headings. It says, "Gross
16 Interval."

17 So as I understand Mr. McShane to say that
18 the gross interval for the San Andres is about
19 1,215 feet. He says that the net interval is
20 738-and-a-half feet. And then says that the net oil
21 interval is at 220 feet. Do you see that?

22 A. I do.

23 Q. Do you understand what saturation cutoff
24 Empire is using to make that net oil determination?

25 A. I do not know.

1 Q. Now, are you aware when -- that when I --
2 when asked which of its two log interpretations is
3 more likely the correct answer, its original or
4 revised interpretations, that NuTech's witness
5 testified in his deposition that NuTech stands by
6 its original log interpretations? Are you aware of
7 that?

8 A. No.

9 Q. Based on the fact that NuTech's own
10 witness testified that NuTech stands by its original
11 log interpretations and not its revised log
12 interpretations, do you stand by the revised
13 testimony, which relies on NuTech's revised log
14 interpretations?

15 A. I tend to like the revised -- and "like"
16 is not the right term. The revised interpretation
17 that was furnished to me looks reasonable and does
18 display an ROZ. So between which of the two are
19 actually correct, I'm not a petrophysicist, I can't
20 say.

21 Q. So do you know what NuTech did to modify
22 its analysis between its original and revised log
23 interpretations?

24 A. My understanding is that they modified
25 their petrophysical parameters, the AM&M factors

1 used to calculate the fluid saturations.

2 Q. Do you know how -- in what way they
3 modified those parameters?

4 A. No.

5 Q. Do you know the basis for which they
6 modified those parameters?

7 A. No.

8 Q. So you have -- as you sit here today, you
9 have no way of evaluating between the two what --
10 basis for deciding yourself which is more correct,
11 agree?

12 A. Yes.

13 Q. Your original testimony -- and, again, I'm
14 referring to your October 2023 testimony that you
15 filed originally, you have a statement in here that
16 says -- and I've tried to put a box on it. I'll
17 zoom in a little bit more. Okay?

18 This is paragraph 4 of your original
19 statement that was marked as Exhibit D. You state
20 that, quote, "The high water disposal rates will
21 cause higher pressures in the ROZ and higher
22 potential for hydraulic fractures in vertical
23 communication, all of which will impair Empire's
24 ability to produce hydrocarbons from the ROZ." Did
25 I read that correctly?

1 A. Yes.

2 Q. Now, in your revised testimony that was
3 just admitted to the Commission today, you got a
4 similar statement, but it's different. And in that
5 statement on page 2 of your revised testimony, you
6 stay, in quote, "The high water disposal rates will
7 likely cause higher pressures in the ROZ and higher
8 potential for hydraulic fracturing in vertical
9 communication, all which will be detrimental to
10 future ROZ operations." Did I read that correctly?

11 A. Yes.

12 Q. And the difference, Mr. Marek, is that in
13 your revised testimony, you inserted the word
14 "likely," correct? Or that's one difference anyway,
15 right? You inserted the word "likely"?

16 A. Okay. I'd have to look at them side by
17 side, but . . .

18 Q. So here's the -- here's the revised
19 version --

20 A. Okay.

21 Q. -- which is, "The high water disposal
22 rates will likely cause higher pressures." In your
23 original, you say, "The high water disposal rates
24 will cause higher pressures." Do you see that?

25 A. I do.

1 Q. Okay. Do you recall why you amended your
2 testimony to use the word "likely"?

3 A. No, I don't recall.

4 Q. In your analysis, Mr. Marek, did you
5 evaluate potential impacts to the San Andres
6 formation pressure as a result of Goodnight's
7 injection?

8 A. Ask me one more time, please.

9 Q. Did you -- did you review any data or
10 evidence that relates to potential impacts to the
11 San Andres formation pressure as a result of
12 Goodnight's injection?

13 A. No, other than the obvious correlation
14 between high injection rates will cause increased
15 pressure with time.

16 Q. Okay. But you, yourself, you didn't look
17 at any data to evaluate how pressure has changed
18 over time as a result of Goodnight's injection, did
19 you?

20 A. That's correct.

21 Q. Okay. And so you didn't look at any
22 data -- or injection data or injection profiles or
23 pressure profiles or pressure data that would
24 support that opinion?

25 A. That's correct.

1 Q. As part of your opening and summary, you
2 talked about concerns about high pressure injection
3 pressures causing potentially fracturing in a
4 formation that would negatively impact development
5 in the EMSU, correct?

6 A. I believe that's correct.

7 Q. And the same concern would apply for
8 waterflood injection operations in the Grayburg,
9 correct?

10 A. Yes.

11 Q. In other words, like if the waterflood
12 injections that Goodnight is operating are
13 exceeding -- or approaching formation parting
14 pressure, that would be a concern as well, correct?

15 A. It could be.

16 Q. Okay. But you didn't -- you didn't
17 evaluate what the formation parting pressures are
18 for the Grayburg or the San Andres, did you?

19 A. I did not.

20 Q. And you don't know whether the current
21 formation pressures are approaching those levels in
22 either the San Andres or the Grayburg, are you?

23 A. Please restate the question.

24 Q. You haven't evaluated the current
25 reservoir pressures in either the Grayburg or the

Cross-Examination by Mr. Rankin

96

1 San Andres, so you can't say whether there's a
2 concern about potential for fracturing in either of
3 those zones, correct?

4 A. Correct.

5 Q. The next sentence here says that, "These
6 same factors may also have a negative impact on
7 current field operations in the traditional Grayburg
8 San Andres producing zones." Did I read that
9 correct?

10 A. Yes.

11 Q. But your statement here does not include
12 an analysis of what those potential impacts would
13 be, correct?

14 A. That's correct.

15 Q. And you did not review any data that would
16 support such an opinion?

17 A. No. That was based on my experience.

18 Q. Okay. So you haven't looked at any
19 production data for the EMSU, any oil or water
20 production data, correct?

21 A. Correct.

22 Q. And you haven't looked at any well
23 production histories for the EMSU, correct?

24 A. Not in recent history, that's correct.

25 Q. Okay. So you have no basis to say whether

1 there are any negative impacts currently being
2 exhibited in the EMSU, correct?

3 A. That's why I put the word "may" in here,
4 "may have."

5 Q. Right. Okay. In your original testimony,
6 I've highlighted here in green in paragraph 5, you
7 included the statement that, quote, "Based on my
8 many years of experience and the above analysis, it
9 is my opinion that Goodnight's proposed injection of
10 produced water into the unitized interval will
11 detrimentally impact Empire's ability to recover
12 hydrocarbons from the ROZ and, therefore, result in
13 waste of oil and gas. As a result, such water
14 disposal should not be allowed at the EMSU." Did I
15 read that correctly?

16 A. Yes.

17 Q. Now, in your amended or revised testimony,
18 you did not include that statement, correct?

19 A. Correct.

20 Q. And in particular, you did not include the
21 statement, quote, "And, therefore, result in waste
22 oil and gas," agree?

23 A. Yes.

24 Q. Okay. Now, Mr. Marek, as part of your
25 analysis and part of your opinion here today, you

Cross-Examination by Mr. Rankin

98

1 were not asked to evaluate whether oil in the
2 purported ROZ in the San Andres is recoverable?

3 A. That was not part of my work product,
4 that's correct.

5 Q. And you were not asked to evaluate what
6 the recovery factor in the ROZ might be under a CO2
7 flood, agree?

8 A. Correct.

9 Q. You were not asked to evaluate whether the
10 purported ROZ in the San Andres is economically
11 recoverable, agree?

12 A. Correct.

13 Q. And you've not identified any facts or
14 data that would support a conclusion that
15 Goodnight's injection will result in waste of oil
16 and gas, agree?

17 A. Please state that again. I want -- I want
18 that one to soak in.

19 Q. You have not identified any facts or data
20 that would support a conclusion that Goodnight's
21 injection will result in waste of oil and gas,
22 agree?

23 A. I'm not sure that I can agree with that.

24 Q. Okay. What facts or data have you
25 identified that establish that there will be waste

Page 98

1 of oil and gas?

2 A. I think the proper characterization is
3 that it may or could result in a waste of oil and
4 gas.

5 Q. But you would agree with me that you have
6 not identified any facts or data that would support
7 a conclusion that Goodnight's injection will result
8 in waste of oil and gas, agree?

9 A. To the extent that I would change the
10 "will" to "may."

11 Q. Okay. But you're saying -- I'm just
12 trying to get you to agree with me, right? You
13 can't say, as you sit here today, that there will be
14 waste of oil and gas, agree?

15 A. I don't know that I can agree, because I
16 can't say that there won't be either.

17 Q. Okay. Well, I'll let you -- I'll let you
18 state it the way you want, which is that, in your
19 opinion, that there may be. Okay? But you've got
20 nothing, sitting here today, that you can point to
21 that says there has been, correct?

22 A. That would be correct.

23 Q. Okay. And you're not offering -- I think
24 you already said this in passing, but you're not
25 offering any opinions or conclusions about

1 petrophysics, correct?

2 A. That's correct.

3 Q. Or how to properly analyze -- how to
4 properly conduct a petrophysical analysis, correct?

5 A. Correct.

6 Q. And you're not -- you haven't done a
7 review to confirm whether NuTech's analysis was done
8 correctly, agree?

9 A. I agree.

10 Q. Okay. And now, as part of your
11 preparation for this testimony today, you did not
12 review the EMSU unit documents or the Oil
13 Conservation Commission case file prior to today's
14 testimony, did you?

15 A. I did not.

16 Q. And you did not review the EMSU unit
17 hearing transcript or the exhibits from when it was
18 presented to the Commission and approved as a
19 statutory waterflood unit in 1984, correct?

20 A. I believe that's correct.

21 Q. And you did not review any of the EMSU
22 well files or production data, correct?

23 A. Not in recent history, no.

24 Q. Not since 1988?

25 A. Exactly.

1 Q. At the time you prepared your direct
2 testimony in this case, were you aware that the EMSU
3 had six water supply wells inside the unit that were
4 completed in the San Andres that supplied all the
5 makeup water for EMSU waterflood operations?

6 A. I wasn't familiar specifically with six
7 wells. I was aware generally that there were water
8 supply wells.

9 Q. Were you aware that they were completed in
10 the San Andres within the EMSU?

11 A. Not that I recall.

12 Q. Okay. Wouldn't that be important for your
13 analysis or assessment of what's happening in the
14 San Andres within the EMSU?

15 A. If there are San Andres water supply wells
16 and they're not producing any oil, then they're not
17 part of an ROZ. So I'm not sure that they would
18 have a detrimental effect.

19 Q. Okay. So at the time you prepared your
20 written testimony, you were not aware that Empire
21 calculates those six water supply wells had produced
22 approximately 380 million barrels of water from the
23 San Andres in the EMSU with no reported oil?

24 A. No, I was not aware of that.

25 Q. Are you aware that those six water supply

1 wells completed in the San Andres are in the same
2 interval that Goodnight is targeting and has been
3 currently disposing of injected water -- of produced
4 water?

5 A. No.

6 Q. Were you aware that there are
7 approximately 20 additional water supply wells that
8 have withdrawn water from the San Andres in the
9 offsetting acreage to the EMSU?

10 A. No.

11 Q. At the time you prepared your direct
12 testimony, were you aware that produced water
13 disposal injection into the San Andres within the
14 EMSU has been authorized in the same zone that
15 Goodnight is targeting since the 1960s,
16 approximately 24 years before the EMSU was even
17 created in 1984?

18 A. To clarify that, produced water within the
19 unit area has been disposed of in the unitized
20 interval? Is that . . .

21 Q. Yeah, let me -- maybe I'll help a little
22 bit. I'm going to pull up what's been marked
23 as Exhibit -- this is Exhibit B-47. This is
24 Goodnight Exhibit B-47. Okay? And I presume,
25 Mr. Marek, that you have not seen this exhibit,

1 correct?

2 A. I'm not seeing it now.

3 Q. Oh, I'm sorry. I fell victim to my own,
4 you know, excitement. I didn't share it. Sorry,
5 one moment.

6 Do you see on your screen a map,
7 Mr. Marek?

8 A. I do.

9 Q. Okay. This has been marked as
10 Exhibit B-47 from Goodnight's exhibits. I presume
11 you've not previously seen this exhibit, correct?

12 A. Not that I recall.

13 Q. Okay. Mr. Marek, this was prepared by
14 Goodnight Midstream's witness, Mr. Preston McGuire.
15 It's based off of the Oil Conservation Division's
16 data. And it shows the data first injection, along
17 with the cumulative volumes of produced water
18 injected. And I'm zooming in to show you the EMSU
19 unit, which is outlined in this green line. Do you
20 see that?

21 A. Yes.

22 Q. And within this green outline of the EMSU
23 are all of the wells that have been approved for
24 disposal within the San Andres formation, including
25 the unitized interval of the EMSU. Okay?

Cross-Examination by Mr. Rankin

104

1 First, that's -- within the unit
2 boundaries was commenced injection in 19-- 1966.
3 It's in this Section 21 within the unit boundary.
4 It's injected a cumulative volume of over
5 43 million barrels. Were you aware that prior to
6 the creation of the EMSU, there was already non-unit
7 disposal occurring within the San Andres?

8 A. I was aware that there were disposal
9 wells, but you just said non-unit water was being --
10 in other words, off-lease water was being disposed
11 of?

12 Q. Correct. Correct.

13 A. Okay. No, I wasn't aware of that.

14 Q. I'm sorry, I apologize. I went silent for
15 a moment because I was reviewing my notes to
16 determine if I need more questions. I apologize,
17 Mr. Marek.

18 I have a couple of questions, I think,
19 maybe or one two. Mr. Padilla asked you a question
20 about your understanding or definition of a residual
21 oil zone. Do you recall that question?

22 A. Yes.

23 Q. And as I recall your response, it was that
24 it's something less than what a waterflood would
25 target, right? Some oil saturations below what a

Page 104

1 waterflood would target. Was that your
2 understanding? Is that what you testified?

3 A. Yes.

4 Q. What are the oil saturations that a
5 waterflood would target?

6 A. In a waterflood, especially in these
7 carbonate reservoirs, there is what we call a
8 residual oil saturation to water. SORW would be the
9 acronym. And that's the saturation -- oil
10 saturation below which the water will not displace
11 oil in a waterflood.

12 And in the San Andres and other
13 carbonates, that's typically a number in the 35 to
14 40 or even 45 percent of pore space. Of course, it
15 varies project by project.

16 Q. Okay. So in your -- your understanding or
17 your interpretation would be the residual oil zone
18 would be something below that -- those
19 concentrations, correct?

20 A. Correct.

21 Q. Okay.

22 COMMISSIONER LAMKIN: I think -- I
23 think -- Mr. Hearing Officer, I don't think I have
24 any further questions for Mr. Marek. I would like
25 to move -- I'm trying to decide. I think this is

Cross-Examination by Mr. Rankin

106

1 part of the record already, his original testimony.
2 But out of abundance of caution, I would move the
3 admission of Mr. Marek's original testimony from the
4 October 2023 filing as Goodnight Cross Exhibit
5 Number 12.

6 HEARING OFFICER HARWOOD: Is it
7 already in evidence, Mr. Padilla?

8 MR. PADILLA: Yes, it is. It's
9 already in evidence.

10 HEARING OFFICER HARWOOD: That's what
11 I thought. What is -- I'm assuming Empire has an
12 exhibit number for it.

13 COMMISSIONER LAMKIN: That's good.
14 Mr. Hearing Officer, I reviewed, and I don't think
15 we have any other exhibits at this time.

16 MR. PADILLA: It would be Exhibit H.

17 COMMISSIONER LAMKIN: Mr. Marek's
18 revised testimony, I believe, is revised Exhibit H,
19 yeah.

20 MR. PADILLA: Right.

21 COMMISSIONER LAMKIN: But this -- I'm
22 saying Mr. Marek's original testimony, which was
23 filed with the Division in October 2023. I don't
24 know if it's part of the record or not, and that's
25 why I, out of an abundance of caution, was going to

Page 106

Cross-Examination by Mr. Moander

107

1 move it as Goodnight Cross Exhibit Number 12.

2 HEARING OFFICER HARWOOD: Any
3 objection, Mr. Padilla?

4 MR. PADILLA: Well, if it's a cross
5 exhibit, I wouldn't have any objection. But the
6 revised exhibit is the one that really matters, as
7 far as Mr. Marek's testimony is concerned.

8 HEARING OFFICER HARWOOD: Okay. It
9 will be admitted as your cross-examination exhibit.

10 (Exhibit 12 admitted into evidence.)

11 COMMISSIONER LAMKIN: No further --
12 no further questions, Mr. Hearing Officer. I make
13 the witness available for cross.

14 HEARING OFFICER HARWOOD: Okay. We
15 have 19 minutes to go before Chairman Razatos' firm
16 stop.

17 So let me turn it over to you next
18 Mr. Moander. Questions?

19 MR. MOANDER: Yes, sir. Thank you.
20 Mr. Hearing Officer, I shouldn't be very long.

21 CROSS-EXAMINATION

22 BY MR. MOANDER:

23 Q. So, Mr. Marek, this is Chris Moander,
24 counsel for OCD. Good morning.

25 A. Good morning.

Page 107

Cross-Examination by Mr. Moander

108

1 Q. I've just got a few, I suspect, quick
2 questions for you here, but I've got to go through
3 them.

4 A. Sure.

5 Q. My understanding is you didn't review any
6 OCD filings in preparation to render your opinion in
7 this matter; is that right?

8 A. That's correct.

9 Q. And so, therefore, you wouldn't have done
10 any analysis of any of the exhibits or filed
11 testimony?

12 A. I believe that's correct.

13 Q. And then would it be fair to say you have
14 no opinion, as you sit here today, on OCD's case; is
15 that right?

16 A. That would be correct.

17 MR. MOANDER: No further questions
18 from OCD, Mr. Hearing Officer.

19 MR. BECK: No questions. Thank you,
20 Mr. Hearing Examiner.

21 HEARING OFFICER HARWOOD: Mr. Suazo,
22 questions for Pilot for Mr. Marek?

23 MR. SUAZO: No questions from Pilot.

24 HEARING OFFICER HARWOOD: All right.
25 Well, then, we'll turn it over to the Commission.

Page 108

1 Who wants to go first? Doctor?

2 EXAMINATION

3 BY COMMISSIONER AMPOMAH:

4 Q. Thank you, sir, for your testimony to as
5 today. So I do have a couple of questions for you.

6 My first one will be: Do you have any
7 experience with any ROZ field that has undergone
8 accessible injections similar to San Andres in
9 question in this case?

10 A. I do have experience with some of the
11 major fields that I mentioned earlier that had ROZs
12 that had been pursued with time for CO2 injection in
13 the areas of Wasson, Seminole, and some of those
14 major fields in the Permian Basin.

15 Q. So my question was very specific. So with
16 these examples that you've mentioned, is there any
17 of them that you can point out where there has been
18 significant amount of water injected into any of the
19 producing zones that were water?

20 A. Water injected into a ROZ? Was that the
21 nature of your question?

22 Q. Yes, sir.

23 A. Oh, I apologize. No, in my experience,
24 water is not injected into the ROZ. That -- that's
25 been the realm of CO2 enhanced recovery.

1 Q. Maybe let me understand it this way. An
2 outside operator has been allowed to inject into a
3 unitized unit. Now my question to you is that --
4 you know, when all these applications were filed
5 except the 1966 one, which was prior to the
6 unitization around 1984, why did these operators not
7 contest these sort of injection wells?

8 A. I guess I don't know the answer to that.

9 Q. Now, I have a question to you, is: Do you
10 have any concern -- you know, you talked about the
11 injection into the San Andres will be detrimental --
12 or likely be detrimental to the ROZ or the Grayburg.
13 Now, my question to you is: Do you have any concern
14 with Empire injecting into the San Andres?

15 A. Well, generally the concern I have is for
16 the high volumes of water that the commercial
17 disposal operations operate with. There are just
18 huge volumes of water being injected.

19 Now, Empire, I believe, has disposed of
20 some water into the San Andres. But you're talking
21 a few hundred barrels a day, maybe at the most per
22 well, versus the commercial operations, which would
23 be maybe 15,000 barrels of water per day, and in
24 some cases, it's been much higher. So small volumes
25 are inconsequential. To me, the large volumes from

Examination by Commissioner Ampomah

111

1 the commercial operations can be very detrimental.

2 Q. So is there a threshold of the water
3 volume that you can speak to, you know, to the
4 Commission?

5 A. Not specifically, no. I'm sorry.

6 Q. So you're talking about around
7 15,000 barrels. So do you believe even
8 15,000 barrels a day would not have any impact on
9 the ROZ?

10 A. Oh, I think it could have an impact on the
11 ROZ. That's been my testimony.

12 Q. So you made some claim in your
13 conclusions, and I don't know if Mr. Padilla can
14 bring that up so that can -- you can refresh your
15 memory on that. So you made about three
16 conclusions, and I'm really -- do you have more
17 concern about the number 3?

18 COMMISSIONER AMPOMAH: So if anyone
19 can bring it up.

20 A. I'm actually looking at it and can address
21 your question, if you'd like.

22 Q. Okay. So can you confirm to the
23 Commission if you performed any personal analysis to
24 support your claim?

25 A. No, I have not. It's based largely on my

Page 111

1 experience.

2 Q. Can you speak to the economical nature of
3 the situation that we have in here where there has
4 been several volumes of water injected into
5 San Andres? How -- you know, how economical is that
6 going to be if, let's say, we have -- the Commission
7 is to shut in all injection wells in this area, how
8 economical is this project going to be, based on
9 your experience?

10 A. Well, the current operations are primarily
11 in the Grayburg and where -- we're not talking here
12 about changing anything with that. So -- but
13 anything -- let me put it this way. Should high
14 volumes of water be injected into the San Andres
15 and, due to hydraulic fracturing, find their way
16 into the Grayburg, then that would have a negative
17 impact on the continued operations of the
18 waterfloods in the Grayburg zone.

19 It would cause higher producing rates,
20 meaning more expensive production. It could
21 compromise the aerial or vertical sweep fishings,
22 leap deficiencies, leading to a lower ultimate
23 recovery. So that would be the concern -- or one of
24 the concerns with the high water volume injection.

25 Q. Thank you for that. And, you know, there

1 has been water injection into that formation way
2 back, we've seen from 1966. Why is there no strong
3 evidence, based on reservoir engineer and
4 application principles, show clarity to the
5 Commission of what you just stated?

6 A. Well, we have not been tasked with doing
7 an extensive reservoir engineering study which could
8 be -- take a lot of time and be very expensive to
9 do. But mainly, it's the time constraint.

10 So the impact of the water injection into
11 the ROZ is -- has the risk factors that I think that
12 we -- that I denote there in my -- the third bullet
13 item of my conclusions, that that can cause
14 fracturing and have an impact on the current
15 operations in the field, in addition to being
16 detrimental to the ROZ itself.

17 Q. I'm checking my watch here to make sure I
18 do not go over the time.

19 So another question for you is: As you
20 reviewed that cross section and also the physical
21 properties, as you show in your exhibit, can you
22 confirm to the Commission the average permeabilities
23 on the San Andres?

24 A. The average perm in the San Andres,
25 actually, I can go back to -- I thought I might have

1 referenced that in our early Cobb reports, but --
2 no, and I'll speak from memory here, that it's in
3 the single to tens of millidarcy range. Of course,
4 it varies. As you're probably well aware, in
5 carbonate reservoirs, you have a high degree of
6 variability in the permeability. We refer to that
7 as the V factor, or Dykstra-Parsons V factor.

8 So there is variability in the perm from
9 low to high. But on average, my estimate would be
10 that it would be in the single digit to tens of
11 millidarcies on average.

12 Q. You don't think you --

13 A. I was going to say, I can certainly get
14 you a better number than that, than my poor memory
15 can scrape up, because we do have that quantified.
16 I'm just going on memory here.

17 Q. Yeah. So, you know, there has been
18 testimony by Dr. Buchwalter, hopefully -- yeah. So
19 he did actual reservoir simulation analysis.

20 Now, I want to ask you: So in his
21 analysis, he used an availability range of 500 to
22 550 millidarcy in his simulation model to prove that
23 there is a communication between the San Andres and
24 the Grayburg.

25 You know, with your experience, have you

1 seen that higher permeability to prove that a
2 connectivity between two formation when, as you
3 said, the permeability is about like -- let's say
4 within a digit, number?

5 A. No, that high of value surprises me. And
6 I know Dr. Buchwalter, and I use his software and
7 have for decades. So I'm a bit puzzled. When you
8 tell me he used 500 millidarcies, that surprises me.

9 Q. Thank you for that. It surprises me too.

10 So you talk about the residual oil
11 saturation is in carbonates, and you cited that you
12 have seen a high to about 45 percent. Can you
13 confirm that?

14 A. There -- in my experience, that range is
15 from generally 35 to 45 percent. You know, if I'm
16 starting a project in a carbonate reservoir and have
17 no other data, I'll usually start at 40 percent as
18 an estimate.

19 There is -- I'm taking the paper off of
20 it. There is a wonderful old 1982 -- pardon me --
21 '83 publication by the Bureau of Economic Geology,
22 and it's an atlas of major oil reservoirs in Texas.
23 And that is one of the few places that in these
24 fields, will report a residual oil saturation, which
25 we would have to assume is residual to water back at

1 the time that was published.

2 So that -- that's a wonderful resource for
3 residual oil saturations. And, in fact, I've got --
4 I even have a digital -- we digitized this data and
5 put it in an Excel spreadsheet. So I refer to that
6 often to retrieve these types of number, average
7 permeabilities, residual oil saturation. It's got
8 some very good data in it, porosity numbers. And
9 I'll just tell you that it exists. I don't know if
10 I'm at liberty to share it. There's nothing --
11 what's the term I'm looking for? -- proprietary
12 about it. It's just out of an industry publication.

13 Q. Thank you for that. So my last question
14 to you will be -- so you've seen documented probably
15 around 45 percent. Now, based on some of the
16 testimony that we've listened to, there was
17 saturations to about 60 percent shown, based on
18 adjustments of them and parameters, you know, and
19 then -- which was not really justified by a Court,
20 but there is an example of, let's say, another type
21 of assessment that you can get that high saturation
22 that was pointed to the Commission.

23 I want to ask you: Assuming a saturation
24 is about 50 to 60 percent and there has been
25 numerous water withdrawal wells within the EMSU,

1 based on your experience, don't you believe that
2 some of these oil, if exists, would that --
3 extremely high saturations, would that be produced?

4 A. Now, are you referring to the ROZ or to
5 the Grayburg or to both in that question?

6 Q. This one is specifically to the ROZ.

7 A. To the ROZ. Okay. I guess, actually, my
8 thought on that would be that if it actually did
9 produce some oil, then it wasn't really in the ROZ.
10 It was in more of a traditional oil leg.

11 Q. You know, so then let me rephrase my
12 question. And I have three minutes, so let me
13 rephrase my question.

14 So I'm saying that we've defined what an
15 ROZ is, right? So if we have to figure out what the
16 oil saturation is to about 60 percent shown to the
17 Commission based on well log analysis, would you
18 classify such a reservoir as a conventional
19 reservoir or as an ROZ reservoir?

20 A. Okay. I think I understand now. If the
21 oil saturation is stated to -- stated to be
22 60 percent, that does not strike me as an ROZ.

23 Q. And, therefore, that oil, that porosity
24 being produced, with the numerous number of water
25 withdrawal wells into the San Andres. Would that be

1 a fair statement?

2 A. That oil would be produced with the water
3 supply wells?

4 Q. With the water -- yeah, yes. Yes, that's
5 the question.

6 A. Okay. If the oil saturation were indeed
7 that high, I would expect those wells to have
8 produced oil.

9 COMMISSIONER AMPOMAH: Thank you,
10 sir. I do not have any further questions for you.

11 HEARING OFFICER HARWOOD: Okay. Near
12 perfect timing, Dr. Ampomah.

13 So, Chairman Razatos, what's your pleasure
14 in terms of reconvening after lunch?

15 CHAIRMAN RAZATOS: Come again? I
16 apologize for this, but I need to probably -- we
17 need to move it -- we need to do lunch until about
18 1:15. So can we reconvene at 1:15?

19 HEARING OFFICER HARWOOD: It's your
20 pleasure.

21 CHAIRMAN RAZATOS: Let's do 1:15.

22 HEARING OFFICER HARWOOD: All right.
23 We'll be in recess, then, until 1:15. Everybody
24 have a good lunch. Thank you.

25 CHAIRMAN RAZATOS: Thank you, all.

Examination by Commissioner Ampomah 119

1 (Recess was taken from 11:50 a.m. until 1:16 p.m.)

2 CHAIRMAN RAZATOS: Good afternoon to
3 everyone. Can you hear me in Pecos Hall?

4 UNIDENTIFIED SPEAKER: Yes, we hear
5 you.

6 CHAIRMAN RAZATOS: Excellent. We're
7 back on for our case, our continuation for the
8 consolidated cases by Goodnight, Midstream, and
9 Empire New Mexico. I'm not going to read the
10 numbers again, we'll just keep them continued.

11 Mr. Hearing Officer, I turn the meeting
12 back over to you.

13 HEARING OFFICER HARWOOD: Okay.
14 Thank you, Chairman Razatos. So if I'm remembering
15 correctly, we're in the middle of questioning by the
16 Commission.

17 So, Mr. Lamkin, do you have questions for
18 Mr. Marek?

19 MR. LAMKIN: I don't have any
20 questions.

21 HEARING OFFICER HARWOOD: All right.
22 Let me not get ahead of myself.

23 Ms. Tellez, are we back on the record?

24 Okay. I see a thumbs up.

25 All right. So, Chairman Razatos, do you

Page 119

Examination by Commissioner Ampomah

120

1 have questions for Mr. Marek?

2 CHAIRMAN RAZATOS: No, I do not have
3 any questions either.

4 HEARING OFFICER HARWOOD: All right.
5 Then we come full circle.

6 Mr. Padilla, redirect of your witness?

7 MR. PADILLA: Mr. Marek, are you
8 there?

9 Mr. Marek?

10 CHAIRMAN RAZATOS: I do not see him
11 on, Mr. Padilla. Can you give me his first name
12 again?

13 MR. PADILLA: Frank.

14 CHAIRMAN RAZATOS: No, there is no
15 such person on right at the moment.

16 MR. PADILLA: We're giving him a
17 call, Mr. Chairman.

18 CHAIRMAN RAZATOS: Okay.

19 HEARING OFFICER HARWOOD: All right.

20 Any luck reaching him, sir?

21 Well, I suppose you could ask Mr. Rankin
22 all your questions. I'm sure he'll give you the
23 answers.

24 MR. PADILLA: I don't have three
25 hours of questions, Mr. . . .

Page 120

Redirect Examination by Mr. Padilla 121

1 UNIDENTIFIED SPEAKER: There you go.
2 I think we just got him in.

3 FRANK MAREK: My apologies. I was at
4 the wrong link again trying get in.

5 HEARING OFFICER HARWOOD: All right.
6 Mr. Marek, I'll just remind you, you're under oath,
7 and it's back to Mr. Padilla on redirect
8 examination.

9 REDIRECT EXAMINATION

10 BY MR. PADILLA:

11 Q. Mr. Marek, I just want to make sure that I
12 understand your testimony as the ROZ that you have
13 identified is within the vertical limits of the
14 San Andres formation as shown by your cross
15 sections; is that correct?

16 A. Yes, sir.

17 Q. Mr. Rankin asked you questions this
18 morning that I took as an implication that only the
19 eastern side of the Central Basin Platform had a
20 ROZ. Do you have an opinion as to whether you could
21 have a ROZ on the western side of the Central Basin
22 Platform?

23 A. Well, I think that you can.

24 Q. You've already concluded that in the EMSU,
25 which is -- it's on the western side of the Central

Page 121

Redirect Examination by Mr. Padilla

122

1 Basin Platform -- is in the western side, correct?

2 A. Correct.

3 Q. You're not making an economic analysis?

4 That wasn't your chore in this case, right?

5 A. That is correct.

6 Q. Once having made the determination that

7 there's a ROZ underlying the EMSU, do you believe

8 there's a potential for ROZ development in the

9 San Andres formation underlying the EMSU?

10 A. Yes, I do.

11 Q. You're not saying one way or the other how

12 prolific or anything of that sort, because that's

13 not the kind of analysis that you were asked to

14 perform, correct?

15 A. I didn't catch the first part of your

16 question. I apologize.

17 Q. You did not make an economic analysis as

18 to the potential for ROZ development and the --

19 underlying the EMSU?

20 A. That is correct.

21 Q. You're simply saying that there's

22 potential for ROZ development underlying the EMSU?

23 A. Yes.

24 Q. Now, you were asked questions about your

25 flat price evaluation back in 1986 and 1988. At

Page 122

1 that time, according to that paper that you were
2 shown and introduced as a cross exhibit, the price
3 of oil was \$18 a barrel, correct?

4 A. I believe that's correct.

5 Q. A lot has changed since that time; would
6 you agree?

7 A. Yes, it's changed many times up and down,
8 oil price.

9 Q. Including ROZ developments, right?

10 A. Yes.

11 Q. Mr. Rankin asked you some questions about
12 oil in place calculations and that you don't have
13 any oil in place calculations, correct, that you did
14 yourself?

15 A. Not for the ROZ, that's correct.

16 Q. Now, he also took you through a series of
17 emails suggesting that perhaps you had a bigger
18 assignment from Empire that would include oil in
19 place calculations. That was never part of your
20 assignment, correct?

21 A. That is correct.

22 Q. He also took you into some of
23 Mr. McShane's testimony and oil in place
24 calculations. Do you have any information or
25 knowledge about how Mr. McShane made those oil in

1 place calculations?

2 A. No, sir, I do not.

3 Q. Now, Mr. Rankin also asked you about the
4 word that you used in your self-affirmed statement.
5 You used the word "likely." Let me ask you about
6 that word.

7 When you talk in terms of probability or
8 foreseeability, how do you -- or drowning up of an
9 oil reserve, is it more likely than not that --
10 given the type of injections that Goodnight is going
11 to put and is actually putting into the reservoir,
12 what is your opinion as to the damage that could be
13 done to the reservoir by that kind of injection?

14 A. Well, the potential damage, I believe, is
15 spelled out in the bullet items in my conclusions
16 and the word "likely," as I would use it, meaning
17 it's more than a 50 percent chance of probability
18 that that would occur.

19 Q. Right now Goodnight has injection
20 permission of injecting 15 barrels -- 15,000 barrels
21 per day, and they have four wells injecting into the
22 San Andres. They have asked permission to increase
23 the rate of injection into the wells, and they've
24 also asked for an additional four wells -- or made
25 applications for an additional -- an additional four

Redirect Examination by Mr. Padilla

125

1 wells for saltwater disposal wells to inject at the
2 same rates.

3 So let's just figure that. You multiply
4 15,000 times eight -- and I'm not counting any of
5 the requests for increase -- and you estimate that
6 you're going to have about 100,000 barrels, at
7 least, of injection into the San Andres formation.
8 Does that give you a much better idea as to the type
9 of damage that would occur to the reservoir?

10 A. Well, the higher the injection volume, the
11 higher the pressure -- the more quickly the pressure
12 will rise and the sooner it will get to what we
13 might call risky levels. And 120,000 barrels of
14 water per day is a pretty high injection rate.

15 Q. If you take a glass of water -- and I'll
16 take that as a reservoir -- and you increase -- and
17 there's been some drop down. I'm not saying that
18 there isn't any drawdown from the water supply
19 wells. But once you fill up that reservoir and you
20 increase the pressures, where is that pressure in
21 the volumes likely to go?

22 A. Well, water is largely incompressible. So
23 when you inject those volumes of water, you will
24 immediately start seeing an increase in pressure.
25 And that basically increases the pressure in the

Page 125

1 entire San Andres reservoir, specifically the ROZ if
2 that's where the water's being injected.

3 Q. When you say that there could be
4 fracturing from increased pressure and water
5 volumes, can you elaborate a little bit more of
6 how -- from reservoir characteristics, how that
7 pressure is going to manifest itself as far as going
8 upstairs?

9 A. Well, as the pressure increases due to
10 water disposal, eventually you will hit what we call
11 the formation parting pressure, which will cause the
12 reservoir rock to fracture. And when that occurs,
13 then you lose control of where the water's going.
14 And there's a good chance that some of that water --
15 at least some of it would go up into the Grayburg
16 zone, and that would have a negative impact on the
17 current waterflood operations in the Grayburg.

18 It could cause cycling of water to the
19 producing wells and causing higher operating costs.
20 It could reduce your sweep efficiencies because
21 you're bypassing oil in the Grayburg waterflood
22 zone.

23 Q. When you talk about higher operating
24 costs, what do you mean by that?

25 A. Just literally the dollars per month it

Redirect Examination by Mr. Padilla

127

1 takes to keep an oil well producing, and that is --
2 can be dependent upon the volume of water that
3 you're having to move or lift to the surface along
4 with the oil. The higher the volume of water, the
5 higher the monthly operating cost.

6 Q. Now, let's take that downstairs to the
7 San Andres formation. What happens there if you do
8 have a ROZ that has -- that should be developed? In
9 terms of economics?

10 A. Okay. Are you asking me if fracturing
11 occurs down there?

12 Q. No, I'm not asking you that necessarily.
13 But if fracturing will occur down there, what's your
14 opinion as to whether fracturing would occur in the
15 San Andres?

16 COMMISSIONER LAMKIN: Objection.
17 Mr. Marek testified that he did not review, has no
18 idea what the parting fracture pressure is for the
19 San Andres. He has not evaluated. He has no basis
20 to opine on that issue.

21 MR. PADILLA: I'm asking him as a
22 general proposition. I'm not asking him on any
23 significant pressures and what the parting pressure
24 is. I know he doesn't know what the parting
25 pressure is. He has testified, according to his own

Page 127

Redirect Examination by Mr. Padilla

128

1 self-affirming statement, that fracturing will
2 occur. I'm just trying to get him to elaborate a
3 little bit more on that.

4 HEARING OFFICER HARWOOD: Overruled.

5 A. Okay. The formatting -- excuse me -- the
6 formation parting pressure, the pressure at which
7 the rock will fracture is -- well, I don't know the
8 number exactly for this area. There are general
9 numbers that do come into play.

10 And if you were to cause hydraulic
11 fracturing in the ROZ, then that could affect a
12 future tertiary oil recovery project the same way it
13 would affect the waterflood. You could cause
14 cycling of CO2 from an injector to a producer,
15 bypassing the oil saturated intervals or some of the
16 interval within the ROZ. That's one negative aspect
17 of it.

18 And then also injecting at the high rates,
19 as we discussed before, causes higher pressures,
20 which will cause you to have to purchase more CO2 to
21 conduct your tertiary project. It would be more
22 costly.

23 Q. Now, let's talk about waste. That was the
24 subject that was brought up this morning. Suppose
25 you have the injection rates that we just now talked

Page 128

1 about, eight, nine injection commercial wells that
2 are, in my opinion, prolific injectors. How does
3 that affect or create waste?

4 A. Well, the waste can come in the form of
5 hydraulic fracturing causing some of the ROZ oil
6 saturated interval to be bypassed because of the
7 hydraulic fracturing. And then secondly, again,
8 it's going to cause more CO2 to be required because
9 of the higher pressure, which is costly and
10 wasteful.

11 I mean, in all -- those two factors
12 together would result in less ultimate oil recovery,
13 which is, of course, a waste of resources.

14 Q. So you're going to leave oil in the hole,
15 right?

16 A. Yes.

17 Q. Now, you were also asked about water
18 supply wells. Does that make any difference here in
19 terms of whether or not that water is being taken
20 upstairs to the Grayburg and used as a waterflood?

21 A. Generally, no.

22 Q. I mean, you stated something that those
23 wells were not producing oil. But in a ROZ, you
24 typically wouldn't see oil necessarily in the well
25 bore, correct?

1 A. Correct. In the ROZ, you would not expect
2 to be producing oil. Even though oil exists there,
3 it's not movable oil.

4 Q. You were also asked about -- and I think
5 that was from Dr. Ampomah. He asked you and
6 referred to you -- made reference to
7 Mr. Buckwalter's testimony. And Mr. -- I'm not
8 sure, but Mr. Buckwalter had a figure of
9 500 millidarcies, and you said that was very high or
10 you thought it was excessive.

11 A. I do believe that's very high for
12 San Andres. But I have not reviewed
13 Dr. Buchwalter's work, and he may have been trying
14 to prove a point -- with a high permeability to make
15 a point that the real permeability is even lower,
16 and that supports his conclusion. I just say that
17 without having read his report. But I know the man.

18 Q. You would have to read his report in order
19 to really opine anything that he said, correct?

20 A. That's correct.

21 Q. I'm not trying to argue against
22 Dr. Ampomah, but I'm just trying to clarify that
23 aspect of his testimony, Mr. Buckwalter's testimony.

24 Do you find Mr. Buckwalter to be credible?

25 A. Generally, yes, very credible.

Redirect Examination by Mr. Padilla

131

1 Q. He's so smart I don't understand him,
2 actually, to tell you the truth.

3 But anyway, going back to darcy or
4 millidarcies, that depends on rock type and
5 reservoir characteristics, correct?

6 A. Yes.

7 Q. So you'd have to look at individual type
8 of reservoir characteristics in order to really say
9 what permeability or porosity factors are involved
10 in evaluating an oil property?

11 A. Yes.

12 Q. Or in this case, a ROZ?

13 A. Yes.

14 Q. Ordinarily, however, when you have oil
15 saturations in the 70 percent range, that would be
16 an indication that you have movable oil, correct?

17 A. Generally I would agree with that, yes.

18 Q. And that you could produce that oil with
19 primary production conventionally?

20 A. And with waterflood both.

21 Q. In a ROZ, however, you can't do a
22 waterflood, right? Or do primary production?

23 A. Well, you can't really do a waterflood. I
24 mean, you can do it, but it would not be successful.

25 Q. You need CO2?

Page 131

1 A. Yes.

2 Q. Now generally, Mr. Rankin tried to ask you
3 about your lack of study on the reservoir
4 characteristics, and you testified that you weren't
5 given that assignment. But let's take your 48 years
6 of experience in reservoir engineering and
7 evaluation of oil and gas properties. Does that
8 count, your experience?

9 A. I would like to think so.

10 Q. I don't want to tell you that -- maybe I
11 don't understand -- yourself, have you got very
12 much -- have you had to do a study on oil in place?
13 But if you did an oil in study -- you need a lot
14 more time and a lot more information, given time
15 limits and that sort of thing. Is that fair to say?

16 A. Yes, very fair.

17 Q. Now, when Mr. Rankin took you through that
18 series of emails, you never really agreed to do
19 anything more than opine on the effect of saltwater
20 injection into the San Andres formation. Is that
21 fair?

22 A. Yes.

23 Q. You never had a meeting of the minds as to
24 what you were going to do in terms of doing further
25 study other than what you wound up doing?

Redirect Examination by Mr. Padilla

133

1 A. Correct.

2 MR. PADILLA: One moment,
3 Mr. Harwood.

4 Not yet. I just said one moment, please.
5 But I don't need any further time. I'm done. I
6 don't have further questions.

7 HEARING OFFICER HARWOOD: You may be
8 excused.

9 CHAIRMAN RAZATOS: Hearing Officer --
10 Mr. Hearing Officer, please don't forget to turn on
11 your microphone. We can't hear you.

12 HEARING OFFICER HARWOOD: I'm sorry.
13 Thank you.

14 All right. Mr. Marek, thank you for your
15 time, and you are free to go. You're excused.

16 FRANK MAREK: Thank you.

17 HEARING OFFICER HARWOOD: All right.
18 On my list, I see Galen Dillewyn. Am I pronouncing
19 that right? Is that your next witness, Empire
20 folks?

21 MS. HARDY: Yes, it is our next
22 witness, and Ms. Shaheen will present Mr. Dillewyn's
23 testimony.

24 HEARING OFFICER HARWOOD: Okay.
25 Great. Is he appearing remotely?

Page 133

Direct Examination by Ms. Shaheen

134

1 MS. SHAHEEN: He is.

2 HEARING OFFICER HARWOOD: Great.

3 MS. SHAHEEN: And he should be on.

4 HEARING OFFICER HARWOOD: Great.

5 MS. SHAHEEN: For Ms. Shaheen.

6 HEARING OFFICER HARWOOD: Good

7 afternoon, Mr. Dillewyn. Can you hear and see us?

8 GALEN DILLEWYN: Yes, I can.

9 HEARING OFFICER HARWOOD: All right.

10 If you will please raise your right hand, sir.

11 GALEN DILLEWYN

12 having been first duly sworn, testified as follows:

13 HEARING OFFICER HARWOOD: All right.

14 Thank you.

15 Ms. Shaheen.

16 MS. SHAHEEN: Thank you.

17 DIRECT EXAMINATION

18 BY MS. SHAHEEN:

19 Q. Good afternoon, Mr. Dillewyn.

20 A. Good afternoon.

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

23 A. My name is Galen Dillewyn.

24 Q. With whom are you employed and in what
25 capacity?

Page 134

Direct Examination by Ms. Shaheen

135

1 A. I'm the vice president of business
2 development for NuTech Energy Alliance.

3 Q. And you are testifying today as an expert
4 in log analysis; is that right?

5 A. That is correct.

6 Q. You've attached your credentials to your
7 written testimony in this matter?

8 A. I have.

9 MS. SHAHEEN: We would move that
10 Mr. Dillewyn's testimony today be accepted and his
11 expertise as a log analysis be admitted into record.

12 HEARING OFFICER HARWOOD: Any
13 objection from Goodnight?

14 COMMISSIONER LAMKIN: Not to the
15 admission of the record. When I deposed
16 Mr. Dillewyn, he told me that he was seeking to be
17 qualified as an expert in petrophysics, so I'm
18 curious what the difference is between log analysis
19 and petrophysics. But I can ask him that on cross.

20 So I don't object to that general
21 statement, but perhaps I'll ask him on cross the
22 difference between log analysis and petrophysics.

23 HEARING OFFICER HARWOOD: Okay. My
24 understanding is he's being tendered as an expert in
25 the field of . . .

Direct Examination by Ms. Shaheen

136

1 MS. SHAHEEN: Log analysis.

2 HEARING OFFICER HARWOOD: Log
3 analysis. And do you have any objection to that?
4 You're going to reserve it for cross, Mr. Rankin?

5 COMMISSIONER LAMKIN: I think I'll
6 reserve it for cross because when I deposed
7 Mr. Dillewyn, he told me he was seeking to be
8 qualified as an expert in petrophysics.

9 HEARING OFFICER HARWOOD: All right.
10 He'll be accepted as an expert in the field of log
11 analysis.

12 Q. Thank you. It's taking me a minute to be
13 able to share here, so just bear with me. Then I
14 have to -- it's not even showing me . . .

15 Mr. Dillewyn, what did Empire first engage
16 NuTech to do with respect to this matter?

17 A. Empire engaged us to analyze a series of
18 logs to determine the characteristics that we see
19 from it.

20 Q. And were those waterline logs?

21 A. Yes, they were.

22 Q. Can you explain to the Commissioners what
23 a waterline log is?

24 A. The waterline log is a series of data
25 that's obtained at the time of drilling generally,

Page 136

Direct Examination by Ms. Shaheen

137

1 where the -- a series of tools that take electronic
2 measures are lowered downhole via means of a
3 waterline or an electronic cable. And then a series
4 of data points are obtained, placed against depth as
5 the tool is removed from the hole.

6 Q. And did you use waterline logs for seven
7 different wells?

8 A. Yes.

9 Q. And what process did you use to look at
10 those logs?

11 A. NuTech has a petrophysical process that we
12 refer to as the NULOOK.

13 Q. You submitted direct written testimony
14 explaining the results of that initial analysis as
15 Empire's Exhibit F on August 26, 2024; isn't that
16 right?

17 A. Yes.

18 Q. And did you submit revised testimony on
19 December 4, 2024, as Revised Exhibit F?

20 A. Yes.

21 Q. Why did you submit revised testimony?

22 A. After the initial submission, more data
23 was made available to us on the EMSU 679 well,
24 including core data that was on that well. And we
25 analyzed that well and tied to the core and then

Page 137

Direct Examination by Ms. Shaheen

138

1 took that information and distributed it to the
2 other wells in the area.

3 Q. And did you also receive a study entitled
4 "Four-County Appraisal of the San Andres ROZ
5 'Fairway' of the Permian Basin" with information
6 that you were asked to incorporate?

7 A. Yes.

8 Q. And I'm going to try to share that
9 document.

10 Is this the Four-County Appraisal study
11 that you used in your second analysis?

12 A. It is.

13 Q. What changed in your revised testimony as
14 a result of the refined analysis?

15 A. As we modified 'm' and 'n' values to match
16 the core data in the analysis, it ultimately
17 resulted in a lowering of oil in place in part of
18 the logs.

19 Q. And is it fair to say that the two
20 analyses, the initial one that was discussed in your
21 August testimony and the second analysis that you
22 submitted in December, is it fair to say that those
23 two analyses rebuild a range of potential
24 saturations?

25 A. Yes, it does.

Page 138

Direct Examination by Ms. Shaheen

139

1 Q. The first analysis, does it represent the
2 high end of the range?

3 A. It does.

4 Q. And the second analysis, does it reflect
5 the low end of the range?

6 A. Yes.

7 MS. SHAHEEN: Sorry, I'm trying to
8 share again. Oops. Let's try that again.

9 Q. Other than the revisions that were made in
10 your Revised Exhibit F, do you have additional
11 changes to your initial Exhibit F?

12 A. No.

13 Q. Do you have any changes to your Revised
14 Exhibit F?

15 A. No.

16 Q. Subject to the revisions that were made in
17 your Revised Exhibit F, do you affirm that the
18 statements made in your initial Exhibit F are
19 correct and also -- and adopt that testimony today
20 as your sworn testimony?

21 A. Yes.

22 Q. And do you affirm that the statements made
23 in your Revised Exhibit F are correct and adopt that
24 testimony as well as your sworn testimony here
25 today?

Page 139

Direct Examination by Ms. Shaheen

140

1 A. Yes.

2 Q. Let's briefly walk through the process for
3 your analysis.

4 A. Okay.

5 Q. Can you describe the process that NuTech
6 used that's reflected here in slide Exhibit F-1?

7 A. Yes. The NULOOK process is an eight-step
8 process in which a well is analyzed. The first step
9 is to look at the raw data and look at the validity
10 of that data.

11 From there, once the data is valid and has
12 been edited and/or normalized as necessary, then a
13 series of steps is taken to evaluate the well to
14 determine lithology, porosity, and permeability of
15 the formation. In the end, it is all ranked with a
16 flag system.

17 Q. And does this slide -- is this a generic
18 example of the output you get from the NULOOK
19 process?

20 A. Yes, it is.

21 Q. Does this slide reflect information that
22 is contained in your filed testimony?

23 A. Yes, it does.

24 Q. Let's walk through the steps in your
25 analysis. What variables did you consider in your

1 analysis?

2 A. In this analysis, after receiving the core
3 data, we looked at the values of 'm' and 'n' on the
4 saturation equation and varied those.

5 Q. And how were the 'm' and 'n' values used
6 in your initial analysis, scenario 1?

7 A. In the initial scenario, we ran a standard
8 value of 2 and 2, which is very common in carbonate
9 reservoirs.

10 Q. And in scenario 2, what changed?

11 A. In scenario 2 -- and all these scenarios
12 are located within that four-county study. The one
13 that was on the northwest shelf in the Midland Basin
14 showed a 'm' value of 2.3 and an 'n' value of 2.3.
15 We found that it made a good match of core
16 saturations from the top of the San Andres to --
17 down to 4,302 feet.

18 Q. And when you say it was a good match, that
19 means you matched it to the core saturations from
20 the core data of the EMSU 679; is that right?

21 A. That is correct.

22 Q. And can you tell us what you used in
23 scenario 3 for your analysis?

24 A. Scenario 3, the data assessed that
25 followed on the San Simon Channel to the north. A

Direct Examination by Ms. Shaheen

142

1 'm' value of 2.3 and an 'n' value of 3.0 was run in
2 those wells. When compared against the core water
3 saturation, we found a core water saturation was
4 15 percent higher than values calculating using
5 those numbers.

6 Q. For scenario 4, did you also use
7 additional data from the Four-County Appraisal?

8 A. Yes. These were two areas within Gaines
9 County on the Central Basin Platform that yielded an
10 'm' and 'n' value of 2.3 and 3.4, which showed a
11 match to the core water saturation in the bottom of
12 the San Andres.

13 Q. How did you apply this analysis to the
14 other wells?

15 A. That is no one value fit the entire
16 analysis. We broke up the interval into three
17 separate zones, to which we applied modified values
18 of 'm' and 'n' with -- using the study as the basis
19 for those. And with that, we then took the values
20 and applied them to the other wells in the area.

21 Q. Were you provided with the core for the
22 EMSU 679 before your first analysis?

23 A. No, we were not.

24 Q. Can you describe to the commissioners what
25 is reflected here in Exhibit F-6?

Page 142

Direct Examination by Ms. Shaheen

143

1 A. F-6 is a graphical representation of the
2 NULOOK analysis, as shown. On the left-hand side,
3 you have the raw waterline data as presented to us.
4 From the middle to the right is our analysis. We
5 have lithological analysis showing that it is
6 primarily a dolomite. This is the Grayburg section
7 on top of the San Andres.

8 We also show porosity with a hydrocarbon
9 saturation in it marked in black. And then we have
10 movable in-bound water shown as part of that
11 porosity. Correct, right there.

12 As well as permeability to the right up
13 there where it shows a permeable formation.

14 Q. What is the important takeaway here?

15 A. In this, it shows that the reservoir has a
16 hydrocarbon saturation, has the ability to flow a
17 fluid through the permeability, and that there is --
18 there is water that will move with it also.

19 Q. And this relates specifically to the log
20 analysis for the EMSU 673 --

21 A. That is correct.

22 Q. -- in light of -- okay. And that's in
23 light of the scenario 4 analysis that you did using
24 the Four-County Appraisal; is that right?

25 A. Scenario 5.

Page 143

Direct Examination by Ms. Shaheen

144

1 Q. Scenario 5. And then that next slide, is
2 this a similar result for the San Andres section?

3 A. Yes, of the same well.

4 Q. And what is the important takeaway here?

5 A. What this shows is the zone is also a
6 dolomite predominately. It has porosity, which
7 shows both hydrocarbon and water saturations, as
8 well as permeability in the reservoir.

9 Q. Is your analysis explained in more detail
10 in the attachment to your Revised Exhibit F
11 entitled, "Water Saturation Parameter Scenarios in
12 Lea County for Empire"?

13 A. Yes.

14 Q. And it's my understanding that Empire's
15 next witness, Mr. McShane, will provide further
16 testimony regarding the results of NuTech's
17 analysis; is that right?

18 A. Yes.

19 Q. Thank you.

20 MS. SHAHEEN: I would like to move
21 for admission into the record both Exhibit F and
22 Revised Exhibit F.

23 HEARING OFFICER HARWOOD: Any
24 objection, Mr. Rankin?

25 COMMISSIONER LAMKIN: No.

Page 144

Direct Examination by Ms. Shaheen

145

1 HEARING OFFICER HARWOOD: OCD?

2 MR. MOANDER: No objection from OCD,
3 Mr. Hearing Officer.

4 HEARING OFFICER HARWOOD: Rice?

5 MR. BECK: No objection.

6 HEARING OFFICER HARWOOD: Pilot?

7 MR. SUAZO: No objection.

8 HEARING OFFICER HARWOOD: It will be
9 admitted.

10 (Exhibit F and Revised Exhibit F admitted into
11 evidence.)

12 MS. SHAHEEN: I would like to move
13 into the record the Four-County Appraisal paper as
14 Exhibit F-8.

15 HEARING OFFICER HARWOOD: Mr. Rankin?

16 COMMISSIONER LAMKIN: No objection.

17 HEARING OFFICER HARWOOD: Mr.
18 Moander?

19 MR. MOANDER: No objection.

20 HEARING OFFICER HARWOOD: Mr. Beck?

21 MR. BECK: No objection.

22 HEARING OFFICER HARWOOD: Mr. Suazo?

23 MR. SUAZO: No objection.

24 HEARING OFFICER HARWOOD: It will be
25 admitted as well.

Page 145

Cross-Examination by Mr. Rankin

146

(Exhibit F-8 admitted into evidence.)

MS. SHAHEEN: Thank you. I pass the witness.

HEARING OFFICER HARWOOD: Okay.
Mr. Rankin.

COMMISSIONER LAMKIN: Thank you.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Good afternoon, Mr. Dillewyn. How are you today?

A. I'm doing well, Mr. Rankin. Yourself?

Q. I'm doing okay. I'm doing okay.

The first thing I want to address with you is what your -- is the status of your testimony. Ms. Sheehan asked you -- qualified you as an expert in log analysis, but when I deposed you and specifically asked you what you were seeking to be qualified as, you told me you were seeking to be qualified as an expert in petrophysics. What's -- what's the difference, in your opinion, between petrophysics and log analysis?

A. The main difference is the inputs used, that a log analyst is a subset of petrophysics, where most of the time petrophysics is log interpretation; however, there can be other items

Page 146

Cross-Examination by Mr. Rankin

147

1 that are introduced that would be in addition to
2 what I have performed for Empire.

3 Q. Okay. So like what?

4 A. Fluid flow within a reservoir.

5 Q. So you did not evaluate fluid flow within
6 a reservoir as part of your analysis for Empire?

7 A. No, I did not.

8 Q. Okay. And you're saying that's something
9 that goes outside of what a log analysis would be?

10 A. Correct.

11 Q. Okay. What else differentiates an expert
12 in log analysis from a petrophysics expert?

13 A. Mostly it's taking it to the reservoir
14 engineering side of things. That is the predominant
15 difference as I see it.

16 Q. Now, when I asked you during your
17 deposition what subject matter or field you were
18 seeking to be qualified as an expert in, you told me
19 petrophysics. Why are you -- why is that changing
20 today?

21 A. Just to be more specific as to what it is
22 I do within the discipline of petrophysics.

23 Q. Whose decision was that to amend your
24 qualifications from petrophysics to log analysis?

25 MS. SHAHEEN: I object to the

Page 147

Cross-Examination by Mr. Rankin

148

1 characterization there. And also to the extent that
2 he's seeking attorney/client communications, I would
3 object as well.

4 HEARING OFFICER HARWOOD: Rephrase
5 the question. It's a bit argumentative.

6 COMMISSIONER LAMKIN: Okay.

7 Q. Did you decide to change your
8 qualifications from petrophysics to log -- to an
9 expert log analysis?

10 A. Yes.

11 Q. Okay. And how did that decision come
12 about?

13 MS. SHAHEEN: Same objection. Don't
14 believe it's relevant to this proceeding.

15 HEARING OFFICER HARWOOD: Overruled.

16 A. In conversation, quite often as we talk
17 about the analysis that we do at NuTech, we refer to
18 it as log analysis versus just petrophysics, to be
19 that specific component of it. And that is why in
20 that conversation, when asked if I had to choose
21 one, which would it be, sometimes it's like talking
22 about things like Kleenex versus tissue, right? At
23 some point they're a little bit different, but
24 overall, they can be quite the same to someone that
25 doesn't -- that isn't within the purview of the

Page 148

1 discipline.

2 Q. Okay. So based on reassessment of what
3 you actually did in your analysis, you have revised
4 your expertise from being an expert in petrophysics
5 to being an expert in log analysis. Is that fair?

6 A. Yes.

7 MS. SHAHEEN: I'm going to object
8 again, because I think that's a mischaracterization
9 of what occurred.

10 HEARING OFFICER HARWOOD: What I've
11 got written down is log analysis is a subset of
12 petrophysics. So I think we got the point. So
13 maybe move on. All right.

14 COMMISSIONER LAMKIN: Well, I guess I
15 want to understand, Mr. Hearing Officer, because --
16 actually, I feel like it's important to understand
17 what Mr. Dillewyn is qualified to testify about.
18 Because much of this case is about petrophysics.

19 And in their direct case, their case in
20 chief, this is the only witness that they have to
21 testify about log analysis or petrophysics. They
22 have nobody else. And without an analysis on
23 petrophysics, who's qualified, then they don't have
24 any testimony that goes to establishing a basis for
25 oil saturation.

Cross-Examination by Mr. Rankin

150

1 And I'm just trying to understand exactly
2 what Mr. Dillewyn is qualified to testify on.

3 HEARING OFFICER HARWOOD: Well, what
4 he's qualified to testify about and how he decided
5 to change his expertise -- the name of his expertise
6 are two different topics.

7 COMMISSIONER LAMKIN: Yeah.

8 HEARING OFFICER HARWOOD: So you're
9 welcome to explore the other one.

10 COMMISSIONER LAMKIN: That's what I'm
11 moving towards.

12 HEARING OFFICER HARWOOD: All right.

13 COMMISSIONER LAMKIN: I wanted to
14 understand the first, and now I'll ask the second.

15 Q. (By Mr. Rankin) So, Mr. Dillewyn, as to
16 the question about what's entailed within the
17 expertise of a log analysis, okay, one of the things
18 you told me, as I understand, that's excluded from
19 that would be understanding or testifying on how
20 fluid would flow within a reservoir, agree?

21 A. Yes.

22 Q. Okay. And I'd like to understand a little
23 bit more about what -- so that's what it doesn't
24 include. And I'd like to understand a little bit
25 more about what it does include. So in your

1 analysis in your testimony, you have modified the
2 'm' and 'n' values for the logs that you
3 interpreted, correct?

4 A. Yes.

5 Q. Okay. And I'd like to understand how a
6 log -- expert in log analysis has the expertise to
7 determine what are the proper 'm' and 'n' values to
8 apply for a given log.

9 A. When running for a general carbonate
10 system, the values used within the saturation
11 exponent generally are 2 and 2 for 'm' and 'n'
12 respectively. In situations those values can change
13 depending on the light of -- in light of the
14 information given.

15 Q. Okay. Now, as a log analysis -- a log
16 analyst, okay, what do you need to understand to
17 determine how -- what specific rock characteristics
18 affect 'm' and 'n'?

19 A. The wettability of the rock, the
20 cementation of the rock, as well as secondary
21 porosity and some geological features, such as
22 fracturing -- natural fracturing, that is, and a
23 secondary porosity in and of that.

24 Q. Okay. So let's take the first one,
25 cementation of the rock. As part of your analysis,

Cross-Examination by Mr. Rankin

152

1 I understand that you took values from this
2 Four-County assessment and you applied those to
3 your -- to your well logs, correct?

4 A. Yes.

5 Q. I -- and I may be taking this out of order
6 a little bit, but I guess I want to understand. My
7 understanding based on, you know, when I deposed
8 you, was that the process that NuTech took when
9 it -- when it pulled those different values from the
10 Four-County assessment, was that you applied -- you
11 ran them, you put them -- you put -- you ran them
12 against your log, right? And you put them down on
13 the log, and you saw which ones fit best with the
14 water saturation; is that -- is that correct?

15 A. We saw which values of the core saturation
16 fit as to the entire -- yeah, as to the parameters
17 run, yes.

18 Q. And I guess I'm just talking about the 679
19 well, correct? Because --

20 A. Correct.

21 Q. -- the only well for which you had water
22 saturations from the core was for the 679 well,
23 correct?

24 A. Correct.

25 Q. Okay. So in order to determine which

Page 152

Cross-Examination by Mr. Rankin

153

1 'm' and 'n' values were properly applied to the 679
2 well, it was a trial and error basically, right?
3 You took 'm' and 'n' and just applied it to 679 to
4 see which one resulted in the closest fit to the
5 water saturation, correct?

6 A. We used the determinations from the
7 Four-County study as a basis for wells within the
8 same reservoir to see if those combinations fit, as
9 there could be a very large number of combinations
10 that could also fit those zones as you calculate
11 them out.

12 Q. Okay. But I'm asking you: You limited
13 yourself to those values from the Four-County study,
14 but it was a trial and error to see which ones fit
15 best across the three zones or intervals that you
16 divided the 679 into, correct?

17 MS. SHAHEEN: Object to the --

18 A. No. We --

19 MS. SHAHEEN: -- form of the
20 question.

21 HEARING OFFICER HARWOOD: It's
22 overruled.

23 Q. You can answer, Mr. Dillewyn.

24 A. No. We used those values to calculate as
25 an entirety of the analysis and saw where in those

Page 153

1 that they fit. After we had a fit, we were asked
2 what it would take to match core by varying
3 'm' and 'n', which is when we came up with the
4 scenario 5 values.

5 Q. Okay. But I guess my point about this is,
6 I'm not hearing you tell me that you were evaluating
7 the geologic components to determine what the
8 cementation of rock is, what the secondary porosity
9 is. One other feature, such as fractures, may
10 influence and amend values. I hear you telling me
11 that you basically were running an 'm' and 'n' to
12 decide which ones fit best with the water
13 saturation, correct?

14 A. I'm not a geologist. I am not able to
15 make that study.

16 Q. So that's -- I mean, did anybody do that
17 at NuTech as part of this analysis?

18 A. That was outside the scope of what we were
19 asked to do.

20 Q. I'm going to come back to this, because I
21 think by going through, you know, what you did in
22 your analysis will help me better understand, and
23 I'll be on the target more directly, the questions I
24 have. Okay?

25 Now, do you -- have you, Mr. Dillewyn,

Cross-Examination by Mr. Rankin

155

1 ever prepared a petrophysical analysis for a
2 proposed residual oil zone development before?

3 A. I have not.

4 Q. To your knowledge, has NuTech ever done
5 so?

6 A. Yes.

7 Q. Where?

8 A. In many fields across West Texas and
9 Eastern New Mexico for the San Andres.

10 Q. Okay. Which fields?

11 A. Fields such as Wasson, Slaughter,
12 Seminole, Vacuum. Those are the first ones that
13 come to mind.

14 Q. Okay. The Vacuum is on the northwest
15 shelf north of the San Simon Channel, correct?

16 A. Yes.

17 Q. Any that you can identify on the western
18 margin or slope of the Central Basin Platform?

19 A. Not that I remember offhand.

20 Q. Okay. So nothing that you can identify,
21 as you sit here today, correct?

22 A. Correct.

23 Q. And were those that you've identified in
24 the San Andres?

25 A. I'm sorry, repeat.

Page 155

Cross-Examination by Mr. Rankin

156

1 Q. Were the ROZs that you referred to that
2 NuTech had worked on in the San Andres?

3 A. Yes.

4 Q. Okay. And those were on the eastern side
5 of the Central Basin Platform or north of this -- of
6 the northwest shelf, correct?

7 A. Predominantly.

8 Q. Okay. But none that you can think of
9 today west -- on the western side of the Central
10 Basin Platform, correct?

11 A. Correct.

12 Q. Okay. All right. Exhibit F. Ms. Shaheen
13 reviewed with you your original testimony, which was
14 marked as Exhibit F and filed in August of 2024. So
15 you prepared that testimony, correct?

16 A. Yes.

17 Q. Okay. And then in December of 2024, you
18 submitted and filed a revised testimony, correct?

19 A. Yes.

20 Q. Now, in that revised testimony, I don't
21 see anywhere in that testimony where you refer to
22 your prior testimony as a low range. Did you
23 refer -- did you intend to retain the prior
24 testimony?

25 A. I'm sorry, you -- it broke up over your

Page 156

1 wording.

2 Q. Did you intend -- when you filed your
3 revised testimony in August -- in December of 2024,
4 did you intend to retain the testimony you provided
5 previously in August of 2024?

6 A. At that time we submitted the modified
7 values, and as anything in petrophysics, the
8 analysis, it can -- can and usually is a range.

9 Q. Now, when you filed your revised
10 testimony, you didn't provide -- you didn't -- you
11 didn't submit any ranges, did you?

12 A. No.

13 Q. It was filed as revised testimony, right?

14 A. To my knowledge, yes.

15 Q. And in your revised testimony, you said --
16 you made no statements about the intent to retain
17 the previous work you'd done and submitted in August
18 of 2024, did you?

19 A. I do not remember.

20 Q. If you did, it would be in your revised
21 testimony, correct?

22 A. That would make sense, yes.

23 Q. Okay. Now, I think you did this a little
24 bit, but I just want to make -- go into a little
25 more detail here. Why did you revise your testimony

1 in December of 2024?

2 A. Due to receiving the new information about
3 the core on the 679, as well as the log data for
4 that well.

5 Q. Now, when you submitted your original
6 testimony, Exhibit F, okay -- and that new -- that
7 new data that you received, what was it?

8 A. It was a spreadsheet with core values and
9 readings with saturations, porosity, and
10 permeability through most of the zone, as well as an
11 LAS of the log data.

12 Q. For which core? Which log? Which well?

13 A. For the EMSU 679.

14 Q. On my screen -- let me know when you can
15 see it -- I'm going to share your original testimony
16 that was filed in August of 2024. Let me know when
17 you can see that.

18 A. I can see it.

19 Q. Okay. Now, this is your self-affirmed
20 statement. It's marked as Exhibit F. And I'll just
21 scroll down.

22 It's signed and dated August 2024. Do you
23 see that?

24 A. Yes.

25 Q. Okay. Now, when you submitted this

1 original testimony, you testified that -- looking at
2 page 2 of your testimony, that NuTech utilized core
3 data available in the area, including core results
4 from the EMSU 679, right?

5 A. Yes, that's what it says.

6 Q. But -- so you knew that there were core
7 data for the 679, but you actually -- you didn't
8 actually have it, did you?

9 A. No.

10 Q. What were you given instead?

11 A. We were given verbal ranges for what
12 porosity and permeability were before doing our
13 analysis.

14 Q. Okay. And who gave you those ranges?

15 A. Nick Corsett, (sic) to my memory.

16 Q. Who is -- who is Nick? Is that with --
17 somebody with Empire?

18 A. Geologist from Empire.

19 Q. Okay. So Empire gave you those ranges.
20 Did you ask to see the core?

21 A. At the time, no.

22 Q. Did you ask to see the core subsequently?
23 Or did -- or did Empire give you the core after
24 seeing Goodnight's direct testimony?

25 A. After the first submission here, it was

Cross-Examination by Mr. Rankin

160

1 decided by Empire that us analyzing that well and
2 including it would show our analysis and see if
3 there was any changes to it.

4 Q. Okay. So going back to the -- to the
5 revisions here, you -- the purpose for the revised
6 statement was to incorporate that additional log --
7 rather core data that you were given from Empire
8 that was previously available, but you didn't ask
9 for it, correct?

10 A. We were not analyzing the 679 well. So
11 no, I did not ask for it.

12 Q. Isn't the 679 well, the only well -- well,
13 I guess there's two wells that potentially have
14 San Andres -- that have core in the San Andres,
15 agree?

16 A. To my knowledge, that is it.

17 Q. Okay. Within the EMSU, one is the RR Bell
18 Number 4, according to Empire, correct?

19 A. Yes.

20 Q. And the other is the EMSU 679, correct?

21 A. Yes.

22 Q. So the two wells for which you were aware
23 that there was core data, you did not ask for, as
24 part of your analysis of the -- of the logs
25 available to you, correct?

Page 160

Cross-Examination by Mr. Rankin

161

1 A. Correct.

2 Q. Okay. So now subsequent to Goodnight
3 filing its -- its testimony, Empire then gave you
4 the actual core data for only one of those wells,
5 right? The EMSU 679, correct?

6 A. Yes.

7 Q. Okay. And in your revised testimony, you
8 were asked by Empire to calibrate the 679 well log,
9 your interpretation to the core water saturations,
10 correct?

11 A. Yes.

12 Q. Okay. And Empire also asked you to, then,
13 based on that analysis, to prepare this revised
14 testimony in December, correct?

15 A. Yes.

16 Q. Okay. So based on the results from the
17 analysis applied to the 679 well log analysis,
18 Empire asked you to prepare a similar analysis for
19 each of the other logs for which -- which were
20 available for the EMSU, correct?

21 A. Yes.

22 Q. And those were what Mr. McShane relied on
23 in his revised testimony, correct?

24 A. To my knowledge.

25 Q. Okay. Now, the difference -- I have up

1 here your revised testimony. I've highlighted it in
2 green, what I understand to be the actual changes in
3 the -- in the testimony, the new testimony that was
4 not -- that was revised, okay, as far as testimony
5 goes. Do you see it on my screen here?

6 A. Yes.

7 Q. So I've highlighted in green what I
8 identified as the change in your testimony. And the
9 first two sentences at the top here on page 5 are
10 that, quote, "In the exhibit, the water saturation
11 reaches as low as 35 percent indicating a
12 hydrocarbon saturation of 65 percent. The oil
13 saturation varies from 65 percent down to 1 percent
14 wherever porosity develops in the reservoir." Did I
15 say that correctly?

16 A. Yes.

17 Q. Was that a new sentence that was added in
18 your revised testimony?

19 A. Yes.

20 Q. Originally you a stated that water
21 saturation was as low as 20 percent with a
22 hydrocarbon saturation of 80 percent, agree?

23 A. If that's what it says, then yes.

24 Q. Okay. But in this revised testimony, you
25 didn't retain that earlier analysis as part of your

1 testimony, did you?

2 A. No, because as you see stated here is, in
3 Exhibit F-7, I was referencing the Exhibit F-7
4 attached here, which was different than the one in
5 the initial.

6 Q. So which -- so is revised -- I'm just
7 confused, because did revised F-7 not replace the
8 original F-7?

9 A. Yes. That's why it is both referred to as
10 Exhibit F-7.

11 Q. The next sentence I identify as being new
12 here is, "The 'm' and 'n' values were adjusted for
13 updated analysis for additional discussion in
14 Attachment 1 at the end of this document." Did I
15 read that correctly?

16 A. Yes.

17 Q. And is that -- are those the three
18 sentences in your testimony that are different from
19 your original testimony?

20 A. As I remember, yes.

21 Q. Okay. Nothing else was changed in your
22 testimony other than those sentences that I've
23 highlighted in green?

24 A. Correct.

25 Q. Okay. Then here in this last sentence I

Cross-Examination by Mr. Rankin

164

1 highlighted in green, you refer to Attachment 1 at
2 the end of this document. And by referring to that,
3 you would agree that you're incorporating that
4 analysis and its statements as part of your
5 testimony, agree?

6 A. Yes.

7 Q. Okay. Now, going back to the statement in
8 your original testimony that -- you referred to the
9 679 in your original testimony that you had -- that
10 the NuTech utilized core data available in the area,
11 including the core results from the EMSU 67.

12 Just to be clear, Empire, at the time of
13 your original testimony in August of 2024, did not
14 ask NuTech to calibrate its log interpretations to
15 the EMSU 679 as part of your original testimony,
16 correct?

17 A. As the EMSU 679.

18 Q. Correct?

19 A. Correct.

20 Q. And it didn't ask you to calibrate your
21 interpretations or analysis to the RR Bell Number 4,
22 correct?

23 A. Correct.

24 Q. Okay. And Empire also did not provide you
25 the core or log information on the RR Bell 4,

Page 164

1 correct?

2 A. Correct.

3 Q. Nor do they provide you the actual core
4 data from the EMSU 679, correct?

5 A. Correct.

6 Q. Mr. Dillewyn, how long have you been doing
7 log analysis for NuTech?

8 A. 16 years.

9 Q. Isn't it advisable when doing log analysis
10 to calibrate your log interpretations to core data
11 whenever that information is available?

12 A. Yes, it is highly recommended.

13 Q. Why didn't you do that in your first
14 analysis?

15 A. Given the analysis that NuTech had done in
16 the area, Empire decided, based on costs, to not
17 have us analyze those wells as there were other
18 wells of immediate concern to what they were trying
19 to accomplish.

20 Q. Okay. That's your understanding based on
21 your discussions, your interactions with Empire,
22 correct?

23 A. Correct.

24 Q. Okay. Now, even in your revised
25 testimony, you did not calibrate your analysis to

1 the RR Bell Number 4 core data, correct?

2 A. It was part of the system that has -- it
3 is in our system that has made up the overall
4 San Andres model, but there was no direct input past
5 that in this area. All of the data was tied to for
6 saturation for the revised testimony in the 679
7 well.

8 Q. Okay. Now, when I -- I saw from
9 discovery, because I understood, based on your
10 deposition, that the RR Bell Number 4 core data was
11 part of the analysis -- was incorporated into
12 NuTech's NULOOK analysis. Is that a fair statement?

13 A. Yes.

14 Q. Okay. And so it informed, to some extent,
15 NuTech's assessment or analysis of its -- of the
16 well logs in the EMSU, correct?

17 A. Correct.

18 Q. Okay. And when I saw -- from Empire to
19 obtain the RR Bell Number 4, I was not -- they
20 objected to my request for that document. And my
21 understanding is you did not provide it to Empire;
22 is that correct?

23 A. That is correct.

24 Q. Okay. And why was that?

25 A. That was due to -- the RR Bell Number 4

Cross-Examination by Mr. Rankin

167

1 core was not provided to us by Empire, was provided
2 to us by another operator. And, therefore, I do not
3 have the rights to share that information.

4 Q. But it was used in your analysis, correct?

5 A. Yes.

6 Q. Okay. Now, you touched briefly on
7 NuTech's NULOOK process with Ms. Shaheen and
8 basically gave us a high level statement that it's
9 an eight-step process. It's called the NULOOK
10 process. We talked about this in your deposition.
11 But I -- and you mentioned just now that the first
12 step is to validate the data.

13 Explain to me how it is that you validate
14 the data. And what data are you validating?

15 A. We are looking at the raw waterline data.
16 We're looking at the inputs that will go into the
17 model, the curves generated based off of the tools
18 that were run on each well.

19 Q. How do you validate the raw waterline
20 data?

21 A. One of the things we do is re-create
22 histograms of data to ensure the similar data
23 ranges. One will be to look at hole washout, or
24 what we refer to as bad hole, to areas where the
25 density data is not valid. Those are the primary

Page 167

1 methods, either for normalization or through
2 editing.

3 Q. When you say editing, you mean like
4 excluding data that is anomalous?

5 A. Or changing the data to be based off of
6 the other curves to literally hand edit the data.

7 Q. Okay. And was that done in this case for
8 any of these wells that you analyzed within the
9 EMSU?

10 A. I do not remember.

11 Q. Is that something you, yourself, did or
12 somebody else at NuTech would have done?

13 A. That would have been done by one of our
14 analysts.

15 Q. But you -- sitting here, you don't know
16 whether -- to what extent any of the data from the
17 raw waterline logs were edited or changed by
18 NuTech's technicians?

19 A. It's indicated on the log display.

20 Q. Okay. So where -- how is it indicated on
21 the log displays?

22 A. There is a red shading to show where that
23 does occur that's located within the depth track.

24 Q. Okay. Are you aware of any, as you sit
25 here today, that reflect that red shading that you

1 can point me to or no?

2 A. If you look at my Exhibit F-6 and F-7,
3 that should below this. In F6, you will see no red
4 shading in the depth tracks or that there were no
5 edits to that data --

6 Q. Okay.

7 A. -- within the zone. If you proceed to the
8 F-7, there are also no edits within this zone.

9 Q. So I'd have to look at the complete well
10 image -- the complete interpreted log image to
11 determine whether or not there's any shading -- red
12 shading indicative of log edits, correct?

13 A. Yes.

14 Q. But as you sit here today, you're not
15 aware whether that's the case for any of the wells
16 that NuTech has analyzed, correct?

17 A. Correct.

18 Q. And you don't know -- so, therefore, you
19 don't know to what extent NuTech, in its validation
20 efforts, had to -- or decided it needed to modify or
21 edit any of the raw waterline data, correct?

22 A. From the top of my head, I cannot recall
23 it. However, it would be able to be looked at and
24 determined quickly.

25 Q. Okay. Now, does NULOOK -- the NULOOK

Cross-Examination by Mr. Rankin

170

1 process use synthetic nuclear magnetic resonance in
2 its analysis?

3 A. Define synthetic nuclear magnetic
4 resonance.

5 Q. I'm asking you: Does NULOOK process --
6 let me ask you this: Does it use a nuclear magnetic
7 resonance in its process?

8 A. No, it does not.

9 Q. Okay. Does it use a neural net or some
10 sort of machine learning?

11 Did you hear that question?

12 A. Yes, I heard you. I'm just considering
13 all aspects of it.

14 Inasmuch that when we determine
15 irreducible water, you'll see on the third step that
16 we use a multiple modeling logic that ties back to
17 our relationships from which we derive from nuclear
18 magnetic resonance.

19 Q. I think I might need you to rephrase that,
20 because I'm not sure I followed you. Can you
21 explain again what you mean?

22 A. So using multiple modeling logic, meaning
23 multiple inputs that are not necessarily tied
24 together to determine irreducible water, which is
25 derived from a relationship that we know from

Page 170

Cross-Examination by Mr. Rankin

171

1 magnetic resonance theory to tie and understand
2 irreducible water.

3 Q. So to the extent there's any sort of
4 neural net machine learning, it's -- that process is
5 related solely to the determination of irreducible
6 water; is that correct?

7 A. Correct.

8 Q. And that same process was used for the --
9 NuTech's revised log analysis, correct?

10 A. Yes.

11 Q. Now, I'm going to skip down to the
12 Attachment 1 where you get into the amendment here
13 that you -- that you did. Okay?

14 This is on PDF page 16 of your revised
15 testimony. This is your attachment that includes
16 your revised analysis, correct?

17 A. Yes.

18 Q. So based on the -- my understanding,
19 Mr. Dillewyn, NuTech received the EMSU 679 core data
20 and logs from Empire in September of 2024, correct?

21 A. Yes.

22 Q. Okay. And what did -- what exactly did
23 Empire ask you to do with that data?

24 A. We were asked to analyze the 679 well
25 black core against it and then to determine what

Page 171

1 values of 'm' and 'n' based on the Four-County
2 Appraisal could apply within there and then
3 ultimately make a tie directly to core saturation as
4 provided.

5 Q. Okay. In this page I've got up on the
6 screen here, which is not numbered, but under
7 number 1 of the scope of the project, the last
8 portion of this sentence here is -- says that you
9 were asked to, you know, apply these 'm' and 'n'
10 values to the 679 well and then provide commentary
11 on implication of the values. Do you see that?

12 A. Yes.

13 Q. What does that mean to provide commentary
14 on implication of the values?

15 A. What does it mean by the values changing
16 in regards to the data.

17 Q. Okay. What does it mean in regards to the
18 values of 'm' and 'n' changing with respect to the
19 data? That's what you said?

20 A. Yes.

21 Q. And I guess I'm trying to understand what
22 do you mean by that? Like does the data reflect --
23 can you -- can you find a basis for changing
24 'm' and 'n' values in the data? Is that what you're
25 saying?

Cross-Examination by Mr. Rankin

173

1 A. As well as why would those values not be a
2 standard number. Why would they not be 2 and 2.

3 Q. Okay. Now, in the introduction here, I've
4 highlighted a section of your statement here that
5 says, "Determining water saturation was one of the
6 multiple rock properties delivered by NuTech's
7 NULOOK to Empire to provide the best petrophysical
8 solution of the San Andres and Grayburg formations
9 in the EMSU 679 well in Lea County."

10 Why evaluate -- why tie the log analysis
11 to the water saturation in the core?

12 A. That's what was requested of us.

13 Q. Do you understand why that was asked of
14 you?

15 A. Because to my knowledge, that was the only
16 water saturation values in the area.

17 Q. Okay. And generally, just so I'm tracking
18 with you, when there's a high water saturation in
19 the core, that would indicate a low oil saturation,
20 correct?

21 A. Yes. Those two work together hand in
22 hand.

23 Q. Right. So the lower the water saturation,
24 the higher the oil saturation, correct?

25 A. Yes.

Cross-Examination by Mr. Rankin

174

1 Q. Okay. Now, in a core, though, right,
2 there's not just water saturation? There would be
3 oil saturation, true?

4 A. Not always.

5 Q. What was that, Mr. Dillewyn? I did not
6 hear you.

7 A. Sorry. I said not always.

8 Q. Not always. In this particular core, was
9 there oil saturation -- were there oil saturation
10 values?

11 A. There were.

12 Q. But you were directed to match to the
13 water saturations, correct?

14 A. Yes.

15 Q. Okay. Now, in this next sentence that
16 I've highlighted here, you explain that the four
17 sets of 'm' and 'n' values that you used in this
18 study were chosen based off of this Four-County
19 paper that we talked about, correct?

20 A. Yes.

21 Q. Okay. And this is a -- I think a map that
22 it shows where -- or how that Four-County area was
23 partitioned into different 'm' and 'n' values,
24 correct?

25 A. Yes.

Cross-Examination by Mr. Rankin

175

1 Q. So there was -- I think you said that
2 partition 1 is up here in the northwest shell,
3 partition 2 is down here through the San Simon
4 Channel, partition 3 is on the Central Basin
5 Platform, partition 5 is over the Midland Basin, and
6 partition 4 is over the Central Basin Platform,
7 correct?

8 A. Yes.

9 Q. Notwithstanding the fact that these
10 Four-County values were from different discrete
11 regions across the Permian Basin, you used each --
12 you used all of those values against the 679 well,
13 correct?

14 A. Yes.

15 Q. And in this Four-County study, these
16 'm' and 'n' values didn't vary with depths, did
17 they?

18 A. No.

19 Q. Okay. And just going back just to
20 confirm, so the purpose of this sensitivity analysis
21 or the study that we're reviewing right now was to
22 calibrate NuTech's log analysis to the water
23 saturation measured in the EMSU 679 core, correct?

24 A. Yes.

25 Q. And once you got that log analysis

Page 175

1 calibrated to the core water saturations, then the
2 idea would be that you would have some confidence in
3 NuTech's interpretation or log derived
4 interpretation of oil saturations, correct?

5 A. Yes.

6 Q. Because as you said, there's a
7 relationship between water saturation and oil
8 saturation, right?

9 A. Yes.

10 Q. Okay. And that calibration using water
11 saturation was done at Empire's request?

12 A. Yes.

13 Q. Not to calibrate it on the oil
14 saturations, correct?

15 A. Correct.

16 Q. Okay. Now, I think I understand how you
17 got to the 'm' and 'n' values in the 679 core,
18 right? I think -- my understanding is that you
19 applied all -- one, two, three, four -- five of
20 those 'm' and 'n' values to the entire core
21 interval, and you looked to see which best fit the
22 water saturation, correct?

23 A. Yes.

24 Q. Okay. And then -- and you divided the 679
25 into three depth intervals, correct?

Cross-Examination by Mr. Rankin

177

1 A. That is what it showed to do, that no one
2 parameter would solve the entire interval.

3 Q. Okay. But you chose only three intervals.
4 Why only three? Why not 10 or 15 or more?

5 A. Because three intervals got the job done.

6 Q. Okay. Now, we're talking about the 679
7 well, right?

8 A. Yes.

9 Q. Now, once you got 'm' and 'n' values that
10 matched the water saturations in the 679 core, then
11 you had to take those 'm' and 'n' values and figure
12 out how to apply them to each of the other wells in
13 the EMSU that you analyzed for which you didn't have
14 core, correct?

15 A. Yes.

16 Q. Okay. Now, how did you do that?

17 A. We looked at each of the other wells and
18 looked at where the changes were made in the 679
19 well and correlated them across and made the changes
20 accordingly.

21 Q. Okay. So those -- okay. So you did it
22 based on a -- and so was it based on a log
23 correlation? A depth correlation? What were you
24 finding -- what were you correlating in the well
25 logs to -- to mark the change in the 'm' and 'n'

1 value?

2 A. A log correlation.

3 Q. A log correlation. Okay. So were you
4 able to see some log characteristic that, to you,
5 indicated that change in the 'm' and 'n' value?

6 A. Under my direction, this work was
7 performed by Harry Hernandez. And he was the one
8 that made the tie to each of the wells.

9 Q. So when I discussed this with you during
10 your deposition, you told me the same thing. And
11 you told me at the time, if you recall,
12 Mr. Dillewyn, that you were not able to identify any
13 log characteristics that indicated a change in
14 'm' and 'n' value, agree?

15 A. Correct.

16 Q. And since that time, have you had a chance
17 to talk with Mr. Hernandez, understand his basis for
18 identifying a change in the logs that correlated to
19 an 'm' and 'n' value?

20 A. No, I have not.

21 Q. Okay. But you didn't do that yourself,
22 right?

23 A. Correct.

24 Q. And you -- as you sit here today, you
25 remain unable to identify any log characteristics

Cross-Examination by Mr. Rankin

179

1 that reflect, in your mind, justification for
2 changing 'm' and 'n' values in any of these logs
3 that you analyzed in your revised testimony,
4 correct?

5 A. Yes.

6 Q. So when I asked you during your deposition
7 whether, as you stood -- when you stood before the
8 Commission and you were asked which of the two
9 analyses you would stand behind, which you thought
10 was more correct, the initial analysis that you'd
11 done or the revised analysis that you'd done, you
12 told me that NuTech stood behind the original
13 analysis. Do you recall that?

14 A. Yes.

15 Q. And as you sit here today, is there any
16 basis -- have you changed your opinion on that?

17 A. Both of the analyses, as run with the
18 numbers, are correct. The -- there are many issues
19 when you tie into a core like we did in which we
20 have values given to us.

21 Based off of that and based off of the
22 other inputs that can be changed within the
23 saturation component, there are other components
24 that could affect saturation to as equal of a value
25 as what we see here. Given the fact that this is

Page 179

Cross-Examination by Mr. Rankin

180

1 the only core in the area, by validating it back,
2 this gives us an opportunity to look at this well
3 and try to calculate those values down.

4 Q. I'm not sure -- I'm not sure I quite
5 followed it. But let me back up to, I think, the
6 first part of your answer to my question. And you
7 told me just now that -- in your opinion, that both
8 analyses or interpretations are correct. And I'm
9 trying to square that where -- let me pull up my --
10 my screen. One second.

11 -- where we have, you know, upwards of
12 80 percent or more difference in oil in place
13 calculations resulting from your oil saturation
14 interpretations. That's a big difference.

15 And you're telling us that they're both
16 correct, correct?

17 A. They are a range, yes, sir.

18 Q. A range. So in -- one moment. Let me get
19 to this.

20 You may or may not have been listening to
21 my discussion with Mr. Marek, but I did review with
22 him the analysis that Empire conducted on the Ryno
23 SWD that NuTech analyzed. And based on NuTech's
24 analysis of the Ryno, in the original NuTech
25 analysis Empire calculated an oil in place value of

Page 180

Cross-Examination by Mr. Rankin

181

1 91.5 million barrels per section. In the revised
2 analysis, NuTech calculated an oil in place value of
3 15.6 million barrels per section. And based on my
4 calculation, that's a -- more than 82 percent
5 decrease in oil in place. And that is a big range.

6 And you're telling me that both
7 interpretations are correct, based on the input
8 values provided; is that correct?

9 A. Yes, they are both valid calculations.

10 Q. But the Commission is sitting here trying
11 to decide today or tomorrow or at the end of this
12 hearing whether there's actually any oil down here.

13 And when I asked you in your deposition
14 which, in your opinion, Mr. Dillewyn, was the more
15 correct interpretation of reality based on your
16 experience, you told me that your original -- that
17 NuTech stood by the original analysis?

18 A. Yes, sir.

19 Q. Between the two -- between the two
20 interpretations that you have done, Mr. Dillewyn,
21 which, in your opinion, is more correct and more
22 reflective of actual conditions in the reservoir?

23 A. They are both a range, like I've said. In
24 doing the analysis initially with the value of 2 and
25 2, which is the standard in a multi-mineral approach

Page 181

1 in getting this, this is the optimistic case.

2 The other run is the pessimistic case of
3 what we are looking at here. In that case, more
4 data is needed to determine the actual in place
5 volumes of this well.

6 Q. Okay. So now in your revised
7 self-affirmed testimony, you didn't testify that
8 your original analysis was the low end and your new
9 analysis was the high end, did you?

10 A. The other way around.

11 Q. Let me -- let me rephrase. In your
12 revised testimony, you didn't say that your original
13 testimony was the high end and the revised testimony
14 was the low end, did you?

15 A. No.

16 Q. Okay. Now, when I asked you that question
17 during your deposition, you gave me an answer. You
18 told me that you believe your original analysis was
19 more correct. What has changed between when I asked
20 you that question in your deposition and today?

21 A. As with anything, all data sets are --
22 what's the word I'm looking for? It is incomplete.
23 In the case here, where -- we did not obtain the
24 data as it was being done, therefore, assumptions
25 are to be made. When you look at those as options

1 and you calculate them out, there are several of
2 these that offset each other.

3 Using the Four-County paper, using the
4 core on the 679 well shows that the variability of
5 'm' and 'n' across an area can be quite great.
6 Therefore, if you look at our analysis of it and you
7 look at the way we tied to that core, that if
8 'm' and 'n' are changed, as we put forth in scenario
9 5, then the revised scenario, being the pessimistic
10 case, accurately represents the 679 well as the core
11 was obtained.

12 Q. I didn't see, where in your revised
13 testimony is scenario 5?

14 A. It was in my exhibit.

15 Q. What exhibit?

16 A. Right. Sorry, in the bottom here of --
17 on -- sorry, I don't know what page. It's the
18 second one up -- one page up from this one. Where
19 it says scenario 5, what it takes to match CORSW.

20 Q. Okay. So here in this scenario 5, you
21 say, "To make core water saturation and derive water
22 saturation in agreement, a variable 'm' and 'n' must
23 be used," and then you go on to say, quote, "which
24 is an unlikely scenario because there is no change
25 in logs character through Grayburg and San Andres

1 formations." Did I read that correctly?

2 A. Yes.

3 Q. Okay. So as you sit here today, are you
4 changing your testimony that it's an unlikely
5 scenario because there's no change in logs character
6 through the Grayburg and San Andres formations?

7 A. No.

8 Q. Okay. Is it common for NuTech, in its
9 work, to -- in log analysis, to calibrate its log
10 interpretations to water saturation in core?

11 A. At times we do.

12 Q. When have you done that?

13 A. One is when we look at the analysis and
14 the -- if we get the values -- when we're working
15 from core, like I said, the data sets are not always
16 perfect; therefore, we do not always get saturation
17 values. So we can't tie to it if we do not have it.

18 If we do have it, understanding how the
19 core was analyzed becomes important to being able to
20 tie to saturation values, as well as when was the
21 core analyzed in time to obtaining the core or
22 when -- we call the core was cut.

23 Q. All right. But that wasn't my question, I
24 guess. Okay? I'm going to get to that because I
25 don't disagree that it's important to understand

1 those things.

2 But my question to you is -- you answered
3 me when I asked you, have you -- is it common for
4 NuTech to calibrate its log interpretations to water
5 saturations, and you said, "sometimes."

6 I'm asking you: When? When have you done
7 that? In what circumstances have you used
8 calibrated to water?

9 A. We have done it in many, many different
10 formations in many different areas, generally in
11 conventional reservoirs.

12 Q. Have you ever done it in a residual oil
13 zone?

14 A. I do not remember.

15 Q. In this revised analysis where you're
16 calibrating to the water saturation measurements and
17 the EMSU 679 core, did you make any corrections for
18 water loss during the coring process?

19 A. No.

20 Q. You just told me that it's important to
21 understand how the core was analyzed, right?

22 A. Yes.

23 Q. Why is it important to understand how the
24 core was analyzed?

25 A. Just depending on how the core was handled

1 can change your saturation values.

2 Q. Right. Because you'd expect, when you
3 bring core from depth, that there's going to be some
4 gas expansion, correct?

5 A. Depending how it was handled.

6 Q. Right. Depending on what kind of core it
7 was, correct?

8 A. Yes.

9 Q. And as gas expands, what happens to water
10 in the core?

11 A. As gas expands, both water and hydrocarbon
12 can leave the sample.

13 Q. Okay. What did you do to assess what --
14 and how this core was handled before you analyzed?

15 A. We just received a table with those values
16 in them. We did nothing. We plotted saturation of
17 the water against the log derived.

18 Q. Okay. But you just told me it's important
19 to understand how the core was handled, correct?

20 A. Correct.

21 Q. But did you do that here?

22 A. We were not given how the core was
23 handled.

24 Q. Did you ask for it? I mean, you told me
25 it's important to understand how the core was

Cross-Examination by Mr. Rankin

187

1 handled in order to do an analysis of a log
2 interpretation. And you explained to me how, when a
3 core is removed from depth, gas will expand and it
4 can express the water from the core, altering the
5 water saturations, right?

6 A. It can, yes.

7 Q. And you don't know whether it did or
8 didn't here, right?

9 A. Correct.

10 Q. And this was a conventional core, correct?

11 A. Yes.

12 Q. So is there any -- anything that would
13 have been -- any aspect of that process that would
14 have preserved water saturations during the --
15 during the coring process?

16 A. I'm not a coring expert.

17 Q. So you don't know?

18 A. No, sir.

19 Q. Okay. All right. So you didn't do that
20 to determine what may have happened or how the core
21 was handled, and you didn't make any corrections to
22 the water saturations prior to your analysis,
23 correct?

24 A. Correct.

25 Q. Okay. Why not?

Page 187

Cross-Examination by Mr. Rankin

188

1 A. Because I don't know how to -- I
2 personally do not know how to make those
3 corrections.

4 Q. And is that because you're a log -- you're
5 a log expert in log analysis and not an expert in
6 petrophysics?

7 A. Because I'm not an expert in core
8 handling.

9 Q. Okay. But that involves understanding the
10 fluid flow in the reservoir, right? Being able to
11 understand what happens to the core?

12 A. That makes logical sense, yes.

13 Q. Okay. And that's outside of the scope of
14 your expertise, correct?

15 A. Yes.

16 Q. Okay. So when -- just stepping through
17 this, if there were a loss of water saturation from
18 the core, right, it's a conventional core, and if
19 there were loss of water due to expansion of gas as
20 the core's removed from depth, you and I discussed
21 previously that as water saturations decrease,
22 you're going to -- the interpretation is that
23 there's a higher oil saturation, correct?

24 A. Yes.

25 Q. So if you don't make any corrections for

Page 188

Cross-Examination by Mr. Rankin

189

1 loss of water during the coring process, isn't that
2 going to artificially lower the measured water
3 saturations in the core?

4 A. As you state, with gas expansion and
5 moving water with the gas expanding, wouldn't that
6 also cause hydrocarbon saturation to go down?

7 Q. Well, I guess I get to ask the questions.
8 But, Mr. Dillewyn, are you aware Empire's position
9 is that the ROZ -- the oil in the ROZ is immobile?

10 A. No.

11 Q. Okay. Now, if the water saturations
12 decrease in the core, the analysis would result in
13 higher oil saturations, correct?

14 A. Yes, as those two are hand in hand.

15 Q. Okay. And so if you fail to make
16 corrections for water saturations, your analysis
17 would generate higher oil saturations, wouldn't
18 they?

19 A. To a point. If you look at the core data,
20 it does go to 100 percent water saturation.

21 Q. In certain places? Is that what you're
22 saying?

23 A. Yes.

24 Q. And in those areas where you measured
25 100 percent water, you're saying that there wouldn't

Page 189

1 be any oil, correct?

2 A. Correct.

3 Q. But in every other -- every other interval
4 where there is less than 100 percent water, then
5 there would be oil, correct?

6 A. But if the oil can't flow and you have
7 100 percent water saturation, then there is
8 0 percent oil saturation. For that to be true, if
9 the oil is not flowing in and of itself, then the
10 other values relative to it would have to be
11 similarly correct.

12 Q. I'm not quite sure I follow the logic
13 there. But you're getting into discussing whether
14 something would flow or not, correct?

15 A. I'm talking about --

16 Q. I'm sorry, what?

17 A. You mentioned that the water would come
18 out with gas expansion, which I agreed to. And if
19 water saturation is at 100 percent yet the oil in
20 the system is also immobile, then you can't make the
21 conclusion that 100 percent water saturation
22 shows -- that there should be hydrocarbon saturation
23 in lieu of 100 percent water saturation.

24 Q. I'm not sure I'm tracking, but that's what
25 you're -- that's -- your response to my question is

1 that, what you just restated?

2 A. Yes.

3 Q. Okay. Now, in addition to not taking into
4 account any corrections for water -- loss of water
5 during coring, did NuTech take into account
6 production tests data that was publicly available in
7 its interpretation of the EMSU well logs in either
8 your original or revised testimony?

9 A. No.

10 Q. Did Empire -- Empire did not provide
11 NuTech any of the well test data, swab tests, water
12 production tests, or any other data with respect to
13 any of the wells that NuTech analyzed; is that
14 correct?

15 A. Perfect.

16 Q. Correct? Is that what you said?

17 A. Correct, yes.

18 Q. Yeah. And NuTech did not, itself, review
19 any of the public well files for well test data on
20 the wells you analyzed, correct?

21 A. Correct.

22 Q. Okay. And -- and Empire didn't give you
23 any information on the perforations in the wells
24 that you analyzed, what depths they were perforated,
25 correct?

Cross-Examination by Mr. Rankin

192

1 A. Correct, to my knowledge.

2 Q. Okay. And NuTech did not ask for any
3 other information from Empire to -- to conduct its
4 analysis, correct, other than what Empire gave you?

5 A. Correct.

6 Q. And the only information that Empire gave
7 you, other than the core and log data for the EMSU
8 679 well, were there raster images for the wells you
9 interpreted, correct?

10 A. Yes, correct.

11 Q. And at the time you prepared your -- both
12 your original and revised testimony, you were aware
13 that the EMSU has been operated as a waterflood
14 since 1986, correct?

15 A. Yes.

16 Q. And you are aware at the -- were you aware
17 at the time of your original or revised testimony
18 that the EMSU had six water supply wells that were
19 drilled inside the EMSU?

20 A. I was not aware of the number, just that
21 there were water supply wells.

22 Q. But you didn't know where they were
23 located or what formation they were completed in?

24 A. No.

25 Q. So you weren't aware that they were

1 producing and completed in the San Andres formation
2 in the EMSU?

3 A. I was not aware, no.

4 Q. And you're not aware that Empire
5 calculates those water supply wells that produced
6 about 380 million barrels of water with no reported
7 oil?

8 A. As stated before, we received no
9 production information like that, so no.

10 Q. Okay. Did NuTech take into account any of
11 the water production history of these six water
12 supply wells in either its original or revised
13 testimony?

14 A. No.

15 Q. And NuTech also did not take into account
16 any of the well production history, oil, gas, or
17 water, as part of its interpretation in either the
18 original or revised testimony?

19 A. No.

20 Q. And NuTech didn't review any mud logs or
21 drilling reports for any of the wells that were
22 analyzed in its analysis?

23 A. No.

24 Q. So one of the questions I have about the
25 way NuTech applied -- did its

1 'm' and 'n' sensitivity analysis, in the revised
2 testimony, you applied a changing 'm' and 'n' value
3 only to the San Andres; is that correct?

4 A. Correct, as the core showed the Grayburg
5 to be in adherence to the model.

6 Q. Okay. So you made no changes to the
7 'm' and 'n' in the Grayburg because you were able to
8 match -- or rather NuTech's original analysis
9 matched the core to start with in the Grayburg?

10 A. Correct.

11 Q. Okay. But did -- as to the San Andres, my
12 recollection is, Mr. Dillewyn, that the issues with
13 the -- matching the core in the 679 were only in the
14 bottom portion of that interval; isn't that correct?

15 A. If you know -- as it says here, that from
16 4,158, which is the -- what I remember to be the top
17 of the San Andres -- sorry. Sorry, from -- yeah,
18 from 4,158 to 4,303, a value of 2.15 and 3 made the
19 best fit. And then below that to TD, an 'm' of 2.4
20 and an 'n' of 3.4 was applied.

21 Q. But you vary -- you vary the 'm' and 'n'
22 values in the San Andres -- the entire San Andres,
23 correct?

24 A. Yes.

25 Q. Okay. But wasn't it true that the

Cross-Examination by Mr. Rankin

195

1 NuTech's analysis -- well -- okay, so you -- but you
2 applied -- you applied the variable 'm' and 'n' to
3 the entire interval of the San Andres in the 679,
4 correct?

5 A. Yes, as stated in here.

6 Q. Now, did NuTech prepare or conduct any
7 sort of uncertainty analysis on its initial log
8 interpretations?

9 A. No.

10 Q. How about for its revised analysis?

11 A. The revised analysis, in and of itself, is
12 a sensitivity.

13 Q. Okay. Did you try running your model --
14 your revised model against any other San Andres core
15 or log to confirm whether it was able to match?

16 A. No.

17 HEARING OFFICER HARWOOD: You tend to
18 lose track of time. I've been on your seat before.
19 But we've been going for a couple of hours, so why
20 don't we take -- if this is a good time for you, why
21 don't we take a midafternoon break.

22 COMMISSIONER LAMKIN: Works for me.

23 HEARING OFFICER HARWOOD: All right.
24 Let's see. So it's 3:15. Let's come back at 3:30?
25 Okay. Thanks.

Page 195

Cross-Examination by Mr. Rankin

196

1 (Recess was taken from 3:16 p.m. until 3:32 p.m.)

2 HEARING OFFICER HARWOOD: Are we back
3 on the record, Ms. Apodaca? Okay.

4 MS. APODACA: Yes, we are.

5 HEARING OFFICER HARWOOD: All right.
6 Mr. Rankin.

7 COMMISSIONER LAMKIN: Thank you.

8 Q. Mr. Dillewyn, I just have another short
9 category of questions to talk -- to ask you about.
10 Are you aware that Empire retained a group called
11 OPS Geologic to prepare a revised petrophysics
12 remodel?

13 A. Yes.

14 Q. Have you reviewed OPS's testimony?

15 A. No.

16 Q. Have you reviewed their analysis of
17 their -- of their logs that they interpreted?

18 A. No.

19 Q. Did anyone at OPS reach out to talk to
20 you?

21 A. No.

22 Q. Did Empire ask you to review their
23 testimony?

24 A. No.

25 Q. Did Empire ask you to review their log

Page 196

Cross-Examination by Mr. Moander

197

1 interpretations?

2 A. No.

3 COMMISSIONER LAMKIN: One moment,
4 Mr. Dillewyn. Just before I let you go, I want to
5 confirm I have no further questions.

6 Mr. Dillewyn, thank you.

7 Mr. Hearing Officer, I have no further
8 questions of the witness.

9 HEARING OFFICER HARWOOD: Thank you,
10 Mr. Rankin.

11 Mr. Moander, questions for Mr. Dillewyn?

12 MR. MOANDER: Yes, Mr. Hearing
13 Officer, just a couple.

14 CROSS-EXAMINATION

15 BY MR. MOANDER:

16 Q. Good afternoon, Mr. Dillewyn. How are you
17 doing today, besides from being cross-examined, that
18 is?

19 A. Highlight of my day.

20 Q. These should be fairly straightforward.
21 So recall you were deposed on December 17, 2024, in
22 these matters?

23 A. Yes.

24 Q. And at that time you testified that you
25 hadn't reviewed any of OCD's filings in any of the

Page 197

Cross-Examination by Mr. Beck

198

1 cases; is that right?

2 A. Correct.

3 Q. Have you reviewed them since?

4 A. No.

5 Q. And would it be fair, then, since you just
6 testified you haven't reviewed OCD's records in
7 these -- in any of these cases, that you don't have
8 an opinion on OCD's case?

9 A. Correct.

10 MR. MOANDER: Thank you.

11 I'll pass the witness.

12 HEARING OFFICER HARWOOD: Okay.

13 Thank you, Mr. Moander.

14 Mr. Beck, questions on behalf of Rice?

15 MR. BECK: Mr. Dillewyn, I just have
16 a couple of questions for you.

17 CROSS-EXAMINATION

18 BY MR. BECK:

19 Q. I want to make sure I understood what
20 Mr. Rankin was asking you about. In your deposition
21 with him in December of 2024, your testimony was
22 that you stood by your original analysis and that
23 you did not stand by the revised analysis. Was that
24 right?

25 A. Yes.

Page 198

1 Q. And today, I think you said something
2 different, which is, today you're saying that the
3 revised analysis is a -- I think you said it's a --
4 it's a low range or a low end range and the original
5 analysis is a high end range; is that right?

6 A. Correct.

7 Q. So today you're standing by both your
8 original and your revised statements?

9 A. They are both possibilities, yes.

10 Q. And then today you were accepted as an
11 expert in log analysis; is that right?

12 A. Yes.

13 Q. And on December 17, 2024, you said that
14 you were -- you expected to be accepted as a
15 petrophysicist expert; is that right?

16 A. Yes.

17 Q. And since December 17, 2024, you said you
18 have not looked at any of the rebuttal statements
19 from OPS Geologic, right?

20 A. Correct.

21 Q. Have you spoken with the attorneys for
22 Empire since December 17, 2024?

23 A. Yes.

24 Q. How many times?

25 A. Don't remember an exact. A handful of

1 times.

2 Q. Did you talk about the change in your
3 testimony about the low end and high end ranges as
4 opposed to not standing by your revised testimony?

5 MS. SHAHEEN: Mr. Examiner, I'm going
6 to object. I feel like he's broaching on
7 attorney/client privilege here and work product.

8 MR. BECK: And I'm happy to answer
9 this. I think we've resolved this issue, the
10 Commission resolved it, finding that experts engaged
11 are not subject to the attorney/client privilege.
12 And I think they gave -- based on that ruling, they
13 gave the OCD the ability to depose again a witness
14 where we had this objection before.

15 So I think we've tread this ground.

16 MS. SHAHEEN: I don't recall that
17 ground having been tread or a ruling having been
18 made. Maybe you can be more specific, Mr. Beck.

19 MR. BECK: Sure. Let me find that --
20 let me find it really quickly.

21 January.

22 So February 6, 2025, the Commission
23 granted the Oil -- excuse me -- the Oil Conservation
24 Division's Motion to Compel Expert Witness Testimony
25 of Dr. Robert Lindsay. And let me find exactly

1 where it is here.

2 Paragraph 4: Empire's objection to the
3 discovery communications between its counsel and
4 Dr. Lindsay on the grounds of attorney/client
5 privilege, i.e., that Dr. Lindsay has personally
6 retained the Padilla Law Firm as his lawyers in this
7 case, were not argued or otherwise supported in
8 Empire's briefing and are thus deemed not
9 meritorious.

10 And so if we tread back on that, what
11 happened was Mr. Padilla objected to the OCD's
12 questioning of communications Mr. Padilla had with
13 Dr. Lindsay on the grounds of attorney/client
14 privilege or work product doctrine. Commission
15 looked at the issue and correctly decided that there
16 is no attorney/client privilege or work product
17 protections for expert witnesses who would testify
18 at this Commission hearing.

19 HEARING OFFICER HARWOOD: Unless the
20 witness themselves are a client of the -- of the
21 party.

22 MR. BECK: Then it would be more
23 complex.

24 HEARING OFFICER HARWOOD: Right.
25 Okay.

Cross-Examination by Mr. Beck

202

1 MR. BECK: It would depend on the
2 nature of those communications.

3 HEARING OFFICER HARWOOD: And Empire
4 is not claiming to -- Mr. Dillewyn is a client.

5 MS. SHAHEEN: That is correct. Not
6 to beat a dead horse, I believe that the definition
7 of work product is any product conducted by someone
8 at the direction of an attorney in anticipation of
9 litigation, which is exactly what we're talking
10 about here.

11 I don't know that that analysis was done
12 with respect to work product in that previous
13 ruling, but I can agree that if Mr. Dillewyn is not
14 a client, this is not an attorney/client
15 communication. Although the client was present at
16 the time, so there was privilege between the client
17 and the attorney at that time.

18 But work product done at the direction of
19 an attorney in anticipation of litigation by any
20 person on behalf of the client is protected unless
21 there's a need for that. And I forget what the
22 standard is, but it's -- you know, there needs to be
23 good cause effectively to get that information.

24 HEARING OFFICER HARWOOD: Okay.
25 Well, I'm not convinced that communications are work

Page 202

Cross-Examination by Mr. Beck

203

1 product. So I'm going to allow the question.

2 Objection is noted, but overruled.

3 You want to repeat it. It's been a while.

4 I don't remember it. Mr. Dillewyn probably needs to
5 hear it again.

6 MR. BECK: Sure. I don't remember
7 exactly what I asked.

8 Ms. Tellez, can you read back my question,
9 please.

10 (The record was read back as requested.)

11 A. Yes.

12 MR. BECK: That's all I have. Thank
13 you.

14 HEARING OFFICER HARWOOD: Pilot,
15 questions for Mr. Dillewyn?

16 MR. SUAZO: Pilot has no questions
17 for this witness.

18 HEARING OFFICER HARWOOD: All right.
19 Then to the Commission, who wants to go first?

20 Pardon?

21 UNIDENTIFIED SPEAKER: Chair? The
22 Chair?

23 HEARING OFFICER HARWOOD: Mr.
24 Razatos, would you -- do you have questions?

25 CHAIRMAN RAZATOS: I do not have

Page 203

1 questions. Thank you.

2 HEARING OFFICER HARWOOD: Okay. Then
3 Mr. Lamkin?

4 MR. LAMKIN: Yeah.

5 EXAMINATION

6 BY COMMISSIONER LAMKIN:

7 Q. Good afternoon, Mr. Dillewyn. Thanks for
8 your testimony. I have one question.

9 In your experience analyzing logs and
10 doing petrophysical analysis for clients in the
11 past, have you ever come across situations where
12 core data kind of confounds the log analysis and/or
13 empirical data from the field?

14 A. Yes.

15 Q. Can you expand on what kind of interplay
16 would cause conflicting outcomes?

17 A. There's numerous situations in the work
18 I've approached, being that I've worked in almost
19 every basin in the world. That situation being the
20 case that when geology is changing, the fact that a
21 core measurement is from a specific point versus
22 waterline logs being an average over a depth of
23 investigation, you can quite often see differences
24 there, as well as sometimes core, in the manner in
25 which it was handled and timing between when it was

Examination by COMMISSION AMPOMAH

205

1 taken, depending how it was stored, how it was
2 handled, things like that can cause differences in
3 saturation values.

4 And depending on the core, information
5 measured from those samples can also change how we
6 look at things. But quite often, it's a resolution
7 issue.

8 MR. LAMKIN: Thank you. That's my
9 only question.

10 HEARING OFFICER HARWOOD: Dr.
11 Ampomah?

12 EXAMINATION

13 BY COMMISSIONER AMPOMAH:

14 Q. Good afternoon, sir. Thank you for your
15 testimony. I do have a couple of questions for you.

16 So you've been accepted as an expert into
17 petrophysics. So my first question to you is: You
18 know, based on your expertise and all the
19 information that you've provided to the Commission,
20 how do you quantify the low and high end of your
21 saturation calculations?

22 A. In looking at the analysis, the value of 2
23 and 2 on the high end is a standard petrophysical --
24 is a standard log analysis approach for a multi
25 mineral model using the values looking -- that were

Page 205

1 placed in there.

2 When running the low case tied to the core
3 here in this situation, we were using only those two
4 values to tie. When you look at the results, you
5 can see that core porosity was very accurate to the
6 analyzed measurement, which holds one of the
7 variables within saturation as known. And,
8 therefore, we are limited in the variables that we
9 can change.

10 However, 'm' and 'n' are not the only
11 variables I can change in a saturation equation.

12 Q. Okay. Thank you. So it sounds to me that
13 your testimony more or less aligned with Mr. Scott,
14 but also more or less assigned a low end and a high
15 end based on the standard and also the core
16 calibrated data.

17 Are you familiar with his testimony?

18 A. No, I am not.

19 Q. So you are not able to speak to how your
20 'm' and 'n' values differ from Mr. Scott Birkhead's
21 testimony?

22 A. No, I am not.

23 Q. Now, you estimated your saturation values
24 to be between 1 percent to 65 percent; is that
25 correct?

1 A. Yes, I believe that's what it said, yes.

2 Q. So when there is a value of about
3 65 percent saturation, more or less about let's say
4 50 percent to the high end of 65 percent saturation,
5 would this reservoir still be classified as an ROZ?

6 A. It is outside my purview to determine an
7 ROZ, as that is not what we do in log analysis.

8 Q. So you are not testifying that there is a
9 presence of oil in this zone that we are talking
10 about?

11 A. I am testifying that we do see hydrocarbon
12 saturation in this reservoir; however, we do not
13 determine an ROZ, as those characteristics are
14 outside of our purview.

15 Q. So there's no way in your testimony that
16 you made mention of ROZ?

17 A. Only in general terms.

18 Q. Okay. So I'm asking you in general terms,
19 do you believe that the reservoir of a saturation of
20 about 65 percent can be classified as an ROZ or a
21 conventional reservoir?

22 A. Depending on porosity.

23 Q. Explain that to me, sir.

24 A. As porosity is one of the largest inputs
25 into the saturation equation, depending on your

1 porosity, therefore changes what your saturations
2 are at that particular point.

3 Q. Now, in your log analysis, I've seen that
4 you are showing movable oil, movable water. And so
5 it sounds to me that based on your analysis, you are
6 familiar with irreducible water saturation. Would
7 that be a fair statement?

8 A. Yes.

9 Q. Then what is the irreducible oil
10 saturation that you estimated?

11 A. We did not estimate an irreducible oil
12 saturation.

13 Q. As part of your analysis, did you also
14 evaluate how the changes in mineralogy can also
15 impact, let's say, the porosity and then the
16 saturation estimation?

17 A. By mineralogy, meaning lithology, yes,
18 sir.

19 Q. When I say mineralogy, I'm not necessarily
20 saying limestone or, let's say, dolomite. I'm
21 talking about the actual mineral composition of the
22 rock metrics.

23 A. No. As we did not have that information
24 going in, I could not make a mineralogical model;
25 therefore, a lithological one was determined.

1 Q. Then my question to you is that: Can you
2 explain to the Commission the geological basis of
3 your potential changes in 'm' and 'n', you know, to
4 convince the Commission? Right as I speak to you
5 now, I'm just trying to figure out which of your
6 estimates should we take.

7 And then if we talk about Mr. Ryan
8 Bailey's estimation that was provided to the
9 Commission -- which I'll come to that. Scott also
10 did some work. Now, as a commissioner, I'm just
11 trying to figure out which ones should I work with.

12 A. Yes, sir. I'm well aware that if you want
13 to have an argument about geological model, put
14 three different geologists in the same room and
15 you'll get four different results.

16 So in this situation here, as we ran it,
17 because there is no way from the logs directly to
18 measure the mineralogical model, therefore, it was
19 not determined to be done. We looked at it
20 lithologically to validate the density porosity.
21 And as you can see, the density -- or the porosity
22 that is obtained within the core of the 679 well is
23 accurate.

24 Therefore, in applying it across, not
25 being able to determine those differences in the

1 geological models is why we are sticking with our
2 initial assessment of 2 and 2. If we had direct
3 measurements of the mineralogical model changing,
4 then we could make some of those assessments and
5 make those changes across to the model.

6 Using -- sorry.

7 Q. Go ahead, sir.

8 A. Using the core values of the saturation,
9 as provided to us in the 679 well, and tying that to
10 the calculation to determine 'm' and 'n' and to look
11 at in proximity to the data that we were provided,
12 and using that as the basis and seeing from the
13 Four-County study the wide variance in 'm' and 'n'
14 values from the different fields in the area, if you
15 will, then there is a lot of values that can be used
16 to obtain many different results in there.

17 Q. So is it your testimony that there is no
18 actual geological basis with regards to, let's say,
19 how the optimal 'm' and 'n' were more or less
20 derived, but just trying to fit that to the data?
21 Is that a fair statement?

22 A. We were only fitting it to the data
23 provided, not -- we were not asked to create a
24 geological model from it.

25 Q. From your experience, are you able to

Examination by COMMISSION AMPOMAH

211

1 analyze the impact of, let's say, saltwater
2 injection on petrophysical analysis?

3 A. Not on the given data at the time of
4 original logging.

5 Q. So explain that to me. So explain to the
6 Commission, how can we -- or let's say how can you
7 estimate the impact of the water injection unless
8 there's a petrophysical analysis?

9 A. Petrophysics or log analysis as we
10 performed on these wells is a snapshot in time of
11 when the data is obtained. Those conditions are
12 only at that particular date on which it is run. If
13 something causes the reservoir to change after that
14 fact and no more data is obtained from that, then
15 through petrophysics no further insight can be
16 viewed.

17 Other data could be obtained and other
18 disciplines can create models based off of that
19 framework to show whether fluids have moved or have
20 not moved or what is there; however, on the
21 petrophysics/log analysis side, it is just a
22 snapshot in that time unless more data is obtained.

23 Q. So is it your testimony to the Commission
24 that even if there is a heavy oil saturation in your
25 log analysis in terms of present-day?

Page 211

1 A. Can you repeat, please.

2 Q. Can you talk about -- based on what you
3 just explained to the Commission, can you comment on
4 the fact that there is a huge -- or let's say there
5 is a high certainty associated with any of the
6 petrophysical analyses that has been presented to
7 the Commission, specifically your petrophysical
8 analysis presented to the Commission considering the
9 present-day?

10 A. I cannot remember when the last log was
11 obtained out of the logs we analyzed. Of those
12 values once obtained more recent or after the
13 injection had -- has commenced and depending on
14 proximity to that injection site, could show effects
15 of water injection.

16 Q. So as of now, you cannot comment on the
17 potential impact injection over 100-something
18 million barrels into the San Andres unless the
19 current petrophysical analysis more or less
20 pertained to the oil currently in place?

21 A. Correct.

22 Q. Thank you. Did you presume -- did you
23 estimate permeability as part of your analysis?

24 A. I did.

25 Q. And what was the typical range that you

1 estimated?

2 A. The zones were anywhere within the
3 San Andres -- I'm just going to refer to the
4 San Andres -- was between .1 -- .01 millidarcy and
5 10 millidarcies.

6 Q. Thank you for that. Now, in your
7 testimony, you made mention to the fact that -- and
8 I will read, but let me see if I can get -- on
9 page 23 of 29 -- so I'm reading from the -- this
10 will be the water saturation parameter scenario in
11 Lea County for Empire. On page 23 of that document,
12 I read from -- I have the original analysis, and I
13 read down a little bit.

14 You're saying that, "On the other hand,
15 core permeability to estimated permeability looked
16 scattered due to the possible fractured reservoir."
17 Do you recall that statement?

18 A. Yes, sir.

19 Q. Is there an approach to estimate the
20 permeability for fractured reservoirs?

21 A. Yes, there's many approaches to
22 calculating fractured permeability.

23 Q. So why -- if you believe strongly that the
24 reservoir is fractured and, thereby, there's a --
25 let's say there is -- you are getting closer to the

1 actual permeability that was predicted based on the
2 correlation that you used and you are making a
3 statement right here attributing that this reservoir
4 could be a possible fractured reservoir, why did you
5 not try that?

6 A. The problem is when determining natural
7 fractures and their contribution to a reservoir, is
8 that predicting natural fractures is extremely
9 difficult as, in and of themselves, natural
10 fractures occur due to many different stresses and,
11 therefore, cannot be quantified. Overall as a
12 reservoir, it can be measured in a wellbore
13 situation if the data's obtained at the time that it
14 is exposed.

15 Q. Were you here when -- were you on the
16 platform when Mr. Marek was providing his testimony?

17 A. I was.

18 Q. Then I presume you also listened to the
19 redirect from Mr. Padilla when he talked about the
20 permeability estimations are based on the rock type,
21 are based on the actual geology of the formation.
22 So you did the estimation of the permeability. You
23 know, you run the models. You use assisted
24 correlations to match that.

25 Now, if I were to tell you that -- let's

1 say you have the input for, more or less, probably
2 used for the reservoir simulation and estimated
3 permeabilities in the range of, let's say, .001 to
4 like, let's say, 10 millidarcy, but a permeability
5 of about 500 to 515 millidarcy was utilized as
6 heavy, tell the Commission that there is a
7 communication between two zones. Can you comment on
8 that?

9 A. No, sir, as I cannot determine from a
10 value given to me, whether from core or from a log
11 calculation, whether the permeability I'm given is
12 KV or KH.

13 Q. Okay. So you are estimating
14 91.5 million barrels of oil per session. That is on
15 the higher side. And then on the lower side is
16 15 million barrels of oil per session. What type of
17 oil are you estimating here?

18 A. We are looking purely at hydrocarbon
19 saturation within the zone. And we used an
20 expansion coefficient of 1.3 in that calculation.

21 Q. So it's not your testimony that this oil
22 that you estimated is an ROZ?

23 A. No, sir. I was not asked to make the
24 determination of an ROZ or not.

25 Q. So Mr. Ryan Bailey also presented his

1 testimony to the Commission. And he also estimated
2 oil in place of 629.62 million barrels of oil on the
3 lower side and then on the higher side,
4 1,049.75 million barrels of oil on the higher side.
5 How does this number compare to your estimation?

6 A. The -- in which? Was that just -- having
7 not reviewed his testimony or his data, was that
8 across a number of wells? Was that a range from it?
9 Could you be a little more specific on the data that
10 that covers, sir?

11 Q. Give me a second.

12 So in his testimony, it is across multiple
13 wells that he builds structure models and then also
14 aspect maps and also saturation maps presumably
15 probably from your input as well. So, yeah, from
16 multiple wells.

17 A. And the oil in place, that is a total oil
18 in place over the entire acreage, sir? Or is that
19 in a per section basis? Or what are the values
20 there?

21 Q. So as far as I remember, this is more or
22 less based on the boundary of the EMSU.

23 A. Sir, it's difficult for me to make that
24 comparison to what we did, as we did our in place
25 volumetrics on a per section basis. And I would

1 need to -- although I have seen the map of the size
2 of EMSU, I have not done that calculation out to
3 make that comparison for you.

4 Q. So when you say "per section," can you
5 tell the Commission the area that are you looking
6 at?

7 A. On a per section, we refer -- a section is
8 a 640-acre unit.

9 Q. So your analysis would just strictly be
10 within, let's say, one well drainage area basis?

11 A. It was outside of our purview to do the
12 work to determine the drainage radius of a single
13 well, sir.

14 Q. You know, based on your testimony and the
15 cross, it sounds to me -- you know, I want to ask
16 you: Are you in any way doubting the core analysis
17 saturation estimation?

18 A. Given the information given to us on the
19 values, I do not know enough to doubt the values;
20 however, in my expertise, saturation values from
21 core can be suspect.

22 Q. So if your client is using that values,
23 that information, I mean, to tell the Commission
24 to -- you know, to terminate permits -- I mean, is
25 that your testimony, that there's a huge offsetting

1 the surrounding, given the actual hard data?

2 A. Sir, even using the conservative low case
3 estimate, there is still hydrocarbon in place in the
4 San Andres as calculated out.

5 Q. Yeah, I believe the Commission also, we do
6 have the -- we also need to know: If it is there,
7 how much is there? Is it recoverable or not?
8 Right?

9 So just being there, I need to know more.
10 You know, because you are setting a very high bar
11 here that -- yeah, I feel like we need to know more.

12 I'm going to ask you the same questions
13 that I asked Mr. Birkhead during his testimony. Is
14 it possible that potential changes in wettability of
15 the system can impede the available oil saturation
16 in present-day?

17 A. The changes in wettability can cause
18 recoverable hydrocarbons to be vastly different.

19 Q. And do you know, based on your analysis,
20 what type of wettability are we dealing with?

21 A. Based on this, I am not sure of the
22 San Andres, in and of itself. Being a mixed
23 wettable system is fairly common.

24 Q. Okay. So probably could have been more or
25 less, let's say, heavy oil wet and now generally in

1 the San Andres, is less wet? Is that your
2 testimony?

3 A. Yes, sir.

4 Q. Now, due to the high volume of the water
5 injected into the San Andres, there is a possible
6 reservoir pressure increase. Do you believe this
7 can reduce the capillary forces holding the residual
8 oil in place?

9 A. In this case, sir, that is outside my
10 purview as a log analyst.

11 Q. As a log analyst, but I thought log
12 analysts have expertise in wettability, in
13 estimation -- let's say as a log analyst, you have
14 the expertise to calculate how much oil is in place,
15 I'm not sure if you can say that wettability or,
16 let's say, capillary forces and all of that is not
17 in your purview, but I will take that.

18 Another question: Can you comment on the
19 fact that the higher injection volume might have
20 already increased the viscous forces overcounting
21 the capillary trapping and subsequently reducing the
22 residual oil in place?

23 A. I'm sorry, I cannot comment on that.

24 Q. So based on all the discussions that we've
25 had today and even previously, at least the ones

Examination by COMMISSION AMPOMAH

220

1 that you listened to, don't you believe that, based
2 on your experience, that there is quite a number of
3 uncertainty associated with these estimates that you
4 are presenting to the Commission?

5 A. Yes, sir.

6 Q. And I'll give you my last question here,
7 that if you had more time and resources, is there
8 anything that you could have done differently,
9 especially in your approach, you know, quantifying
10 the 'm' and 'n'?

11 A. Sir, given unlimited resources and data,
12 then absolutely there are ways to do that. There is
13 additional data that can be obtained. Ideally in
14 every well, I would have a core, and all of these
15 values would be measured, and, therefore,
16 uncertainty would be reduced drastically.

17 Quite often, though, at least the data
18 sets are less than ideal, and, therefore, inferences
19 have to be made and calculated from there.

20 COMMISSIONER AMPOMAH: I appreciate
21 your time, and thank you, sir.

22 HEARING OFFICER HARWOOD: Okay.
23 Thank you, Dr. Ampomah.

24 So back to you, Ms. Shaheen, for redirect.

25 MS. SHAHEEN: Thank you,

Page 220

1 Mr. Examiner.

2 REDIRECT EXAMINATION

3 BY MS. SHAHEEN:

4 Q. Do you recall your testimony earlier when
5 Mr. Rankin asked you about whether you had reviewed
6 a variety of other types of information and data in
7 performing your analysis?

8 A. Yes.

9 Q. Is there a need -- in your opinion, in
10 conducting the analysis that NuTech performed, is
11 there a need to review the EMSU unit documents or
12 case file?

13 A. No.

14 Q. Is there a need to review the hearing
15 transcripts from the unit proceeding?

16 A. No.

17 Q. Is there a need to review exhibits from
18 that proceeding, well -- excuse me. Is there a need
19 to review exhibits from that proceeding?

20 A. No.

21 Q. Is there a need to review well files?

22 A. No.

23 Q. Production data?

24 A. No.

25 Q. Fluid flow?

Redirect Examination by Ms. Shaheen

222

1 A. No.

2 Q. And you regularly perform work for other
3 clients using the NULOOK process, correct?

4 A. Yes.

5 Q. Did you do anything different for Empire
6 than you would do for any of your other clients?

7 A. No.

8 Q. Dr. Ampomah asked you which opinion, if
9 you will, the Commission should accept, the low end
10 or the high end. Do you recall his questions on
11 that front?

12 A. I do.

13 Q. Would it be accurate to say that
14 regardless which one may be more correct, it's
15 somewhere in the middle? As you said, there is oil
16 down there?

17 A. That is correct.

18 Q. And the uncertainties that exist are
19 within that range, correct?

20 A. Yes.

21 MS. SHAHEEN: No further questions.
22 Thank you.

23 HEARING OFFICER HARWOOD: Okay.
24 Thank you, Ms. Shaheen. May this witness be
25 excused?

Page 222

Redirect Examination by Ms. Shaheen

223

1 MS. SHAHEEN: I believe so.

2 HEARING OFFICER HARWOOD: All right.

3 Mr. Dillewyn, thank you for your time here today,
4 and you are free to leave.

5 Let's see, it's 4:12 in the afternoon.
6 Let me ask Chairman Razatos.

7 What are your thoughts at this point,
8 Chairman? We could obviously --

9 I suppose, Ms. Sheehan, assuming he's
10 available, we could take the next witness, Joe
11 McShane.

12 MS. SHAHEEN: That is correct.

13 HEARING OFFICER HARWOOD: Okay. Or
14 we could start with him in the morning.

15 CHAIRMAN RAZATOS: Ms. Shaheen, quick
16 question for you. How long do you think the -- your
17 opening testimony with the next witness is going to
18 take?

19 MS. SHAHEEN: No more than 30
20 minutes.

21 CHAIRMAN RAZATOS: So, Mr. Hearing
22 Officer and all parties involved, do you want to at
23 least spend the next 30 minutes to hear the opening
24 statements of the next witness, and then we can
25 start the questioning tomorrow?

Page 223

Redirect Examination by Ms. Shaheen

224

1 Mr. Rankin?

2 COMMISSIONER LAMKIN: Yes, please.

3 CHAIRMAN RAZATOS: Okay.

4 Mr. Moander?

5 MR. MOANDER: Yes, we could proceed.

6 CHAIRMAN RAZATOS: Okay. Mr. Beck?

7 MR. BECK: Yes.

8 CHAIRMAN RAZATOS: Mr. Suazo?

9 MR. SUAZO: That's fine with Pilot.

10 CHAIRMAN RAZATOS: Awesome. I think,
11 Mr. Hearing Officer, let's put the next witness on.
12 Let's give it the half-hour, and then we can wrap it
13 up and call it a day.

14 HEARING OFFICER HARWOOD: All right.
15 All right, Mr. Chairman, that sounds like a plan.

16 CHAIRMAN RAZATOS: Thank you.

17 HEARING OFFICER HARWOOD: Will
18 Mr. McShane appear remotely?

19 MS. SHAHEEN: Mr. McShane is here in
20 person.

21 HEARING OFFICER HARWOOD: Oh, there
22 he is.

23 MS. SHAHEEN: But I'm hoping you can
24 give me a few minutes to get my ducks in a row.

25 HEARING OFFICER HARWOOD: Okay. The

Page 224

Direct Examination by Ms. Shaheen

225

1 clock is ticking, though.

2 MS. SHAHEEN: Can we have five
3 minutes?

4 HEARING OFFICER HARWOOD: Sure.

5 Mr. McShane, if you want to take the
6 witness stand, I'll swear you in.

7 If you'll raise your right hand, please,
8 sir.

9 JOSEPH McSHANE
10 having been first duly sworn, testified as follows:

11 CHAIRMAN RAZATOS: Just so you know,
12 Ms. Shaheen, your microphone is on, so we can hear
13 you.

14 DIRECT EXAMINATION

15 BY MS. SHAHEEN:

16 Q. Good afternoon, Mr. McShane. Can you
17 please state your name for the record.

18 A. Joe McShane.

19 Q. And who are you employed with and in what
20 capacity?

21 A. I'm employed as a senior geologist for
22 Empire Petroleum Corp.

23 Q. And are you testifying today as an expert
24 in petroleum geology?

25 A. Yes.

Page 225

Direct Examination by Ms. Shaheen

226

1 Q. And you've attached your credentials to
2 your written testimony in this matter?

3 A. I have.

4 MS. SHAHEEN: I move that Mr. McShane
5 be qualified as an expert witness in petroleum
6 geology in this matter.

7 HEARING OFFICER HARWOOD: Any
8 objection, Mr. Rankin?

9 COMMISSIONER LAMKIN: None.

10 HEARING OFFICER HARWOOD: Mr.
11 Moander?

12 MR. MOANDER: No.

13 HEARING OFFICER HARWOOD: Mr. Beck?

14 MR. BECK: No.

15 HEARING OFFICER HARWOOD: Mr. Suazo?

16 MR. SUAZO: No objection.

17 HEARING OFFICER HARWOOD: He'll be so
18 recognized.

19 MS. SHAHEEN: Thank you.

20 Q (By Ms. Shaheen) Mr. McShane, you first
21 submitted direct written testimony explaining the
22 results of your opinions, your testimony as Empire's
23 Exhibit G on August 26, 2024; is that correct?

24 A. Yes.

25 Q. And you also submitted revised testimony

Page 226

Direct Examination by Ms. Shaheen

227

1 on December 4, 2024, as Revised Exhibit G; is that
2 right?

3 A. Yes.

4 Q. Why did you submit revised testimony?

5 A. Between the two dates, we had asked NuTech
6 to run another pass at their model utilizing
7 additional core data that we delivered to them. And
8 when we got the range of their results, I erred on
9 the side of using the low side estimates for oil in
10 place and revised my testimony.

11 Q. Do you have any corrections to your
12 Revised Exhibit G?

13 A. No.

14 Q. Other than the revisions in your Revised
15 Exhibit G, do you have any corrections to your
16 original Exhibit G?

17 A. No.

18 Q. Do you affirm that the statements made in
19 your Revised Exhibit G are correct and adopt that as
20 your sworn testimony here today?

21 A. I do.

22 Q. And subject to the revisions that you made
23 in your Revised Exhibit G, do you also adopt
24 Exhibit G as your sworn testimony today?

25 A. Yes.

Page 227

Direct Examination by Ms. Shaheen

228

1 MS. SHAHEEN: I would move for
2 admission of Empire's Exhibit G and Empire's Revised
3 Exhibit G and all the exhibits attached thereto.

4 HEARING OFFICER HARWOOD: Mr. Rankin?

5 COMMISSIONER LAMKIN: No objection.

6 HEARING OFFICER HARWOOD: Mr.

7 Moander?

8 MR. MOANDER: No objection.

9 HEARING OFFICER HARWOOD: Mr. Beck?

10 MR. BECK: No objection.

11 HEARING OFFICER HARWOOD: Mr. Suazo?

12 MR. SUAZO: No objection.

13 HEARING OFFICER HARWOOD: All right.

14 It will be admitted with attachments.

15 (Exhibit G and Revised Exhibit G admitted into
16 evidence.)

17 Q (By Ms. Shaheen) Mr. McShane, what changed
18 in your revised testimony as a result of the
19 NuTech's refined analysis?

20 A. As I said, you know, as has been testified
21 to previously, they integrated in their second pass
22 the EMSU 679 core data, as well as integrated some
23 data from a study that was found. And once we got
24 the ranges between the two models, we decided -- or
25 I decided, in conjunction with other engineers, that

Page 228

1 we would go with the low side estimate in their
2 model in order to move forward with our analysis.

3 Q. Turning to your Exhibit G-1A, what is the
4 importance of this slide?

5 A. So this is a regional slide of -- showing
6 the EMSU, the EMSU-B, and the AGU. Overriding is
7 the top of the San Andres structure map.

8 The first thing to point out is, again,
9 that there's a -- the structure shows that there's a
10 structural closure in the San Andres on the east --
11 running northwest to southeast over EMSU itself on
12 the right side of the unit.

13 And then on this map, we're also showing
14 the permitted and the existing saltwater disposal
15 well locations.

16 And then the third thing I want to point
17 out is that there -- in purple, there is a cross
18 section line that will refer to a cross section C on
19 the next slide. And that these wells that we are --
20 that will show the cross section are located,
21 drilled through injecting into a -- a unitized
22 interval.

23 Q. And do the proposed wells, the Goodnight's
24 proposed wells lie in the crestal area?

25 A. Yes, they do.

1 Q. And --

2 A. But I'd also like to point out that in the
3 structure map just as well -- the 679, we showed --
4 showed oil down to minus 762 subsea. And that will
5 be important when we're talking about injecting
6 down-dip.

7 Q. Why is it significant that the Goodnight's
8 proposed wells lie in the crestal area?

9 A. Well, in the dynamic of drilling geology,
10 your highest point on the structural closure should
11 be your best wells. And if you're injecting into
12 that zone, you're going to have a better chance of
13 damaging the reservoir, as well as the water you're
14 pushing down-dip is going to move up-dip, as well,
15 towards those crestable regions.

16 Q. And just to make sure there's no confusion
17 here, this Exhibit G-1A was attached to your
18 testimony, right?

19 A. That is correct.

20 Q. Was there any change made to this exhibit
21 for your presentation today?

22 A. The only thing we changed for the
23 presentation is, we dropped off all of the existing
24 producing wells other than the disposal wells, just
25 to make it clearer to see on the screen.

Direct Examination by Ms. Shaheen

231

1 Q. Turning to the next slide, can you
2 describe this cross section for the commissioners?

3 A. Correct. This cross section that you saw
4 on the previous slide, the cross section line, this
5 cross section includes Goodnight's current saltwater
6 disposal wells. In addition to the next, we'll see
7 proposed permits.

8 Then you also see some additional
9 producers in the EMSU, and this is a structural
10 cross section, so we're removing from the --
11 basically the southwest to the northeast up
12 structure.

13 Q. So the red line, the solid red line and
14 the dotted red -- or dashed red line, what does that
15 indicate?

16 A. The dashed and solid red line is the
17 unitized intervals, as agreed upon, in the field
18 rules.

19 And I've also put that in the callout box,
20 the language down the bottom right where it says,
21 "The unitizer will -- shall include formations from
22 the lower limit defined by the base of the
23 San Andres formation to the upper limit defined by
24 the Grayburg formation and/or 100 feet subsea data,
25 whichever is higher."

Page 231

Direct Examination by Ms. Shaheen

232

1 And so what we can see is that where
2 that -- where these wells fall within that unitized
3 intervals, as well as where Goodnight's injection
4 intervals are, in conjunction to that unitized
5 interval, showing that they're below the San Andres
6 top, but that they cover -- they cover a large chunk
7 of our unitized intervals.

8 Q. And what do the green brackets indicate?

9 A. The green brackets indicate where we are
10 identifying a residual oil zone.

11 And just real quick and to shed -- just
12 because where the green brackets -- like for the
13 EMSU 713 and the 673, et cetera, just because the
14 bracket ends, it's just ending because of the log.
15 It does not mean that we think that the ROZ actually
16 ends there in the San Andres. We suspect that it
17 continues below that.

18 Q. Here going back to G-1A with a slightly
19 different rendition. Can you explain to the
20 commissioners why this is significant?

21 A. This is, again, just a similar map to the
22 first one. But, again, it's just showing a
23 different cross section line that you'll see in the
24 next slide with the -- the cross section moves
25 basically along the apex of the structure, the

Page 232

1 structural closer itself, and it's going to include
2 permitted wells as well as existing producers.

3 Q. And this next cross section corresponds to
4 the last slide; is that right?

5 A. Yes, absolutely. So you see logs for the
6 wells that are producing and then just placeholder
7 logs for the proposed permits by Goodnight. Again,
8 associated with their -- based on their proposed
9 depths where they would fall within the unitized
10 interval.

11 Q. And, again, you have the green brackets
12 showing the residual oil zone; is that right?

13 A. That's correct.

14 Q. Can you describe what this map shows?

15 A. So this map is illustrating the seven
16 wells that NuTech did their log analysis for us when
17 we initially gave them the scope of work. We
18 actually gave them nine wells, but they settled on
19 seven based on log quality, as well as the fact that
20 they cover some portion of the San Andres reservoir.
21 Four of these wells -- four of these analyses were
22 performed -- were performed recently on 2005 vintage
23 open hole logs in the San Andres to evaluate for
24 hydrocarbons.

25 Q. And what are the key points here?

Direct Examination by Ms. Shaheen

234

1 A. So the key points that we want to point
2 out is, in one of these wells that Goodnight did
3 their -- or that NuTech did their analysis was
4 Goodnight's Ryno SWD well. According to NuTech's
5 analysis, the oil in place per section for the Ryno
6 SWD well calculated was 15.6 million barrels per
7 section.

8 We also wanted to show that the wells are
9 fairly distributed across the EMSU, and they are
10 representing both, you know, down-dip and up-dip
11 reservoirs, so we should get a good spread. There
12 are some on the apex and some coming off of the
13 flanks of the apex, of the structure itself.

14 And on average, these wells cover greater
15 than 350 foot of the San Andres reservoir. With
16 two, the Ryno SWD and the EMSU 746, they covered
17 over 1,000 foot of the San Andres.

18 Our oil in place volume calculation, based
19 on NuTech's analysis that we calculated on a per 640
20 section basis, range from 15.6 million barrels per
21 section to 62.2 million barrels per section. If we
22 exclude the EMSU 713, which is a well that they --
23 to get those -- that spread, we excluded the 713
24 because it only has 125 foot of log to San Andres.
25 And so it was all calculating out smaller volumes.

Page 234

Direct Examination by Ms. Shaheen

235

1 And then on the left side, I just want to
2 point out -- because I noticed it in discussion
3 that -- you know, when we're referring back to
4 testimonies of OPS Geologic, in black next to the
5 key point, we put -- we included in this
6 presentation OPS Geologic ranges for the oil in
7 place as well.

8 So for the Ryno SWD, OPS Geologic had
9 19.86 million barrels per 640 to 33.02. And then
10 for the range across the -- these seven wells, OPS
11 Geologic calculated out 12.76 to
12 69.47 million barrels of oil per 640.

13 Q. And when you say "640 section basis," you
14 mean a section which consists of 640 acres, correct?

15 A. That's correct. And what I want to point
16 out is that even though -- for the most part --
17 we'll see this in this coming slides -- their
18 numbers are on trend even though there are
19 differences.

20 Q. What does Exhibit G-1B show?

21 A. So Exhibit G-1B is showing the NuTech
22 wells analyzed from east to west in a cross section.
23 And they're showing that -- in the red boxes, that
24 there are hydrocarbons present throughout the
25 San Andres interval from the down-dip most western

Direct Examination by Ms. Shaheen

236

1 edge to the up-dip most eastern edge of the EMSU.

2 If you look, those red boxes fall below to well
3 below the San Andres itself.

4 And then what I'd also like to point out
5 is, like at the base of each well log, in green we
6 have the calculated oil in place number based on
7 NuTech's numbers, NuTech's revised numbers. And
8 then below the oil thickness, in black we see OPS
9 Geologic's low side to high side range for each well
10 as -- to be able to compare to.

11 Q. What is the black indicator in the
12 second-to-last track of each well?

13 A. The black indicator is hydrocarbon
14 presence, oil saturation.

15 Q. And what is the green indicator in the
16 last track of each well?

17 A. That is showing calculated oil in place.

18 Q. Turning to Exhibit G-3C. Does this cross
19 section provide the same information for different
20 wells?

21 A. Correct. This cross section provides --
22 shows the NuTech analyzed wells from northeast to
23 southwest. And so, again, they're showing where
24 we're showing hydrocarbons present and in --
25 calculated in the San Andres.

Page 236

Direct Examination by Ms. Shaheen

237

1 Q. And that's indicated in the red box here?

2 A. Correct.

3 Q. Then here down in -- below each well,
4 you've got something in brown, oil thickness. What
5 is that?

6 A. That's the calculated net feet of oil
7 thickness.

8 Q. In Exhibit G-3D, does this slide
9 illustrate the result of the NuTech analysis for the
10 EMSU 658?

11 A. Correct, it does. It shows the
12 petrophysical analysis. You see the hydrocarbons
13 present in the San Andres. And then we also showed
14 our calculation based on NuTech's work of
15 30.29 million barrels per section calculated.

16 Q. And does this reflect the scenario 5
17 revised analysis that Mr. Dillewyn testified about?

18 A. Yes.

19 Q. And what do the green and red colors
20 indicate?

21 A. In the third track from the right, yes,
22 those -- that is perm calculations based on NuTech's
23 analysis. So you're seeing -- basically the cooler
24 colors are the lower perm. The higher red colors
25 are the higher perm, so it's within the lithology.

Page 237

1 Q. And just to the left there, the blue and
2 turquoise colors -- I'm losing my cursor here.

3 A. The track just to the left is -- that
4 shows water saturation versus hydrocarbons in black.

5 Q. And where is this well located?

6 A. So 658 well is located on the eastern side
7 of the EMSU on the top -- you know, basically on top
8 of the structural apex itself, of the top of the
9 closure.

10 Q. Why is this location significant?

11 A. Because we would expect that it would be
12 some of our better reservoir rock. And when we look
13 at the breakdowns of it, you see an average porosity
14 of 10.9 percent, an average oil saturation -- and
15 this is just in the San Andres -- of 39.0 percent
16 and an average perm of 2.19 millidarcies.

17 Q. Does this slide show the NuTech result of
18 its analysis of the EMSU 673?

19 A. Correct. And, again, it's showing the
20 same things in the log deliverable that we have
21 screenshot on there showing the -- you know, the
22 important tracts to point out are the hydrocarbons
23 in place versus water saturation and then the
24 permeability to the right of that.

25 And, again, just off the structural

1 closer, we're still seeing average porosity of
2 13 percent. We're seeing an increase perm of 6.12.
3 And we're seeing a consistent oil saturation average
4 of 40 percent right there.

5 Q. And so this shows the presence of
6 hydrocarbons in the San Andres interval; is that
7 right?

8 A. Correct. And just it's hard to see, but
9 in these wells at the top of San Andres is on -- is
10 shown in the exhibit. There is -- at the very top
11 of each log, you'll see a green line that goes
12 across, and that is the top of the San Andres.

13 Q. And I can't recall whether we talked about
14 this with the last slide and the last well. But
15 here in green, you've got an oil in place number?

16 A. Correct. We did mention in the last one.
17 And this one, we're calculating out
18 31.68 million barrels per section. Again, a very
19 similar number still on top of the structure itself.

20 Q. And this well is located on top of the
21 structure?

22 A. Structural trap, yes.

23 Q. Okay. And that's significant for the same
24 reason as it was significant for the EMSU 658; is
25 that right?

Direct Examination by Ms. Shaheen

240

1 A. That's correct.

2 Q. And does this slide show the result of the
3 NuTech analysis of the EMSU 660?

4 A. Yes, it does.

5 Q. And same information here; is that right?

6 A. Correct, same information here. We --
7 again, hydrocarbons present in the top from the San
8 Andres down. Again, the top of San Andres is on the
9 log. It's a thin green line across the top, so it's
10 hard to see. But the calculated oil in place is
11 48.62 million barrels per section. Again, seeing an
12 average oil saturation of -- coming down just
13 slightly, but we're also coming down the back side
14 of the structural closure. So you're seeing average
15 oil saturation of 30-point -- 34.4 percent. The
16 porosity is maintained around 11.5 percent and
17 average perm is 2.5.

18 Q. And the numbers that you just discussed,
19 those are in the lower left-hand corner right here
20 in this box; is that right?

21 A. Correct.

22 Q. Okay. Can you describe what is reflected
23 on Exhibit G-4? Oops, what happened there? Here we
24 go.

25 A. Yes, so Exhibit G-4 is a -- we had -- one

Page 240

Direct Examination by Ms. Shaheen

241

1 of the wells that NuTech did the analysis on, so,
2 again, you'll see in the red box to the right, which
3 is NuTech's well, it's the analysis of the EMSU 660.
4 You'll see the hydrocarbons again present. You'll
5 see the permeability.

6 But what we -- the key takeaway we wanted
7 to take from this is that we compared it with the
8 mud log. Again, the mud log is taken in fairly
9 realtime, measuring the gas while drilling, in
10 addition to calibrating the cuttings as they come up
11 based on lag time and placing a description
12 correlating with the gas curves.

13 But what we want -- what I want to point
14 out is that the gas curves in the same depth are in
15 the same depth as shown in the red box in NuTech's
16 log, and those gas curves exhibit the same
17 characteristic. You would see -- you would expect
18 to see hydrocarbons present, as well as the cutting
19 descriptions all talk about fluorescing every one of
20 them through that zone. So, again, the gas curves
21 and the cuttings indicated oil in place.

22 Q. Turning to Exhibit G-7B, what does this
23 cross section illustrate?

24 A. So the G-7B, what we wanted to point out
25 with this is the 679 well, which is in the middle

Page 241

1 and we have a little callout, you see the core
2 description from the 679. In the column where --
3 you know, it's an illustrated core description
4 showing the fractures present between the zones of
5 the -- you know, transition zone between the
6 San Andres and the Grayburg.

7 But what we also want to point out is
8 that -- you see there's a light blue callout box
9 across the cross section just below the San Andres.
10 You know, if you're trying to correlate that same
11 interval across, we see so many changes that it's
12 hard to say that the lateral faces - faces are
13 consistent. So, therefore -- that, in addition to
14 the fractures present identified in the core, you --
15 we do not expect to see a lateral phases continuity
16 across the field, but there are changes, therefore
17 not a consistent barrier between the zones.

18 Q. What is important about Exhibit G-8?

19 A. So Exhibit G-8 is from the sales packet
20 from when Empire purchased the EMSU. What we want
21 to point out is that Exxon, themselves, identified
22 within their sales packet the San Andres -- the same
23 San Andres ROZ present, the main oil column in the
24 Grayburg. They were using porosity cutoffs of
25 6 percent or greater.

Direct Examination by Ms. Shaheen

243

1 And what -- but the key thing is, also
2 look at the fact that that calculated oil in place
3 for the San Andres ROZ is very similar and on trend
4 with what two independent analyses within our group
5 did -- were done by OPS Geologic and done by NuTech,
6 that we still get kind of the same range of that
7 900 million barrels to, you know, to 1,000 over.

8 So, again, this is from their 2021 sales
9 package. And in the sales package, while this is
10 just one slide, they mentioned ROZ on five of seven
11 pages. And this is why -- you know, again, I just
12 want to point out that protecting this resource is
13 critical to the EMSU, but also the EMSU-B and also
14 the AGU and that -- you know, our current of the
15 core well log in some production has confirmed that
16 there is oil or CO -- or that there is CO2, and EOR
17 can recover substantial reserves from this field.

18 Q. Do you have any additional testimony to
19 present today?

20 A. No.

21 MS. SHAHEEN: Thank you, Mr. McShane.
22 Pass the witness.

23 HEARING OFFICER HARWOOD: Okay.
24 Mr. Rankin, technically, you've got 19 minutes until
25 5:00 p.m. Do you want to start or do you want to --

Page 243

Direct Examination by Ms. Shaheen

244

1 what's your preference?

2 COMMISSIONER LAMKIN: I'm kind of
3 fried.

4 HEARING OFFICER HARWOOD: Okay.

5 COMMISSIONER LAMKIN: Wouldn't mind
6 resuming in the morning.

7 HEARING OFFICER HARWOOD: That's
8 okay. That's fine.

9 Mr. Razatos, is that fine -- is that okay
10 with the Commission?

11 CHAIRMAN RAZATOS: Yes. Let's call
12 it an evening. We'll resume again tomorrow at
13 9:00 a.m.

14 Thank you, everybody, for your
15 willingness, and we'll see you all tomorrow.

16 HEARING OFFICER HARWOOD: Thank you,
17 everybody, as to you, Ms. Tellez, and you,
18 Ms. Apodaca, as well as the witnesses.

19 We'll be off the record.

20 (The proceedings recessed at 4:43 p.m.)
21
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25

Page 244

Direct Examination by Ms. Shaheen

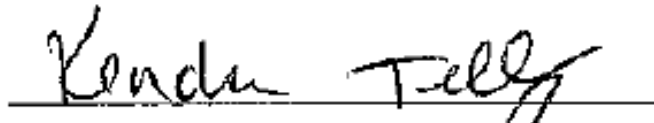
245

AFFIRMATION OF COMPLETION OF TRANSCRIPT

I, Kendra D. Tellez, DO HEREBY CERTIFY that on the 7th day of April, 2025, a hearing of the New Mexico Oil Conservation Commission was taken before me via video conference.

I FURTHER AFFIRM that I did report in stenographic shorthand the proceedings as set forth herein, and the foregoing is a true and correct transcript of the proceedings to the best of my ability.

I FURTHER affirm that I am neither employed by nor related to any of the parties or attorneys in this case, and that I have no interest in the final disposition of this case in any court.

A handwritten signature in black ink, reading "Kendra Tellez", is written over a horizontal line.

KENDRA D. TELLEZ

Veritext Legal Solutions

&	10 10:1 47:16 177:4 213:5 215:4 10.9 238:14 100 89:17,19,22 100:1 189:20 189:25 190:4,7 190:19,21,23 212:17 231:24 100,000 125:6 101 101:1 102 102:1 103 103:1 104 104:1 105 105:1 106 106:1 107 3:13 4:6 107:1 108 108:1 109 3:13 109:1 10:28 73:2 10:30 72:19 10:42 73:2 11 4:5 7:17 11:1 71:6 72:12 73:8 11.5 240:16 110 2:18 110:1 111 111:1 112 112:1 113 113:1 114 114:1 115 115:1 116 116:1	117 117:1 118 118:1 119 119:1 11:50 119:1 11th 5:14 7:11 7:22 8:16,24 12 4:6 12:1 106:5 107:1,10 12.76 235:11 120 120:1 120,000 125:13 121 3:14 121:1 122 122:1 1220 1:5 2:23 123 123:1 124 124:1 12400 2:13 125 125:1 234:24 126 126:1 127 127:1 128 128:1 129 129:1 13 13:1 53:1,13 67:8 239:2 130 130:1 131 131:1 132 132:1 133 133:1 134 3:16 134:1 135 135:1 136 136:1 137 137:1 138 138:1	139 139:1 13th 66:21 14 14:1 140 140:1 141 141:1 142 142:1 143 143:1 144 144:1 145 4:7 145:1 1450 48:23 49:13 146 3:16 4:8 146:1 147 147:1 148 148:1 149 149:1 14th 13:18 15 15:1 124:20 142:4 177:4 215:16 15,000 110:23 111:7,8 124:20 125:4 15.6 181:3 234:6,20 15.62 88:3,7 150 150:1 151 151:1 152 152:1 153 153:1 154 154:1 155 155:1 156 156:1 157 157:1
& 2:17 3:2,6 11:9 18:6 19:17 29:20,23 29:24 30:1,22 44:18 47:4 64:3,17 65:25 66:7			
0			
0 190:8 0.75 53:16 001 215:3 01 213:4			
1			
1 1:1 2:17 36:1 73:10 74:18 75:19 77:7 78:22 88:19 89:9 90:5 140:6 141:6 162:13 163:14 164:1 171:12 172:7 175:2 206:24 213:4 1,000 234:17 243:7 1,049.75 216:4 1,215 90:19 1,851.5 33:6,21 1,851.5. 89:16 1,928 33:17 1,952 89:17 1.3 215:20			

<p>158 158:1</p> <p>159 159:1</p> <p>16 16:1 73:22 74:18 165:8 171:14</p> <p>160 160:1</p> <p>161 161:1</p> <p>162 162:1</p> <p>163 163:1</p> <p>164 164:1</p> <p>165 165:1</p> <p>166 166:1</p> <p>167 167:1</p> <p>168 168:1</p> <p>169 169:1</p> <p>17 17:1,18 52:20 58:8 71:4 197:21 199:13,17,22</p> <p>170 170:1</p> <p>171 171:1</p> <p>172 172:1</p> <p>173 173:1</p> <p>174 174:1</p> <p>175 175:1</p> <p>176 176:1</p> <p>177 177:1</p> <p>178 178:1</p> <p>179 179:1</p> <p>18 18:1 54:20 123:3</p> <p>180 180:1</p> <p>181 181:1</p> <p>182 182:1</p>	<p>183 183:1</p> <p>184 184:1</p> <p>185 185:1</p> <p>186 186:1</p> <p>187 187:1</p> <p>188 188:1</p> <p>189 189:1</p> <p>19 19:1 104:2 107:15 243:24</p> <p>19.15.2 9:12</p> <p>19.15.25 9:12</p> <p>19.15.5 9:12</p> <p>19.15.8 9:12</p> <p>19.15.9 9:12</p> <p>19.86 235:9</p> <p>190 190:1</p> <p>191 191:1</p> <p>192 192:1</p> <p>193 193:1</p> <p>194 194:1</p> <p>195 195:1</p> <p>196 196:1</p> <p>1960s 102:15</p> <p>1966 104:2 110:5 113:2</p> <p>197 3:17 197:1</p> <p>1977 29:4</p> <p>198 3:17 198:1</p> <p>1981 29:12</p> <p>1982 29:15,17 115:20</p> <p>1983 29:5 50:16</p> <p>1984 29:17,22 100:19 102:17</p>	<p>110:6</p> <p>1985 30:11</p> <p>1986 122:25 192:14</p> <p>1987 30:22 46:16 47:5 54:8,14 59:18</p> <p>1988 57:5,12,14 59:18 100:24 122:25</p> <p>199 199:1</p> <p>1:00 68:20</p> <p>1:15 118:18,18 118:21,23</p> <p>1:16 119:1</p> <p>1a 229:3 230:17 232:18</p> <p>1b 235:20,21</p> <p>1st 1:4</p>	<p>2.3. 141:14</p> <p>2.4 194:19</p> <p>2.5. 240:17</p> <p>20 3:3 7:17 20:1 53:8,16 53:22,24 102:7 162:21</p> <p>200 200:1</p> <p>2005 233:22</p> <p>201 201:1</p> <p>202 202:1</p> <p>2021 243:8</p> <p>2022 58:11,24</p> <p>2023 60:11 63:3,23 66:14 67:8 69:14 73:10,11,16,22 74:1,18,20 81:10 82:14 83:13 92:14 106:4,23</p> <p>2024 30:3 46:12 78:13 87:23 137:15 137:19 156:14 156:17 157:3,5 157:18 158:1 158:16,22 164:13 171:20 197:21 198:21 199:13,17,22 226:23 227:1</p> <p>2025 1:8 7:11 7:17 200:22 245:4</p>
		2	
		<p>2 2:1 33:2 35:5 77:12 85:9 93:5 141:8,8 141:10,11 151:11,11 159:2 173:2,2 175:3 181:24 181:25 205:22 205:23 210:2,2</p> <p>2,013 33:19</p> <p>2.15 194:18</p> <p>2.19 238:16</p> <p>2.3 141:14 142:1,10</p>	

<p>203 203:1 204 3:18 204:1 205 3:18 205:1 206 206:1 207 207:1 208 208:1 209 209:1 20th 8:3,12,22 12:18 13:13,15 15:14,17,24 21 21:1 104:3 210 210:1 211 211:1 212 212:1 213 213:1 214 214:1 215 215:1 216 216:1 217 217:1 218 2:6 218:1 219 219:1 22 22:1 220 90:21 220:1 221 3:19 221:1 222 222:1 223 223:1 224 224:1 225 3:21 225:1 226 226:1 227 227:1 228 4:9 228:1 229 229:1 23 23:1 82:21 83:7 213:9,11</p>	<p>230 230:1 2307 2:3 231 231:1 232 232:1 233 233:1 234 234:1 235 235:1 236 236:1 23614 17:17 237 237:1 23775 17:18 238 238:1 239 239:1 23rd 68:22 69:1,14 24 24:1 63:3 102:16 240 240:1 24018 17:18 24020 17:19 24025 17:19 241 241:1 24123 17:17 242 242:1 243 243:1 244 244:1 245 245:1 246 3:22 24683 9:6 10:8 25 25:1 73:11 250 48:24 49:13,16,17,22 2523 2:9 25th 12:22 13:2 14:13 20:14</p>	<p>69:21 70:6 26 26:1 137:15 226:23 27 27:1 28 3:12 28:1 281 2:12 29 29:1 213:9</p> <hr/> <p>3</p> <hr/> <p>3 3:1 74:23 79:3 87:19 90:10 111:17 141:23,24 175:4 194:18 3.0 142:1 3.4 142:10 194:20 30 30:1 55:11 223:19,23 240:15 30.29 237:15 300 2:13 30523 245:18 31 31:1 31.68 239:18 31st 15:17 63:15 64:15 32 32:1 33 33:1 33.02. 235:9 34 4:3 34:1 34.4 240:15 35 35:1 105:13 115:15 162:11 350 234:15</p>	<p>36 36:1 37 37:1 38 38:1 380 101:22 193:6 39 39:1 39.0 238:15 3:15 195:24 3:16 196:1 3:30 195:24 3:32 196:1 3c 236:18 3d 237:8 3i 80:19,22 86:18,21 87:17 89:4 3rd 16:12</p> <hr/> <p>4</p> <hr/> <p>4 4:1 58:24 70:5,10 75:20 77:12 92:18 137:19 142:6 143:23 160:18 164:21,25 166:1,10,19,25 175:6 201:2 227:1 240:23 240:25 4,158 194:16,18 4,302 141:17 4,303 194:18 4/2/2025 84:22 40 3:12 31:3 40:1 57:9 105:14 115:17</p>
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239:4 41 41:1 42 42:1 43 43:1 104:5 44 44:1 45 45:1 105:14 115:12,15 116:15 46 46:1 47 47:1,11 102:23,24 103:10 48 4:4 35:19 48:1 132:5 48.62 240:11 49 49:1 4:12 223:5 4:43 244:20	515 215:5 52 52:1 53 53:1 54 54:1 55 55:1 550 114:22 56 56:1 57 57:1 58 58:1 59 59:1 5:00 25:16 243:25 5th 12:24	239:24 66 66:1 660 36:20 75:20 240:3 241:3 669 34:3 67 67:1 164:11 673 143:20 232:13 238:18 679 34:4 38:22 75:20 137:23 141:20 142:22 152:18,22 153:1,3,16 158:3,13 159:4 159:7 160:10 160:12,20 161:5,8,17 164:9,15,17 165:4 166:6 171:19,24 172:10 173:9 175:12,23 176:17,24 177:6,10,18 183:4,10 185:17 192:8 194:13 195:3 209:22 210:9 228:22 230:3 241:25 242:2 68 68:1 69 69:1 69.47 235:12	7 7 1:8 5:14 7:1 7:11 163:3,3,7 163:8,10 169:2 169:8 70 70:1 131:15 70s 44:12 71 71:1 713 232:13 234:22,23 72 4:5 72:1 725 3:2 728 33:15 73 73:1 738 90:20 74 74:1 746 234:16 748 33:13 75 75:1 76 76:1 761 33:15 762 230:4 77 77:1 78 78:1 78216 2:14 79 79:1 7b 241:22,24 7th 245:4
5	6 6 6:1 142:25 143:1 169:2 200:22 242:25 6.12. 239:2 60 60:1 116:17 116:24 117:16 117:22 61 61:1 62 62:1 62.2 234:21 629.62 216:2 63 63:1 64 64:1 640 217:8 234:19 235:9 235:12,13,14 65 65:1 162:12 162:13 206:24 207:3,4,20 658 36:19 237:10 238:6		8 8 4:8 8:1 60:11 145:14 146:1 242:18,19 8/21/2024 78:18

[80 - adherence]

80 31:1,4 53:16 57:10 80:1 162:22 180:12	9:01 1:8	193:15	23:21 40:21
	a	accurate 51:17 52:2,3,5,12 53:7 206:5 209:23 222:13	46:13 49:17 50:8 56:3,8 58:15 65:22 77:24 80:3 84:17 91:19 111:20 113:25 117:7,8 124:11 131:2 149:3,16 159:7,8 181:12 232:15 233:18
81 81:1	a&m 29:3	accurately 183:10	adam 6:17 9:23 17:25 18:6
82 41:20 82:1 88:10,10 181:4	a.m. 1:8 73:2,2 119:1 244:13	acknowledging 63:11	add 38:10
83 83:1 115:21	ability 92:24 97:11 143:16 200:13 245:11	acquire 51:14 59:15 60:21	added 74:11 162:17
84 84:1	able 26:11 27:14 48:21 50:3,22 62:5 136:13 154:14 169:23 178:4 178:12 184:19 188:10 194:7 195:15 206:19 209:25 210:25 236:10	acquired 51:6 59:14	addition 22:18 39:9 44:19 113:15 147:1 191:3 231:6 241:10 242:13
85 41:20 45:11 85:1	above 97:8	acres 57:9 235:14	additional 57:13,13 67:7 74:10 102:7 124:24,25,25 139:10 142:7 160:6 163:13 220:13 227:7 231:8 243:18
86 86:1	absolutely 8:18 220:12 233:5	acronym 50:11 105:9	address 12:10 35:4 111:20 146:13
87 30:25 87:1	abundance 106:2,25	acting 5:2,2,4 5:21,23	adherence 194:5
87102 3:3	accept 26:17 222:9	actual 6:14 17:8 52:17 77:25 114:19 161:4 162:2 165:3 181:22 182:4 208:21 210:18 214:1 214:21 218:1	
87501 2:7	accepted 135:10 136:10 199:10,14 205:16	actually 10:4 12:9 14:1	
87504 2:4,10,18	accessible 109:8		
87505 2:24 3:7	accomplish 165:19		
88 31:2 88:1	account 191:4 191:5 193:10		
89 89:1			
9			
9 9:1 52:3			
90 90:1			
900 243:7			
91 91:1			
91.5 86:25 88:6 181:1 215:14			
92 92:1			
93 93:1			
94 94:1			
95 95:1			
96 96:1			
97 97:1			
98 98:1			
99 99:1			
9:00 244:13			

[adjusted - analyses]

adjusted 163:12	245:7,12	231:17	ampomah 1:1
adjustments 116:18	affirmation 245:1	agreement 12:4 14:10 69:13 75:12 183:22	1:13 2:1 3:1,13 3:18 4:1 5:1 6:1,1,5 7:1 8:1 8:7 9:1 10:1 11:1 12:1 13:1 14:1 15:1,9,12 15:13,20 16:1 16:5,15,16,18 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 109:1,3 110:1 111:1,18 112:1 113:1 114:1 115:1 116:1 117:1 118:1,9 118:12 119:1 120:1 130:5,22 205:1,11,13 206:1 207:1 208:1 209:1 210:1 211:1 212:1 213:1 214:1 215:1 216:1 217:1 218:1 219:1 220:1,20,23 222:8
administrative 9:13	affirmed 26:18 32:20,24 33:3 35:1 74:14 87:21 124:4 158:19 182:7	agu 229:6 243:14	
admissibility 72:10	affirming 128:1	ahead 16:8 24:9 47:1 73:4 119:22 210:7	
admission 34:12,19 47:14 71:3 106:3 135:15 144:21 228:2	afternoon 119:2 134:7,19 134:20 146:9 197:16 204:7 205:14 223:5 225:16	aka 25:25	
admitted 34:22 34:23 48:6,7 72:11,12 87:6 93:3 107:9,10 135:11 145:9 145:10,25 146:1 228:14 228:15	agenda 7:10,12 7:12,15	albuquerque 3:3	
adopt 139:19 139:23 227:19 227:23	ago 22:7 49:25	aligned 206:13	
adopted 76:9	agrakin 2:19	alleman 27:10	
advisable 165:9	agree 25:7 49:22,23 51:16 52:10,18 54:25 66:6 84:6 88:7 88:14 92:11 97:22 98:7,11 98:16,22,23 99:5,8,12,14,15 100:8,9 123:6 131:17 150:20 160:15 162:22 164:3,5 178:14 202:13	alliance 9:11 135:2	
adviser 30:3		allow 203:1	
aerial 112:21		allowed 35:20 97:14 110:2	
affect 128:11 128:13 129:3 151:18 179:24		altering 187:4	
affidavit 66:11 69:6		am&m 91:25	
affirm 139:17 139:22 227:18	agreed 12:21 132:18 190:18	amend 9:11 147:23 154:10	
		amended 12:1 13:1,2,6,7,17 25:25 84:10 88:17 94:1 97:17	
		amendment 171:12	
		amendments 46:12	
		amount 109:18	
		ampoham 6:3 8:9	
			analyses 44:21 71:19 138:20 138:23 179:9 179:17 180:8 212:6 233:21

[analyses - andres]

243:4	149:22 150:17	212:8,19,23	38:12,17 42:24
analysis 37:12	151:1,6,15,25	213:12 217:9	44:4,8 64:19
45:1,14,18	153:25 154:17	217:16 218:19	65:8,19 66:2
46:1,6 49:19	154:22 155:1	221:7,10	68:7 71:23
54:8,13 65:7	157:8 159:13	228:19 229:2	75:1,15 76:20
65:18 67:10	160:2,24	233:16 234:3,5	77:9 79:2,10
71:22,25 75:9	161:13,17,17	234:19 237:9	79:19 80:12
76:24 77:4	161:18 162:25	237:12,17,23	81:17,18,25
78:21 79:2,20	163:13 164:4	238:18 240:3	82:6,16 83:25
79:23 80:17	164:21 165:7,9	241:1,3	84:6 85:3 86:2
81:16 82:24	165:14,15,25	analyst 146:23	86:10 89:7,11
83:3,6 84:8,9	166:11,12,15	151:16 219:10	89:16,18,22,23
85:4,7 88:1,6	167:4 170:2	219:11,13	90:13,18 94:5
88:12 89:6,9	171:9,16	analysts 168:14	94:11 95:18,22
91:22 94:4	173:10 175:20	219:12	96:1,8 98:2,10
96:12 97:8,25	175:22,25	analyze 100:3	101:4,10,14,15
100:4,7 101:13	179:10,11,13	136:17 165:17	101:23 102:1,8
108:10 111:23	180:22,24,25	171:24 211:1	102:13 103:24
114:19,21	181:2,17,24	analyzed	104:7 105:12
117:17 122:3	182:8,9,18	137:25 140:8	109:8 110:11
122:13,17	183:6 184:9,13	168:8 169:16	110:14,20
135:4,11,18,22	185:15 187:1	177:13 179:3	112:5,14
136:1,3,11	187:22 188:5	180:23 184:19	113:23,24
137:14 138:11	189:12,16	184:21 185:21	114:23 117:25
138:14,16,21	192:4 193:22	185:24 186:14	121:14 122:9
139:1,4 140:3	194:1,8 195:1	191:13,20,24	124:22 125:7
140:25 141:1,2	195:7,10,11	193:22 206:6	126:1 127:7,15
141:6,23	196:16 198:22	212:11 235:22	127:19 130:12
142:13,16,22	198:23 199:3,5	236:22	132:20 138:4
143:2,4,5,20,23	199:11 202:11	analyzing	141:16 142:12
144:9,17	204:10,12	160:1,10 204:9	143:7 144:2
146:16,21	205:22,24	andres 31:7,22	155:9,24 156:2
147:6,9,12,24	207:7 208:3,5	32:4 35:10,15	160:14,14
148:9,17,18	208:13 211:2,8	35:16 36:18,21	166:4 173:8
149:3,5,11,21	211:9,21,25	36:23 37:19	183:25 184:6

[andres - argumentative]

193:1 194:3,11 194:17,22,22 195:3,14 212:18 213:3,4 218:4,22 219:1 219:5 229:7,10 231:23 232:5 232:16 233:20 233:23 234:15 234:17,24 235:25 236:3 236:25 237:13 238:15 239:6,9 239:12 240:8,8 242:6,9,22,23 243:3 andrew 11:1 andrews 36:15 ann 11:1 annual 44:13 44:17 45:6 anomalous 168:4 answer 52:14 91:3 110:8 153:23 180:6 182:17 200:8 answered 185:2 answers 120:23 anticipate 27:2 27:16 anticipated 45:2	anticipation 202:8,19 antonio 2:14 anybody 10:24 11:6,13,18 19:20 72:14 154:16 anyway 25:19 93:14 131:3 apex 232:25 234:12,13 238:8 apodaca 9:1 20:4,6 196:3,4 244:18 apologies 18:3 18:23 74:3 121:3 apologize 10:2 19:1 54:6 82:2 104:14,16 109:23 118:16 122:16 apparently 71:9 appear 224:18 appearances 2:1 appearing 9:23 10:4 11:9,15 18:7,10 19:17 133:25 appellate 22:15 applicable 23:4	applicants 10:15 12:25 application 9:6 13:2,6 113:4 applications 74:6 110:4 124:25 applied 142:17 142:20 152:2 152:10 153:1,3 161:17 176:19 193:25 194:2 194:20 195:2,2 apply 95:7 142:13 151:8 172:2,9 177:12 applying 209:24 appraisal 138:4 138:10 142:7 143:24 145:13 172:2 appreciate 7:25 11:17 13:9 15:7 69:8 220:20 approach 56:1 181:25 205:24 213:19 220:9 approached 204:18 approaches 213:21 approaching 95:13,21	approval 7:11 7:16 8:23 74:7 approve 7:12 7:20 8:5,12,22 approved 7:15 8:16 100:18 103:23 approximately 89:24 101:22 102:7,16 april 1:8 5:14 7:11 12:10 13:2,25 14:1 14:13 31:2 245:4 area 30:17 102:19 112:7 128:8 138:2 142:20 159:3 164:10 165:16 166:5 173:16 174:22 180:1 183:5 210:14 217:5,10 229:24 230:8 areas 109:13 142:8 167:24 185:10 189:24 argue 130:21 argued 201:7 argument 25:18 209:13 argumentative 148:5
--	--	---	---

[arguments - average]

arguments 21:7,8 23:10 23:10 arrive 83:22 84:4 arrowhead 63:21 artificially 189:2 aside 12:20 asked 35:8 59:25 63:23 65:18,20,23 71:22 74:24 75:5 91:2 98:1 98:5,9 104:19 121:17 122:13 122:24 123:11 124:3,22,24 129:17 130:4,5 138:6 146:15 146:17 147:16 148:20 154:1 154:19 161:8 161:12,18 171:24 172:9 173:13 179:6,8 181:13 182:16 182:19 185:3 203:7 210:23 215:23 218:13 221:5 222:8 227:5 asking 24:20 62:5,11 64:8	65:12 66:22,24 66:24 67:11,13 67:21 68:1 84:13 127:10 127:12,21,22 153:12 170:5 185:6 198:20 207:18 asks 65:24 aspect 128:16 130:23 187:13 216:14 aspects 170:13 assess 186:13 assessed 141:24 assessment 82:22 83:2 101:13 116:21 152:2,10 166:15 210:2 assessments 210:4 assigned 206:14 assignment 123:18,20 132:5 assignments 31:20 assistant 6:24 assisted 214:23 associated 212:5 220:3 233:8	associates 29:20,23,25 30:23 44:18 47:5 64:3,17 65:25 66:8 association 11:3,10 assume 115:25 assuming 106:11 116:23 223:9 assumptions 182:24 atlas 115:22 attached 58:25 59:17 69:8 77:12,13 135:6 163:4 226:1 228:3 230:17 attachment 84:11 144:10 163:14 164:1 171:12,15 attachments 228:14 attempted 42:12 attention 51:25 attorney 148:2 200:7,11 201:4 201:13,16 202:8,14,17,19 attorneys 199:21 245:13	attributing 214:3 august 30:22 30:25 40:22 46:12,16 60:11 63:3,15 64:15 78:13 137:15 138:21 156:14 157:3,5,17 158:16,22 164:13 226:23 authorized 102:14 availability 26:24 63:3,6 114:21 available 15:22 48:18 50:25 52:18 53:22 63:5 107:13 137:23 159:3 160:8,25 161:20 164:10 165:11 191:6 218:15 223:10 ave 2:13 avenue 2:6 3:7 average 113:22 113:24 114:9 114:11 116:6 204:22 234:14 238:13,14,16 239:1,3 240:12 240:14,17
--	---	--	---

[avoid - basis]

avoid 21:16 aware 42:23 44:7 91:1,6 101:2,7,9,20,24 101:25 102:6 102:12 104:5,8 104:13 114:4 160:22 168:24 169:15 189:8 192:12,16,16 192:20,25 193:3,4 196:10 209:12 awesome 224:10	170:16 175:19 180:1,5 195:24 196:2 201:10 203:8,10 220:24 232:18 235:3 240:13 background 28:23 44:20 56:17 bad 167:24 bailey 61:4,21 63:17 215:25 bailey's 209:8 baker 3:2 balance 50:18 ball 14:19 ballpark 24:17 bar 82:6 218:10 barely 75:6,7 barrel 87:1 123:3 barrels 88:3,6 88:7 101:22 104:5 110:21 110:23 111:7,8 124:20,20 125:6,13 181:1 181:3 193:6 212:18 215:14 215:16 216:2,4 234:6,20,21 235:9,12 237:15 239:18 240:11 243:7	barrier 242:17 base 36:17,21 77:9 79:10,20 80:12 81:18,24 82:7,16 89:16 89:23 231:22 236:5 based 33:11,20 37:11 38:20 49:19 50:15 53:21 54:1,16 57:21 61:23 75:23 77:6 79:19,22 82:17 84:7 85:7 87:6 87:25 88:5,11 91:9 96:17 97:7 103:15 111:25 112:8 113:3 116:15 116:17 117:1 117:17 149:2 152:7 161:13 161:16 165:16 165:20 166:9 167:17 168:5 171:18 172:1 174:18 177:22 177:22 179:21 179:21 180:23 181:3,7,15 200:12 205:18 206:15 208:5 211:18 212:2 214:1,20,21	216:22 217:14 218:19,21 219:24 220:1 233:8,19 234:18 236:6 237:14,22 241:11 basically 53:15 70:1 89:22 125:25 153:2 154:11 167:8 231:11 232:25 237:23 238:7 basin 31:9 43:7 43:8,22 44:5,9 57:18,24 71:21 109:14 121:19 121:21 122:1 138:5 141:13 142:9 155:18 156:5,10 175:4 175:5,6,11 204:19 basis 79:18 80:10 86:4,8 86:23 92:5,10 96:25 127:19 142:18 149:24 153:7 172:23 178:17 179:16 209:2 210:12 210:18 216:19 216:25 217:10 234:20 235:13
b			
b 13:17 102:23 102:24 103:10 229:6 243:13 back 8:14 14:5 17:4,5 18:18 24:10 25:20 30:22 40:22,25 41:22 43:16 44:11,25 48:16 54:13 58:8,10 61:19 64:11 74:1,20 78:13 81:10 82:14 87:24 113:2,25 115:25 119:7 119:12,23 121:7 122:25 131:3 154:20 160:4 164:7			

[bates - briefing]

<p>bates 47:11 58:4 71:4</p> <p>baylen 1:12</p> <p>bear 136:13</p> <p>beat 202:6</p> <p>beatty 3:6 11:9 19:17</p> <p>beck 3:4,17 19:2,3,4 24:21 24:22 32:14 48:1,2 108:19 145:5,20,21 198:1,14,15,18 199:1 200:1,8 200:18,19 201:1,22 202:1 202:1 203:1,6 203:12 224:6,7 226:13,14 228:9,10</p> <p>beck's 25:6</p> <p>beeville 29:9</p> <p>beginning 44:11</p> <p>begins 13:18</p> <p>behalf 9:23 11:2,9,15 18:7 19:5,10,18 198:14 202:20</p> <p>behave 53:3</p> <p>believe 11:20 12:11,21 14:8 19:21 22:25 23:11 27:8,10 33:25 44:1</p>	<p>46:11 47:7,16 48:25 49:15 51:21 61:22 80:21,24 81:20 82:12 85:18 95:6 100:20 106:18 108:12 110:19 111:7 117:1 122:7 123:4 124:14 130:11 148:14 182:18 202:6 207:1,19 213:23 218:5 219:6 220:1 223:1</p> <p>bell 70:5,10 75:20 160:17 164:21,25 166:1,10,19,25</p> <p>belong 30:4</p> <p>beneath 64:20</p> <p>beneficial 22:12</p> <p>benefit 24:24</p> <p>best 78:23 152:13 153:15 154:12 173:7 176:21 194:19 230:11 245:10</p> <p>better 49:7,9 49:10 52:13,13 58:11 64:3 77:18 78:6,24 78:25 80:16</p>	<p>114:14 125:8 154:22 230:12 238:12</p> <p>beyond 60:4 70:7</p> <p>big 31:12 38:3 180:14 181:5</p> <p>bigger 49:8 123:17</p> <p>bill 27:11</p> <p>birkhead 218:13</p> <p>birkhead's 206:20</p> <p>bit 27:4 49:3 58:10 60:17 66:22 67:12 71:13 74:3 92:17 102:22 115:7 126:5 128:3 148:5,23 150:23,24 152:6 157:24 213:13</p> <p>black 143:9 171:25 235:4 236:8,11,13 238:4</p> <p>bloom 6:15,21 6:22,23 7:8,13 7:21 8:4,13,18 16:7,10,23 17:10,13</p> <p>blue 82:4 238:1 242:8</p>	<p>bore 129:25</p> <p>bottom 36:2 37:9 41:1 47:11 53:13 54:20 58:4 81:7 84:21 88:25 90:11 142:11 183:16 194:14 231:20</p> <p>bound 143:10</p> <p>boundaries 104:2</p> <p>boundary 104:3 216:22</p> <p>box 2:3,9 82:4 85:12,16 92:16 231:19 237:1 240:20 241:2 241:15 242:8</p> <p>boxes 235:23 236:2</p> <p>bracket 232:14</p> <p>brackets 232:8 232:9,12 233:11</p> <p>break 25:11 72:22 195:21</p> <p>breakdowns 238:13</p> <p>brewing 64:10</p> <p>brief 23:13 24:23</p> <p>briefing 21:17 201:8</p>
---	--	---	---

[briefly - cases]

briefly 29:12 140:2 167:6 bring 5:18 51:24 111:14 111:19 186:3 brings 7:9 broaching 200:6 broke 142:16 156:25 brought 128:24 brown 237:4 bs 29:2 buchwalter 114:18 115:6 buchwalter's 130:13 buckwalter 130:8,24 buckwalter's 130:7,23 building 1:4 2:13 builds 216:13 bullet 34:1 35:12,18,22 38:18,25 113:12 124:15 burden 23:5 bureau 115:21 burning 72:16 business 135:1 butte 29:13 bwenergylaw... 3:8	bypassed 129:6 bypassing 126:21 128:15 c c 229:18 c.a.r.e. 9:9 cable 137:3 calculate 92:1 153:10,24 180:3 183:1 219:14 calculated 37:17 180:25 181:2 218:4 220:19 234:6 234:19 235:11 236:6,17,25 237:6,15 240:10 243:2 calculates 101:21 193:5 calculating 142:4 213:22 234:25 239:17 calculation 86:20,22 87:1 87:7,11 88:9 181:4 210:10 215:11,20 217:2 234:18 237:14 calculations 123:12,13,19 123:24 124:1 180:13 181:9	205:21 237:22 calibrate 161:8 164:14,20 165:10,25 175:22 176:13 184:9 185:4 calibrated 176:1 185:8 206:16 calibrating 185:16 241:10 calibration 176:10 call 5:20 6:2,12 37:8 61:24 68:1 76:24 105:7 120:17 125:13 126:10 184:22 224:13 244:11 called 29:10,13 30:7 41:13,16 41:25 167:9 196:10 callout 231:19 242:1,8 callouts 79:5 capacity 134:25 225:20 capillary 219:7 219:16,21 caption 74:6 carbonate 105:7 114:5 115:16 141:8	151:9 carbonates 105:13 115:11 care 17:11 27:20 career 29:9,24 31:13 44:11,16 caring 9:7 case 7:4 9:5,6 9:24 10:5,8 16:13 17:8,8 17:15,17,18,18 22:9,22 23:7 31:24 41:8 55:3,9,21 56:9 56:12,15 72:7 73:21 78:9,10 86:15 100:13 101:2 108:14 109:9 119:7 122:4 131:12 149:18,19,19 168:7 169:15 182:1,2,3,23 183:10 198:8 201:7 204:20 206:2 218:2 219:9 221:12 245:14,15 cases 9:5 17:16 18:8,10 21:13 23:4,20 31:24 32:21 73:17,19 73:23 74:8,10 110:24 119:8
--	--	--	---

[cases - characterization]

<p>198:1,7 cash 55:4 catch 12:11 13:20 122:15 category 196:9 caught 12:7 cause 39:2,12 39:19,20,23 92:21 93:7,22 93:24 94:14 112:19 113:13 126:11,18 128:10,13,20 129:8 189:6 202:23 204:16 205:2 218:17 causes 39:18 128:19 211:13 causing 95:3 126:19 129:5 caution 106:2 106:25 cementation 151:20,25 154:8 center 9:7 10:14 central 36:3 43:7,21 44:5,9 57:18,24 71:21 121:19,21,25 142:9 155:18 156:5,9 175:4 175:6</p>	<p>centre 2:13 certain 189:21 certainly 39:23 44:16,17 49:24 54:17 70:21 76:3 114:13 certainty 212:5 certificate 3:22 certify 245:3 cestari 70:3,14 cetera 61:11,11 232:13 chain 58:6 70:12 71:5 73:7,9,12,15 chair 1:12 5:2,4 5:23 7:21 8:4 8:19 9:23 10:12,21 11:1 11:8,14,24 12:15 13:19 14:7,20 15:9 16:7,11 18:5 19:10,15 203:21,22 chairman 5:1 5:11 6:8,13,19 7:7,14 8:1,6,11 8:20 9:2,25 10:6,17,23 11:4,11,16 12:13 13:11,16 13:21 14:4,17 14:22 15:11,15 15:23 16:6,8</p>	<p>16:22,25 17:12 18:2,11,13,16 18:22,25 19:7 19:12,19 20:1 20:12 25:10 28:13 32:5 72:21 107:15 118:13,15,21 118:25 119:2,6 119:14,25 120:2,10,14,17 120:18 133:9 203:25 223:6,8 223:15,21 224:3,6,8,10,15 224:16 225:11 244:11 chance 22:2 124:17 126:14 178:16 230:12 change 12:8 13:20 14:3 33:3,13 99:9 148:7 150:5 151:12 162:8 177:25 178:5 178:13,18 183:24 184:5 186:1 200:2 205:5 206:9,11 211:13 230:20 changed 13:3 13:25 94:17 123:5,7 138:13 141:10 163:21</p>	<p>168:17 179:16 179:22 182:19 183:8 228:17 230:22 changes 13:8 32:23 33:1,2,8 34:8 84:14,15 139:11,13 160:3 162:2 177:18,19 194:6 208:1,14 209:3 210:5 218:14,17 242:11,16 changing 112:12 147:19 168:5 172:15 172:18,23 179:2 184:4 194:2 204:20 210:3 channel 141:25 155:15 175:4 character 183:25 184:5 characteristic 178:4 241:17 characteristics 126:6 131:5,8 132:4 136:18 151:17 178:13 178:25 207:13 characterizati... 99:2 148:1</p>
--	--	--	---

[characterized - commercial]

characterized 52:24 check 7:23 checking 113:17 chief 149:20 chino 1:4 choose 148:20 chore 122:4 chose 177:3 chosen 174:18 chris 19:10 107:23 chris.moander 2:24 christopher 2:25 chunk 232:6 circle 120:5 circulated 11:25 circumstances 185:7 cited 115:11 citizens 9:7,11 claim 111:12 111:24 claiming 202:4 clarifications 68:24 clarify 67:16 68:2 102:18 130:22 clarifying 26:14	clarity 113:4 classified 207:5 207:20 classify 117:18 clean 84:16 clear 164:12 clearer 230:25 client 18:20 25:6 30:23 31:3 46:19 51:4,11 57:5 59:4 148:2 200:7,11 201:4 201:13,16,20 202:4,14,14,15 202:16,20 217:22 clients 42:9 43:6 56:20,22 204:10 222:3,6 clock 225:1 closely 52:17 closer 213:25 233:1 239:1 closest 153:4 closing 21:6,8 21:16,18 22:24 23:13 24:22 closings 21:14 21:15 23:17 24:12 closure 229:10 230:10 238:9 240:14	cloutier 10:25 11:1 club 9:11 co2 31:15,16,18 38:7,10 39:10 39:12 41:15 42:11 43:6,14 44:3 45:2,3,3 45:13,16 46:5 98:6 109:12,25 128:14,20 129:8 131:25 243:16 coattail 26:22 cobb 29:19,20 29:23,24 30:1 30:22 44:15,18 46:18 47:4 48:20 49:20 50:22 51:1 52:24 53:8,21 54:2,8,14,24 59:1,6,16 60:12 61:22 62:8,11,24 64:3,8,17 65:6 65:25 66:7 67:10 69:3 71:10 114:1 cobb's 49:19 code 9:13 coefficient 215:20 colleague 10:3 18:9 61:21	63:17 colleagues 61:3 61:4 62:19,24 63:4 69:3 collect 62:6 colors 237:19 237:24,24 238:2 column 90:15 242:2,23 combinations 153:8,9 come 14:5 59:9 118:15 120:5 128:9 129:4 148:11 154:20 155:13 190:17 195:24 204:11 209:9 241:10 coming 234:12 235:17 240:12 240:13 commenced 104:2 212:13 comment 12:12 51:25 212:3,16 215:7 219:18 219:23 commentary 172:10,13 comments 15:8 commercial 32:2 35:10 39:16,18 110:16,22
--	--	--	---

[commercial - concern]

111:1 129:1 commission 1:1 1:3,11,14 2:1 3:1 4:1 5:1,4 5:15,23,24 6:1 7:1 8:1,12,23 8:24 9:1 10:1 10:13 11:1 12:1,3,16,17 13:1 14:1,14 15:1,3,5 16:1 17:1,20 18:1 19:1 20:1 21:1 21:19 22:1,13 22:19 23:1,1 23:14,20 24:1 25:1,20 26:1 26:17 27:1 28:23 29:6 31:23 39:14 49:7 73:24 74:12 83:17 85:1 93:3 100:13,18 108:25 111:4 111:23 112:6 113:5,22 116:22 117:17 119:16 179:8 181:10 200:10 200:22 201:14 201:18 203:19 205:1,19 206:1 207:1 208:1 209:1,2,4,9	210:1 211:1,6 211:23 212:1,3 212:7,8 213:1 214:1 215:1,6 216:1,1 217:1 217:5,23 218:1 218:5 219:1 220:1,4 222:9 244:10 245:5 commission's 21:5,9 72:5 commissioner 3:12,13,16 5:25 6:3,11,15 6:17,18,21,22 6:24 7:1,8,13 7:21 8:3,4,7,9 8:13,18 9:22 10:3 15:9,12 15:20 16:5,7,9 16:10,18,23 17:10,13 18:1 18:4 22:6 26:4 26:21 32:9 34:18 40:7 47:13 48:8 71:2,12,17 72:20,24 73:5 73:6 105:22 106:13,17,21 107:11 109:1,3 110:1 111:1,18 112:1 113:1 114:1 115:1 116:1 117:1	118:1,9 119:1 120:1 127:16 135:14 136:5 144:25 145:16 146:6 148:6 149:14 150:7 150:10,13 195:22 196:7 197:3 204:1,6 205:13 209:10 220:20 224:2 226:9 228:5 244:2,5 commissioners 10:12,21 11:8 18:5 19:4,10 19:16 136:22 142:24 231:2 232:20 committed 13:1 common 55:16 55:24 141:8 184:8 185:3 218:23 commonly 30:7 communication 39:4 92:23 93:9 114:23 202:15 215:7 communicati... 148:2 201:3,12 202:2,25 companies 44:14 55:23	company 3:1 19:5 29:10,13 29:13,16 41:12 45:8 compare 216:5 236:10 compared 142:2 241:7 comparison 216:24 217:3 compel 200:24 complaint 13:1 complete 58:9 169:9,10 completed 66:13 101:4,9 102:1 192:23 193:1 completion 3:22 245:1 complex 201:23 component 148:19 179:23 components 154:7 179:23 composition 208:21 compromise 112:21 concentrations 105:19 concern 25:12 95:7,14 96:2 110:10,13,15
---	--	--	--

[concern - core]

111:17 112:23 165:18 concerned 107:7 concerns 14:9 95:2 112:24 concluded 121:24 concludes 40:2 conclusion 23:10 38:24 98:14,20 99:7 130:16 190:21 conclusions 22:12,17 23:2 23:12,19,24 24:15 34:9 37:15 38:19 99:25 111:13 111:16 113:13 124:15 conditions 181:22 211:11 conduct 64:18 66:1 82:22 83:1,21 84:3 100:4 128:21 192:3 195:6 conducted 46:5 71:10 86:22 180:22 202:7 conducting 55:14,18 221:10	conference 9:14 13:4 14:6 245:6 confidence 176:2 confirm 100:7 111:22 113:22 115:13 175:20 195:15 197:5 confirmed 243:15 conflicting 204:16 confounds 204:12 confused 66:23 67:12 80:8 163:7 confusion 230:16 conjunction 228:25 232:4 connection 68:14 connectivity 115:2 connects 36:4 36:13,15 conservation 1:3 2:21 5:3,4 5:15,22,24 9:8 10:22 19:11 100:13 103:15 200:23 245:5	conservative 56:1,2,10,13 218:2 consider 23:14 42:24 140:25 consideration 21:6,20 72:6 considering 170:12 212:8 consistent 239:3 242:13 242:17 consists 235:14 consolidated 17:15 32:21 119:8 constant 55:10 constraint 113:9 consultants 30:2 consulting 28:21 29:21,25 30:1 contact 64:2 contacted 57:15 58:14 59:12 contained 38:24 140:22 containing 38:1 contends 68:7 contest 110:7 continuance 63:24	continuation 5:13 17:20 119:7 continued 112:17 119:10 continues 232:17 continuity 242:15 contribute 64:4 contributed 51:9 contribution 214:7 control 126:13 conventional 117:18 185:11 187:10 188:18 207:21 conventionally 131:19 conversation 148:16,20 conversations 11:22 62:17 convince 209:4 convinced 202:25 cooler 237:23 coordination 13:10 copies 58:25 copy 69:7 core 37:18 38:14,22 53:2
--	---	---	--

[core - correct]

64:21 69:20,22	206:15 209:22	81:19,20,25	154:13 155:15
70:4,10 137:24	210:8 213:15	82:8,11,12,18	155:21,22
137:25 138:16	215:10 217:16	83:4 84:22,23	156:6,10,11,15
141:2,15,19,20	217:21 220:14	85:5,18,22	156:18 157:21
142:2,3,11,21	227:7 228:22	86:2,6,11 87:8	160:9,18,20,25
152:15,22	242:1,3,14	88:14,23,24	161:1,5,10,14
154:2 158:3,8	243:15	89:12,20 90:7	161:20,23
158:12 159:2,3	core's 188:20	91:3,19 92:10	163:24 164:16
159:6,20,22,23	corey 2:15	93:14 94:20,25	164:18,19,22
160:7,14,23	coring 185:18	95:5,6,9,14	164:23 165:1,2
161:4,9 164:10	187:15,16	96:3,4,9,13,14	165:4,5,22,23
164:11,25	189:1 191:5	96:20,21,23,24	166:1,16,17,22
165:3,10 166:1	cornell 29:15	97:2,18,19	166:23 167:4
166:10 167:1	29:18,19 41:12	98:4,8,12	169:12,16,17
171:19,25	41:13,17,18	99:21,22 100:1	169:21 171:6,7
172:3 173:11	42:6 44:25	100:2,4,5,19,20	171:9,16,20
173:19 174:1,8	corner 240:19	100:22 103:1	173:20,24
175:23 176:1	corp 225:22	103:11 104:12	174:13,19,24
176:17,20	correct 13:13	104:12 105:19	175:7,13,23
177:10,14	20:16,17 34:4	105:20 108:8	176:4,14,15,22
179:19 180:1	36:24 41:24	108:12,16	176:25 177:14
183:4,7,10,21	43:25 44:1,15	121:15 122:1,2	178:15,23
184:10,15,19	44:22,23 45:9	122:5,14,20	179:4,10,18
184:21,21,22	45:19,20 46:17	123:3,4,13,15	180:8,16,16
185:17,21,24	48:11 49:13	123:20,21	181:7,8,15,21
185:25 186:3,6	50:12 53:10,24	129:25 130:1	182:19 186:4,7
186:10,14,19	54:9,15 55:11	130:19,20	186:19,20
186:22,25	57:6,11 60:1,5	131:5,16 133:1	187:9,10,23,24
187:3,4,10,20	61:5 62:25	135:5 139:19	188:14,23
188:7,11,18,18	63:1 65:21	139:23 141:21	189:13 190:1,2
189:3,12,19	69:14,15 75:2	143:11,21	190:5,11,14
192:7 194:4,9	75:7,8,15,21	147:10 151:3	191:14,16,17
194:13 195:14	76:1,10,20,25	152:3,14,19,20	191:20,21,25
204:12,21,24	77:4,9 79:11	152:23,24	192:1,4,5,9,10
205:4 206:2,5	79:20 80:12	153:5,16	192:14 194:3,4

[correct - cross]

194:10,14,23 195:4 198:2,9 199:6,20 202:5 206:25 212:21 222:3,14,17,19 223:12 226:23 227:19 230:19 231:3 233:13 235:14,15 236:21 237:2 237:11 238:19 239:8,16 240:1 240:6,21 245:9 corrected 26:18 34:5,12 35:2 correcting 26:7 corrections 26:15 70:9 185:17 187:21 188:3,25 189:16 191:4 227:11,15 correctly 14:18 50:19 52:8 53:4,18 64:24 68:11 69:9 92:25 93:10 97:15 100:8 119:15 162:15 163:15 184:1 201:15 correlate 242:10 correlated 177:19 178:18	correlating 177:24 241:12 correlation 94:13 177:23 177:23 178:2,3 214:2 correlations 214:24 corresponds 233:3 corsett 159:15 corsw 183:19 cost 127:5 costly 128:22 129:9 costs 55:10 126:19,24 165:16 counsel 1:14 2:22 107:24 201:3 count 132:8 counting 125:4 county 75:1 138:4,10 141:12 142:7,9 143:24 144:12 145:13 152:2 152:10 153:7 153:13 172:1 173:9 174:18 174:22 175:10 175:15 183:3 210:13 213:11	couple 12:10 14:16 48:9 51:20 54:24 74:14 104:18 109:5 195:19 197:13 198:16 205:15 course 27:19 38:11 105:14 114:3 129:13 court 20:5 22:15,20 116:19 245:15 cover 232:6,6 233:20 234:14 covered 234:16 covers 35:16 216:10 cowden 31:11 43:18 cox 12:13 create 129:3 167:21 210:23 211:18 created 53:8 102:17 creation 104:6 credentials 135:6 226:1 credible 130:24 130:25 crestable 230:15 crestal 229:24 230:8	critical 51:17 243:13 cross 26:11 36:2,5,7,8 37:8 38:12 40:1,3,9 41:1 42:1 43:1 44:1 45:1 46:1 47:1,15 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1,6 72:1 73:1,8 74:1 75:1,25 76:1,2,5,8,12 76:13,14 77:1 78:1 79:1 80:1 80:10,23 81:1 81:2,11 82:1 83:1 84:1 85:1 85:8 86:1 87:1 88:1,23 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1,4 107:1,1,4,9,13 107:21 108:1
--	--	--	--

[cross - date]

113:20 121:14 123:2 135:19 135:21 136:4,6 146:1,7 147:1 148:1 149:1 150:1 151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1 197:1,14 197:17 198:1 198:17 199:1 200:1 201:1 202:1 203:1 204:1 217:15 229:17,18,20	231:2,3,4,5,10 232:23,24 233:3 235:22 236:18,21 241:23 242:9 cumulative 103:17 104:4 curious 135:18 current 39:7 95:20,24 96:7 112:10 113:14 126:17 212:19 231:5 243:14 currently 44:8 97:1 102:3 212:20 cursor 81:22 82:1 238:2 curves 167:17 168:6 241:12 241:14,16,20 cut 15:6 54:6 184:22 cutoff 89:25 90:23 cutoffs 90:4 242:24 cutting 241:18 cuttings 241:10 241:21 cwehmeyer 2:14 cycling 126:18 128:14	d d 73:21 74:18 77:12,12 92:19 245:3,19 dallas 29:12,16 damage 124:12 124:14 125:9 damaging 230:13 dana 2:8 18:14 darcy 131:3 darrell 64:15 dashed 231:14 231:16 data 33:12,20 37:18 38:14 50:4,15,17,23 50:25 51:2,6 51:10,17 52:7 52:13,17,18 53:2,22 54:1,5 62:6 64:21 69:18,20,22 70:2,18 77:5 78:1 94:9,17 94:22,22,23 96:15,19,20 98:14,19,24 99:6 100:22 103:16,16 115:17 116:4,8 136:24 137:4 137:22,24 138:16 140:9 140:10,11	141:3,20,24 142:7 143:3 158:3,7,11 159:3,7 160:7 160:23 161:4 164:10 165:4 165:10 166:1,5 166:10 167:12 167:14,14,15 167:20,22,22 167:25 168:4,5 168:6,16 169:5 169:21 171:19 171:23 172:16 172:19,22,24 182:4,21,24 184:15 189:19 191:6,11,12,19 192:7 204:12 204:13 206:16 210:11,20,22 211:3,11,14,17 211:22 216:7,9 218:1 220:11 220:13,17 221:6,23 227:7 228:22,23 231:24 data's 214:13 date 12:8,18 13:2,25 14:1,3 16:2,3,4 58:15 58:16 69:14 74:17 78:17 211:12
--	---	--	--

[dated - designated]

dated 58:24 60:10 70:6 73:22 78:18 84:22 158:22 dates 12:2,4,10 13:7,10,24 227:5 davidson 27:11 davis 64:15 65:2,24 66:10 66:20,21 67:6 67:9 68:4,20 68:22 69:2 day 17:15 25:17,17 63:7 68:5,21,21 110:21,23 111:8 124:21 125:14 197:19 211:25 212:9 218:16 224:13 245:4 days 16:14 63:14 68:23 69:1 deacon 20:19 26:1 dead 202:6 deadlines 15:4 21:17 deal 31:20 33:2 dealing 218:20 deals 30:17 decades 115:7	december 29:22 58:24 63:24 73:10 87:23 137:19 138:22 156:17 157:3 158:1 161:14 197:21 198:21 199:13 199:17,22 227:1 decide 105:25 148:7 154:12 181:11 decided 69:11 150:4 160:1 165:16 169:20 201:15 228:24 228:25 deciding 92:10 decision 21:11 23:25 147:23 148:11 decrease 181:5 188:21 189:12 deemed 201:8 deep 36:20 deeper 58:18 deepest 33:6,17 33:22 deeply 42:22 deficiencies 112:22 define 38:1 170:3	defined 35:13 35:14 117:14 231:22,23 definitely 15:4 definition 37:23 75:11 104:20 202:6 degree 29:2 114:5 delight 22:5 deliverable 238:20 deliverables 62:8 delivered 173:6 227:7 denote 113:12 density 167:25 209:20,21 department 2:23 depend 202:1 dependent 127:2 depending 56:4 151:13 185:25 186:5,6 205:1 205:4 207:22 207:25 212:13 depends 131:4 depicting 36:17 depose 200:13 deposed 135:15 136:6 146:16 152:7 197:21	deposition 91:5 147:17 166:10 167:10 178:10 179:6 181:13 182:17,20 198:20 depth 33:7,10 33:14,17,22 49:13,16,21 78:2 85:11,12 90:2 137:4 168:23 169:4 176:25 177:23 186:3 187:3 188:20 204:22 241:14,15 depths 33:9 70:10 79:5 175:16 191:24 233:9 derive 170:17 183:21 derived 170:25 176:3 186:17 210:20 describe 140:5 142:24 231:2 233:14 240:22 description 4:2 51:22 52:6 241:11 242:2,3 descriptions 241:19 designated 6:18
---	---	---	---

[designee - direct]

designee 6:6,25 detail 60:23 144:9 157:25 details 26:8 53:20 62:12 70:8 determination 85:5 90:1,24 122:6 171:5 215:24 determinations 153:6 determine 64:18 66:1 104:16 136:18 140:14 151:7 151:17 152:25 154:7 169:11 170:14,24 171:25 182:4 187:20 207:6 207:13 209:25 210:10 215:9 217:12 determined 169:24 208:25 209:19 determining 173:5 214:6 detrimental 39:5,15,22 93:9 101:18 110:11,12 111:1 113:16	detrimentally 97:11 develop 45:1 developed 45:6 53:17 127:8 developing 44:8 development 95:4 122:8,18 122:22 135:2 155:2 developments 31:7 123:9 develops 162:14 dhardy 2:7 differ 206:20 difference 93:12,14 129:18 135:18 135:22 146:20 146:22 147:15 161:25 180:12 180:14 differences 204:23 205:2 209:25 235:19 different 53:9 53:22 54:14,25 56:21 58:24 80:22 90:15 93:4 137:7 148:23 150:6 152:9 163:4,18 174:23 175:10	185:9,10 199:2 209:14,15 210:14,16 214:10 218:18 222:5 232:19 232:23 236:19 differentiates 147:11 differently 220:8 difficult 78:4 214:9 216:23 difficulty 51:10 digit 114:10 115:4 digital 80:6,7 116:4 digitized 80:3 116:4 digits 80:2 dillewyn 3:15 133:18 134:7,8 134:11,19,23 135:16 136:7 136:15 146:9 149:17 150:2 150:15 153:23 154:25 165:6 171:19 174:5 178:12 181:14 181:20 189:8 194:12 196:8 197:4,6,11,16 198:15 202:4 202:13 203:4	203:15 204:7 223:3 237:17 dillewyn's 133:22 135:10 diné 9:9 dip 230:6,14,14 234:10,10 235:25 236:1 direct 12:4,22 13:23 28:1,15 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 101:1 102:11 134:1,17 135:1 136:1 137:1,13 138:1 139:1 140:1 141:1 142:1 143:1 144:1 145:1 149:19 159:24 166:4 210:2 225:1,14 226:1 226:21 227:1 228:1 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1 238:1 239:1 240:1 241:1 242:1 243:1 244:1 245:1
---	--	---	--

[directed - drawdown]

directed 174:12 direction 178:6 202:8,18 directly 63:16 154:23 172:3 209:17 director 5:2,22 directs 63:16 disagree 22:23 88:12 184:25 discipline 147:22 149:1 disciplines 211:18 discovery 58:3 58:6 71:5 166:9 201:3 discrete 175:10 discuss 7:18 25:11,19,20 61:9,20 63:3 66:22 67:11 68:20 74:15 discussed 21:22 22:7 23:6 50:8 54:12 128:19 138:20 178:9 188:20 240:18 discussing 68:24 73:7 190:13 discussion 52:21 60:4 65:9,12 163:13 180:21 235:2	discussions 12:6 61:19 62:15,19 63:6 64:7 65:5 69:18 70:8,11 70:13,17 72:3 165:21 219:24 displace 105:10 display 37:4 91:18 168:19 displayed 36:9 displays 168:21 disposal 33:18 35:9,11 36:12 38:21 39:1 62:2,7 63:20 64:11 67:24 74:8,25 75:6 85:25 92:20 93:6,21,23 97:14 102:13 103:24 104:7,8 110:17 125:1 126:10 229:14 230:24 231:6 disposed 39:20 102:19 104:10 110:19 disposing 38:21 102:3 disposition 245:15 distinguish 42:2	distributed 138:1 234:9 district 29:14 diverted 39:20 divided 153:16 176:24 division 2:21 5:3,21,22 10:22 19:11 106:23 division's 103:15 200:24 doable 15:18 15:21 doctor 15:18 28:6,7 109:1 doctrine 201:14 document 47:12 52:3 58:9 69:24 71:3 72:10 84:16,17 87:20 138:9 163:14 164:2 166:20 213:11 documented 86:6 116:14 documents 100:12 221:11 doing 44:19,20 48:16 62:16,20 71:19 88:9 113:6 132:24 132:25 146:11	146:12,12 159:12 165:6,9 181:24 197:17 204:10 dollars 126:25 dolomite 143:6 144:6 208:20 don 3:7 61:4 dotted 231:14 doubt 58:22 65:4 217:19 doubting 217:16 downhole 137:2 downspacing 57:9 downstairs 127:6 dr 1:13 3:18 6:4 15:12 16:15,16 27:11 114:18 115:6 118:12 130:5 130:13,22 200:25 201:4,5 201:13 205:10 220:23 222:8 draft 12:1 drainage 217:10,12 drastically 220:16 drawdown 125:18
---	---	--	---

[drilled - empire]

drilled 192:19 229:21 drilling 57:9 136:25 193:21 230:9 241:9 drive 1:5 2:23 drivers 12:5 drop 125:17 dropped 230:23 drowning 124:8 ducks 224:24 due 21:11 50:17 112:15 126:9 158:2 166:25 188:19 213:16 214:10 219:4 duly 28:12 134:12 225:10 dune 31:12 dykstra 114:7 dynamic 230:9	east 229:10 235:22 eastern 43:24 121:19 155:9 156:4 236:1 238:6 easy 38:6 economic 44:20 45:1,13 46:1 54:2,8,13,21 55:14,18 56:4 56:17,19 71:19 115:21 122:3 122:17 economical 112:2,5,8 economically 98:10 economics 55:20 127:9 edge 236:1,1 edit 168:6 169:21 edited 140:12 168:17 editing 168:2,3 edits 169:5,8,12 education 9:9 28:24 effect 32:2 34:9 39:15 101:18 132:19 effective 24:13 effectively 202:23	effects 212:14 efficiencies 126:20 efficiency 39:10 efforts 169:20 eight 125:4 129:1 140:7 167:9 either 67:23 95:22,25 96:2 99:16 120:3 168:1 191:7 193:12,17 elaborate 126:5 128:2 electronic 137:1,3 email 20:14 26:22 27:6 58:10,15,23 59:24 60:9,15 61:13 62:11 63:9 64:15,16 65:1,2,24 67:1 67:6 68:5,15 69:20 70:6,11 70:17 71:4 73:7,9,9,10,12 73:15 emailed 61:3,7 emails 58:6 62:23 63:15 68:15,24 69:18 70:21 123:17	132:18 emnrd.nm.gov 2:24 empire 2:2 7:4 17:16 18:14 21:7,10 24:2 26:9 27:21 33:12,20 41:7 47:10 57:15 58:3,7,14,15,24 59:6,12 60:10 60:21 61:22 62:5,12,15,19 62:25 63:4,15 64:7,15,20 65:6 66:7 68:7 68:25 69:21 71:5 73:11,17 75:24 76:6,7 80:18 81:11 87:22 90:24 101:20 106:11 110:14,19 119:9 123:18 133:19 136:15 136:17 144:12 147:2,6 159:17 159:18,19,23 160:1,7,18 161:3,8,12,18 164:12,24 165:16,21 166:18,21 167:1 171:20 171:23 173:7
e			
e 36:1 earlier 16:19 33:22 43:12 109:11 162:25 221:4 early 41:22 114:1 earthworks 9:9 easier 10:9 80:14			

[empire - essentially]

180:22,25	66:23 67:18	239:24 240:3	177:2 194:22
191:10,10,22	75:1,11,20	241:3 242:20	195:3 216:18
192:3,4,6	79:2 81:25	243:13,13	entirely 71:25
193:4 196:10	83:25 84:6	ends 232:14,16	entirety 153:25
196:22,25	85:3 95:5	energy 2:22	entitled 138:3
199:22 202:3	96:19,23 97:2	135:2	144:11
213:11 222:5	97:14 100:12	engage 136:15	entries 33:10
225:22 242:20	100:16,21	engaged 136:17	entry 33:15,17
empire's 34:19	101:2,5,10,14	200:10	33:21 48:19
42:23 70:3	101:23 102:9	engagement	51:21,24
72:7 78:8,23	102:14,16	60:4	entwined 22:21
84:12 86:14	103:18,22,25	engineer 28:22	environment
92:23 97:11	104:6 116:25	29:1,5,8,11,14	56:5
137:15 144:14	121:24 122:7,9	30:14 74:17	environmental
176:11 189:8	122:19,22	113:3	9:7 10:14
201:2,8 226:22	137:23 141:20	engineering 6:5	eog 11:15
228:2,2	142:22 143:20	29:3,16,21	eor 68:10
empirical	158:13 159:4	32:6 113:7	243:16
204:13	160:17,20	132:6 147:14	equal 179:24
employed	161:5,20	engineers 30:7	equation 141:4
134:24 225:19	164:11,15,17	30:10,17	206:11 207:25
225:21 245:12	165:4 166:16	228:25	ernest 2:11
employee 29:22	168:9 171:19	enhanced 38:8	18:13
emsu 31:1,4	173:9 175:23	42:12 43:14	erred 227:8
32:4 35:11,14	177:13 185:17	45:17 46:5	error 33:25
39:2 42:24	191:7 192:7,13	109:25	153:2,14
46:16,20 48:18	192:18,19	ensure 167:22	escalated 55:6
48:23 49:12	193:2 216:22	entailed 150:16	especially
50:4,19,23	217:2 221:11	entire 16:17	71:21 105:6
51:18 52:11,16	228:22 229:6,6	29:24 35:16	220:9
53:3,17 55:5	229:11 231:9	76:20 77:8	esq 1:14 2:5,8
57:6,14 59:2	232:13 234:9	82:16 83:24	2:11,15,20,25
59:15 60:21	234:16,22	84:5 89:10	3:4,8
61:25,25 62:6	236:1 237:10	126:1 142:15	essentially
62:16 65:8,19	238:7,18	152:16 176:20	71:11 75:14,25

[establish - examination]

establish 98:25	173:10 208:14	72:12 94:10	55:1 56:1 57:1
established	233:23	106:7,9 107:10	58:1 59:1 60:1
22:11	evaluated	113:3 145:11	61:1 62:1 63:1
establishing	43:14 44:3	146:1 228:16	64:1 65:1 66:1
149:24	54:14 95:24	evidentiary	67:1 68:1 69:1
estimate 68:8	127:19	17:21 23:5	70:1 71:1 72:1
114:9 115:18	evaluating	exact 199:25	73:1 74:1 75:1
125:5 208:11	30:18 41:8	exactly 69:16	76:1 77:1 78:1
211:7 212:23	42:6 46:19,22	100:25 128:8	79:1 80:1 81:1
213:19 218:3	55:14 57:8	150:1 171:22	82:1 83:1 84:1
229:1	63:19 67:18	200:25 202:9	85:1 86:1 87:1
estimated	92:9 131:10	203:7	88:1 89:1 90:1
206:23 208:10	154:6	examination	91:1 92:1 93:1
213:1,15 215:2	evaluation 30:9	1:1 2:1 3:1,12	94:1 95:1 96:1
215:22 216:1	30:14,16 33:5	3:12,13,13,14	97:1 98:1 99:1
estimates 209:6	42:5 45:13,23	3:16,16,17,17	100:1 101:1
220:3 227:9	48:16 49:20	3:18,18,19,21	102:1 103:1
estimating	54:2,21 56:5	4:1 5:1 6:1 7:1	104:1 105:1
215:13,17	64:22 83:22	8:1 9:1 10:1	106:1 107:1,9
estimation	84:3 85:2	11:1 12:1 13:1	107:21 108:1
208:16 209:8	122:25 132:7	14:1 15:1 16:1	109:1,2 110:1
214:22 216:5	evaluations	17:1 18:1 19:1	111:1 112:1
217:17 219:13	31:16 44:21	20:1 21:1 22:1	113:1 114:1
estimations	55:15,18 56:17	23:1 24:1 25:1	115:1 116:1
214:20	56:19	26:1 27:1 28:1	117:1 118:1
et 61:11,11	evening 244:12	28:15 29:1	119:1 120:1
232:13	eventually	30:1 31:1 32:1	121:1,8,9
eunice 30:21,24	126:10	33:1 34:1 35:1	122:1 123:1
63:20 64:20	everybody	36:1 37:1 38:1	124:1 125:1
evaluate 42:13	11:19 15:7	39:1 40:1,9	126:1 127:1
53:9 55:19	17:9 19:21	41:1 42:1 43:1	128:1 129:1
74:24 75:5	118:23 244:14	44:1 45:1 46:1	130:1 131:1
94:5,17 95:17	244:17	47:1 48:1 49:1	132:1 133:1
98:1,5,9	evidence 22:14	50:1 51:1 52:1	134:1,17 135:1
140:13 147:5	34:23 48:7	53:1,1,2 54:1	136:1 137:1

[examination - exhibits]

138:1 139:1	207:1 208:1	excellent 5:11	85:9 86:18,21
140:1 141:1	209:1 210:1	6:8,19 7:7,14	87:17,18,19,22
142:1 143:1	211:1 212:1	8:20 9:2,25	88:20,21,25
144:1 145:1	213:1 214:1	10:17,23 11:4	89:4 90:10
146:1,7 147:1	215:1 216:1	11:11,16 13:11	92:19 102:23
148:1 149:1	217:1 218:1	14:22 17:4	102:23,24,25
150:1 151:1	219:1 220:1	18:16 19:7,12	103:10,11
152:1 153:1	221:1,2 222:1	19:19 119:6	106:4,12,16,18
154:1 155:1	223:1 224:1	except 37:5	107:1,5,6,9,10
156:1 157:1	225:1,14 226:1	110:5	113:21 123:2
158:1 159:1	227:1 228:1	excessive	137:15,19
160:1 161:1	229:1 230:1	130:10	139:10,11,14
162:1 163:1	231:1 232:1	excitement	139:17,18,23
164:1 165:1	233:1 234:1	103:4	140:6 142:25
166:1 167:1	235:1 236:1	exclude 234:22	144:10,21,22
168:1 169:1	237:1 238:1	excluded 53:14	145:10,10,14
170:1 171:1	239:1 240:1	150:18 234:23	146:1 156:12
172:1 173:1	241:1 242:1	excluding	156:14 158:6
174:1 175:1	243:1 244:1	168:4	158:20 162:10
176:1 177:1	245:1	excuse 128:5	163:3,3,10
178:1 179:1	examined	200:23 221:18	169:2 183:14
180:1 181:1	197:17	excused 133:8	183:15 226:23
182:1 183:1	examiner 19:16	133:15 222:25	227:1,12,15,16
184:1 185:1	21:1 23:16	exhibit 4:2,3,4	227:19,23,24
186:1 187:1	34:11 40:1	4:5,6,9 13:17	228:2,3,15,15
188:1 189:1	80:25 108:20	14:15 32:20	229:3 230:17
190:1 191:1	200:5 221:1	34:12,14,20,23	230:20 235:20
192:1 193:1	example	36:1 40:21	235:21 236:18
194:1 195:1	116:20 140:18	46:14 47:15,15	237:8 239:10
196:1 197:1,14	examples	48:7 58:2 71:6	240:23,25
198:1,17 199:1	109:16	71:15 72:12,16	241:16,22
200:1 201:1	exceeding	73:8,21 74:18	242:18,19
202:1 203:1	95:13	78:9 79:3,13	exhibited 97:2
204:1,5 205:1	excel 77:25	79:21 80:19,22	exhibits 4:1,7,8
205:12 206:1	116:5	80:23,24 84:12	12:22,23 66:11

[exhibits - fairly]

71:8 77:12 85:9 100:17 103:10 106:15 108:10 221:17 221:19 228:3 exist 222:18 existing 229:14 230:23 233:2 exists 116:9 117:2 130:2 expand 187:3 204:15 expanding 189:5 expands 186:9 186:11 expansion 186:4 188:19 189:4 190:18 215:20 expect 118:7 130:1 186:2 238:11 241:17 242:15 expected 56:11 56:14 199:14 expedient 23:17 expedite 23:25 expensive 112:20 113:8 experience 29:7 30:20 31:6 35:19 38:1 46:15 57:14	96:17 97:8 109:7,10,23 112:1,9 114:25 115:14 117:1 132:6,8 181:16 204:9 210:25 220:2 expert 32:6 61:10 71:18 135:3,17,24 136:8,10 146:15,19 147:11,12,18 148:9 149:4,5 151:6 187:16 188:5,5,7 199:11,15 200:24 201:17 205:16 225:23 226:5 expertise 135:11 149:4 150:5,5,17 151:6 188:14 205:18 217:20 219:12,14 experts 42:24 200:10 explain 39:14 136:22 167:13 170:21 174:16 207:23 209:2 211:5,5 232:19 explained 144:9 187:2	212:3 explaining 68:13 84:14 137:14 226:21 explains 68:6 explore 150:9 exponent 151:11 exposed 214:14 express 35:8 72:16 187:4 expressed 35:1 extensive 22:14 44:20 56:16 113:7 extent 70:20 99:9 148:1 166:14 168:16 169:19 171:3 external 45:8 extremely 117:3 214:8 exxon 242:21 eyes 49:3	158:20 163:3,3 163:7,8,10 169:2,2,8 f6 169:3 faces 242:12,12 fact 22:11,17 23:1,12,19 24:15 38:5 45:1,13 63:2 83:1 91:9 116:3 175:9 179:25 204:20 211:14 212:4 213:7 219:19 233:19 243:2 factor 53:15 98:6 114:7,7 factors 39:6 91:25 96:6 113:11 129:11 131:9 facts 22:14 98:13,19,24 99:6 faculty 6:6 fail 189:15 fair 49:5 62:22 108:13 118:1 132:15,16,21 138:19,22 149:5 166:12 198:5 208:7 210:21 fairly 55:25 197:20 218:23
		f f 2:15 4:7,7,8,8 137:15,19 139:10,11,14 139:17,18,23 140:6 142:25 143:1 144:10 144:21,22 145:10,10,14 146:1 156:12 156:14 158:6	

[fairly - fluid]

<p>234:9 241:8 fairway 138:5 fall 56:14 232:2 233:9 236:2 familiar 42:17 42:19,22 48:10 101:6 206:17 208:6 fane 2:3 far 107:7 126:7 162:4 216:21 fashion 36:10 fast 60:8 father 27:1 fe 1:5 2:4,7,10 2:18,24 3:7 18:6 feasibility 45:17 46:6 feature 154:9 features 151:21 february 200:22 feel 149:16 200:6 218:11 feet 48:24 49:17 89:17,22 90:19,20,21 141:17 231:24 237:6 fell 103:3 field 24:19 39:7 41:14 96:7 109:7 113:15 135:25 136:10</p>	<p>147:17 204:13 231:17 242:16 243:17 fields 31:9,17 31:18,21,22 43:13 109:11 109:14 115:24 155:8,10,11 210:14 figure 117:15 125:3 130:8 177:11 209:5 209:11 figures 66:12 file 13:6,6 25:25 77:25 100:13 221:12 filed 40:21 46:10 78:12 84:12 87:22 92:15 106:23 108:10 110:4 140:22 156:14 156:18 157:2,9 157:13 158:16 files 100:22 191:19 221:21 filing 12:4,22 12:23 13:1 26:19 106:4 161:3 filings 108:6 197:25 fill 125:19</p>	<p>final 22:16 23:25 37:16 245:14 finalize 15:2 find 78:23 112:15 130:24 172:23 200:19 200:20,25 finding 177:24 200:10 findings 22:11 22:16 23:1,12 23:19,24 24:15 fine 23:18 224:9 244:8,9 finish 7:2 firm 2:9 19:4 29:21,24,25 30:2 107:15 201:6 first 3:3 9:5 20:19 26:25 27:9,9 28:12 29:22 33:3,13 35:4 46:15 53:14 75:9 103:16 104:1 109:1,6 120:11 122:15 134:12 136:15 139:1 140:8 142:22 146:13 150:14 151:24 155:12 159:25 162:9 165:13 167:11</p>	<p>180:6 203:19 205:17 225:10 226:20 229:8 232:22 fishings 112:21 fit 142:15 152:13,16 153:4,8,10,14 154:1,1,12 176:21 194:19 210:20 fitting 210:22 five 20:15,15 31:5 53:16 57:10 176:19 225:2 243:10 flag 140:16 flanks 234:13 flat 55:3,5,9,15 55:21,22,24 56:9,12,14 122:25 flexible 24:17 flood 98:7 floor 1:4 flow 55:4 143:16 147:4,5 150:20 188:10 190:6,14 221:25 flowing 190:9 fluid 52:7 92:1 143:17 147:4,5 150:20 188:10 221:25</p>
--	---	---	---

[fluids - g]

fluids 211:19 fluorescing 241:19 focused 46:22 folks 58:16,24 60:12 67:7 133:20 follow 31:2 57:5 61:25 190:12 followed 141:25 170:20 180:5 following 27:14 36:5 64:14 66:19 84:15 follows 28:12 52:25 69:2 134:12 225:10 foot 234:15,17 234:24 force 67:4,5 forces 219:7,16 219:20 foregoing 245:9 foreseeability 124:8 forget 133:10 202:21 forgot 18:22 form 29:20 30:1 32:1 79:23 80:6,7 129:4 153:19	formal 45:23 format 80:3 formation 35:15 37:6 64:23 94:6,11 95:4,13,17,21 103:24 113:1 115:2 121:14 122:9 125:7 126:11 127:7 128:6 132:20 140:15 143:13 192:23 193:1 214:21 231:23 231:24 formations 173:8 184:1,6 185:10 231:21 formatting 128:5 forth 61:20 66:13 183:8 245:8 forward 60:8 229:2 found 141:15 142:3 228:23 four 27:9 33:10 74:8 124:21,24 124:25 138:4 138:10 141:12 142:7 143:24 145:13 152:2 152:10 153:7 153:13 172:1	174:16,18,22 175:10,15 176:19 183:3 209:15 210:13 233:21,21 fox 10:10,11,13 10:18 11:21 12:11,15 13:12 13:15 14:11,20 15:15 17:2 fracture 126:12 127:18 128:7 fractured 213:16,20,22 213:24 214:4 fractures 39:19 92:22 154:9 214:7,8,10 242:4,14 fracturing 39:4 93:8 95:3 96:2 112:15 113:14 126:4 127:10 127:13,14 128:1,11 129:5 129:7 151:22 151:22 framework 211:19 francis 1:5 2:23 frank 3:11 20:20 25:25 26:18 28:7,11 28:19 120:13 121:3 133:16	free 133:15 223:4 friday 46:11,11 69:5 84:13 fried 244:3 front 222:11 fuchsia 85:12 85:16 full 15:21 33:4 120:5 fund 9:9 furnished 33:12 91:17 further 26:20 27:22 57:13 61:18 105:24 107:11,12 108:17 118:10 132:24 133:5,6 144:15 197:5,7 211:15 222:21 245:7,12 future 7:25 9:8 39:5,10,22 56:7 68:21 93:10 128:12
			g
			g 4:9,9 78:9 79:3 80:19,22 86:18,21 87:17 87:19,22 89:4 90:10 226:23 227:1,12,15,16 227:19,23,24 228:2,3,15,15

[g - going]

229:3 230:17 232:18 235:20 235:21 236:18 237:8 240:23 240:25 241:22 241:24 242:18 242:19 gaines 142:8 galen 3:15 133:18 134:8 134:11,23 garza 31:12 gas 11:10 29:10 30:18 44:22 55:9 56:9,18 97:13,22 98:16 98:21 99:1,4,8 99:14 132:7 186:4,9,11 187:3 188:19 189:4,5 190:18 193:16 241:9 241:12,14,16 241:20 gaspar 3:7 general 2:22 64:7 127:22 128:8 135:20 151:9 207:17 207:18 generally 56:19 57:3 62:18 70:16 74:21 79:7 101:7 110:15 115:15	129:21 130:25 131:17 132:2 136:25 151:11 173:17 185:10 218:25 generate 189:17 generated 59:23 167:17 generic 140:17 gentleman 29:18 geologic 52:12 52:18 64:22 154:7 196:11 199:19 235:4,6 235:8,11 243:5 geologic's 236:9 geological 53:8 151:21 209:2 209:13 210:1 210:18,24 geologist 69:5 70:3 78:8 154:14 159:18 225:21 geologists 209:14 geology 51:22 51:23 52:21 61:10 115:21 204:20 214:21 225:24 226:6 230:9	gerasimos 1:12 5:1,21 getting 51:10 80:6 182:1 190:13 213:25 give 28:23 32:1 67:3 120:11,22 125:8 159:23 191:22 216:11 220:6 224:12 224:24 given 22:9 24:1 75:24 81:10 124:10 132:5 132:14 151:8 151:14 159:10 159:11 160:7 165:15 179:20 179:25 186:22 211:3 215:10 215:11 217:18 217:18 218:1 220:11 gives 180:2 giving 120:16 glass 125:15 glorieta 82:7 go 7:23 12:19 14:18,21 16:8 18:18 24:9 34:24 35:22 36:20,25 37:16 37:21 46:10 47:1 50:7 53:20 63:9	72:9 73:4 87:24 107:15 108:2 109:1 113:18,25 121:1 125:21 126:15 133:15 157:24 167:16 183:23 189:6 189:20 197:4 203:19 210:7 229:1 240:24 goal 12:2 goes 55:8 58:9 63:22 66:10 147:9 149:24 162:5 239:11 going 14:24 15:3 17:10,14 27:1 28:1 36:3 36:4 40:17,20 40:25 44:11 47:1,3 48:13 50:7 52:20 53:20 58:1,4,7 61:9 69:12 71:7,12 76:23 77:14 80:25 87:10 89:3 102:22 106:25 112:6,8 114:13 114:16 119:9 124:10 125:6 126:7,7,13 129:8,14 131:3 132:24 136:4
--	--	---	---

[going - hand]

138:8 149:7 154:20,21 158:15 160:4 164:7 171:11 175:19 184:24 186:3 188:22 189:2 195:19 200:5 203:1 208:24 213:3 218:12 223:17 230:12,14 232:18 233:1 goldsmith 31:11 43:18 good 6:4,22 9:22 10:11,20 10:25 11:7 14:23 16:23 18:5 19:3,9,15 20:10 39:25 40:11,13,14 69:17 82:13 106:13 107:24 107:25 116:8 118:24 119:2 126:14 134:6 134:19,20 141:15,18 146:9 195:20 197:16 202:23 204:7 205:14 225:16 234:11 goodnight 2:16 7:4 17:16 18:7 23:18 26:5	32:8 40:6 47:10,15 71:6 73:8 74:7 75:19 79:4 86:5 95:12 102:2,15,24 103:14 106:4 107:1 119:8 124:10,19 135:13 161:2 233:7 234:2 goodnight's 22:5 94:6,12 94:18 97:9 98:15,20 99:7 103:10 159:24 229:23 230:7 231:5 232:3 234:4 gosh 57:19 granted 26:17 200:23 graphical 143:1 grayburg 32:3 35:15,16 36:14 36:23 37:6 39:8,15,21 46:23,25 52:25 53:9 54:4,22 63:21 64:23 75:14 76:15 95:8,18,22,25 96:7 110:12 112:11,16,18	114:24 117:5 126:15,17,21 129:20 143:6 173:8 183:25 184:6 194:4,7 194:9 231:24 242:6,24 grayburg's 31:7 great 10:6 17:6 20:3 28:3 60:23 72:24 77:15 133:25 134:2,4 183:5 greater 234:14 242:25 green 36:15 82:6 97:6 103:19,22 162:2,7 163:23 164:1 232:8,9 232:12 233:11 236:5,15 237:19 239:11 239:15 240:9 greenfield 42:18,25 43:3 greg 6:12,23 gross 90:15,18 ground 200:15 200:17 grounds 201:4 201:13 group 63:16 64:16 67:7	68:5 196:10 243:4 guadalupe 2:18 guess 16:13 24:19 25:10,14 43:11 49:11 64:11 65:22 79:1 83:14 110:8 117:7 149:14 152:6 152:18 154:5 160:13 172:21 184:24 189:7 guys 68:14 69:11
			h
			h 4:3 34:12,15 34:16,20,23 40:21 46:14 80:24 85:9 106:16,18 haas 30:1,1 half 90:20 224:12 hall 1:4 5:6 119:3 hand 9:17,17 16:2 17:24 28:10 134:10 143:2 168:6 173:21,22 189:14,14 213:14 225:7 240:19

[handful - hearing]

handful 199:25	20:18,23 21:3	203:18,23	22:4 23:15
handled 185:25	21:21,25 22:4	204:2 205:10	24:3,5,6,8,18
186:5,14,19,23	23:15 24:3,6,8	220:22 222:23	25:1,8,17,23
187:1,21	24:18 25:1,8	223:2,13	26:5,13 27:18
204:25 205:2	25:23 26:13	224:14,17,21	28:2,9 32:7,10
handling 188:8	27:18,25 28:2	224:25 225:4	32:15,17 34:13
hanson 3:2	28:9 32:7,10	226:7,10,13,15	34:16,18,21
happen 23:22	32:15,17 34:13	226:17 228:4,6	40:4,8 47:13
happened	34:16,21 40:4	228:9,11,13	47:18,21,24,25
60:24 187:20	47:18,21,25	243:23 244:4,7	48:3,5 63:22
201:11 240:23	48:3,5 71:14	244:16	66:12,15 67:22
happening 24:1	72:8,13,25	he'll 120:22	71:2,14,18
101:13	73:3 81:4	136:10 226:17	72:8,13,25
happens 127:7	106:6,10 107:2	head 61:13	73:3 81:4
186:9 188:11	107:8,14	169:22	100:17 105:23
happy 27:6,7	108:21,24	headers 77:18	106:6,10,14
200:8	118:11,19,22	headings 90:15	107:2,8,12,14
hard 77:14	119:13,21	heads 17:4	107:20 108:18
78:5 82:3	120:4,19 121:5	hear 5:5,7,9	108:20,21,24
85:15 218:1	128:4 133:3,7	72:14 119:3,4	118:11,19,22
239:8 240:10	133:12,17,24	133:11 134:7	119:11,13,21
242:12	134:2,4,6,9,13	154:10 170:11	120:4,19 121:5
hardy 2:8	135:12,23	174:6 203:5	128:4 133:7,9
18:14 20:14,17	136:2,9 144:23	223:23 225:12	133:10,12,17
20:18,22 21:1	145:1,4,6,8,15	heard 1:10 9:14	133:24 134:2,4
21:4,24 22:2	145:17,20,22	17:20 42:19	134:6,9,13
22:23 23:15,16	145:24 146:4	170:12	135:12,23
25:4,22 27:7	148:4,15	hearing 1:1,10	136:2,9 144:23
27:20,23	149:10 150:3,8	5:13,15 6:15	145:1,3,4,6,8
133:21	150:12 153:21	7:4 8:15 12:18	145:15,17,20
hardy's 26:22	195:17,23	12:19 13:7,18	145:22,24
harry 178:7	196:2,5 197:9	14:3,18 17:21	146:4 148:4,15
hart 2:17 18:7	198:12 201:19	19:16,23,24,25	149:10,15
harwood 1:10	201:24 202:3	20:7,10,18,23	150:3,8,12
19:25 20:7,10	202:24 203:14	21:3,21,25	153:21 154:6

[hearing - hydrocarbons]

181:12 195:17 195:23 196:2,5 197:7,9,12 198:12 201:18 201:19,24 202:3,24 203:14,18,23 204:2 205:10 220:22 221:14 222:23 223:2 223:13,21 224:11,14,17 224:21,25 225:4 226:7,10 226:13,15,17 228:4,6,9,11,13 243:23 244:4,7 244:16 245:4 heavy 20:13 211:24 215:6 218:25 held 55:10 help 42:9,13 61:22 69:8 102:21 154:22 helped 45:1 48:11 helpful 22:19 helping 43:5 hernandez 178:7,17 heterogenous 53:3,6 high 39:1,18 92:20 93:6,21	93:23 94:14 95:2 110:16 112:13,24 114:5,9 115:5 115:12 116:21 117:3 118:7 125:14 128:18 130:9,11,14 139:2 167:8 173:18 182:9 182:13 199:5 200:3 205:20 205:23 206:14 207:4 212:5 218:10 219:4 222:10 236:9 higher 39:2,3,9 39:24 92:21,21 93:7,7,22,24 110:24 112:19 115:1 125:10 125:11 126:19 126:23 127:4,5 128:19 129:9 142:4 173:24 188:23 189:13 189:17 215:15 216:3,4 219:19 231:25 237:24 237:25 highest 230:10 highlight 197:19 highlighted 40:23 44:24	48:19 50:16 51:23 52:1 53:13 54:22 55:3 61:1 63:18 74:14,23 86:24 97:6 162:1,7 163:23 164:1 173:4 174:16 highlighting 48:14 58:12 84:19 highly 165:12 highway 2:12 hinkle 2:6 11:1 hinklelawfir... 2:7 hired 29:18 histograms 167:22 histories 96:23 history 44:13 96:24 100:23 193:11,16 hit 126:10 holding 219:7 holds 206:6 hole 129:14 137:5 167:23 167:24 233:23 holland 2:17 18:6 hollandhart.c... 2:19,19	hope 12:19 hopefully 8:15 20:3 27:13 114:18 hoping 224:23 horse 202:6 hour 224:12 hours 120:25 195:19 huge 110:18 212:4 217:25 hughes 29:10 29:10 44:12,12 hundred 110:21 hung 37:6 76:15 hydraulic 39:3 92:22 93:8 112:15 128:10 129:5,7 hydrocarbon 143:8,16 144:7 162:12,22 186:11 189:6 190:22 207:11 215:18 218:3 236:13 hydrocarbons 92:24 97:12 218:18 233:24 235:24 236:24 237:12 238:4 238:22 239:6 240:7 241:4,18
---	--	--	--

[i.e. - indicative]

i	image 77:15 78:6,23,25 80:17 81:15 88:22 89:5 169:10,10 images 192:8 imagine 24:22 immediate 165:18 immediately 125:24 immobile 189:9 190:20 impact 24:1 39:7 74:24 75:5 95:4 96:6 97:11 111:8,10 112:17 113:10 113:14 126:16 208:15 211:1,7 212:17 impacts 94:5 94:10 96:12 97:1 impair 92:23 impede 218:15 implication 121:18 172:11 172:14 importance 22:10 229:4 important 22:25 27:19 53:7 72:5 101:12 143:14	144:4 149:16 184:19,25 185:20,23 186:18,25 230:5 238:22 242:18 improve 20:3 inasmuch 170:14 include 41:2 55:15 96:11 97:18,20 123:18 150:24 150:25 231:21 233:1 included 41:15 97:7 235:5 includes 12:1 75:15 171:15 231:5 including 31:10 52:6 62:24 66:11 75:18 103:24 123:9 137:24 159:3 160:2 164:11 incomplete 182:22 incompressible 125:22 inconsequent... 110:25 incorporate 138:6 160:6	incorporated 166:11 incorporating 164:3 incorrect 49:16 increase 56:11 124:22 125:5 125:16,20,24 219:6 239:2 increased 94:14 126:4 219:20 increases 125:25 126:9 independent 11:2 82:22 83:2,21,22 84:4,9 85:2 243:4 index 3:10 indicate 53:3 173:19 231:15 232:8,9 237:20 indicated 14:11 37:18 90:14 168:19,20 178:5,13 237:1 241:21 indicates 70:4 indicating 162:11 indication 131:16 indicative 169:12
----------	---	--	---

[indicator - interval]

indicator 236:11,13,15	181:24 233:17	232:3	international 16:21
individual 76:6 131:7	inject 35:21 110:2 125:1,23	injections 95:12 109:8 124:10	interplay 204:15
industry 30:4 30:17 44:22 116:12	injected 86:9 102:3 103:18 104:4 109:18 109:20,24	injector 128:14 injectors 129:2	interpretation 79:8 80:5 82:17,19,23 90:6 91:16 105:17 146:25 161:9 176:3,4 181:15 187:2 188:22 191:7 193:17
inferences 220:18	110:18 112:4 112:14 126:2 219:5	input 63:25 166:4 181:7 215:1 216:15	interpretations 83:3 91:2,4,6 91:11,12,14,23 164:14,21 165:10 180:8 180:14 181:7 181:20 184:10 185:4 195:8 197:1
infield 57:8	injecting 68:6 86:5 110:14 124:20,21 128:18 229:21 230:5,11	inputs 53:8 146:22 167:16 170:23 179:22 207:24	interpreted 75:18 151:3 169:10 192:9 196:17
influence 154:10	injection 21:12 32:3 33:18 38:10 39:17,18 41:15 52:2,4 52:11 67:18 94:7,12,14,18 94:22,22 95:2 95:8 97:9 98:15,21 99:7 102:13 103:16 104:2 109:12 110:7,11 112:7 112:24 113:1 113:10 124:13 124:19,23 125:7,10,14 128:25 129:1 132:20 211:2,7 212:13,14,15 212:17 219:19	inquiring 61:16 inserted 93:13 93:15 inside 101:3 192:19 insight 211:15 instance 9:18 35:20 integrated 228:21,22 intend 13:5 156:23 157:2,4 intent 157:16 interactions 165:21 interest 51:11 51:15 245:14 interested 54:23 interfaith 9:10 internal 41:14 45:7 63:10	interval 21:12 32:4 35:10,13 35:17,21 38:13 44:8 75:1,11 75:14 76:20 77:9 82:5,11 82:16 83:25 84:6 85:17,19 85:20,21,24
information 40:23 48:18 54:2 123:24 132:14 138:1,5 140:21 151:14 158:2 164:25 165:11 167:3 191:23 192:3,6 193:9 202:23 205:4,19 208:23 217:18 217:23 221:6 236:19 240:5,6			
informed 166:14			
initial 48:23 137:14,22 138:20 139:11 139:18 141:6,7 163:5 179:10 195:7 210:2			
initially 15:16 73:18,21			

[interval - know]

86:1,10 89:11 89:17 90:7,16 90:18,21 97:10 102:2,20 103:25 128:16 129:6 142:16 176:21 177:2 190:3 194:14 195:3 229:22 232:5 233:10 235:25 239:6 242:11 intervale 90:19 intervals 128:15 153:15 176:25 177:3,5 231:17 232:3,4 232:7 introduced 123:2 147:1 introduction 32:21 35:6 173:3 invaluable 63:25 investigation 204:23 investing 30:24 involved 30:18 31:8,15 37:7 41:8 44:17 131:9 223:22 involves 188:9 involving 73:10	irreducible 170:15,24 171:2,5 208:6 208:9,11 issue 21:19 23:5 64:11 67:22,23 84:9 127:20 200:9 201:15 205:7 issues 16:1 22:21 45:3 61:25 62:7,8 63:4 67:18,24 70:9 179:18 194:12 item 7:10,16 35:12,18 113:13 items 124:15 146:25	j 25:25 26:18 28:19 january 200:21 jesse 10:21 11:25 jim 27:11 job 51:2,3 177:5 joe 223:10 225:18 jogs 58:18 john 27:10 joined 29:15,19 29:21	joseph 3:20 78:8 225:9 juan 9:10 july 12:22 jurgensen 2:20 10:4 18:9 justification 179:1 justified 116:19 k keep 119:10 127:1 kendra 20:8,11 245:3,19 key 233:25 234:1 235:5 241:6 243:1 kh 215:12 kind 14:25 22:7 23:13 84:19 122:13 124:13 186:6 204:12 204:15 243:6 244:2 king 63:15 kleenex 148:22 knew 69:16 159:6 knights 27:12 know 5:6 6:11 16:12 21:2,6,9 21:10 23:8,20 25:7,17 27:21 40:18 42:4 43:1,4,15 47:3	51:13 56:7 57:20 64:1,12 67:5 69:4,6,15 69:24 71:11 85:20 87:13 90:25 91:21 92:2,5 95:20 99:15 103:4 106:24 110:4,8 110:10 111:3 111:13 112:5 112:25 114:17 114:25 115:6 115:15 116:9 116:18 117:11 127:24,24 128:7 130:17 152:7 154:21 158:14,16 168:15 169:18 169:19 170:25 172:9 180:11 183:17 187:7 187:17 188:1,2 192:22 194:15 202:11,22 205:18 209:3 214:23 217:14 217:15,19,24 218:6,9,10,11 218:19 220:9 225:11 228:20 234:10 235:3 238:7,21 242:3 242:5,10 243:7
---	---	---	---	--

[know - listening]

243:11,14 knowledge 123:25 155:4 157:14 160:16 161:24 173:15 192:1 known 206:7 kv 215:12	149:14 150:7 150:10,13 195:22 196:7 197:3 204:1,3 204:4,6 205:8 224:2 226:9 228:5 244:2,5 land 6:25 7:5 lands 6:18 7:1 language 61:2 63:18 75:12 88:16 231:20 large 110:25 153:9 232:6 largely 12:3 111:25 125:22 largest 207:24 las 158:11 late 66:13 lateral 242:12 242:15 law 2:9 9:7 10:14 19:4 22:12,17 23:2 23:19 24:15 201:6 lawyer 10:14 lawyers 201:6 layer 53:16 layers 53:9,22 53:24 lea 75:1 144:12 173:9 213:11 leadership 30:11,11	leading 11:21 112:22 leap 112:22 learning 170:10 171:4 lease 104:10 leave 16:13,24 16:25 25:25 129:14 186:12 223:4 leaving 6:16 left 9:17 11:20 29:19 36:12 73:7 85:11 90:11 143:2 235:1 238:1,3 240:19 leg 117:10 legal 22:21 23:10,13,13 245:19 level 167:8 levelland 31:10 43:17 levels 95:21 125:13 liberty 116:10 lie 229:24 230:8 lies 64:20 lieu 190:23 life 55:11 lift 127:3 lifting 20:13	light 9:10 143:22,23 151:13,13 242:8 likely 59:24 91:3 93:7,14 93:15,22 94:2 110:12 124:5,9 124:16 125:21 limestone 208:20 limit 35:14 231:22,23 limited 153:12 206:8 limits 121:13 132:15 lindsay 200:25 201:4,5,13 line 19:5 36:1 36:13,15,17 59:2 81:1 103:19 229:18 231:4,13,13,14 231:16 232:23 239:11 240:9 link 121:4 list 43:16 57:20 62:7 69:20,22 133:18 listened 116:16 214:18 220:1 listening 180:20
l l 2:11 18:13 labeled 32:20 35:6 labels 47:11 58:4 lack 50:17 132:3 lag 241:11 lake 31:12 lamkin 1:12 3:12,16,18 6:11,17 7:4 9:22 10:3 18:1 18:4 22:6 26:4 26:21 32:9 34:18 40:7 47:13 48:8 71:2,12,17 72:20,24 73:5 73:6 105:22 106:13,17,21 107:11 119:17 119:19 127:16 135:14 136:5 144:25 145:16 146:6 148:6			

[lists - looks]

lists 74:8 literally 126:25 168:6 lithological 143:5 208:25 lithologically 209:20 lithology 140:14 208:17 237:25 litigation 202:9 202:19 little 16:1 27:4 49:9 58:10 71:13 80:8 82:3 85:12 92:17 102:21 126:5 128:3 148:23 150:22 150:24 152:6 157:23,24 213:13 216:9 242:1 llc 2:2 18:8 19:6 llp 2:3,6,17 lobby 23:11 locate 50:4 51:2 located 141:12 168:23 192:23 229:20 238:5,6 239:20 location 238:10 locations 229:15	log 33:5,23 36:19 37:11,13 37:14,14 38:15 38:23 64:21 77:10,18 78:1 79:7,14,19 80:17,17 81:15 82:18,22 88:18 88:22 89:5,15 91:2,6,11,11,13 91:22 117:17 135:4,11,18,22 136:1,2,10,23 136:24 143:19 146:16,21,23 146:24 147:9 147:12,24 148:8,9,18 149:5,11,21 150:17 151:6,6 151:8,15,15 152:12,13 158:3,11,12 160:6 161:8,17 164:14,25 165:7,9,10 168:19,21 169:10,12 171:9 173:10 175:22,25 176:3 177:22 178:2,3,4,13,25 184:9,9 185:4 186:17 187:1 188:4,5,5	192:7 195:7,15 196:25 199:11 204:12 205:24 207:7 208:3 211:9,21,25 212:10 215:10 219:10,11,11 219:13 232:14 233:16,19 234:24 236:5 238:20 239:11 240:9 241:8,8 241:16 243:15 logging 211:4 logic 170:16,22 190:12 logical 188:12 logs 36:9,16,20 37:5,18 53:2 75:17,23 76:8 76:18,19 136:18,20 137:6,10 138:18 151:2 152:3 160:24 161:19 166:16 168:17 171:20 177:25 178:18 179:2 183:25 184:5 191:7 193:20 196:17 204:9,22 209:17 212:11 233:5,7,23	long 44:13 50:1 107:20 165:6 223:16 look 42:9 56:8 57:19 58:18 93:16 94:16,21 131:7 137:9 140:9,9 167:23 169:2,9 180:2 182:25 183:6,7 184:13 189:19 205:6 206:4 210:10 236:2 238:12 243:2 looked 43:11 45:3 48:17 75:17,19 85:8 96:18,22 141:3 169:23 176:21 177:17,18 199:18 201:15 209:19 213:15 looking 30:24 31:3 51:14 59:15 60:21 76:12 77:23 79:16,24 81:21 85:10 111:20 116:11 159:1 167:15,16 182:3,22 205:22,25 215:18 217:5 looks 65:23 67:8 91:17
---	--	---	--

[lose - marek]

lose 126:13 195:18 losing 238:2 loss 185:18 188:17,19 189:1 191:4 lot 113:8 123:5 132:13,14 210:15 lots 60:24 low 114:9 139:5 156:22 162:11,21 173:19 182:8 182:14 199:4,4 200:3 205:20 206:2,14 218:2 222:9 227:9 229:1 236:9 lower 35:14 39:13 112:22 130:15 173:23 189:2 215:15 216:3 231:22 237:24 240:19 lowered 137:2 lowering 138:17 lowest 89:18 luck 120:20 lucy 63:15 lunch 118:14 118:17,24	m m 3:4 29:19,20 138:15 141:3,5 141:14 142:1 142:10,18 151:2,7,11,18 153:1,3 154:3 154:11 163:12 172:1,9,18,24 174:17,23 175:16 176:17 176:20 177:9 177:11,25 178:5,14,19 179:2 183:5,8 183:22 194:1,2 194:7,19,21 195:2 206:10 206:20 209:3 210:10,13,19 220:10 machine 170:10 171:4 made 34:8 85:4 111:12,15 122:6 123:25 124:24 130:6 137:23 139:9 139:16,18,22 141:15 157:16 166:3 177:18 177:19 178:8 182:25 194:6 194:18 200:18 207:16 213:7	220:19 227:18 227:22 230:20 magnetic 170:1 170:3,6,18 171:1 main 26:24 46:23 146:22 242:23 maintained 240:16 major 31:9 109:11,14 115:22 make 5:5 10:8 11:18 14:11 15:4 17:3,22 49:8 56:25 79:14 80:14 82:4 90:24 107:12 113:17 121:11 122:17 129:18 130:14 154:15 157:22 157:24 172:3 183:21 185:17 187:21 188:2 188:25 189:15 190:20 198:19 208:24 210:4,5 215:23 216:23 217:3 230:16 230:25 makes 188:12 makeup 101:5	making 70:18 82:4 90:4 122:3 214:2 man 130:17 manager 29:17 manifest 126:7 manner 204:24 map 36:1,3,9 103:6 174:21 217:1 229:7,13 230:3 232:21 233:14,15 maps 64:23 216:14,14 march 7:17,17 7:22 8:3,12,16 8:22,24 20:14 marek 3:11 20:20,20 26:1 26:11,19 27:25 28:4,6,7,11,17 28:19,20 30:4 30:13,20 31:6 32:6,18,19 33:24 34:24 36:22 37:3,15 40:2,11 48:8 50:3 58:3 64:5 67:4 70:7 71:18 72:4 73:6 74:2 78:7 81:1,10 87:14 93:12 94:4 97:24 102:25 103:7,13

[marek - mexico]

104:17 105:24 107:23 108:22 119:18 120:1,7 120:9 121:3,6 121:11 127:17 133:14,16 180:21 214:16 marek's 106:3 106:17,22 107:7 margin 43:24 155:18 mark 177:25 marked 73:7 73:21 74:18 78:9 92:19 102:22 103:9 143:9 156:14 158:20 market 56:13 match 138:15 141:15,18 142:11 154:2 174:12 183:19 194:8 195:15 214:24 matched 141:19 177:10 194:9 matching 194:13 material 50:18 materials 78:23 math 88:13,13	matt 10:16 19:4 matter 9:13 10:15 17:19 24:1 74:11 108:7 135:7 136:16 147:17 226:2,6 matters 7:3 20:25 26:20 107:6 197:22 matthew 3:4 mattias 11:15 mbeck 3:4 mcbeath 27:11 mcguire 27:13 103:14 mcshane 3:20 78:8,17,20 86:19 87:4,21 88:5 90:17 123:25 144:15 161:22 223:11 224:18,19 225:5,9,16,18 226:4,20 228:17 243:21 mcshane's 78:12 79:2 80:19 86:13,16 86:18,20 87:10 87:18 88:20 89:3 90:9 123:23 mean 9:17 41:23 54:6	60:19 63:11 64:10 126:24 129:11,22 131:24 154:16 168:3 170:21 172:13,15,17 172:22 186:24 217:23,24 232:15 235:14 meaning 31:16 112:20 124:16 170:22 208:17 means 31:10,14 43:18 137:2 141:19 meant 70:4 measure 209:18 measured 49:17,21 175:23 189:2 189:24 205:5 214:12 220:15 measurement 204:21 206:6 measurements 185:16 210:3 measures 137:2 measuring 241:9 meet 16:3,15 61:20 meeting 5:18 5:18 7:2,9,17 7:19,22,25 8:3	8:7,16,25 12:17 66:22 67:11 68:15,19 119:11 132:23 member 1:12 1:13 30:6,9 members 1:11 12:16 58:7 memory 51:6 58:19 111:15 114:2,14,16 159:15 mention 21:19 207:16 213:7 239:16 mentioned 31:22 33:22 43:12,20 109:11,16 167:11 190:17 243:10 merged 29:25 meritorious 201:9 met 11:22 methods 168:1 metrics 208:22 mexico 1:2,5 2:2,4,7,10,18 2:21,22,24 3:3 3:7 6:5,25 9:8 9:10,13 11:3 11:10 17:16 19:11 48:22,22 75:2 119:9
--	--	--	---

[mexico - mountain]

155:9 245:5 microphone 133:11 225:12 midafternoon 195:21 middle 33:9 119:15 143:4 222:15 241:25 midland 141:13 175:5 midmorning 72:22 midstream 2:16 17:16 18:7 74:7 119:8 midstream's 103:14 miguel 3:8 11:8 19:17 mike 60:10 63:10 millidarcies 114:11 115:8 130:9 131:4 213:5 238:16 millidarcy 114:3,22 213:4 215:4,5 million 86:25 88:3,6,7 101:22 104:5 181:1,3 193:6 212:18 215:14 215:16 216:2,4	234:6,20,21 235:9,12 237:15 239:18 240:11 243:7 mind 70:25 155:13 179:1 244:5 minds 132:23 mineral 6:24 181:25 205:25 208:21 mineralogical 208:24 209:18 210:3 mineralogy 208:14,17,19 minerals 2:22 minus 33:6,13 33:15,15,17,19 33:21 48:24 49:13,15,22 89:16,16 230:4 minute 136:12 minutes 7:17 7:19,23 8:8,12 8:16,23,24 73:1 107:15 117:12 223:20 223:23 224:24 225:3 243:24 mischaracteri... 149:8 missed 10:24 mister 28:8	mixed 218:22 moander 2:25 3:13,17 19:9 19:10,13 24:5 24:7,9,10 25:4 32:12 47:22,23 107:1,18,19,22 107:23 108:1 108:17 145:2 145:18,19 197:1,11,12,15 198:10,13 224:4,5 226:11 226:12 228:7,8 model 51:18 52:16 53:8,16 114:22 166:4 167:17 194:5 195:13,14 205:25 208:24 209:13,18 210:3,5,24 227:6 229:2 modeling 52:16 170:16,22 models 56:17 210:1 211:18 214:23 216:13 228:24 modified 91:24 92:3,6 138:15 142:17 151:1 157:6 modify 91:21 169:20	moment 40:16 67:3 74:16 77:17 103:5 104:15 120:15 133:2,4 180:18 197:3 montezuma 2:6 month 67:19 126:25 monthly 127:5 monument 30:21,24 63:20 64:21 monumental 14:23 morgan 10:16 morning 6:4,23 9:22 10:11,20 10:25 11:7,25 18:5 19:3,9,15 20:11 40:11 107:24,25 121:18 128:24 223:14 244:6 morrisett 60:10 60:16 61:3,7 63:10 motion 7:12,19 20:21 25:24,24 26:14 84:12 200:24 motion's 26:16 mountain 29:14
--	---	--	---

[movable - normalization]

movable 130:3 131:16 143:10 208:4,4 move 7:13 8:2 8:5,23 17:8 19:2 36:6 47:14 71:3 105:25 106:2 107:1 118:17 127:3 135:9 143:18 144:20 145:12 149:13 226:4 228:1 229:2 230:14 moved 29:11 211:19,20 moves 232:24 moving 150:11 189:5 msuazo 3:8 mud 193:20 241:8,8 mullins 3:2 multi 181:25 205:24 multiple 170:16,22,23 173:6 216:12 216:16 multiply 125:3 mute 74:2	151:2,7,11,18 153:1,3 154:3 154:11 163:12 172:1,9,18,24 174:17,23 175:16 176:17 176:20 177:9 177:11,25 178:5,14,19 179:2 183:5,8 183:22 194:1,2 194:7,20,21 195:2 206:10 206:20 209:3 210:10,13,19 220:10 naeva 9:9 name 6:4 10:13 10:21 17:25 28:18,19 59:13 120:11 134:21 134:23 150:5 225:17 named 29:18 nate 27:10 nathan 2:20 10:4 18:9 natural 2:22 151:22 214:6,8 214:9 nature 22:9 26:7 60:22 109:21 112:2 202:2	near 61:23,24 62:6 118:11 necessarily 72:14 127:12 129:24 170:23 208:19 necessary 16:15 140:12 need 12:9 16:16 22:10 24:23 25:12 52:12 61:10 66:13 68:8 69:4,7 70:2 72:14 104:16 118:16 118:17,17 131:25 132:13 133:5 151:16 170:19 202:21 217:1 218:6,9 218:11 221:9 221:11,14,17 221:18,21 needed 7:18 12:7 13:20,23 14:3 16:13 17:1 169:20 182:4 needs 14:1 202:22 203:4 negative 39:7 96:6 97:1 112:16 126:16 128:16	negatively 95:4 neglected 14:2 neither 245:12 net 90:19,20,24 170:9 171:4 237:6 neural 170:9 171:4 never 35:19 39:24 66:3,5 71:10 123:19 132:18,23 new 1:2,5 2:2,4 2:7,10,18,21,22 2:24 3:3,7 6:5 6:25 9:8,10,13 11:3,9 12:2 17:16 19:11 48:22,22 49:5 75:1 77:2 119:9 155:9 158:2,6,7 162:3,17 163:11 182:8 245:4 nice 20:11 nick 69:5 159:15,16 nine 129:1 233:18 nmt 6:6 nodding 17:5 non 104:6,9 normalization 168:1
n			
n 138:15 141:3 141:5,14 142:1 142:10,18			

[normalized - objection]

normalized 140:12 north 2:13,18 31:11 43:18 141:25 155:15 156:5 northeast 231:11 236:22 northwest 3:3 141:13 155:14 156:6 175:2 229:11 notably 38:15 notarized 69:7 note 37:9,10 47:8 noted 88:24 203:2 notes 7:24 8:3 104:15 notice 12:1 13:7 14:3 noticed 235:2 notwithstandi... 175:9 november 16:12 66:15 67:21 nrjurgensen 2:19 nu 83:14 nuclear 170:1,3 170:6,17 nulook 137:12 140:7,18 143:2	166:12 167:7,9 169:25,25 170:5 173:7 222:3 number 9:6 10:8 17:18 34:3,4 35:5 47:15,16 48:17 70:5 71:6 73:8 75:19,20 77:7 78:22 89:9 105:13 106:5 106:12 107:1 111:17 114:14 115:4 116:6 117:24 128:8 153:9 160:18 164:21 166:1 166:10,19,25 172:7 173:2 192:20 216:5,8 220:2 236:6 239:15,19 numbered 172:6 numbers 17:17 17:18 71:4 80:3 116:8 119:10 128:9 142:5 179:18 235:18 236:7,7 240:18 numerous 116:25 117:24 204:17	nutech 33:5,23 37:14 38:15 75:18 76:24 77:10 78:1,22 79:14,23 80:5 80:7,16 84:7 88:18 89:6,15 91:5,10,21 135:2 136:16 137:11 140:5 148:17 152:8 154:17 155:4 156:2 159:2 164:10,14 165:7,15 168:12 169:16 169:19 171:19 179:12 180:23 180:24 181:2 181:17 184:8 185:4 191:5,11 191:13,18 192:2 193:10 193:15,20,25 195:6 221:10 227:5 233:16 234:3 235:21 236:22 237:9 238:17 240:3 241:1 243:5 nutech's 37:11 71:25 77:3 78:21 79:1,19 81:16 82:17,22 83:2,5,9,12,15	83:16 85:4,7 87:6,25 88:5 88:22 89:8 91:4,9,13 100:7 144:16 166:12,15 167:7 168:18 171:9 173:6 175:22 176:3 180:23 194:8 195:1 228:19 234:4,19 236:7 236:7 237:14 237:22 241:3 241:15 nykiel 10:16 o o'grady 10:16 oath 121:6 object 23:23 71:7 81:1 135:20 147:25 148:3 149:7 153:17 200:6 objected 166:20 201:11 objection 32:8 32:9,11,12,14 34:17,19 47:19 47:20,23 48:2 48:4 72:9 107:3,5 127:16 135:13 136:3 144:24 145:2,5 145:7,16,19,21
--	---	---	---

[objection - oil]

145:23 148:13 200:14 201:2 203:2 226:8,16 228:5,8,10,12 objections 32:16 obtain 48:21 166:19 182:23 210:16 obtained 50:16 136:25 137:4 183:11 209:22 211:11,14,17 211:22 212:11 212:12 214:13 220:13 obtaining 184:21 obvious 94:13 obviously 62:23 64:10 65:10 223:8 occasionally 21:13,14 occasions 42:10 occur 124:18 125:9 127:13 127:14 128:2 168:23 214:10 occurred 65:4 65:10 66:4,5 70:22 149:9 occurring 39:2 104:7	occurs 126:12 127:11 ocd 24:6,17 32:11 47:23 107:24 108:6 108:18 145:1,2 200:13 ocd's 24:12 108:14 197:25 198:6,8 201:11 october 12:18 13:13,13,15,18 15:14,17 66:14 73:22 74:1,18 74:20 81:10 82:14,21 83:7 83:13 92:14 106:4,23 offering 99:23 99:25 offhand 155:19 office 2:22 5:17 6:25 7:5 18:6 officer 1:10 19:23,25 20:7 20:10,18,23 21:3,21,25 22:4 23:15 24:3,5,6,8,18 25:1,8,23 26:5 26:13 27:18 28:2,9 32:7,10 32:15,17 34:13 34:16,19,21 40:4,8 47:14	47:18,21,24,25 48:3,5 71:3,14 71:18 72:8,13 72:25 73:3 81:4 105:23 106:6,10,14 107:2,8,12,14 107:20 108:18 108:21,24 118:11,19,22 119:11,13,21 120:4,19 121:5 128:4 133:7,9 133:10,12,17 133:24 134:2,4 134:6,9,13 135:12,23 136:2,9 144:23 145:1,3,4,6,8 145:15,17,20 145:22,24 146:4 148:4,15 149:10,15 150:3,8,12 153:21 195:17 195:23 196:2,5 197:7,9,13 198:12 201:19 201:24 202:3 202:24 203:14 203:18,23 204:2 205:10 220:22 222:23 223:2,13,22 224:11,14,17	224:21,25 225:4 226:7,10 226:13,15,17 228:4,6,9,11,13 243:23 244:4,7 244:16 offset 63:20 183:2 offsetting 102:9 217:25 oh 18:22 28:2 34:2 35:22 41:20 57:19 63:1,9 77:24 103:3 109:23 111:10 224:21 oil 1:3 2:21 5:3 5:4,15,22,23 10:22 11:10 19:11 29:10,15 30:18 31:7,16 33:6,23 37:17 37:24,25 38:2 38:6,9,16 39:11,12 41:5 41:9,12,24 42:3,7,15,18,25 43:3 44:21 45:17,24 46:2 46:5 50:11,15 55:9 56:9,18 64:18,19 65:7 65:7,15,18,19 66:1,2 67:10 68:9 71:9,22
--	---	---	---

[oil - okay]

72:1 76:19	155:2 162:12	14:17,22 15:23	84:10,13,24
77:8,21 78:3	173:19,24	16:6,22 17:3,7	85:7,19 86:4,8
79:9,16,17,18	174:3,9,9	17:14 19:25	86:13,17,18,23
80:3,11 81:13	176:4,7,13	20:12,23 21:3	87:4,16,23
81:16,23 82:10	180:12,13,25	21:21 22:4	89:13,20 90:4
82:15 83:23,24	181:2,5,12	24:3,18 25:1,8	92:17 93:16,20
84:5 85:2,21	185:12 188:23	26:13 27:19	94:1,16,21
86:1,22 87:1	189:9,13,17	28:2 35:24	95:16 96:18,25
88:2,10,19	190:1,5,6,8,9	37:17 41:20	97:5,24 98:24
89:10,15,18,21	190:19 193:7	42:2,5,21 44:2	99:11,17,19,23
89:25 90:1,5,6	193:16 200:23	45:22 47:1,8	100:10 101:12
90:20,24 96:19	200:23 207:9	48:13 49:11	101:19 102:24
97:13,22 98:1	208:4,9,11	50:14 51:23	103:9,13,25
98:15,21 99:1	211:24 212:20	52:15 54:1,11	104:13 105:16
99:3,8,14	215:14,16,17	54:18 55:17	105:21 107:8
100:12 101:16	215:21 216:2,2	56:25 57:4,17	107:14 111:22
101:23 103:15	216:4,17,17	58:1,20,23	117:7,20 118:6
104:21,25	218:15,25	59:16,21,23	118:11 119:13
105:4,8,9,11,17	219:8,14,22	60:3 61:7,15	119:24 120:18
115:10,22,24	222:15 227:9	61:18,21,24	127:10 128:5
116:3,7 117:2	230:4 232:10	62:4,14,18	133:24 135:23
117:9,10,16,21	233:12 234:5	63:14,14,16	140:4 143:22
117:23 118:2,6	234:18 235:6	65:11 66:3,6,6	146:4,12,12
118:8 123:3,8	235:12 236:6,8	66:10,15,19,21	147:3,8,11
123:12,13,18	236:14,17	68:16 69:17	148:6,11 149:2
123:23,25	237:4,6 238:14	70:5,12,16,23	150:17,22
124:9 126:21	239:3,15	71:1 72:8 73:3	151:5,15,16,24
127:1,4 128:12	240:10,12,15	73:11 74:22	152:25 153:12
128:15 129:5	241:21 242:23	75:4,17 76:5	154:5,24
129:12,14,23	243:2,16 245:5	77:11,14 78:5	155:10,14,20
129:24 130:2,2	oilfield 64:21	78:9,13,18	156:4,8,12,17
130:3 131:10	okay 6:17 8:1,2	79:1,16,25	157:23 158:6
131:14,16,18	8:2,6,7,11,17	80:2,8,14,19,20	158:19,25
132:7,12,13	9:1,4 10:6	81:21,21 82:9	159:14,19
138:17 149:25	12:13 13:16,21	82:13,14,20	160:4,17 161:2

[okay - original]

161:7,12,16,25 162:4,24 163:21,25 164:7,24 165:20,24 166:8,14,18,24 167:6 168:7,20 168:24 169:6 169:25 170:9 171:13,22 172:5,17 173:3 173:17 174:1 174:15,21 175:19 176:10 176:16,24 177:3,6,16,21 177:21 178:3 178:21 182:6 182:16 183:20 184:3,8,24 186:13,18 187:19,25 188:9,13,16 189:11,15 191:3,22 192:2 193:10 194:6 194:11,25 195:1,13,25 196:3 198:12 201:25 202:24 204:2 206:12 207:18 215:13 218:24 220:22 222:23 223:13 224:3,6,25	239:23 240:22 243:23 244:4,8 244:9 old 49:3 88:21 115:20 once 15:2 122:6 125:19 140:11 175:25 177:9 212:12 228:23 ones 41:11 43:10 152:13 153:14 154:12 155:12 209:11 219:25 ongoing 21:11 online 10:16 28:1 ooip 50:10 68:8 oops 139:8 240:23 open 233:23 opening 95:1 223:17,23 operate 51:8 110:17 operated 64:20 192:13 operating 3:1 19:5 55:10 95:12 126:19 126:23 127:5 operation 52:5 operations 32:3 35:9,11 39:5,7 39:23 74:25	93:10 95:8 96:7 101:5 110:17,22 111:1 112:10 112:17 113:15 126:17 operator 51:7 110:2 167:2 operators 110:6 opine 127:20 130:19 132:19 opinion 32:2 35:8 49:18 79:22 82:13 83:22 84:4,7 86:5,9 89:8,21 94:24 96:16 97:9,25 99:19 108:6,14 121:20 124:12 127:14 129:2 146:20 179:16 180:7 181:14 181:21 198:8 221:9 222:8 opinions 99:25 226:22 opponents 21:23 opportunities 43:6 opportunity 42:8 180:2	oppose 26:5 opposed 200:4 opposing 63:19 opposite 56:2 ops 196:11,19 199:19 235:4,6 235:8,10 236:8 243:5 ops's 196:14 optimal 210:19 optimistic 56:15 182:1 optimization 62:1 options 182:25 oral 21:7,14,15 22:24 23:17 24:12 25:18 orally 23:9 orange 36:13 order 20:15 27:3,8,17 51:2 75:13 130:18 131:8 152:5,25 187:1 229:2 ordinarily 131:14 organizations 30:5,12 organized 40:16 original 30:25 32:24 33:16 37:12,13 40:21 46:13 50:11,15
--	--	---	---

68:9 71:22 73:19 75:4 76:22,23,24 77:10,13 78:7 78:21 79:3,13 79:22 80:5,9 80:16 81:5 82:19 86:13,20 86:21 91:3,6 91:10,22 92:13 92:18 93:23 97:5 106:1,3 106:22 156:13 158:5,15 159:1 163:8,19 164:8 164:9,13,15 179:12 180:24 181:16,17 182:8,12,18 191:8 192:12 192:17 193:12 193:18 194:8 198:22 199:4,8 211:4 213:12 227:16 originally 79:8 92:15 162:20 outcomes 204:16 outline 103:22 outlined 103:19 outlook.com 2:10 output 140:18	outside 35:20 110:2 147:9 154:18 188:13 207:6,14 217:11 219:9 overall 72:6 148:24 166:3 214:11 overcounting 219:20 overriding 229:6 overruled 72:9 81:8 128:4 148:15 153:22 203:2 own 51:4,8 83:22 84:4 85:1 91:9 103:3 127:25 owner 51:11 oxy 9:23 p p.m. 25:16 119:1 196:1,1 243:25 244:20 p.o. 2:3,9 pa 3:2 package 243:9 243:9 packet 242:19 242:22 padilla 2:9,11 3:12,14 18:12 18:13,14 27:24	27:25 28:1,14 28:16 29:1 30:1 31:1 32:1 32:5,13,19 33:1 34:1,11 34:15,24 35:1 36:1 37:1 38:1 39:1 40:1,5 43:12 47:19,20 71:7 80:25 104:19 106:7,8 106:16,20 107:3,4 111:13 120:6,7,11,13 120:16,24 121:1,7,10 122:1 123:1 124:1 125:1 126:1 127:1,21 128:1 129:1 130:1 131:1 132:1 133:1,2 201:6,11,12 214:19 padillalawnm 2:10 page 3:10 4:2 33:2,9 47:11 48:13 50:7,10 52:3,20 53:1 53:13 54:20 60:7 71:4,24 87:24 93:5 159:2 162:9 171:14 172:5	183:17,18 213:9,11 pages 51:20 58:8 75:7 243:11 paper 24:16 115:19 123:1 145:13 174:19 183:3 papers 41:5 paperwork 15:1 paragraph 24:24 33:4 74:23 92:18 97:6 201:2 parameter 144:11 177:2 213:10 parameters 52:12 91:25 92:3,6 116:18 152:16 pardon 115:20 203:20 parsons 114:7 part 36:3 48:11 53:14 54:7,7 54:23 58:6 75:9 76:3 78:20,24 80:17 82:23 83:3,17 86:15 89:18 95:1 97:24,25 98:3 100:10
--	--	--	---

[part - person]

<p>101:17 106:1 106:24 122:15 123:19 138:17 143:10 147:6 151:25 154:17 160:24 162:25 164:4,15 166:2 166:11 180:6 193:17 208:13 212:23 235:16 partially 46:24 participating 7:3 particular 17:7 61:1 77:6 97:20 174:8 208:2 211:12 parties 9:15 12:21 13:9 14:9 17:23 20:25 22:20 23:3,22 223:22 245:13 parting 95:13 95:17 126:11 127:18,23,24 128:6 partition 175:2 175:3,4,5,6 partitioned 174:23 party 35:20 45:8 51:7 201:21</p>	<p>party's 22:16 pass 40:3 146:2 198:11 227:6 228:21 243:22 passing 99:24 past 166:4 204:11 pattern 53:16 57:10 patterns 31:5 pay 46:23 pc 2:12 pdf 58:25 171:14 pdfs 78:4 pecos 1:4 5:6 119:3 pedro 2:13 peifer 3:2 19:4 peiferlaw.com 3:4 pending 9:4 20:21 penrose 46:24 people 15:4 16:12 41:23 42:2 percent 88:10 89:19 90:5 105:14 115:12 115:15,17 116:15,17,24 117:16,22 124:17 131:15 142:4 162:11</p>	<p>162:12,13,13 162:21,22 180:12 181:4 189:20,25 190:4,7,8,19,21 190:23 206:24 206:24 207:3,4 207:4,20 238:14,15 239:2,4 240:15 240:16 242:25 perfect 11:20 118:12 184:16 191:15 perforated 191:24 perforation 33:12 85:17,19 perforations 38:20 85:25 191:23 perform 122:14 222:2 performance 45:17 46:6 52:4 53:18 54:3 performed 83:6 111:23 147:2 178:7 211:10 221:10 233:22 233:22 performing 221:7</p>	<p>perm 113:24 114:8 237:22 237:24,25 238:16 239:2 240:17 permeabilities 53:23 113:22 116:7 215:3 permeability 114:6 115:1,3 130:14,15 131:9 140:14 143:12,17 144:8 158:10 159:12 212:23 213:15,15,20 213:22 214:1 214:20,22 215:4,11 238:24 241:5 permeable 143:13 permian 18:8 19:5 31:9 43:8 109:14 138:5 175:11 permission 59:3 124:20,22 permits 217:24 231:7 233:7 permitted 229:14 233:2 person 120:15 202:20 224:20</p>
---	---	---	---

[personal - porosity]

personal 111:23	petrophysics 100:1 135:17	216:2,17,18,24 218:3 219:8,14	224:2 225:7,17
personally 188:2 201:5	135:19,22 136:8 146:19	219:22 227:10 234:5,18 235:7	pleasure 118:13,20
perspective 24:12	146:21,23,24 147:12,19,22	236:6,17 238:23 239:15	plotted 186:16
pertain 33:8	147:24 148:8 148:18 149:4	240:10 241:21 243:2	plus 49:17
pertained 212:20	149:12,18,21 149:23 157:7	placed 137:4 206:1	point 8:17 21:5 27:17 35:22
perv 33:18	188:6 196:11 205:17 211:9	placeholder 233:6	38:25 61:2 62:4 64:5,6,9
pessimistic 182:2 183:9	211:15,21 phase 8:14	places 115:23 189:21	69:11,16 71:8 72:2 99:20
petition 14:13 14:15,15	phases 242:15 physical 113:20	placing 241:11 plan 224:15	109:17 130:14 130:15 148:23
petitioner 14:12	pick 16:2 36:22 pilot 3:5 19:18	platform 5:17 10:24 19:14,20	149:12 154:5 169:1 189:19
petroleum 11:2 28:21 29:2,7	24:20 32:15 48:4 108:22,23	43:7,22 44:5,9 57:18,24 71:21	204:21 208:2 223:7 229:8,16
29:11,20 30:1 30:2,7,9,13,16	145:6 203:14 203:16 224:9	121:19,22 122:1 142:9	230:2,10 234:1 235:2,5,15
32:6 64:20 225:22,24	pilot's 25:5 place 50:11,15	155:18 156:5 156:10 175:5,6	236:4 238:22 240:15 241:13
226:5 petrophysical 76:24 77:4	64:19 65:7,15 65:18 66:1	214:16 play 38:8 128:9	241:24 242:7 242:21 243:12
87:7 88:11 89:9 91:25	67:10 68:9 71:10,22 72:23	plaza 3:3 please 28:10,17	pointed 12:9 34:6 116:22
100:4 137:11 155:1 173:7	86:23 87:1 88:2,11 123:12	36:25 37:16 65:16 67:1,2	points 137:4 233:25 234:1
204:10 205:23 211:2,8 212:6	123:13,19,23 124:1 132:12	84:2 94:8 95:23 98:17	poor 114:14 pop 8:14
212:7,19 237:12	138:17 180:12 180:25 181:2,5	133:4,10 134:10,21	porosity 53:23 116:8 117:23
petrophysicist 91:19 199:15	182:4 212:20	203:9 212:1	131:9 140:14 143:8,11 144:6
			151:21,23 154:8 158:9

[porosity - pressures]

159:12 162:14 206:5 207:22 207:24 208:1 208:15 209:20 209:21 238:13 239:1 240:16 242:24 portion 16:19 86:10 172:8 194:14 233:20 position 21:9 25:6 71:16 189:8 positions 22:20 30:11,12 positive 56:8 possibilities 199:9 possible 21:11 23:25 52:17 213:16 214:4 218:14 219:5 possibly 17:3 potential 39:3 41:9,15 42:6 42:12 43:6 44:3 46:19 54:3 55:19 68:11 92:22 93:8 94:5,10 96:2,12 122:8 122:18,22 124:14 138:23 209:3 212:17 218:14	potentially 8:2 62:15,20 95:3 160:13 pour 105:14 power 9:10 powerpoint 34:25 preamble 20:24 predict 53:17 predicted 214:1 predicting 214:8 prediction 52:2 52:3,11 predominant 147:14 predominantly 156:7 predominately 144:6 prefer 21:7 24:12 preference 244:1 preferred 56:23 preliminaries 23:6 preliminarily 25:15 preliminary 7:3 12:25 20:25 26:20	preparation 45:8 83:18 100:11 108:6 prepare 32:19 48:11 65:7 67:10 76:2,5 161:13,18 195:6 196:11 prepared 30:23 50:5,18 54:2,8 54:12 71:24 73:13,17,20 74:10 75:24 76:7,13 81:11 82:14,21 83:6 83:10 101:1,19 102:11 103:13 155:1 156:15 192:11 preparing 44:13,14 51:18 73:25 74:19 83:13 prescription 49:6 presence 207:9 236:14 239:5 present 9:15 17:23 19:22 20:5 45:11,12 133:22 202:15 211:25 212:9 218:16 235:24 236:24 237:13 240:7 241:4,18	242:4,14,23 243:19 presentation 22:16 34:25 230:21,23 235:6 presentations 41:3 presented 41:4 55:4 76:9 100:18 143:3 212:6,8 215:25 presenter's 69:7 presenting 220:4 preserved 187:14 president 135:1 pressure 31:19 39:2 48:18,23 49:12,21 50:4 50:17,23 51:2 51:10,17 94:6 94:11,15,17,23 94:23 95:2,14 125:11,11,20 125:24,25 126:4,7,9,11 127:18,23,25 128:6,6 129:9 219:6 pressures 39:9 39:13,19 92:21 93:7,22,24
--	--	--	---

[pressures - projected]

<p>95:3,17,21,25 125:20 127:23 128:19 preston 103:14 presumably 59:1 216:14 presume 102:24 103:10 212:22 214:18 pretty 24:17,23 51:1 125:14 previous 12:5 26:15 33:14,19 34:7 36:8 37:5 37:10 67:19 157:17 202:12 231:4 previously 22:7 41:25 78:15 103:11 157:5 160:8 188:21 219:25 228:21 price 55:3,9,15 55:21,22,24 56:10,12,14 122:25 123:2,8 prices 55:5,6,9 56:11,14 pricing 54:14 54:25 55:2,19 56:21 57:1 primarily 46:25 51:6 112:10 143:6</p>	<p>primary 12:5 131:19,22 167:25 prime 36:3 principles 113:4 prior 58:25 59:4,16 74:10 100:13 104:5 110:5 156:22 156:23 187:22 pritchard's 59:13 privilege 200:7 200:11 201:5 201:14,16 202:16 probability 124:7,17 probably 15:17 16:20 24:23 114:4 116:14 118:16 203:4 215:1 216:15 218:24 problem 18:4 23:9 26:10 214:6 proceed 27:23 28:5 72:18 169:7 224:5 proceeding 148:14 221:15 221:18,19</p>	<p>proceedings 1:7 244:20 245:8,10 process 88:18 137:9,11 140:2 140:5,7,8,19 152:8 167:7,9 167:10 170:1,5 170:7 171:4,8 185:18 187:13 187:15 189:1 222:3 produce 39:12 39:24 92:24 117:9 131:18 produced 47:10 58:2,5 71:5 97:10 101:21 102:3 102:12,18 103:17 117:3 117:24 118:2,8 193:5 producer 128:14 producers 231:9 233:2 producing 31:9 31:22 39:8,16 39:21 41:13 96:8 101:16 109:19 112:19 126:19 127:1 129:23 130:2 193:1 230:24</p>	<p>233:6 product 98:3 200:7 201:14 201:16 202:7,7 202:12,18 203:1 production 39:22 51:18 52:4,11 56:9 61:10 96:19,20 96:23 100:22 112:20 131:19 131:22 191:6 191:12 193:9 193:11,16 221:23 243:15 profession 28:20 professional 29:4 professor 6:5 profiles 94:22 94:23 project 39:11 44:4 45:2,23 45:24 46:2,3,7 46:7 61:8 66:24 67:17 105:15,15 112:8 115:16 128:12,21 172:7 projected 55:10</p>
--	---	--	--

[projection - question]

projection 50:18 projections 55:4,22,24 projects 44:7 44:21 56:18 57:20,23 71:20 prolific 122:12 129:2 pronouncing 133:18 proper 99:2 151:7 properly 100:3 100:4 153:1 properties 30:19 42:9,11 113:21 132:7 173:6 property 38:11 41:13 45:3 51:5 52:7,7 131:10 proposal 12:16 proposals 13:9 proposed 13:3 25:4 26:12 68:14 97:9 155:2 229:23 229:24 230:8 231:7 233:7,8 proposing 71:15 proposition 127:22	proprietary 116:11 protect 68:10 protected 202:20 protecting 243:12 protections 201:17 prove 114:22 115:1 130:14 provide 59:4 144:15 157:10 164:24 165:3 166:21 172:10 172:13 173:7 191:10 236:19 provided 33:20 60:1 69:19,22 70:5,19 74:9 84:8 142:21 157:4 167:1,1 172:4 181:8 205:19 209:8 210:9,11,23 provides 84:14 236:21 providing 23:23 59:5 60:4 214:16 proximity 210:11 212:14 psi 48:23 49:13 public 1:1 6:18 7:1 51:7 55:23	191:19 publication 115:21 116:12 publicly 191:6 published 116:1 pull 40:17 47:1 58:1 75:12 77:17 78:6 87:10 89:3 102:22 180:9 pulled 80:15,16 152:9 pulling 43:16 purchase 128:20 purchased 242:20 purely 215:18 purple 229:17 purported 98:2 98:10 purpose 160:5 175:20 purposes 47:16 pursued 109:12 purview 148:25 207:6,14 217:11 219:10 219:17 pushing 230:14 put 92:16 97:3 112:13 116:5 124:11 152:11 152:11,12	183:8 209:13 224:11 231:19 235:5 putting 124:11 puzzled 115:7
			q
			qualifications 147:24 148:8 qualified 135:17 136:8 146:15,18,19 147:18 149:17 149:23 150:2,4 226:5 qualify 90:6 quality 77:15 77:18 78:25 233:19 quantified 114:15 214:11 quantify 66:25 67:14 205:20 quantifying 220:9 question 13:12 49:11 59:21 67:2 84:2 95:23 104:19 104:21 109:9 109:15,21 110:3,9,13 111:21 113:19 116:13 117:5 117:12,13 118:5 122:16

[question - rates]

148:5 150:16 153:20 170:11 180:6 182:16 182:20 184:23 185:2 190:25 203:1,8 204:8 205:9,17 209:1 219:18 220:6 223:16 questioning 81:1 119:15 201:12 223:25 questions 40:14 48:9,15 104:16 104:18 105:24 107:12,18 108:2,17,19,22 108:23 109:5 118:10 119:17 119:20 120:1,3 120:22,25 121:17 122:24 123:11 133:6 154:23 189:7 193:24 196:9 197:5,8,11 198:14,16 203:15,16,24 204:1 205:15 218:12 222:10 222:21 quick 88:9 108:1 223:15 232:11	quickly 23:25 125:11 169:24 200:20 quite 148:16,24 180:4 183:5 190:12 204:23 205:6 220:2,17 quote 52:25 53:2,15 92:20 93:6 97:7,21 162:10 183:23 r radius 217:12 raise 21:4 28:10 134:10 225:7 ran 141:7 152:11,11 209:16 range 64:18 66:1 71:20 114:3,21 115:14 131:15 138:23 139:2,5 156:22 157:8 180:17,18 181:5,23 199:4 199:4,5 212:25 215:3 216:8 222:19 227:8 234:20 235:10 236:9 243:6 ranges 157:11 159:11,14,19 167:23 200:3	228:24 235:6 ranked 140:15 rankin 6:10,18 9:20,23 18:1,2 18:3,6 21:2 22:1 25:3,7 26:2 34:17 40:1,10 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1,4 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1,6 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 120:21 121:17 123:11 124:3 132:2,17 136:4 144:24	145:15 146:1,5 146:8,11 147:1 148:1 149:1 150:1,15 151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1,6 197:10 198:20 221:5 224:1 226:8 228:4 243:24 raster 192:8 rate 124:23 125:14 rates 39:1 92:20 93:6,22
---	---	---	---

[rates - reconvene]

<p>93:23 94:14 112:19 125:2 128:18,25 rather 21:8 160:7 194:8 raw 78:1 140:9 143:3 167:15 167:19 168:17 169:21 razatos 5:1,2 5:11,21 6:8,13 6:19 7:7,14 8:1 8:6,11,20 9:2 9:25 10:6,17 10:23 11:4,11 11:16 12:13 13:11,16,21 14:4,17,22 15:11,15,23 16:6,8,22,25 17:12 18:2,11 18:16,22,25 19:7,12,19 20:1,13 28:13 72:21 107:15 118:13,15,21 118:25 119:2,6 119:14,25 120:2,10,14,18 133:9 203:24 203:25 223:6 223:15,21 224:3,6,8,10,16 225:11 244:9 244:11</p>	<p>reach 37:15 38:25 59:9 196:19 reached 59:24 reaches 162:11 reaching 120:20 read 49:23 50:19 52:7 53:4,18 55:6 55:11 60:17 64:23 67:4,5 68:11 69:9 78:4,5 79:6 81:14 92:25 93:10 96:8 97:15 119:9 130:17,18 163:15 184:1 203:8,10 213:8 213:12,13 reading 67:1 213:9 readings 158:9 ready 28:5 66:14 real 130:15 232:11 reality 181:15 really 107:6 111:16 116:19 117:9 130:19 131:8,23 132:18 200:20</p>	<p>realm 109:25 realtime 241:9 reason 49:15 55:23 62:22 69:19,23 80:21 239:24 reasonable 25:5 50:1 72:22 91:17 reassessment 149:2 rebuild 138:23 rebuttal 12:4 12:23 13:24 199:18 recalculated 88:1 recall 12:17 44:6 45:25 46:4,8 50:3,6 57:15,22 58:14 59:5,8,23 60:6 60:15 61:13,15 62:11,13,14,17 62:18,21 63:5 64:12 65:1,3,5 65:9,11,12,17 66:16 70:13 73:25 74:19 76:6 79:12 80:1,6 86:16 94:1,3 101:11 103:12 104:21 104:23 169:22 178:11 179:13</p>	<p>197:21 200:16 213:17 221:4 222:10 239:13 receive 79:23 138:3 received 29:2 58:9 69:24 158:7 171:19 186:15 193:8 receiving 65:2 141:2 158:2 recent 96:24 100:23 212:12 recently 83:10 83:19 233:22 recess 73:2 118:23 119:1 196:1 recessed 244:20 recognized 32:18 38:8 226:18 recollection 44:2 50:21 63:12 64:6 194:12 recommend 56:20 recommenda... 56:25 recommended 165:12 reconvene 118:18</p>
--	--	---	---

[reconvening - remember]

reconvening 118:14 record 22:10 22:14,15 23:3 28:17 47:8,17 87:6 106:1,24 119:23 134:22 135:11,15 144:21 145:13 196:3 203:10 225:17 244:19 records 48:21 198:6 recover 97:11 243:17 recoverable 98:2,11 218:7 218:18 recovered 38:10 recovery 31:16 31:19 38:8 39:11 42:12 43:15 44:3 45:17 46:6 98:6 109:25 112:23 128:12 129:12 red 168:22,25 169:3,11 231:13,13,14 231:14,16 235:23 236:2 237:1,19,24 241:2,15	redirect 120:6 121:1,7,9 122:1 123:1 124:1 125:1 126:1 127:1 128:1 129:1 130:1 131:1 132:1 133:1 214:19 220:24 221:1,2 222:1 223:1 224:1 redline 84:14 84:16 reduce 39:10 126:20 219:7 reduced 220:16 reducing 219:21 reduction 88:10 refer 33:5 77:3 77:24 80:9 114:6 116:5 137:12 148:17 156:21,23 164:1 167:24 213:3 217:7 229:18 reference 130:6 referenced 114:1 references 44:25 referencing 163:3	referred 30:10 42:15 59:17,18 73:23 74:11 78:2 88:20 130:6 156:1 163:9 164:8 referring 26:8 41:23 47:6 76:23 81:15 92:14 117:4 164:2 235:3 refers 78:21 refined 138:14 228:19 reflect 52:17 59:3 139:4 140:21 168:25 172:22 179:1 237:16 reflected 49:20 80:23 140:6 142:25 240:22 reflective 181:22 reflects 54:24 86:19 refresh 50:21 111:14 regarding 35:9 144:16 regardless 222:14 regards 172:16 172:17 210:18	regional 229:5 regions 175:11 230:15 registered 29:4 regularly 222:2 reiterating 35:13 related 171:5 245:13 relates 94:10 143:19 relationship 170:25 176:7 relationships 170:17 relative 190:10 relatively 55:13 relevance 71:16 relevant 35:5 71:11 72:5 148:14 reliable 52:10 relied 79:14 85:4 161:22 relies 71:25 91:13 rely 78:3 81:2 relying 79:8 remain 178:25 remember 41:19 42:10,16 49:24 51:13 54:17 58:17 59:11,14 60:19
---	---	--	--

[remember - resolved]

60:22 66:4 70:16,21 155:19 157:19 163:20 168:10 185:14 194:16 199:25 203:4,6 212:10 216:21 remembering 119:14 remind 40:24 121:6 reminds 50:24 remodel 196:12 remotely 28:1 133:25 224:18 removed 137:5 187:3 188:20 removing 231:10 render 108:6 rendition 232:19 repeat 84:2 85:23 155:25 203:3 212:1 rephrase 117:11,13 148:4 170:19 182:11 replace 163:7 report 30:23,25 46:18,22 47:5 47:9 48:10,20 49:20 50:5,9 53:2,21 54:7,8	54:16,24 57:12 71:24 81:5 115:24 130:17 130:18 245:7 reported 101:23 193:6 reporter 20:5,9 reporting 49:19 reports 44:14 44:14,17,19 45:7,9 59:1,6 59:16,18,20 60:5 71:20 114:1 193:21 represent 12:2 58:5 81:23 139:1 representation 23:2 87:17 143:1 represented 81:5 representing 10:15,22 234:10 represents 82:10 85:16 183:10 reprocessed 33:5,23 37:14 77:5 80:7 87:7 88:1,22 89:6,8 request 21:15 64:1 65:6 67:9	67:11 166:20 176:11 requested 23:21 173:12 203:10 requests 61:20 72:3 125:5 require 55:22 required 39:12 129:8 requirements 53:10 requires 52:5 research 41:4 reserve 44:13 44:14,17,19 45:7,8,13,23 64:2 68:10 71:20 124:9 136:4,6 reserved 16:11 16:24 reserves 243:17 reservoir 28:21 29:16 37:19 38:17 51:23 52:6,23 61:10 95:25 113:3,7 114:19 115:16 117:18,19,19 124:11,13 125:9,16,19 126:1,6,12 131:5,8 132:3 132:6 143:15	144:8 147:4,6 147:13 150:20 153:8 162:14 181:22 188:10 207:5,12,19,21 211:13 213:16 213:24 214:3,4 214:7,12 215:2 219:6 230:13 233:20 234:15 238:12 reservoirs 38:4 105:7 114:5 115:22 141:9 185:11 213:20 234:11 residual 12:10 31:20 37:24,25 41:5,9,24 42:3 42:7,15,18,25 43:3 45:24 46:2 64:19 65:19 66:2 104:20 105:8 105:17 115:10 115:24,25 116:3,7 155:2 185:12 219:7 219:22 232:10 233:12 resolution 205:6 resolved 14:10 200:9,10
---	--	--	--

[resonance - right]

resonance 170:1,4,7,18 171:1	240:2	reviewed 75:25 76:8 77:3 78:15 106:14 113:20 130:12 156:13 196:14 196:16 197:25 198:3,6 216:7 221:5	157:20 160:5 161:7,13,23 162:1,4,18,24 163:6,7 165:24 166:6 171:9,14 171:16 179:3 179:11 181:1 182:6,12,13 183:9,12 185:15 191:8 192:12,17 193:12,18 194:1 195:10 195:11,14 196:11 198:23 199:3,8 200:4 226:25 227:1,4 227:10,12,14 227:19,23 228:2,15,18 236:7 237:17
resource 116:2 243:12	resulted 138:17 153:4	reviewing 22:15,20 73:16 79:12 104:15 175:21	revisions 26:11 26:12 139:9,16 160:5 227:14 227:22
resources 2:23 6:24 29:13 129:13 220:7 220:11	resulting 180:13	revise 84:13 89:14 157:25	rice 3:1 19:5 24:20,21 32:13 145:4 198:14
respect 136:16 172:18 191:12 202:12	results 63:6 137:14 144:16 159:3 161:16 164:11 206:4 209:15 210:16 226:22 227:8	revised 4:3,7,8 4:9 14:13 26:6 33:11,11,14,19 34:6,20 77:3 83:10,16,18 84:7,25 87:5,6 87:11,18,21,22 88:11,17 89:4 89:5,8,15 91:4 91:11,12,13,15 91:16,22 93:2 93:5,13,18 97:17 106:18 106:18 107:6 137:18,19,21 138:13 139:10 139:13,17,23 144:10,22 145:10 149:3 156:18,20 157:3,9,13,15	right 6:14 9:17 14:19 17:24 18:8 20:12,24 25:23 26:16 27:18,22 28:4 28:5,10,13 32:17 36:23
respectively 151:12	resume 27:14 40:18 41:20 45:12 69:8 244:12		
respond 63:2 66:19 67:9	resuming 244:6		
responding 68:19	retain 156:23 157:4,16 162:25		
responds 61:21 68:20,22	retained 31:24 32:1 196:10 201:6		
response 68:4 70:3 104:23 190:25	retrieve 116:6		
rest 69:17	review 7:22 22:13 77:6 83:12,16 86:14 94:9 96:15 100:7,12,16,21 108:5 127:17 180:21 191:18 193:20 196:22 196:25 221:11 221:14,17,19 221:21		
restate 67:2 95:23			
restated 191:1			
restating 69:21			
result 94:6,11 94:18 97:12,13 97:21 98:15,21 99:3,7 129:12 138:14 144:2 189:12 228:18 237:9 238:17			

[right - ryno]

37:2 40:4	173:23 174:1	151:19,20,25	131:12,21
43:22 45:4,14	175:21 176:8	154:8 173:6	138:4 189:9,9
45:18 46:16,20	176:18 177:7	208:22 214:20	207:5,7,13,16
46:24 48:5,24	178:22 183:16	238:12	207:20 215:22
52:15 54:4	184:23 185:21	rocky 29:13	215:24 232:15
55:6 56:5,10	186:2,6 187:5	roll 5:20 6:2	242:23 243:3
56:18 57:9,10	187:8,19	rolling 14:19	243:10
61:4,12 62:2	188:10,18	room 17:24	rozatos 1:12
65:24 66:25	195:23 196:5	209:14	rozs 109:11
67:14,15,19,24	198:1,24 199:5	roughly 89:17	156:1
68:2,17 69:12	199:11,15,19	round 24:19	rr 70:5,10
72:17,25 76:16	201:24 203:18	row 224:24	75:20 160:17
82:7 85:9,25	209:4 214:3	roz 31:20 37:18	164:21,25
88:21 89:1	218:8 223:2	37:24 38:9,13	166:1,10,19,25
90:5 91:16	224:14,15	38:22 39:3,5	rule 25:12
93:15 97:5	225:7 227:2	44:3 46:7	ruled 23:21
99:12 104:25	228:13 229:12	66:25 67:14,22	rules 231:18
106:20 108:7	230:18 231:20	67:23 68:8,9	ruling 200:12
108:15,24	233:4,12	71:23 86:6	200:17 202:13
117:15 118:22	237:21 238:24	91:18 92:21,24	run 56:16,18
119:21,25	239:4,7,25	93:7,10 97:12	56:20,22 142:1
120:4,15,19	240:5,19,20	98:2,6,10	152:17 167:18
121:5 122:4	241:2	101:17 109:7	179:17 182:2
123:9 124:19	rights 167:3	109:20,24	211:12 214:23
129:15 131:22	ripley 1:10	110:12 111:9	227:6
133:14,17,19	rise 125:12	111:11 113:11	running 56:17
134:9,10,13	risk 56:13	113:16 117:4,6	57:1 151:9
135:4 136:9	113:11	117:7,9,15,19	154:11 195:13
137:16 141:20	risky 125:13	117:22 121:12	206:2 229:11
143:4,11,12,24	roadmap 24:16	121:20,21	ryan 209:7
144:17 148:22	robert 61:5	122:7,8,18,22	215:25
149:13 150:12	200:25	123:9,15 126:1	ryno 33:18
152:12 153:2	rock 52:6	127:8 128:11	36:11,18 37:13
156:12 157:13	126:12 128:7	128:16 129:5	38:15,21,23
159:4 161:5	131:4 151:17	129:23 130:1	75:19 77:7

[ryno - saturation]

78:22 79:4,10 79:13 82:15,23 85:10,17,24 86:25 87:8 88:1,19 89:9 180:22,24 234:4,5,16 235:8	77:9 79:2,10 79:19 80:12 81:17,18,25 82:6,16 83:24 84:6 85:3 86:2 86:10 89:7,11 89:16,18,22,23 90:13,18 94:5 94:11 95:18,22 96:1,8 98:2,10 101:4,10,14,15 101:23 102:1,8 102:13 103:24 104:7 105:12 109:8 110:11 110:14,20 112:5,14 113:23,24 114:23 117:25 121:14 122:9 124:22 125:7 126:1 127:7,15 127:19 130:12 132:20 138:4 141:16,25 142:12 143:7 144:2 155:9,15 155:24 156:2 160:14,14 166:4 173:8 175:3 183:25 184:6 193:1 194:3,11,17,22 194:22 195:3 195:14 212:18	213:3,4 218:4 218:22 219:1,5 229:7,10 231:23 232:5 232:16 233:20 233:23 234:15 234:17,24 235:25 236:3 236:25 237:13 238:15 239:6,9 239:12 240:7,8 242:6,9,22,23 243:3 santa 1:5 2:4,7 2:10,18,24 3:7 18:6 santoyo 2:12 saturated 128:15 129:6 saturation 33:6 38:2,16 76:19 77:8 78:3 79:17,17,19 81:13,13,17 83:23 88:19 89:19,19,25 90:5,7,23 105:8,9,10 115:11,24 116:7,21,23 117:16,21 118:6 141:4 142:3,3,11 143:9,16 144:11 149:25	151:10 152:14 152:15 153:5 154:13 162:10 162:12,13,21 162:22 166:6 172:3 173:5,11 173:16,18,19 173:23,24 174:2,3,9,9 175:23 176:7,8 176:11,22 179:23,24 180:13 183:21 183:22 184:10 184:16,20 185:16 186:1 186:16 188:17 188:23 189:6 189:20 190:7,8 190:19,21,22 190:23 205:3 205:21 206:7 206:11,23 207:3,4,12,19 207:25 208:6 208:10,12,16 210:8 211:24 213:10 215:19 216:14 217:17 217:20 218:15 236:14 238:4 238:14,23 239:3 240:12 240:15
s			
s 1:5 4:4 47:15 48:7 saint 1:5 sales 242:19,22 243:8,9 saltwater 33:18 35:9,11 36:11 38:21 39:16 62:2,7 63:19 64:11 67:24 74:7,25 75:6 125:1 132:19 211:1 229:14 231:5 sample 186:12 samples 205:5 san 2:13,14 9:10 31:22 32:4 35:10,15 35:16 36:15,18 36:21,23 37:19 38:12,17 42:24 44:4,8 64:19 65:8,19 66:2 68:7 71:23 75:1,15 76:20			

[saturations - sections]

saturations 37:17 72:1 77:22 79:5,9 80:4,11 81:24 82:11,15 83:24 84:5 85:2,21 86:2 89:10,21 90:1 92:1 104:25 105:4 116:3,17 117:3 131:15 138:24 141:16,19 144:7 152:22 158:9 161:9 174:13 176:1,4 176:14 177:10 185:5 187:5,14 187:22 188:21 189:3,11,13,16 189:17 208:1 saturday 68:22 saw 13:24 37:4 152:13,15 153:25 166:8 166:18 231:3 sayer 11:14,15 11:17 saying 63:4 65:22,23 99:11 106:22 117:14 122:11,21 125:17 147:8 172:25 189:22 189:25 199:2 208:20 213:14	says 26:14 37:11 48:25 50:9,17 52:1 52:23 53:15 54:16 55:4 58:25 61:8 63:24 65:25 69:3 86:25 87:16 90:14,15 90:19,20 92:16 96:5 99:21 159:5 162:23 172:8 173:5 183:19 194:15 231:20 scattered 213:16 scenario 55:15 57:2 141:6,7 141:10,11,23 141:24 142:6 143:23,25 144:1 154:4 183:8,9,13,19 183:20,24 184:5 213:10 237:16 scenarios 54:14 54:25 55:2 56:21 141:11 144:11 schedule 15:19 16:24 17:1 scheduled 8:15	scheduling 12:6 14:6 15:25 scope 154:18 172:7 188:13 233:17 scott 206:13,20 209:9 scrape 114:15 screen 9:18 40:17 58:21 60:13 73:18 87:13 103:6 158:14 162:5 172:6 180:10 230:25 screenshot 238:21 scroll 40:25 52:20 54:11 58:8 60:7 61:18 63:8 73:19 74:3 77:11 78:14,16 87:19 158:21 scrolling 80:15 84:18 season 64:2 seat 195:18 seats 24:11 sec 55:22 second 8:10 17:15 33:4,15 34:1 35:12 38:18 76:14	138:11,21 139:4 150:14 180:10 183:18 216:11 228:21 236:12 secondary 151:20,23 154:8 secondly 37:20 129:7 section 36:2,7,8 37:8 50:9,14 51:21 52:23 76:12,14 80:10 80:23 81:3,11 85:8 86:23 87:1 88:3,6,7 88:23 104:3 113:20 143:6 144:2 173:4 181:1,3 216:19 216:25 217:4,7 217:7 229:18 229:18,20 231:2,3,4,5,10 232:23,24 233:3 234:5,7 234:20,21,21 235:13,14,22 236:19,21 237:15 239:18 240:11 241:23 242:9 sections 36:5 37:11 38:13
---	---	---	---

[sections - shaheen]

75:25 76:3,5,9 76:13 121:15 see 9:20 16:1 16:14 17:4 20:11 25:15 36:11,18,20 38:13,14,16,22 40:18,19 47:4 49:7,9 56:24 58:11,12,18,21 59:7,13 60:9 60:12,13,19 62:8,10 63:10 63:11 66:3,9 68:18 71:8 72:18 74:4,5 74:13,16 77:14 77:18 78:2,6 78:16 79:3 82:3 85:10,13 85:15 86:18,24 87:2,13,15,16 87:20,24 88:3 90:11,21 93:24 103:6,20 119:24 120:10 129:24 133:18 134:7 136:18 147:15 153:4,8 153:14 156:21 158:15,17,18 158:23 159:20 159:22 160:2 162:5 163:2 169:3 170:15	172:11 176:21 178:4 179:25 183:12 195:24 204:23 206:5 207:11 209:21 213:8 223:5 230:25 231:6,8 232:1,23 233:5 235:17 236:8 237:12 238:13 239:8,11 240:10 241:2,4 241:5,17,18 242:1,8,11,15 244:15 seeing 41:19 82:1 103:2 125:24 159:24 210:12 237:23 239:1,2,3 240:11,14 seeking 64:8 135:16 136:7 146:17,18 147:18 148:2 seems 59:12 72:22 seen 33:23 35:19 83:15 102:25 103:11 113:2 115:1,12 116:14 208:3 217:1 self 26:18 32:20 32:24 33:3	35:1 74:14 87:21 124:4 128:1 158:19 182:7 seminole 31:11 31:14 43:15,18 109:13 155:12 send 27:6 70:4 sending 58:15 sends 64:16 68:4 senior 30:3 225:21 sense 157:22 188:12 sensitivity 175:20 194:1 195:12 sent 26:22 60:11 sentence 50:16 52:1 53:14 96:5 162:17 163:11,25 172:8 174:15 sentences 162:9 163:18,22 separate 67:17 83:21 142:17 september 12:24 58:11 63:23 66:21 67:8 68:22 69:1,14,21 70:6 73:11,16	171:20 sequence 27:4 47:16 59:11 series 68:15,23 123:16 132:18 136:17,24 137:1,3 140:13 service 19:6 session 215:14 215:16 set 5:14 12:18 12:20 14:4,18 14:20 15:1,13 15:16,25 63:23 68:16,19 80:18 245:8 sets 174:17 182:21 184:15 220:18 setting 20:14 218:10 settled 14:8 233:18 seven 137:6 233:15,19 235:10 243:10 several 26:14 42:10 112:4 183:1 shading 168:22 168:25 169:4 169:11,12 shaheen 2:5 3:16,19,21 18:15,19,20,23
---	--	--	---

18:24 133:22 134:1,1,3,5,5 134:15,16,18 135:1,9 136:1 136:1 137:1 138:1 139:1,7 140:1 141:1 142:1 143:1 144:1,20 145:1 145:12 146:2 147:25 148:13 149:7 153:17 153:19 156:12 167:7 200:5,16 202:5 220:24 220:25 221:1,3 222:1,21,24 223:1,1,12,15 223:19 224:1 224:19,23 225:1,2,12,15 226:1,4,19,20 227:1 228:1,1 228:17 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1 238:1 239:1 240:1 241:1 242:1 243:1,21 244:1 245:1 shandler 1:14 shanor 2:6 11:2	share 62:6 103:4 116:10 136:13 138:8 139:8 158:15 167:3 sharing 73:18 88:17 sharon 2:5 18:15 shed 232:11 sheehan 27:24 146:15 223:9 sheila 8:22 shelf 141:13 155:15 156:6 shell 175:2 short 23:8 50:11 89:23 196:8 shorthand 245:8 shortly 29:19 show 48:22 68:10 69:23 71:9 76:19 88:22 89:6 103:18 113:4 113:21 143:8 160:2 168:22 211:19 212:14 229:20 234:8 235:20 238:17 240:2 showed 141:14 142:10 177:1	194:4 230:3,4 237:13 showing 37:1 70:20 79:22 84:15 86:17 90:10 136:14 143:5 208:4 229:5,13 232:5 232:22 233:12 235:21,23 236:17,23,24 238:19,21 242:4 shown 33:9 36:4 38:18 116:17 117:16 121:14 123:2 143:2,10 239:10 241:15 shows 36:1,8 77:8 81:12 82:15 88:19 89:4,10,15 103:16 143:13 143:15 144:5,7 174:22 183:4 190:22 229:9 233:14 236:22 237:11 238:4 239:5 shut 112:7 sic 159:15 side 9:17,17 17:5,24 43:21 44:4,9 57:17	57:23 93:16,17 121:19,21,25 122:1 143:2 147:14 156:4,9 211:21 215:15 215:15 216:3,3 216:4 227:9,9 229:1,12 235:1 236:9,9 238:6 240:13 sierra 9:11 signature 74:16 84:17,22 245:18 signed 73:22 158:22 significant 13:8 109:18 127:23 230:7 232:20 238:10 239:23 239:24 signs 78:17 silent 104:14 similar 37:4 87:17 93:4 109:8 144:2 161:18 167:22 232:21 239:19 243:3 similarly 190:11 simmons 2:8 simon 141:25 155:15 175:3
---	---	---	--

[simply - specific]

simply 122:21 simulation 45:20 114:19 114:22 215:2 single 114:3,10 217:12 sir 11:5 18:11 28:10,25 30:6 32:1,25 34:5 35:3 37:22 38:14 41:21 49:14 50:13 52:9 53:5 107:19 109:4 109:22 118:10 120:20 121:16 124:2 134:10 180:17 181:18 187:18 205:14 207:23 208:18 209:12 210:7 213:18 215:9 215:23 216:10 216:18,23 217:13 218:2 219:3,9 220:5 220:11,21 225:8 sit 61:12,15 65:17 66:17 92:8 99:13 108:14 155:21 168:24 169:14 178:24 179:15 184:3	site 212:14 sitting 10:5 24:10 57:21 99:20 168:15 181:10 situation 112:3 204:19 206:3 209:16 214:13 situations 151:12 204:11 204:17 six 101:3,6,21 101:25 192:18 193:11 size 217:1 skip 48:13 84:10 171:11 skipping 51:20 slaughter 31:10 31:15 43:17 155:11 slide 35:5,5,23 36:6,25 37:5 37:10,10,16 38:25 140:6,17 140:21 144:1 229:4,5,19 231:1,4 232:24 233:4 237:8 238:17 239:14 240:2 243:10 slides 76:1 235:17 slightly 33:11 63:8 232:18	240:13 slope 155:18 slowly 78:14 small 110:24 smaller 234:25 smart 131:1 snapshot 211:10,22 soak 98:18 society 30:7,9 30:16 software 115:6 solely 71:25 82:17 171:5 solid 231:13,16 solution 173:8 solutions 245:19 solve 177:2 somebody 159:17 168:12 soon 21:11 sooner 125:12 sorry 20:1 24:7 35:23 67:2 80:15 82:3 83:14 85:23 103:3,4 104:14 111:5 133:12 139:7 155:25 156:25 174:7 183:16,17 190:16 194:17 194:17 210:6 219:23	sort 110:7 122:12 132:15 170:10 171:3 195:7 sorw 105:8 sounds 23:18 24:16 206:12 208:5 217:15 224:15 sources 51:7 south 2:23 30:21 31:11 43:18 63:20 southeast 229:11 southwest 231:11 236:23 space 105:14 spacing 31:1,3 31:4 spe 30:8,16 speak 111:3 112:2 114:2 206:19 209:4 speaker 5:8,9 119:4 121:1 203:21 special 61:8 specialize 45:12,16 specific 16:3 45:22 62:17 63:12 64:7 71:23 72:15 78:2,3 79:13
--	--	---	--

[specific - strongly]

79:21 109:15 147:21 148:19 151:17 200:18 204:21 216:9 specifically 31:14 42:14 54:19 57:25 58:17 62:13 64:12,16 65:3 65:16 70:15 101:6 111:5 117:6 126:1 143:19 146:17 212:7 specifics 42:11 70:24 specified 45:24 46:2,7 specify 56:23 spee 30:10,15 speed 67:5 spelled 124:15 spencer 2:3 spend 223:23 spoken 199:21 spot 31:5 53:16 57:10 spread 234:11 234:23 spreadsheet 116:5 158:8 square 180:9 stamp 74:17 stand 91:12 179:9 198:23	225:6 standard 55:14 141:7 173:2 181:25 202:22 205:23,24 206:15 standards 23:4 standing 199:7 200:4 stands 91:5,10 start 5:18 7:10 9:16,18 11:23 15:3,24 17:22 17:23 40:20 115:17 125:24 194:9 223:14 223:25 243:25 started 5:19 29:9 starting 13:13 115:16 state 1:2 6:25 27:7 28:17 46:9,15 74:24 77:7 92:19 98:17 99:18 134:21 189:4 225:17 stated 13:12 15:16 41:25 59:1 113:5 117:21,21 129:22 162:20 163:2 193:8 195:5	statement 26:18 32:20,24 33:3,16,20 34:6 35:2 74:14 78:19 79:9,15,18 80:11 81:16 83:13 87:21 88:14,15,18 89:14 90:9 92:15,19 93:4 93:5 96:11 97:7,18,21 118:1 124:4 128:1 135:21 158:20 160:6 164:7 166:12 167:8 173:4 208:7 210:21 213:17 214:3 statements 139:18,22 157:16 164:4 199:8,18 223:24 227:18 states 45:12 47:4 63:17 stating 64:17 status 9:14 13:4 146:14 statutory 100:19 stay 93:6 ste 2:13	stems 55:21 stenographic 245:8 step 17:11 27:14 140:7,8 167:9,12 170:15 stepping 7:1 188:16 steps 140:13,24 stick 46:13 sticking 210:1 stint 15:18 stood 179:7,7 179:12 181:17 198:22 stop 107:16 stored 205:1 straightened 15:5 straightforward 197:20 strategy 63:19 stratification 52:24 stratified 53:4 53:7 stratigraphic 37:8 76:15 stresses 214:10 strictly 217:9 strike 117:22 strong 113:2 strongly 213:23
---	---	--	--

structural 36:7 36:10 76:14 229:10 230:10 231:9 233:1 238:8,25 239:22 240:14 structure 37:7 216:13 229:7,9 230:3 231:12 232:25 234:13 239:19,21 studied 30:25 studies 31:15 41:14 45:20 71:10 study 31:2 57:5 62:1 64:18 65:10 66:1,5,7 66:11 113:7 132:3,12,13,25 138:3,10 141:12 142:18 153:7,13 154:15 174:18 175:15,21 210:13 228:23 suazo 3:8 11:7 11:8,12 19:15 19:17 25:2,3 32:16 48:3,4 108:21,23 145:7,22,23 203:16 224:8,9 226:15,16 228:11,12	subject 25:14 59:2 128:24 139:16 147:17 200:11 227:22 submission 26:6 137:22 159:25 submit 15:2 137:18,21 157:11 227:4 submitted 26:15 78:11,11 80:18 83:17,19 85:1 86:15 88:15 137:13 138:22 156:18 157:6,17 158:5 158:25 226:21 226:25 submitting 14:12 24:14 subsea 33:7,13 33:17 48:24 49:13,16,17,22 230:4 231:24 subsequent 73:12,15 161:2 subsequently 159:22 219:21 subset 30:15 146:23 149:11 substantial 243:17 successful 131:24	sufficient 51:17 suggesting 123:17 suite 2:17 3:2 sum 23:9 54:23 summarize 34:25 summary 40:2 76:1 95:1 summering 23:9 supervised 45:7 supplied 101:4 supply 45:3 101:3,8,15,21 101:25 102:7 118:3 125:18 129:18 192:18 192:21 193:5 193:12 support 24:14 94:24 96:16 98:14,20 99:6 111:24 supported 201:7 supports 130:16 suppose 120:21 128:24 223:9 supposed 20:2 sure 5:5 11:18 15:4,13,17 17:22 56:4	60:18 67:3,3 69:16 70:18 74:5 77:16 78:15 84:1,3 85:24 98:23 101:17 108:4 113:17 120:22 121:11 130:8 170:20 180:4,4 190:12,24 198:19 200:19 203:6 218:21 219:15 225:4 230:16 surface 127:3 surprises 115:5 115:8,9 surrounding 218:1 suspect 108:1 217:21 232:16 swab 191:11 swd 61:25 62:2 62:8 68:6 75:19 77:7 78:22 82:15,23 86:25 88:19 89:9 180:23 234:4,6,16 235:8 swear 225:6 sweep 112:21 126:20 swenergylaw... 2:14
--	--	---	---

[switch - testimonies]

switch 5:25 6:2 17:14 18:12 46:10 sworn 28:12 134:12 139:20 139:24 225:10 227:20,24 synonymous 20:20 synthetic 170:1 170:3 system 53:4 140:16 151:10 166:2,3 190:20 218:15,23	241:6 taken 27:20 73:2 119:1 129:19 140:13 196:1 205:1 241:8 245:5 takes 9:4 127:1 183:19 talk 83:5,9 115:10 124:7 126:23 128:23 148:16 178:17 196:9,19 200:2 209:7 212:2 241:19 talked 95:2 110:10 128:25 167:10 174:19 214:19 239:13 talking 51:22 77:21,22 110:20 111:6 112:11 148:21 152:18 177:6 190:15 202:9 207:9 208:21 230:5 tannis 10:13 target 38:3 104:25 105:1,5 154:23 targeting 102:2 102:15 task 14:24 69:13	tasked 113:6 td 194:19 team 48:11 69:21 teams 5:17 68:1 tech 6:6 technical 26:14 30:3 41:2 70:11 technically 243:24 technician 83:5 83:9 technicians 168:18 tell 29:6 31:23 35:6 115:8 116:9 131:2 132:10 141:22 154:6 214:25 215:6 217:5,23 tellez 20:8 119:23 203:8 244:17 245:3 245:19 telling 154:10 180:15 181:6 ten 68:23 69:1 73:1 tend 91:15 195:17 tender 32:5 34:11 tendered 135:24	tens 114:3,10 term 42:17,19 61:23,24 62:6 91:16 116:11 terminate 217:24 terms 26:23 29:7 41:22 57:1 118:14 124:7 127:9 129:19 132:24 207:17,18 211:25 tertiary 31:16 39:11 44:3 128:12,21 test 191:11,19 testified 28:12 87:5 91:5,10 105:2 127:17 127:25 132:4 134:12 159:1 197:24 198:6 225:10 228:20 237:17 testify 28:1 149:17,21 150:2,4 182:7 201:17 testifying 135:3 150:19 207:8 207:11 225:23 testimonies 235:4
t			
t 2:5 table 18:18 33:10 90:10,11 186:15 take 17:11 40:15 72:21 73:1 77:17 113:8 125:15 125:16 127:6 132:5 137:1 151:24 154:2 177:11 191:5 193:10,15 195:20,21 209:6 219:17 223:10,18 225:5 241:7 takeaway 143:14 144:4			

[testimony - think]

testimony	144:16 146:14	228:18 230:18	204:1 205:8,14
12:22,23 13:24	149:24 151:1	243:18	206:12 212:22
25:25 26:6,8	156:13,15,18	tests 191:6,11	213:6 220:21
26:15 35:1	156:20,21,22	191:12	220:23,25
40:2 46:9,12	156:24 157:3,4	texas 2:14 29:3	222:22,24
61:11 69:12	157:10,13,15	29:9 45:2	223:3 224:16
72:7 73:17,19	157:21,25	115:22 155:8	226:19 243:21
73:20,25 74:9	158:6,15 159:1	text 33:4 60:22	244:14,16
74:20,23 75:4	159:2,24 161:3	75:7	thanks 21:22
76:4,22 77:2	161:7,14,23	thank 5:11 6:3	27:19 195:25
78:7,10,12,20	162:1,3,3,4,8	6:6,8,19 7:6,7	204:7
78:24 80:9,10	162:18,24	8:19,20 9:2,25	theory 171:1
80:18 81:9,14	163:1,18,19,22	10:12,17 11:4	thereto 228:3
82:21 83:7,10	164:5,8,9,13,15	11:11,16 12:14	thickness 236:8
83:12,15,16,18	165:25 166:6	12:15 15:7	237:4,7
84:11,13,25	171:15 179:3	16:5,10 17:6,8	thin 240:9
86:14,21 87:5	182:7,12,13,13	17:11,12 18:2	thing 39:25
87:11 89:4	183:13 184:4	18:11,16,23	53:12 75:10
91:13 92:13,14	191:8 192:12	19:7,13,24	132:15 146:13
93:2,5,13 94:2	192:17 193:13	20:1,22 24:4	178:10 229:8
97:5,17 100:11	193:18 194:2	24:19 25:9,22	229:16 230:22
100:14 101:2	196:14,23	28:8 40:5,7,13	243:1
101:20 102:12	198:21 200:3,4	47:25 49:10	things 27:19
106:1,3,18,22	200:24 204:8	59:21 73:5,14	40:23 48:17
107:7 108:11	205:15 206:13	107:19 108:19	59:12 72:15
109:4 111:11	206:17,21	109:4 112:25	74:15 147:14
114:18 116:16	207:15 210:17	115:9 116:13	148:22 150:17
121:12 123:23	211:23 213:7	118:9,24,25	167:21 185:1
130:7,23,23	214:16 215:21	119:14 133:13	205:2,6 238:20
133:23 135:7	216:1,7,12	133:14,16	think 12:3
135:10 137:13	217:14,25	134:14,16	13:25 14:10,25
137:18,21	218:13 219:2	136:12 144:19	15:23 21:10
138:13,21	221:4 223:17	146:2,6 196:7	22:8,18,24
139:19,20,24	226:2,21,22,25	197:6,9 198:10	23:16,17 24:13
139:24 140:22	227:4,10,20,24	198:13 203:12	25:3,6,13

[think - took]

40:22 43:12 46:13 57:22 72:4 81:6 85:11 99:2,23 104:18 105:22 105:23,23,25 106:14 111:10 113:11 114:12 117:20 121:2 121:23 130:4 132:9 136:5 149:8,12 154:21 156:8 157:23 170:19 174:21 175:1 176:16,18 180:5 199:1,3 200:9,12,15 223:16 224:10 232:15 thinking 13:23 22:9 60:20 third 7:16 12:1 33:16 45:8 85:10 113:12 170:15 229:16 237:21 thorough 51:1 thought 22:8 106:11 113:25 117:8 130:10 179:9 219:11 thoughts 25:10 25:14 223:7	three 12:20 33:10 111:15 117:12 120:24 142:16 153:15 163:17 176:19 176:25 177:3,4 177:5 209:14 threshold 111:2 thumbs 119:24 thursday 64:14 ticking 225:1 tie 171:1 172:3 173:10 178:8 179:19 184:17 184:20 206:4 tied 137:25 166:5 170:23 183:7 206:2 ties 170:16 time 7:22 11:22 16:2 17:5 22:7 22:8 25:12,13 25:18 38:7 40:15 41:16,24 42:1 47:14 48:19 49:6 50:1 51:4,14 54:13 56:5,12 59:6,11,14,15 60:25 61:16 62:14,20 68:20 69:16 72:24 78:19 82:20,24 94:8,15,18	101:1,19 102:11 106:15 109:12 113:8,9 113:18 116:1 123:1,5 132:14 132:14 133:5 133:15 136:25 146:24 157:6 159:21 164:12 178:11,16 184:21 192:11 192:17 195:18 195:20 197:24 202:16,17 211:3,10,22 214:13 220:7 220:21 223:3 241:11 timeframes 66:17 times 55:21 61:20 123:7 125:4 184:11 199:24 200:1 timing 118:12 204:25 tissue 148:22 titled 50:15 today 5:19 7:15 9:5 10:16 19:17 21:20 40:12 57:21 61:12 66:17 76:1 77:3 88:16 92:8	93:3 97:25 99:13,20 100:11 108:14 109:5 135:3,10 139:19,25 146:10 147:20 155:21 156:9 168:25 169:14 178:24 179:15 181:11 182:20 184:3 197:17 199:1,2,7,10 219:25 223:3 225:23 227:20 227:24 230:21 243:19 today's 100:13 together 129:12 170:24 173:21 told 87:4 135:16 136:7 146:18 147:18 150:18 178:10 178:11 179:12 180:7 181:16 182:18 185:20 186:18,24 tomorrow 181:11 223:25 244:12,15 took 121:18 123:16,22 132:17 138:1 142:19 152:1,8
---	--	--	--

[took - ultimately]

<p>153:3 tool 137:5 tools 137:1 167:17 top 35:15 36:14 36:15 37:6 40:20 47:4 61:13 77:9 79:10,20 80:12 81:17,24 82:5 82:7,16 87:19 141:16 143:7 162:9 169:22 194:16 229:7 232:6 238:7,7 238:8 239:9,10 239:12,19,20 240:7,8,9 topics 150:6 tops 36:22 89:7 total 216:17 totally 84:1 touched 167:6 toward 33:9 36:2,2 towards 150:11 230:15 track 77:22 79:17 81:12,22 81:22 82:9 85:10,11,12 168:23 195:18 236:12,16 237:21 238:3</p>	<p>tracking 173:17 190:24 tracks 169:4 tracts 238:22 traditional 39:8 96:7 117:10 traditionally 38:3 transcript 1:7 100:17 245:1 245:10 transcripts 21:16 221:15 transfer 19:23 transition 41:16 42:1,3 242:5 trap 239:22 trapping 219:21 travel 16:21 tread 200:15,17 201:10 tremaine 10:19 10:20,21 11:21 11:24,25 12:14 13:17,19,22 14:7 17:2 trend 235:18 243:3 trial 153:2,14 tried 92:16 132:2</p>	<p>tripp 11:1 trouble 49:4 true 174:3 190:8 194:25 245:9 truth 131:2 try 17:2 138:8 139:8 180:3 195:13 214:5 trying 51:2 59:11 68:16,19 70:17 81:6 82:4 99:12 105:25 121:4 128:2 130:13 130:21,22 139:7 150:1 165:18 172:21 180:9 181:10 209:5,11 210:20 242:10 tuesday 60:11 69:5 turn 107:17 108:25 119:11 133:10 turning 229:3 231:1 236:18 241:22 turquoise 238:2 two 8:13,25 12:8,20 14:5 15:16,18 17:3 24:24 26:25</p>	<p>60:11 68:14 71:24 75:7,24 76:13 91:2,18 92:9 104:19 115:2 129:11 138:19,23 142:8 150:6 160:13,22 162:9 173:21 176:19 179:8 181:19,19 189:14 206:3 215:7 227:5 228:24 234:16 243:4 tying 210:9 type 116:20 124:10 125:8 131:4,7 214:20 215:16 218:20 types 116:6 221:6 typical 212:25 typically 56:22 105:13 129:24 typing 20:5 typo 34:7 typographical 33:25</p>
u			
<p>ultimate 112:22 129:12 ultimately 138:16 172:3</p>			

[unable - utilizing]

unable 178:25	185:21,23	unitization	137:6,9 142:6
unavailable	186:19,25	110:6	170:1,6,9,16
27:1	188:11	unitized 21:12	214:23
uncertain 56:8	understandable	32:3 35:13,21	used 64:22 92:1
63:25	60:24	75:11,13 86:10	114:21 115:8
uncertainties	understanding	97:10 102:19	124:4,5 129:20
222:18	26:2 43:2	103:25 110:3	138:11 140:6
uncertainty	55:19 62:1	229:21 231:17	141:5,22
195:7 220:3,16	70:9 81:14	232:2,4,7	146:22 151:10
unchanged	82:10 85:16	233:9	153:6,24 167:4
33:16	91:24 104:20	unitizer 231:21	171:8 174:17
under 5:16	105:2,16 108:5	units 63:21	175:11,12
18:25 20:1	135:24 144:14	university 29:3	183:23 185:7
90:6 98:6	150:19 152:7	unlimited	210:15 214:2
121:6 172:6	165:20 166:21	220:11	215:2,19
178:6	171:18 176:18	unmuted 28:5	uses 77:3
undergone	184:18 188:9	unopposed	using 52:15
109:7	understood	20:21 25:24	53:8 89:25
underlying	66:23 70:18	26:3,16	90:24 142:4,18
122:7,9,19,22	84:1 166:9	update 13:23	143:23 170:22
understand	198:19	26:23	176:10 183:3,3
21:18 50:2	unidentified	updated 12:1	205:25 206:3
70:17 81:12	5:8,9 119:4	13:22 14:2,14	210:6,8,12
84:24 90:17,23	121:1 203:21	26:8 77:4	217:22 218:2
110:1 117:20	unit 30:21,24	87:25 88:22	222:3 227:9
121:12 131:1	41:13,17 51:9	89:5 163:13	242:24
132:11 149:15	51:12 63:21	updates 14:11	usually 9:16
149:16 150:1	75:12,13	updating 26:7	115:17 157:8
150:14,18,22	100:12,16,19	upper 231:23	utilized 159:2
150:24 151:5	101:3 102:19	upstairs 126:8	164:10 215:5
151:16 152:1,6	103:19 104:1,3	129:20	utilizing 53:15
154:22 162:2	104:6,9 110:3	upwards	55:5 227:6
171:1 172:21	217:8 221:11	180:11	
173:13 176:16	221:15 229:12	use 88:16 94:2	
178:17 184:25		115:6 124:16	

[v - wants]

v		version 47:9 74:19,22 78:12 84:16 93:19	voters 9:8
v 53:15 114:7,7 vacuum 155:12 155:14 valid 140:11 167:25 181:9 validate 167:12 167:13,19 209:20 validating 167:14 180:1 validation 169:19 validity 140:9 value 33:14 38:10 86:23 88:2 115:5 141:8,14,14 142:1,1,10,15 178:1,5,14,19 179:24 180:25 181:2,24 194:2 194:18 205:22 207:2 215:10 values 53:23 138:15 141:3,5 142:4,17,19 151:2,7,10,12 152:1,9,15 153:1,13,24 154:4,10 157:7 158:8 163:12 172:1,10,11,14 172:15,18,24 173:1,16	174:10,17,23 175:10,12,16 176:17,20 177:9,11 179:2 179:20 180:3 181:8 184:14 184:17,20 186:1,15 190:10 194:22 205:3,25 206:4 206:20,23 210:8,14,15 212:12 216:19 217:19,19,20 217:22 220:15 variability 114:6,8 183:4 variable 183:22 195:2 variables 140:25 206:7,8 206:11 variance 210:13 varied 141:4 varies 105:15 114:4 162:13 variety 221:6 vary 175:16 194:21,21 varying 154:2 vastly 218:18 verbal 159:11 veritext 245:19	version 47:9 74:19,22 78:12 84:16 93:19 versus 110:22 148:18,22 204:21 238:4 238:23 vertical 39:4,19 92:22 93:8 112:21 121:13 vice 135:1 victim 103:3 video 245:6 view 17:5 36:13 64:3 viewed 211:16 views 23:3 vintage 233:22 viscous 219:20 visual 80:16 volume 65:7,18 104:4 111:3 112:24 125:10 127:2,4 219:4 219:19 234:18 volumes 39:24 64:19 66:2 103:17 110:16 110:18,24,25 112:4,14 125:21,23 126:5 182:5 234:25 volumetrics 216:25	w
			waddell 31:12 waiting 21:16 21:17 walk 40:15 84:19 140:2,24 want 5:5,18 15:13 23:24 40:15,24 48:15 52:16 55:18 67:4 68:2,10 72:2 84:19 98:17,17 99:18 114:20 116:23 121:11 132:10 146:13 149:15 152:6 157:24 197:4 198:19 203:3 209:12 217:15 223:22 225:5 229:16 234:1 235:1,15 241:13,13 242:7,20 243:12,25,25 wanted 6:12 21:4,15,19 48:9 51:24 56:23 61:2 74:15 150:13 234:8 241:6,24 wanting 68:25 wants 109:1 203:19

[washout - wells]

washout 167:23	125:14,15,18 125:22,23	water's 126:2 126:13	25:13 27:3 42:8 43:11,13
wasson 31:10 31:14 41:14 43:17 109:13 155:11	126:4,10,14,18 127:2,4 129:17 129:19 142:2,3 142:11 143:10 143:18 144:7 144:11 152:14 152:21 153:5 154:12 161:9 162:10,20 170:15,24 171:2,6 173:5 173:11,16,18 173:23 174:2 174:13 175:22 176:1,7,10,22 177:10 183:21 183:21 184:10 185:4,8,16,18 186:9,11,17 187:4,5,14,22 188:17,19,21 189:1,2,5,11,16 189:20,25 190:4,7,17,19 190:21,23 191:4,4,11 192:18,21 193:5,6,11,11 193:17 208:4,6 211:7 212:15 213:10 219:4 230:13 238:4 238:23	waterflood 38:3 46:19 52:5 53:9,17 54:3,21 55:5 57:10 61:25 95:8,11 100:19 101:5 104:24 105:1,5,6,11 126:17,21 128:13 129:20 131:20,22,23 192:13	113:2 116:16 117:14 195:19 200:9,15 219:24
waste 97:13,21 98:15,21,25 99:3,8,14 128:23 129:3,4 129:13		waterflooding 31:1,4	weather 5:16 19:1 20:2,2
wasteful 129:10		waterfloods 112:18	wednesday 16:20 66:20
watch 113:17		waterline 136:20,23,24 137:3,6 143:3 167:15,19 168:17 169:21 204:22	week 15:18,21 16:11,15,17,20 20:2 26:23 27:2,15 69:6
water 19:18 32:2 35:21 38:22 39:1,20 39:24 81:12 86:9 89:19 92:20 93:6,21 93:23 96:19 97:10,13 101:3 101:5,7,15,21 101:22,25 102:3,4,7,8,12 102:18 103:17 104:9,10 105:8 105:10 109:18 109:19,20,24 110:16,18,20 110:23 111:2 112:4,14,24 113:1,10 115:25 116:25 117:24 118:2,4		way 50:4,22 92:2,9 99:18 110:1 112:13 112:15 113:1 122:11 128:12 182:10 183:7 193:25 207:15 209:17 217:16	weeks 8:13,25 12:20 14:5,16 15:16 17:3
		ways 220:12	wehmeyer 2:12 2:15
		we've 12:20 14:8 15:25	weight 72:6,7 72:10
			welcome 150:9
			wellbore 214:12
			wells 36:4,8,19 39:23 68:6 74:8 75:23 76:25 101:3,7 101:8,15,21 102:1,7 103:23 104:9 110:7 112:7 116:25 117:25 118:3,7 124:21,23,24 125:1,1,19

[wells - year]

126:19 129:1 129:18,23 137:7 138:2 142:2,14,20 153:7 160:13 160:22 161:4 165:17,18 168:8 169:15 177:12,17 178:8 191:13 191:20,23 192:8,18,21 193:5,12,21 211:10 216:8 216:13,16 229:19,23,24 230:8,11,24,24 231:6 232:2 233:2,6,16,18 233:21 234:2,8 234:14 235:10 235:22 236:20 236:22 239:9 241:1 wendell 1:4 went 38:7 88:6 104:14 west 43:21 45:2 57:17,23 155:8 156:9 235:22 western 9:7 10:14 44:4,9 121:21,25 122:1 155:17 156:9 235:25	wet 218:25 219:1 wettability 151:19 218:14 218:17,20 219:12,15 wettable 218:23 whichever 231:25 wholly 30:17 wide 71:20 210:13 wife 26:25 william 1:13 6:4 29:18,20 williams 61:5 willingness 244:15 withdrawal 116:25 117:25 withdrawn 102:8 witness 20:19 26:24 27:8,8 27:17,23 40:3 91:4,10 103:14 107:13 120:6 133:19,22 144:15 146:3 149:20 197:8 198:11 200:13 200:24 201:20 203:17 222:24 223:10,17,24	224:11 225:6 226:5 243:22 witnesses 20:15 26:25,25 27:4 27:9 201:17 244:18 wonderful 115:20 116:2 word 93:13,15 94:2 97:3 124:4,5,6,16 182:22 wording 157:1 words 56:7 95:11 104:10 work 15:6 29:6 41:3,7 42:6 43:5 62:16,20 65:13,14 98:3 130:13 157:17 173:21 178:6 184:9 200:7 201:14,16 202:7,12,18,25 204:17 209:10 209:11 217:12 222:2 233:17 237:14 worked 29:12 57:23 156:2 204:18 working 46:14 46:16,18 51:8 51:11,15 184:14	works 68:20 195:22 world 204:19 worries 18:24 wound 132:25 wozniak 3:6 11:9 19:17 wrap 224:12 write 67:8 writeup 66:12 written 21:8,14 21:18 23:1,12 23:23 24:24 60:20 75:7 101:20 135:7 137:13 149:11 226:2,21 wrong 121:4
y			
yeah 15:20 16:8,10,25 26:4 44:24 65:17 72:20 73:14 78:5 89:2 102:21 106:19 114:17 114:18 118:4 150:7 152:16 191:18 194:17 204:4 216:15 218:5,11 year 12:19 55:11 60:8 64:1			

[years - zooming]

years 30:8 35:19 37:25 38:4 42:8 43:14 49:24 71:19 97:8 102:16 132:5 165:8 yielded 142:9	zoom 49:2,3 58:10 60:17 92:17 zooming 103:18
z	
zachary 1:14 zone 36:14,16 37:24,25 38:1 39:8,16,21 41:9,16 42:1,3 42:3,7,15,18,25 43:3 45:24 46:23 64:19 65:19 66:2 86:6 90:14 102:14 104:21 105:17 112:18 126:16,22 144:5 155:2 158:10 169:7,8 185:13 207:9 215:19 230:12 232:10 233:12 241:20 242:5 zones 31:20 38:4,9 41:5,24 41:24 96:3,8 109:19 142:17 153:10,15 213:2 215:7 242:4,17	