

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 11, 2025
9:00 a.m.

HEARD BEFORE: HEARING OFFICER RIPLEY HARWOOD
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BAYLEN LAMKIN, Member
DR. WILLIAM AMPOMAH, Member

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1 CHAIRMAN RAZATOS: Okay. It's 9:00.
2 Can you hear me in Pecos Hall?

3 UNIDENTIFIED SPEAKER: Yes, we hear
4 you.

5 CHAIRMAN RAZATOS: Thank you. Happy
6 Friday to everybody, and good morning.

7 My name is Gerasimos Razatos. I'm the
8 acting director for the Oil Conservation Division.
9 I'm also the acting chair for the Oil Conservation
10 Commission.

11 Today is April the 11th, 2025. We are
12 continuing with our evidentiary hearing that we have
13 had all week. I will read off the cases, as I have
14 every day this week. These are the consolidated
15 cases by Goodnight Midstream and Empire New Mexico
16 and the case numbers are as follows: 24123, 23614
17 through 17, 23775, 24018 through 24020, and 24025.

18 Mr. Hearing Officer, we transfer the
19 hearing over to you. Thank you. Just as a
20 reminder, Mr. Hearing Officer, today we do need to
21 end by 3:45.

22 HEARING OFFICER HARWOOD: Okay.
23 Thank you, Chairman Razatos. That was going to be
24 my first question, and only question.

25 All right. We're on the record, correct?

Examination by Commissioner Ampomah

6

1 THE REPORTER: Yes.

2 HEARING OFFICER HARWOOD: Great.

3 Mr. West, I'll remind you that you're
4 under oath, and I believe we left off with
5 questions. I'm sure that Dr. Ampomah has been up
6 all night -- no.

7 All right, so questions from Dr. Ampomah.

8 EXAMINATION OF WILLIAM WEST

9 BY COMMISSIONER AMPOMAH:

10 Q. Good morning, Mr. William. My name --
11 West.

12 A. Good morning.

13 Q. Okay. So I'm also William, professor, New
14 Mexico Tech. Thank you for your testimony.

15 So I just want to start by asking that:
16 You did not provide more -- any new testimony, but
17 it's more consulting all the consultants, findings,
18 and then the position of Empire in your testimony?

19 A. Could you repeat the question? I couldn't
20 understand it fully, the beginning.

21 Q. Okay. So I just want to know that -- or
22 just want to confirm that in your testimony, it's
23 just a consolidation of all the consultants'
24 findings that you are more or less putting it all
25 together to summarize Empire's case?

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Examination by Commissioner Ampomah

7

1 A. Yes, sir.

2 Q. So I will go through your direct
3 testimony, the self-affirmed statement. I'll go
4 through that, and then I'll come to the slides. So
5 I will try not to repeat as much as I can.

6 Okay. So I'm on page 2 of your direct
7 testimony. And some of them I'll try to read -- or
8 we can bring it up. That would be much, much
9 easier.

10 On item number 3, way down you describe
11 that the Grayburg -- the "Grayburg oil [and] gas and
12 water production caused an influx of San Andres
13 water [to] natural fractures as Grayburg reservoir
14 pressure dropped, with a corresponding
15 18.5 percent."

16 So that would be on the next page. So I'm
17 on page 3 right now.

18 COMMISSIONER AMPOMAH: Yeah, if you
19 can go down.

20 Yeah, right there. Thank you.

21 Q. So "corresponding 18 percent drop in the
22 San Andres reservoir pressure prior to water
23 injection in 1986. No withdrawals from the San
24 Andres in the immediate" --

25 So that portion, is it your testimony to

Page 7

1 the Commission that there were never any water
2 supply wells prior to the 1986 -- pressure
3 measurement prior to the water injection?

4 A. That is correct, within the bounds of the
5 EMSU -- the EMSU unit. I can't speak for -- I can
6 speak for within the boundary of the EMSU unit, but
7 I can't -- I don't know if there was something off
8 structure somewhere else a ways away.

9 Q. So you're just talking about the boundary
10 of the EMSU, but you don't have any evidence that
11 there were no water withdrawal wells outside your
12 boundary?

13 A. That is correct, sir.

14 Q. Now, so you can look at that statement and
15 task that statement more or less from the three. My
16 question to you is that -- XTO, let's say Chevron
17 operated this well for a very long time. Why is it
18 that now these discussions were found -- you know,
19 clearly found in some of these reports, especially
20 when the gas natural fractures contributed to the
21 influx?

22 A. I'm sorry, what was the question part of
23 it? I . . .

24 Q. So my question is that XTO or Chevron
25 operated this well for a very long time.

1 A. Correct.

2 Q. And throughout the testimonies that we've
3 listened to, you know, in the week two now, there
4 were a lot of emphasis that Chevron really did do a
5 thorough job. You know, that is from your experts.

6 So I'm asking you: Why was the influx of
7 water into the San Andres -- into the Grayburg as a
8 result of natural fractures not clearly stated in
9 any of the reports that have been reviewed by the
10 Commission?

11 A. I think there's a lot of those reports of
12 where -- you know, there's historical, you know,
13 plumes and different things that go up into it.
14 Mr. Lindsay's, Ph.D., describes it in there where
15 there's fractures and communication in between
16 there. So I think it's like page 1,001 through
17 1,004.

18 And then also when you get down the
19 formation of the AGU and those documents that's been
20 into evidence, it shows -- you know, it describes
21 also the same plume things, the fractures, and the
22 communications between the San Andres and the
23 Grayburg. And then also the -- you know, the '96
24 NACE report, which is the corrosion report that has
25 a lot of stuff in there from Chevron where they

1 describe the barium sulfate problem of communicating
2 up through, that -- you know, those are all well
3 documented things that Chevron, you know, really
4 documented of the time Dr. Lindsay was there at the
5 formation of those fields, was the geologist on
6 staff. And so he's, you know, reviewed those cores
7 and, you know -- you know, had lots of fracture
8 studies on them.

9 Q. You know, I do know your position, you
10 know. If you listen to Dr. Lindsay's testimony, you
11 know, we went through the Love paper. And as you
12 say, Chevron recommended an influx to the well bore,
13 you know, an influx to the well bore. And they
14 described how that process more or less went about,
15 and that is one way -- you know, I'm not saying that
16 the fractures might not contribute, but through
17 other testimony -- yeah, I'm just looking for the
18 catchword, you know, the catch evidence, you know,
19 to prove that.

20 Now, let me ask you: Do you believe that
21 only one well, which is the well EMSU 679, showing
22 some evidence of fractures and then there was
23 another well all the way to the other side that also
24 had core -- I'm sure you know the one I'm talking
25 about?

1 A. Are you talking about the --

2 Q. Bell or something.

3 A. The one far left that goes deep down into
4 the San Andres?

5 Q. Yes. So that well did not have a lot of
6 fractures compared to that of the EMSU 679?

7 A. I can't say I remember -- I remember
8 fractures in both. And since then also,
9 Dr. Lindsay's looked at the R.R. Bell, which is the
10 other one that goes across there. And he originally
11 didn't do a fracture study on it because it wasn't
12 an oriented core to have the more in-depth fracture
13 study, but he's reviewed that core and the photos.
14 And you can see, you know, vertical fractures
15 through that, you know, transition zone of going
16 from the Grayburg down into the San Andres.

17 Q. Are you saying that the R.R. Bell also did
18 have extensive fractures that was presented to the
19 Commission by Dr. Lindsay?

20 A. It was not. He had not did (sic) it to
21 present to the Commission, but since then he has
22 reviewed it. And I've seen the photos, and I've
23 seen his interpretation of the fractures. And
24 there's fractures through there also.

25 Q. Yeah, but that was not presented to the

1 Commission?

2 A. That's true.

3 Q. What was presented to the Commission that
4 we all saw was the EMSU 679, you have fractures in
5 there.

6 Now, my question to you is: Based on your
7 extensive experience, do you normally just use one
8 data point to make a decision?

9 A. You can never use one data point to make a
10 decision.

11 Q. So that makes it also difficult for me to
12 really think about, let's say, one well having
13 fractures in there. And even if you look at the
14 R.R. Bell well, there wasn't much evidence shown to
15 the Commission that it was extensive fractures in
16 there. So the connectivity, you know, is not really
17 clear, right?

18 The connectivity is not really clear, so
19 that is why, you know, the Commission was asking
20 about the additional transformation work that
21 Chevron plans to -- that Empire plans to do to
22 really prove, let's say, some of these issues that
23 has been raised to the Commission.

24 Okay. How much emphasis do you put on
25 Dr. Buchwalter's modeling and his testimony?

1 A. It's a data point, right? So we're --
2 I'll refresh you on your previous question there a
3 little bit.

4 So we're looking at all the data points.
5 One thing we can look at the cores and say: Okay,
6 we see some fractures there, right? So that's one
7 potential thing. We look at the historical water
8 production and go, like, these -- this extra water
9 does not make sense, right? Why you would have this
10 extra water up structure, unless it's coming from
11 somewhere else, right? It just is not flowing past
12 all of these other wells and they're not producing
13 all of this water and then all of a sudden that one
14 structure you're producing water.

15 So you have these unexplained plumes that
16 are, you know, historically pretty well documented,
17 luckily. I mean, a lot of times you don't have this
18 past history in a field as what we do here.

19 So we've got those. And then we've got
20 the -- you know, also another proof is that whenever
21 you're forming the barium scale, that you have to
22 have the sulfate. You had the barium in the initial
23 Grayburg water, and then you had the sulfate that
24 could only come from the San Andres water.

25 If it was coming from the Goat Seep, it

1 doesn't have that sulfate. So you wouldn't form the
2 barium. And, you know, that's documented a few
3 places. And, you know, back to that Love paper of
4 it coming up from the bottom, just remember the
5 wellbore construction, you know, kind of indicates
6 it's coming from the very, very bottom. But you've
7 got 150 to 200-foot of shoe track of pure cement in
8 the bottom of the wellbore. And that's where all
9 of -- your cement's circulating up around. So
10 that's the most solid part of the well from
11 anything.

12 So you had to come through the perfs, and
13 so you have different perf zones now. You know,
14 whenever you're talking production, a lot of times
15 you're saying it's in the wellbore because that's
16 where it ends up. But it could have been coming
17 through, you know, the lower zone of the Grayburg,
18 and most of these are completed in more than one
19 zone in the Grayburg.

20 So when they're talking about the mixing
21 in the wellbore, well, it's coming through the
22 reservoir and it's mixing there. And that's where
23 you pressure temperature to be the right mixture to
24 really get that barium sulfate to form.

25 So -- make sure I don't get myself lost.

1 I have to come back to your -- your second question
2 on it. So there's -- I guess, repeat the next one.

3 Q. Yeah. So I was asking you a general
4 question before I start digging into it. So I was
5 asking you a general question that: How much
6 emphasis are you putting on the history matching
7 report, along with the water report that
8 Dr. Buchwalter presented to the Commission?

9 A. Yes. So you do extensive models, and
10 that's, you know, a very big part of your
11 background. I mean, when I was a young engineer, I
12 did start out wishing that I would be a reservoir
13 modeler and figured out that -- and doing eclipse
14 models and offshore reservoirs, or whatnot, to
15 reduce simulations, decided that wasn't for me.

16 But, you know -- so I think in model, you
17 try to predict, you know, what's going on in past
18 performance. I mean, models aren't great to
19 predicting future performance. You know, you're
20 trying to match historically.

21 So let's try to take it into context of
22 going like, okay, we put a model together, and then
23 we go: What do we got to play around with to make
24 it work, right? You got to do some adjustments.
25 You take some hard numbers, and, you know, the --

1 you know, we talked a lot about reservoir
2 characteristics down in the San Andres, but we
3 didn't really talk a huge amount in the Grayburg.
4 But there are cores and stuff in the core samples in
5 the Grayburg up there that you've got perms over
6 1,000. So you've got really, really high perms.

7 And like the Love paper says that you have
8 really high perm streaks, and that's seen as some of
9 the problems with the waterfloods in zone 1 and 2.
10 And so, you know, he adjusted his model that way.
11 And then you had to try to do a mass balance of
12 where the water's coming from.

13 And he couldn't get it to match, as he
14 says. And he had to poke some holes in through the
15 barrier between the San Andres and the Grayburg.
16 You know, so he adjusted, I think, like 99 cells out
17 of 35,000 to get these little breaks into the top,
18 and then he achieved a match.

19 So you take the model in context, and you
20 go like: Okay, can I explain that in the real
21 world? So that's when you start going back and
22 going like: Hey, Geology, you know, do we have any
23 cores going across there?

24 And they go: Okay, yeah.

25 Do you -- can you relook at this core

1 again and see if possibly there's fractures there?

2 And they go: Yeah, we see vertical
3 fractures that can happen through that barrier.

4 And then you look back at other historical
5 performance and go like: Is there spots in it that
6 historically, you know, made more water in areas and
7 see if it gives you insight to what may be going on
8 in the reservoir.

9 So I take Dr. Buchwalter's in that
10 context, and I do respect him as a modeler. I mean,
11 he built the software, and things. He's by far past
12 my abilities as a modeler, so -- and while you could
13 always make a model better and, you know, there is
14 time constraints to build the, you know, the model,
15 that he could have put perfs in, he could have did
16 the, you know, different pieces of it, but he was on
17 a tight time strain. And as you can probably
18 appreciate, a model of that size takes a long time
19 to put together and build.

20 So I think it gives a good context of
21 clues into what may be going on into the reservoir.

22 Q. Thank you for the explanation. And then
23 also clarifying that he more or less adjusted for
24 the 99 cells out of the total cells?

25 A. Yeah, like 99 of them out of like 34,000.

1 Q. 34,000?

2 A. On that -- and what we're talking there is
3 on that horizontal permeability, right? Between
4 the -- you know, between the layers of the Grayburg
5 and the San Andres.

6 Q. Well, so I did not hear in his testimony,
7 a part that was -- I thought that he more or less
8 applied the same vertical permeability. You know,
9 I'll give you when you say that the Grayburg do have
10 higher permeabilities so probably 5 millidarcy that
11 he used in that range more or less makes sense.

12 Now, the problem that I had was putting a
13 Kv of 100 millidarcy before he was able to get the
14 movement of the water from the San Andres to the
15 Grayburg.

16 A. That's only in a few cells.

17 Q. Yeah, it was not -- during his testimony,
18 I don't think he made mention of -- I just tried to
19 create a permeability streak. He just said, you
20 know, "I use Kv over 100 straight up." You know, I
21 don't think it was clear in his testimony that it
22 was just on a few cells, honestly.

23 A. I do agree with you, that he wasn't very
24 clear in his testimony that that's what he did. But
25 we could pull up, you know, the -- you know, the

1 models in the evidence, and those layers are there.
2 And you can see if -- you know, they pulled up that
3 one summary table that shows the higher perm, the
4 vertical things, and then it had your -- you know,
5 your vertical permeabilities. And he pretty much
6 had 1 millidarcy through all the Grayburg ones. And
7 then for the layer in between the Grayburg and
8 San Andres, he had "varies."

9 And the reason being, most of those are 0
10 except for where he had those, you know, high perm
11 streaks to get the water to match.

12 Q. During the cross by Mr. Rankin -- you
13 know, when I saw the modeling, I was like, "Wow,
14 this is going to be awesome," until I saw it cross
15 going back and forth.

16 So it was on the screen, the parameters --
17 especially the permeabilities that way -- utilizing
18 that model for the San Andres specifically to prove
19 that there was a movement. So there is evidence
20 there that the Commission can look at and then also
21 take into consideration what you are telling us
22 today. We do not have the models. All that we have
23 is the testimony that was more or less provided to
24 the Commission.

25 A. Yes, I understand.

1 Q. Now, so on the same -- on your page 3, you
2 talked about -- page 3 of your direct, and you
3 highlighted that more or less in red. So, "EMSU-660
4 pumped 3 barrels oil and 1057 barrels water on
5 January 10, 2006 from the San Andres interval."

6 Now, my question to you is that: This
7 means that the ROZ can coexist with water injection?

8 A. I think this is probably indicating up
9 where you're in that transition zone and you have
10 those barrels to be able to flow, right? And so
11 that's -- you know, quickly flushed out from a
12 transition zone, if you add barrels -- you know,
13 water coming through there in through a ROZ. I
14 don't think -- you're asking if it can coexist as an
15 injection zone or as a disposal zone?

16 Q. Yeah. So you do have a well drilled 2006
17 into the San Andres. And then from your testimony,
18 you're saying that it produced some amount of oil.

19 If we can bring that up so can you see the
20 entire statement, page 3 of the direct testimony of
21 Mr. William West.

22 A. Yeah, correct. Those are those ones that
23 are very top of the structure. And they would have
24 to --

25 COMMISSIONER AMPOMAH: Can you go

1 down? Yeah, right there, the highlighted red,
2 um-hmm.

3 A. And if you -- in my PowerPoint slides that
4 had the cross section and those are those two very
5 top wells, I don't know if you remember that?

6 Q. Um-hmm.

7 A. To where those are the peak. So you
8 anticipate that being the residual part of the
9 transition zone that would be left as being in the
10 top of the structure where you have closure, right?
11 So you'd have the ROZ coming down, and things, and
12 you -- you're able to have a little bit higher
13 saturations, and they tested oil from there.

14 So it's telling you where they both go
15 over from the ROZ to that transition just a little
16 bit. That one. Now, they weren't great wells, but
17 it did, you know -- you know, confirm that you do
18 have hydrocarbons there that are able to flow.

19 Q. Yeah. So what I was trying to understand
20 here is that, let's say this well was completed in
21 the San Andres. Irrespective of the location, it
22 was completed in the San Andres?

23 A. Yes, sir.

24 Q. And tested about three barrels of oil?

25 A. Yes, sir.

1 Q. And even at that time, there has been some
2 amount of water injection into the San Andres. Is
3 that a fair statement?

4 A. Some. I mean, if we went back on that
5 cumulative -- as of 2006, and especially the
6 cumulative part of it, as you are pretty -- the
7 San Andres is pretty drawn down.

8 Q. Drawn down?

9 A. So I think it would be -- that injection
10 you'd be filling up, and you wouldn't necessarily be
11 pushing anything in the area of where this --
12 because this is high on structure right at the peak.

13 Q. Okay.

14 A. And so I wouldn't anticipate you'll flush
15 that off at that point in time. Now, I would be
16 worried about it now a little bit more, you know. I
17 mean, the high structure right now is still kind
18 of -- I'd say a little bit safer because there
19 really hasn't been as much disposal up there as you
20 get off to the flank. I mean, that's where all the
21 permits kind of surround this area.

22 Q. So let me put that question in another
23 context. Can CO2 EOR to produce the ROZ, coexist
24 with water injection, commercial water injection in
25 the San Andres?

1 A. No.

2 Q. Can you explain that?

3 A. So if you're -- you got commercial
4 injection going into the San Andres, you're raising
5 the reservoir pressure of it by, you know, flooding
6 it out. And then -- I don't know where you would
7 put the -- I mean, commercial injection in the
8 San Andres could happen, you know, if you went a
9 couple miles down-dip, right, and you got off
10 structure long enough.

11 So that would be a choice if you could
12 get, you know, two miles away from the structure and
13 then it's down-dip, then it could coexist there.
14 But you could not develop the ROZ at the same time
15 as it's going into the structure of where you're
16 going to develop the ROZ.

17 Q. So you're saying that at least it has to
18 be two miles away from the structure to even
19 consider a coexistence of it?

20 A. Yes.

21 Q. Okay.

22 A. You need some distance, right? So then
23 you have that area that you could pump those volumes
24 in, and things, and you're not -- you're far enough
25 out that the pressure is going to be a minimal

1 impact or maybe you're just, you know, pushing a
2 little bit of, you know, bottom water leg water up.

3 Q. And was any analysis done to come up with
4 the two miles? Because Mr. Wheeler also talked
5 about it.

6 A. Yes. And the two miles, you know, that's
7 the -- you know, we've talked two, we talked, you
8 know, five in all of this, but, you know, at least a
9 minimum of, you know, two miles I think is a
10 reasonable distance that you could get away. I
11 mean, it's a -- it's a large reservoir.

12 Q. Okay. You know, so I'm going back now --
13 switching back to exhibits, and I don't know if you
14 have it in front of you. But on I-6, you made a
15 comment that caught my eye. I-6 you made a comment
16 that caught my eye.

17 COMMISSIONER AMPOMAH: Yeah, right
18 there.

19 Q. You're saying, "NMOCD recognized Grayburg
20 & San Andres as one oil producing zone."

21 Can you comment on that?

22 A. It's recognized as a -- you know, it's
23 part of the unit, right? So, I mean, it's -- which
24 part of the comment do you --

25 Q. Yeah, so is there any evidence that NMOCD

1 is saying the San Andres is oil bearing zone, oil
2 bearing reservoir?

3 A. The -- I think definitely around the area
4 to the north. To the south, it's definitely an oil
5 bearing zone, right? And it's an oil bearing zone
6 in here, and it was part of -- and NMOCD is
7 recognizing it as this is part of the unit that --
8 to produce the oil out of here. And it -- I think
9 there's some comments in the unit agreement, you
10 know, to be able to provide for all those recoveries
11 of the hydrocarbons.

12 Q. So when you make that statement, you're
13 referring to, let's say, analogous fields, it's not
14 necessarily the EMSU, but other areas where the
15 San Andres is producing oil?

16 A. Yes. I mean, recognizing it as the unit,
17 but then also that those are -- in the area,
18 definitely the San Andres, is recognized as an oil
19 producing zone. The unit just directly to the north
20 produces out of the San Andres, right? The one that
21 adjoins the EMSU-B, the North Monument field. And
22 then you got one that's directly to the, you know,
23 east that we've shown there that produces oil out of
24 it.

25 So it's a well recognized -- I mean, it's

1 what -- I think in the Permian Basin before the last
2 boom, it was the number two reservoir producer out
3 of the Permian Basin. So it's a prolific and well
4 recognized oil producing zone.

5 Q. Okay. So then definitely there is an
6 existence of oil samples -- or let's say some oil
7 analysis that has been done in the Permian Basin for
8 the San Andres oil that you are aware of?

9 A. Yes, I'm sure there's lots of ones -- and
10 one that we pulled in our lot was from the Seminole
11 field --

12 Q. From the Seminole field?

13 A. Right.

14 -- to help to put together our estimates
15 for the -- you know, what CO2 would do here.
16 Because it was -- it's a great field, as Mr. Melzer
17 talked about, and things, that -- you know, I think
18 that Chevron has put a lot of work into gathering,
19 you know, data of different cores and different
20 things. And it's a highly successful CO2 flood.

21 Q. So let's talk about the pressures a little
22 bit. So if we can go to Exhibit I-4.

23 And, you know, I like this slide so much,
24 but let's talk about it. So you are using the
25 pressure profile to prove that there is a reduction

1 in the original pressure in the San Andres, that
2 there has been some reduction of about 282-psi
3 reduction, meaning there has been some depletion
4 from that. Okay.

5 So my question to you is that: The first
6 one is -- what is the source of the pressure?

7 A. These are RFT pressures. So the source of
8 the pressure of -- kind of curved to the left coming
9 down are RFT pressures in the 211. The source of
10 the pressure over to the right is where we took the
11 initial pressure from 1939 and extrapolated down on
12 that .386, which is -- actually ended up being
13 confirmed with the piece that was -- that bottomhole
14 pressure from 1959, 1960, right, it lined up. So
15 that line over the right seems to be a pretty decent
16 original pressure.

17 And then you took the RFTs -- you know,
18 which I'm sure you're familiar with the RFT. I
19 don't know if everyone else in here is, but
20 basically you're -- when you're drilling, you're,
21 you know, putting a cupping mechanism basically
22 against the reservoir. You're vacating that space,
23 and, you know, it's sealing up against the rock and
24 you're taking that pressure in that individual space
25 because you got heavier fluid around you. And you

1 record those pressures. And so these are the
2 pressure points that were taken in 1986.

3 Q. So within the San Andres -- so this one
4 was taken in 1986 -- were there any other pressures
5 taken in the San Andres that you are aware of?

6 A. No, unfortunately not.

7 Q. Now, you assumed hydrostatic pressure in
8 the San Andres 0.433 or 46, you know, you made that
9 clear in there as the gradient to calculate your
10 initial pressure that should have been in the San
11 Andres.

12 A. The .386 is what we used. And it's so --
13 you know, so this the corrected one where we had the
14 25- -- the positive 250 to the negative 250. This
15 is the one with the negative 250, which is accurate
16 and correct. And that's the .386 gradient. The
17 other one was like the .43 or 2, I can't remember
18 exactly.

19 Q. Okay. Now, why did you utilize the 0.386,
20 though?

21 A. Because it was -- that's where the
22 pressure was taken at that point. And you would
23 assume that, you know, the -- the reservoir up and
24 down, maybe it's -- was a slightly naturally
25 under-pressured reservoir, right? And so -- because

1 that's what it would be, right? Because it's a
2 little bit under a water gradient. And so -- and so
3 not to, you know, swap it to a full -- I mean, if we
4 swapped to a full water gradient from that negative
5 250 measuring point and come down, it would be much
6 higher, that we would be trying to -- say, in
7 San Andres. You could have made that point and made
8 it look like more, you know, depletion. But we, you
9 know, thought that was a conservative value to take
10 the 386.

11 And then luckily, which is kind of a cool
12 and nice thing, is the, you know, pressure point
13 from 1959 that was taken at San Andres almost lines
14 up exactly with this estimate that was brought into
15 evidence yesterday.

16 Q. So based on the back-and-forth cross,
17 you're saying that it was established that in 1955,
18 the pressure gradient was very close to what you
19 used in your, let's say, initial calculation for the
20 San Andres?

21 A. Yes, sir. In 1959 that pressure --

22 Q. '59?

23 A. -- that point there, or whatnot, I mean,
24 it's nice that it lined up and there was no -- you
25 know, that's kind of before there was really a SWD

1 injection there. So it didn't, you know -- you
2 know, it's nice that the points line up, actually.

3 Q. Yeah. You know, when I saw this, I
4 thought -- probably then I think probably the
5 previous slide where I thought that you were
6 assuming that is a normally fracture -- normally --
7 a normal fracture regime. So I thought -- I was
8 going to ask, okay: What about if it was
9 under-pressured? But it sounds like you took a
10 conservative approach?

11 A. Um-hmm.

12 Q. Okay. I appreciate that. Okay.

13 A. Yes, sir.

14 Q. Okay. Wow.

15 Now, is there any other mechanism, you
16 know, aside withdrawal or, let's say, influx of the
17 water from the San Andres into the Grayburg that
18 could have caused the reduction in the pressure? Is
19 there any reservoir engineer mechanism that could
20 have caused that?

21 A. Well, to -- I think there is, right?
22 Anything that would be -- that you have to have some
23 removal of fluids, right? So if we're -- you know,
24 in this point in 1986, there really -- and before
25 that, you know, especially inside of where the EMSU

1 is, there really hasn't been any withdrawal from the
2 San Andres. Because this is primary stuff that --
3 the good stuff was always up in the Grayburg, right?
4 And that was, you know, where everyone was focusing
5 and staying in.

6 So there was no production. We don't know
7 of any known production down below, no withdrawals
8 for water. But there was a removal -- there was a
9 reduction in pressure from the San Andres. And so
10 it had to be produced, right, somewhere.

11 I don't -- I mean, we're clearly -- I
12 can't think of any other spot that it could be
13 coming up from outside of production that happened
14 in the area. So your production in the area that
15 was the closest reservoir would be the Grayburg.

16 Q. Then let me ask you: So how do you assess
17 the boundary condition for the San Andres and the
18 EMSU?

19 A. Which boundary are you talking about?

20 Q. The external boundary.

21 A. The --

22 Q. Is it -- is it closed? Or is it open? Is
23 it semi closed?

24 A. I have to refer to my geologist on there
25 and the pieces of it. I'm unsure. I don't know if

1 you have enough -- you know, so if you -- you know,
2 whenever -- let's talk the Grayburg real quick, and
3 then we'll just have to talk down through the
4 San Andres.

5 Q. Okay.

6 A. But the Grayburg, you know, it's -- you
7 know, you've got a structure, right? It's a little
8 bit to the top. And then to the east, you -- it
9 stratigraphically kind of pinches out. The
10 reservoir rock deteriorates, and that kind of sets
11 it.

12 And then you're not really bound back to
13 the west, right? You kind of -- we're up on the
14 Central Basin Platform here, and so we're sitting
15 off that shelf. And then all of a sudden you go off
16 the western bounds of the -- where the EMSU is, you
17 really drop off into the Delaware Basin, right, is
18 what is happening.

19 Q. Um-hmm.

20 A. You drop like 2-, 3,000-foot, if I --
21 don't quote me on that -- if I remember right, but
22 you drop steeply, and then you get into the Delaware
23 Basin. And so you're really unbounded on the
24 southern side of -- you know, of the reservoir for
25 sure.

1 Now, I don't know whenever you take that
2 San Andres exactly when you go to the east.

3 Q. Um-hmm.

4 A. Because you don't really have enough
5 penetrations deep enough to say whether you got the
6 same strat, you know, pinch out happening. It's
7 hard to say if you're in communication. I just
8 don't -- we just -- I just don't have enough data.

9 You could -- we could think through
10 different ideas and go like: If it happened in the
11 Grayburg, these are all, you know, at the same time.
12 Maybe it's similar. Maybe it's not.

13 But I can't tell you that I have evidence
14 one way or another to what that boundary condition
15 is to the east.

16 Q. Okay. I'm curious to see what Larry Lake
17 will talk about, whether, you know, there's any
18 other way to explain why pressure will reduce, you
19 know, to this magnitude. And if you will consider
20 it, because I thought you were using normal
21 pressure. You even used under-pressure?

22 A. Yes, sir.

23 Q. So I'm looking forward to see what
24 Goodnight will say about that. Okay?

25 A. Um-hmm.

1 Q. You know, you showed the induction profile
2 throughout the years. And then you also match that
3 to, let's say, when Goodnight -- if we allow
4 Goodnight to continue injection?

5 A. Yes, that cumulative plot. Yeah, there it
6 is.

7 Q. Yeah, right there. Right there.

8 A. Down one?

9 Q. Yeah, right there. Now, I want to ask
10 you: If you look at the -- at the others, right,
11 which is about 25,000 barrels of water per day
12 injection going on there, you know, at the bottom
13 you see, let's say, 2023, 2025, the average, you can
14 see probably the -- let's say somewhere around
15 25,000?

16 A. For which time period?

17 Q. So I'm looking at the average right now,
18 the plot on the -- the figure on the screen. I'm
19 looking at the blue . . .

20 A. So the blue is from everyone else.

21 Q. Exactly.

22 A. The orange would be the Goodnight.

23 Q. Yeah. So what if -- during the transition
24 period -- you know, assuming the Commission says
25 that, okay, Empire, you can go ahead and do, you

1 know, your current authorization work to really
2 prove that the ROZ is recoverable. Do you believe
3 that the Commission can at least, you know, grant
4 Goodnight's injection to about 25,000? And would
5 that significantly impact your operations?

6 A. I think definitely in the areas of where
7 it's, you know, happening, especially if it's
8 concentrated, it would. Now, you know, from -- you
9 know, as far as our stance, you know, from upper
10 management, or whatever, to proceed forth -- and
11 he's right to do that, Mr. Mulacek.

12 I mean, he -- before I started with the
13 company, which is before I knew about any of this
14 stuff, you know, in my interviews with him, he was
15 -- he talked about this project. I mean, he's
16 firmly believed into it. This is the big project
17 that the company firmly believes in, and he wants to
18 proceed with it.

19 Now, you know, we'd have to talk through
20 terms and different pieces of it is (sic), but he
21 doesn't want any injection going in within a
22 two-mile boundary of the EMSU to proceed because, I
23 mean, this guy goes big. I mean, he's, you know,
24 drilled the largest -- the number one and number two
25 Guinness Book of world record gas finds, you know,

1 in the world. And he -- you know, he doesn't know
2 any other way to go big.

3 And so whenever you go to do something out
4 here, he wants to lay the pipeline. He wants to,
5 you know, go and do the injection. He doesn't want
6 to do a huff and puff. He doesn't want to do
7 different things. He wants to produce the minerals
8 out here.

9 And so we -- to do -- I mean, I wouldn't
10 want to risk, you know, the reservoir and the damage
11 of a high injection rate into it.

12 Now, maybe we could talk something of the
13 small amounts of historical -- you know, that was --
14 you know, that predated everything. But I -- I'm
15 just letting you know where his stance is right now,
16 is that -- I mean, he wants that two-mile buffer
17 around there and everything to be shut down to be
18 able to proceed. And he's ready to.

19 Q. Yeah. So, you know, when Commission
20 counsel was going back and forth with Mr. Wheeler,
21 you know, he talked about: Should the Commission
22 consider that -- the permit that was granted
23 Goodnight was by the government, you know, in our
24 analysis.

25 So what I'm asking you is: During the

1 Pilot's project time, you know, to transition
2 Goodnight out of the EMSU, at least can they -- can
3 the Commission consider reduction -- extreme
4 reduction in injection volumes while they more or
5 less move two miles away, you know, because -- I
6 mean, there's also extensive investment that is in
7 there. So my question is: How much compromise is
8 Empire going to make here?

9 A. So what I would ask there is, that if
10 we're having injection in there, is that creating
11 waste and flooding out a resource, you know, and
12 protecting that? I mean, that's -- and we were
13 going to -- you know, to develop it, and things.
14 But if there's injection going on every day, we're
15 wasting in flooding out hydrocarbon resource.

16 Q. So then why is Empire's opposition for
17 Commission to strike all injection wells in the
18 San Andres in the EMSU?

19 A. It is. It is.

20 Q. Including your well?

21 A. Yes, absolutely.

22 Q. Is that part of the case here?

23 A. I more than happily will give it back to
24 you.

25 Q. Okay.

1 A. That's not a problem. We're not even
2 injecting in it, right?

3 Q. Okay. So there's no other entity
4 injecting into the EMSU, aside Goodnight and
5 probably Empire on a smaller note?

6 A. I know that the parties that's all
7 mentioned here. I can't remember exactly where Rice
8 and Permian's, you know, wells are, but they're
9 right there on the boundary of it. There's some
10 inside, you know.

11 Q. So Mr. Wheeler touched on this a little
12 bit. So has there been a discussion with these
13 parties to move two miles away from, let's say, the
14 EMSU that you are aware of?

15 A. I'd have to say, I haven't been a part of
16 the discussions, or whatnot. I know that the
17 lawyers talked, or whatnot. I know that there was
18 conversations and discussions to have those
19 discussions. I wasn't a part of them, so I can't
20 speak to them.

21 Q. So let's go to the next slide where we're
22 showing the withdrawal over time.

23 COMMISSIONER AMPOMAH: Yeah, right
24 there.

25 Q. So can you tell the Commission on the red

1 section how much pressure are we building up? I
2 mean, you can reference to Dr. Buchwalter's
3 testimony, and it should be okay.

4 A. You know, I think, you know, that that
5 point -- and I don't remember his exact testimony,
6 but, you know, he showed in some of that testimony
7 of that pressure going up once you hit that point.

8 And ironically, I mean, I did this totally
9 independent, and I think this is an oversimplistic
10 reservoir model, but with that high injection rate
11 and that going up that quick, you're going up --
12 especially definitely the closer you are to the
13 wellbores, are going to have a higher pressure. And
14 naturally that -- you know, that's going to have
15 a -- it's going to affect -- it's going to go out
16 radial in some means to pressure, but it's hard to
17 speak to the exact increase of pressure.

18 I would have to probably defer to
19 Mr. Buchwalter's model as being, you know, the best
20 anticipation that we could of what the pressure
21 would be going forward.

22 Q. You know, I've always had some issues or
23 concern about how much water that needs to be
24 withdrawn before even the ROZ production can become
25 commercial. Looking at this profile, do you see

1 that as a concern to you?

2 A. You know, so I think to make the project
3 proper, I think we need to flood out some of the top
4 zones, in zone 1 and zone 2. I think it's some of
5 the problems with the waterflooding, and things, and
6 just build that barrier to kind of keep your CO2
7 down below, and things.

8 I mean, zone 3, zone 4 -- you know, 3, 4,
9 5, and 6 in the Grayburg is, you know, also the big
10 chunk that we need to recover with CO2. And you
11 kind of have that -- a little bit more of a perm
12 barrier there anyway. So a good place to take that
13 water out when you withdraw it is to put it in to
14 fill up those zones 1 and 2.

15 Q. Okay. So that is -- that brings up
16 another question. So you are saying that you are --
17 you're going to withdraw the water from the
18 San Andres and put it some layers in the Grayburg?

19 A. Yes, sir.

20 Q. Will that not also cause waste to the
21 potential recoverable oil that would be in there?

22 A. I mean, you're still going to, you know,
23 produce -- I mean, so a lot of, you know, zone 1 and
24 zone 2, you've got a lot out already. Now it's hard
25 to really get -- I mean, those were the sweet -- you

1 know, I mean, those had the most permeability and,
2 you know, the biggest, largest primary.

3 Now, they've created issues, and Love's
4 paper talks about it, and different things, because
5 of those super high permeability streaks, that it's
6 hard to get into the smaller pore throats and the
7 places to get the waterflood. Now, you could CO2 it
8 also, but it's got such large -- you know, high
9 permeabilities, and different things, it probably --
10 your recovery might not be as good in those zones.

11 And right now you're at 99-plus percent
12 water cut on everything. So you strip things out
13 pretty good. And so to -- you wouldn't waste it,
14 right? I mean, the water that's -- you know, at
15 least traditionally that was in the San Andres was,
16 you know, used for the waterflood up above.

17 So I wouldn't anticipate any more than
18 what's historically being done as long as it's the
19 original water. To put it back up in the waterflood
20 is not going to create waste. Worst case at some
21 point in time later in the future you might reserve
22 it, is that you could take that water back out and
23 dewater it and maybe switch your CO2 up and change
24 in different zones.

25 Q. So does Empire -- do you have well

1 talked-out plans for the execution of a CO2 project?

2 A. We've had a lot of discussions. Now,
3 we've had to divert a lot to work on this project.
4 I mean, we're, you know, a small company.

5 Now, I mean, whenever this happened, I
6 mean, literally, I hired on like 11 employees
7 whenever I came on May or June 1. Okay? And before
8 that, you know, Mr. Mulacek, and things, talked
9 about this project, wanted to do this project.

10 And then, you know, I was just -- we were
11 trying to kick off a drilling project in North
12 Dakota, a bunch of different things. We make a trip
13 out to New Mexico to go see the asset, and we see
14 the big tanks, or whatever. And he's like, "Oh, my
15 gosh."

16 And so next thing you know, in the month
17 of August -- and we had all this paperwork due in
18 September -- I hired like over 11 employees. Okay?
19 Because we're like -- this is like -- the big plans
20 of the company is to develop. It's too -- go hand
21 in hand with the State of New Mexico, put together
22 this big large CO2 flood, recover these resources.
23 Because he sees it as a -- one of the largest ones
24 in the world. Let's partner up. Let's do this.

25 And that's -- you know, that's what his

1 great plan is. And so that's why he's like: You
2 know what, no matter what, we've got to speed this
3 up into -- you know, get this stopped whatever it
4 takes.

5 Because, you know, he wants to do this.
6 This is a big project for the State of New Mexico.

7 Q. Thank you for that. So has the current
8 injection in the San Andres in any way impacted your
9 waterflood in the Grayburg?

10 A. It's a -- you know, it's a big waterflood.
11 It comes back in. I mean, so kind of the way the
12 whole water flows, it -- you end up in -- I mean,
13 you've got two big 10,000-barrel tanks of water
14 where the produced water comes into and then it goes
15 into another set of two, and so you're -- depending
16 on a lot of well tests.

17 And so you can -- you know, like we showed
18 some things. I do think there's the start of
19 indications of the water salinity going up. You
20 know, we -- you know, why you got to look over the
21 right time periods, and things. We have seen some
22 lowering of, you know, production. And it's -- but
23 it's such a massive thing that by the time you
24 really see, you know, steep, sharp declines, it's
25 over. The damage has already been done.

1 But I do think that the -- you know, the
2 changes of the water chemistry is a good indication,
3 especially when that's right in the immediate area.
4 I do believe that, you know, when you do see
5 indications of, you know, oil production falling off
6 from the whole entire unit, that it's having an
7 effect.

8 And, you know, it gets scary whenever you
9 have such a difference in water chemistry between
10 the two fluids that -- it's going to happen in the
11 reservoir way before it shows up to the wellbore.

12 Q. Yesterday during the cross, Mr. Rankin
13 showed you the oil production profile for the
14 Grayburg. Do you remember that?

15 A. Yes, sir.

16 Q. And I don't know if we can bring that up,
17 because I want to compare that to the table that you
18 provided to the Commission, you know, the amount of
19 oil and then the amount of injection and then the
20 amount of water that has been injected. You know, I
21 want that slide to really talk about -- to use that
22 to -- for us to talk about the impact of the
23 injection on the waterflood.

24 So I don't know if we can see the first
25 day production profile. I want you to look at that

1 production profile and explain to the Commission if
2 this is not a typical primary, secondary type of
3 profile you will see in an actual reservoir. And if
4 you remember that being a part, you can speak to
5 that.

6 A. I remember there's two of them, and I
7 don't know if you're talking about the complete
8 historical one or you're talking about the one that
9 was more like the last year or two.

10 Q. No, the complete. The complete one.

11 A. The complete one?

12 Q. The complete one.

13 A. I'll let her pull it up. I can speak to
14 it --

15 Q. Okay.

16 A. -- with what I would anticipate, right?
17 But I would anticipate -- you know, so you're, you
18 know, low on production and oil, right? And then
19 you start the injection, and then you get the push
20 and you come way up, right?

21 Now, as you continue to work the
22 waterflood and things, you expect that -- after you
23 get that initial breakthrough, that your water would
24 come up and things, and your oil production will
25 start to taper down, right? But with that, though,

1 you're still getting a pretty good sweep of the
2 waterflood, right? It's giving you good barrels.

3 There you go.

4 So, yeah. So as you turn on the
5 waterflood in '87, '89, right, you get that good
6 push, and you come up. And then there's probably --
7 let's be honest, there's -- this doesn't show it,
8 but you're drilling wells, and things, right? And
9 the thing of it is, you're actively developing, you
10 know, it -- which you got the dropoff before that
11 because you're probably -- they probably did
12 conversions, so it's the same, right? That's
13 probably where the barrels come off.

14 And so then you go up and then you start
15 coming down a general slide. I mean, I think, you
16 know, '01, '02, '03, in that area, if I had to
17 guess, that little bump there was either they did
18 some, you know, conformance work -- I think, if I
19 remember from Mr. Lindsay, they did some conformance
20 work. And I think that's maybe, you know, around
21 the context of some of the Love paper, and things.
22 I can't remember the exact years. But you did some
23 work, it looks like, right? You did some
24 improvements and then you came off.

25 And it looks like again in, you know, '06,

1 '07, I'm guessing we did some work there. Oh,
2 actually, you know, that's when XTO bought it,
3 roughly in that timeframe. I think it was 2004,
4 2006. I don't -- don't hold me to it. But it's in
5 that timeframe.

6 So -- and if I remember correctly, there
7 was a few wells that were drilled. So you flatten
8 off again because there's a few wells drilled,
9 right?

10 And then you're, you know, continuing down
11 what I would say is, you know, your later -- near
12 later life, you know, waterflood. And it's a fairly
13 consistent turn. And then it continued of, you
14 know, flattens out a little bit more toward the end,
15 but that's kind of because you haven't really done a
16 whole lot of conformance work, right? And so those
17 barrels and how many pore volumes that you've passed
18 by there, and things, you're not really grabbing a
19 whole lot of new barrels, but you're not losing a
20 bunch because you're just, you know, really skimming
21 a lot of oil off the water.

22 So you flatten out more at the last -- the
23 later part of the flood. And you're flat there
24 unless you do conformance work, you do something to
25 pick it back up.

1 And, you know, from -- you know, other
2 than the last conformance work, really, in this
3 flood was done more around 2000, 2001, '2, early on
4 there. The XTO was really, you know, a drilling
5 thing. I know that they did one or two horizontals,
6 you know, that they laid down that they sidetracked
7 out of the wells. I think that's what that
8 flattening is.

9 But you're -- there just hasn't been a lot
10 of work done to make an improvement. So you just --
11 on that slide, and then naturally, you get that
12 hyperbolic and it kind of flattens out a little bit
13 more.

14 Q. Yeah, so we're engineers, right? So as
15 you look at this, I mean, is it easy to say that
16 there is some kind of excessive water coming from --
17 some amount of water coming from the San Andres to
18 really impact oil production in the Grayburg, just
19 looking at the production history?

20 A. Oh, on this scale, I mean, it's hard to
21 say, right? I mean, you know, if you look way back
22 in history, you knew that there was water coming
23 there from the excessive production, historical
24 production before the flood.

25 And so I think it's a -- could be a safe

1 assumption that probably whatever those mechanisms
2 were that, you know, created that water early, you
3 know, before flooding, or any of that stuff, that
4 they're probably still open. And those avenues are
5 still connecting the San Andres into the Grayburg.

6 Now, any extra water that is not helping
7 your flood, or anything, is going to be impactful,
8 right? It costs more chemicals. It costs more
9 electricity and pumps, everything to move it all
10 around, so you're cycling everything.

11 Now, you -- to quantify the volume part of
12 it, you know, it's -- that's really hard to say how
13 much water is coming up.

14 Q. So you're saying that -- assuming we are
15 not able to establish that there is any impact of
16 the injection going into the San Andres on the
17 Grayburg, you are saying that you do have water
18 supply wells that might be contaminated and so more
19 or less cause the corrosion problems in the
20 Grayburg?

21 A. Yes, sir. Yeah, we definitely have that
22 part, which is a really direct, you know -- I mean,
23 you're pulling water out of there and putting it in.
24 No matter what, you're affecting that chemistry.
25 And, you know, the commissioner here was talking

1 about if you could chemically treat it, or whenever,
2 and especially when you talk barium and strontium,
3 you really wouldn't want to put those chemicals into
4 the formation because you're going to cause damage.
5 A lot of those chemicals to treat and to stop those,
6 you know, forever scales, that kind of -- we call
7 them barium sulfate and strontium sulfate, you know,
8 because it just let's you do mechanical means.

9 You can treat the wellbore, but you can't
10 really treat the reservoir to stop those.

11 Q. So I think we are -- we are agreeing that
12 it's so difficult to really tell, just looking at
13 the production profile, if there's any adverse
14 effect, you know, from the water from the
15 San Andres, but we've talked about corrosion too.

16 Can we go to the slide where you have the
17 production and then the injection in a table form?
18 Yeah, that was your testimony.

19 A. I know what you're talking about.

20 Q. Yeah.

21 A. Yeah, you're talking about that had the --
22 I think the nine months?

23 Q. Yes. Yes, in a table form. And you
24 know . . .

25 MS. HARDY: Is it in the actual

1 testimony or is in an exhibit, do you know?

2 COMMISSIONER AMPOMAH: It should
3 be -- it should be a table with the --

4 Q. Mr. West, you know the one I'm talking
5 about? Yeah.

6 A. I know which one you're talking about, but
7 I can't --

8 Q. Okay.

9 A. Where it's located in all of these
10 documents?

11 Q. Yeah, right on page --

12 A. There it is.

13 Q. It should be I-18.

14 A. Yes.

15 Q. So let's go down. It should be a table,
16 so . . .

17 Page 106 of 118.

18 A. Yeah.

19 Q. Yeah, right there. And same on this one
20 too. You know, from engineering point of view, you
21 are injecting about -- let's say close to about
22 30,000 -- 70,000 barrels a day and someone is
23 producing that same amount.

24 So in terms of material balance, it's not
25 easy to say that there's any foreign water coming

1 into my reservoir.

2 A. Well, you know, as we established, it's
3 hard to say what has been coming in, right? You
4 can't tell where it's coming in.

5 And this is where we start to blend in the
6 piece of, you know, reservoir and production a
7 little bit. Because reservoir -- it's tough, right?
8 I mean, it's different volume, different things, you
9 know.

10 And as engineers, we -- you know,
11 especially when you start doing production, is
12 like -- you start to feel like: Is there a trend
13 starting? Because things happen slower in the
14 production world, I guess you would say, right? And
15 so you start to just try to: Am I seeing a dropoff
16 or not? Or am I seeing anything else, you know,
17 happening?

18 Now, there's no doubt that through all
19 this, you've got well work going on, and different
20 things. You might have an injector go down and MIT
21 you got to take care of and back up. So that may
22 change your injection up and down.

23 And you can have the same way on the, you
24 know, oil produced too. I think there's a lot of
25 factors going on. And so we can -- you know, we can

1 talk to -- and we can discuss going like: Maybe
2 there's something going on right now, right?

3 You -- it takes -- you know, only history
4 proves the truth, right? It's always tough to
5 predict. But you -- I think you see a trend. And
6 we -- you know, we didn't change any operations of
7 the field outside of your normal operations. But
8 you're trending, and it's hard to say where the
9 water's coming from.

10 I mean, you can kind of even look at
11 the -- which is kind of odd, right? If we just
12 looked at June and July, for whatever reason, it
13 swapped there. You know, we've got more water
14 produced and less water injected versus the first
15 two months. If we look up at November, December,
16 they're almost flip-flopped, so . . .

17 Q. Um-hmm.

18 A. You can start to say like, we're
19 producing, you know -- we're not injecting that
20 much, and we're getting more volumes out of water.
21 If we just looked at the water -- and I hadn't
22 really gone through and even looked at that until
23 us, you know, having this engineering discussion to
24 try to work through the data. So, yeah, I mean,
25 it's -- it's . . .

1 Q. But the volumes are fairly close to each
2 other because -- you know, let's say -- you could
3 have made a stronger case here assuming you are
4 injecting 70,000 and producing 100,000. I mean,
5 that is clear evidence that there's some kind of --
6 some foreign water coming into my reservoir.

7 A. Um-hmm.

8 Q. And this one is just pairing up, you know,
9 down. So looking at this, would you agree with me
10 that it's so difficult, you know, to establish that
11 there's -- there is some strong communication
12 between the San Andres and the Grayburg?

13 A. So from this production piece of evidence,
14 you can -- maybe be indications, right? I think the
15 historical water production before the flood as
16 unexplainable is pretty hard evidence that you had
17 communication, and then it -- and as it's documented
18 in, you know, different documents that you had that
19 part.

20 Now, how many barrels are coming from
21 which way right now? I don't know, right?

22 Q. But you -- so, you know, in
23 Dr. Buchwalter's modeling, he did not really check
24 the -- he just perforated everything. So, you know,
25 if you look at even where that water, that higher

1 production that we're showing, I mean, hasn't been
2 established, you know, in the hearing that we
3 perforated the oil zone, but we're still producing
4 significant amounts of water. I don't think it has
5 been established to the Commission on the
6 perforations or these higher volume water wells, you
7 know, to really lay that strong case that maybe XTO
8 or the operator then did not probably perforate into
9 the water zone in the Grayburg.

10 A. If you go high up on structure, you know,
11 so you're -- you know, you're where Mr. Lindsay's
12 document is about a negative 540 subsea --

13 Q. Okay.

14 A. -- water contact in the Grayburg. So I
15 can't quite get that water contact to the top of the
16 structure of where those high waters are. I mean,
17 you could cone up. You could do different things.
18 But all indications are, is that, you know, the
19 down-dip wells that are complete -- now, yes, some
20 are in the high zones, some in the low zones,
21 whichever way, they didn't see that large amount of
22 water.

23 So if my contact is lower down here, it's
24 really hard, especially early on, for the flood to
25 get those high volumes of water up at the top of the

1 structure.

2 Q. So, your justification is that the oil
3 water contact was well known --

4 A. Um-hmm.

5 Q. -- in the Grayburg? So there's no way the
6 oil pass into the water zone? Is that your
7 testimony?

8 A. Yes. You know, so you -- you know, so
9 there's two different timeframes of, you know, they
10 originally, you know, had a water contact in the
11 350s, a negative 350. And then, you know, after,
12 you know, more time and history and, you know, wells
13 that go down, or whatever, then, you know -- and
14 it's well documented in his Ph.D., Dr. Lindsay, he
15 moved it down to a negative 540 because you just
16 didn't have old enough, deep enough wells to
17 establish that.

18 And so you're water leg's a long ways
19 away. And if we're talking in -- let's say that
20 we're talking in the 1986 -- before '86, '87
21 timeframe, right, '81 is whenever a lot of those
22 plots are made of the water cumes. It's -- you
23 know, without looking at every individual, it's hard
24 to get that water, that high rate of water there
25 unless it's coming from another reservoir.

1 Q. Let's talk a little bit about a CO2, and
2 I'll wrap it up so we can continue. I do appreciate
3 the discussion. This has been really, really great
4 and enlightening too.

5 Now, let's talk about the CO2. So the
6 1,003-psi as the MMP --

7 A. Um-hmm.

8 Q. -- you're saying that is analogous to the
9 Seminole field?

10 A. Yes. From that Seminole paper.

11 Q. Yeah. Do you believe that your reservoir,
12 the EMSU now, is analogous to the Seminole field?

13 A. I believe -- I believe it's a good analogy
14 right now for close to being the same reservoir,
15 similar -- you know, you're in that 30 to 35 API
16 gravity oil, about the summer type temperatures, you
17 know, running 90, 100 degrees, it's about the same.
18 So I believe it's -- you know, it's what we can do
19 in the industry. It's a good analogy as what we can
20 get.

21 Q. But I thought from all of the testimony
22 that we've listened -- you know, EMSU unit is not
23 going to be more -- it's just unique because of the
24 high volumes of water that has been injected in
25 there. Does that impact the MMP in any way?

1 A. Let's think. I mean, you're the expert
2 more in the CO2 than I am, right? And you're the
3 reservoir expert, so let's talk -- let's talk this
4 through, right?

5 So, you know, the pressure is going to be
6 the pressure on the reservoir. And right now we're
7 in that 13- to 1500 pounds of pressure, right? And
8 then the oil is going to be the oil. The
9 characteristics of that is probably not going to
10 change.

11 So if it's contained in there, that 1300,
12 1500, I mean -- I think that's reasonable assumption
13 that you're going to be somewhere in that range.

14 Q. Okay. A reasonable assumption in that
15 range. Okay. Now, so you use the -- in the
16 modeling CO2 screen tool for your economic analysis?

17 A. Yes, sir.

18 Q. Does that have an ROZ piece in there?

19 A. So it's an economic model --

20 Q. Yeah.

21 A. -- right? And so you're moving volumes of
22 CO2 through, which is displacing, you know, water,
23 and it's displacing, you know, oil. And then you're
24 just kind of a mass balance of moving it in, moving
25 it out.

1 So it's kind of irrelevant if it's -- you
2 know, the way the model -- if it's a CO2 flood main
3 pay or if it's an ROZ, I don't think it impacts the
4 model.

5 Q. Yeah, but in that case, the modeling CO2
6 screen tool, you know, I do believe that your EMSU
7 system is little bit unique right now. I mean, so
8 in that economic model, did you include the amount
9 of water that needs to be withdrawn from the
10 San Andres to even make CO2 flood effective in the
11 economics?

12 A. It has a -- you know, the water piece in
13 it, yes, of where you were removing it. The water
14 is essentially moving into an in-well. Since we've
15 got, you know, the floods going, and everything
16 else, we can put it in 1 and 2. You've got the
17 pumps there, and everything, to handle the water
18 that you could take, and you could put it up there.

19 I mean, it is definitely unique, and it is
20 unique and nice that we have this large Grayburg,
21 you know, as part of the reservoir, and things,
22 where you have these options. And you can kind of
23 vertically and horizontally develop these reservoirs
24 at the same time. And you can use the existing
25 infrastructure and the -- you know, the existing

1 wells, and things, to help improve economics.

2 Q. So definitely, that portion was still part
3 of your economic analysis?

4 A. Yes. Yes, definitely.

5 Q. Okay. Okay. Okay. And then -- so based
6 on your testimony, you're also saying that the
7 things in the chlorides more or less also confirm
8 the impacts of the water coming into the Grayburg.
9 Is that your testimony?

10 A. Yes. It gives us strong indication that
11 something's happening.

12 Q. Okay. So on your exhibit slide -- let's
13 go to slide 25. You know, you showed the injections
14 that has gone on -- I think 25, slide 25. Yeah.

15 COMMISSIONER AMPOMAH: And the upper
16 one should be okay. I should be able to use the
17 upper one. I should be able to use the one that we
18 referred to earlier on. So if you can go down. The
19 one that was showing the injection profile of
20 Goodnight's injection. Yeah, right there.

21 Q. So this one, I do have one quick question
22 here. Have any of these wells violated the permits,
23 the current permits?

24 A. I believe, if I remember correctly, there
25 was some points in time that they had some peak

1 rates that went over the permitted volumes.

2 Q. Okay.

3 A. I think it's documented in there. But I
4 can't -- you know, I remember discussions and talk
5 of that. I don't remember the exact data off the
6 top of my head.

7 Q. Okay. So let's go to Exhibit I-19.

8 So in I-19 and onwards, you now, 2021,
9 '22, you're describing that if we permit the wells
10 and then even if we allow the current wells to
11 continue, you are establishing the impact of the
12 pressure buildup that will happen, let's say, within
13 the EMSU, more or less impacting your ROZ.

14 I just want to understand more on the
15 assumptions that was utilized here. I know you
16 talked about withdrawal, one is to one.

17 A. Um-hmm.

18 Q. But if you can also include the boundary
19 situation here, where is that water that is
20 displacing going?

21 A. That's a good question, right? I mean,
22 like, you know, down-dip, you know, it seems like
23 you fall off into the Delaware Basin of what that
24 boundary is. I am -- honestly, I don't know the
25 geology completely of what you're -- you know, what

1 would be your northeastern boundary on this
2 reservoir.

3 Now, it's very similar as you go, you
4 know, from what the -- the northwest to the
5 southeast, you know, we see the, you know,
6 continuation reservoir from the EMSU-B all the way
7 down to the AGU. So I don't think you're bound in
8 those directions. You know, I don't know what
9 that -- I really don't understand completely what
10 that boundary is heading back to the east.

11 Q. But it's a good assumption from your
12 perspective that at least one is to one can still
13 establish what you are looking for here?

14 A. Can you repeat that? I didn't understand
15 it.

16 Q. I'm saying that the assumption of one is
17 to one, withdrawal and injection, is a good
18 assumption, you know, to establish the impact, you
19 know, that you are showing on these couple of
20 exhibits to the Commission?

21 A. Are you saying the -- you know, where you
22 push -- one barrel pushes one barrel?

23 Q. Yeah.

24 A. Yes.

25 Q. Okay. Now, you know, one thing -- one

1 concern that I also had on the exhibit that you
2 showed the higher water producing for some -- water
3 production for some of the wells, one question that
4 I had there was: Did you also check the water cut
5 of the wells? Yeah, yeah, on this slide. Did you
6 check the water cut of these wells to support if you
7 drill more oil?

8 A. Do you want to go ahead and pull up the
9 slide here that has the oil on that? So we did --
10 we did look at it.

11 To answer your question, I have a slide
12 for you.

13 Q. Okay. I appreciate that. Okay.

14 A. This is cumulative volumes, you know, of
15 oil and water produced. And you can see from --
16 you'll see that -- you'll be able to infer what the
17 cut is.

18 Q. Okay.

19 A. Good to have a good tech person in the
20 room.

21 So here's -- you know, at that point in
22 time, you know, prior to that, you know, 1986, this
23 is the same thing except we're putting oil in there
24 so total volume is produced out of the wells. And,
25 you know, from the pies, you can infer what the

1 water cut was.

2 Q. Okay. So definitely those big ones
3 would -- higher water you can still see that in the
4 bubble maps. Okay.

5 A. So you see how those ones right at the top
6 of the structure get to be really hard to explain
7 what -- how good of oil cut wells you had in between
8 there.

9 Now, I do believe that you did have some
10 effects from the Goat Seep from some of those ones
11 to the, you know, southwestern corner, and that's
12 kind of documented.

13 Q. Interesting. Okay. Is this one in
14 evidence?

15 A. I can't move to put it in there.

16 MS. HARDY: Wait. We are going to
17 move to put this into evidence with Mr. West's
18 redirect because we knew this issue was raised
19 yesterday. But I can move it into evidence now if
20 he would like.

21 HEARING OFFICER HARWOOD: Okay. What
22 exhibit number is it?

23 MS. HARDY: It would be Empire
24 Exhibit N-23, which is the continuation from
25 Mr. West's last exhibit.

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1 HEARING OFFICER HARWOOD: Mr. Rankin,
2 any objection?

3 MR. RANKIN: I haven't seen it, and I
4 guess I just would like to know what the data is,
5 the source of the data, a little bit more about
6 where it came from in the data.

7 WILLIAM WEST: It's from the
8 historical NMOCD records, just the same as what the
9 previous one was made of.

10 MR. RANKIN: Yeah, I guess my
11 question, though, is -- I guess my understanding,
12 Mr. Hearing Officer, that the OCD data goes back to
13 1994. So I presume this would be Empire's data --
14 my understanding is that prior to 1970, there was no
15 per well data.

16 So I'm wondering -- I'm just trying to
17 understand how this was allocated prior -- the years
18 prior to 1970, because there was no per well data.
19 That's why Mr. Buchwalter -- Dr. Buchwalter didn't
20 have allocated data prior to 1970.

21 So I don't understand how Empire was able
22 to allocate this much refinement to all of these
23 wells. I just don't understand that, but I'm
24 just -- I want to make sure I understand the basis
25 for the bubble maps.

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1 HEARING OFFICER HARWOOD: Well, I'm
2 going to assume that's an objection, and it will be
3 admitted -- well, it will be admitted over your
4 objection.

5 But I see Mr. Moander is chaffing at the
6 bit to say something.

7 MR. MOANDER: You know, Mr. Hearing
8 Officer, a quick voir dire of the witness should
9 resolve this so we can keep things moving.

10 HEARING OFFICER HARWOOD: That's
11 fine.

12 MR. MOANDER: Just a proposal to keep
13 the football headed down the field.

14 HEARING OFFICER HARWOOD: That's a
15 good suggestion.

16 Mr. Rankin, if you have a few questions
17 for this witness on this exhibit?

18 VOIR DIRE EXAMINATION

19 BY MR. RANKIN:

20 Q. Mr. West, did you -- did you, yourself,
21 prepare this exhibit?

22 A. I had some of my staff prepare it because
23 I was in here.

24 Q. Did you -- do you understand what the
25 source of the data is for this exhibit?

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1 A. Yes. It's the historical records, the
2 same thing that everything else has been -- the
3 blend between -- that's been provided to you that
4 was from the Gulf days, the Chevron days, and then,
5 you know, the NMOCD records.

6 Q. Is it your understanding --

7 MR. RANKIN: Are we losing
8 connection? Have we lost connection or is it just
9 me that's hearing the beeping in the background?

10 I think we've been disconnected.

11 WILLIAM WEST: This still looks on.

12 COMMISSIONER AMPOMAH: Probably
13 getting a Teams call or something.

14 WILLIAM WEST: Somebody is going to
15 call.

16 Q (By Mr. Rankin) Sorry about that. So your
17 understanding is that the source of the data is a
18 combination of data that was provided to Goodnight
19 from Empire?

20 A. Correct.

21 Q. And OCD public data?

22 A. Correct.

23 Q. Are you familiar with Dr. Buchwalter's
24 database that he used to create his model?

25 A. I didn't, you know -- I'm not familiar

1 with, you know, the whole database of it. I don't
2 know exactly the data -- you know, this should be
3 the same data that's in his database.

4 Q. And Empire provided the database to
5 Dr. Buchwalter, correct?

6 A. That is correct.

7 Q. And is it your understanding that prior to
8 1970, empire had a per well data production for the
9 EMSU?

10 A. You're stressing my memory on it at the
11 moment on it, but exactly the way -- because I get
12 flipped between the different states of it. You
13 know, historical records in New Mexico really need a
14 lot per well.

15 Gosh, I can't -- I can't remember exactly
16 on that. I mean, we provided you all the
17 production. This is where this comes out of this
18 production and, you know, the per well basis. This
19 could only be created on a per well basis.

20 Q. That's right. That's my question, I
21 guess, Mr. West, because my understanding is that
22 Dr. Buchwalter, prior to 1970, didn't have a per
23 well -- you can pull up Dr. Buchwalter's model and
24 see that he didn't have a per well allocation. He
25 has a cumulative allocation for water production

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1 because he didn't have a per well allocation. Do
2 you agree?

3 A. I can't speak to his model off the top of
4 my head on that.

5 Q. I'd have to pull up Dr. Buchwalter's
6 evidence to show that he doesn't have a per well --
7 he's using a cumulative production of water and oil,
8 because he didn't have a per well production prior
9 to 1970. I'd have to get back online to do that to
10 pull it up and share.

11 HEARING OFFICER HARWOOD: Well, I
12 think it's beyond the scope of the voir dire that
13 was suggested. He's explained the basis for the
14 exhibit, so --

15 MR. RANKIN: Well --

16 HEARING OFFICER HARWOOD: -- I'm
17 assuming that you believe there's an inconsistency
18 and that you probably oppose admission of the
19 exhibit.

20 MR. RANKIN: I do, Mr. Hearing
21 Officer. It's a massive inconsistency because prior
22 to 1970, there is no per well data. And this is
23 entirely based on per well data, and I don't
24 understand how it was created.

25 HEARING OFFICER HARWOOD: All right.

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1 It goes to weight, not admissibility. It will be
2 admitted over Goodnight's objection.

3 What is OCD's position?

4 MR. MOANDER: OCD doesn't object to
5 the exhibit.

6 HEARING OFFICER HARWOOD: Rice?

7 MR. BECK: Yeah, without -- I mean,
8 without testimony of whoever created this and the
9 data that went into it, I can't say that it's a fair
10 representation of the evidence.

11 So Rice and Permian are opposed to its
12 admissibility -- its admission. And I think without
13 the data, it does go to the admissibility. We don't
14 know whether this is a fair representation of the
15 evidence underlying this data.

16 HEARING OFFICER HARWOOD: All right.
17 Thank you.

18 Pilot?

19 MR. SUAZO: Pilot's will also object
20 to the admission of this exhibit, Mr. Examiner.

21 HEARING OFFICER HARWOOD: Okay.
22 Thank you. Your positions are noted for the record.

23 (Exhibit N-23 admitted into evidence.)

24 HEARING OFFICER HARWOOD: Dr.
25 Ampomah.

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1 EXAMINATION (continued)

2 BY COMMISSIONER AMPOMAH:

3 Q. So looking at this, you know, did you
4 analyze this information and collaborate it with
5 Dr. Buchwalter's work that he did?

6 A. Yeah. Yes, you know, so the cumulative
7 water and -- he, you know, had all this information
8 to make his model, and that's where he put the
9 breaks in the -- notes where the higher water
10 production cut wells were. That's where he put
11 those, you know, vertical perm breaks into it.

12 Q. I mean, why did Dr. Buchwalter not talk to
13 the Commission about this at all to justify why he
14 had to increase some of the cells to really match
15 his model?

16 A. He didn't do quite as good a job of
17 explaining his model as what I would have wished
18 that he would have.

19 Q. Okay.

20 COMMISSIONER AMPOMAH: Thank you so
21 much. I enjoyed the engineering discussions. And
22 thanks for being here. Thank you.

23 WILLIAM WEST: Thank you, sir.

24 MR. BECK: Your mic isn't on, Hearing
25 Officer.

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1 HEARING OFFICER HARWOOD: All right.
2 Let's start that over again.

3 Chairman Razatos, I don't believe you've
4 had the opportunity to ask questions of Mr. West.
5 Do you have questions for this witness?

6 MS. HARDY: Mr. Chairman, my Teams
7 blank is showing that it was disconnected, but I
8 don't know if that's just me.

9 MR. RANKIN: I was kicked off, Dana,
10 but I was -- it just put me on, I had to -- I'm
11 having to -- to get back on, so maybe it will just
12 take a moment to do it.

13 MS. HARDY: It looks like everyone
14 else is connected, so it's just me for the moment.

15 UNIDENTIFIED SPEAKER: No, I got --

16 HEARING OFFICER HARWOOD: Okay.
17 Well, why don't we take a -- our midmorning break,
18 and we'll come back and see if we resolved the
19 technical issues with -- the Chairman and then it
20 will be redirect by Empire. Thank you.

21 (Recess was taken from 10:30 a.m. until 10:45 a.m.)

22 HEARING OFFICER HARWOOD: Mr.
23 Razatos, did you have anything you needed to add?

24 CHAIRMAN RAZATOS: No, Mr. Hearing
25 Officer. My apologies. I had technical issues on

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1 my end. I have no questions.

2 HEARING OFFICER HARWOOD: Okay.

3 Thank you, Mr. Chairman.

4 So then it's back full circle to Empire
5 for redirect of Mr. West.

6 MS. HARDY: Thank you, Mr. Examiner.

7 REDIRECT EXAMINATION

8 BY MS. HARDY:

9 Q. Mr. West, I realize we've heard a lot of
10 testimony and questions, so I'll be jumping back and
11 forth a little bit.

12 Mr. Rankin asked you about your specific
13 experience with CO2 projects. Do you recall those
14 questions?

15 A. Yes, ma'am.

16 Q. And does Empire have technical staff that
17 have worked on CO2 projects?

18 A. Yes, ma'am. I have three engineers on
19 staff with over, you know, 30 years of industry
20 experience that have walked -- worked on model CO2
21 projects.

22 Q. Mr. Rankin asked you if the production
23 test that you discussed on the EMSU 660 and 658
24 wells were publicly available. Do you recall those
25 questions?

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1 A. Yes, ma'am.

2 Q. And have you determined whether those
3 tests were publicly available?

4 A. I believe that, you know, from their 2019
5 testimony of Goodnight's that they're applying in
6 there, that they knew there was oil production from
7 the San Andres. So I would assume that's from those
8 tests.

9 Q. And this is referenced in your rebuttal
10 Exhibit N-10; is that correct?

11 A. That is correct, ma'am.

12 Q. Okay. And just actually before we took
13 our break, we were discussing your exhibit that I'm
14 showing here. And can you -- this will be marked.
15 I understand it has been admitted. But can you
16 explain a little bit about where the data came from
17 that was used to prepare this exhibit?

18 A. Yes. And so up to 1971, and the technical
19 paper did -- had all the cumes per well of oil and
20 water. And then the 1986, you know, unitization --
21 or '86, '87, whatever the dates was, it had per well
22 data in there.

23 So you had historical that was in -- that
24 you'd get from IHS, and things, from 1970 and
25 before. And this is the same stuff that was in

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1 Mr. Buckwalter's and the bridge was up to the
2 Technical Committee Report. And then you had four
3 reports since then.

4 Q. Thank you. And does Dr. Lindsay's
5 dissertation also discuss communication between the
6 San Andres and the Grayburg?

7 A. Yes, ma'am.

8 Q. And I'm going to pull up your rebuttal
9 Exhibit N-19. Sorry.

10 And is this a figure and information from
11 Dr. Lindsay's dissertation?

12 A. Yes, ma'am. That's from his Ph.D.

13 Q. Okay. And let me pull up the actual page,
14 as well, from the dissertation.

15 Is that what I've pulled up here?

16 A. Yes, ma'am. That's the diagram over to
17 the left of the AGU, and it's showing how, in this
18 system going there, that you have these sections of
19 bottom water where he clearly indicated in -- on
20 this map.

21 And then you've got that little southwest
22 edge water that, you know, comes into the reservoir.
23 And you can see, you know, as his description there
24 on page 1004, so these plumes are vertically
25 oriented in the upper San Andres formation, the

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1 bottom water only affected in small areas of the
2 units in most cases only affected one well, though
3 mapped as if the bottom water was affecting a larger
4 area.

5 Similarly, these vertical-oriented plumes
6 of upper San Andres formation bottom water were also
7 encountered in individual wells further in the north
8 EMSU unit and the EMSU-B unit. So it's something
9 that's, you know, depictive of, you know, historical
10 data that you had these plumes all the way up and
11 down the structure.

12 MS. HARDY: And, Mr. Examiner, I'd
13 like to move the admission of this page. We have
14 the figure in some of the language that I have
15 referenced in Mr. West's rebuttal exhibit. It's in
16 evidence already, but I thought it would be helpful
17 for the Commission to have this actual language from
18 the dissertation on the right.

19 So I would move the admission of this
20 exhibit as Empire's Exhibit N-24.

21 HEARING OFFICER HARWOOD: Any
22 objection from Goodnight?

23 MR. RANKIN: No objection. I -- no
24 objection.

25 HEARING OFFICER HARWOOD: And OCD?

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1 MR. MOANDER: No objection.

2 HEARING OFFICER HARWOOD: Rice?

3 MR. BECK: No objection.

4 HEARING OFFICER HARWOOD: Pilot?

5 MR. SUAZO: No objection.

6 HEARING OFFICER HARWOOD: Thank you.

7 It will be admitted.

8 (Exhibit N-24 admitted into evidence.)

9 MS. HARDY: Thank you.

10 Q (By Ms. Hardy) And, Mr. West, Mr. Rankin
11 asked you a number of questions about the 1996
12 Chevron paper and its statement that San Andres
13 water was mixing with river water in the well bores.
14 Do you recall those questions?

15 A. Yes, ma'am.

16 Q. And if water is mixing in the wellbores,
17 where would it come from?

18 A. Kind of with -- my discussion with the
19 doctor, if you know you got a conventional wellbore
20 and, say -- you know, because if it's open hole, it
21 would have to have been drilled down into.

22 So let's talk conventionally. You got the
23 shoe tracks. You got a 100 to 200-foot of cement in
24 the bottom of the well with your float collars and
25 your plugs, right, because that's where you pump the

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1 cement down and come back upside. So that's -- the
2 bottom of the wellbore is about as plugged as it's
3 going to get. It's pure pipe, and things, and so
4 there's no real entries directly from the bottom.

5 So it has to come up somewhere inside, mix
6 into the reservoir, and enter through the perms. So
7 it would have to, you know, mix into one of the
8 lower zones of the zone 5 or zone 6 of the Grayburg
9 and enter into the wellbore. And then as they were
10 talking production-wise that it was in the wellbore
11 mixing.

12 Q. Mr. Rankin asked you a number of questions
13 about the Love paper, which was Goodnight Cross
14 Exhibit 1, and if the water in the Grayburg was
15 coming from the Goat Seep, would there -- would you
16 expect to see -- well, would there be a barium
17 sulfate problem?

18 A. Goat Seep does not have, you know,
19 quantities of salt -- it's not a sulfate rich
20 environment, so there's no sulfate to make the
21 barium sulfate. So, no, the Goat Seep water would
22 not precipitate out barium sulfate.

23 Q. But does that indicate to you that the
24 water is not coming -- that you're seeing is not
25 coming from the Goat Seep?

1 A. That is correct.

2 Q. And Mr. Rankin asked you questions about
3 your slide number 11, which let me get there. And
4 this was Dr. Buchwalter's Exhibit N-3. And
5 specifically he'd asked whether the report excerpts
6 that are shown here address the EMSU. Do you recall
7 those questions?

8 A. Yes, ma'am.

9 Q. And is the excerpt here from the report on
10 the AGU?

11 A. Yes, ma'am.

12 Q. And where is the AGU located?

13 A. The AGU is just to the southeast of the
14 EMSU unit.

15 Q. And is it part of the same structure as
16 the EMSU?

17 A. Yes. You would -- you know, it's
18 considered the same structure, and you'd call -- you
19 can call that the Eunice Monument, you know, field.
20 It's all part of that same structure.

21 Q. Okay. And I'm going to pull up -- this is
22 the actual AGU Technical Committee Report that's
23 referenced in your slide. You can see here the
24 cover page. Let me get here to the page I want to
25 ask you about.

Redirect Examination by Ms. Hardy

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1 Okay. So I'm looking at page 8 of the
2 Technical Committee Report for the AGU. And with
3 respect to water migration, can you please tell us
4 what this is stating?

5 A. Yes. As it states there, "A portion of
6 the water production is probably attributable to
7 communications of zones 4 and 5 with the -- of the
8 lower Grayburg with the San Andres aquifers." And
9 then it goes into -- "Although siliciclastic," some
10 geology terms, "between each zone is -- generally
11 prevent vertical communication, in some localized
12 areas of the field, they do act -- do not act as
13 permeable barriers. When the barriers break down in
14 the lower Grayburg members, the prolific San Andres
15 aquifer can influx into the oil productive horizons
16 resulting in large volumes of water production."

17 Q. Again, is the Arrowhead Unit part of the
18 Monument structure?

19 A. Yes, ma'am.

20 MS. HARDY: And, Mr. Examiner, I'd
21 like to move the admission of this exhibit as
22 Empire N-25 for purposes of completion, since we had
23 this excerpt in Mr. West's testimony, and then
24 Mr. Rankin questioned him about that.

25 HEARING OFFICER HARWOOD: Any

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1 objection from Goodnight?

2 MR. RANKIN: No. I just have a
3 question for understanding.

4 This was part of the 1983 Technical
5 Committee Report. Was that not all submitted,
6 Ms. Hardy?

7 Mr. Hearing Officer, I believe it would
8 have been all submitted, but I -- I'm not -- oh,
9 it's from the Arrowhead Grayburg unit. I see.

10 MS. HARDY: Right.

11 MR. RANKIN: Okay. Got it. No
12 objection.

13 HEARING OFFICER HARWOOD: All right.
14 OCD?

15 MR. MOANDER: No objection.

16 HEARING OFFICER HARWOOD: Rice?

17 MR. BECK: No objection.

18 HEARING OFFICER HARWOOD: Pilot?

19 MR. SUAZO: No objection.

20 HEARING OFFICER HARWOOD: All right.
21 It will be admitted.

22 (Exhibit N-25 admitted into evidence.)

23 MS. HARDY: Thank you.

24 Q (By Ms. Hardy) And let me just switch
25 around here. Mr. Rankin asked you a number of

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1 questions about the 1996 Chevron paper and whether
2 it discusses water migrating from the San Andres
3 into the Grayburg. Do you recall those questions?

4 A. Yes, ma'am.

5 Q. Okay. Let me pull up a slide here on this
6 Chevron paper.

7 That's not what I want to show you, so
8 just a second.

9 Okay. Here we go. Can you see that?

10 A. Yes, ma'am.

11 Q. Okay. Here, let me make it bigger.

12 Okay. And can you explain what this slide
13 is showing?

14 A. Again, this is talking about the mixing of
15 the fluids from the sulfate rich San Andres water
16 with the barium rich Grayburg water and the
17 precipitation of scale. And in there, as it's
18 highlighted, you can see where it says, you know,
19 San Andres water was finding its way into the
20 wellbores of this -- these wells and resulted in a
21 barium sulfate scale and barite deposition problem.

22 Q. Does that support your determination, as
23 well, that water is migrating from the San Andres
24 into the Grayburg?

25 A. Yes.

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1 MS. HARDY: And I'd like to move the
2 admission of this exhibit as Empire Exhibit N-26,
3 since it's summarizing -- or it's including parts of
4 the Chevron paper that Mr. Rankin asked Mr. West
5 about.

6 HEARING OFFICER HARWOOD: I think
7 we've seen this already before. Isn't this an
8 exhibit already?

9 This was something that you showed, wasn't
10 it, Mr. . . .

11 MS. HARDY: I don't think that this
12 exhibit slide was shown.

13 HEARING OFFICER HARWOOD: Okay. Any
14 objection from Goodnight?

15 MR. RANKIN: No.

16 HEARING OFFICER HARWOOD: OCD?

17 MR. MOANDER: No objection.

18 HEARING OFFICER HARWOOD: Rice?

19 MR. BECK: No objection.

20 HEARING OFFICER HARWOOD: Pilot?

21 MR. SUAZO: No objection.

22 HEARING OFFICER HARWOOD: Does it
23 have an exhibit number?

24 MS. HARDY: It would be N-26.

25 HEARING OFFICER HARWOOD: It will be

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1 admitted.

2 (Exhibit N-26 admitted into evidence.)

3 MS. HARDY: Thank you.

4 Q (By Ms. Hardy) Sorry, this is being a
5 little bit finicky. It's probably me, it's probably
6 not the technology, but doing my best to switch back
7 and forth here to a number of things, so thank you
8 for your patience. Just get to what I want to show.

9 Okay. Okay. And here I'm showing slide
10 17 from your presentation that there's been a fair
11 amount of discussion about -- over the course of the
12 hearing. And when did -- just to be clear, when did
13 Goodnight start injecting?

14 A. As shown on there in 19 is where you've
15 got those other -- small piece of orange come on.

16 Q. And Mr. Rankin asked you questions about
17 the time period dating back prior to January of
18 2012. Do you recall those questions?

19 A. Yes, ma'am.

20 Q. And have you reviewed that data and had
21 you reviewed it before you prepared this slide?

22 A. Yes, ma'am.

23 Q. And how does it compare in relation to
24 Goodnight's injection shown on your slide?

25 A. It's a very similar trend back in the

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1 past, and it's reflective of the cumulative slide
2 there that there wasn't -- wasn't these large
3 volumes of injection going on in the -- in the
4 reservoir residual.

5 MS. HARDY: Mr. Examiner, because
6 this slide has been discussed extensively, I think,
7 during the hearing, I would like to move it into
8 evidence, as well, as Empire Exhibit N-27.

9 HEARING OFFICER HARWOOD: Mr. Rankin?

10 MR. RANKIN: My only concern with
11 this exhibit is that it's a little misleading
12 because it's a stacked chart, and it's not clear on
13 the face of the exhibit that you have to subtract
14 the blue lines from the orange lines to determine
15 what Goodnight's volumes are. That's my only
16 concern with this exhibit.

17 Otherwise, it's OCD data. It's public
18 data. I have no other concerns with it.

19 HEARING OFFICER HARWOOD: And I think
20 you asked those questions of the witness on cross
21 anyway.

22 MR. RANKIN: I did. I did. Just
23 based on that with the record, I have no objections.

24 HEARING OFFICER HARWOOD: All right.
25 Thank you.

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1 OCD?

2 MR. MOANDER: No objection. I think
3 the issue of the nature of the chart has been
4 discussed, and the parties are apprised, as is the
5 Commission.

6 HEARING OFFICER HARWOOD: That's my
7 memory as well.

8 Rice?

9 MR. BECK: No objection.

10 HEARING OFFICER HARWOOD: Pilot?

11 MR. SUAZO: No objection.

12 HEARING OFFICER HARWOOD: It will be
13 admitted.

14 (Exhibit N-27 admitted into evidence.)

15 MS. HARDY: Thank you.

16 Q (By Ms. Hardy) Mr. West, Mr. Rankin asked
17 you a number of questions about the pressure reading
18 in the Rice well from 1959. Do you recall those
19 questions?

20 A. Yes, ma'am.

21 Q. Okay. And I wanted to pull up your water
22 balance slide, which was in your hearing
23 presentation as slide number 18 --

24 A. Yes, ma'am.

25 Q. -- here. And just to be clear, can you

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1 tell us what this slide shows with respect to the
2 pressure in the reservoir in relation to the Rice
3 well?

4 A. It -- you know, the Rice well was 1959,
5 the beginning of the curve of where you started to
6 have SWD injection in there, which lines up well
7 with what the predictions was, you know, from the
8 initial negative 250 subsea pressure readings. So
9 that's -- you know, historically lines up well.

10 And then just, you know, as discussed
11 before in the chart, it just goes over the SWD
12 injection, the withdrawal with the injection, and
13 then, you know, the slowing down of the withdrawal
14 and the speeding up of the saltwater disposal.

15 MS. HARDY: Mr. Examiner, this is
16 another one that's been discussed extensively, so
17 I'd like to move it into evidence as Empire
18 Exhibit N-28.

19 HEARING OFFICER HARWOOD: Mr. Rankin?

20 MR. RANKIN: No objection.

21 HEARING OFFICER HARWOOD: OCD?

22 MR. MOANDER: No objection.

23 HEARING OFFICER HARWOOD: Rice?

24 MR. BECK: No objection.

25 HEARING OFFICER HARWOOD: Pilot?

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1 MR. SUAZO: No objection.

2 HEARING OFFICER HARWOOD: It will be
3 admitted.

4 (Exhibit N-28 admitted into evidence.)

5 MS. HARDY: Thank you.

6 Q (By Ms. Hardy) Mr. West, regarding your
7 economic model that you discussed in your testimony
8 and Dr. Ampomah asked you a number of questions and
9 so did Mr. Rankin, just to be clear, is this a
10 production model or an economic model?

11 A. It's an economic model.

12 Q. And does it need continuous 400-foot
13 interval of 30 percent oil saturation to work?

14 A. No, it does not need a continuous. You
15 can use a net because the basis owed is for an
16 economic model of the mass balance in and out.

17 Q. And I'm going pull up a couple of Empire's
18 exhibits.

19 Okay. This is not what I want to show
20 you.

21 There we go. Can you see the slide there
22 that I'm showing you?

23 A. Yes, ma'am. You might make it just a
24 little bigger, if you don't mind.

25 Q. Okay. And this is Empire Exhibit L-13,

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1 which was provided by OPS Geologic. Have you
2 reviewed this and are you familiar with it?

3 A. Yes, ma'am.

4 Q. Okay. And what does this exhibit show?

5 A. So this exhibit shows that, you know,
6 of -- their low cases and high cases of net
7 reservoir in the San Andres that would be, you know,
8 limited by log depths and things. But you can see
9 where -- for several cases, and then you'd have to
10 add the lower and upper together, but where you can
11 very easily support the 400-foot thick net thickness
12 of the 1200-foot -- 12-, 1500-foot gross interval of
13 the San Andres.

14 Q. Okay. And then I'm going to -- I've
15 pulled up here Empire's Exhibit G-3(c), which was
16 provided by NuTech. Have you reviewed this? Are
17 you familiar with it?

18 A. Yes, ma'am.

19 Q. And what does it show?

20 A. This shows that -- you know, why they're
21 all cut off by the end of the logs, the -- you know,
22 you've got net thicknesses of over 500-foot shown
23 here that is represented by NuTech.

24 Q. So is that consistent with what's in your
25 model as well?

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1 A. Yes, ma'am. It does a very good job to
2 support the 400-foot net.

3 Q. A few more questions here. There have
4 been a number of questions asked about
5 Dr. Buchwalter's model. Do you recall those
6 questions about the cells that were adjusted?

7 A. Yes, ma'am.

8 Q. And let me just put this in a different
9 format. Can you tell me what this slide shows that
10 I've got up on the screen?

11 A. So the doc will probably understand this
12 the best. This is your, you know, layers of what
13 we're talking about between -- this is directly out
14 of his model, and so it's all in evidence, and
15 everything, already.

16 And you can see where he poked the little
17 holes in the barrier for the vertical perm. And you
18 can see the values that he used in there from -- I
19 don't know, reading a few off, 375, 5, 125. And
20 this is representative of those 99 blocks out of the
21 34,500 that were there. So this is the KZ of layer
22 8 if you pull up the model.

23 MS. HARDY: Apologies, I feel like my
24 computer has frozen. I can't even see my cursor.
25 Apologies. Let me just get this straightened out

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1 for one moment.

2 Okay. Thank you. Sorry.

3 Q. Mr. West, I'm showing another slide here
4 regarding Dr. Buchwalter's model. Can you tell me
5 what this shows?

6 A. Yes, ma'am. So this is -- if you took
7 that one layer that's between the Grayburg and
8 San Andres, and then this is just taking the 99
9 blocks that were modified. And so you can see
10 what -- you know, how many cells were at the
11 different permeabilities that he modified in there,
12 right? So you can just clearly see that, you know,
13 32 blocks less than 10 millidarcies and then, you
14 know, the stair steps up. And where there's only a
15 block or two, that he had to go all the way up to,
16 you know, a darcy.

17 Q. Thank you. This is my last few questions
18 here for you. Let me just -- okay.

19 Mr. West, Mr. Rankin asked you a number of
20 questions yesterday about 45Q tax credits. Do you
21 recall those questions?

22 A. Yes, ma'am.

23 Q. And he asked you about who received tax
24 credits. Do you remember those questions?

25 A. Yes, ma'am.

1 Q. Okay. And he referenced a part of your
2 deposition where he indicated that you had said that
3 the seller would receive the tax credits. Do you
4 recall that?

5 A. Yes, ma'am.

6 Q. Okay. And I've pulled up here your
7 deposition testimony that I think Mr. Rankin was
8 referring to. And it specifically starts at
9 page 142, and I'll go ahead and read -- read this.

10 And his question at line 19, says:

11 "QUESTION: Okay. In this comment
12 here that there's an opportunity to purchase
13 the CO2 at a reduced rate, is that referring to
14 the tax benefits that you've incorporated into
15 your economic analysis?"

16 And then can you tell me, what did you
17 state?

18 A. I said:

19 "ANSWER: Correct. That's where, you
20 know, you get a reduced rate because they
21 receive the 45Q tax credits, the seller does."

22 Q. Okay. And then can you read the next
23 lines of the following page?

24 A. "ANSWER: So you change it in the purchase
25 price of the CO2."

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1 Q. Okay. So is what you were stating here,
2 that the seller receives the tax credits, but
3 they -- but they pass them on to the buyer via
4 contracts?

5 A. Yes, ma'am.

6 Q. Okay. And that's a negotiated contract
7 term?

8 A. Yes, ma'am.

9 Q. Okay. So it's not correct that you stated
10 that the seller received the tax credits and that
11 there's no benefit to the buyer?

12 A. Yes, ma'am.

13 Q. Okay. Thank you.

14 MS. HARDY: Those are all of my
15 questions for Mr. West.

16 It does.

17 HEARING OFFICER HARWOOD: Thank you.
18 And I think that concludes the testimony of
19 Dr. West, does it not, for the record?

20 MS. HARDY: It does.

21 HEARING OFFICER HARWOOD: All right.
22 And if I'm correct, Dr. West is Empire's last
23 witness?

24 MS. HARDY: That is true.

25 HEARING OFFICER HARWOOD: Okay. I

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1 wasn't sure I would ever get to the point of asking
2 this question, but does Empire rest its case?

3 MS. HARDY: Yes, it does. Thank you.

4 HEARING OFFICER HARWOOD: All right.
5 It's a quarter after 11, that brings us, I guess, to
6 Goodnight's case.

7 But before we start with that, let me hear
8 from you, Mr. Razatos, and then also from the
9 parties. I suppose the question is: Would folks
10 prefer to break for lunch and take an early lunch
11 and come back early and commence Goodnight's case?
12 Or would you prefer to start your case now?

13 Mr. Razatos, what are your thoughts?

14 CHAIRMAN RAZATOS: Mr. Rankin, how
15 long would it take for your first witness for you to
16 start?

17 MR. RANKIN: I haven't exactly timed
18 it, Chair Razatos. I think we would be able to do
19 it within the 45 minutes remaining. I might just
20 need a few minutes to get set up.

21 My only concern about it is our
22 termination date -- time today. Our first witness
23 will be Mr. McBeath. He will be unable to rejoin us
24 in person when we resume the hearing later this
25 month. And so I would like to make sure I've had as

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1 much time to try to get through his testimony while
2 he's here as possible.

3 So if we did take an early lunch, which
4 is, I think, fine, because it's -- whether we do it
5 now or later, it doesn't matter, but I think as long
6 as we were able to come back around 12:15 or 12:30
7 to get started, that would be fine with me.

8 I guess it does make a nice natural break
9 so there's no risk of, you know, going longer with
10 our introduction if it's slightly longer. So I
11 guess my preference would be to take a short lunch
12 now or a normal hour lunch break as long as we can
13 get back at 12:30.

14 CHAIRMAN RAZATOS: Commissioners, are
15 you okay with that?

16 COMMISSIONER AMPOMAH: Yes.

17 COMMISSIONER LAMKIN: I'm fine with
18 that also.

19 CHAIRMAN ROZATOS: Okay. So --

20 MR. SHANDLER: This is Zach Shandler.

21 CHAIRMAN ROZATOS: Yes.

22 MR. SHANDLER: I just have a basic
23 question on the rules. I thought the direct was
24 short, not 45 minutes. What is -- what are the
25 rules on direct?

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1 MR. RANKIN: Well, there were no
2 rules, and they're allowed long directs. So I --
3 we -- I didn't object to anything that was long at
4 all. And I think -- if I may, I believe the case is
5 very important, and it's -- we didn't object to her
6 having any concerns about anybody spending extra
7 time on the summaries.

8 MR. WEHMEYER: On behalf of Empire,
9 we don't have an objection to 45 minutes, and we've
10 certainly -- everyone's been very accommodating with
11 our opening presenting of our witnesses.

12 MR. MOANDER: From OCD's position,
13 goose and gander analysis would say, you know, fair
14 is fair. Doesn't have an issue with that.

15 MR. BECK: And Rice would echo what
16 OCD said.

17 MR. SUAZO: Same with Pilot.

18 HEARING OFFICER HARWOOD: Okay.
19 Well, then let's -- we're already cutting into our
20 abbreviated lunch hour. Let's call it quits now and
21 be back and restart at 12:30.

22 CHAIRMAN RAZATOS: So wait, I have a
23 question. Mr. Shandler, did that answer your
24 question?

25 MR. SHANDLER: Yes, sir.

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1 CHAIRMAN RAZATOS: Okay. So, yeah,
2 let's take lunch now, and we can come back -- resume
3 at 12:30.

4 HEARING OFFICER HARWOOD: Okay.
5 Thank you.

6 CHAIRMAN ROZATOS: Thank you.
7 (Recess was taken from 11:16 a.m. until 12:30 p.m.)

8 HEARING OFFICER HARWOOD: Ms.
9 Apodaca, are we ready in the back?

10 MS. APOCADA: We sure are.

11 HEARING OFFICER HARWOOD: Ms. Tellez,
12 you ready to go?

13 THE REPORTER: Yes.

14 HEARING OFFICER HARWOOD: All right.
15 Chairman Razatos, any preliminary thoughts or
16 issues? I have -- I have an alarm set for
17 3:40 p.m., five minutes before our hard break.

18 CHAIRMAN RAZATOS: I appreciate that.
19 I don't have anything else. Thank you, Mr. Hearing
20 Officer.

21 HEARING OFFICER HARWOOD: All right.
22 You guys listen. When the duck quacks, it will be
23 time to go.

24 All right. So, Mr. Rankin, I'm assuming
25 you're presenting this witness?

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Direct Examination by Mr. Rankin

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1 MR. RANKIN: I am, Mr. Hearing
2 Officer.

3 HEARING OFFICER HARWOOD: And is
4 Goodnight ready to proceed with its case?

5 MR. RANKIN: We're more than ready to
6 proceed with our case, Mr. Hearing Officer.

7 HEARING OFFICER HARWOOD: Is it
8 Mr. or Dr. McBeath?

9 JOHN McBEATH: It's Mr. McBeath.

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

12 JOHN McBEATH
13 having been first duly sworn, testified as follows:

14 HEARING OFFICER HARWOOD: All right.
15 Mr. Rankin.

16 MR. RANKIN: Thank you very much,
17 Mr. Hearing Officer.

18 DIRECT EXAMINATION

19 BY MR. RANKIN:

20 Q. Mr. McBeath, will you just state your full
21 name for the record.

22 A. My full name is John Campbell McBeath.

23 Q. And by whom are you employed?

24 A. I'm employed by Austin Consulting
25 Petroleum Engineers, Inc.

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Direct Examination by Mr. Rankin

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1 Q. And in what capacity?

2 A. Well, I'm a consulting petroleum engineer.
3 I'm a partner, founding partner in the firm. And
4 I'm also vice president in our structure, business
5 structure.

6 Q. And have you previously had the
7 opportunity to testify before the Oil Conservation
8 Division or the Commission here in New Mexico?

9 A. Not before this case, no.

10 Q. You've previously testified before the
11 Texas Railroad Commission?

12 A. I have many times.

13 Q. And is your educational experience and
14 experience throughout your career as a petroleum
15 engineer and a reservoir engineer listed as an
16 exhibit to the direct testimony that you filed in
17 this matter?

18 A. Yes. My resume is attached.

19 Q. Will you just give us a brief summary of
20 your education and your work experience, in
21 particular as it relates to petroleum engineering
22 and reservoir engineering and enhanced oil recovery
23 work?

24 A. Sure. So I graduated from the University
25 of Texas at Austin in 1987. I went immediately to

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1 work for Schlumberger International overseas. I was
2 in Egypt, Kuwait, Pakistan, Oman for about five
3 years, running logs, working with clients there.

4 And then I came home and started various
5 consulting positions from that point in time.

6 In '96 I ended up at Platt, Sparks &
7 Associates, which is a group of folks that -- most
8 of them were still with Austin Consulting Petroleum
9 Engineers. But I started there in '96. We were
10 acquired by a bigger consulting firm in 2014 for a
11 six-year term. In 2020, Austin Consulting Petroleum
12 Engineers was formed.

13 Q. And you've done work as you -- as you
14 stated across not just enhanced oil recovery, but
15 you've done some work on saltwater disposal wells,
16 too; is that correct?

17 A. That's for sure. So I'll kind of speak
18 generally about my practice and then more
19 specifically about EOR.

20 So we provide petroleum engineering
21 services to a wide range of clients, from
22 individuals all the way up to majors and everything
23 in between. We do regulatory work. We do
24 straight-up reservoir engineering studies. We do
25 economic analyses. And we do some amount of

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1 litigation as well.

2 And as far as specific CO2 and enhanced
3 oil recovery experience, when I first landed at
4 Platt Sparks in 1996, they had been engaged for a
5 large study that involved CO2 volumes that moved
6 from Bravo Dome down into the Permian Basin. And we
7 basically tracked every Mcf of CO2 that was
8 delivered that started at Bravo Dome, to look at the
9 F -- efficiency of the floods.

10 There was an allegation in a legal dispute
11 that the value of the CO2 was related to the amount
12 of oil that was recovered. And so we had to go see
13 how that really worked out when you figured out how
14 much CO2 went to each flood and how much oil came
15 out. So I got exposed to almost every flood in the
16 Permian Basin doing that work.

17 The same dispute migrated to McElmo Dome,
18 which has bigger volumes in southwest Colorado
19 coming down the Cortez pipeline. So a similar study
20 was done for that.

21 I've also done some tax work in the Wasson
22 field for Shell. We tracked pattern by pattern
23 their recoveries to show that the CO2 that was
24 injected actually recovered oil, for tax purposes
25 for the years 1990 and '91, were doing that work, I

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1 think, in 2000 because it was part of an audit. In
2 addition to that, I've been involved in regulatory
3 matters. That's where you're going into a field and
4 asking for a change in field rules. I've done that
5 very recently at the Wasson field to change the
6 spacing to compete with some of these off-units
7 horizontal wells that are being drilled to the west
8 in the Platani field, because they were snugging
9 right up against the unit. And for fairness, Oxy
10 wanted to have wells right up against the unit line
11 also.

12 And then in the past, I've done other --
13 worked on other fields at the Railroad Commission,
14 the Yates field for field rules, and so it's a
15 pretty good overview.

16 Q. And based on that, your education and
17 experience that you just gave us a summary of, do
18 you hold yourself out in an expert in reservoir and
19 petroleum engineer?

20 A. I do.

21 MR. RANKIN: Mr. Hearing Officer, at
22 this time I would tender Mr. McBeath as an expert
23 witness in reservoir and petroleum engineering.

24 HEARING OFFICER HARWOOD: Any
25 objection from Empire?

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1 MR. WEHMEYER: Without objection.

2 HEARING OFFICER HARWOOD: OCD?

3 MR. MOANDER: No objection.

4 HEARING OFFICER HARWOOD: Rice?

5 MR. BECK: No.

6 HEARING OFFICER HARWOOD: Pilot?

7 MR. SUAZO: No objection.

8 HEARING OFFICER HARWOOD: He'll be so
9 recognized.

10 Q (By Mr. Rankin) Mr. McBeath, were you
11 engaged by Goodnight Midstream to form and provide
12 opinions in this matter?

13 A. I'd say it a little differently. I was
14 engaged to review data, to analyze information, and
15 then to see if my expertise was related to any of
16 that data. And then the opinions kind of fall out
17 of that study, so that's how I'd say it.

18 Q. So you weren't given any specific
19 instructions about what your opinions would be or
20 what --

21 A. No.

22 Q. No. Now, what data and information did
23 you consider in forming your opinions ultimately?

24 A. So I've looked at -- there's been a lot of
25 data exchanged between the parties in this matter.

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1 Some information from Empire, information from
2 Goodnight.

3 I've also acquired on my own public
4 information from the NMOCD website, well files,
5 logs. I've gone and looked at specific hearings
6 that have occurred in the past. Downloaded all the
7 transcripts and the exhibits that go with that.
8 That's pretty much it, yeah.

9 Q. Now, have you also considered and reviewed
10 Empire's filed written direct and rebuttal testimony
11 from its own experts and witnesses that were filed
12 in this case?

13 A. Did you say Empire's?

14 Q. Yes.

15 A. Yes. I have looked at them all. I've
16 focused on particular witnesses that are covering
17 the same ground that I am.

18 Q. Got it. And have you also considered
19 Goodnight's expert's written testimony as well?

20 A. Yes, I have.

21 Q. And do the opinions that you're expressing
22 today take into account your current understanding
23 of the information and the opinions expressed and
24 the testimony of the witnesses for both Goodnight
25 and Empire?

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1 A. It does. And the way you've asked that, I
2 want to just clarify that as I've sat in the back of
3 this room for a couple of weeks, I've learned a few
4 more things. So it is, yeah, definitely my current
5 understanding.

6 Q. And have you, yourself, prepared written
7 rebuttal, direct, and supplemental testimony in
8 exhibits that are marked as Exhibit F and
9 Exhibits F-1 through F-20, Rebuttal Exhibit F and
10 Exhibits F-27 (sic) through F-27, and then
11 Supplemental Exhibit F and Exhibits F-28 through 30?

12 A. I'm going to assume you got those numbers
13 right, because I don't have them memorized.

14 Q. Yeah.

15 A. Yes, I had three separate testimonies.

16 Q. I think I misstated. For your rebuttal
17 exhibit, it's Rebuttal Exhibits F and Exhibits F-21
18 through F-27?

19 A. Yes, that's right.

20 Q. Were the exhibits prepared by you or
21 compiled under your direction and supervision?

22 A. Yes. The exhibits and the written
23 testimony as well.

24 Q. Any corrections or changes to the
25 testimony or exhibits that were filed?

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1 A. I found a couple of small typos in the
2 last couple of days looking over the original
3 statement. On page 11, there's a reference to some
4 perfs in the four -- in the 746 well. Near the
5 bottom of the page, it says, "Perforated from 4100
6 to 4100," which is a small interval. It should be
7 4100 to 41- -- it should be 4100 to 4110.

8 Then on page 15 -- 13 and 15, I
9 inadvertently referred to Dr. Davidson as
10 Mr. Davidson.

11 Q. Got it.

12 A. Apologies for that.

13 Q. No other changes or corrections to your
14 testimony that you identified?

15 A. No.

16 Q. Do you adopt the testimony with those
17 changes and modifications you just reviewed? Do you
18 adopt the testimony in your self-affirmed statement,
19 your rebuttal statement, and the supplemental
20 statement that are marked as Exhibit F as your own
21 sworn testimony today?

22 A. Yes, I do.

23 MR. RANKIN: At this time,
24 Mr. Hearing Officer, I would move the admission into
25 the record of Mr. McBeath's self-affirmed statement,

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1 his direct, rebuttal, and his supplemental testimony
2 in Exhibit F and F-1 through F-30.

3 HEARING OFFICER HARWOOD: Any
4 objection from Empire?

5 MR. WEHMEYER: Without objection.

6 HEARING OFFICER HARWOOD: OCD?

7 MS. HARDY: No objection.

8 HEARING OFFICER HARWOOD: Rice?

9 MR. BECK: No objection.

10 HEARING OFFICER HARWOOD: Pilot?

11 MR. SUAZO: No objection.

12 HEARING OFFICER HARWOOD: They will
13 be admitted.

14 (Exhibit F and Exhibits F-1 through F-30 admitted
15 into evidence.)

16 Q (By Mr. Rankin) Mr. McBeath, I think you
17 alluded to this just a moment ago, but you've been
18 present for the summary testimony, the
19 cross-examination, and the redirect testimony
20 provided by Empire -- Empire's witnesses during the
21 first week of testimony in February and during much
22 of this week's testimony; is that correct?

23 A. Almost all of it. There was one day where
24 I was sent back to your office to review some new
25 information that Dr. Buchwalter has provided. So I

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1 think Mr. -- Dr. Trentham and Mr. Melzer were
2 testifying. I reviewed that from the archives when
3 I got home.

4 Q. Okay.

5 A. And then this week I was here all week
6 except for -- was driving and listening to the
7 testimony up until 3:00 when I arrived here on
8 Monday.

9 Q. And did you also now prepare summary
10 slides reflecting any of your opinions as they exist
11 today?

12 A. Yes, I have.

13 Q. And do those slides reflect your
14 up-to-date opinions, including any additional
15 opinions formed based upon your observations of the
16 summary testimony, the cross-examination, and the
17 redirect testimony from Empire's witnesses?

18 A. They do. You know, I don't cover every
19 single thing I had in my testimonies because some
20 issues of -- I think have fallen by the wayside.
21 But I'd say they cover the important things.

22 Q. Mr. McBeath, I'm going to go ahead and
23 share your slides, and we'll go ahead and walk
24 through your summary.

25 Your first slide here is a summary of your

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1 opinions. Can you just walk us through each of
2 your -- a summary overview of your opinions?

3 A. Sure. And this is just to tell you what's
4 coming. We'll have details on each of these and
5 some additional things.

6 So the first opinion is that I've reviewed
7 Empire's log analysis, and they show very, very high
8 oil saturations and low mobile water saturations in
9 intervals that were tested and produced essentially
10 zero water. I'm going to show you one example, but
11 I looked at several wells that show the same thing.

12 The second category that we're going to go
13 through is the allegation that the Grayburg and the
14 San Andres were connected as of 1986. I'm going to
15 talk about the data that that allegation is based on
16 and show you some information about the RFT as well.

17 The third one on this list has to do with
18 the economics that were put forward by Empire
19 through Mr. West's spreadsheet calculation. And I
20 want to talk about the inputs to that, how I studied
21 it and figured out what they were doing, and then my
22 corrections to some of the obvious problems with
23 those inputs and what it does to the economics.

24 And then finally, I go over some
25 observations about Dr. Buchwalter's reservoir model

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1 and how it differs from known information that we
2 have and how that, in my opinion, would really
3 impact its reliability.

4 Q. So turning to your first substantive slide
5 here, just review for us what this shows and what --
6 how it relates to your opinion.

7 A. Sure. So this goes -- this goes with the
8 first opinion. This is an example of some of my
9 review of NuTech's log analysis. What I did is, I
10 tried to square up actual measured data with what
11 they were assessing in the same zones.

12 So I was provided with LAS files of their
13 analysis, and I went in and I captured the average
14 oil saturation for the zones. And then I looked at
15 what had happened when the well was drilled and
16 those zones were tested either through swabbing or
17 in a couple of cases when they set a pump and moved
18 large volumes of water to see if those zones would
19 test. And you can see that in -- the reason I've
20 got two colors there, those two zones were kind of
21 treated separately as two groups of perforations.

22 And the takeaway from this is that in
23 these zones where you had as high as 73 percent oil
24 saturation, we were producing 100 percent water, and
25 that just can't occur.

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1 Q. About how much water total was withdrawn
2 as -- from these tests?

3 A. In this particular well, if you add up all
4 of the swabbing and the production that was done
5 with a submersible pump, it's about 1700 barrels of
6 water, no oil.

7 Q. Now, this was -- NuTech prepared two
8 separate analyses. Was this NuTech's revised
9 analysis or its original analysis?

10 A. This is the first one that I had that was
11 available to put in my original statement, so that
12 would have been as of August. I think they had done
13 the work previous to that, but it would have been as
14 of August 2024.

15 Q. Why didn't you refer to or rely on
16 NuTech's revised analysis?

17 A. Well, I was kind of poised to because they
18 had issued a report that redid the analysis on a
19 single well. And I got quizzed about this at my
20 deposition because the report was confusing, to say
21 the least. It said: Here's an alternative
22 analysis. But it didn't say: This replaces our
23 first analysis. It doesn't say anything about what
24 the first analysis was.

25 Then the individual got deposed, and I

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1 asked you to specifically ask them: Okay. So we
2 don't have to worry about the original analysis?

3 And the answer was: No, we stand by the
4 original analysis, and it's, in fact, the more
5 robust one that we believe in.

6 So I stuck with this.

7 Q. How does this next slide relate to your
8 analysis of NuTech's log analysis?

9 A. So we're on the same topic, and I just
10 wanted to show visually. They gave me kind of an
11 unusual LAS file that had oil saturation in it, it
12 had bulk volume of immobile water.

13 So I couldn't compare things. I had to go
14 in and using the porosity, calculate bulk volume of
15 each of the components. And you can see it's a
16 little unusual. Normally for log analysis, you
17 don't get immobile water. But that's an output from
18 their analysis that I think was explained on --
19 earlier this week that it comes from a relationship
20 that they've developed from the log curves through a
21 big database of nuclear resonance imaging
22 measurements. So I used it.

23 You can think of this as a four, and
24 you've got 62 percent oil over this zone. You've
25 got only 17 percent mobile water and 21 percent

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1 immobile water. And yet, when the well is tested
2 and the zone is tested, it produces 100 percent
3 water. It literally makes no sense with what
4 actually came out of the well.

5 Q. Now next, those slides, I think, go into a
6 new set of topics here, where we spent a lot of time
7 today talking about pressures. Just walk us through
8 this initial slide and how it relates to your
9 analysis about pressures and formations.

10 A. Okay. And there's a -- before -- when I
11 created these slides, there was still kind of a live
12 controversy about whether the measurement was at --
13 above a mean sea level of 250 or below.

14 I think that's been put to bed because I
15 heard Mr. West say that he's gone back to his
16 original assessment, which I agree that it looks
17 like the measurement would have been at below 250
18 below so you're in the Grayburg.

19 But I still want to point out that we
20 don't know that much about the measurement. It's
21 1450. It was reported in a unitization hearing. We
22 don't have the source document. We don't have a
23 bottomhole pressure. We don't have a fluid level.

24 So there's still some question marks
25 around that pressure, and it's a real important

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1 pressure for Empire's case. Even though we've
2 land -- we tend to agree now, I guess, what datum
3 that goes with.

4 There are no measurements, no original
5 measurements in the San Andres. So they're having
6 to take a measurement in the Grayburg and assume
7 that you can take it down into the San Andres
8 disposal zone and assume that that's right. So I
9 just wanted to point that out.

10 This information is used principally by
11 two of Empire's witnesses, Mr. West, who's just
12 recently showed his opinions on that. But then from
13 a previous session, Dr. Buchwalter uses that
14 information in his model. And he had adjusted his
15 model for the higher pressure that assumed that
16 measurement was at minus 250 or above mean sea
17 level -- I'm sorry -- 250 above mean sea level.

18 So any run that you see from
19 Dr. Buchwalter that starts at like 1700 or more psi,
20 it's -- they've been supplanted, but that's not
21 relevant anymore.

22 Q. Anything more on this slide, Mr. McBeath?

23 A. No.

24 Q. And this slide, I think, based on
25 Mr. West's revised testimony, we don't need to

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1 address, correct?

2 A. That's right.

3 Q. Okay.

4 A. I thought we were going to have a big
5 fight about it, but it looks like it's resolved.

6 Q. Okay. Then continuing with your
7 discussion about pressure, how this next slide
8 refers or relates to their pressure analysis?

9 A. Okay. So this zone, we know that Empire
10 has started with that 1450 measurement. They've
11 assumed they can take it down into San Andres for
12 comparative purposes. And then they've gone and
13 found an RFT measurement.

14 Now, there was a little bit of testimony
15 this morning about what an RFT tool is. When I
16 worked for Schlumberger, I ran about 150 of them.
17 And they are used usually the last run in a well
18 because you use the previous runs to pick the points
19 you're going to measure. You have hydraulic pistons
20 where you can set that tool in the wellbore, push it
21 up against the side of the wellbore. And then a
22 probe comes out of the middle of that packer
23 section, goes into the reservoir, and then opens a
24 valve and measures the pressure there.

25 There's quality control that goes along

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1 with that. You're always watching a packer leak.
2 If you have a packer leak, it means you go back to
3 hydrostatic pressure in the wellbore. So that's --
4 those are the pressures he's used.

5 And if we look at those pressures, they
6 say something completely different than what --
7 Empire is alleging that we've got connected zones
8 with fractures up and down through the San Andres
9 and the Grayburg. And I want to show you what I
10 mean by that on the next slide.

11 Q. Before we move to the next slide,
12 Mr. McBeath, you mentioned that Empire was using
13 this data to establish a communication -- a pressure
14 communication with the San Andres. And you were
15 present for all -- the testimony throughout this
16 case, and you heard all of the disputes over tops
17 and where the San Andres is and where the San Andres
18 isn't.

19 I wanted you to just -- you know, as you
20 speak through and talk about these different
21 locations and depths, if you would just articulate
22 for us when you're talking about what Empire refers
23 to as the San Andres versus what may be Goodnight's
24 disposal zone or what -- just to be clear. Okay?

25 And here, we'll move on to the next slide

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1 because I think you're going to discuss it. What
2 does this next slide show?

3 A. Let's just briefly go to this slide. This
4 is Mr. West's slide. It's the one that, I guess,
5 should be -- we should go back to the original one
6 where he's gone down to his different pressure. But
7 in the middle, there's a -- highlighted in yellow
8 the EMSU 211 RFT data. That's the data that he
9 looked at. That's the data that I'm going to talk
10 about on the next slide.

11 Q. Okay. Nothing else here?

12 A. Nothing else.

13 Okay. This is a simple plot I made of
14 those RFT measurements. And it's a plot that I
15 would have made if I was sitting in a logging truck
16 doing logs in the Middle East. You're taking those
17 measurements because you're looking for context.
18 You start deep. You make a measurement. You plot
19 it on your graph paper.

20 You come uphole to the next pick from the
21 geologist, and you set the tool again. You make a
22 measurement. And you're looking for a gradient that
23 is reflective of the water in the -- in the
24 interval. You then keep coming uphole and you start
25 to see a change in the gradient. And that's because

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1 you're moving into a transition zone.

2 Eventually you get -- with your stations
3 moving up the hole, you move into the oil zone that
4 will have a different zone. And if there's a gas
5 cap in this reservoir, you get to a point where the
6 slope of the line goes quite vertical, and you found
7 the gas oil content. That's what you're trying to
8 establish when looking at these RFTs.

9 Now, if I look at the measurements between
10 the stations in this RFT, you've got pressure
11 differences of a couple hundred pounds or more only
12 over 11 feet. Or you've got 150 pounds over
13 21 feet. There is no liquid that exists on earth
14 that can explain -- that has enough density to
15 explain that kind of pressure difference from a
16 hydrostatic standpoint.

17 So what this is telling us is, those
18 stations are separated. They have intervening
19 formations that allow large pressures to exist over
20 short distances in the wellbore, and that means it's
21 not connected.

22 So I cannot square this data with a theory
23 that says we got fractures -- vertical fractures up
24 and down in the reservoir.

25 Q. Curious about, Mr. McBeath, when one is

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1 running an RFT tool, where are they looking to test?
2 I mean, what zones are they usually trying to find
3 to test with an RFT?

4 A. Is usually setting the tool based on picks
5 from a geologist, and the geologist will do it in
6 the best porosity. Because every time you set the
7 tool, it costs money. And you don't want to set it
8 in a shale. You don't want to set it in a dense
9 interval and -- where you'll get a bad reading. So
10 you set it in the -- in the zones that would likely
11 produce.

12 Q. Got it. Anything further on this slide?

13 A. One other thing. So you might be
14 wondering why is it that we've got these big
15 pressure differences? And it's got to be from
16 depletion. The intervals in the Grayburg have been
17 produced since the '30s, and you have wellbores that
18 penetrate them and produce laterally. But they
19 don't connect vertically. That's the point from
20 that.

21 Q. Got it. Next slide. What do you have --
22 what's -- what does this data show?

23 A. Well, this is to show that I'm not basing
24 this analysis on a single well. We were provided a
25 spreadsheet from Empire that summarized a number of

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1 RFTs that were taken, most of them about the same
2 time as this. These were '86, thereabouts.

3 So we've got similar kind of slopes that
4 don't fall on a -- on a normal hydrostatic line.
5 The big difference is in measurements over short
6 distances in the wellbore.

7 Q. Anything further on this discussion?

8 A. No.

9 Q. Now, this next set of slides is a new
10 topic here addressing economic. You reviewed
11 Empire's economic analyses?

12 A. Well, I did. I reviewed spreadsheets that
13 I received, and I had to do kind of a forensic dive
14 into these spreadsheets. The testimony that went
15 along with those spreadsheets did not describe in
16 much detail at all what was occurring there.

17 So we went into the spreadsheets,
18 understood how they worked, came up with a list of
19 questions for you to use at his deposition, and got
20 some further information. So I understand them now,
21 but they weren't well explained in the testimony.

22 Q. And in the testimony, did it explain --
23 did it provide a hydrocarbon recovery factor? Or
24 what was missing from the testimony that you
25 didn't -- that you needed to look for?

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1 A. I never saw any discussion about a
2 recovery factor. There's an implicit recovery
3 factor if you dive into the spreadsheet, because
4 they use a dimensionless curve, which we'll talk
5 about here in a minute, and they shut off injection
6 after three, four volumes. And that happens to line
7 up on the dimensionless curve at 18.5 percent
8 recovery. But that's something I had to incur. I
9 never saw any discussion on the recovery factor.

10 Q. Why don't you walk through these points
11 here that you identify as issues with your economic
12 analysis.

13 A. Okay. So the first assumption that stuck
14 out to me was that for every pattern that this
15 spreadsheet uses, they calculate the hydrocarbon
16 pore volume based on 400 feet of thickness times a
17 30 percent oil saturation.

18 And I specifically had you ask at the
19 deposition: Where does that exist? And the answer
20 was: It's at the top of the San Andres.

21 So I took that and relied on it and went
22 and -- you'll see I did some alternative
23 calculations using the 400 feet top of the
24 San Andres that our experts looked at.

25 But in the last day or so we've heard

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1 testimony that: Well, it's not really the top
2 400 feet. It could be 1500 feet, and it's -- that's
3 just the net 400 feet. And the spreadsheet doesn't
4 care if it's net or gross.

5 But -- the spreadsheet doesn't care, but
6 the field's going to care when you inject CO2 in
7 1500 feet or anything bigger than 400. You're going
8 to need of more CO2, and it won't be as effective as
9 the dimensionless curve says because you're going to
10 lose a lot of CO2 into nonproductive intervals.

11 So when I heard that, I thought, well, I
12 really don't like these economics because of the
13 inputs, but now they've become totally irrelevant.

14 Q. You mentioned it took you some uncovering
15 to figure out how Mr. West calculated oil recovery.
16 Part of his economic analysis also included CO2
17 recovery, as you heard from his testimony.

18 How did you ascertain Mr. West's
19 calculated -- his analysis for CO2 recovery as part
20 of his economic analysis?

21 A. We had to look in the model -- in the
22 spreadsheet model the same way we did to figure out
23 the oil recovery. There's another dimensionless
24 curve in there that relates CO2 injection on a
25 hydrocarbon pore volume basis with CO2 production.

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1 That's important for the economics because they use
2 it to say: Hey, I'm getting some recycle here that
3 I don't have to buy. So it limits the amount of CO2
4 that's required for purchase.

5 So it's a really important economic
6 parameter. There's no discussion of where that
7 curve comes from, the legitimacy of it, how it would
8 apply to 400 continuous feet, let alone 1500 feet of
9 San Andres for flooding.

10 So I still don't really know where that
11 came from. It's in the model. It's got a curve.
12 It's got an equation that they used to fit that
13 curve, but that's it.

14 Q. Now, this is something that Mr. --
15 Dr. Lake was going to address as more specifically
16 in his testimony; is that correct?

17 A. I believe that's correct, yes.

18 Q. Now, is it your understanding that this
19 economic model presented by Empire is its evidence
20 that waste is occurring in the -- or would occur in
21 the San Andres ROZ?

22 A. Well, I've either sat through or listened
23 to everything that's happened so far. This is the
24 only information I've seen that directly relates to
25 an estimate of waste.

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1 Q. And that would be for the San Andres ROZ?

2 A. That's correct.

3 Q. Okay. Why don't you walk us through the
4 last -- I think, did you talk about the last two
5 points here?

6 A. Let me back up and hit that second one
7 again. So once we found that dimensionless curve, I
8 think I asked you to ask Empire the source of it.
9 We were provided two things. We got an SPE paper
10 that's identified there, and we also got a
11 presentation from the same authors that had largely
12 the same info.

13 That paper was a scoping paper for the
14 State of Wyoming to figure out how much -- if we
15 flooded every field in Wyoming, both immiscible and
16 miscible, how much CO2 do we need on an
17 instantaneous rate and how much do we need total?
18 And they used -- they developed some formulas for
19 that.

20 The point is, the paper had nothing to do
21 with ROZ. It had nothing to do with New Mexico ROZ.
22 It has one curve in there that's labeled San Andres,
23 and it doesn't say where that came from. So that's
24 the source of the curve.

25 Q. Okay.

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1 A. Let me hit the last two here. The oil
2 prices in the economics are escalated. They start
3 out as \$75. They escalate 1 percent. And that's --
4 that's the only price run they made. We've had very
5 low prices recently, and when you escalate that
6 price out to the end of these economics, it's close
7 to \$120.

8 So seems to me if you're trying to capture
9 certainty, you need to have some other runs. So
10 I've redone some price ticks that are flat and
11 for -- with some futures prices.

12 Then the last thing has to do with the CO2
13 price. CO2 price is in the model because it's the
14 biggest cost in the CO2 flood. It's bigger than
15 capital expenses. And the assumed price is \$1 MCO.
16 The way they get to that is they say: We think the
17 price today is about \$1.50, and we think there's a
18 50-cent credit for -- 45Q tax credits. But that's
19 it. It's just an assumption.

20 My understanding of the 45Q tax credits is
21 that you have to have anthropogenic CO2 or you have
22 to have -- get it from, you know, a coal-fired power
23 plant or pull it out of the atmosphere. I think
24 starting with the \$1.50 is really low, and then
25 taking the 50 cents off is speculative. I don't

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1 know anybody who's actually got one of those
2 projects approved yet.

3 Q. Now --

4 A. So that's it on those.

5 Q. I think your next slide goes into these in
6 a little bit more detail, correct?

7 A. Yes.

8 Q. Okay. What's this one related to?

9 A. You know, I kind of jumped the gun and
10 described this. This is the Wyoming paper. It's
11 clear that it's not about residual oil saturation
12 zones -- or residual oil zones, and it's really not
13 about the Permian or New Mexico.

14 Another point I'll make about this, the
15 paper was written, I believe, in 2009, from memory.
16 So before 2010. And so we didn't have a whole lot
17 of ROZ projects at that point, maybe a handful. So
18 it's likely that if I bend over backwards and think
19 about what this curve represents, it's more than
20 likely, if it's based on data, it's going to be
21 based on main pay information, which is different
22 than ROZ.

23 And then one final point, it's -- you can
24 see on the x-axis that it's labeled Cumulative WAG,
25 so CO2 plus water injection in hydrocarbon pore

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1 values. So it's a WAG dimensionless curve. And we
2 heard from Mr. West that his model is modeling
3 continuous injection. So it's different.

4 Q. What's this next slide?

5 A. This is the CO2 production curve that has
6 no -- we just don't know where it came from. But
7 you can see that at 1 pore volume of injected CO2,
8 that's the x-axis -- and I apologize, if this is how
9 it existed in the model, it doesn't have labels.
10 You get back or produce 95 percent of a pore volume.
11 It seems like a really high return. You're only
12 losing 5 percent of the CO2. It doesn't make a lot
13 of sense.

14 Q. I know I referenced that Dr. Lake was
15 going to address this, but based on your review of
16 Dr. Lake's work and your understanding, just as a
17 preview, why is it your -- why do you believe that
18 that seems like a high rate of return for that?

19 A. Well, it's the same 1 pore volume of
20 injection. If you go back to the -- we won't go
21 back to it, but I'll tell you what the number is.
22 That 1 pore volume of CO2 injection, you've
23 recovered 11 percent pore volume of oil.

24 So it seems like there's 6 percent pore
25 volume missing. It's kind of nonphysical. I don't

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1 know what happened to that other 6 percent. It
2 seems like it would have been filled up with CO2.

3 Q. Anything further on this slide,
4 Mr. McBeath?

5 A. No.

6 Q. How about this next slide, what does this
7 show about your analysis of the economic model
8 presented by Empire?

9 A. So this is a chart of oil prices. The red
10 and the green lines that run up over time are the
11 assumptions in -- those are the assumptions in
12 Mr. West's model. You've got -- the green line is
13 for the 72 pattern. It doesn't take quite as long
14 to implement. And the red line is for the
15 250-pattern model that includes EMSU-B, additional
16 EMSU patterns, and AGU patterns.

17 The other two lines are my sensitivity
18 runs. I put in a flat run starting at the same
19 price that he did, \$75. And then I went to the
20 futures market when I ran this, which was leading up
21 to my rebuttal testimony, for a 30-day period, which
22 is typically how we analyze future prices to take
23 volatility out of the curve. And you can see that
24 at that point in time, and still today, the futures
25 market is cautious about oil prices.

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1 At that point in time when I ran it, it
2 was in the low '60s. So I've implemented those
3 prices into my revised runs.

4 Q. What's this next slide show?

5 A. This is the results for the 72-pattern
6 analysis where I've gone into Mr. West's spreadsheet
7 and I've done three things to it. I've gone in and
8 I've adjusted the porosity. I've adjusted the oil
9 saturation. And I've adjusted the CO2 price. Well,
10 I say three things. I've also adjusted the prices,
11 too, so four things under two different price ticks.

12 The first column -- I wish I could point
13 at this. But could you point at the middle column
14 where they're highlighted in yellow?

15 Yes. That's minus \$24 million. Prior to
16 the adjustments, if you go up to -- above that you
17 can see Mr. West's answer was that the 72-pattern
18 was going to make \$262 million.

19 So I changed porosity, not very much. His
20 was 10. I changed it to 9.35. And I'll talk about
21 why I changed that and how I changed that in a
22 minute.

23 I changed the oil saturation to 10.39 from
24 his 30 percent. And then I made two different runs,
25 \$75 a barrel constant, which results in a loss of

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1 \$24 million. Then on the futures market, which has
2 those decreasing prices out over time, the loss is
3 \$84 million.

4 Let me take a pause for a minute and talk
5 about why I made those adjustments. So he said in
6 his deposition that he was looking at the top
7 400 feet of the San Andres. So I took the log
8 analysis from our experts, from Netherland, Sewell &
9 Associates, Dr. Davidson, and I tallied up the
10 average porosity and the average oil saturation in
11 the top 400 of the San Andres. And I substituted
12 it.

13 And so Dr. Davidson will talk about how he
14 got to those results. But this is a sensitivity
15 that doesn't just assume a 30 percent oil
16 saturation. It's based on analysis.

17 So those changed the hydrocarbon pore
18 volume. For each 40-acre pattern, you've gone down
19 to about a third of the hydrocarbon pore volume
20 compared to the assumptions that Empire makes. And
21 so that -- that's the first column.

22 The second column of numbers has an
23 additional correction, and that's changing the CO2
24 price back to the \$1.50. And that's just removing
25 the tax credit that's assumed and going with \$1.50.

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1 And the results of that are below, where the \$75 per
2 barrel constant oil price loses about \$66-and-a-half
3 million and the futures price tick loses
4 \$127 million.

5 Q. And you did a similar analysis for the
6 72-pattern, correct?

7 A. I did, yes, on the next slide.

8 Q. Is that the next slide?

9 A. Yeah. I won't go over all of those
10 because the changes were the same in the model.
11 It's just using his 250-pattern model. He said
12 they're going to make \$585 million. That's a
13 present worth number. But when you make the
14 corrections for just porosity and oil saturation
15 under the two price ticks, you lose \$86 million with
16 \$75 oil or you lose \$215 million with the futures
17 price tick.

18 Similarly, when you roll in the CO2 price,
19 you lose either \$176 million or 370 -- \$307 million.

20 Q. Mr. McBeath, you heard today testimony --
21 this was on an assumption of a 400-foot interval,
22 correct?

23 A. My -- mine?

24 Q. Yes.

25 A. Yes.

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1 Q. And you heard today that Empire is
2 actually looking at injecting CO2 across a 1200 --
3 or 1500-foot interval across the entire San Andres.

4 A. I heard illusions to that, yes.

5 Q. Okay. How would that affect your analysis
6 here, your alternative pricing scenarios if you were
7 to actually try to implement this CO2 recovery
8 across a 1500 interval -- 1500-foot interval?

9 A. 1500 interval with 400 net? Is that what
10 you're asking me?

11 Q. Yeah.

12 A. I don't know that I could use this model
13 the way it is. You could change -- you could leave
14 the 400. That would properly calculate the
15 hydrocarbon pore volume of the oil. The problem
16 would be on the CO2 side.

17 Because when you inject, there's no way to
18 tell the CO2 just to go into the zones that you're
19 worried about. The CO2 is going to go into the
20 zones that make up the difference between 1500 and
21 400 or 1200 and 400.

22 So you'd have to accommodate -- somehow
23 change the model to triple or quadruple the amount
24 of CO2 you need because you're going to lose a lot
25 of it.

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1 Q. Explain if you would -- you were here for
2 OPS Geologic's testimony about how -- about what
3 they found in terms of where the highest oil
4 saturations were located in the San Andres?

5 A. You'll have to show me a document.

6 Q. Okay.

7 A. I don't remember that.

8 Q. Okay. Very well. Do you recall that the
9 testimony was that the highest oil saturations from
10 OPS Geologic were in the lowest porosity intervals?

11 A. Oh, I do recall that, yes.

12 Q. Yeah. So how would that -- how would that
13 square with this -- with this attempt to flood the
14 San Andres?

15 A. Well, you bring up a good point. The
16 model uses an average porosity, but if we've got
17 saturations that vary dramatically with porosity, it
18 seems like the model needs to be -- recognize that
19 and maybe calculate pore volume on more of a packet
20 basis where you could incorporate the right porosity
21 with the right saturation.

22 Q. Anything further on these pricings?

23 A. No.

24 Q. What do these next series of slides show
25 about your economic pricing scenarios?

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1 A. We can go through these next two pretty
2 quickly because they're just a visual representation
3 of what I've just shown on the previous corrections.

4 This is the 72-pattern calculation. The
5 red line is over time how Mr. West's analysis adds
6 up to about \$262 million of net present value. And
7 then you can see below zero over time on my
8 corrections under various assumptions.

9 Q. So that's just tweaking the few variables
10 you're -- you showed that the economic model
11 wouldn't -- couldn't be economic?

12 A. That's true. Porosity, oil saturation,
13 CO2 price, and then we've got the two different
14 price dex.

15 Q. And this is your chart for the 250-pattern
16 CO2 injection plan?

17 A. That's right. Similar results, but scaled
18 up to the 250-pattern model; whereas, Mr. West's
19 analysis approach is \$600 million net present value.
20 When you make those corrections, all of the results
21 are losing money to various degrees, as shown below.

22 Q. Now, in the next series of slides,
23 Mr. McBeath, I think we get into Dr. Buchwalter's
24 reservoir model. Just, if you would, give us an
25 overview of what this slide shows and what you're

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1 going to be talking about.

2 A. So what I'm going to talk about is how --
3 as I've studied Dr. Buchwalter's model, listened to
4 his testimony, listened to the conclusions that he's
5 drawn from its results, how I've tried to keep in
6 mind all of the data that I know about, that I've
7 looked at and contrast it with what he used in the
8 model to build his model and then to run his results
9 with history matches and future predictions.

10 So his model is relatively simple.
11 It's -- you know, it's only got ten layers. The
12 layers are thick in some places. He was really
13 intent on matching the oil in place, which I'm not
14 sure that was a really good way to go because we
15 know that there was a lot of uncertainty about the
16 oil in place.

17 If you go into the unitization hearing
18 from '84, they sort of complain about the quality of
19 the logs that they had, because many of the wells
20 are from the '30s and '40s. So he kind of forced
21 the model to fit that original oil in place.

22 One of the things he did was to drop the
23 oil-water contact from either 325 or 350 down to
24 366. That has the effect of killing a lot of water.
25 I mean, that might be the reason why he had trouble

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1 finding water in the Grayburg. But he did that. I
2 didn't see a justification for it.

3 I would think that one of the things that
4 an operator would know, even in the '30s and '40s,
5 is a contact. You'd know that in a wellbore. You
6 don't really know what the OOIP is, but that was
7 something that he used as a linchpin to make the
8 model fit them.

9 Q. Next slide?

10 A. Yeah. So the first thing I wanted to
11 show -- you know, I sat here and I listened to
12 Dr. Lindsay's discussion of the -- principally the
13 Grayburg. He talked about -- I think it was 87
14 different zones in the Grayburg with intervals that
15 don't produce, intervals that do produce, different
16 stratigraphy. And I think about that compared to
17 the five layers that Dr. Buchwalter has in the
18 Grayburg, and they really -- there's no way that the
19 model is going to capture the complexities that
20 Dr. Lindsay talked about in the geologic model.

21 So that's putting side by side to show
22 that, but I think that's pretty obvious.

23 Q. Explain this next slide and how it relates
24 to your criticisms of Dr. Buchwalter's analysis.

25 A. So here's some details. You know, there's

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1 been a lot of questions about: What were the
2 permeabilities that Dr. Buchwalter used? And maybe
3 there was some confusion over the last couple of
4 days.

5 But I pulled these directly out of the
6 model. So these are -- these are the
7 permeabilities, horizontal and vertical, in the
8 model. And the one that we'll have to talk about is
9 the one that is labeled Variable because that
10 doesn't tell you much. But let me go a little bit
11 further into this.

12 He's got -- you know, stay over on the
13 porosity side. He's got constant porosity up in the
14 Penrose of 6 percent. He's got 8 percent on an
15 average in the Grayburg, but variable. We've looked
16 at those grid ranges.

17 It's -- it is variable, but it's not that
18 much change. I mean, it's -- you think about a bell
19 curve. I think the lowest porosities are 6 and the
20 highest are 12. That's not much of a range of
21 porosities, but it is variable. And on average,
22 it's -- average, it's 8.

23 But the confusing thing is, he's got
24 variable porosity, but constant permeability. I
25 don't think I've ever seen that in reality. I would

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1 have expected both to be variable. They're somewhat
2 related, but he's got it in the model as -- at least
3 horizontally, he's got constant permeability in the
4 Grayburg.

5 We move down to the San Andres, you can
6 see he's got a constant porosity of about
7 6.4 percent. I talked to the folks on our team that
8 have done the log analysis, and they say that's very
9 low, very low for the San Andres.

10 And we move over to the permeability, and
11 I was prepared to say today that the range of
12 permeabilities that Dr. Buchwalter used to connect
13 up layer 7 and 8 was .1 to 12.8, because that's what
14 the documents have that I've got. I've got output
15 from his model.

16 Apparently, though, he must have used a
17 multiplier that's buried in his model that we don't
18 have access to. Mr. West put up a helpful slide
19 that showed that range is more like as high as, one
20 cell, a darcy down to much lower. But those are
21 enormous changes to make.

22 The rest of the San Andres is 0 -- the
23 rest of the connection between 7 and 8 is 0. So
24 you've got zones around particular wells where
25 they -- drastic modifications in the vertical

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1 permeability and at levels that I was surprised to
2 hear about today. Those are really high.

3 And the change is not just made at the
4 wellbore. The change is made in the entire block,
5 which is about 2 acres.

6 Q. Mr. McBeath, we'd asked for those output
7 documents from Mr. Buchwalter -- Dr. Buchwalter,
8 correct?

9 A. We did. We had asked for them, and we
10 got -- you know, I know there's a lot of output from
11 that model -- and even now some of it with the wrong
12 starting pressure. I wouldn't care that I had it at
13 this point. But we got some initial grids that show
14 what's happening and the realization of the model.
15 We got 1986, where I pulled some of the other things
16 that I'll show you, but we don't have every time
17 step. We can't get pressure at every point in the
18 model because the only output pressure, if you
19 had -- if you had a well in the cell. And you don't
20 have wells in every cell.

21 Q. Anything more that you want to address or
22 discuss on this -- on this slide?

23 A. One other thing. And this may come up
24 with other witnesses as our case goes on. We see
25 the level of the permeability that he's using, you

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1 know, upwards of 500 millidarcies in the Grayburg.

2 Now, I know that in models, you often have
3 to increase the permeability by some factor to make
4 it work because we're scaling up well level
5 measurements to field wide measurements. But
6 typical scaleup factors are 8 to 12 times. And when
7 I've looked at the permeability that I see,
8 particularly in one early published paper about the
9 field, you've got porosities that are below a
10 millidarcy that go up to maybe in the 10s of
11 millidarcies. I don't see any justification to take
12 the Grayburg up to 500 millidarcies for horizontal
13 permeability.

14 Q. One thing, before we move off this slide,
15 Mr. McBeath. You and I were discussing previously
16 some of the other factors that maybe were instituted
17 in this model that might have contributed to the
18 Grayburg's lack of water. You mentioned one being,
19 pushing down the water contact. Tell us -- there
20 may be one or two others that we discussed. If you
21 would just touch on it before we go off this slide.

22 A. Yeah. That's a good point. There are two
23 other things that were done in the model that I
24 think kind of precluded Grayburg water from being a
25 source of supply.

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1 One is pushing the oil-water contact down.
2 You know, you're losing a lot of water that could
3 have provided some of the water that he's struggling
4 to find. And it conflicts with the published
5 oil-water contact that we have in reports from
6 earlier operators.

7 He also used, in my view -- and I think
8 we'll hear from Dr. Lake about this a little bit
9 more -- a pretty high irreducible water saturation
10 conflicted with what was published in the
11 unitization hearing. So that freezes up water too.
12 Doesn't allow it to move.

13 Then the final thing. If you look into
14 the model, you look at the grids, he's got 0 net to
15 gross or basically nulled-out -- nulled-out grids to
16 the east in the -- in the Grayburg that prevents
17 water from moving from the east -- basically
18 prevents the edge water that's talked about in some
19 of the Chevron papers.

20 Q. Anything further on these -- this slide?

21 A. I'm sorry, I didn't hear you.

22 Q. Anything further on this slide?

23 A. No.

24 Q. Okay. Next slide over here, I think you
25 have a few comments on, some additional criticisms

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1 of Dr. Buchwalter.

2 A. Yes. So this was something that came up
3 at his deposition, and he -- basically the
4 assumption in the model is that anyplace there was
5 an oil zone, he assumed that an operator would have
6 completed the whole oil zone.

7 So in the model, he lets any well that is
8 producing, it has to have scheduled production for
9 that to occur, he allows it to produce from any zone
10 in the model that's got oil saturation.

11 But we know, in fact, the way that the
12 field was developed was that individual zones were
13 perforated and produced, depleted, and then there
14 were plug backs, there were deepenings. There were
15 workovers. And so he didn't know how oil actually
16 came out of the ground and came out of different
17 formations. He let them all produce.

18 So that has the effect of really messing
19 up the history match, because that scheduled
20 production -- that's the one thing that you kind of
21 know happened. Stuff came out of the well at the
22 surface, and he's letting it come out of all zones
23 within the model, whereas, it came out of discrete
24 zones, in fact, in wells.

25 So it's -- you've got fluids moving around

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1 in the model that really didn't move around, in
2 fact.

3 And the last -- on this slide, there's a
4 reference to after unitization, there were like 270
5 workovers that included deepening wells, working on
6 wells, re-perforating, things like that.

7 Q. Got it. Anything further on this
8 particular slide?

9 A. No.

10 Q. Let us know what this slide shows and how
11 it relates to your response to that --

12 A. Okay.

13 Q. -- stimulation.

14 A. So based on reviewing all of
15 Dr. Buchwalter's work, based on listening to him
16 testify about it, he has concluded that the EMSU-B
17 unit, the EMSU unit, and the AGU unit all
18 communicate. And he said that volumes move between
19 them. And I suspect it's a function of dropping
20 this oil-water contact down. I'm not sure if it's
21 real or not.

22 But we know that surrounding at least the
23 EMSU-B to the north, there are these other units
24 that have production. So if EMSU-B talks to EMSU
25 talks to AGU, why wouldn't they talk to these other

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1 units? So it's -- if he's going to take that
2 position, these other units and wells need to be in
3 his model, too, and they're not. There's just no
4 production, no wells. There's reservoir out there
5 in his model, but it doesn't have any wells in it.

6 Q. And these other wells or production that
7 you're referencing, are they solely Grayburg
8 production?

9 A. No. In fact, this was referenced in
10 Mr. West's discussion. He had talked about a field
11 far to the north, and I think this morning he
12 referenced San Andres production out of the North
13 Monument that's a source of withdrawal out of the
14 San Andres.

15 So leaving all of these things out of the
16 model, just take the model farther and farther away
17 from reality and take the results of it farther and
18 farther away from the liability.

19 Q. I think you have a slide that will address
20 some of those concepts later. But let's go to your
21 next slide.

22 Anything further on this one?

23 A. Only that I took this image from one of
24 Empire's exhibits. It's noted there.

25 Q. What does this next slide refer to?

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1 A. This came up earlier this morning too.
2 This is a -- an example of the database we were
3 given from Empire that shows we only have monthly
4 production resolution back to 1970. Prior to that,
5 there's a single cumulative number that represents
6 all the production that occurred for this well up to
7 1970.

8 So I think at one point when the
9 commissioners were asking Dr. Buchwalter a question,
10 they said: When did the water start? And he said:
11 Right away.

12 Well, it started right away in the model,
13 I'll give you that. But he told it to start right
14 away.

15 We don't know for each well when that came
16 occurred, and that's 40 years of production. It
17 might have happened in the last five. It might have
18 happened at the beginning. It might have happened
19 over the whole time period. That's a serious flaw
20 in the model. I don't know that it's -- there's
21 anything you can do about it, but it's a -- it puts
22 uncertainty on the results, in my mind.

23 Q. Okay. And that's just a limiting factor
24 based on the available data, correct?

25 A. That's right, absolutely.

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1 Q. Now, just in relation just -- how much of
2 the history of the production data are we talking
3 about that is based on cumulative data?

4 A. So you've got -- he says he starts the
5 production in '39. Let's just call it 1940. So
6 you've got 30 years of production before. And then
7 he goes forward in time, you know, to current. So
8 it's a little less than half.

9 Q. Anything further on this slide?

10 A. No.

11 Q. Okay. What's this next one show?

12 A. We're going to get back to RFTs. You guys
13 are going to think I'm in love with RFTs, but
14 they're important because it's real data that we
15 have. I talked about how the RFT measurements
16 undercut what Mr. West has said, but it's also
17 important to think about them when looking at
18 Dr. Buchwalter's model.

19 So I described earlier that we had some
20 limited information about the model. We were able
21 to go into some of the output that we were given
22 that gave us the gross -- basically the tops of
23 different models. And we can take the difference
24 between these tops and calculate the gross thickness
25 in different intervals.

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1 So the interval 7 that's shown on the
2 left-hand side of the page, that's the interval for
3 most of those RFT measurements, where everything
4 except the deepest one, all of those measurements
5 were made where I showed 11 feet, you had a couple
6 hundred psi difference, you have 150-psi over
7 20 feet, and those really big pressure differences
8 that occurred over small depth differences in the
9 model.

10 The highlighted number in that layer 7
11 grid, which is 65 feet, that's the location -- I've
12 only cut out a little piece of the grid because it's
13 huge. That's the location of the 211.

14 So at the 211, layer 7 is 65 feet thick.
15 So there's no way that his model could ever
16 accurately represent the real pressure differences
17 that we see from those RFT measurements.

18 If we move over to the right-hand side of
19 the page, that's the thickness of layer 8, which is
20 what he calls San Andres in his model. And it's
21 about 465 feet.

22 So, again, you can't represent the
23 difference in pressure that you see between those
24 last two RFT measurements when you have this thick
25 of cells in the model. Because the way the model

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1 works is that every time step, you have a material
2 balance, an equilibrium, and in effect, absent
3 gravity, you have about the same pressure in the
4 whole cell.

5 So the whole 65 feet has about the same
6 pressure, except for gravity effects. And same
7 thing in the 465. This model will never represent
8 what is really shown in those RFTs.

9 Q. Anything further on this slide?

10 A. No.

11 Q. Now, Mr. McBeath, previously you were
12 talking about some of the issues or concerns you had
13 about excluding immediately offsetting production
14 data from Mr. -- from Dr. Buchwalter's model. I
15 think this next slide raises a broader concern about
16 some of the assumptions about the size of the
17 San Andres in particular. If you would just review
18 for us what your -- what your -- the point of this
19 slide is and how it relates to your assessment of
20 the simulation.

21 A. Right. So earlier today the question of
22 boundaries came up and what's an appropriate
23 boundary to consider around the EMSU. So I listened
24 to Mr. Melzer's testimony after the fact when I got
25 home, on YouTube. And I went into his exhibit,

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1 which I couldn't really see that well because it's
2 small, fine lines. But I zoomed in, and I
3 highlighted all of the fairways that look like they
4 were connected to the location of the EMSU.

5 And I wanted to show that because the
6 scale of this fairway, which under his theory of how
7 an ROZ would occur has to do with pathways,
8 migration pathways, and water moving from one place
9 to another. So those zones are connected.

10 Otherwise, the fluid won't move.

11 If we compare that to the size of the
12 aquifer that Dr. Buchwalter attached to his model,
13 sounds big in a vacuum, 38 miles by 17 miles, but
14 it's tiny in comparison to the actual San Andres
15 zone that is connected across, you know, two
16 counties in New Mexico and then onward into Texas.
17 So this is a huge zone that one mile or two miles
18 around EMSU is not an appropriate boundary.

19 Q. I want to ask you, Mr. McBeath, just to
20 kind of, you know, square that -- this concept with
21 some of the data and some of the analysis you've
22 heard and read and the testimony. And I'm thinking
23 in particular about the results we're seeing and
24 I've read about from the water supply wells that
25 produce from the EMSU and then they did water

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1 disposal wells that Goodnight operates in
2 particular.

3 And if you would, just at a high level --
4 because I know there are other -- other experts that
5 are going to testify about that, just for the
6 purposes of the Commission, relay your understanding
7 of how that data squares with and relates to what
8 you just told us about the size of the San Andres
9 here in these fairways?

10 A. So the productive characteristics of the
11 water supply wells and the injectivity of the
12 disposal wells tell us that we're connected to an
13 enormous reservoir. And I'd add Rice to the list
14 that you just told us about. The water supply wells
15 were able to produce continuously for long, long
16 periods of time without any reduction in their
17 deliverability. So they must be connected to a very
18 high volume, large aquifer.

19 Conversely, when we go to the disposal
20 side in the same zone, Rice has -- I had an
21 interview with Rice. They told me that they have
22 seen no changes in their capacity to dispose of
23 water on a vacuum in their wells for decades. So if
24 the reservoir pressure is changing -- it can't be
25 that the reservoir pressure is changing if there's

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1 no change in injectivity of those wells.

2 Similarly with Goodnight's wells, large,
3 large volumes are able to be disposed of with
4 essentially no changes in the well deliverability.

5 Q. So I guess just to -- just to draw this
6 all together, then, the point of this slide
7 conceptually is that what we're talking about is a
8 giant ocean?

9 A. Well, you don't even have to believe me.
10 You can look at their own expert who says this is
11 the pathway and this is all connected.

12 Q. Anything further on this slide?

13 A. No.

14 Q. Explain what we're seeing here.

15 A. So this is a busy slide. I didn't make
16 it. So I'll explain what I think it says.

17 But I think this is a concept of how to
18 flood vertically with horizontal wells. Mr. Melzer
19 specifically said there's no analog for this, that
20 it's an untested concept. I don't think it's
21 appropriate here with all the differences we've seen
22 in the RFT showing that we do not have connections.

23 Witnesses talked about how you rely on
24 vertical fractures for this concept, and we can see
25 in those pressure measurements that the zones are

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1 holding large pressures. In other words, I can't
2 square vertical fractures with the pressures we see
3 in those RFTs that are not connected. So I don't
4 think this is a reasonable concept to implement
5 here.

6 Q. And here, they're talking about what
7 thickness of reservoir interval is this being
8 applied to in this instance?

9 A. It's noted as greater than 250 feet thick.

10 Q. And it's not clear -- is it clear how --
11 that this could be applied to an interval of 1200 to
12 1500 feet there?

13 A. Not -- just based on this diagram, no.

14 Q. Anything further on this slide?

15 A. No.

16 Q. Okay. What's this next slide show?

17 A. This next slide is another topic that
18 Mr. Melzer touched on. In the middle of the slide
19 I've got a cutout of an exhibit that I pulled from
20 the Tall Cotton hearing that was done. There's been
21 a lot of talk about Tall Cotton as an analogy.

22 And I wanted to -- there's been a lot of
23 questions about whether ROZ recovery factors --
24 that's a difficult question because there's not a
25 lot of data available publicly. In Texas, most of

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1 the ROZs, if not all, are commingled with main pay
2 ROZs. And in Texas, if you have a unit, you get one
3 production number for the whole unit for the month.
4 So trying to figure out even incrementally what an
5 added ROZ project will do to a curve is -- there's a
6 lot of uncertainty, and it's difficult to do.

7 But in Tall Cotton, we do have an
8 opportunity to look at the production, because all
9 of its related to ROZ. And we've got some published
10 information about the oil in place. So you can
11 infer some residual oil zone recovery factors. And
12 I wanted to attempt to answer that question.

13 But before I do that, there was an
14 implication that ROZ -- or that Tall Cotton was a
15 successful project. Based on what they had planned
16 to get and said they were going to get, it really
17 was not. It had some really lower recoveries than
18 they expected. So we go through that first.

19 The number that I circled,
20 19 million barrels under one section was identified
21 by Kinder Morgan in a hearing where they were asking
22 for some regulatory relief, and they said that
23 relates to a 400-foot thick interval. I scaled that
24 up because they ultimately found that they had
25 450-foot interval. I scaled that up from 400 to

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1 450. And I scaled the 640 acres, the whole section,
2 down to the acres that they had at Tall Cotton,
3 which was coincidentally also 450.

4 So that 19 million barrels becomes about
5 15 million barrels under Kinder Morgan's
6 assessment -- all I've done is scale it -- of ROZ
7 recoverable oil to the CO2 injection process.

8 Let's go to the next slide, and I'll
9 compare that to what I think they got.

10 So I have plotted the publicly available
11 data for the Tall Cotton project. And I've made a
12 simple rate cume plot and extrapolated that. I've
13 been conservative. I've said: Let's allow them to
14 go down to a 0 rate, which is probably not going to
15 happen. But if they were allowed to go down to a 0
16 rate, they can get -- their max EOR out of that
17 project is 4 million bars of oil. Compare that to
18 my normalized recoverable ROZ that they expected.
19 15.03, they've gotten less than half of what they
20 thought they were going to get. So it's not
21 successful.

22 And by the way, that project is not on
23 40 acres. It's on more like 10-acre spacing. So
24 all of the economics that you've looked at from
25 Empire, that's assuming a 40-acre spacing. So the

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1 recovery factor is going to be below -- 40 will be
2 less than 10 because you're contacting less
3 intervals.

4 I want to do one thing. I want to go back
5 one slide and make another comparison.

6 If you move up in that matrix, there's a
7 63 number. That's the oil in place. We need that
8 number to also be scaled, and I'm not going to bore
9 you with the math, but if you scale that
10 63 million barrels to the right thickness and the
11 right acreage, you end up with almost exactly
12 50 million barrels of oil in place in the ROZ.

13 You compare that 50 million to the 6.4
14 we've seen on the extrapolated production curve,
15 that math gets really easy, because 50, if you
16 double it, becomes 100. So you double 6.4, you're
17 at 12.8. So that's about the recovery factor at
18 Tall Cotton.

19 Q. Anything further out of these two slides?

20 A. No.

21 Q. Okay. Explain what you're seeing on this
22 slide. You mentioned that you had interviewed
23 somebody from Rice Operating. Explain who you spoke
24 to and why you did.

25 A. Sure. So I -- on March 26th, I had a

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1 conference call meeting with Mr. Scott Curtis, who I
2 guess at one point was going to testify and
3 ultimately is not. But I think the resolution of
4 that was that we were allowed to talk to him and
5 perhaps add to our testimony. And that's what I'm
6 doing here.

7 I talked to Mr. Curtis about his wells. I
8 talked to him about the history of his wells, his
9 experience with drilling wells, and his experience
10 with whether his wells disposal capacity has changed
11 over time. And what I'm really thinking about is
12 Dr. Buchwalter's model has already told us that he
13 believes the San Andres has started increasing in
14 pressure, depending on which run you look of his, as
15 early as 2018.

16 So if the pressure has started going up in
17 the San Andres, in reality, then people who are
18 contacted to that zone should see effects on their
19 wells.

20 And Mr. Curtis reported they disposed of
21 their water by just -- on a vacuum, pouring the
22 water into the well, in effect. And the way they
23 test it is, occasionally they load the well
24 continuously, measure the volume over a particular
25 period of time to see what the max disposal rate is,

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1 and absent well problems -- like you're having to
2 clean up a wellbore or get fill out of a well,
3 absent those things, he has seen no reduction in his
4 wells' max capacity over time, which means the
5 reservoir pressure hadn't changed.

6 Q. And your understanding from Mr. Curtis is
7 that Rice has been able to inject on vacuum for the
8 entire history of its disposal operations?

9 A. That's right. That's right.

10 Q. And that's true. Did they use pumps or
11 compression for any of their wells? Is that your --

12 A. No. It's just -- I mean, literally don't
13 dump it in the well, but it's just disposed of by a
14 vacuum -- on a vacuum.

15 Q. Anything further on this slide?

16 A. You know, the last comment there about
17 comparing this pressure to Dr. Buchwalter's model,
18 I'm not concerned about that because of this change
19 in the pressure. We know that many of his runs
20 really don't result -- have any reliable results.

21 Q. Did you want to comment on the EME-H20
22 well data we got from the data survey?

23 A. Sure. So that well -- that well had a
24 measurement. I think it's the oldest measurement we
25 have in the San Andres, 1959. If you look at the

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1 history of the well, the measurement is made just
2 four days after the log is run.

3 So this is, in all likelihood, prior to
4 injection. I mean, it's a -- this is our best
5 measurement in the San Andres. The measurement at
6 5,000 feet, the pressure is 1800-psi. If you do the
7 math, the gradient is about .36. I mean, most of
8 the gradients when you look at them, 1450 even,
9 go -- find that wellbore, find its depth, that that
10 measurement would be made at, it's about .37.

11 Some of the recent pressures we see in
12 the -- in the Goodnight wells, .38. I mean, the
13 pressures haven't changed very much at all over
14 time. It really conflicts with the theory that
15 looks to the RFT measurement at 1245, 4,006, that
16 there's been a big decrease in pressure in the
17 disposal zone.

18 Q. Based on that, you're saying, Mr. McBeath,
19 that it doesn't appear that there's been any change
20 or any effect on the reservoir pressure within the
21 San Andres over all of these decades?

22 A. Not based on the data I've looked at, no.
23 If it is, it's very minor.

24 Q. And if you would just conceptually relate
25 that back to our discussion about the size and scale

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1 of the San Andres just briefly so we --

2 A. So it makes sense when you think about the
3 ability of the wells to dispose of fluid, large
4 volumes that haven't changed over time, the ability
5 of the water supply wells to produce for long
6 periods of time without any degradation in their
7 deliverability, you must have a very, very large
8 reservoir for that to occur.

9 Q. Mr. McBeath, moving on to your last slide
10 here, these are your conclusions. If you would just
11 summarize at a high level your final opinions on
12 where we stand today -- where you stand today.

13 A. So based on everything I've looked at and
14 listened to their side, read all of the testimony
15 that I've reviewed, I have not seen any credible or
16 direct measurement evidence of a viable economic ROZ
17 project. The log analysis that was provided that I
18 looked at and compared with actual tests just
19 doesn't square with the real data. It's wildly
20 optimistic.

21 That's the first conclusion.

22 The second one is that both of their
23 witnesses, Mr. West and Dr. Buchwalter, rely on very
24 scant data, none of which, in the case of
25 Dr. Buchwalter, was actually made in the San Andres

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1 disposal zone, which is the zone we ought to be
2 concerned about, the zone that Goodnight is
3 disposing into.

4 The RFT measurements we've gone over a
5 bunch of times. Those large pressure differences
6 over very small depth differences in the well tells
7 us there are not connections vertically in the wells
8 where they measured that.

9 And then the Empire economics, the ROZ
10 floods economics, which I suppose is their evidence
11 of potential waste, I believe is not reliable and
12 has many inputs that are unsupported and are
13 unreasonable. And when you correct those, they
14 drive the project economics negative.

15 And then we've just gone over the
16 Dr. Buchwalter information where he's failed to
17 incorporate actual, known data and complexities into
18 the model. And, therefore, any conclusions that you
19 draw from the model are really suspect.

20 And then finally my overall conclusion is:
21 Based on everything I've seen -- obviously, it's the
22 Commission's decision, but I don't see the evidence
23 to support a drastic change in the status quo, which
24 was the use of the San Andres disposal zone for over
25 60 years. There's just no direct evidence of any

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1 effect between the disposal and the production of
2 Empire in the EMSU.

3 Q. Do you have an opinion, Mr. McBeath, about
4 whether Empire's production operations and Goodnight
5 Midstream's disposal zone are in communication?

6 A. Well, I certainly haven't seen any direct
7 evidence of that. And based on the characteristics
8 of the wells that we know that are in the disposal
9 zone and the fact that we don't see any effect on
10 the EMSU production curve on the total volume of
11 fluid that's being produced, it's staying about the
12 same, it looks to me like they can coexist, stay out
13 of each other's way, as long as we -- Goodnight
14 stays in the disposal zone. And anything that
15 happens above the interval where we drilled through
16 and had losses, you know, they can go -- do what
17 they want.

18 Q. Do you have an opinion about whether -- I
19 think you addressed it just now -- whether
20 Goodnight's injection is impairing in any way
21 Empire's correlative rights in the Grayburg zone --
22 or the zone above Goodnight's injection?

23 A. I mean, that's a follow-on of the opinion
24 that there's no connection between the two. And I
25 have -- been confusing. Some witnesses have said if

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1 you inject into an ROZ zone, nothing moves. Other
2 witnesses have said it pushes oil off the lease.

3 Well, I thought it was an ROZ zone, so I
4 don't see how correlative rights could be impaired
5 by simply injecting into an ROZ zone where the
6 oil -- an alleged ROZ zone where the oil can't move.

7 Q. Any opinion about whether Goodnight's
8 injection is causing waste?

9 A. I certainly haven't seen evidence of that.
10 I don't believe so.

11 Q. And I want to just touch on -- I mentioned
12 this or asked this question, but I don't think you
13 answered it. But have you been involved in cases
14 where SWDs have actually been shut down by an
15 agency?

16 A. I have, yes.

17 Q. And what kind of evidence or what were
18 the -- what were the facts that were presented that
19 caused a shutdown in those cases?

20 MR. WEHMEYER: We have an objection.
21 None of this is disclosed -- none of this is
22 disclosed in the witness statements. We haven't
23 received any documents on this.

24 So all of this is brand-new. We've never
25 been provided it. We object that this was due long

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1 ago, if this is the tack they wanted to take.

2 HEARING OFFICER HARWOOD: Response?

3 MR. RANKIN: I will withdraw the
4 question. It's part of his experience that he
5 brings to the table. And if it's a problem for them
6 to hear it, then, you know, I don't have to ask it.

7 HEARING OFFICER HARWOOD: Okay. All
8 right. That solves the problem.

9 Q (By Mr. Rankin) Mr. McBeath, you've heard
10 the Commission grappling today with its questions
11 and the last -- over the weeks with weighed issues
12 that are before it.

13 But I -- and I think you kind of answered
14 this question, but I just wanted to ask: Are
15 Empire's existing and potential ROZ development and
16 Goodnight's injection in the San Andres disposal
17 zone mutually exclusive, in your opinion?

18 A. In my opinion, they are not. I believe
19 they can coexist.

20 Q. What's your -- Commission is in here, I
21 think, looking for recommendation from both Empire's
22 witnesses and experts and Goodnight's witnesses and
23 experts. Given all that you've seen and heard and
24 based on your experience, do you have a
25 recommendation for what the Commission should do in

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1 terms of the status quo?

2 A. I don't see any reason to change the
3 status quo. The Commission obviously has ongoing
4 jurisdiction should something change. We're not
5 saying that this is the end of the analysis. If
6 anything changes and new data became available, I
7 suspect it would be brought to your attention.

8 But as I sit here, I have not seen direct
9 evidence of any effect of Goodnight's operations on
10 Empire's operations.

11 MR. RANKIN: Thank you very much,
12 Mr. McBeath.

13 At this time, Mr. Hearing Officer, I have
14 no further questions of the witness and make him
15 available for cross-examination.

16 HEARING OFFICER HARWOOD: All right.
17 It's almost 2:00. Why don't we take a 15-minute
18 break. Let's see, it's -- we'll call it 1:55.
19 Let's be back at ten after 2:00 since we're short on
20 time this afternoon.

21 (Recess was taken from 1:54 p.m. until 2:09 p.m.)

22 HEARING OFFICER HARWOOD: Are we back
23 on the record, then?

24 I'll take silence as a yes.

25 All right. If -- Mr. Wehmeyer, are you

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1 doing the cross?

2 MR. WEHMEYER: Yes. Cory Wehmeyer
3 for Empire.

4 HEARING OFFICER HARWOOD: All right.
5 Mr. McBeath, I'll just remind you you're under oath.

6 JOHN McBEATH: Thank you.

7 HEARING OFFICER HARWOOD: Oh, before
8 we proceed, though, doing the arithmetic, we've got
9 just about an hour-and-a-half left for
10 cross-examination, not only of Empire but everyone
11 else and then questions from the Commission.

12 So in all likelihood, we will have to have
13 this witness come back somehow, even if it's just
14 virtually.

15 Mr. Rankin, can you provide some insights
16 on that?

17 MR. RANKIN: Thanks for asking,
18 Mr. Hearing Officer. Yeah, I discussed with
19 counsel, Mr. McBeath will be available virtually
20 when this hearing resumes, however he won't be able
21 to be in person. When he does appear virtually, his
22 wife will have undergone knee replacement surgery.
23 He's the primary caregiver.

24 So just ask for some accommodations in
25 terms of his ability to go check on her and maybe

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1 some -- occasionally longer breaks so he can make
2 sure that she has what she needs.

3 But other than that, he'll be available
4 for cross as long as Mr. Wehmeyer or any of the
5 parties, including the Commission, have questions of
6 him.

7 HEARING OFFICER HARWOOD: Okay. Any
8 problem with that from Empire?

9 MR. WEHMEYER: No objection from
10 Empire.

11 HEARING OFFICER HARWOOD: Anyone else
12 OCD? Rice?

13 MR. MOANDER: No objection from OCD
14 at all.

15 MR. BECK: No objection from Rice.

16 MR. SUAZO: No objection from Pilot.

17 HEARING OFFICER HARWOOD: All right.
18 Okay. Without further ado, Mr. Wehmeyer, take it
19 away.

20 MR. WEHMEYER: Thank you.

21 CROSS-EXAMINATION

22 BY MR. WEHMEYER:

23 Q. Mr. McBeath, I want to start a little bit
24 with your experience and background. As you
25 discussed that with Mr. Rankin, have you ever

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1 actually worked with an oil and gas producer
2 in-house?

3 A. In-house, no.

4 Q. So if the Commission wanted to know about
5 any of your experience in-house with an operator on
6 an EOR project, a CO2 project, an ROZ project, or
7 just even primary recovery, you couldn't tell the
8 Commission about any experience like that in-house
9 with a producer, could you?

10 A. Well, I've reviewed many, many in-house
11 documents as part of the study I was describing
12 about tracking CO2 from Bravo Dome and Nagella Dome.
13 Some of those were studies that predated any of the
14 Wasson original Denver unit information.

15 So although I have never worked for an
16 operator, I have worked hand in hand with them as a
17 consultant. And I think my experience covers
18 multiple operators in that realm.

19 Q. Circling back to my actual question, which
20 was: If the Commission wanted to hear about
21 experience you had actually working in-house for a
22 producer, you couldn't tell them about any of that
23 kind of experience, could you?

24 A. If in-house experience is the relevant
25 question, I cannot say anything about that.

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1 Q. Now, in terms of the tail end of your
2 testimony, you used the -- a phrase several times,
3 and I want to focus in on it to make sure I
4 understand. You said that you haven't seen, quote,
5 "direct evidence," and you used that phrase three
6 times. What is direct evidence?

7 A. Actual measurements, like pressure,
8 effects on production. All of the information that
9 I've seen are inferences. Calculations of a
10 simulation that we've shown have got numerous input
11 problems. So that's an indirect measurement.

12 Q. I know you have not testified at the OCC
13 or the OCD before. It's not your suggestion that
14 this Commission is somehow limited to,
15 quote/unquote, "direct evidence," as opposed to
16 circumstantial or other inferential evidence in
17 making their decision, is it?

18 A. I think the Commission can decide whatever
19 evidence they want to look at.

20 Q. Additionally, you used, in response to the
21 closing questions from Mr. Rankin, the phrase
22 "waste" several times. You spoke to production
23 of -- protection of correlative rights. Do you
24 remember that?

25 A. Yes.

1 Q. Those are phrases that you're familiar
2 with?

3 A. Those are phrases that I use, and I have
4 an understanding of them.

5 Q. Additionally, "production in paying
6 quantities" is a phrase that you use, yes?

7 A. Absolutely.

8 Q. You're very familiar with production in
9 paying quantities?

10 A. You know I am.

11 Q. Production in paying quantities would
12 constitute an economic analysis that would exclude
13 CapEx expenditures and give only consideration
14 merely to recurrent revenue against recurrent
15 expense; is that right?

16 A. Production in paying quantities is an
17 analysis that relates to a producing well and
18 whether or not that well can hold a lease. I don't
19 see any applicability of production in paying
20 qualities in the realm of a future project like ROZ.

21 Q. My question -- if you'll just listen to my
22 question. In every context you've understood the
23 phrase "production in paying qualities," it has
24 required all exclusion of CapEx expenditures and
25 would only give -- give consideration to both actual

Cross-Examination by Mr. Wehmeyer

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1 and anticipated recurrent revenue against recurrent
2 expense, true?

3 A. Anticipated?

4 Q. Prong 2 of a production in paying
5 quantities.

6 A. So you're talking about the Pattern Jury
7 Charge of Texas?

8 Q. And I'm actually going to show you a
9 different state as well. But my question is: Based
10 on your experience, production in paying quantities
11 excludes all capital expenditure and gives
12 consideration only to recurrent revenue and
13 recurrent expense, both actual and anticipated in
14 the future?

15 MR. RANKIN: Mr. Hearing Officer, I'm
16 going to object to the questions. It's outside the
17 scope of Mr. McBeath's direct testimony and my
18 examination of him. He makes no reference to
19 produce -- PPQ analysis in any of his assessments or
20 in any of his testimony. And I didn't ask him about
21 it.

22 HEARING OFFICER HARWOOD: Well, he
23 testified at length about his views on the
24 economic -- economics of the proposed CO2 EOR
25 project. So I think the door is wide open.

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Cross-Examination by Mr. Wehmeyer

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1 I'll overrule the objection.

2 A. Can you repeat it?

3 Q (By Mr. Wehmeyer) Of course. With respect
4 to all of your experience in the history of time
5 with production in paying quantities, that would
6 require exclusion of all capture expenditure and
7 consideration be given only to recurrent revenue
8 against recurrent expense, both actual and
9 anticipated. Isn't that true?

10 A. That is true. But also all of my
11 experience relates to existing producing wells
12 trying to hold the lease.

13 Q. Now, if the Commission wanted to know
14 whether you've run any economic cases that would
15 exclude consideration of capital expenditure, you've
16 not done that; isn't that right?

17 A. I have done the adjustments that I just
18 testified about. We didn't talk about capital
19 expenditures at all.

20 Q. Your model includes capital expenditures
21 as part of the expense case, doesn't it?

22 A. Just as Mr. West's does.

23 Q. My question to you was: If the Commission
24 wanted to know whether you have an economic case
25 that you've run here that would exclude capital

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Cross-Examination by Mr. Wehmeyer

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1 expenditures, you have not prepared that case, have
2 you?

3 A. I have not.

4 Q. You can tell the Commission that if you
5 had prepared such a case, excluding capital
6 expenditure under any of the variable scenarios you
7 changed, it would be a profitable enterprise?

8 A. Don't know without running the numbers.

9 Q. Just because counsel brought up the
10 concept of waste, just very high level, are you
11 aware that the Constitution of the State of New
12 Mexico charges the State with protecting the natural
13 resources for the people of the state?

14 A. No.

15 Q. You know Texas does, doesn't it?

16 A. Generally I know that, yeah.

17 Q. It wouldn't be a shock to you if New
18 Mexico likewise had made a part of its Constitution
19 that the State has a duty to protect for its people
20 its precious natural resources?

21 MR. RANKIN: Objection. He's asking
22 a legal conclusion.

23 HEARING OFFICER HARWOOD: Overruled.
24 Sounds to me like it's probably quoted language from
25 the Constitution, which wouldn't be a legal

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1 conclusion.

2 A. That would not surprise me.

3 Q (By Mr. Wehmeyer) Right. And obviously,
4 oil would be a precious natural resource of the
5 State of New Mexico?

6 A. In the abstract, yes.

7 Q. And as we bring this away from the
8 abstract and talk concretely here on the EMSU, you
9 can tell this Commission that approximately
10 60 percent of the minerals that Empire's here
11 fighting for is owned by the State of New Mexico;
12 isn't that correct?

13 A. I could only parrot what Mr. West said. I
14 haven't studied those percentages.

15 Q. You have no reason to dispute that
16 approximately 60 percent of the minerals that
17 Empire's here fighting for are owned by the State of
18 New Mexico; isn't that right?

19 A. I cannot dispute that.

20 Q. You cannot dispute that approximately
21 20 percent of the minerals that Empire's here
22 fighting to protect is owned by the BLM?

23 A. I wasn't paying as close attention for
24 that number, but if you represent that to me, I
25 don't dispute it.

Cross-Examination by Mr. Wehmeyer

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1 Q. With respect to -- and I appreciate you
2 saying generally you would agree with 60 percent is
3 owned by the State of New Mexico and 20 percent by
4 the BLM.

5 In terms of the pore space that this
6 saltwater injection is entering right now, you can
7 tell this Commission that the saltwater, as we sit
8 here right now, is entering into pore space that is
9 owned by the State of New Mexico and Empire; isn't
10 that correct?

11 MR. RANKIN: Objection, foundation.
12 Mr. McBeath has no knowledge of the ownership of the
13 surface or what the laws are in New Mexico governing
14 pore space. There's no basis for the question nor
15 did I address it with him in direct examination or
16 during his presentation.

17 HEARING OFFICER HARWOOD: Can you lay
18 some more foundation?

19 MR. WEHMEYER: I absolutely can.
20 Q (By Mr. Wehmeyer) Mr. McBeath, did you just
21 testify in response to Mr. Rankin's direct
22 testimony -- direct questions that you had sat
23 through the entirety of these proceedings as part of
24 your expert work, less and except some time driving
25 on the road in which you participated by YouTube to

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1 ensure that you heard every word of testimony?

2 A. And the half day where I went back to
3 study Buchwalter's new stuff.

4 Q. So you've sat -- as part of your expert
5 work, in terms of taking the oath and offering
6 opinions to this Commission, you've listened to all
7 of the witnesses?

8 A. Effectively, I have, yes.

9 Q. And have you heard about the actual
10 alleged leases here that Goodnight claims which are
11 about 5 acres in size?

12 MR. RANKIN: Objection --

13 A. I don't --

14 MR. RANKIN: -- foundation. There's
15 no basis in the record for Mr. McBeath to know what
16 the lease size is.

17 Q (By Mr. Wehmeyer) Let's take this -- go
18 ahead, sorry.

19 HEARING OFFICER HARWOOD: Sustained.

20 Q (By Mr. Wehmeyer) If we take this
21 hypothetical, if hypothetically Goodnight had
22 acquired a 5- to 10-acre surface lease from heavens
23 to core -- are you with me so far from?

24 A. From who?

25 Q. From heaven to core?

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1 A. Oh, okay. Yes, I'm with you.

2 Q. You're with me so far on that
3 hypothetical?

4 A. Yes.

5 Q. You can tell this Commission that within a
6 matter of days, the saltwater injection would have
7 gone far past that rectangular cube from heaven to
8 earth and entered into other owners' adjoining pore
9 space; isn't that right?

10 MR. RANKIN: Objection, Mr. Hearing
11 Officer. Mr. McBeath has done no analysis of the
12 radius of influence.

13 HEARING OFFICER HARWOOD: It's a
14 hypothetical. Overruled.

15 A. I cannot speculate on days, no.

16 Q (By Mr. Wehmeyer) So as part of your work
17 here in offering opinions to this Commission about
18 what they should do by way of allowing Goodnight to
19 continue, you haven't analyzed where the saltwater
20 is going?

21 A. No.

22 Q. Doesn't that seem like an important
23 undertaking in terms of avoidance of waste?

24 A. In my experience, that particular analysis
25 is not part of the regulatory review when looking at

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1 applications for injection and disposal wells. It
2 certainly isn't in Texas, and to my knowledge, it's
3 not in New Mexico.

4 Q. Earlier, Mr. McBeath, you talked about the
5 importance of -- as a scientist of listening to all
6 of the information and looking at the testimony
7 that's come in. Do you remember that?

8 A. I don't think I referred to myself as a
9 scientist.

10 Q. Would you -- you disagree, not a
11 scientist?

12 A. I'm an engineer.

13 Q. Okay.

14 A. Yeah.

15 Q. Engineer. And but -- so help me
16 understand this. Did you make log picks here in
17 terms of the top of the San Andres?

18 A. Did I personally?

19 Q. Yes.

20 A. There's only, I think, one instance where
21 I looked at picks. I didn't make the picks. I
22 referred to historical picks in some water supply
23 wells surrounding the 211 well.

24 Q. Okay. So as we talked about the concept
25 of scientists versus engineer. You have not made

1 any personal picks here that you would say with
2 engineering probability, you're willing to put your
3 hand up in that stand and say: This is the top of
4 the San Andres, true?

5 A. That has not been my role here. There are
6 other witnesses that are going to talk about picks,
7 but not my role.

8 Q. Is that -- is that witness Preston
9 McGuire?

10 A. That's probably one of them, yeah.

11 Q. On his best day, he would be an engineer;
12 isn't that right?

13 A. I don't recall if he's an engineer or
14 geologist.

15 Q. Now, you have worked with Goodnight in the
16 past, haven't you?

17 A. I have a bit in the past, yes.

18 Q. You've personally worked in dispute
19 litigation matters with Goodnight?

20 A. Not matters. One other matter.

21 Q. And you have a partner that's worked with
22 Goodnight on numerous transactional matters as well?

23 A. What do you mean, "transactional matters"?

24 Q. Regulatory, something not disputed, us
25 getting to come here and fight together.

1 A. Oil Commission work, sure.

2 Q. Sure. Okay. Now, I remember, in review
3 of your deposition, that you volunteered -- and
4 you -- you know, you have to keep track of your past
5 testifying engagements and who you worked for,
6 because all of that kind of comes back to the issue
7 of bias and who is the guy and --

8 A. Sure.

9 Q. -- what's he done with them. Yeah.

10 A. Yes.

11 Q. In your deposition, you couldn't remember
12 what the case was that you helped Goodnight with in
13 a dispute litigation context. Do you remember, you
14 couldn't recall the name?

15 A. Yes, I do remember that.

16 Q. If I give the name just to see if these
17 helps refresh your memory, was it PPC Energy, LLC,
18 and Priest vs. Goodnight?

19 A. No.

20 Q. Are you familiar with that case?

21 A. Very vaguely. I didn't participate in it.
22 I've read about it a little bit, but that's it.

23 Q. You can tell the Commission, based on
24 reading about that case, that Goodnight was held
25 accountable for committing waste of natural

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1 resources and had to pay a settlement to aggrieved
2 mineral and producers?

3 MR. RANKIN: Objection. Mr. McBeath
4 just testified that he didn't have any real personal
5 knowledge about that case.

6 A. I don't know what the resolution of the
7 case was.

8 HEARING OFFICER HARWOOD: Hold on.

9 JOHN McBEATH: I'm sorry.

10 HEARING OFFICER HARWOOD: It's
11 overruled.

12 Go ahead.

13 A. I don't know what the resolution of the
14 case was.

15 Q (By Mr. Wehmeyer) Well, tell, then, the
16 commissioners what you do know about that case.

17 A. The only thing I know, I think it -- from
18 memory, one of my ex-partners may have been involved
19 in it, but I don't really know that for sure. I
20 think it was in Reeves County.

21 Q. Judge Swanson, and there's now a published
22 opinion that discusses the commission of waste and
23 the -- that fact that Goodnight actually settled out
24 of it?

25 A. We're going to find out a lot more about

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1 it by looking at an opinion than what I know about
2 the Priest case.

3 Q. Can you help the Commission and tell them
4 about an experience that you've been involved in in
5 which a commercial SWD operator permitted new wells
6 and began injecting into, as a commercial matter, a
7 designated oil unit?

8 MR. RANKIN: Objection, Mr. Hearing
9 Officer. I asked Mr. McBeath to discuss his
10 experience with SWDs. Mr. Wehmeyer objected and
11 prohibited me from eliciting his testimony.
12 Therefore, it's outside the scope of cross. I do
13 not understand why he is permitted to inquire on
14 this type, number one.

15 Number two, the case that Mr. Wehmeyer is
16 referring to is a case that not -- in terms of bias
17 or any concerns, Mr. McBeath didn't work on, but his
18 former partner did. He has not laid a foundation
19 how, in any way, Mr. McBeath would be biased by the
20 fact that his ex-partner may have worked on that
21 case.

22 HEARING OFFICER HARWOOD: Well,
23 credibility is always an issue in any case.

24 So the objection is overruled. It will go
25 to the weight, but not the admissibility of the

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1 testimony.

2 MR. WEHMEYER: Thank you.

3 Q (By Mr. Wehmeyer) So the question I had was
4 actually different than the one that your counsel
5 asked that was outside of your witness statements.
6 I'm not asking about an instance in which you saw
7 saltwater permits revoked, which was not in your
8 report and what he asked you earlier.

9 What I'm asking you is: Are you aware, in
10 your years of experience, in which there was an
11 existing designated oil production unit and a
12 commercial saltwater disposal operator permitted new
13 operations within the boundaries of the unit, yes or
14 no?

15 A. Well, I have to ask a clarifying question.
16 You're saying unit. Are you talking about a
17 drilling unit? A secondary recovery unit? What are
18 we talking about?

19 Q. Secondary recovery unit.

20 A. I can't think of any instance where I've
21 seen that.

22 Q. And you had how many decades of experience
23 before you sat in the chair today?

24 A. I guess it's getting close to four.

25 Q. So with four decades of experience, if

1 this Commission wants to know, can you tell them
2 about an instance in which a regulatory body, be it
3 in Texas or New Mexico or Wyoming or North Dakota or
4 Louisiana or any other place on the face of the
5 planet, a commission authorized a commercial
6 saltwater disposal operator to inject into a
7 secondary recovery unit that had been established?
8 You can't recall one, can you?

9 A. Other than this one?

10 Q. Yes.

11 A. I can't, but I wouldn't do it from memory.
12 If someone asked me to do that, I'd go research it.

13 Q. I'm going to publish a couple of slides
14 here just -- as we talked about the concept of
15 paying quantities, in, you know, your report, your
16 deposition, you speak of economic -- economically
17 recoverable -- technically recoverable -- I mean,
18 you've introduced the concepts of economics into
19 everything that you're doing here, haven't you?

20 A. Much of it.

21 Q. And, in fact, if the Commission wants to
22 know, you are the only witness in this case for
23 Goodnight that will be testifying on economics;
24 isn't that correct?

25 A. I don't know if that's true or not.

Cross-Examination by Mr. Wehmeyer

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1 Q. Stated differently, as you reviewed all of
2 these witness statements, you didn't see anybody
3 else besides yourself that would help this
4 Commission with economic testimony as concerns
5 Goodnight, true?

6 A. I don't know if that's true. There's been
7 some new reports put forward that were surrebuttal,
8 and I'd have to look at those to tell you for sure.

9 Q. All right. Let's take this in pieces.
10 Earlier you said you know production in paying
11 quantities at least in the state of Texas, but you
12 weren't sure on the state of New Mexico. And here
13 is a Supreme Court of New Mexico case discussing
14 paying quantities generated income against operating
15 costs, and it actually cites the Seminole Texas
16 Supreme Court case Clifton v. Koontz, which you're
17 familiar with?

18 A. Yes.

19 Q. It looks identical to -- as you understand
20 it in Texas. Yes?

21 A. Which looks identical?

22 Q. The paying quantities analysis in New
23 Mexico.

24 A. It's identical, and it's also referring to
25 keeping a lease in place.

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Cross-Examination by Mr. Wehmeyer

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1 Q. Next one.

2 With respect to the New Mexico
3 Constitution, do you see that the -- in terms of
4 what this Commission is doing here, is: The
5 protection of the state's beautiful and healthful
6 environment. It's of fundamental importance to the
7 public interest to health, safety, and general
8 welfare that the legislature shall provide for
9 control of despoilment of natural resources of the
10 state consistent with the use and development of
11 these resources for the maximum benefit of the
12 people.

13 I read that generally correctly on the
14 part we care about here?

15 A. You did.

16 Q. It would be consistent with how you
17 understand Texas is discharged?

18 MR. RANKIN: Objection, Mr. Hearing
19 Officer. He's asking for a conclusion -- a legal
20 conclusion about comparing New Mexico law
21 constitution with Texas law. Mr. McBeath is not a
22 lawyer.

23 HEARING OFFICER HARWOOD: I'm not
24 sure it's a legal conclusion. It's just asking to
25 compare the language.

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Cross-Examination by Mr. Wehmeyer

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1 Overruled.

2 A. I can answer? I suspect there's some
3 similar provision in the Texas Constitution.

4 Q (By Mr. Wehmeyer) I hope we could all agree
5 that in listening to all of the testimony in the
6 case, this Commission should be vitally concerned
7 with protecting this state's natural resources for
8 the maximum benefit of its people, especially here
9 where 60 percent of those resources are, in fact,
10 owned by the people. You agree?

11 A. I don't think we have to tell the
12 commissioners there.

13 Q. Let me have the next slide.

14 The Commission's empowered to prevent
15 waste. Go to the next slide.

16 We've talked about waste. And what's your
17 understanding of what prevention of waste is?

18 A. It would be impacting economically
19 recoverable reserves, be they gas or oil.

20 Q. Or just tending to reduce the total
21 quantity of crude petroleum oil recovered, yes?

22 A. I think there's an implicit economics in
23 there, because it's not reasonable to assume this
24 would apply to uneconomic reserves.

25 Q. Let's talk about uneconomic. Even if

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1 you're not impressed by my client, Empire, and the
2 work that they've spent millions of dollars to bring
3 here to this Commission, there are reserves that
4 hypothetically could not be economically recoverable
5 at this precise moment that the State of New Mexico
6 owns, but that through advances in technology, the
7 changes in cost profile, or the changes in commodity
8 price environment become economically in the future?

9 A. You can't call them reserves.

10 Q. Okay. What would you like me to call the
11 State of New Mexico's oil and gas hydrocarbon
12 molecules that are literally inside the EMSU
13 San Andres right now?

14 A. You can call it an alleged resource.

15 Q. Okay. So the alleged resource -- so as we
16 talk about the State of New Mexico's people's
17 alleged resource, as it sits in the San Andres and
18 even in the Grayburg right now, we can agree that
19 changes in technology, changes in cost profile, or
20 changes -- this is an "or" not an "and" -- or
21 changes in commodity price can all make the -- help
22 me with your phrase again?

23 A. The alleged resource.

24 Q. -- the alleged resource now become
25 economically recoverable?

1 A. I mean, that's possible.

2 Q. Okay. "The oil conservation division may
3 make rules and orders for the purposes and with
4 respect to the subject matter stated in this
5 subsection: Number 4, to prevent the drowning by
6 water of any stratum or part thereof capable of
7 producing oil or gas or both oil and gas in paying
8 quantities."

9 You can tell the Commission that if
10 they're applying subsection B(4) here, you do not
11 have a paying quantities analysis prepared in this
12 case; isn't that true?

13 A. The term "paying quantities," to me, is a
14 term of art that applies to producing wells and
15 whether or not they hold leases. So I'm really
16 confused about you trying to insert that term of art
17 into a discussion of undeveloped and unproven
18 contingent resources.

19 Q. The question is narrow, Mr. McBeath. If
20 the Commission wants to know if you have any
21 production in paying quantities analysis for them,
22 your answer is, "I do not have one"; isn't that
23 true?

24 A. If you tell me that paying quantities in
25 this particular case means you would go into the

1 spreadsheet and delete capital expenses and rerun
2 the spreadsheet, I don't have it.

3 Q. And if you did do that, you know perfectly
4 well that this is all a positive case, don't you?

5 A. I also know perfectly well, that that
6 would be meaningless from making a decision to
7 implement an ROZ project.

8 Q. Likewise, the Commission has the duty to
9 avoid water encroachment that reduces or tends to
10 reduce the total ultimate recovery of crude
11 petroleum oil or gas or both. Is that your
12 understanding?

13 A. Well, that's what it says here.

14 MR. WEHMEYER: We can take that down.

15 Q. I want to come back to just speak high
16 level. As we just talked about how important the
17 proceeding -- Mr. Rankin actually talked about how
18 important the proceeding is, and I absolutely agree.

19 We know that 60 percent of these
20 hydrocarbons, the, quote/unquote, "alleged resource"
21 of the people, is here in the EMSU. And you've
22 heard from Mr. West's mouth how committed the CEO of
23 Empire is to ensuring development of those
24 resources.

25 A. I heard him testify about that.

1 Q. Do you think he's being disingenuous or do
2 you think he's a kidder or he's a joker? Or do you
3 think that's earnest?

4 A. I take him at face value.

5 Q. Wouldn't the people of New Mexico benefit
6 greatly if Empire at least gets its chance to spend
7 its money at zero economic risk to the people of the
8 state of New Mexico to develop this precious natural
9 resource?

10 A. Wouldn't -- I missed the first part of
11 that.

12 Q. Wouldn't the people of New Mexico be
13 benefited greatly if Empire's at least permitted to
14 expend the millions and millions of dollars it would
15 take to develop this resource?

16 A. It depends on the success of the project
17 whether they would benefit greatly.

18 Q. And you've heard Mr. West say that until
19 the saltwater injection is stopped, they can't even
20 get to a place to raise money or put the plans
21 together to develop the project because the very
22 first thing any investor or stockholder is going to
23 want to know is: Why on earth are you doing this
24 where there's nine commercial saltwater injection
25 wells in the, quote/unquote, "alleged resource"

1 zone?

2 A. That's not what he said. He said his
3 major shareholder would pay for it.

4 Q. Can you agree that as a matter of common
5 sense, the first step towards developing the ROZ
6 here in the San Andres would, in fact, be stopping
7 the saltwater injection?

8 A. Not in the disposal zone.

9 Q. You've heard Empire say that they intend
10 to conduct an ROZ project on all of the San Andres.
11 You've heard that through multiple witnesses,
12 haven't you?

13 A. They said they intend to do 400 net feet
14 over 1500 feet.

15 Q. And I know you want to make a distinction
16 between upper San Andres and lower San Andres, and
17 you call the lower San Andres the disposal zone?

18 A. Effectively, yeah, that broadly describes
19 it.

20 Q. You can tell the Commission that if
21 Empire's developing 400 either gross feet or net
22 feet, that's obviously going to be into what you're
23 calling the disposal zone, isn't it?

24 A. Even if it was 1500 feet, it would be,
25 yes.

1 Q. I said 400 feet. If the interval of
2 development is 400 feet -- even if it's just
3 400 feet?

4 A. Whose top are we using?

5 Q. Either top.

6 A. I think that would probably cover the
7 zone -- most of the zone, yes.

8 Q. And so you -- you've seen that the net pay
9 that some of the Empire model is built off of has at
10 places 400 feet of net pay, in some places 300 feet,
11 different net pay zones?

12 A. Which model are you talking about?

13 Q. Mr. West's model.

14 A. I did not hear him testify about which
15 model he linked that to. He said 400 feet. In his
16 deposition, he said it's the top 400 feet. And
17 there was no specificity given about which expert
18 that would have linked up to. Some of those
19 analyses didn't even exist when he was deposed.

20 Q. And, again, I'm just trying to not play
21 the injection zone terminology game with you. If
22 it's 400 feet from anybody's top of San Andres, you
23 can tell the Commission that we are into what you
24 are calling the injection zone, aren't we?

25 A. Approximately, that's true.

1 Q. And so you said you didn't doubt Mr. West
2 was earnest when he told this Commission under oath
3 about Empire's intention to conduct an ROZ project
4 in the San Andres. You've heard him say this is
5 400 feet or more that they -- he said 1500 feet,
6 right?

7 A. He did, yes.

8 Q. And so I come back to my first question,
9 which was: Wouldn't the people of the state of New
10 Mexico benefit from this because they have a cost
11 free, risk free opportunity to receive a royalty off
12 of the million dollars of development that's going
13 to be spent by Empire?

14 A. You keep saying "benefit greatly." They
15 will only benefit greatly if it's a successful
16 project.

17 Q. But until the saltwater disposal is
18 stopped, it would make no sense for Empire to even
19 start that project, would it?

20 A. I think they can coexist. You're going to
21 hear from other witnesses. I'm the first witness in
22 our case. And you're going to see log analysis that
23 shows there's not a -- saturations in that interval
24 that are worth even trying, so -- you know.

25 Q. Okay. Work with me in this hypothetical.

1 You -- we can all agree there are some -- under
2 anybody's analysis, Mr. Davidson's, Empire's, there
3 are hydrocarbons in the San Andres all the way to
4 the base of the Glorieta?

5 A. I don't know that. All the way, you're
6 talking about continuously?

7 Q. Through -- throughout the 1500 feet. They
8 may not be at oil in place volumes that are good
9 enough for you or Mr. Davidson, but there are
10 volumes there under anybody's analysis, aren't
11 there?

12 A. There are sporadic instances of
13 saturations down to the base.

14 Q. And you just heard Empire testify that at
15 zero expense to the people of the state of New
16 Mexico, they want to try to get the hydrocarbons out
17 of all 1500 feet?

18 A. I mean, that's what Mr. West said.

19 Q. You would agree with me that it makes no
20 sense to start that project in the 1,500 feet while
21 a saltwater disposal commercial operator is
22 injecting into the -- into that unitized oil
23 interval?

24 A. It depends. It depends on the pressure.
25 It depends on the volume. It depends on what part

1 of the field you're talking about. I think they
2 could start it.

3 Even if I accept your premise that they
4 want to do it through the entire interval, which I
5 think is -- based on what I've seen, would not be a
6 good idea, there are parts of the field where they
7 could start that and prove it up.

8 Q. Let's take the other side of the coin. If
9 the Commission decides to allow saltwater disposal
10 into the pore space owned by the people of New
11 Mexico, allowed to continue -- and let's even permit
12 some more saltwater disposal into that pore space --
13 are you with me so far on that hypothetical?

14 A. No.

15 Q. They don't revoke any of the permits and
16 they don't approve any of the --

17 A. You know what's hanging me up? You went
18 back to the pore space of the people of New Mexico.
19 I don't know what leases, where the volumes are
20 going at this time. So I don't know.

21 Q. Before coming and giving this Commission
22 testimony about what they should make by way of
23 decisions here, you didn't bother to do that
24 research?

25 A. That's not part of the analysis that goes

1 into a saltwater disposal application.

2 Q. Well, let's take the other side of the
3 coin. If they don't revoke the permits, they don't
4 stop the saltwater injection, and they also allow
5 even more saltwater injection -- are you with me so
6 far in the hypothetical?

7 A. I am.

8 Q. Goodnight is a Dallas-based company; is
9 that right?

10 A. I think that's true.

11 Q. They're private equity funded by a company
12 in Fort Worth, Texas?

13 A. No idea.

14 Q. All of the revenue from the saltwater
15 disposal would go in a little tiny quantity to one
16 fee surface owner, like a little 5, 6-acre pad site,
17 and the rest of the money would all go across state
18 lines over to North Texas to be spent in Dallas and
19 Fort Worth, Texas?

20 A. I don't know. No idea.

21 Q. Can you help me with how allowing this
22 saltwater -- well, let me strike that.

23 Have you seen any analysis in this case
24 that -- by any witness for Goodnight, that if this
25 saltwater disposal is stopped -- are you with me so

1 far?

2 A. Yes.

3 Q. -- that any particular oil and gas well in
4 New Mexico would have to be shut in for lack of
5 saltwater disposal capacity, yes or no?

6 A. Well, we've only just started our case, so
7 I haven't seen that yet, but no.

8 Q. So you haven't -- you've had access to all
9 of the witness statements that Goodnight's prepared,
10 right?

11 A. Yes.

12 Q. You've probably gone to dinner with the
13 other Goodnight witnesses and you sit over a
14 hamburger or a flat enchilada, or whatever you want
15 to eat, and you-all had a chance to talk about the
16 case over these meals, spend --

17 A. Good amount of time to do that.

18 Q. Okay. You haven't heard over the flat
19 enchilada dinners or in any of the witness
20 statements that you've seen so far, anybody say
21 they've conducted an analysis and that if this
22 Commission rules in favor of Empire, a particular
23 oil producing well will be shut in for lack of
24 saltwater capacity, true?

25 A. I've certainly heard discussions about the

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1 effect it would have on future development of wells
2 because capacity is -- disposal capacity is critical
3 for drilling future horizontal wells.

4 Q. You have not seen any such study conducted
5 or provided in any of the witness statements?

6 A. You asked me about going to dinner and
7 listening to --

8 Q. I changed my -- I changed my question.
9 You haven't seen any of this in any of the witness
10 statements to the Commission?

11 A. I have not.

12 Q. Okay.

13 HEARING OFFICER HARWOOD: You guys,
14 just try and -- for the court reporter's sake, try
15 and make sure you don't talk over each.

16 JOHN McBEATH: That's my fault. I
17 apologize.

18 HEARING OFFICER HARWOOD: That's all
19 right.

20 JOHN McBEATH: It's my fault.

21 MR. WEHMEYER: Mr. McBeath and I are
22 actually dear friends. We really are. He's one of
23 my favorite people on the earth.

24 HEARING OFFICER HARWOOD: I'd hate to
25 see your enemies.

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1 Q (By Mr. Wehmeyer) Mr. McBeath, as we come
2 back to this hypothetical, you're not prepared to
3 explain any case of economic harm to the State of
4 New Mexico or its citizens if this saltwater
5 disposal is stopped, are you?

6 A. I have not undertaken that study.

7 Q. And you haven't seen any Goodnight witness
8 undertake that particular study, have you?

9 A. Not so far.

10 Q. Now, earlier you said engineers want data.
11 As part of doing your work here, it was important
12 to -- you to hear the testimony, yes?

13 A. Yes.

14 Q. Now -- and I'm taking your slides kind of
15 in reverse order just because this one came to mind
16 as we're visiting. The -- with respect to the Tall
17 Cotton field that -- you actually thought that was
18 important enough to provide a slide on it?

19 A. Yes.

20 Q. And the reason you provided a slide on it
21 and offered testimony was because you wanted to
22 offer that to this Commission as a -- as a failure
23 case, right?

24 A. No. Actually the main reason was to try
25 and answer Dr. Ampomah's question about ROZ recovery

1 factors, which has come up -- a number of witnesses.
2 It's hard information to find. And I realized
3 looking at the exhibits when Mr. Melzer was
4 testifying that: Oh, we could -- we could actually
5 determine this.

6 Q. Did you hear Mr. Melzer's testimony about
7 what happened at Tall Cotton?

8 A. I heard something about it. I don't
9 recall.

10 Q. That he was actually a consultant to
11 Kinder Morgan and that he told them, "Don't do it."
12 And they did it, and they fracked into the injector
13 wells and ruined their injector wells?

14 A. I did hear that, yes.

15 Q. Okay. Wouldn't that be important
16 testimony for this -- if you're going to use that as
17 a -- you called it a -- you -- measuring the success
18 factor, what did you call it?

19 A. Recovery factor.

20 Q. The recovery factor. As an engineer,
21 wouldn't it be important to provide the Commission
22 with the information, as you talk about recovery
23 factor, that the darn injector wells got fracked
24 into and ruined?

25 A. The Commission already knew that from

1 Mr. Melzer's statement -- testimony.

2 Q. Could that be an explanation as to why the
3 recovery factor was less than perhaps was
4 anticipated on the front end?

5 A. If you look at that decline curve, I would
6 expect to see a dramatic change somewhere. It
7 depends when that happened in the life, what
8 portions of the lease, if it really affects the
9 entire lease. So the specifics matter.

10 Q. Let's move into your slides. And I'm just
11 going to take them in the order that you put them
12 together.

13 A. Okay.

14 Q. The first one was the NuTech -- you had
15 the oil saturations that you were talking on?

16 A. I can't see it just yet.

17 MR. RANKIN: Mr. McBeath knows me
18 well enough to know that I'm the least technology
19 savvy person in this entire room. And Ms. Hardy has
20 been so kind to help over here.

21 Q (By Mr. Wehmeyer) All right. So what I've
22 done is just taken your slide 2 and added NuTech's
23 revised calculations. Were you in here when NuTech
24 testified on those this week?

25 A. I was not here, but I was listening.

1 Q. Okay. And you knew that when you prepared
2 this slide, that this was on the first case that
3 NuTech had provided, right?

4 A. Absolutely. And I explained why I
5 included that.

6 Q. If -- but just in terms of making sure
7 this Commission has the information it needs to go
8 back and make a decision, if we look over on the
9 left-hand column to NuTech's revised oil saturations
10 at 54 percent, 41 percent, 37 percent, 10 percent,
11 26 percent, 15 percent, and 6 percent, you can tell
12 the Commission that those are accurate in terms of
13 the revised NuTech numbers?

14 A. I'll have to take your word for it because
15 I haven't summed those up over those intervals.

16 Q. But in terms of presenting the Commission
17 with the slide, you took the old NuTech numbers, not
18 the new numbers?

19 A. I used the old ones because at their
20 deposition, they said those are the ones they were
21 going to stand behind.

22 Q. And as you sit here, you're not ready to
23 dispute any of these numbers, but just for the
24 Commission's ease and reference, I've provided here?

25 A. I would hope whoever put this together

1 summed up the right numbers.

2 Q. Likewise, your slide number 3 used the
3 outdated NuTech -- uh, oh. We're frozen again.

4 There we go. All right. So all I've done
5 here is made the point to the Commission that what
6 you used was old NuTech and that if we used the new
7 NuTech, it's not 62 percent oil, it's 32 percent
8 oil, yeah?

9 A. Don't know. I mean, this was kind of an
10 involved calculation I had to do to put everything
11 on a bulk volume basis. But assuming someone did
12 that correct over the right interval, those numbers
13 probably would change with their new revised
14 information.

15 Q. Stated differently, you're not ready to
16 dispute here 32 percent oil would be the -- the
17 revised average of NuTech?

18 A. Of the new numbers?

19 Q. Yes.

20 A. I'm not ready to dispute it, but I haven't
21 done that work. But I'll hang my hat on them saying
22 they thought the original ones were the ones they
23 would stand behind.

24 Q. And, in fact, the volumes that were used
25 by Mr. West in his economic model would be

1 conservative to 32 percent saturation, wouldn't
2 they?

3 A. You're asking me if 30 is less than 32?

4 Q. Yes, sir.

5 A. Yes.

6 Q. Okay. Great. But NuTech -- that would
7 not -- would NuTech's analyses, would that -- as I
8 come back to this direct evidence distinction that
9 you've drawn on the witness stand today is -- are
10 NuTech's figures direct evidence or those are not
11 direct evidence?

12 A. Indirect.

13 Q. Okay.

14 A. So logs are -- when you make calculations
15 on logs, those are inferences.

16 Q. So in terms of making a direct evidence
17 case to the Commission, logs aren't good enough
18 because you think we need direct evidence?

19 A. But you're mixing up -- when we're talking
20 about the effect of disposal on Empire's operations,
21 when I was talking about direct evidence, like wells
22 pressuring up, drastic changes in production
23 profile, total volumes in the field changing, that's
24 what we were talking about when that came up.

25 Q. Okay. Let's go to the -- actually, let me

1 ask: Have you ever analyzed the new NuTech numbers?

2 A. Have I looked at the numbers? I've looked
3 at the report. I have not gone into their -- I have
4 to see if we even got them, the LAS files to sum up
5 the half-a-foot by half-a-foot numbers.

6 Q. And I guess that's my point for the
7 Commission. There's a difference between looking at
8 some something and analyze something. I can look at
9 all sorts of stuff. That doesn't mean I've analyzed
10 it.

11 On the revised NuTech, have you analyzed
12 those or gone no further than looking at them?

13 A. I only looked at them, and I told the
14 Commission why.

15 Q. But you would agree that the most
16 important thing we do here for the State of New
17 Mexico and its people is get this right, right?

18 A. Absolutely.

19 Q. Okay. Have you ever analyzed OPS
20 Geologic's saturations?

21 A. If I'm going to use the term like you used
22 it in the last question "analyzed," which means take
23 their files, sum them up, make averages, no.

24 Q. Okay. So you're the only person that
25 you're aware of that we're going to hear from in

1 this case for Goodnight on economic things. We know
2 that NuTech revised their numbers, but you didn't
3 analyze those. And we know that you had geology and
4 geophysical work from OPS Geologic, but you haven't
5 analyzed that either, true?

6 A. The geology -- did we see geophysical work
7 in this case? I don't think so.

8 Q. I meant to say petrophysical. If I said
9 geophysical, I misspoke.

10 A. Okay. So I think there was a ruling after
11 our last hearing that certain witnesses would be
12 allowed to serve surrebuttal reports, and that work
13 was done by Mr. Knights and Dr. Davidson, because
14 they've done the specific look at those analyses.

15 Q. And I'm only asking you because you're the
16 one on the box and you're the only economics guy I
17 have in the whole case. So this -- if I have
18 economics stuff, you're my only guy I get to talk
19 to.

20 A. Okay.

21 Q. You have not done any analysis of any of
22 the OPS Geologic work, be that from Mr. Birkhead or
23 Mr. Bailey, true?

24 A. I have not.

25 Q. Now, if this Commission wants to know who

1 on the planet earth knows the most about the EMSU
2 and the Grayburg and the San Andres, will you work
3 with me and let's make a list for the commissioners
4 of who on the planet knows the most about it?

5 A. I'm not sure.

6 Q. Can we agree Chevron?

7 A. Oh, you're talking about in history?

8 Q. Well, yeah. We're just going to work on
9 the -- let's go through the entire history of time.
10 If these commissioners want to know who on the
11 planet knows the most about it, we would agree
12 Chevron would be on that list. Yeah?

13 A. Some people at Chevron, yes.

14 Q. We would agree that Exxon is on that list?

15 A. When they were the operator, I expect
16 there were some people at Chevron that knew stuff.

17 Q. And we would agree that Empire would be on
18 that list?

19 A. They should.

20 Q. And in terms of Goodnight, to your
21 knowledge, they have never once been an oil and gas
22 producer, have they?

23 A. I don't know that to be true.

24 Q. Likewise, over the flat enchilada dinners
25 with Mr. McGuire, you know that, save one short --

1 one short internship, he's never worked for a
2 producer, has he?

3 A. I don't know.

4 Q. Okay. And could we add Dr. Lindsay, who
5 did his entire Ph.D. thesis dissertation -- can we
6 add him to the list of people that know the most
7 about this place on the planet?

8 A. About the Grayburg, I'd say.

9 Q. He's certainly done plenty of work on the
10 San Andres, too, hasn't he?

11 A. Most of what I heard in his testimony
12 related to the Grayburg.

13 Q. If the commissioners would like to know
14 what geologists on the planet knows more about the
15 San Andres at this location, who would that be?

16 A. I don't know.

17 Q. Is -- Dr. Lindsay would be the best you
18 could come up with, agree?

19 A. You said San Andres this time?

20 Q. Yes.

21 A. I'm not sure.

22 Q. Okay. I'm just thinking if there's
23 somebody other than Dr. Lindsay, I'm just happy to
24 hear about it, if you know who it would be.

25 A. This is not something I do, go around

1 trying to rank people of what they know about a
2 certain field.

3 Q. Now, Exxon, that was one of the ones that
4 you -- you said would know a lot about the area.
5 You can tell the commissioners Exxon would have the
6 operational data -- best operational data in this
7 area, right?

8 A. You're talking about production and well
9 information?

10 Q. Well, anything a producer would care
11 about.

12 A. I would hope they had received everything
13 from the previous operator.

14 Q. There's no oil and gas company on the
15 planet earth better economically situated than Exxon
16 to have the resources to study the area, agree?

17 A. Have the resources to do what?

18 Q. Study the area.

19 A. Oh, that's probably true.

20 Q. Now, in terms of public data, Exxon would
21 have access to all the public data; do you agree?

22 A. Yes.

23 Q. And in terms of propriety derived data
24 internally from their scientists and engineers,
25 Exxon is better equipped than any other oil company

1 on the planet, by way of their internal human
2 resources, to know everything they could know about
3 this area. Agree?

4 A. It depends how they allocated people and
5 resources. I mean, if they were focusing on it,
6 sure.

7 Q. And by way of access to contractors,
8 certainly Exxon has plenty of access and recourse to
9 contractors?

10 A. That's true.

11 Q. All right. And they're publicly traded,
12 and so you know they're subject to all the
13 securities laws, federal and state?

14 A. You're talking to an engineer, but I have
15 a general understanding of that, yes.

16 Q. And, again, Exxon is a client of yours?

17 A. True.

18 Q. Has it been your experience that XTO or
19 Exxon goes around lying to folks?

20 A. Absolutely not.

21 Q. All right. Let's take a look at the --
22 you saw this was part of the advertising material
23 from Exxon as the efforts when Empire purchased the
24 EMSU, right?

25 A. I saw this slide, yes.

1 Q. And do you see that they pick the top of
2 the San Andres? In the typed log on the left?

3 A. I do see the word "San Andres," yes.

4 Q. And then below it, there's a ROZ
5 identified, a top and a bottom?

6 A. Yes.

7 Q. And over in the left, it says, "Residual
8 oil zone 300 feet thick"; do you agree?

9 A. It does say that, yes.

10 Q. And it's got 912 million barrels of
11 original oil in place. Do you see that?

12 A. Yes.

13 Q. Do you think Exxon was joking about this
14 when they put it on here or -- are they kidders?

15 A. No. But if you look at other slides, the
16 word "potential" is scattered through here.

17 Q. You can tell the commissioners that this
18 analysis much more closely aligns in terms of
19 assessment of oil in place with the Empire case than
20 it does with the work by Dr. Davidson; isn't that
21 true?

22 A. I haven't looked at this closely enough to
23 say that.

24 Q. Can --

25 A. Because I don't know what they mean by

1 analysis.

2 Q. 912 million barrels of oil in place in the
3 San Andres ROZ. You don't think that that looks a
4 whole lot more like the Empire analysis of its
5 experts than Dr. Davidson's extremely pessimistic
6 case?

7 A. I haven't seen anybody in this case who's
8 added up the amounts that are calculated on a
9 section basis to include EMSU-B, EMSU, or AGU. And
10 that's the number I would need to answer your
11 question.

12 Q. Now, in terms of scientists or engineers,
13 they always want more data, don't they? More data
14 is better?

15 A. Yes.

16 Q. At your -- at your deposition, you
17 explained that this is an ongoing fluid process,
18 that you get data, you do your work, you get more
19 data, you do more work. As we've seen through
20 Dr. Lindsay's life work, he's still doing work right
21 here on the EMSU, isn't he?

22 A. Is he? I did not know that.

23 Q. He did a fracture study last week on the
24 R.R. Bell, but I don't think we're going to bring it
25 in.

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1 A. I haven't seen it.

2 Q. It's a little tardy yet, but -- we agree
3 it's tardy, but we got it. If Mr. Rankin wants it,
4 we'll give it over to him. How about that?

5 But as we talk about data, all right, I
6 mean, core data would be really valuable here,
7 wouldn't it be?

8 A. Additional core data would be -- I mean,
9 you say "valuable." Valuable from what standpoint?

10 Q. To calculate original oil in place in the
11 EMSU.

12 A. To know if it's there, yes.

13 Q. Absolutely. Because at that point --
14 could we agree that we're now out of logs and
15 we're -- we'd be in what you call direct data at
16 that point?

17 A. Core would be, yes.

18 Q. Direct evidence?

19 A. Yes.

20 Q. Okay. So in terms of anybody that's
21 drilled deep into the San Andres in the last five
22 years who would have been operationally, technically
23 in a position to get that core data so that we could
24 come here and have an absolute done and finished
25 conversation, based on your review of all the

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1 drilling permits that have happened in the EMSU, who
2 is the only person -- party on the planet that could
3 have done that?

4 A. Could have done a core?

5 Q. Yeah.

6 A. The last five years? You going to make me
7 say it? Goodnight.

8 Q. Goodnight could have. So in terms of
9 bringing this Commission for the important decision
10 over the minerals of the people of New Mexico,
11 actual direct evidence, Goodnight has actually
12 drilled deep into the San Andres, and they could
13 have taken pressure core if they wanted to spend the
14 money?

15 A. That would be unusual for a saltwater
16 disposal company who's focused on completing a well,
17 getting it in shape to deliver volume and subsurface
18 to take cores through the zone.

19 Q. But you've already told the Commission
20 that based on four decades of your experience, this
21 is a highly unusual situation, because you've never
22 seen a commercial SWD operator injecting into a
23 designated secondary oil recovery unit?

24 A. What I said was, if you want to know the
25 answer to that, I'll go research it. I don't know,

1 sitting here.

2 Q. Okay. But let's just come back and make
3 sure the Commission has a concrete answer to this.

4 The one party that could have taken
5 pressure core deep into the San Andres as part of
6 work they were going to do anyway, that would be
7 Goodnight, right?

8 A. I'm recognizing that the well under the
9 time period that you have given me and put me in
10 this box, the only well that was drilled in the area
11 that deep was Goodnight. I'm saying also it would
12 be unusual for a disposal company to do that.

13 Q. If they didn't want to take -- spend the
14 money on pressure core, they could have also done
15 sponge core, but they didn't do that either?

16 A. They didn't take cores.

17 Q. They -- if they didn't want to spend the
18 money for pressure core or sponge core, they could
19 have -- could have taken oriented core, couldn't
20 they?

21 A. Being conventional core?

22 Q. Oriented, where you -- doesn't orient --
23 where'd you go, you know, exactly north, south?

24 A. You could do that.

25 Q. Okay.

1 A. But you're -- it seems like you're
2 alleging that that's walking down some expense.

3 Q. Is oriented core not more expensive than
4 just plan conventional core that's not oriented?

5 A. So you're going to regular next?

6 Q. Yes.

7 A. Okay. Let's do it.

8 Q. Okay. So they could have taken -- they
9 could have taken oriented core, too, couldn't they?

10 A. You mean like in a vacuum?
11 Hypothetically, anybody that drills a well can take
12 cores if they want to do it.

13 Q. And if they didn't want to spend that
14 money, they could have gone with the cheapest of the
15 four options and just done conventional core?

16 A. If you're drawing a well, you can take a
17 core.

18 Q. Do you know how excited Dr. Lindsay would
19 have been in here if he would have had -- he even --
20 he didn't even need oriented, just a conventional
21 core down to the bottom? And I think our
22 commissioners would have been pretty excited too.

23 A. I can imagine.

24 Q. Yeah. But, again, Goodnight didn't spend
25 the money to do this?

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1 A. As far as I know, they did not core the
2 wells.

3 Q. And it's easy to tear something down.
4 It's harder to build something up. Isn't it a fair
5 assessment, if you read all of these reports that
6 Goodnight has pulled together, all they're doing is
7 picking and fussing and tearing and ripping, saying
8 there's not enough data for Empire to stop the
9 destruction of its -- of the minerals in its ROZ?

10 A. I don't think that's a fair assessment.

11 Q. Let's talk on pressures. I think as we
12 move on to pressures, I want to get to your correct
13 slide.

14 Your slide 4 doesn't have relevance
15 anymore because that was -- that one was on the --
16 and I'm not showing the right thing right now. But
17 your slide 4 was the one uncertain original pressure
18 data. Now that Mr. West -- you've heard him say we
19 agree it's 250 subsea, not 250 above subsea. That's
20 not anything the commissioners need to worry about?

21 A. What's 4?

22 Q. 4 was the uncertain original pressure
23 data. I'm just trying to avoid Ms. Hardy having
24 to --

25 A. But the only thing that's still relevant

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1 there is the uncertainty that goes around with the
2 actual measurement. The only place we see it is on
3 a single entry in the unitization and technical
4 report. We don't have a fluid level. We don't have
5 a direct measurement, bottomhole pressure. I
6 mentioned that in my direct testimony.

7 Q. Let's take that in pieces. Are you
8 suggesting whenever the original bottomhole pressure
9 was taken, that there was a problem with the tool?
10 You're not suggesting there was a mechanical
11 problem, are you?

12 A. You just don't know what the basis of that
13 pressure is. Did someone estimate it? Did they
14 take it from a fluid level? Did they actually
15 measure it? So all we know is somebody wrote down
16 1450.

17 Q. Okay. So just coming back to Empire
18 working with the data we have, what would you use
19 for original pressure if you don't use the one from
20 the Technical Committee Report?

21 A. In the Grayburg, I think I would use that.
22 My problem is extrapolating it down to the
23 San Andres where there hasn't been a measurement,
24 back to original, which is one-half of the
25 comparison that Mr. West makes.

1 Q. You're saying that the measurement was not
2 taken in the San Andres?

3 A. The 1450?

4 Q. The -- the 250 subsea?

5 A. Yeah, that's not in the San Andres.
6 That's in the Grayburg.

7 Q. Under whose tops?

8 A. Anybody's, yeah.

9 Q. Okay. With respect to an original
10 pressure reading, what would you use, then, for the
11 San Andres?

12 A. I can keep looking. I haven't found one.

13 Q. You would agree that Empire used the best
14 data available?

15 A. Don't know. I mean, they -- that's the
16 one piece of information I've seen that they have.

17 Q. And you said slide -- your slide 5,
18 Uncertain Original Pressure Data, that's not
19 relevant anymore, right?

20 A. You'll have to show me. Is that the one
21 with the cartoon?

22 Q. The cartoon, yeah?

23 A. Other than to remind you where the
24 Grayburg is.

25 Q. Mr. McBeath and I have both been yelled at

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1 by an expert for calling something a cartoon. So
2 I'm fearful on calling something cartoons. All
3 right.

4 If we go to your slide 7.

5 MR. WEHMEYER: Can we put that one
6 up? I just want to make sure we can see -- actually
7 slide 6 real quick.

8 Q. Where do you get the top of your
9 San Andres?

10 A. Where do I get the top?

11 Q. Yeah. So just -- if the Commission wants
12 to know where the top of the San Andres is, what is
13 your base -- are you just wholly relying on
14 Mr. McGuire for that?

15 A. For the most part, I am. But in this
16 particular analysis in my original statement, I
17 referenced three kind of equidistant wells around
18 the 211. They were all water supply wells that the
19 operator drilled and reported San Andres tops. And
20 I compared that to the top that he says the
21 San Andres is in the 211 and noted that it was
22 anomalous.

23 Q. I want to do just a little bit of geology
24 at the start.

25 MR. WEHMEYER: May I have the New

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1 Mexico paper, please, from the Bureau of Mines and
2 Mineral Resources?

3 Q. All right. You see this paper that was
4 published by the New Mexico Bureau of Mines and
5 Mineral Resources, a division of the New Mexico
6 Institute of Mining and Technology?

7 A. Yes.

8 Q. Did you look at this paper as part of any
9 of your work?

10 A. Can you scroll through it a little bit?

11 Q. Yeah, we'll go down to page 12.

12 MR. WEHMEYER: Let's just stop there.
13 Yeah.

14 Q. The San Andres formation, Leonardian and
15 Guadalupian, is about 1500 feet thick in this area.
16 The upper part is dolomite with an interval of
17 sandstone and black shale, known as the Lovington
18 sand about 150 feet below the top.

19 MR. RANKIN: Just so I'm clear, is
20 this an exhibit that was previously admitted into
21 the record? Can just tell me the exhibit number?

22 MR. WEHMEYER: For record reference,
23 Exhibit K-60.

24 MR. RANKIN: Thank you.

25 Q (By Mr. Wehmeyer) Okay. So what we have

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1 here is the -- you would find the top of the
2 San Andres, and then would you go down about
3 150 feet and you would find the Lovington sand.
4 Fair summary of what we're seeing here?

5 A. That's what this highlighted information
6 shows.

7 Q. Speaks to dolomites in the Lovington sand
8 actually inside the San Andres, right?

9 A. I'd like to see the whole sentence.

10 Q. Sure.

11 A. I mean, I see words that you've
12 highlighted, yes.

13 Q. Okay. So have you looked at Ryan Bailey's
14 geological work in terms of picking tops off of the
15 various logs?

16 A. I've listened to his testimony.

17 Q. And so he would identify a top of
18 San Andres, and then approximately 100 feet below
19 that, he can identify a -- clear Lovington sand in
20 there?

21 A. Maybe that's -- I'm not sure if that's a
22 good generalization.

23 Q. Have you looked at any of Mr. McGuire's
24 work to see whether you could figure out where the
25 Lovington sand is in relation to the top of the

1 San Andres?

2 A. No, I have not.

3 Q. It wouldn't make any sense, as a matter of
4 geology, if in some places the Lovington sand is
5 above the San Andres or at it and in another places
6 below it, would it?

7 MR. RANKIN: Mr. Examiner, I object.
8 Mr. McBeath is not a geologist, and Mr. Wehmeyer is
9 asking him as a matter of geology. It's not
10 something that Mr. McBeath is qualified to testify
11 on.

12 HEARING OFFICER HARWOOD: Overruled.

13 Q (By Mr. Wehmeyer) You certainly have enough
14 familiarity with the geology out here to know that
15 the Lovington sand is not going to move above the
16 top of the San Andres in some places and below the
17 top of the San Andres in other places. That doesn't
18 make any sense, does it?

19 A. The only thing I've done with tops
20 independently is to look at those three wells
21 surrounding the 211 and know what the original
22 operators that drilled those wells put at the top.

23 Q. In terms of literature, literature that
24 would say that the Lovington sand is an impermeable
25 barrier, can you tell the Commission, after all of

1 your work, whether you found any literature that
2 would say the top of the San Andres -- strike that.

3 Can you tell the Commission about any
4 literature that would say the Lovington sand is an
5 impermeable barrier?

6 A. That has not been part of my study.

7 Q. Can you tell the Commission about -- if we
8 move 150 feet up from the Lovington sand -- are you
9 with me so far?

10 A. Yes.

11 Q. Can you tell me the Commission about any
12 literature that says the top of the San Andres is an
13 impermeable barrier?

14 A. I have not done that in this study, so I
15 don't know.

16 Q. Now, as we talk about your pressures,
17 isn't the real point of the pressure discussion --
18 there's several slides on it, but that's to the
19 point of you trying to make the case that there's no
20 communication between the top of the San Andres and
21 the Grayburg, right?

22 A. It's to really explain the pressures in
23 that RFT, but not only between the two measurements
24 between the San Andres as Empire defines it and the
25 first lowest measurement in the Grayburg, but also

1 those other stations as the tool was brought to
2 surface.

3 Q. But isn't that to the ends of trying to
4 say that there's no communication between Grayburg
5 and San Andres?

6 A. That's one thing I note, but it really
7 comments on the validity of the conclusion that
8 Mr. West made.

9 Q. We have seen literature from the Technical
10 Committee Report and Chevron and Dr. Lindsay that
11 discusses there being places where water infiltrates
12 up from the San Andres into the Grayburg, haven't
13 we?

14 A. You'll have to show me.

15 Q. You just don't recall?

16 A. I recall some discussions that were
17 caveated about that, nuance discussions, not as
18 simple as the way you just described it. So you'll
19 have to show me what you're talking about.

20 Q. Some of them have actually been shown to
21 Mr. West today, haven't they? You've seen them on
22 the screen?

23 A. We're talking about studies, like the
24 technical report, things like that?

25 Q. The Chevron technical report and also,

1 Dr. Lindsay's thesis.

2 A. I mean, I saw the snippets from that
3 today, yes.

4 Q. And just with -- under the plain, ordinary
5 English language could be interpreted by a reader as
6 coming to a conclusion that water was infiltrating
7 up from the San Andres into the Grayburg. Fair?

8 A. It depends which San Andres we're talking
9 about.

10 Q. Has Dr. Lindsay ever been confused about
11 where the top of the San Andres is?

12 A. I don't know.

13 Q. Can you direct this -- the commissioners
14 to any literature, witness statements, or writings
15 by Dr. Lindsay where he was ever confused about the
16 Lovington sand being approximately 150 feet below
17 the top of the San Andres?

18 A. Of course not.

19 Q. And, again, if the commissioners wanted to
20 know who the geologist is that would know more about
21 this place on the planet, you couldn't -- you
22 couldn't get us a human there, could you?

23 A. No.

24 Q. What would be -- what would be your
25 assumption that the Grayburg has a uniformed

1 thickness?

2 A. The -- well, you're talking about my
3 assessment of Mr. West's top in the 211?

4 Q. I'm off of your slide 6. I mean, it
5 appears to me that you just treat the Grayburg as
6 having a uniform thickness of approximately
7 400 feet.

8 A. What makes you say that from this slide?

9 Q. Maybe I'm on the wrong one.

10 Well, with respect to your contention
11 about where the bottomhole pressure was taken, don't
12 you rely on a uniformed Grayburg thickness to place
13 that bottomhole reading?

14 A. So --

15 MR. RANKIN: Objection, foundation.
16 Mr. Wehmeyer is asking about bottomhole pressures.
17 There were no bottomhole pressures.

18 HEARING OFFICER HARWOOD: Mr.
19 Wehmeyer, a little more foundation if you have it.

20 Q (By Mr. Wehmeyer) Earlier you testified
21 that the original San Andres pressure that Empire
22 has was actually taken out of the Grayburg. Isn't
23 that your --

24 A. The 1450?

25 Q. Yes.

1 A. Yes.

2 Q. Is that on the assumption that the
3 Grayburg is approximately 400 feet thick?

4 A. No.

5 Q. How did you get to that place?

6 A. By looking at the cross sections from the
7 unitization hearing. I picked an example, but
8 there's about, I don't know, eight or ten of them in
9 there, all that put the Grayburg at about minus
10 250 MSL.

11 Q. Did -- have you conducted an analysis of
12 the thickness of the Grayburg across the EMSU?

13 A. Across the total?

14 Q. Yes.

15 A. No.

16 Q. Do you believe it's uniformly thick at
17 approximately 400 feet thick?

18 A. I haven't studied it. I don't know.

19 Q. We hit your slide 7. As the Commission
20 goes back to make important decisions, again, this
21 slide, the pressure depletion this was off of
22 Mr. West's old analysis. This is not the one that
23 would be consistent with a 250-foot subsea
24 interpretation; isn't that right?

25 A. Actually, the oldest one he did is right.

1 This was the second one he did that he then
2 abandoned and went back to the original one or
3 oldest one.

4 Q. Thank you for correcting me. I'm exactly
5 opposite on it, and you're exactly right.

6 The one that he's testified to here in
7 this court is different than this, correct? In the
8 Commission hearing?

9 A. No. Actually, I think he had the wrong
10 one up and he said this should be corrected. I
11 don't think the substitution was made. Memory -- it
12 appeared that the decision to move the data must
13 have happened really late in the game because there
14 were a bunch of slides that didn't get updated.

15 Q. Well, just so that -- I just do not want
16 this Commission confused. The pressure depletion
17 percent down in the bottom right-hand corner of
18 28.7 percent -- are you with me there?

19 A. Yes.

20 Q. Do you know, based on Mr. West's testimony
21 in this Commission proceeding, that that number is
22 about 18, 19 percent?

23 A. I understand that.

24 Q. Okay. We can go to slide 8.

25 Do you understand that it is Empire's

1 position that there are baffles to fluid flow within
2 the Grayburg?

3 A. Better be their position, because there
4 are.

5 Q. And can baffles explain differences in
6 pressure over short intervals?

7 A. It depends on the extent of the baffle.
8 In order to support pressures of about, you know,
9 262-psi over 11 feet, the baffles would have to go
10 long, long, long distances.

11 Q. But certainly, you would agree there are
12 baffles within the Grayburg and that those can lead
13 to different pressure readings?

14 A. Well, I would agree that there are not
15 continuous blocks of permeable intervals, such as
16 depicted in Dr. Buchwalter's model, and that this
17 more closely resembles the geology that we see in
18 Lindsay's model.

19 Q. Okay.

20 MR. WEHMEYER: We can take that down
21 for a minute.

22 Q. I want to talk about water compatibility
23 or chemistry studies. Do you know whether Goodnight
24 does any compositional analysis, chemistry analysis
25 of the water that is taken in from the Delaware

1 Basin?

2 MR. RANKIN: Objection, Mr. Hearing
3 Officer. I've not aware of any direct testimony
4 that I elicited or that Mr. McBeath has offered that
5 has any -- has touched on water chemistry in any
6 way. That's outside the scope of cross.

7 HEARING OFFICER HARWOOD: I'll allow
8 it.

9 Q (By Mr. Wehmeyer) Mr. McBeath, you told the
10 Commission this is not going to cause any waste
11 here, right? I mean, that was kind of the
12 conclusion of the one hour and 40 minutes that you
13 and Mr. Rankin spent together, wasn't it?

14 A. Based on my study, that's true, yes.

15 Q. Well, wouldn't you want to know by way of
16 water chemistry and water compatibility, is this
17 going to cause a problem when it's sucked up in a
18 water supply well and used in the Grayburg?

19 A. We have many witnesses on our side of the
20 case. I'm the first witness. And I've covered the
21 areas that I've been -- that I feel are a part of my
22 expertise. And the Commission is going to hear from
23 those other witnesses on topics where their
24 expertise lies.

25 Q. Okay. But are you aware of any water

1 chemistry -- I'm just asking if you know about it --
2 any water chemistry analysis performed by Goodnight
3 on the Delaware water?

4 A. The only thing I've seen is, sitting here
5 and seeing Mr. West's, I guess, summary of that. I
6 presume that came from Goodnight.

7 Q. Would you agree that if Delaware water is
8 injected into the San Andres and then it's sucked
9 out of the San Andres by Empire as part of its
10 secondary waterflood in the Grayburg, that that
11 water composition would be different than what's in
12 the Grayburg?

13 A. Can you help me with the hypothetical?

14 Q. Yeah.

15 A. You said two things would happen.

16 Q. Goodnight -- Goodnight is taking water
17 from Delaware Basin producers --

18 A. Okay.

19 Q. -- right? You agree with that?

20 A. Yes, I do.

21 Q. And they've complained that they get a lot
22 of solids with it. Have you seen that in the
23 documents?

24 A. Not really, no.

25 Q. Okay. In terms of them having any clue

1 what chemicals are in this water that they're
2 getting out of the Delaware Basin, there aren't any
3 frack chemicals, aren't (sic) there?

4 A. They call them flowback. There would be
5 chemicals, yeah.

6 Q. So there's going to be chemicals, and it's
7 going to be a different type of water that's in the
8 San Andres, correct?

9 A. That's originally in the San Andres?

10 Q. Yes.

11 A. I haven't looked at that, but I suspect
12 there could be some differences.

13 Q. And then we know that Goodnight is --
14 strike that.

15 We know that Empire's sucking water out of
16 San Andres as part of its waterflood operations in
17 the Grayburg?

18 A. You mean currently?

19 Q. Well, it has been. It may in the future.

20 A. I'm not sure.

21 Q. Would you agree that if that water is used
22 in the Grayburg, that it can have detrimental
23 effects on Empire's oil wells?

24 MR. RANKIN: Objection. Outside the
25 scope of Mr. McBeath's testimony. He's a reservoir

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1 engineer and a petroleum engineer. He's not
2 testified as to his qualifications on water
3 chemistry. If Mr. Wehmeyer wants to voir dire the
4 witness to determine whether or not Mr. McBeath has
5 expertise to answer his questions, I think that's
6 fine.

7 HEARING OFFICER HARWOOD: Will you be
8 presenting a different witness --

9 MR. RANKIN: We will.

10 HEARING OFFICER HARWOOD: -- who will
11 have expertise on this area that Mr. Wehmeyer can
12 save this question for?

13 MR. RANKIN: We do.

14 HEARING OFFICER HARWOOD: Who is
15 that?

16 MR. RANKIN: Mr. Tomastik, among
17 several others.

18 HEARING OFFICER HARWOOD: Okay. Mr.
19 Wehmeyer, why don't you save that question.

20 Sustained.

21 MR. WEHMEYER: No problem. Thank
22 you.

23 Q (By Mr. Wehmeyer) In terms of pressures
24 rising, you can agree historically, there's been a
25 lot of water taken out of the San Andres as part of

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1 waterflood operations in the Grayburg; isn't that
2 true?

3 A. In the area of the EMSU?

4 Q. Yes.

5 A. There has been a lot of water out of the
6 water supply wells.

7 Q. Okay. And in terms of doing an analysis
8 by way of comparison in terms of what's been
9 injected back, do you know, has more been sucked out
10 or has all of that been replaced and now more
11 injected back?

12 A. Which area are we talking about?

13 Q. In the EMSU.

14 A. I don't know.

15 Q. You would agree that as -- that historical
16 volumes of water injection into the EMSU --

17 A. Which zone?

18 Q. San Andres.

19 A. Okay.

20 Q. Historically, water injected into the
21 San Andres -- you've seen those historical volumes?

22 A. I've seen a lot of summations of that,
23 depending how far out you go from the EMSU.

24 Q. You've seen it on at least monthly --
25 month against year going back to '80s, haven't you?

1 A. We're talking about the orange and blue
2 chart?

3 Q. Yes.

4 A. I've seen that.

5 Q. Okay.

6 A. That one mile around the EMSU.

7 Q. You can tell the commissioners that the
8 volumes injected pre-Goodnight, compared to what
9 Goodnight has been doing and is proposing to be
10 doing, are minuscule, aren't they?

11 A. Month to month they're smaller. If you
12 add all that up, I don't know.

13 Q. But in terms of the last five years, the
14 amounts that were injected historically are
15 minuscule compared to what Goodnight has done and
16 plans to do; isn't that true?

17 A. They're smaller. I don't know about
18 minuscule, but they're smaller.

19 Q. As you inject more water into the
20 San Andres, can we agree that that pressure is going
21 to rise?

22 A. Depends on the size of the tanks.

23 Q. Have you seen Dr. Lake's opinion that
24 pressure will rise 4 to 10-psi per million barrels
25 of water injected?

1 A. I've seen that. And that's based on
2 individual well calculations, which I believe
3 have -- there's been additional testimony on that,
4 that does it on more of a regional basis. It's a
5 much smaller number.

6 Q. From Dr. Lake?

7 A. I'll have to see which witness did that.
8 It may have been Preston McGuire.

9 Q. You don't have any knowledge of Dr. Lake
10 updating any of that opinion or analysis, do you?

11 A. Dr. Lake did not submit a submittal -- a
12 supplemental, so that's probably true.

13 Q. To your knowledge, Dr. Lake's opinion is
14 that for every 1 million barrels of water stuck into
15 the San Andres, pressure will rise about 4 to
16 10-psi?

17 A. Well, I mean, I worked with him on that,
18 so I know what it's based on. And I'm sure he's
19 going to say that that's an individual well
20 analysis.

21 Q. Have -- you've never worked for an oil and
22 gas operator doing an ROZ in-house?

23 A. Not as an employee.

24 Q. Have you ever assisted an operator with an
25 economic analysis of an ROZ as an outside

1 consultant?

2 A. Included with a main pay, yes. Most of
3 them are -- the vast majority of them are
4 commingled. There's hardly any of them that are
5 individual.

6 Q. Are you drawing a distinction between
7 greenfields and brownfields with that?

8 A. No.

9 Q. Okay. But just with respect to the
10 San Andres here in the EMSU that Empire is going to
11 develop, that ROZ would not be what you would call a
12 main pay, right?

13 A. Not main pay, no.

14 Q. And you've never assisted a producer with
15 an economic analysis of a non-main pay ROZ, have
16 you?

17 A. Not where the ROZ was a standalone.

18 Q. Will you -- will you help the Commission,
19 though, with -- just explain to them the effect that
20 rising pressures will have on the ability to carry
21 out an ROZ development in the San Andres.

22 A. Depends on the magnitude of the pressures.

23 Q. And the magnitude of the pressures are
24 going to vary based on the magnitude of the
25 saltwater injection, isn't it?

1 A. The main variable that we need to
2 understand is the size of the reservoir.

3 Q. Have you done that analysis?

4 A. Did you see my highlighted exhibit from
5 Mr. Melzer?

6 Q. Have you heard the geology from
7 Dr. Lindsay that there's a trap on the east side
8 where it pinches off and it doesn't leave?

9 A. In the San Andres? I don't think that's
10 right.

11 Q. Have you done any of the geology?

12 A. I haven't.

13 Q. So in terms of the idea that there's this
14 unlimited ocean, is the basis for that statement
15 just you pointing to one slide from Mr. Melzer where
16 he mapped a fairway?

17 A. The basis for that is the whole theory
18 behind migration paths and the existence of ROZs in
19 the Central Basin Platform.

20 Q. So if the Commission just wants a straight
21 answer to, what will be the effect of rising
22 pressures through saltwater injection on the ability
23 to carry out an ROZ, you're not competent to answer
24 that question for the Commission?

25 A. I didn't say that.

1 Q. Okay. Well, go ahead --

2 A. I said it depends on the amount of the
3 pressure increase.

4 Q. If pressure is increasing by 4 to
5 10 percent psi per million barrels injected, as
6 Dr. Lake wrote, will you share with the Commission
7 what the hazards are to the ability to carry out an
8 ROZ in the San Andres?

9 A. I can't, because that's an invalid
10 increase in pressure to use in this situation where
11 the reservoir is so large.

12 Q. Why do you think Empire cares so much
13 about saltwater injection in its oil unit?

14 A. I can't put myself in their head. I don't
15 know.

16 Q. Let's talk about economics a little bit.
17 Now, obviously, before caring out a \$1.2 billion ROZ
18 development, there's going to be a lot more data
19 gathering and there's going to be test projects on
20 smaller scales, isn't there?

21 A. I would hope so.

22 Q. So in terms of picking on Empire, in
23 either your deposition testimony or your written
24 remarks, about for a \$1.2 billion CapEx outlay, we
25 would see a whole lot more, that's not really fair

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1 because we all know that the first thing that would
2 be started is this -- test cases on smaller scales,
3 fair?

4 A. Not picking on Empire. So I was hired to
5 look at the information that they put in front of
6 us. I was hired to help the lawyers make lists of
7 things that we asked for, "Hey, we expect you to
8 have this information."

9 We served discovery on them. Nothing came
10 of it except a memo that was very vague and then
11 later on this economic spreadsheet that they put
12 forth to estimate waste. And I've been asked to
13 comment on those and the validity of the inputs.
14 And it's not personal. I'm not picking on Empire.
15 I'm commenting on the analysis.

16 Q. You would want oil miscibility studies,
17 wouldn't you?

18 A. Did you say miscibility?

19 Q. Oil miscibility studies.

20 A. Absolutely. I'd want slim tube testing.
21 I would want to make sure what pressure we're
22 looking at. They talked about 1300-psi. That seems
23 low to me. You might want an increase in pressure
24 in the San Andres to guarantee miscibility.

25 And we really need to understand

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1 miscibility with respect to the quality of the oil
2 if it's there because ROZ oil has got different
3 components. Most of the lights are swept away, so
4 we do need to understand miscibility.

5 Q. You would want some pressure or sponge
6 cores?

7 A. I would if I was in charge of the project,
8 sure.

9 Q. And in terms of carrying out the test
10 spacing and test wells, you'd probably want to pick
11 your best structure for that, wouldn't you?

12 A. I don't know about that. That's more of a
13 geologic input.

14 Q. Do you know why -- have you compared where
15 the saltwater disposal wells are in comparison to
16 where the highest oil in place assessment is from
17 both OPS Geologic and NuTech?

18 A. No, I haven't.

19 Q. Has anybody with Goodnight shared with you
20 how they're picking those saltwater disposal
21 locations?

22 A. How they did it in the past?

23 Q. Yes.

24 A. No.

25 Q. If Empire came to you and asked your

1 opinion and said "We want to go raise money or get
2 investors to develop this project," you would tell
3 them that that's going to be a challenge in light of
4 the saltwater -- the commercial saltwater disposal
5 injection, wouldn't you?

6 A. I think the challenge would be that we
7 have just very little data in the San Andres with
8 respect to the ROZ.

9 Q. But certainly, anybody looking at this is
10 going to be very concerned about the saltwater
11 disposal -- commercial saltwater disposal injection?

12 A. If they wanted to do an ROZ in the
13 disposal zone.

14 Q. Which you understand that's everything
15 that we're here on, right?

16 A. Well, no.

17 Q. I'm not being a smart aleck, but --

18 A. There's the disposal zone and then there's
19 the rest of the San Andres.

20 Q. But you just said -- you heard Mr. West
21 say for the state of the people of New Mexico, he
22 wants every bit of oil they get out in 1,500 feet of
23 gross pay. Do you understand?

24 A. I think it's a pipe dream. The way that
25 the saturations are spread out across that

1 1500 feet, there may be a part at the top of the
2 San Andres, certainly in the Grayburg. But if
3 somebody came to me and said "We want to flood the
4 ROZ in the disposal zone," I'd say, "Be very
5 cautious with spending money."

6 Q. I'm going to put on the record right here,
7 you didn't tell them, don't do it.

8 All right. We'll move on to the next
9 slide. We're at slide 11. With respect to your
10 economic model, will you explain to the
11 commissioners how you built your curve?

12 A. Which curve?

13 Q. You did a -- you did an economic analysis
14 with a net present value 10 case, didn't you?

15 A. We might be on the wrong slide.

16 Q. But didn't you -- you shared some slide
17 with a net present value case where they were
18 negative. Do you remember that?

19 A. Yeah, but that's not this slide.

20 Q. Did that come out of your economic model?

21 A. Yes.

22 Q. Well, tell them, how did you build your
23 curve to forecast oil recoverability in your model?

24 A. I didn't build it. I used -- I explained
25 this in my testimony. I took Empire's spreadsheet,

1 and I modified it.

2 Q. So the true answer to my question, as we
3 talk about it's easy to rip things down and throw
4 rocks as opposed to build something, is you didn't
5 build a curve in this case, did you?

6 A. No, I didn't do an independent one.

7 Q. With respect to the curve that's reflected
8 here at slide 11, I -- I know you like to highlight
9 the Wyoming thing on there -- but this was a -- this
10 was from Kinder Morgan, wasn't it? It was a Kinder
11 Morgan screening tool?

12 A. Don't know that. That's never been
13 explained. Kinder Morgan came up today for the
14 first time.

15 Q. And, in fact, Kinder Morgan built this
16 tool off of its experience with developing ROZ and
17 EOR in the Permian Basin; isn't that right?

18 A. If that's true, I'm finding out about it
19 right now. Because we asked specifically about the
20 inputs to this model so that we could have time to
21 look at it. And if you're now -- just now telling
22 me that this has a different source than this paper,
23 this is the paper they gave us when we said, "Where
24 did the curve come from?"

25 Q. So you're not prepared to explain to the

1 Commission that this was not off the Kinder Morgan
2 CO2 screen tool which was built off of its Permian
3 Basin experience in EOR and ROZ, are you?

4 A. If that was the answer to where the curve
5 came from, I would expected Empire would have told
6 Goodnight it came from Kinder Morgan about six
7 months ago.

8 Q. Let's go to slide 13.

9 Again, the dimension was curved. You
10 didn't -- maybe I'm at the wrong . . .

11 Slide 12, that's another one of your --
12 one of our curves. You didn't -- you didn't build
13 your own curve, did you?

14 A. This was in the model without any
15 reference to where it came from.

16 Q. Again, you didn't build your own curve?

17 A. Did not.

18 Q. Okay. Oil prices. We're at slide 13. On
19 oil prices, you understand that this ROZ would be a
20 large capital expenditure with long years of actual
21 development and production, right?

22 A. Yes.

23 Q. You'd be very interested in what the out
24 years of commodity prices are?

25 A. Well, nobody knows what they'll be.

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1 That's why we have to put ranges on future prices.

2 Q. And so that the Commission has this in one
3 place, you testified at your deposition -- I think
4 you would agree that in looking at an ROZ
5 development, the single most important factor is
6 commodity price; isn't that true?

7 A. I'm not sure I said that. The single most
8 important cost factor is CO2 price.

9 Q. In terms of the economic -- in terms of
10 the economic viability of the whole project, the
11 number one variable that makes the most difference
12 is commodity price?

13 A. It's super important.

14 Q. Okay. So we agree on that. Now, on the
15 commodity price, here the -- with respect to
16 Mr. West's model, it runs approximately 40 years out
17 to end of economic life.

18 A. Which one, the 72 or the 250?

19 HEARING OFFICER HARWOOD: Yeah.
20 Okay. For my entire 40-year-plus career, I've
21 always wanted to use the duck in a courtroom
22 proceeding. That's your five-minute warning.

23 MR. WEHMEYER: At least it wasn't a
24 donkey.

25 Thank you. We'll wrap up here within the

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1 five.

2 HEARING OFFICER HARWOOD: And I'm
3 not -- I'm not suggesting you need to do that
4 either.

5 MR. WEHMEYER: I'll take the five and
6 I'll close it down and we'll get everybody out of
7 here on a Friday, if that pleases the Commission.

8 HEARING OFFICER HARWOOD: I'm not
9 suggesting that you curtail your cross-examination
10 if you have more areas to cover, just so it's clear.

11 MR. WEHMEYER: We have a lot more to
12 cover.

13 HEARING OFFICER HARWOOD: Okay.

14 Q (By Mr. Wehmeyer) But I tell you what, just
15 in terms of using a flat deck, I mean, isn't the
16 play -- the flat deck -- these are publicly traded
17 companies. This is the Securities and Exchange
18 Commission trying to make apples to apples so that
19 everybody can compare their PDP and their probables
20 and investors know exactly what are these economic
21 cases based on?

22 A. That was a question?

23 Q. Yeah. The use of a flat deck?

24 A. The use of a flat deck is one of the
25 ranges of prices that we do in all economic

1 analyses.

2 Q. Did -- the EIA, do they have a long-term
3 commodity price forecast that they publish?

4 A. Yes.

5 Q. Would that commodity price forecast look a
6 whole lot closer and actually even higher than the
7 one that Empire used here at their conservative
8 1 percent escalated?

9 A. I haven't looked at it.

10 Q. So the EIA was a source of long-term
11 commodity price data that you chose not to use in
12 your model, right?

13 A. I used the futures market, and those are
14 actual barrels that change hands.

15 Q. Those are contracts that are happening in
16 the year 2025?

17 A. Absolutely. And those are committed to
18 deliveries, and it's very common for people to roll
19 futures prices into their analysis.

20 Q. Okay. But the EIA, you can't sit here and
21 say whether it would actually even be -- a higher
22 case than what Empire has projected?

23 A. I haven't looked at it because I don't use
24 it. And I don't know any economic analysis folks
25 that use the EIA deck.

1 Q. Well, as we talk about direct evidence,
2 wouldn't historical oil prices be direct evidence of
3 prices?

4 A. No.

5 Q. Why not?

6 A. Because they don't predict future prices.

7 Q. Right. But at least looking backwards, it
8 would be -- if the Commission wanted to know of the
9 last 36, 40 years, whatever, what has actually
10 happened, it would be a logical place to look,
11 wouldn't it?

12 A. It would be an illogical place to look for
13 a pro forma analysis that looks only into the
14 future.

15 Q. Have you looked over the last 40 years on
16 what --

17 MR. WEHMEYER: It's going to be N.

18 Q. All right. If we just -- just looking
19 back to 1986 actual oil prices, do you see that
20 there's been an average escalation of 2.77 percent?

21 Oh, I lost it.

22 MS. HARDY: It's pulling up the wrong
23 thing.

24 A. I saw it.

25 Q (By Mr. Wehmeyer) You saw it. It was

1 2.77 percent over the last 35, 40 years, right?

2 A. If somebody calculated that correctly,
3 yeah. I mean, but historical prices have no
4 relevance to analyzing future prices. They really
5 don't.

6 Q. In terms of the highest case ever, at the
7 conservative 1 percent escalated that Empire uses,
8 what's the highest oil price that it ever gets to?

9 A. 118.

10 Q. You can tell the commissioners that we've
11 seen \$118 oil twice in the last 15 years, haven't
12 we?

13 A. We have, yes.

14 Q. Okay. So in terms of -- it's not like
15 this is an economic case that gets to some \$175 WTI
16 barrel that has never been seen in the history of
17 time. We have seen \$115 oil during our professional
18 lives?

19 A. That's true.

20 Q. And with respect to the 1 percent
21 escalator that Mr. West used, just looking at
22 historical, that would be conservative to
23 historical, wouldn't it?

24 A. I would never look to historical to
25 establish an escalator.

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1 MR. WEHMEYER: I'm -- Commissioners,
2 I'm at a -- I'm at my time, and I know everybody's
3 got other things to get to, but I certainly have
4 additional examination. I would estimate an hour or
5 less on the additional, whenever we have to
6 reconvene.

7 HEARING OFFICER HARWOOD: All right.
8 Well, we'll have to pick up --

9 MR. BECK: Mr. Hearing Officer,
10 before we sign off, I just want to remind everyone
11 that I requested Jack Wheeler's notes that reflect
12 what he provided to his paralegal, and I've emailed
13 everyone about that. But I have not received a copy
14 of those notes.

15 HEARING OFFICER HARWOOD: Okay. We
16 will take that --

17 THE REPORTER: Who was speaking? I'm
18 sorry. Who was that speaking?

19 MR. BECK: Sorry, Kendra. That's
20 Matt Beck.

21 THE REPORTER: Thank you.

22 HEARING OFFICER HARWOOD: Mr. Beck,
23 you'll just have to take that up with Empire.

24 Mr. Razatos, did you have anything that
25 you wanted to say before we go off the record? Any

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1 housekeeping matters or other matters of substance?

2 CHAIRMAN RAZATOS: We do. Just like
3 all other Commission meetings, we have to kind of
4 wrap it up like we normally do. So thank you,
5 everybody, for the participation this week.
6 Appreciate it.

7 Our next point that we have in our
8 schedule, in our agenda, is any pending litigation.

9 Mr. Shandler, do we have any pending
10 litigation or any updates that we needed to bring
11 up?

12 MR. SHANDLER: No, Mr. Chairman.

13 CHAIRMAN RAZATOS: Excellent. Thank
14 you.

15 Commissioners, any other business that we
16 needed to bring up?

17 COMMISSIONER AMPOMAH: No, Mr. Chair.

18 CHAIRMAN RAZATOS: Thank you.

19 COMMISSIONER LAMKIN: Not from me
20 either.

21 CHAIRMAN RAZATOS: Thank you.
22 Appreciate it.

23 Our last point is, our next meeting is
24 scheduled for April the 21st through the 25th of
25 2025, which is in two weeks. So we will see

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1 everybody again here in about two weeks.

2 And if there's nothing else, our meeting
3 is adjourned. Thank you, everybody. Have a happy
4 and safe weekend, and we'll see you soon.

5 (The proceedings concluded at 3:46 p.m.)
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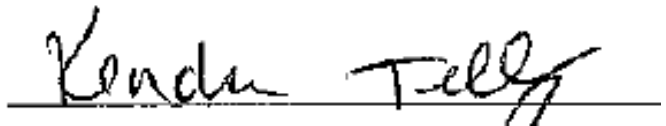
AFFIRMATION OF COMPLETION OF TRANSCRIPT

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.

April 25, 2025

A handwritten signature in black ink that reads "Kendra Tellez". The signature is written in a cursive style and is positioned above a horizontal line.

KENDRA D. TELLEZ

Veritext Legal Solutions

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