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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 10, 2025  
VOLUME X

HEARD BEFORE:

HEARING OFFICER RIPLEY HARWOOD

COMMISSION MEMBERS:

GERASIMOS ROZATOS, Chair

BAYLEN LAMKIN, Member

DR. WILLIAM AMPOMAH, Member

COUNSEL TO THE COMMISSION:

MR. DANIEL RUBIN, ESQ.

A P P E A R A N C E S

FOR EMPIRE NEW MEXICO:

HINKLE SHANOR, LLP  
P.O. Box 2068  
Santa Fe, New Mexico 87504-2068  
BY: Dana S. Hardy  
dhardy@hinklelawfirm.com

SPENCER FANE, LLP  
P.O. Box 2307  
Santa Fe, New Mexico  
BY: Sharon T. Shaheen 87504-2307  
sshahen@spencerfane.com

PADILLA LAW FIRM  
P.O. Box 2523  
Santa Fe, New Mexico 87504  
BY: Ernest L. Padilla  
padillalawnm@outlook.com

SANTOYO WEHMEYER, PC  
IBC Highway 281  
North Centre Building  
12400 San Pedro Ave., Ste. 300  
San Antonio, Texas 78216  
BY: Corey F. Wehmeyer  
cwehmeyer@swenergylaw.com

FOR THE GOODNIGHT MIDSTREAM:

HOLLAND & HART  
110 North Guadalupe St., Ste. 1  
Santa Fe, New Mexico 87504-2208  
BY: Adam Rankin  
agrarkin@hollandhart.com  
Julia Broggi  
jbroggi@hollandhart.com  
Michael Feldewert  
mfeldewert@hollandhart.com

A P P E A R A N C E S (Cont'd)

FOR NEW MEXICO OIL CONSERVATION DIVISION:

NM ENERGY, MINERALS AND NATURAL RESOURCES DEPT.  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

BY: Chris Moander  
chris.moander@emnrd.nm.gov  
Jesse K. Tremaine  
jessek.tremaine@emnrd.nm.gov

FOR RICE OPERATING COMPANY and  
PERMIAN LINE SERVICE, LLC:

PEIFER, HANSON, MULLINS & BAKER, PA  
P.O. Box 25245  
Albuquerque, New Mexico 87125-5245  
BY: Matthew M. Beck  
mbeck@peiferlaw.com

FOR PILOT WATER SOLUTIONS SWD, LLC:

BEATTY & WOZNIAK, PC  
500 Don Gaspar Ave.  
Santa Fe, New Mexico 87505  
BY: Miguel A. Suazo  
msuazo@bwenenergyllaw.com  
James Parrot  
jparrot@bwenertyllaw.com

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1 (On the record at 10:30 a.m.)

2 TRANSCRIPT OF PROCEEDINGS

3 CHAIR ROZATOS: Good morning to everybody.  
4 Today is Thursday, April the 10th. This is the  
5 continuation of our Oil Conservation Commission  
6 hearing. My name the Gerasimos Rozatos. I am the  
7 acting director of the Oil Conservation Division and  
8 also the acting chairman of the Oil Conservation  
9 Commission.

10 We are continuing our evidentiary  
11 hearing, the consolidated cases by Goodnight  
12 Midstream and Empire New Mexico. The case numbers  
13 are as follows: 24123, 23614 through 17, 23775,  
14 24018 through 24020, and 24025. As I stated, this is  
15 the continuation of the evidentiary hearing.

16 Mr. Hearing Officer, I transfer this  
17 hearing back over to you.

18 HEARING OFFICER HARWOOD: Thank you,  
19 Chairman Rozatos. Good morning everybody. Let's  
20 see. Do we have court reporter? Okay. Great.

21 So first of all, thank you, Dr. Ampomah  
22 for -- I may speak for everybody on this. Thank you  
23 for a relaxed morning.

24 So is there a motion to start off the  
25 day with our mid-morning break?

1 All right. Okay. So let's see, we are  
2 still on Mr. Rankin's cross-examination of Mr. West,  
3 correct?

4 MR. RANKIN: Correct, Mr. Hearing Officer.

5 HEARING OFFICER HARWOOD: Mr. West, I'll  
6 just remind you that you're under oath.

7 You may proceed, Mr. Rankin.

8 MR. RANKIN: Mr. Hearing Officer, before we  
9 do, just one point of order for housekeeping matters,  
10 and I discussed this with counsel for Empire. I had  
11 circulated an anticipated witness list for Goodnight  
12 once we get our case started.

13 I'm making a slight modification to  
14 that, just due to witness availability. Mr. MacBeath  
15 will be unavailable to be here in Santa Fe the third  
16 week of April, when we resume. So, for that reason,  
17 I'm going to ask to move him up from second in order  
18 to first in order, because I think it would be very  
19 important to have his testimony be in person.

20 HEARING OFFICER HARWOOD: Okay.

21 MR. RANKIN: And I discussed that with  
22 Empire, so they're aware.

23 HEARING OFFICER HARWOOD: All right. So  
24 assuming Empire's case is done sometime today, it  
25 would be your first witness?

1 MR. RANKIN: He'll be my first witness.

2 THE COURT: And no objection to that,  
3 Ms. Hardy?

4 MS. HARDY: Mr. Examiner, we don't object to  
5 moving him up in the order. We would like -- if we  
6 do get to Mr. MacBeath, we were prefer to do it  
7 tomorrow.

8 I don't know that we're going to finish  
9 Mr. West today, so that may not be an issue. But we  
10 weren't prepared to have Mr. MacBeath go.

11 MR. RANKIN: I understand the issues around  
12 that. It's not easy when there's shuffling of  
13 witnesses. I believe that was an issue on our end,  
14 as well. I'm not doing to it make it difficult for  
15 Ms. Hardy.

16 But if there's a way we could at least  
17 get his summary presentations done. I agree with  
18 her. I'm not sure we're going to actually get to  
19 Mr. MacBeath today, but if we do, I would like to at  
20 least get his summary presentation done, potentially.  
21 But we'll confer during a break with counsel for  
22 Empire.

23 THE COURT: Well, let's see how the day  
24 goes. But it seems reasonable, then, if -- is it  
25 Mr. MacBeath?

1 MR. RANKIN: It's MacBeath.

2 HEARING OFFICER HARWOOD: If Mr. MacBeath --  
3 it seems reasonable that Mr. Rankin could get through  
4 the direct exam, if time permits. And hopefully,  
5 time will permit.

6 I don't want to make any advance rulings  
7 on your request, Ms. Hardy, because the effect might  
8 be to unnaturally prolong cross-examination.

9 MS. HARDY: And we are fine with  
10 Mr. MacBeath doing his direct examination today.  
11 It's just the cross that we would like to do  
12 tomorrow.

13 HEARING OFFICER HARWOOD: All right. For  
14 now, let's play it by ear. But, Mr. Rankin, thank  
15 you for heads-up. And are you ready to proceed?

16 CHAIR ROZATOS: Mr. Hearing Officer, I  
17 apologize. I also have just a slight wrench for  
18 tomorrow. I do need to be done by 3:45 tomorrow, so  
19 just keep that in mind with the cross-examinations  
20 and everything. We need to kind of cut a little  
21 shorter tomorrow, so I just wanted to throw that out  
22 there, by 3:45.

23 HEARING OFFICER HARWOOD: Okay. Thank you.  
24 Reminding all of us that time is always of the  
25 essence.



1 All right Mr. Rankin.

2 MR. RANKIN: Thank you, Mr. Hearing Officer.  
3 Thank you, Commission Chair, Commissioners.

4 WILLIAM WEST,  
5 having previously been duly sworn,  
6 testified as follows:

7 CROSS-EXAMINATION (Cont'd)

8 BY MR. RANKIN:

9 Q. Good morning, Mr. West.

10 A. Good morning.

11 Q. I'm going to pick up with your Slide  
12 Number 8 from your summary testimony of your direct  
13 examination by Ms. Hardy. And this slide is a slide  
14 that we talked about a bit yesterday, Slide Number 8  
15 of your presentation, and it's your Exhibit I-5 from  
16 your direct testimony.

17 As part of your analysis of water  
18 production in the EMSU, did you evaluate the  
19 completion intervals for the wells that you've  
20 identified on this exhibit?

21 A. They're completed in the Grayburg.

22 Q. Did you evaluate the specific zones within  
23 the Grayburg that they were completed in as part of  
24 your analysis and assessment of water production?

25 A. In this slide here, it sums them all up just

1 as "Grayburg."

2 Q. I understand that. But as part of  
3 determination about whether or not there are other  
4 factors or other sources of water that may have  
5 explained the water production values here, did you  
6 evaluate what zones they were completed in?

7 A. Yes. When we were doing the full  
8 evaluation, we looked at the wellbores and to see  
9 where they were completed.

10 Q. So you incorporated that consideration into  
11 this analysis?

12 A. Yes, sir.

13 Q. And based on your assessment, you determined  
14 that there's no other explanation for these water  
15 production values but for communication with the  
16 San Andres?

17 A. That's the most likely.

18 Q. And you ruled out, then, potential  
19 encroachment from Goat Seep?

20 A. There is a small encroachment that's, you  
21 know, from the Goat Seep. But that's all the way to  
22 the far west.

23 Q. How did you rule it out? Did you rule it  
24 out?

25 A. Well, if you're high up on the structure,

1     it's hard to bypass the other wells and get the Goat  
2     Seep up to those high structure wells.

3             Q. You showed us an exhibit from Mr. Lindsay  
4     that showed how, based on his testimony and his  
5     measurements, Goat Seep water is encroaching all the  
6     way up to the top of the structure. Agreed?

7             A. I don't think that's what the exhibit  
8     showed.

9             Q. You were here for Dr. Lindsay's testimony,  
10    weren't you?

11            A. Yes.

12            Q. And you didn't hear him testify that the  
13    Goat Seep was encroaching to the top of the structure?

14            A. I do not remember that.

15            Q. And you're in charge of operations for EMSU  
16    on behalf of Empire, correct?

17            A. That is correct.

18            Q. And as part of head of operations for the  
19    EMSU, you would be charged with understanding all the  
20    engineering factors that potentially would affect  
21    operations and production in the EMSU, correct?

22            A. That is correct.

23            Q. Okay. Now, as far as encroachment, what was  
24    your evaluation? What did you do to evaluate the  
25    potential effect of Goat Seep encroachment as part of

1 your analysis?

2 A. So one thing you look at is the production  
3 from the wellbores and the pressures. Like, the  
4 pressure data we showed you earlier, is that those  
5 pressures in those zones drop down to low pressure, 2-  
6 to 300 pounds on RFT. So if you had a strong aquifer  
7 support, you would have more pressure.

8 Q. Do you have --

9 A. And it's well documented that this is a  
10 solution drive reservoir in the Grayburg.

11 Q. Do you have RFT pressures for these wells,  
12 showing that these wells with the high water  
13 production have low wellbore pressures?

14 A. Not all of them. But if you go to the RFT  
15 on the 211, you can see that those zones had lower  
16 pressure.

17 Q. Is the 211 identified here as a well that  
18 has high water production?

19 A. I don't remember exactly whether the 211 is  
20 on here.

21 Q. Isn't it up here in Section 32?

22 A. We'd have to put on the map. I don't know.

23 Q. But as I sit here and look here today, I  
24 don't see that EMSU 211 here. Do you see it on your  
25 map?

1           A. I do not. But it's an example of, you know,  
2     how the pressure is lower in the wellbores, and, you  
3     know, that it's pulling down, indicating that you  
4     don't have a strong aquifer support.

5           Q. If the 211 truly had low pressure -- and  
6     isn't the 211 in your analysis completed in -- or  
7     isn't it completed partially within the upper  
8     San Andres?

9           A. The 211 has RFT pressures through, you know,  
10    a section including all the way down into the  
11    San Andres.

12          Q. So if it's got low pressure, why isn't it  
13    showing up here as a well that has high water volumes,  
14    if it's pulling water up from the San Andres? If the  
15    San Andres is overpressured at this point and would be  
16    drawing -- pushing water up into the Grayburg, why  
17    isn't the 211 one of the wells you have identified as  
18    having a high excess water production?

19          A. I didn't say that it would have high excess  
20    water production. I said that it shows that the  
21    reservoirs in the Grayburg are depleted, showing that  
22    there's not a strong aquifer support.

23          Q. But I think one of your explanations was  
24    that the lower pressures in the wellbores would be  
25    indicative of the lower pressure in the Grayburg,

1 correct?

2 A. Lower pressure in the Grayburg would be  
3 lower pressure in the Grayburg.

4 Q. Okay. And as a result of lower pressure in  
5 the Grayburg, my understanding from your testimony is  
6 that the San Andres is at a higher pressure than the  
7 Grayburg at present, correct?

8 A. That is correct.

9 Q. And higher pressure in the Grayburg, based  
10 on engineering principles, would push water up into  
11 the Grayburg. Isn't that your opinion?

12 A. In the lower zones of the Grayburg; that is  
13 correct.

14 Q. Okay. And so why aren't we seeing the EMSU  
15 211 as one of the wells identified on this exhibit  
16 with high water as a result of influx from the  
17 Grayburg -- or rather, influx from the San Andres?

18 A. I think it's irrelevant to this slide.

19 Q. Okay. Now, when you reviewed this slide  
20 yesterday, I think I understood you to say that when  
21 you discussed it, that there's no set pattern in the  
22 way the water production shows up here across the  
23 EMSU; is that correct?

24 A. Yes. You can see that there's no one big  
25 cluster of water. So if you had a strong water influx

1 from the Goat Seep, all the ones to the far west would  
2 have a lot of water, because that's closest to the  
3 Goat Seep as you're coming off the structure.

4 Q. Okay. Now, I asked you yesterday -- we  
5 discussed this a little bit. You said in your  
6 testimony that you believed it's well documented in  
7 different papers that there's water migrating from the  
8 San Andres into the Grayburg in the EMSU, correct?

9 A. That's correct.

10 Q. Okay. We talked a little bit about the  
11 papers and sources that you could cite or relied on.  
12 And then I asked you whether you were aware of any  
13 papers, starting in the 1930s, that documented that  
14 there was water encroachment in the EMSU. Do you  
15 recall the discussion yesterday?

16 A. I recall the discussion.

17 Q. Since we had that discussion, have you had a  
18 chance to refresh your memory or do any additional  
19 work to determine whether you're aware of any papers  
20 from the 1930s that address that issue?

21 A. I did go back and look to try to find the  
22 1930s paper. I did find one, but I don't know which  
23 one you're referring to.

24 Q. I'm going to pull it up on my screen, this  
25 paper from July 1939.

1 MR. RANKIN: Mr. Hearing Officer, I'm going  
2 to move the admission of this as Goodnight Cross  
3 Exhibit Number 18. This is a United States  
4 Department of the Interior Bureau of Mines paper.

5 That's a report of investigations  
6 relating to reservoir characteristics of the Eunice  
7 oil field in Lea County, New Mexico.

8 HEARING OFFICER HARWOOD: Any objection from  
9 Empire?

10 MS. HARDY: No objection.

11 HEARING OFFICER HARWOOD: OCD?

12 MR. MOANDER: No objection.

13 HEARING OFFICER HARWOOD: Rice?

14 MR. BECK: No objection.

15 HEARING OFFICER HARWOOD: Pilot?

16 MR. SUAZO: No objection.

17 HEARING OFFICER HARWOOD: It'll be admitted.

18 BY MR. RANKIN:

19 Q. Mr. West, is this the paper that you  
20 reviewed last night or this morning?

21 A. Parts of it I did review this morning.

22 Q. Prior to reviewing it this morning, were you  
23 familiar with this paper at all?

24 A. No, I was not.

25 Q. So you weren't aware that Goodnight's



1 experts, starting with this direct testimony filed in  
2 August of 2024, cited to and relied on this paper in  
3 this case?

4 A. I can't say I remember every reference.

5 Q. Okay. So prior to yesterday when you  
6 reviewed it, you were not aware of this paper and its  
7 analysis in 1939 in the Eunice Monument South area?

8 A. I can't remember every exact paper that I  
9 looked at. But I do not remember as of yesterday that  
10 paper.

11 Q. So because you have no memory of it, it  
12 appears to me that you didn't rely on this paper in  
13 your assessment of water production in the EMSU,  
14 correct?

15 A. No.

16 Q. Okay. And prior to yesterday, you're not  
17 familiar with the paper and its description of  
18 different zones within the field and how they're  
19 isolated by low porosity and permeability intervals?

20 A. There's definitely different zones in the  
21 field.

22 Q. I'm asking about this specific paper and its  
23 analysis. Prior to this morning, when you reviewed  
24 it, were you familiar with the description in the  
25 paper regarding the variable porosity and permeability

1 and its effect on well production across the field?

2 A. You'd have to show me on it. But no, if I  
3 didn't look at before this morning, then I probably  
4 wouldn't know, right?

5 Q. I'm just trying to confirm that. Prior to  
6 this morning, you didn't incorporate any of the  
7 findings or analysis in this study in your assessment  
8 of the effect of water on the EMSU, correct?

9 A. Correct.

10 Q. Okay. Now, you mentioned also yesterday a  
11 Love paper by Mr. Love; do you recall that?

12 A. Yes, sir.

13 Q. And I mentioned yesterday we had discussed  
14 that paper extensively during Dr. Lindsay's testimony.  
15 And at the time it was marked as Goodnight Cross  
16 Exhibit Number 1. Do you recall that discussion with  
17 Dr. Lindsay?

18 A. Yes, sir.

19 Q. And I think yesterday, you mentioned that  
20 you thought that this is one of the papers you cited  
21 as I think potentially discussing some aspect of the  
22 San Andres creating an influx into the Grayburg; is  
23 that correct?

24 A. Yes, sir.

25 Q. Okay. So this is the Love paper that you're

1 referring to?

2 A. Yes, sir.

3 Q. Okay. Do you disagree that this paper  
4 addresses and confirms that there are conformance  
5 issues within the EMSU?

6 A. It discusses the conformance issues; that is  
7 correct.

8 Q. Do you disagree that the conformance issues  
9 it addresses in this paper are the same issues that  
10 you've highlighted here in your Exhibit I-5?

11 A. No. Those are different conformance issues.

12 Q. You think they're different conformance  
13 issues?

14 A. Yes.

15 Q. How are they different? What's different  
16 about them?

17 A. This is indicating that you've got -- you  
18 know, so the Love paper, you're talking about the  
19 zones coming across. You're talking about when you're  
20 actively waterflooding. This slide is before the  
21 waterflood, so this is production before the  
22 waterflood. And the paper is addressing waterflood  
23 conformance. Two separate subjects.

24 Q. So you're telling me that the Love paper  
25 does not address in any way the effect of edge water

1 coming in and affecting water production in the EMSU?

2 A. I mean, there's a light aquifer support from  
3 the Gray reef.

4 Q. Okay.

5 A. Goat Seep. Sorry about that.

6 Q. So your opinion is that these issues here  
7 identified in your Exhibit I-5 are separate and  
8 unrelated to anything or any of the analysis discussed  
9 in Mr. Love's 1998 paper?

10 MS. HARDY: Object to the form. I think it  
11 misstates Mr. West's testimony.

12 MR. RANKIN: I'm trying to clarify, which is  
13 why I'm asking the question.

14 HEARING OFFICER HARWOOD: Just rephrase the  
15 question, if you would.

16 BY MR. RANKIN:

17 Q. Well, Mr. West, I'm trying to think what I  
18 asked and how I asked the question.

19 So what I'm getting at, the point is,  
20 you're telling me that you think that the Love paper  
21 addresses a different issue because it's related to  
22 just conformance within waterflooding and not the  
23 effect of edge water on those conformance issues. Is  
24 that a fair characterization of your opinion?

25 A. The Love paper affects waterflood

1 conformance issues.

2 Q. Now you're telling me that it does not  
3 address the affect of edge water on those conformance  
4 issues?

5 A. It might, but you're in a waterflood at that  
6 point in time. It might mention it in there. I can't  
7 remember that.

8 Q. I'll go ahead and pull it up. And I guess  
9 my point is, Mr. West, that here it goes on and talks  
10 about -- you're correct, it talks about conformance,  
11 the variability of the porosity issues, the high  
12 circulation, zones of high production of water. And  
13 then it talks about the focus area.

14 And the first sentence of this  
15 description about the focus area, which is on I  
16 believe Page 4 of the document, states that  
17 conformance problems were observed over the entire  
18 field. Did I read that correctly?

19 MS. HARDY: Mr. Examiner, I object to  
20 Mr. Rankin testifying. There was a long list of  
21 testimony before Mr. Rankin got to his question.

22 HEARING OFFICER HARWOOD: All right.  
23 Mr. Rankin, it's a fair objection. Try and just -- I  
24 know you're trying to lay a preamble in a complex  
25 technical area, so it's a judgment call. But try and

1 bear that in mind if you would, please.

2 MR. RANKIN: Okay. I'll restate the  
3 sentence, the question.

4 BY MR. RANKIN:

5 Q. On Page 692 of the paper, Page 4 of the  
6 document, it states, "Conformance problems were  
7 observed over the entire field."

8 Did I read that correctly?

9 A. That is correct.

10 Q. And it cites to Figure 7 to support that  
11 statement. Agree?

12 A. Can you show me Figure 7?

13 Q. I will. So there's Figure 7. It states  
14 that wells that have symptoms of poor reservoir  
15 conformance are marked by a large circle. Do you see  
16 that?

17 A. I see that.

18 Q. And then under the title of that image, it  
19 says "Edgewater drive." Do you see that?

20 A. I see it on that image.

21 Q. It's not titled evidence of San Andres  
22 bottom -- San Andres bottom water plumes.

23 A. So if we can, like, set up in context to go  
24 up in the paper to describe the zones.

25 Q. Yeah.

1           A. So if you could scroll up.

2           Q. What are you looking for?

3           A. Scroll up. I'll tell you when. It'll say  
4 the zones, how it defines the zones, Zone 1, Zone 2,  
5 Zone -- up a little bit higher. Keep on going. Next  
6 page. All right. Right here. See there's Zone 4,  
7 Zone 5. Go ahead and scroll up so you can see Zone 1,  
8 Zone 2.

9           Q. You want me to go up?

10          A. Yes, just a little bit farther.

11                       So when we refer to the -- you know,  
12 the -- you know, so it's talking down below about  
13 Zone 1 and Zone 2, so when you refer to that, that's  
14 where it ties back to the EMSU 211 RFTs, you're taking  
15 in that Zone 1 and Zone 2, which has very high  
16 permeability streaks. And those pressures are low.  
17 If you're getting that much edge water support, you  
18 wouldn't have that lower pressure there. Okay?

19                       I do think it's important here to go to  
20 Zone 4. And where it describes Zone 5, which is, it  
21 says, typically a water drive, it has, you know, a  
22 little bit more water in Zone 6, and Zone 5 and 6 says  
23 that it overlies the top of the San Andres and  
24 contains an unconformity in the upper part and that  
25 there's oil wells shown well down into the San Andres.

1                   So it's kind of -- it confirming here  
2                   that Zone 5 and Zone 6 is in direct communication with  
3                   the San Andres and the contributing water.

4                   Q. Where does it says that Zone 5 and Zone 6  
5                   are in direct communication with the San Andres  
6                   contributing water?

7                   A. It says that it's a high -- you know, it's a  
8                   higher -- it's typically a water drive and that it is,  
9                   you know -- that it includes the top of the  
10                  San Andres, you know, into what they consider Zone 6.

11                  Q. It says it overlies the top of the  
12                  San Andres. It doesn't say includes the San Andres?

13                  A. Overlies, you know -- you know, it's  
14                  implying here that the San Andres is part of that  
15                  zone. Consider it impacts that lower zone of the  
16                  Grayburg.

17                  Q. That's your opinion?

18                  A. Yes. That's what it, you know, says. And  
19                  it says oil shows well down into the San Andres;  
20                  another proof of record that there's historical  
21                  records of oil in the San Andres.

22                  Q. No, Mr. West, I'm not talking about oil yet.  
23                  I'm talking about water. We can talk about oil later.  
24                  And Mr. Knights addresses that specific quote in his  
25                  analysis. But I'm asking about what here, and you



1 told me that "overlies" is the same as "includes"?

2 A. If there's fractures in between that  
3 connects. I mean, they were using it in the same  
4 context as a zone here.

5 Q. Does this paper address fractures or does it  
6 say anything about communication or influx of water  
7 from the San Andres into the Grayburg?

8 A. That's saying that it's typically a water  
9 drive from the zone, including --

10 Q. Okay. And where it says that it's a water  
11 drive, in Figure 7, it talks about edge water, doesn't  
12 it? And it shows in the analysis -- talk about  
13 implications, it's implying that performance issues  
14 are a direct result of the edge water, correct?

15 A. It doesn't say that. It says that --

16 Q. It doesn't say "Edgewater drive"?

17 A. It says that wells have symptoms of poor  
18 reservoir conformance, and they are marked by a large  
19 circle.

20 Q. That title of the figure does not say  
21 "Edgewater drive"?

22 A. That's what that says. But there's no  
23 implication of what it's telling. It says "thin gas  
24 cap" up at the top, too.

25 Q. Okay. So over here, where it's interpreting

1 or discussing the figure, it's saying that  
2 "Conformance problems observed over the entire field,"  
3 correct?

4 A. That is correct.

5 Q. And it refers down to Figure 7, which is  
6 titled, "Edgewater drive," correct?

7 A. It's not titled. It's a -- it says it  
8 there. Probably implying that, you know, that  
9 southwestern corner, that that's where it was affected  
10 from. They put it on that graph. That is not a  
11 title. That's a label.

12 Q. Okay. And your own expert, Dr. Lindsay --  
13 and you're telling me you don't recall his testimony,  
14 but this figure shows that there is the Goat Seep,  
15 which is by Dr. Lindsay's own testimony, the edge  
16 water that encroaches all the way up to the top of  
17 structure. Do you disagree?

18 A. Yeah. It has some, you know, mix in there  
19 of the edge water.

20 Q. Okay.

21 A. But it would be -- not have the sulfate,  
22 right? So you wouldn't have the barium sulfate  
23 problem.

24 Q. Going to your Exhibit 9, which is same topic  
25 here, this is your Exhibit I-6 from your direct

1 testimony, correct?

2 A. That is correct.

3 Q. And this is an image or figure from a 1983  
4 Technical Committee Report, correct?

5 A. That's correct.

6 Q. I thought I had pulled it up. I apologize.  
7 I have so many files in your folder, Mr. West.

8 A. There's a lot of documents to keep straight,  
9 there's no doubt. This is big case and a lot of  
10 technical things. Forgive me whenever I don't recall  
11 off the top of my head.

12 Q. That may be the reason I didn't open it,  
13 because it's a big file.

14 So is this the 1983 Technical Committee  
15 Report that you were referring to in your testimony?

16 A. Yes, sir.

17 Q. Okay. And you and I discussed this  
18 yesterday. Do you recall when I was asking you --  
19 when we looked at this figure on your PowerPoint on  
20 Slide Number 9, I was asking you whether or not there  
21 was specific reference in the Technical Committee  
22 Report that interpreted this image, indicating that it  
23 was reflective of an influx of San Andres water into  
24 the Grayburg. Do you recall that, yesterday?

25 A. I remember the discussion. But talking

1 about the paper, I don't remember exactly. But I'll  
2 take your word for it.

3 Q. So what I'm asking you here now is, do you  
4 recall any specific language, discussion, analysis  
5 relating to this figure from the 1983 technical report  
6 or anywhere in the technical report that discusses a  
7 determination or conclusion or even an indication that  
8 there's an influx of San Andres water into the  
9 Grayburg?

10 A. I'd have to reread it. But, you know, this  
11 is where it's showing historical high plumes of water  
12 production.

13 Q. Okay. But that's different than what you  
14 said yesterday, isn't it?

15 MS. HARDY: Objection.

16 MR. RANKIN: I'm asking if it's different  
17 than what he said yesterday.

18 A. I do not recall fully what I said yesterday  
19 in reference to this particular one. We were talking  
20 about a lot of historical references, and I don't  
21 remember my exact wordings on this one.

22 Q. So as you sit here today, you're telling me  
23 that --

24 CHAIR ROZATOS: Mr. Rankin, I'm going to  
25 interrupt for a second. There was an objection that

1 was raised. The Hearing Officer did not get a chance  
2 to make his decision.

3 I mentioned this many times before, you  
4 guys. We need to keep decorum in here. There was an  
5 objection raised. The Hearing Officer has to make  
6 his decision before we continue. Please make sure  
7 you follow these rules.

8 MR. RANKIN: I apologize.

9 MR. ROZATOS: Mr. Hearing Officer, there was  
10 an objection. I turn it back over to you.

11 HEARING OFFICER HARWOOD: Thank you. I  
12 guess I didn't hear that.

13 All right. I'm going to have to go back  
14 and see what the question was.

15 MS. HARDY: I think Mr. Rankin rephrased his  
16 question.

17 HEARING OFFICER HARWOOD: The question was,  
18 you asked him if what he said today is different from  
19 what he said yesterday. Okay. That's a fair  
20 question. Objection is overruled.

21 MS. HARDY: That wasn't my objection. My  
22 objection was to his prior question. He then  
23 rephrased it to ask the question that you're  
24 mentioning. So I don't object to the rephrased  
25 question. Thank you.

1           HEARING OFFICER HARWOOD:   Okay.   That cures  
2   it.   All right.

3           MR. RANKIN:   I apologize, Mr. Chair,  
4   Commissioners, Ms. Hardy.   I didn't mean to curtail  
5   the opportunity to address the objection.   I  
6   apologize.

7           HEARING OFFICER HARWOOD:   That's all right.  
8   And while we're talking about decorum, both of you  
9   please try and remember not to talk over each other  
10   for the sake of the record and especially the court  
11   reporter.   Thanks.

12   BY MR. RANKIN:

13           Q. Mr. West, you can answer the question.

14           A. Can you restate it.   I don't remember after  
15   that.

16           Q. What you said today about this image or this  
17   chart shows water production values, is different than  
18   what you stated about the chart yesterday; is that  
19   correct?

20           A. I don't remember what I stated exactly  
21   yesterday.   This is, you know, depicting high water  
22   cum values in different points whenever it was put  
23   together, prior to the waterflood.

24           Q. It is your opinion that this chart shows an  
25   influx of water pluming from the San Andres into the

1 Grayburg?

2 A. I believe that it gives you -- I mean, that  
3 is a great indication of that, would be a way that you  
4 would get the isolated plumes of water into the  
5 structure.

6 Q. Okay. Now my necessary, Mr. West, is there  
7 anywhere in that 1983 Technical Committee Report that  
8 interprets this chart to indicate that that there is  
9 an influx of San Andres water into the Grayburg?

10 A. I do not remember.

11 Q. So since our discussion yesterday, where I  
12 raised with you, did you have an opportunity to go  
13 back and review the 1983 technical report to find any  
14 such language?

15 A. I did not review the entire report.

16 Q. Okay. In your exhibit here, I-6, you refer  
17 to this chart. I'm going to skip down to it. I'm  
18 just going to make sure that this is -- so we have the  
19 whole page. This is the page that you pulled for your  
20 exhibit, correct?

21 A. Yes. That's the diagram.

22 Q. Okay. And it's titled "Eunice Monument  
23 South Unit Mesh Perspective on 1981 Water Production,"  
24 correct?

25 A. That is correct.

1 MR. RANKIN: Mr. Hearing Officer, I'm going  
2 to go ahead and move into admission the 1983  
3 Technical Committee Report from April 1983, and I'll  
4 mark it as Goodnight Cross Exhibit 19.

5 HEARING OFFICER HARWOOD: Empire, any  
6 objection?

7 MS. HARDY: No objection.

8 HEARING OFFICER HARWOOD: OCD?

9 MR. MOANDER: No objection.

10 HEARING OFFICER HARWOOD: Rice?

11 MR. BECK: No objection.

12 HEARING OFFICER HARWOOD: Pilot?

13 MR. SUAZO: No objection.

14 HEARING OFFICER HARWOOD: All right. It  
15 will be admitted.

16 (Admitted: Goodnight Midstream  
17 Cross Exhibit 19.)

18 BY MR. RANKIN:

19 Q. Mr. West, I did a search on this, and I'm  
20 not going to subject everybody in this room to it, but  
21 I could find no direct discussion, interpretation of  
22 this figure. Just so we can see, it's listed as  
23 Figure 12 in the Technical Committee Report. I could  
24 find no direct interpretation or discussion of this  
25 figure in the Technical Committee Report.



1                   Do you recall yourself seeing any  
2     interpretations or discussion of this figure in the  
3     Technical Committee Report?

4                   MS. HARDY:   Object to Mr. Rankin testifying  
5     about what he found in the report.

6                   MR. RANKIN:   That's fine.

7     BY MR. RANKIN:

8                   Q. Mr. West, are you able to identify yourself  
9     any discussion of this figure of the Technical  
10    Committee Report?

11                  A. I can't say I remember that 167 pages right  
12    now. This was used in our frame of reference at the  
13    time of water production from the field.

14                  Q. Okay. But you're presenting this as  
15    evidence of or at least indication of communication  
16    between the San Andres and Grayburg, correct?

17                  A. That is correct. That is an indication of  
18    communication where you have historical high water  
19    volumes up structure, and down structure, you do not.

20                  Q. Okay. So you're telling me that this grid  
21    is all on the high structure; is that correct?

22                  A. I mean, it covers a big chunk of the field,  
23    right? But you could probably see on here the two  
24    folds that Lindsay shows there, where you would have  
25    the fracturing, right? You got the one initial hump

1 and the you got the next initial hump that they kind  
2 of line up.

3 Q. I don't see any structure on this. This is  
4 a mesh -- isn't this a mesh perspective on water  
5 production?

6 A. That is correct, and it's structural in  
7 there. But, you know, you've got the double humps  
8 coming across the field from, you know, downdip. You  
9 got the first hump, and you kind of have that line of  
10 higher water there, and then you have a dip, where  
11 there's none. And then you have where the structure  
12 gets reflexed again. You have a line of higher water  
13 production again.

14 Q. So your opinion is that this water  
15 production correlates to the structure; is that  
16 correct?

17 A. That's indicating where you would have, you  
18 know, fracture zones that Mr. Lindsay indicated of  
19 those flexures.

20 Q. So the pattern here, potentially, would be  
21 based on structure. Agree?

22 A. It would be where there's flexing and  
23 fracturing. And whenever the rock is bent, especially  
24 a dolomite, there's a lot of fracturing that occurs  
25 and more vertical perm.

1           Q. I'm going to skip over 10 and go to Slide 11  
2 here. This is an exhibit from Dr. Buchwalter,  
3 correct?

4           A. Yes, sir.

5           Q. And on the left is a snippet that applies  
6 the -- discusses the Arrowhead Grayburg Unit, or AGU.  
7 Agree?

8           A. That is correct. It is from the Chevron  
9 unitization, I believe, technical.

10          Q. And in this case before the Commission  
11 currently, there's no testimony or evidence to  
12 establish what the depths are of the San Andres and  
13 the Grayburg in the Arrowhead Grayburg Unit. Agree?

14          A. I don't know for 100 percent fact.

15          Q. As you said here, you can't recall any  
16 testimony or facts or exhibits presented by Empire or  
17 anybody else that address or clarify what the  
18 San Andres or Grayburg depths are the AGU. Agree?

19          A. Correct. This has been on the EMSU. But in  
20 this paper, they refer to the EMSU.

21          Q. Okay. On this snippet, does it refer to the  
22 EMSU?

23          A. It doesn't on this snippet, but if we pulled  
24 up the paper, it does.

25          Q. Why wouldn't Mr. Buchwalter -- well,

1 Mr. Buchwalter did not identify in this exhibit  
2 anything relating to the EMSU. Agree?

3 A. You know, the water production over to the  
4 right, that snippet, he has, you know, the higher  
5 water production, the EMSU.

6 Q. That's true. I'm going to talk about that  
7 in a moment. But as for the snippet included on the  
8 AGU, it does not reference the EMSU. Agree?

9 A. So you're referencing just what's  
10 highlighted in red?

11 Q. I'm referencing what Dr. Buchwalter deemed  
12 important to include in this exhibit.

13 A. It looks like to me that he deemed  
14 important, you know, water influx from the San Andres  
15 to the lower Grayburg, and he deemed important as the  
16 high production of water in different plumes in the  
17 EMSU.

18 Q. Doesn't say anything about the EMSU in that  
19 snippet, does it, on the left?

20 A. So you -- I asked you if it was in the red,  
21 if that's what you were referring to. And you said  
22 you were referring to the whole slide, so I went back  
23 to the whole slide. Are referring to just what is  
24 highlighted in the red?

25 Q. I'm asking you, the information that

1 Dr. Buchwalter pulled from the AGU report, does it  
2 reference anything about the EMSU?

3 A. It's just that snippet in the square box  
4 that does not have a reference to the EMSU in that.

5 Q. As to the AGU in this case, there's been no  
6 testimony or evidence to establish that what is  
7 referred to as the San Andres influx in this snippet  
8 here from Dr. Buchwalter that he refers to, is not  
9 just Goat Seep edge water coming up into the AGU from  
10 down structure. Agree?

11 A. It says that it's a solution gas drive. So  
12 if it's a solution gas drive reservoir, you do not  
13 have strong aquifer support.

14 Q. I'm asking you, though, Mr. West, that  
15 there's no testimony or evidence to establish that  
16 San Andres influx is not just Goat Seep edge water  
17 coming up into the AGU from down structure.

18 A. It couldn't be a solution gas drive  
19 reservoir if you had aquifer support.

20 Q. But there's been no testimony or discussion  
21 around the AGU in this case, agree, that relates to  
22 the edge water drive in the AGU?

23 MS. HARDY: Object to the form. I think  
24 lack of foundation.

25 MR. RANKIN: That's fine. I'll move on.

1 That's fine. I'll move on.

2 HEARING OFFICER HARWOOD: Okay. Hold on. I  
3 do have to rule on the objection, and so I'm going to  
4 sustain the objection, because I don't know how  
5 comprehensive they are, but my notes of  
6 Dr. Buchwalter's testimony include a statement where  
7 he said there's no evidence of strong aquifer coming  
8 into the Grayburg, for what that's worth.

9 MR. RANKIN: Okay.

10 BY MR. RANKIN:

11 Q. You reference this other image on the right  
12 that Dr. Buchwalter pulled from -- included in his  
13 testimony here. It is Exhibit M-3. And that's also  
14 from the 1983 Technical Committee Report, as well,  
15 correct?

16 A. That is correct.

17 Q. Okay. And to the best of your knowledge,  
18 Mr. West, as with the prior figure that we were just  
19 discussing in that Technical Committee Report, were  
20 you able to identify any discussion in the report  
21 about this figure or an interpretation to go with it?

22 A. I don't remember off the top of my head.  
23 We'd have to pull up the document and look at it. But  
24 it's a large document also.

25 Q. It is. But as you sit here, you can't

1 recall -- Mr. West, is Empire relying on this image of  
2 water production from 1981 to establish that there's  
3 communication between the San Andres and the Grayburg?

4 A. It's a piece of data indicating that you  
5 have an unexplainable high water production up  
6 structure.

7 Q. Now, it's your opinion that that water  
8 production is unexplainable; is that right?

9 A. No. Actually, you can explain it from water  
10 influx from the San Andres.

11 Q. Okay. Now, your opinion is that there's  
12 water influx from the San Andres and that this image  
13 is an indication of that. Agree?

14 A. It indicates high water where you wouldn't  
15 typically expect high water.

16 Q. Now, you reviewed the 1983 Technical  
17 Committee Report, didn't you?

18 A. I have at one time. I didn't do it last  
19 night.

20 Q. And you would have been looking for every  
21 detail or snippet of information that would support  
22 your position. Agree?

23 A. We're looking. Can't say I didn't miss any.

24 Q. Okay. But if you had found something that  
25 supported this interpretation of this image, you would

1 have included it in your testimony or in your  
2 exhibits. Agree?

3 A. Yeah. I mean, if, you know -- you know, to  
4 support the case. But that's a strong indication of  
5 water.

6 Q. Okay. I'm going to just skip down to where  
7 I believe that -- I'm not sure exactly what page that  
8 is on, so I will not attempt to find it. But you  
9 agree that it's in that Technical Committee Report,  
10 right?

11 A. That is where it stated that it came from,  
12 yes, I believe.

13 Q. And so while there's -- it does, I guess --  
14 I reviewed this and I did find some discussion of  
15 information about communication. And here on Page 5  
16 of the Technical Committee Report, the technical  
17 committee wrote, "At this time, there is insufficient  
18 data available to determine the degree of vertical  
19 reservoir communication." Did I read that correctly?

20 A. That is what you read there. And it looks  
21 like it's saying they had thoughts that there was  
22 vertical reservoir communication, or they never would  
23 have put it in the report.

24 Q. It's actually hard to tell its context,  
25 whether it's addressing vertical communication within



1 the Grayburg itself, or between the Grayburg and the  
2 San Andres. Would you agree?

3 MS. HARDY: Object to Mr. Rankin testifying  
4 about what the article says.

5 HEARING OFFICER HARWOOD: That's overruled.

6 A. It's talking about vertical reservoir  
7 communication.

8 Q. Can you determine, based on this paragraph  
9 of the context, whether it's discussing vertical  
10 communication between the Grayburg and San Andres or  
11 within the Grayburg itself?

12 A. It's talking about vertical communication.

13 Q. Okay. There are some other additional  
14 discussions about water production in the unit, and it  
15 discusses, at some length, the assessment of water  
16 production. And here on this page, which is Page 22  
17 of the report, the technical committee states,  
18 "However, after analyzing individual well production  
19 records it is obvious that the water production is not  
20 evenly distributed throughout the field." Did I read  
21 that correctly?

22 A. Yes, you did.

23 Q. And that matches up well, with your  
24 Exhibit I-5. Agree?

25 A. Yes, with I-5 and the other exhibits of

1 different spots of high water.

2 Q. And then further down on that same page, it  
3 goes on to say that the technical committee attempted  
4 to make -- to correlate to determine whether that  
5 water encroachment was uniform. Do you see that, that  
6 I've highlighted here?

7 A. Yes. I'm just working on reading all of it.

8 Q. It goes on to say that after comparing water  
9 production, decline rates and structural position for  
10 the leases within the field, they determined that  
11 there was no clear trend. Do you see that?

12 A. Yes. So if you had edge water, you would  
13 have a clear trend.

14 Q. If the structure were uniform. Agree?

15 A. That structure, you got downdip, you got  
16 updip. You would have a clear trend. Clear trend  
17 would be in reference to structure.

18 Q. Are there not variations in porosity and  
19 permeability all through the Grayburg?

20 A. Yes. There is in any reservoir.

21 Q. Especially in a complex carbonate system,  
22 such as the Grayburg in the EMSU. Agree?

23 A. Yes. It is a...

24 Q. Okay. Now --

25 A. Flip back there real quick. You had one

1 other thing down at the bottom that I just wanted to  
2 read before you went off of it.

3           Considering the entire unit area, the  
4 water production does not indicate a strong uniform  
5 water drive mechanism. Okay. I just wanted to make  
6 sure I read that right.

7           Q. All right. Moving off that topic, here on  
8 the Slide 12, this is referencing your Rebuttal  
9 Exhibit N-8. Correct?

10          A. That is correct.

11          Q. And I think I understood you to say that  
12 this slide is no longer accurate because you've  
13 changed your opinion about the depth of the pressure  
14 datum. Correct?

15          A. That is correct. We changed it because it  
16 was referenced on the paper as 250. But it makes more  
17 sense, as my original analysis was a negative 250.  
18 And I incorrectly switched it to the 250 because  
19 that's -- I read the document for what it was.

20          Q. So rather than referring to N-8, I guess,  
21 should it be -- is it I-3?

22          A. Yeah. The original one would be a better  
23 one to talk from.

24          Q. Okay. So your testimony as it stands today  
25 is adopting I-3, not N-8, correct?

1           A. That is correct.

2           Q. And I guess my question is, why did you  
3 change your mind about that pressure datum?

4           A. Just to make sense that it matches up better  
5 with Mr. Buchwalter's original models of the pressure  
6 being proper, and that, you know, its position in the  
7 reservoir makes more sense.

8           Q. But no new data, correct?

9           A. No new data.

10          Q. And no new papers or information that you  
11 evaluated to make that determination, correct?

12          A. No. Just trying to make the determination  
13 that it was incorrectly stated on that original paper.

14          Q. That what was incorrectly stated?

15          A. That it's 250 subsea instead of a negative  
16 250 subsea.

17          Q. Now, the next slide here, going back to your  
18 slide presentation, same thing with this one, would  
19 we -- we'd want to refer instead to your original  
20 testimony, the exhibit that correlates to this one in  
21 your original testimony; is that correct?

22          A. Yes. For that far pressure curve to the  
23 right.

24          Q. So that would be Exhibit I-4, correct?

25          A. Yeah. That's similar to it.

1 Q. I guess my question is, I'm trying to figure  
2 what your final testimony is on this issue. Is it  
3 what is stated in Exhibit I-4 or what's stated in this  
4 revised Exhibit I-4 on your slide presentation?

5 A. Yeah, just making sure, I'm just reading the  
6 two of them clearly, the key points over to the right  
7 and things. But yes, we can go with the original one.

8 Q. So as you sit here today, your final  
9 testimony on this pressure data would be this original  
10 testimony, original exhibit in your direct testimony,  
11 I-4, correct?

12 A. Yes, that is correct. And you can see there  
13 where on those high zones that you had a thousand  
14 pounds of depletion up in Zones 1 and 2.

15 Q. So in this exhibit, Mr. West, you also  
16 include a top of San Andres, correct?

17 A. Yes.

18 Q. That's Empire's pick for the top of the  
19 San Andres in this well, correct?

20 A. At the time of this, yes, that is.

21 Q. Has it changed?

22 A. I would have to reference. I don't think --  
23 it's just a couple feet if it did change.

24 Q. So somewhere around, you know, 4,000  
25 measured depth. Measured depth, it's not TBD? Do you

1 mean TBD?

2 A. Well, it's referring to the subsea depth  
3 there. But, I mean, in a vertical well, TBD and  
4 measured depth is virtually the same.

5 Q. I thought it was referencing the top of the  
6 San Andres.

7 A. Well, it's referencing in this wellbore  
8 that --

9 Q. Okay.

10 A. -- you know, that measured depth, which  
11 would be a safe assumption to assume on a vertical  
12 well that, you know, the TBD and measured depth are  
13 correct.

14 Q. Okay. I'm following. Okay. So somewhere  
15 around 4,000 feet is Empire's pick for the top of the  
16 San Andres. Agree?

17 A. Yep. Right around 4,000. I mean, it's 3975  
18 here.

19 Q. But it's no shallower -- or rather, no  
20 deeper than that RT pressure measurement at 4,006  
21 feet. Agree?

22 A. Well, you know, structural position would be  
23 depending on where you add on structure. So it would  
24 depend on different wellbores.

25 Q. But, I mean, you're asserting here that this

1 pressure measurement that you're referencing in this  
2 exhibit is in what Empire has identified as the  
3 San Andres. Agree?

4 A. In this wellbore, that is correct.

5 Q. In this wellbore. So the top of the  
6 San Andres in this wellbore is above what you're  
7 saying is where this pressure measurement was taken,  
8 correct?

9 A. That is correct.

10 Q. Right? Okay. It's close, but you're saying  
11 the top is picked just above where this pressure was  
12 taken, correct?

13 A. That is correct.

14 Q. Okay. So yesterday, Mr. West, we discussed  
15 this at some length, and I was asking you whether you  
16 had done yourself an analysis to determine whether or  
17 not this pressure measurement that you're indicating  
18 here and that you contend indicates that there's a  
19 pressure communication between what Empire has  
20 identified as the San Andres and the Grayburg.

21 I was asking you yesterday whether you  
22 had done an analysis to determine whether or not this  
23 pressure reading 4,006 feet is in Goodnight  
24 Midstream's disposal zone. Do you recall that  
25 discussion yesterday?

1           A. Yes. It is in the San Andres.

2           Q. That wasn't my question. We went back and  
3 forth about this yesterday, right?

4           A. Yes.

5           Q. And I was asking you whether you had done  
6 analysis. And you were sticking to your guns that  
7 this is in the San Andres. And we didn't determine  
8 yet where exactly in this well Empire had picked its  
9 permeability barrier. Agree?

10          A. We don't see a permeability barrier?

11          Q. As far as our discussion, you and I, we did  
12 not put up on the screen or have any discussion about  
13 where Goodnight had picked its permeability barrier.  
14 Do you agree?

15          A. For Goodnight, yeah, you did not put  
16 anything up on the screen, right.

17          Q. So I do have a cross-section that Goodnight  
18 had prepared that shows its permeability pick in the  
19 211. This is prepared by Goodnight Midstream,  
20 Mr. Preston McGuire, and at the top left, it shows  
21 Empire New Mexico, LLC, EMSU 211 well. It shows on  
22 the cross-section, the center well is the Empire EMSU  
23 Number 1 SWD well. And then it shows on the far  
24 right, Goodnight Midstream's Ryno well, which is one  
25 of its disposal wells at issue in this case.



1                   And I'll just scroll down so you can see  
2     it. We indicated on the 211, Goodnight indicated on  
3     211 log, the location of Empire's pick, which is right  
4     around 390. We said -- sorry. Right around 3,975  
5     feet. Would you agree with me that's approximately  
6     around 3,975 feet?

7                   A. Yes. The best that I can see the line, that  
8     looks approximately to be the proper location. Can't  
9     keep everything in my head.

10                  Q. So you agree with me that that's approximate  
11     for Empire's pick for the top of the San Andres in  
12     that well. Agree?

13                  A. That's correct.

14                  Q. And then below that, with the black line, is  
15     where Goodnight Midstream in this well has picked its  
16     top of the San Andres, which correlates to the top of  
17     its permeability barrier. Do you see that?

18                  A. I see what they picked. I don't agree with  
19     their picks.

20                  Q. Yeah, I'm not asking you to. But this is  
21     based on the tops that Goodnight has provided to  
22     Empire in discovery, and these are the pics that  
23     Empire has identified for this well. I'm not asking  
24     you agree with them.

25                  A. Understand.

1 Q. Also on this image, it goes on to show  
2 Empire's San Andres disposal zone within the EMSU SWD  
3 Number 1. Do you see that?

4 A. Yes. That's the disposal zone that just has  
5 very small volumes going into it?

6 Q. Right. That's the disposal zone.

7 And then to the right, it shows  
8 Goodnight Midstream's Ryno well and the depth in the  
9 center track here, the depth track, it shows the  
10 perforations where Goodnight has perforated its well  
11 for disposal. Do you see that?

12 A. And it looks like they're representing  
13 perfs.

14 Q. And then it has an inset map that shows the  
15 location of those wells within the EMSU from A to A  
16 prime. Do you see that?

17 A. Yes, sir.

18 MR. RANKIN: Mr. Hearing Officer, I move the  
19 admission of this as Goodnight Cross Exhibit Number  
20 20.

21 HEARING OFFICER HARWOOD: It's not already  
22 in evidence in your case in chief?

23 MR. RANKIN: It is not.

24 HEARING OFFICER HARWOOD: Any objection from  
25 Empire?

1 MS. HARDY: No objection.

2 HEARING OFFICER HARWOOD: OCD?

3 MR. MOANDER: No objection.

4 HEARING OFFICER HARWOOD: Rice?

5 MR. BECK: No objection.

6 HEARING OFFICER HARWOOD: Pilot?

7 MR. SUAZO: No objection.

8 HEARING OFFICER HARWOOD: It will be be  
9 admitted.

10 (Admitted: Goodnight Midstream  
11 Cross Exhibit 20.)

12 BY MR. RANKIN:

13 Q. So in this well at least, between where  
14 Empire picks its top of San Andres and where Goodnight  
15 Midstream picks the top of the San Andres and its  
16 permeability barrier, there's approximately -- I'm not  
17 going to ask you to confirm, but approximately about  
18 100 feet in this well, correct?

19 A. Looks like 100, 110 feet difference between  
20 the picks.

21 Q. Okay. In other wells, that difference can  
22 be more or less, depending on where you are on the  
23 structure and depending on where the picks are. Do  
24 you agree?

25 A. Agree that our picks and your picks don't

1 line up?

2 Q. Yes. So for purposes of our discussion  
3 today, I'm going to refer to the difference here  
4 between Empire's pick and Goodnight's pick, I'm going  
5 to call this, just for ease after reference, "The  
6 disputed San Andres interval." Okay?

7 A. The difference between our pick, which is  
8 consistent with the state, and what Goodnight is  
9 trying to say is the pick?

10 Q. I appreciate the additional commentary,  
11 Mr. West. But yes, I'm asking you just to agree with  
12 me that as between where Empire has picked the  
13 San Andres and where Goodnight has picked the  
14 San Andres in this well, I'm asking you to agree with  
15 me -- for the purposes of discussion, I'm going to  
16 refer to that as "The disputed San Andres interval."  
17 Okay?

18 A. In this particular wellbore --

19 Q. In this pick, yes.

20 A. -- I think sometimes your guys' picks vary  
21 up and down.

22 Q. I'm asking you just for the purposes of this  
23 image, this exhibit. Okay?

24 A. This 110 feet in this well?

25 Q. Correct.

1           A. Correct.

2           Q. Just for purposes of our discussion, is that  
3 okay with you, so we can speak the same language?

4           A. I'll say correct. Sorry about that.

5           Q. All right. Now, that survey, pressure data  
6 survey that we were looking at in your Exhibits I-3  
7 and I-4, that was taken at 4,006 feet, correct?

8           A. That is correct.

9           Q. And looking at this log image of the EMSU  
10 211 well, I think these tick marks are 10 feet; isn't  
11 that right?

12          A. Typically, that's right. I can hardly see  
13 the tick marks.

14          Q. I don't think the scale included on this log  
15 header -- or we don't even have a log header included.  
16 But I believe when you --

17          A. I can see the middle one, which would be 5,  
18 you know, 50, so...

19          Q. You agree 10 feet, right?

20          A. Agree 10 feet what?

21          Q. That each tick mark is a 10-foot interval.

22          A. Not that I can really read the tick marks.  
23 I can read the 50 marks, but it's hard to read them.  
24 But we can approximate.

25          Q. Okay. So, you agree with me that the

1 4,006-foot depth where the pressure survey data was  
2 taken is approximately at this indication where I've  
3 got my little blue box?

4 A. Yes. That would be right in there.

5 Q. Right in there. And that would be within  
6 what Empire calls the San Andres, but above Goodnight  
7 Midstream's pick for the top of the San Andres.

8 Agree?

9 A. What Empire and the State calls the pick,  
10 yes.

11 Q. Okay. Is it your opinion that that location  
12 is within Goodnight's disposal zone?

13 A. If you're calling the San Andres the  
14 disposal zone, yes, that would be within it.

15 Q. No. I guess, Mr. West, just to be clear,  
16 looking at the Ryno well on the far right, I'm calling  
17 Goodnight's disposal zone the interval below  
18 Goodnight's San Andres pick. Do you see that?

19 A. I see the Ryno well there. But, you know, I  
20 don't know what you're defining the disposal zone as.

21 Q. I'm defining the disposal zone as the  
22 interval below Goodnight's San Andres pick, across  
23 this cross-section.

24 A. So firm reference of it is it would be the  
25 pick of the San Andres, not whether or not it's a

1 Goodnight pick or not; is that correct?

2 Q. I'm sorry. Ask the question again.

3 A. You would be referring to -- if we're  
4 talking with the State, the San Andres is what you're  
5 calling the disposal zone?

6 Q. No. I'm calling the disposal zone Goodnight  
7 Midstream's pick below Goodnight Midstream's pick for  
8 the San Andres. Do you see that?

9 A. So you're trying to come up with another  
10 spot of the disposal zone rather than calling it the  
11 top of the San Andres?

12 Q. Mr. West, for purposes of discussion, I'm  
13 trying to get on the same page. Okay?

14 A. I'm trying to, too. I'm just trying to  
15 understand exactly what you're --

16 Q. What I'm asking you is -- what I'm telling  
17 you is, for purposes of our discussion today,  
18 Goodnight Midstream's disposal zone is this interval  
19 below what is indicated on this exhibit as Goodnight's  
20 pick for the San Andres. Do you see that?

21 A. Okay. I can see -- yes, I can see where  
22 it's perforated in the San Andres.

23 Q. So what I'm talking about, when I refer to  
24 the disposal zone, I'm referring to the interval below  
25 this line on this exhibit. Do you see that?

1 A. Okay.

2 Q. And is it your opinion that the 4,006-foot  
3 mark, where the RFT test was taken for the EMSU 211,  
4 is within Goodnight Midstream's disposal zone?

5 A. I agree that it's within the San Andres.

6 Q. Okay.

7 MR. RANKIN: Mr. Hearing Officer, I don't  
8 know that I can get him to answer, but I think he's  
9 being nonresponsive.

10 HEARING OFFICER HARWOOD: My problem is, we  
11 were talking about -- if you can scroll back up.  
12 When we were first talking about the 4,006-foot  
13 area -- can you scroll back up?

14 MR. RANKIN: Oh, the other direction?

15 HEARING OFFICER HARWOOD: No. Up.

16 MR. RANKIN: Oh, to the other --

17 THE HEARING OFFICER: To the same set of  
18 wells. We were first talking about EMSU 211, and  
19 then you switched over to talking about Ryno 17-1.  
20 So I don't think he's being responsive. I think the  
21 record at this point is unclear.

22 BY MR. RANKIN:

23 Q. Mr. West, I guess I'm asking -- let me try  
24 to reframe the question, then. In the EMSU 211,  
25 Goodnight Midstream has identified the top of its



1 San Andres pick. Do you see that?

2 A. Yes, sir.

3 Q. And for purposes of my question to you,  
4 below that pick in the EMSU 211 is identified as  
5 Goodnight's disposal zone. Okay?

6 MS. HARDY: Well --

7 MR. RANKIN: For purposes of the question.  
8 Okay?

9 BY MR. RANKIN:

10 Q. Mr. West, I'm asking you, for purposes of my  
11 question, the interval below that pick is what  
12 Goodnight refers to as its disposal zone. Okay?

13 A. Okay.

14 Q. So are you willing telling me, is it your  
15 opinion, that the 4,006-foot depth, where the RFT was  
16 taken in the EMSU 211, is within Goodnight's disposal  
17 zone?

18 MS. HARDY: I object to the question as  
19 misleading, because I do think it's conflating what's  
20 shown here with respect to different wells. The  
21 disposal zone Mr. Rankin is asking about is not in  
22 the EMSU 211.

23 HEARING OFFICER HARWOOD: I'm sorry, but I  
24 do find the question confusing. And maybe it's  
25 nomenclature, and maybe it's just my lack of

1 technical sophistication. But can you try it again?

2 MR. RANKIN: Sure.

3 BY MR. RANKIN:

4 Q. Mr. West, in this cross-section, Goodnight  
5 Midstream has correlated its picks across each of  
6 these three wells. Do you agree?

7 A. I agree.

8 Q. And based on Goodnight Midstream's analysis,  
9 it has correlated its disposal interval across the  
10 depths identified in this cross-section. Do you  
11 agree?

12 MS. HARDY: Mr. Examiner, I object to  
13 Mr. Rankin testifying about what this exhibit shows  
14 Goodnight has done when Goodnight's witnesses haven't  
15 testified about it.

16 HEARING OFFICER HARWOOD: Well, if you want  
17 to -- I consider it hypothetical. If you want to  
18 rephrase it as a hypothetical --

19 MR. RANKIN: That's fine.

20 HEARING OFFICER HARWOOD: -- do it that way.

21 BY MR. RANKIN:

22 Q. Mr. West, assuming that Goodnight Midstream  
23 has correlated correctly its pick for the San Andres  
24 across this cross-section, do you agree with me that  
25 Goodnight Midstream has hypothetically correlated its

1 pick for the San Andres across this cross-section?

2 A. It has Goodnight's picks across here, but I  
3 do not see Empire's picks across.

4 Q. Very well. But in every instance, would you  
5 agree with me that Empire's picks for the San Andres  
6 are above Goodnight's picks for the San Andres?

7 A. I believe from the testimony before,  
8 sometimes they're right on top of each other, same  
9 spot.

10 Q. Okay. But they're not below Goodnight's  
11 picks for the San Andres, are they?

12 A. I don't know every pick of it. But do we  
13 need to see the frame of reference of where our pick  
14 is going across to infer from one well to the left the  
15 cross-section to the right? If you draw from my picks  
16 or Empire's picks across it, I can't really talk from  
17 one well in the cross-section to one to the far right.

18 Q. I guess I could pull up Mr. Bailey's  
19 cross-section. I'm happy to do that, because he's  
20 included the cross-section of these wells. Would you  
21 like me to do that?

22 A. Yeah, sure.

23 MR. RANKIN: Mr. Examiner, will you give me  
24 just a moment, like a two-minute break, so I can pull  
25 up Mr. Bailey's cross-sections?

1 HEARING OFFICER HARWOOD: Sure.

2 CHAIR ROZATOS: Mr. Examiner, we're coming  
3 up on the lunch hour. Should we just give him time  
4 to be able to just get their thoughts back together  
5 and we come back after lunch, we just take a longer  
6 lunch?

7 HEARING OFFICER HARWOOD: Mr. Rankin, would  
8 that give you the time you need for all of this?

9 MR. RANKIN: Probably, Mr. Hearing Officer,  
10 I think we could take a lunch break now and come back  
11 at 1 o'clock.

12 HEARING OFFICER HARWOOD: What's your  
13 pleasure, Mr. Chairman, for when we return?

14 CHAIR ROZATOS: Let's return at 1:15. We  
15 can break for lunch and we'll come back at 1:15, like  
16 we have.

17 HEARING OFFICER HARWOOD: Thank you all.  
18 We'll see you at 1:15.

19 (Lunch recess was held from  
20 11:39 a.m. to 1:15 p.m.)

21 HEARING OFFICER HARWOOD: I'll just remind  
22 you, Mr. West, you're under oath. And we were in the  
23 middle of Mr. Rankin's cross-examination.

24 BY MR. RANKIN:

25 Q. Good afternoon, Mr. West.

1           A. Good afternoon.

2           Q. When we left, we were talking about your  
3 Exhibit N-8 and I-4 in your Slides 12 and 13.

4           A. Can you show your screen?

5           Q. Thank you for reminding me.

6                       We were discussing your slide  
7 presentations on 12 and 13 which reflect our  
8 Exhibit N-8 and I-4. Do you recall that?

9           A. Yes, sir.

10          Q. And in addition, we were discussing  
11 Goodnight Cross Exhibit Number 20, which is the  
12 cross-section that includes the Empire EMSU 211 well,  
13 EMSU SWD 17-1 well and Goodnight Midstream's Ryno 17-1  
14 well; do you recall that?

15          A. Yes, sir.

16          Q. Okay. And I was asking you about whether or  
17 not the RFT pressure survey data that you presented in  
18 your exhibits and testimony, which were taken at a  
19 measured depth of 4,006 feet within the EMSU 211, were  
20 within what Goodnight Midstream defines as its  
21 disposal zone; do you recall that?

22          A. I recall the discussion, yes.

23          Q. And we were talking about whether the tops  
24 generally -- and you told me -- during the course of  
25 our discussion you explained that you didn't have --

1 you couldn't see or didn't know, off the top of your  
2 head, where Empire's tops were in the Empire SWD  
3 Number 1 well or the Ryno well, correct?

4 A. That is correct.

5 Q. Okay. So, just to refresh your  
6 recollection, I've got here Mr. Bailey, one of  
7 Empire's experts, his cross-section, which is  
8 Exhibit K-13 up on the screen. Do you recall this  
9 exhibit from Mr. Bailey?

10 A. Yes, sir.

11 Q. Okay. And on this cross-section here,  
12 Mr. Bailey included his picks for the Ryno SWD  
13 Number 1, which is the same well on Goodnight  
14 cross-section Cross Exhibit Number 20, correct?

15 A. Yes, sir.

16 Q. And then he also has here in the middle  
17 well, the EMSU SWD Number 1 well on the same  
18 cross-section. Agree?

19 A. Yes, sir.

20 Q. And as I recall, and correct me if it's your  
21 understanding as well, that on this cross-section,  
22 he's got both Empire's picks and Goodnight's picks for  
23 the San Andres tops, correct?

24 A. I believe we want to look at the blue line  
25 going across is Goodnight's, and Empire's is in red.

1 Q. And as to the Ryno well, both Empire and  
2 Goodnight have the same top of the San Andres pick,  
3 correct?

4 A. Correct.

5 Q. But as to the EMSU SWD Number 1 well,  
6 Mr. Bailey's pick is several hundred feet above  
7 Goodnight's pick, correct?

8 A. Yes.

9 Q. Okay. Do you agree with Mr. Bailey's pick  
10 for the San Andres in the EMSU Number 1 well?

11 A. Yes, sir.

12 Q. Okay. So going back to Goodnight Cross  
13 Exhibit Number 20, so as to these three wells on this  
14 exhibit, Goodnight and Empire have the same picks for  
15 the top of the San Andres in the Ryno well. Agree?

16 A. Agree.

17 Q. Okay. But as for the EMSU SWD Number 1  
18 well, which is the middle well in this exhibit,  
19 there's a difference of several hundred feet between  
20 Empire's picks and Goodnight's picks. Agree?

21 A. Agree there was a difference. I can't  
22 remember the exact distance, but yes.

23 Q. Okay. As then, as to the EMSU 211 well,  
24 there's also a difference of opinion about where that  
25 pick should be, correct?

1           A. Yes, sir.

2           Q. And as to this, the EMSU 211 well, do you  
3 agree with me that that 4,006 feet is above the  
4 location that Goodnight has picked for the top of the  
5 San Andres in that well?

6           A. In that well, that is correct.

7           Q. Okay. And you're not a geologist, right?

8           A. No, I'm not a geologist.

9           Q. So you wouldn't be able to tell me, looking  
10 at these exhibits, whether the intervals or the picks  
11 are correlative across this zone, would you?

12          A. Not from this presentation. But if you look  
13 at the Ops Geologic one, it makes sense whenever you  
14 highlight on the Lovington Sand and be able to follow  
15 tops across.

16          Q. I mean, do you generally pick -- do you have  
17 the expertise in picking correlative stratigraphic  
18 intervals?

19          A. No, I do not.

20          Q. Going back to your slide presentation that  
21 you presented yesterday, and I'm looking at Slide 13  
22 here, the pressure data reflected in this exhibit does  
23 not approximate a straight line, does it?

24          A. Which pressure data?

25          Q. Well, thank you. So I'm not talking about



1 the calculated pressure that you calculated off a  
2 pressure gradient here. I'm talking about the RFT  
3 data on the left side of this graph.

4 And actually, perhaps, Mr. West, if you  
5 agree with me, we should probably be looking at your  
6 original Exhibit I-4, correct?

7 A. Yes, sir. Same point, but it's got the  
8 right subsea depth.

9 Q. So looking at your Exhibit I-4 from your  
10 testimony, the RFT data that you've included on this  
11 exhibit does not reflect a straight line, does it?

12 A. That is correct.

13 Q. Okay. In fact, over very short vertical  
14 intervals, there are large difference in the pressure  
15 recorded across that EMSU 211 well, correct?

16 A. Correct.

17 Q. And those pressure differentials are larger  
18 than can be explained by the pressure from a column of  
19 salt water. Agree?

20 A. It would take in the fact of the formation,  
21 yeah.

22 Q. I'm sorry. Say that again.

23 A. It would take into fact of the formation.

24 Q. What would take into the fact of the  
25 formation?

1           A. The different changes in pressure.

2           Q. I'm not following your answer. Can you  
3 explain what you mean?

4           A. For instance, like, you know, the top two  
5 picks, because you say there's Zones 1 and 2, they,  
6 you know, have a higher horizontal permeability than  
7 they do vertical. There may be some leakage in  
8 between them. But as you go down you hit different  
9 layers of kind of the baffles that exist in the  
10 reservoir. And so you always have a horizontal  
11 component of permeability and a vertical also. Most  
12 of the time the vertical is slower.

13          Q. And the pressure difference between these  
14 vertical offsets is greater than what would be  
15 accounted for in a column of salt water, correct?

16          A. That is higher than a column of salt water.  
17 That is correct.

18          Q. And what is the pressure gradient that you  
19 were using to make the calculation on the pressure  
20 gradient on the right side of this chart?

21          A. That's at .386.

22          Q. That's what the calculated pressure gradient  
23 is?

24          A. Yes.

25          Q. Okay. And what is the salinity that you are

1 using to make that calculation?

2 A. So that's just taking what that pressure  
3 gradient was at that point and going down. If you  
4 used a water gradient, then the pressure down at the  
5 bottom would be higher. A fresh water gradient is  
6 about a .433. So if you want to make -- I mean, at  
7 least that's extending that gradient up and down --

8 Q. Yeah, based off the --

9 A. I don't know on that column if you want to.  
10 We can. I'll make that pressure at the bottom higher.

11 Q. Got it. No, I just wanted to make sure I  
12 understood how you were using it, how you were  
13 calculating it.

14 Okay. Going back to your PowerPoint  
15 presentation I'll skip down to Slide 14 here. Then as  
16 I understand, this was a pressure survey report for a  
17 Grayburg well in the EMSU, correct?

18 A. Correct. That's one of the injectors.

19 Q. This is an injection well?

20 A. Correct.

21 Q. It's a single well in the Grayburg, correct?

22 A. That is correct.

23 Q. And which zone is it injecting into, do you  
24 know?

25 A. I don't know off the top of my head.

1           Q. Okay. Now, you've identified here one well  
2 for establishing a pressure for the Grayburg?

3           A. At this point in this well, yes, there's one  
4 well that we took pressure. And it happened to be  
5 down, so I was able to get a pressure.

6           Q. Are you saying that this one well is  
7 representative of the pressure in the Grayburg across  
8 the entire EMSU?

9           A. It representative of the Grayburg in that  
10 wellbore. It's 14,000 acres. There's a long ways.  
11 You can't make that jump of one.

12           Q. So you agree with me that this well -- this  
13 pressure survey data is representative of a point in  
14 time, correct?

15           A. Yes.

16           Q. Okay. Next slide here, I think this was --  
17 you used from a Goodnight exhibit in some of the  
18 briefing filed in this case, correct?

19           A. That is correct. And one small correction  
20 from yesterday, that Piper Number 2 is actually the  
21 missing well that was on here. That's why I couldn't  
22 find it. That just between the State Track E well and  
23 the Nolan Ryan. That's the reason when I was going  
24 over the time line I missed it. I just wanted to make  
25 that point.

1 Q. And the Piper Number 2 is the Penrock well,  
2 right?

3 A. That is correct.

4 Q. Are you aware that Goodnight Midstream did  
5 not own or operate the Penrock well in 2012?

6 A. Sorry. I might have got the data incorrect,  
7 but thought so.

8 Q. Okay. Now, this slide just shows active  
9 saltwater disposal wells, correct?

10 A. Yeah, this is saltwater disposal wells.  
11 That might be the wrong statement if Goodnight began  
12 its injection into the well and we didn't know the  
13 actual ownership at that time.

14 Q. The next question I'm asking you, though, is  
15 that this exhibit shows only active saltwater disposal  
16 wells at this time, correct?

17 A. This shows all the -- in this area that  
18 Goodnight represented, which is around EMSU unit of  
19 these SWD wells, I don't know if it has -- are you  
20 asking if there's any other inactive ones?

21 Q. Well, I was just kind of pointing out, I  
22 guess it's also missing the Truckers SWD that's in the  
23 unit, correct?

24 A. Yeah. This is your guys' exhibit. Yeah, so  
25 you're right, it would be up there.

1 Q. And the Truckers has been plugged and  
2 abandoned, correct?

3 A. I believe so.

4 Q. Now, your time line on the right, it  
5 excludes or doesn't reference the EME 21 saltwater  
6 disposal well which is in the unit. Agree?

7 A. Is it that one -- where is that?

8 Q. It's down here in the corner. I think it's  
9 that Section 21.

10 A. Okay. Yeah, we didn't include on the time  
11 line of every well.

12 Q. And was that an inadvertent exclusion on the  
13 time line?

14 A. Yes, trying not to crowd it with everything.  
15 It's kind of captured in the cumulative data.

16 Q. And at the time the map was created, it had  
17 injected nearly 40 million barrels. Agree?

18 A. Is that what it has on there? I can't see  
19 that. It looks like it's 39 something. Yeah, 39, I  
20 take it for the -- what it says on the exhibit.

21 Q. Okay. And the first date of injection in  
22 that well was in 1966. Agree?

23 A. Agree.

24 Q. And you agree it's within -- an injection  
25 into the San Andres within the boundaries of the EMSU?

1 A. Agree.

2 Q. This next slide is Slide 16 in your  
3 presentation. Is there a reason you don't -- again,  
4 this Slide 16 is the disposal volumes for Empire's  
5 EMSU SWD Number 1 well, correct?

6 A. That is correct.

7 Q. And it shows volumes injected from 1995 to  
8 essentially present, correct?

9 A. That is correct.

10 Q. Is this based on Oil Conservation Division  
11 data?

12 A. Yes.

13 Q. I think you say so at the bottom of this.

14 A. Yes. It should have had been at the bottom.

15 Q. So was this slide prepared based on OCD  
16 public data?

17 A. Yes.

18 Q. Okay. And is there a reason you don't show  
19 disposal volumes for this well prior to 1995?

20 A. That's whenever it started injection.

21 Q. Okay. So you're not aware that Chevron  
22 converted this well in 1988 to a disposal well?

23 A. I wasn't aware. My understanding, it was  
24 '95 when it was converted.

25 Q. Apologize. I thought I had this pulled up,

1 but I restarted my computer. One moment while I pull  
2 this up. Apologize for the delay.

3 Mr. West, I'm showing on the screen the  
4 well file for the EMSU SWD Number 1 well, which was  
5 previously the Meyer B-4 well. And it shows here in  
6 the well file in a sundry notice that was filed by  
7 operator Chevron USA, that it was seeking to convert  
8 this well, the EMSU SWD Number 1 well, from a -- to be  
9 completed as a saltwater disposal well. Do you see  
10 that?

11 A. Yes.

12 Q. And it was done back in 1988. Do you see  
13 that?

14 A. Yes.

15 Q. And are you aware that OCD's public data is  
16 only available after 1994 for water production and oil  
17 production?

18 A. That's probably why I messed that up.  
19 Sorry, I didn't mean to exclude that time frame.

20 MR. RANKIN: Mr. Examiner, I will move the  
21 admission of the single sundry notice into the record  
22 as Goodnight Cross Exhibit Number 21.

23 HEARING OFFICER HARWOOD: Empire?

24 MS. HARDY: No objection.

25 HEARING OFFICER HARWOOD: OCD?



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: It will be  
7 admitted.

8 (Admitted: Goodnight Midstream  
9 Cross Exhibit 21.)

10 BY MR. RANKIN:

11 Q. Mr. West, is Empire still using this well  
12 for disposal?

13 A. It's not -- I mean, it's an active disposal,  
14 but we're not putting volumes into it.

15 Q. Does Empire intend to maintain it as an  
16 active disposal well?

17 A. No. I mean, we're going to maintain it just  
18 to keep it as an active well. But we do not plan to  
19 put any disposal volumes down it.

20 Q. Do you intend to plug and abandon the well?

21 A. At the proper time, yes.

22 Q. When would that be?

23 A. I don't know. Whenever the wellbore is  
24 completely deemed -- we're not going to use it. It  
25 may be used -- it could be used in the CO2 flood. It

1       could be used for other different purposes.

2               Q. What is Empire currently doing with its  
3       produced water that it needs to dispose of?

4               A. Haul it and truck it away.

5               Q. Where are you trucking it to?

6               A. I don't know where it's trucked to, off the  
7       top of my head.

8               Q. What are the volumes that Empire is  
9       currently trucking?

10              A. I don't know off the top of my head.

11              Q. Are you currently sending -- and Empire is  
12       no longer sending water to the EME saltwater disposal  
13       system operated by Rice?

14              A. That is correct.

15              Q. You're the senior VP of operations for  
16       Empire and you don't know where the water is going?

17              A. It's going into non-San Andres reservoirs.

18              Q. Is it multiple wells you're sending it to,  
19       multiple saltwater disposal well operators?

20              A. I don't know.

21              Q. Okay.

22              A. We have wells across multiple states, all  
23       over the place. It's hard to...

24              Q. Okay. Slide 17 here, this is a chart that  
25       you explained I think that it shows total disposal

1 volumes inside the EMSU within a mile, correct?

2 A. That's correct.

3 Q. One thing I wasn't clear about, is this a  
4 stacked chart or is it overlapping with the data?

5 A. So it's a stacked chart.

6 Q. So in order to understand what -- and,  
7 again, the orange is Goodnight, correct?

8 A. That is correct.

9 Q. And the blue is everybody else within the  
10 EMSU within a mile?

11 A. That is correct.

12 Q. So in order to understand what Goodnight's  
13 injections are, you need to subtract the blue from the  
14 orange, correct?

15 A. That is correct.

16 Q. And you're only depicting volumes from  
17 January 2012 forward, correct?

18 A. That is correct.

19 Q. So you are not including any of the early  
20 volumes from the EMSU 21 well, correct?

21 A. Not on this chart. They're included on that  
22 cumulative one.

23 Q. And you're not including any of the earlier  
24 volumes from the EME 33 well, correct?

25 A. I don't know -- you said -- which --

1 anything before 2012 is not included on this chart.

2 Q. Okay. This next slide, 18, this is a slide  
3 where you prepared showing -- it's a mass balance of  
4 water volumes, correct?

5 A. Correct.

6 Q. It does not reflect anything regarding  
7 pressures in the San Andres. Agree?

8 A. It give you an indication of if you take  
9 water out, there would be less pressure, and if you  
10 add water in, there would be more pressure.

11 Q. But you'd have to understand a lot more  
12 about the reservoir to make any inferences about  
13 whether there's any implications with respect to the  
14 reservoir pressure. Would you agree?

15 A. You can make inferences that it will go up  
16 or go down. You can't predict the exact pressure  
17 production from it.

18 Q. Okay. You mentioned miscibility of CO2 and  
19 you discuss this chart. Do you recall that?

20 A. Yes, sir.

21 Q. Had you done any studies on miscibility of  
22 CO2 in the San Andres?

23 A. We used an analogous field of Seminole on  
24 paper from there and pulled that. Because you do not  
25 have core and we don't have individual oil from the

1 San Andres from this reservoir to do that, you know,  
2 exact work. So you use an analogous field.

3 Q. So you're using the oil properties from the  
4 San Andres to make your miscibility calculations for  
5 the San Andres ROZ?

6 A. Correct.

7 Q. So that assumption of those calculations  
8 presumes that the ROZ oil in the San Andres is  
9 analogous to the San Andres Seminole unit?

10 A. Yes. It's saying that it's similar to the  
11 Seminole oil, and the San Andres is similar to the oil  
12 that's in the EMSU.

13 Q. Just back to the pressures. Based on the  
14 volumes, you can't infer from this chart, based on  
15 volumes or mass balance of water, you can't infer sort  
16 of magnitude of pressure changes in the San Andres,  
17 can you?

18 A. You can infer direction, but not necessarily  
19 magnitude.

20 Q. Okay.

21 A. Naturally the higher -- the quicker it goes  
22 in or comes out, then, you know, it's probably going  
23 to happen more rapidly.

24 Q. Back to the miscibility question. Your  
25 assumptions about -- your calculations about

1 miscibility of CO2 in the San Andres are dependent upon  
2 the assumptions that the Seminole San Andres oil is  
3 analogous for purposes of making those calculations,  
4 correct?

5 A. That is correct.

6 Q. Okay. Let's skip over a couple slides. I'm  
7 going to deal with those in your testimony. This is  
8 Slide 21 from your presentation.

9 When you reviewed this slide for the  
10 Commission, you were talking about -- you identified  
11 two sources of fluid mixed in here, correct?

12 A. That is correct.

13 Q. So on the top, you've got Goodnight's  
14 treated saltwater disposal water on the top, correct?

15 A. Well, the disposal water. I don't know  
16 about the treated.

17 Q. These values are provided to you by  
18 Goodnight during discovery, correct?

19 A. That is correct.

20 Q. And in discovery, was it not identified that  
21 these were treated volumes prior to injection?

22 A. Most of the time people don't treat volumes  
23 in an SWD. But if you provided that, I missed it.

24 Q. So as you sit here, you don't know whether  
25 or not Goodnight is treating its volumes prior to

1 injection?

2 A. That would be an unusual industry practice.

3 Q. You didn't review Tom Tomastik's testimony  
4 that he filed in the direct cases in this matter?

5 A. I remember seeing his testimony. I don't  
6 remember all of it.

7 Q. Now, back to my question. This chart shows  
8 two sources of fluids mixing. One being Goodnight's  
9 water that it's disposing, and then on the bottom,  
10 you've got the EMSU produced water, correct?

11 A. That is correct.

12 Q. And the produced water would be Grayburg  
13 water that is being produced from Empire's production  
14 wells in the EMSU, correct?

15 A. It would be the injection water, which is  
16 made up of a lot of traditional San Andres water.

17 Q. Hold on. On the left side here it says,  
18 "produced water." Agree?

19 A. Produced water goes back in as injected  
20 water.

21 Q. So it's water that's being produced by  
22 Empire's production wells. Agree?

23 A. That is correct.

24 Q. And that would be Grayburg water. Agree?

25 A. It would be the mixture from the waterflood

1 and all the water wells. You drew, you know, many,  
2 many barrels out of the San Andres and replaced it in  
3 the Grayburg. So it's a mix of those two reservoirs.

4 Q. And then wouldn't you agree there's a third  
5 source of fluid, for purposes of mixing model between  
6 these two sources of water?

7 A. What's the third source?

8 Q. Wouldn't it be the San Andres?

9 A. Yeah, there would be some that would  
10 probably be pushed from the SWD wells that could mix  
11 in there.

12 Q. Mr. West, is Goodnight injecting into the  
13 Grayburg?

14 A. Since they're in communication, you know,  
15 between the San Andres and the Grayburg, the fluids  
16 mix.

17 Q. Let me ask the question again. Is Goodnight  
18 injecting into the Grayburg? Are there perforations  
19 that Goodnight is injecting -- are they in the  
20 Grayburg or are they in what you call the San Andres?

21 A. There is not in the Grayburg. No  
22 perforations in the Grayburg.

23 Q. So is Goodnight injecting into the Grayburg  
24 or the San Andres?

25 A. They are injecting into the San Andres.



1 Q. Thank you. So Goodnight's water is being  
2 injected into the San Andres, but you're not  
3 accounting for any mixing or dilution of San Andres  
4 volumes in this depiction on your exhibit, are you?

5 A. They kind of get, you know, mixed up in the  
6 EMSU produced water.

7 Q. Let me ask again. You're not accounting for  
8 any dilution from San Andres water in this exhibit,  
9 are you?

10 A. There's a lot of dilution that goes on in  
11 all the mixing. I mean, it's many millions of  
12 barrels.

13 Q. And this exhibit does not account for that  
14 dilution, does it?

15 A. It's not trying to. It's just stating this  
16 is the one fluid type here and this is the other fluid  
17 type.

18 Q. And in the middle between the two, you've  
19 got this little indication that seems to imply that  
20 those two fluids are directly mixing.

21 A. Because they mix through the -- whether it's  
22 through the fractures of the reservoir that  
23 communicate the two or through wellbores or through  
24 the water supply well that pulls directly out of the  
25 San Andres and injects water into the Grayburg.

1 There's mixing going on.

2 Q. And there's a third source of water that you  
3 don't include in this chart, and that's the  
4 San Andres. Agree?

5 A. San Andres is very similar to the Grayburg.  
6 It's kind of one and the same now.

7 Q. Now, looking at this chart and looking at  
8 the anion inside, you've got hydrogen sulfide, right?

9 A. That is correct.

10 Q. And I see the numbers are arranged in the  
11 Grayburg from, I don't know, 200s up to 800. Agree?

12 A. I agree.

13 Q. That's parts per million?

14 A. That is milligrams per liter.

15 Q. Which is parts per million, right?

16 A. Yes.

17 Q. So is there anything more corrosive on this  
18 chart than hydrogen sulfide? And I'm talking about  
19 corrosion.

20 A. You're talking about corrosion?

21 Q. Yeah. Is there anything more corrosive than  
22 hydrogen sulfide on this chart?

23 A. There's a lot of things that go into the  
24 chemistry. If you get chlorides to go up in things,  
25 it'll cause corrosion or will affect the chemistry to

1 make corrosion happen faster. So it's not just, you  
2 know, any straight element. But in general, you know,  
3 H2S is a corrosive element.

4 Q. Is it your opinion that chlorides are more  
5 corrosive than H2S?

6 A. It depends on the complete environment that  
7 they're in. I mean, chlorides have an effect, pH has  
8 an affect. You know, H2S has an effect. The CO2 has  
9 an effect.

10 Q. Is CO2 also corrosive?

11 A. Yes.

12 Q. Looking at Slide 23, are you aware that the  
13 Ryno well operated by Goodnight Midstream was  
14 originally permitted to inject into the Devonian?

15 A. Yes.

16 Q. Did you forget that it was originally  
17 approved to inject into the Devonian in 2017 when you  
18 made your statements about this slide?

19 A. I think I said 2019 or 2020, but I don't  
20 know.

21 Q. So from 2017 to the time this workover  
22 report was prepared, that's about seven years. Agree?

23 A. There would have been a workover -- if you  
24 went from the Devonian up to the San Andres, you would  
25 have had another workover in between here.

1 Q. So you're saying that the tubing is  
2 different for the San Andres disposal?

3 A. Would have said that you would have pulled  
4 it out and inspected it properly before you ran it  
5 back into the San Andres.

6 Q. These slides, from Slide 25 to 29, my  
7 understanding is the intent here is to show based on  
8 certain assumptions that you made that there's an area  
9 being impacted by Goodnight's injection within the  
10 EMSU. Correct?

11 A. That is correct.

12 Q. And the assumptions are based on a certain  
13 value or ratio of net to gross in the injection wells,  
14 correct?

15 A. That is correct.

16 Q. Okay. What are some of the other  
17 assumptions that you made in order to make this  
18 representation?

19 A. It's a perfed interval, it's a 50 percent  
20 net to gross. And that, you know, your water that  
21 you're injecting is going to push whatever is existing  
22 in the reservoir out.

23 Q. So the last assumption you mentioned, the  
24 area that -- the bottom of the water injected, is that  
25 an equal volume of water that's being pushed out?

1           A. Barrel for barrel.

2           Q. So does that essentially double the affected  
3 area that you've calculated based on those  
4 assumptions?

5           A. No, you're having an effect. So when you  
6 put a barrel in, you got to effectively, you know, go  
7 in or go up?

8           Q. The question is, is it doubling the area  
9 that you're representing as being affected by the  
10 disposal?

11          A. So the effect is whatever total fluid that's  
12 being pushed.

13          Q. Mr. West, that's not a hard question, I  
14 guess. So you're saying it's an equal barrel from the  
15 injection to the barrel affected. So it's twice the  
16 number of barrels, right, that you're assuming are  
17 affecting the EMSU, right?

18          A. Yes. The affected area is the barrels going  
19 in, and the barrels it affects in pushing the  
20 reservoir. Total-wise, yes, it doubles that.

21          Q. It doubles the size of the area?

22          A. The area impact.

23          Q. Okay. And what is the effect?

24          A. Mixing of fluids, the chemistry that we went  
25 on earlier. It's, you know, re-pressuring the

1 reservoir.

2 Q. And is it your opinion -- I mean, my  
3 understanding from Empire's case is that the ROZ oil  
4 in the San Andres is not movable, except for the  
5 injection of CO2. Would you agree?

6 A. Yes.

7 Q. Okay. Slide 31 in your presentation here  
8 this is a representation of Empire's water management  
9 system across the EMSU and EMSU-B; is that right?

10 A. Yes. The pipeline and facilities.

11 Q. And I'm talking about I guess specifically  
12 referring to the pipelines here. This system was set  
13 up and designed in part to move water across these two  
14 units, right?

15 A. Yes. They operate from one system.

16 Q. Okay. And it's moving injected -- let me  
17 see how to phrase this exactly. So it's moving the  
18 water supply well water out to all these wells for  
19 reinjection to manage the waterflood. Agree?

20 A. Correct. It comes into where you see there  
21 that EMSU CTB. All the fluid comes in through there  
22 and then is redistributed out through that system.

23 Q. So at the time the waterflood was set up,  
24 there were six original water supply wells. Agree?

25 A. Agree.

1 Q. And this system was employed to move the  
2 water produced from those water supply wells in the  
3 San Andres for purposes of waterflooding across all  
4 this acreage. Agree?

5 A. Agree.

6 Q. And at the time are -- let me get to my  
7 paper that I don't have up yet.

8 This is Goodnight Exhibit B-5. This is  
9 the Chevron corrosion paper that we previously  
10 discussed. In addition to the other matters we  
11 discussed about this exhibit, Chevron stated in this  
12 paper that, and I'll quote here, it's Page 3 of this  
13 document, "The San Andres Formation provides the only  
14 source of water formation is the geographic area with  
15 a sufficient volume of water for the waterflood and  
16 unfortunately had to be used as supply source knowing  
17 that the San Andres water was not compatible with the  
18 Penrose and Grayburg formation waters." Did I read  
19 that correctly?

20 A. Yes. That was your business decision.

21 Q. And this system that you show in your  
22 PowerPoint here in Slide 31 distributed all this  
23 non-compatible water across these two units for  
24 injection into the Grayburg. Agree?

25 A. Agree.

1 Q. And it was doing that since 1987. Agree?

2 A. That is correct.

3 Q. On these conclusions, on Slide 32, you state  
4 that the EMSU has a ROZ of over 900 million barrels of  
5 oil, correct?

6 A. Correct.

7 Q. Just so I know, because there's lots of  
8 different sources here, what is that 900 million  
9 barrels based on?

10 A. It's based on looking at all the different  
11 points of data. It's stuff that goes up over 1,000 --  
12 million barrels into the range, and that 900, so  
13 decent representation --

14 Q. Okay.

15 A. -- of the EMSU.

16 Q. And then on Point Number 2, you state at  
17 that, "The San Andres reservoir pressure is increasing  
18 and this is promoting increased water influx into  
19 Grayburg intervals." Did I read that right?

20 A. Yes, you did.

21 Q. I was trying to find where in your overview  
22 slide presentation you made any demonstration of  
23 increase in San Andres reservoir pressure. Can you  
24 point me to a slide where you made that?

25 A. By nature of where we talked before, in the



1 slide, we withdrew a lot of water out of the  
2 San Andres, and now it's filling back up. So by  
3 nature, if you're filling back up the reservoir with  
4 SWD, you're raising the pressure.

5 Q. And is that based on this mass balance slide  
6 that you showed me that we were talking about?

7 A. Yes, sir.

8 Q. And, again, you can't say anything about the  
9 magnitudes of pressure?

10 A. I cannot say anything about the magnitude.  
11 It's going up and the faster you inject in it, the  
12 faster it's going to fill up.

13 Q. Okay. We talked about this a fair bit in  
14 reference to your summary presentation. And I  
15 confirmed with you that this is your rebuttal  
16 Exhibit N, and this is on Page 7 of your rebuttal  
17 testimony where you talk about your calculations with  
18 respect to pressure in the San Andres. Do you recall  
19 this testimony of yours?

20 A. Yes, sir.

21 Q. Okay. And Dr. Buchwalter relied on this  
22 data for his model, correct?

23 A. Yes, sir.

24 Q. Now, I want to bring up another slide. One  
25 moment.

1 MS. HARDY: Mr. Rankin, what page are you  
2 showing there?

3 MR. RANKIN: This is Page 7 of his  
4 testimony, on Exhibit N.

5 BY MR. RANKIN:

6 Q. This is Goodnight Exhibit B-47. And this  
7 was part of Mr. McGuire's rebuttal testimony. Do you  
8 recall, did you review this testimony, Mr. West, as  
9 part of Mr. McGuire's rebuttal testimony?

10 A. I remember seeing the exhibit.

11 Q. Do you see this well up here in Section 20  
12 of Township 20 South, 37 East?

13 A. Yes, I see the highlighted well.

14 Q. And it says the date of first injection was  
15 July 1959. Do you see that?

16 A. Yes, I see the date there.

17 Q. And it's got a cumulative injection volume  
18 of over 14 million barrels. Do you see that?

19 A. Just to clarify, that's an -- I'm trying to  
20 read the symbol. That's an injection well?

21 Q. Correct. It's a saltwater disposal well  
22 that's operated by Rice in Section 20, Township 20  
23 South, Range 37 East. Do you see that?

24 A. Yes, sir.

25 Q. Okay. And that's about a mile and a half,

1 would you agree with me, directly north of the EMSU?

2 A. That's about right.

3 Q. And so that's just, you know, a short  
4 distance outside -- would you agree with me that  
5 there's no primary production immediately offsetting  
6 this saltwater disposal well?

7 A. You don't have the wells on there, so I have  
8 no idea to tell.

9 Q. So you're not aware yourself whether there's  
10 primary production offsetting that well?

11 A. I can't tell from this exhibit.

12 Q. That's fine. Mr. West, we were provided  
13 shortly before the start of this hearing, at the end  
14 of February, this document from Rice Operating, and  
15 it's a Bottom Hole Pressure Survey Report for that  
16 well I showed you on the map. It's the Rice  
17 Engineering & Operating well, the EME H-20 well. We  
18 provided this to Empire counsel shortly after we  
19 received it from Rice. Did you have a chance to see  
20 this?

21 A. Yes, I've seen it.

22 Q. And the EME is part of the injection system  
23 saltwater disposal injection system that Empire was a  
24 part of. Agree?

25 A. I'll take your word for it. I don't

1 remember which wells they are.

2 Q. This is a Bottom Hole Pressure Survey Report  
3 that's dated July 15, 1959. Do you see that? I've  
4 highlighted it here.

5 A. Yes, July 15, '59.

6 Q. And similar to the Bottom Hole Pressure  
7 Survey Report that you included in your outline, your  
8 summary outline, this is a Bottom Hole Pressure Survey  
9 Report for this well. Do you see that?

10 A. Yes, sir.

11 Q. And it shows a measured bottom hole pressure  
12 about a mile and a half north of the unit. And if I  
13 scroll down, you can see that the lowermost bottom  
14 hole pressure here was measured at a depth of 5,000  
15 feet at 1800 psi. Do you see that?

16 A. Yes, sir.

17 Q. Okay. And this well, at the time of the  
18 pressure survey, was an open hole completion. This is  
19 a document from the OCD's website showing the  
20 completion configuration for this well. It's dated  
21 April 27, 1976. And it indicates that it's the  
22 wellbore configuration for the EME H-20 well. Do you  
23 see that?

24 A. Yes. And this is representative of 1976. I  
25 don't know what it was '59, necessarily.

1 Q. Okay. And it identifies the location of the  
2 well that we discussed that's in Section 20,  
3 Township 20 South, Range 37 East. Do you see that?

4 A. Yeah, I see the label description.

5 Q. Do you agree that's the well in the same  
6 section that you and I were discussing on Goodnight's  
7 Exhibit B-47?

8 A. I'll take your word for it. I don't have  
9 the map in front of me with the section township  
10 ranges. But if you say so.

11 Q. Going back to the bottom hole survey, this  
12 survey report shows that -- before I do that, I'll  
13 jump back over to your Exhibit I.

14 So you're saying here in your  
15 Exhibit I-4 that the San Andres Formation pressure is  
16 at 1245 psi -- I'm sorry -- 1527 psi as the original  
17 reservoir pressure; is that correct?

18 A. Yes, for that depth.

19 Q. For that depth? Okay.

20 So when I go back to the Rice H-20  
21 pressure survey report, at 5,000 feet, that's roughly  
22 1,000 feet deeper. Agree?

23 A. That is 1,000 foot deeper.

24 Q. And at 1,000 feet deeper, it's roughly about  
25 53 psi higher than what you're calculating for the

1 San Andres. Agree?

2 A. Can we do some math to convert that 1800 to  
3 5,000 to a gradient, so we know what gradient that is?

4 Q. Sure. So, you and I did this during your  
5 deposition and I learned some engineering from you.  
6 But basically, we'll take the 1800 feet, right?

7 A. Divided by 5,000.

8 Q. And divide by 5,000. That comes up to .36  
9 psi?

10 A. So we have an original .38.

11 Q. Yeah, and I'm happy to do it, so we can --

12 A. That's what it is. I can't do that math in  
13 my head.

14 Q. We can do that. I'm happy to do it. So  
15 1800, right?

16 A. Yep, 1800 --

17 Q. Divided by 5,000 gives was a .36 psi per  
18 foot gradient, correct?

19 A. Pretty similar pressures. That's good  
20 confirmation.

21 Q. Okay.

22 A. Original.

23 MR. RANKIN: Well, before I get too far  
24 along, Mr. Hearing Officer, I guess I might as well  
25 do this now, I'll move the admission of this Rice

1 H-20 pressure survey report as Goodnight Cross  
2 Exhibit 22?

3 HEARING OFFICER HARWOOD: Objection from  
4 Empire?

5 MS. HARDY: No objection.

6 HEARING OFFICER HARWOOD: OCD?

7 MR. MOANDER: No objection.

8 HEARING OFFICER HARWOOD: Rice?

9 MR. BECK: No objection.

10 HEARING OFFICER HARWOOD: And Pilot?

11 MR. SUAZO: No objection.

12 HEARING OFFICER HARWOOD: It'll be admitted.

13 (Admitted: Goodnight Midstream  
14 Cross Exhibit 22.)

15 MR. RANKIN: Mr. Examiner, I'd move also the  
16 admission of this well configuration, and it also has  
17 a plat on the next page showing the location of the  
18 well, which I neglected to point out. And I'd like  
19 to move this as Goodnight Cross Exhibit Number 23.

20 HEARING OFFICER HARWOOD: Empire?

21 MS. HARDY: No objection.

22 HEARING OFFICER HARWOOD: OCD?

23 MR. MOANDER: No objection.

24 HEARING OFFICER HARWOOD: Rice?

25 MR. BECK: No objection.

1 HEARING OFFICER HARWOOD: Pilot?

2 MR. SUAZO: No objection.

3 HEARING OFFICER HARWOOD: It'll be admitted.

4 (Admitted: Goodnight Midstream

5 Cross Exhibit 23.)

6 BY MR. RANKIN:

7 Q. So, Mr. West, I've now pulled up Goodnight's  
8 Exhibit B-21, which is a calculation of the pressure  
9 gradients for each of Goodnight's active saltwater  
10 disposal wells. Do you recall reviewing this exhibit  
11 as part of Mr. McGuire's direct testimony?

12 A. Yes. I believe I've seen it before.

13 Q. On it he shows, from left to right, each of  
14 the wells that Goodnight operates, the fluid-level  
15 date that the data was taken, the shut-in tubing  
16 pressure recorded for each of those wells, and the  
17 fluid level measured from the surface.

18 Then he also has the measured depth of  
19 the top perf, the mid perf and the base perf going  
20 from left to right. And then he has the bottom hole  
21 pressure at the mid perf calculated for each of these  
22 wells. Do you see that?

23 A. I see that. And it looks like you're using  
24 a .465 saltwater gradient.

25 Q. Mr. McGuire used a .465 based on an estimate



1 of what the TDS content is of the San Andres.

2 Now, he's also calculated for each of  
3 these wells a pressure gradient, just as you and I had  
4 done, for the H-20. Agree?

5 A. Yeah. I don't know how -- I assume that's  
6 what he did, did the math right.

7 Q. Then he came up with an average gradient for  
8 each of these wells down here, which was a .38 as an  
9 average gradient. Agree?

10 A. Agree.

11 Q. And these were all calculated in 2024.  
12 Agree?

13 A. Yeah, I see the dates. Yes.

14 Q. So we go back to the H-20 well and we  
15 calculated a .36 pressure gradient. It shows there's  
16 been only a slight increase -- well, let me ask you  
17 this. When I go back to Exhibit B-21, it gives us mid  
18 perf depths, and it's ranges anywhere from about 4300  
19 feet to a little more than 5200 feet. Do you see  
20 that?

21 A. Yes, sir.

22 Q. Okay. So would you agree with me that  
23 that's within the range of the depths at which this  
24 Rice EME H-20 well was measured?

25 A. Yes.

1 Q. And when I go back and consider what the  
2 pressure gradient is that you and I calculated here  
3 for the H-20 well, is .36, and I consider that in  
4 2024, Mr. McGuire calculated at .381 pressure  
5 gradient, doesn't that represent only a slight  
6 increase in pressure gradient since 1959?

7 A. So flip to cumulative material balance on my  
8 presentation, the volume of water in and out.

9 Q. How does that impact this consideration?

10 A. Because it shows that you're almost filled  
11 back up. And so your pressure, you would expect your  
12 pressure to be about the same. You took out a whole  
13 lot of volume and you've almost filled it back up to  
14 its original pressure, because you took off hundreds  
15 of millions of barrels out of the reservoir. Now  
16 you've put hundreds of millions of barrels back.

17 And you can imply from that chart that  
18 you're -- it looks like you're getting close to that  
19 balance line. So you're just telling me, yeah, it  
20 looks like maybe it filled up a little faster than  
21 that.

22 Q. But let me ask you this, Mr. West. When we  
23 hear from Dr. Buchwalter about how much pressure is  
24 increasing per million barrels of water since 1959,  
25 hundreds of millions of barrels of water have been

1 injected into the San Andres. Would you agree?

2 A. There's been hundreds of millions out and  
3 there's been hundreds of millions in.

4 Q. Right. So just considering the volumes that  
5 were put back in, so hundreds of millions of barrels  
6 put back in and the pressure gradient has only  
7 increased approximately, what, two-tenths --  
8 two-hundredths of a psi per foot?

9 A. Bring up the exhibit so everyone can see the  
10 cum volumes in and out so we know what we're talking  
11 about. The other one.

12 Q. Yeah, the PowerPoint.

13 A. Right here. So you see, so your pressure  
14 point is around 59, 60, let's call it the same. You  
15 put some in, you took a bunch out, now you're putting  
16 it back in. You know, present day, you're almost  
17 saying that you filled it back up. So I would expect  
18 present-day pressure to be really close to what it was  
19 in 1959.

20 Q. Well, and that's -- I understand your  
21 position there. And I'm asking you now, with respect  
22 to Dr. Buchwalter's testimony, that for every million  
23 barrels of water, you're seeing a .4 out of 10 psi  
24 increase. How does that square with Dr. Buchwalter's  
25 testimony?

1 MS. HARDY: I object to Mr. Rankin  
2 testifying about what Dr. Buchwalter testified about.  
3 I mean, it's not this witness' testimony.

4 HEARING OFFICER HARWOOD: Maybe ask him if  
5 he remembers what Dr. Buchwalter said on the subject.  
6 BY MR. RANKIN:

7 Q. Mr. West, do you recall Dr. Buchwalter's  
8 testimony about the effect of injection in the  
9 San Andres with respect to pressure increases?

10 A. I can't say that I recall all of it. It's  
11 been a few days.

12 Q. Okay.

13 A. I'll let his testimony speak for itself.

14 Q. Do you recall Dr. Buchwalter testifying that  
15 for every million barrels of water injected into the  
16 San Andres, the pressure would increase anywhere from  
17 4 to 10 psi?

18 A. I don't recall what reference of time he was  
19 talking about.

20 Q. Well, it was with respect to volumes, right?  
21 He said for every million barrels injected, there  
22 would be a corresponding increase of anywhere from 4  
23 to 10 psi. Do you recall that testimony?

24 A. I don't recall that testimony.

25 Q. Okay.

1           A. There's been a lot of testimony.

2           Q. Sure. But that seems to be a fairly  
3 important piece of evidence for Empire. You don't  
4 recall his testimony on that point?

5           MS. HARDY: Asked and answered. Objection.

6           MR. RANKIN: That's fine. I'll move on.

7           HEARING OFFICER HARWOOD: Thank you.

8 Sustained.

9 BY MR. RANKIN:

10           Q. If that were the case Mr. West, if  
11 Dr. Buchwalter had testified that for every million  
12 barrels of water, the formation pressure in the  
13 San Andres would increase from 4 to 10 psi, would that  
14 consistent with this data that we just discussed?

15           A. I don't know.

16           Q. Okay. Going back to your rebuttal  
17 testimony, you state here -- and this is on Page 6 of  
18 your rebuttal testimony in Exhibit N. You state that,  
19 "The Grayburg has much lower permeability than the  
20 San Andres in most layers, therefore mud losses while  
21 drilling usually do not occur until drilling reaches  
22 the San Andres high permeability intervals." Did I  
23 state that correctly?

24           A. That's the statement. Can you just scroll  
25 up so I can see what's above? I'm trying to figure

1 out what context it was put in.

2 Okay. You can scroll down.

3 So yeah, it would be referenced in  
4 probably the lower section of the Grayburg.

5 Q. Okay. So my understanding about what you're  
6 saying here is, because the Grayburg generally has low  
7 permeability, or has lower permeability than the  
8 San Andres, that if you're drilling through the  
9 Grayburg, you wouldn't usually have drilling losses  
10 until you've reach the San Andres. Is that my  
11 understanding of that statement?

12 A. Not necessarily. You know, drilling losses  
13 will occur whenever you have a possibility of a zone  
14 taking a drink or whatever. And it could happen up  
15 high in the Grayburg. You know, Zones 1 and 2 is low,  
16 so it could -- they're inconsistent of where you're  
17 going to get drilling losses.

18 Q. So I'm trying to understand what exactly  
19 you're saying here. Are you saying that the  
20 Grayburg -- I thought I understood you to say, my  
21 impression of this, is that the Grayburg has lower  
22 permeability than the San Andres in most layers.  
23 Right? Correct?

24 A. Yes, that's what the statement says.

25 Q. Therefore, you say mud losses while drilling

1 usually won't occur in the Grayburg, correct?

2 A. That is correct.

3 Q. And my understanding is that the rationale  
4 that you're presenting to us is that those drilling  
5 loses won't occur because the Grayburg has much lower  
6 permeability. Agree?

7 A. There's a varying of permeability through  
8 all of them.

9 Q. But you won't expect to have losses in the  
10 Grayburg because of that low permeability. Agree?

11 A. Where the permeability is lower, I wouldn't  
12 expect to have this matter of drilling losses.

13 Q. Okay. I may come back to this if I have  
14 time, Mr. West, but I can't find the exhibit I wanted  
15 to use so I'll move on from it now. I may come back  
16 to this based on timing.

17 A. Okay.

18 Q. This is Page 4 of your rebuttal testimony,  
19 Exhibit N. And I'm happy to show you the context  
20 here. But I wanted to focus on this bullet point,  
21 where you state that: If we correct the oil  
22 saturations down on the core -- and I believe you're  
23 referring to the EMSU 679 core; is that correct?

24 A. Yes.

25 Q. Okay. -- then the interval with oil

1 saturation greater than 20 percent extends down to the  
2 near the bottom of the core at 4,357 measured depth or  
3 minus 757 feet subsea, resulting in a 215-foot oil  
4 column in the San Andres EMSU 679 and 450 feet oil  
5 column in the EMSU 278. Did I read that correctly?

6 A. Yeah. That's just -- also, that's how  
7 longer the cores are.

8 Q. Right. So the core is limited by the depth  
9 of the core?

10 A. Correct, yeah. The thicknesses.

11 Q. So I want to ask you about the correction  
12 you applied here. What is the correction that you  
13 suggest here based on?

14 A. Can you scroll up a little bit just to make  
15 sure I've got all my context right?

16 Q. Sure.

17 A. So it's a correction of whenever you lose --  
18 you do conventional coring, that there's, you know,  
19 fluids lost out of the core, you know, oil and gas  
20 that comes out just naturally by the depressurization  
21 of the core. So you can put back in some volumes of  
22 oil in there because the -- the gas is going to be in  
23 the solution of the oil, and preferentially, it's  
24 going to push the oil out. It might push some water  
25 out, too. But the oil is definitely to expand as it



1 depressurizes from, where he's looking at, roughly  
2 13-, 1500 psi and comes all the way to the surface at  
3 zero.

4 Q. Have you done any analyses of the San Andres  
5 oil to justify this correction that you suggest here?

6 A. Ask the question again.

7 Q. Have you done any analyses of the San Andres  
8 oil in the EMSU to justify that proposed correction?

9 A. No. We don't have a good sample of oil in  
10 the San Andres, so you just have to make engineering  
11 assumptions.

12 Q. Is it based on literature or is it just  
13 based on your engineering assumptions?

14 A. It's, you know, literature that all the  
15 Seminole cores that they took, where they took cores  
16 that were pressure corers, they took sponge cores and  
17 then bump them back in. There's been a lot of  
18 testimony on that earlier.

19 Q. Okay. And so did you, yourself, undertake  
20 that work, or are you relying on Empire's other  
21 experts to make the determination about whether the  
22 SSAU is analogous for purposes of determining a proper  
23 correction?

24 A. Depending on the experts, depending on the  
25 paper, make a good engineering judgment saying that's

1 reasonable.

2 Q. This is your opinion or are you relying on  
3 your experts for those correction values?

4 A. Then and then, you know, my interpretation  
5 of the paper and interpretation of their data and, you  
6 know, saying this is reasonable.

7 Q. So it's your own opinion. Agree?

8 A. Yes.

9 Q. Okay. And then I think I heard you say you  
10 haven't don't have -- you haven't done -- what have  
11 you done, if anything, to determine what the oil  
12 characteristics of the ROZ in the San Andres would be?  
13 Have you done anything to try to evaluate what the oil  
14 characteristics would be in the San Andres?

15 A. To be on this, you would have to, you know,  
16 get core, get a true sample of oil and which -- since  
17 it's in the ROZ, it would have to be from core. You'd  
18 have to extract it to do an analysis on the exact oil  
19 in the San Andres and the EMSU. We do not at this  
20 point in time have that sample.

21 Q. Right. So failing that, there's nothing  
22 else you can think of or no other efforts you can  
23 undertake to determine what might be a reasonable  
24 determination of oil characteristics for the  
25 San Andres ROZ?

1           A. So what you do reasonable is you look to see  
2       where there's literature or fields that are similar,  
3       and then you use that literature and your experts to  
4       derive what you would use in this field because you  
5       have a lack of data of the actual oil from the  
6       San Andres. Which we wish we always had all the data,  
7       but you never have complete data.

8           Q. Next bullet I want to talk to you about is  
9       here at the bottom of your Page 7, where you get into  
10      the chemistry issues that you discuss in your summary  
11      slides. And here you refer to some data that's in  
12      Exhibit N-9. And I'll go ahead and pull up that  
13      exhibit.

14                    This is your Exhibit N-9. Is this the  
15      exhibit that you're referring to in that testimony I  
16      had highlighted previously?

17           A. Yes, sir.

18           Q. And just to be clear, the data here is all  
19      from 2024, correct?

20           A. Yes.

21           Q. And Goodnight has been injecting into the  
22      San Andres in the EMSU for several years by the time  
23      these samples were collected in 2024. Agree?

24           A. Agree.

25           Q. Correct, right?

1 A. Yes, right.

2 Q. But, actually, there are more chemistry  
3 samples collected for each of these wells than what  
4 you show on your exhibit. Agree?

5 A. Yes.

6 Q. Mr. West, I'm sharing on my screen here a  
7 copy of that Exhibit B-42, which is in Mr. McGuire's  
8 rebuttal testimony. And I've highlighted here each of  
9 the wells that were identified on your Exhibit N-9.  
10 And I'm going to do my best to flip between your  
11 exhibit and these values to just identify what we're  
12 looking at.

13 I'm going to start from left to right on  
14 your Exhibit N-9. We'll start with the EMSU 377 well,  
15 and that's the data chemistry in green, correct?

16 A. Yes.

17 Q. And you've got two data points for that  
18 well --

19 A. Yes.

20 Q. -- that you show on your exhibit?

21 And on Mr. McGuire's, there's four data  
22 points, correct?

23 A. Yes.

24 Q. And starting in May of 2023, the chlorides  
25 are 11,900 ppm approximately, correct?

1           A. Yes.

2           Q. And it actually shows that they go down over  
3 several months before they tick back up again in  
4 November of 2024. Agree?

5           A. Agree.

6           Q. And in your exhibit, however, you just show  
7 those two data points showing that it's only going up.  
8 Agree?

9           A. Agree. But that would go, like, to the  
10 circles that we were talking earlier. You're  
11 injecting in volume, and then you're pushing volumes  
12 of San Andres water. So you have to wait until they  
13 actually get water that's being reinjected into the  
14 well as SWD.

15                   So earlier data is kind of -- it could  
16 drop down or, you know, have a change of whatever,  
17 because you're getting that connate San Andres water  
18 that was there that's being pushed into the well. So  
19 you look at trends over a small period and you  
20 continue to monitor them to see if it goes up. So  
21 there's a point you got to, you know, start at a  
22 starting point and look.

23           Q. Earlier data is irrelevant?

24           A. If the injected volumes haven't reached that  
25 wellbore, it's irrelevant.

1 Q. So if there were higher values in the EMSU  
2 those would be irrelevant for chlorides?

3 A. So you would go to where those injection  
4 circles are. You'd have to have the fluid that's  
5 impacted in there and you'd have to actually reach  
6 these wells.

7 Q. So looking at the next well, you've got the  
8 EMSU 407 and you've got three data points here,  
9 correct?

10 A. Yes, sir.

11 Q. And when I look at Mr. McGuire's  
12 Exhibit B-42, he's got four database. So one was  
13 excluded, correct?

14 A. Yes.

15 Q. And you excluded the September 23 data  
16 point. Agree?

17 A. All my data was in '24, so I didn't include  
18 anything in '23.

19 Q. The '23 data would have included the time  
20 frame during which Goodnight's wells were injecting.  
21 Agree?

22 A. Injecting, but you made -- that fluid may  
23 not have reached those wellbores yet.

24 Q. It goes from 13.9 parts per million down to  
25 11.6 parts per million during the period in which

1 Goodnight was injecting. Agree?

2 A. Yes.

3 Q. And the same thing with these other points,  
4 Mr. West. You excluded data points that show a  
5 potential increase and decrease, a variation in these  
6 chloride values across each of these wells.

7 A. You made a statement. Was there a question?

8 Q. That's the question.

9 A. Okay. Sorry about that. Can you ask me the  
10 question?

11 Q. Sure. With respect to the wells I've just  
12 identified, you've excluded data points that show a  
13 variation from high to low and sometimes back up again  
14 for each of the wells I've just identified, correct?

15 A. Correct. So in production engineering,  
16 you're doing trends, to see if it's impacting. And  
17 you've got to -- like I said, the injected fluid in  
18 from the SWD has to reach the wells before the data is  
19 relevant.

20 Q. And you also excluded in your presentation  
21 any indication of what the sulfate concentrations are,  
22 correct?

23 A. Yeah. This is the chlorides.

24 Q. Wasn't it one of Empire's main contentions  
25 from Dr. Lindsay and yourself that sulfate is an

1 indication of the presence of San Andres water?

2 A. Yes, originally.

3 Q. What do you mean by "originally"?

4 A. Over time, you know, a lot of the sulfates  
5 dropped out with the barium and whatnot and reacted  
6 with other chemicals. And so, you know, you can still  
7 get little pockets of sulfate coming in and out, but  
8 that would be where you're pushing new barrels.

9 So if you did get some sulfate increases  
10 in here, that could be another indication, I guess,  
11 that you're pushing San Andres virgin water toward  
12 those wellbores. And then that water is getting into  
13 these wellbores and coming up.

14 Q. For example, in the EMSU 47, you're seeing  
15 sulfate. In September 2023, you're going from 600  
16 parts per million down to 460 parts per million.  
17 Agree?

18 A. Yeah. So that could be a case to where  
19 you're pushing San Andres water with higher sulfate  
20 and then you're starting to get into water which is  
21 less sulfate rich, the Goodnight water, and the  
22 chloride, you know, where it swaths around.

23 Q. And so your opinion is that anything here  
24 could be an indication of San Andres water encroaching  
25 upon your wells. Is that a fair statement?



1           A. You try to look for trends and you look at  
2 different pieces. I mean, there's a lot of dilution  
3 going on, so it's tough.

4           Q. Are any of these values a fingerprint that  
5 you can confirm as actually San Andres water from  
6 Goodnight's injection?

7           A. Well, it wouldn't be San Andres water; it  
8 would be water from the Delaware Basin disposal water  
9 getting there. There's good indication -- you're  
10 seeing indications of increases in chlorides.

11          Q. When I look at your Exhibit I-11 and I-12,  
12 in your direct testimony, you presented historical  
13 values for historical water analysis data the Eunice  
14 Monument South unitized interval. And there's two  
15 pages of data that you represent as being historical  
16 water values, chemistry values, correct?

17          A. Yes, sir.

18          Q. And then you've got a column here for  
19 chlorides, and I think you actually -- I think these  
20 are ranked from lowest to highest on a TDS basis; is  
21 that right?

22          A. That's what it looks like. I don't recall  
23 exactly what it is.

24          Q. So I think it's lowest to highest on a TDS  
25 basis. But the chloride concentrations closely track

1       that, correct?

2             A. That is correct.

3             Q. So we go from about 2200 parts per million  
4 chlorides all the way up to on the high end, over  
5 32,000 parts per million chlorides in the EMSU,  
6 correct?

7             A. Yes, sir.

8             Q. And when I look at your PowerPoint  
9 presentation, where you show us the network of water  
10 distribution and injection into the EMSU, all this  
11 water is getting mixed across the entire two units,  
12 correct?

13            A. That is correct.

14            Q. So I ask you, I guess, Mr. West, when I look  
15 at your Exhibit N-9, how is it possible where the  
16 highest chlorides that you reported here are still  
17 under 15 parts per million, this can in any way be  
18 indicative of a fingerprinting of disposal water from  
19 Goodnight Midstream into the San Andres?

20            A. It's an indication of the chlorides that are  
21 raising from higher chloride fluid.

22            Q. Okay. And couldn't that easily be a  
23 consequence of the distribution of chloride values in  
24 other parts of this unit that you've indicated as  
25 being historically high across the Grayburg?

1           A. It could be. I mean, there's mixing of it  
2 all. It could be also where you're, you know, pulling  
3 in the water supply well, water that's maybe coming in  
4 and mixing higher. Or it could be pushing some  
5 connate.

6                   But to have in a little finite area that  
7 you're seeing consistent across all those wells  
8 chlorides coming up, it's an indication.

9           Q. Looking at Exhibit I-18, Mr. West, this is  
10 an exhibit that you refer to in your testimony where  
11 you state that, as you do here on the slide, that  
12 there are -- there's a 13.4 percent decline in the  
13 EMSU production these nine months that you presented  
14 on this chart. Agree?

15           A. Agree.

16           Q. And as I said, what you did was you took the  
17 barrels per day produced in November 2023 and you  
18 compared it to the barrels produced in July 2024 and  
19 you calculated percentage change between those two  
20 values, correct?

21           A. That is correct.

22           Q. How did you come to choose those nine  
23 months -- actually, you didn't even use nine months in  
24 your analysis. You just used two months. Agree?

25           A. We used a whole column. This was due on

1 August of '24, so that's the reason we truncated the  
2 data there.

3 Q. But in your calculation, you just used two  
4 points to make that calculation. You used November  
5 2023 and you used July 2024. Agree?

6 A. Agree.

7 Q. How did you come to decide to use those two  
8 months, November 2023 and July 2024, to calculate your  
9 13.4 percent decline?

10 A. That's what you do with a decline, you do  
11 this first point, you do the last point.

12 Q. Is that an engineering analysis?

13 A. That's how you do a decline rate, you know,  
14 rise over run.

15 Q. How did you come to choose November 2023 and  
16 July 2024?

17 A. I don't remember exactly November of 2023.  
18 July of 2024 is easy. The document was due in July of  
19 2024.

20 Q. What was due?

21 A. Wasn't this document due in August of 2024?

22 Q. I guess I'm asking, what is this document?  
23 What is this taken from?

24 A. This is taken from my testimony, right?

25 Q. Okay. So you're saying with this document,

1 you used that date because it was -- you used that  
2 July 2024 date because it was the most recent date  
3 available for production? Is that what you're trying  
4 to say?

5 A. Yes, sir.

6 Q. I didn't mean to testify for you. How did  
7 you come to choose the November 2023 date, then, as  
8 the initial date for your calculation?

9 A. Just went back a time period and picked  
10 that.

11 Q. So if I pull up Mr. McGuire's rebuttal  
12 Exhibit B-40, which includes a longer view of  
13 production around those months, he's identified here  
14 in brackets on the second page of that exhibit the  
15 months that you've identified in that chart. Do you  
16 see that?

17 A. Yes, sir.

18 Q. And he identified in the brackets from  
19 November 2023 to I believe it was August 2024,  
20 correct?

21 A. July of 2024, because that was the last  
22 piece of data I had. This is seeing into the future.

23 Q. Right. So my question to you was, why did  
24 you choose November 2023? If you had chosen, say,  
25 August 2023, it would have shown almost no decline

1 between those months. Agree?

2 A. Looks like there's a break in data.

3 Q. There's a break in data, Mr. West, I'll  
4 represent to you, because we didn't receive these two  
5 months from Empire. We asked for the daily production  
6 rates and we didn't receive them, so that's why  
7 there's break in the data there.

8 A. Okay.

9 Q. Just pointing out, Mr. West, if you had  
10 chosen August 2023 and compared it to July 2024 or  
11 even, let me pick another date, for example, June  
12 2023, if it was a June 2023 date, I think that's the  
13 date here, and I compared it to July 2024, there would  
14 be a much smaller decline, wouldn't there have been?

15 A. I could pick, you know, December of '22 and  
16 there would be more of a decline.

17 Q. I guess my point is, how did you end up  
18 choosing -- is it reasonable to choose any month out  
19 of the year? Why not do a more reasonable or a longer  
20 term assessment of what the decline is, if any? How  
21 did you come to choose that month?

22 A. Just looking at a more recent time frame  
23 and, again, just a trend.

24 Q. But if I had chosen July '23 and compared it  
25 to July '24, a 12-month trend, it wouldn't have shown

1 as much of a decline, would it have?

2 A. It still would have been a decline.

3 Q. Looking at this period of production,  
4 Mr. West, Goodnight started injecting into the EMSU in  
5 roughly 2020; is that correct?

6 A. Sounds about right.

7 Q. And Empire acquired the unit around March of  
8 2021, agree?

9 A. Yes, sir.

10 Q. And that steep decline around the time of  
11 Empire's acquisition is related to the transition in  
12 operations; is that correct?

13 A. No. That was DCP had to -- during the  
14 process, when it was selling, had a pipeline shut  
15 down. So it was down for three, four months.

16 Q. So it was an operational issue, not related  
17 to the transition, but related to some outside issue?

18 A. No. It was actually down when the data room  
19 was out.

20 Q. Okay.

21 A. So it was down there and then all the way  
22 into '21. So that's your deep gap. I don't know why  
23 there's that one point down there, but really it would  
24 be where there's shoulders for several months.

25 Q. So if I look at the time when Goodnight

1 initiated injection into the EMSU, around the 2020  
2 time frame, and I look back to even the period you  
3 selected, I'm not seeing much of a decline at all in  
4 the rates of production over this period of time.  
5 Would you agree?

6 A. Well, if you recall, back in March, April,  
7 May of 2020, that was COVID. So there was a huge  
8 amount of things affecting operations across the  
9 world. So I would anticipate that to be lower, and I  
10 wouldn't think that would be a very good pick.

11 Q. So if I go back to, again, a longer time  
12 frame over the EMSU -- and I don't do decline curves.  
13 I'm a lawyer, but just eyeballing this, and looking at  
14 a larger period of time, this is the first page of  
15 Mr. McGuire's Exhibit B-40, and I'm trying to eyeball  
16 the production over here, it looks like actually the  
17 production decline from January of '19 to present is  
18 not as steep as it was in previous years. Do you  
19 disagree with me?

20 A. You're later in the life of the flood, so  
21 you'd expect it not to be as steep.

22 Q. How does that square with your testimony  
23 that you're seeing excessive decline currently, in the  
24 present?

25 A. You're seeing it currently over that time



1 frame. You got to look to more -- you know, you just  
2 come down to a shorter time frame. And '19 and '20  
3 were kind of messy times, into '21, because of all the  
4 COVID stuff that was happening. And then they  
5 shut-down the pipeline. And then so you got the rest  
6 of the production to work with.

7 We could have went back to October of  
8 '21 to present say, if you wanted to calculate that.

9 Q. Now, this is the only data you present in  
10 your testimony about any impacts to production; is  
11 that correct?

12 MS. HARDY: Objection. Misstates testimony.

13 MR. RANKIN: I'm asking --

14 HEARING OFFICER HARWOOD: Overruled.

15 BY MR. RANKIN:

16 Q. Mr. West, is there any other testimony you  
17 presented or exhibits or data, information in your  
18 testimony that reflects any decrease or decline in the  
19 production of the EMSU?

20 A. Not that I remember.

21 Q. Okay. I'm going to move on to your  
22 discussion of your economic models. In your direct  
23 testimony, starting at Page 13, under the  
24 Subheading F, called, "CO2 Flood of San Andres ROZ  
25 Interval," first section I've highlighted here

1 discusses how much CO2 Empire anticipates having to  
2 inject across each 40-acre pattern that you anticipate  
3 developing, and also states what you anticipate would  
4 be the recovery of oil over -- is that oil or CO2  
5 recovery there?

6 A. Which part are you talking about?

7 Q. So this sentence I've highlighted here. It  
8 states that you'll recover approximately 500,000  
9 barrels of oil there over a 20-year period.

10 So in this sentence that I've  
11 highlighted here, this refers to the economic models  
12 that you have attached as your Exhibits I-26 and I-27;  
13 is that right?

14 A. So it refers to -- I think the first one is  
15 talking about the Grayburg and the San Andres, but  
16 then it says given the more acres that 250 40-acres,  
17 it's 125 million out of San Andres alone.

18 Q. Okay. But that is referring to the economic  
19 model that you calculated that are attached at  
20 Exhibits I-26 --

21 A. Correct.

22 Q. -- and I-27; is that right?

23 A. Yes.

24 Q. And one is an economic model based on a  
25 72-pattern CO2 flood, correct?

1           A. That is correct.

2           Q. And the other is based on a 250-pattern CO2  
3 flood?

4           A. That is correct.

5           Q. And each pattern is based on a 40-acre  
6 spacing, correct?

7           A. That is correct.

8           Q. And as I understand it, the 250-pattern  
9 model includes the EMSU, EMSU-B and AGU, correct?

10          A. Correct. It includes about 10,000 acres.  
11 It could be applied just to the EMSU, which is about  
12 14,000 acres. So it could squeeze all into there,  
13 but, you know, but we kind of look at this project in  
14 a whole across all three.

15          Q. So when I'm reviewing your Exhibit I and I'm  
16 trying to understand the economic model and how you  
17 did your calculations, I don't see an explanation for  
18 how this economic model works or any basis for any of  
19 its underlying assumptions about costs, about  
20 recovery, about how you're going to get -- how you  
21 calculated and whether you even calculate any recovery  
22 factors.

23                   Can you point me to anyplace in this  
24 testimony where you explain how you determine what the  
25 recovery factor is going to be, for example, for

1 hydrocarbons in the San Andres ROZ?

2 A. So it was in the economic model spreadsheet  
3 itself. What we used, this model was going from -- it  
4 was built by Kinder Morgan to, you know, have some  
5 other engineers on staff that have experience with CO2,  
6 actually, three of them, CO2 and ROZ. And this was one  
7 that this economic model was built to assess different  
8 properties to whether or not it would be a good CO2  
9 project or not.

10 It uses about an 18 percent recovery  
11 factor in it. And it times out your CO2 going in,  
12 pushing out your water, oil and then your reinjection.  
13 And then you can put -- you can build the models,  
14 build the patterns out.

15 Q. So let me go -- I think the description or  
16 the exhibits relating to the model start at PDF 50  
17 here, which I think is the first one, I-26, correct?

18 A. Yes, sir.

19 Q. And this shows different charts from oil  
20 production, water production, CO2 recycle volume, and  
21 CO2 injection rate, correct?

22 A. Correct.

23 Q. So these are outputs from your economic  
24 model, correct?

25 A. That is correct.

1 Q. And I think this is for the 72-pattern  
2 economic model, right?

3 A. Yeah. They're similar shape.

4 Q. The same inputs went into both models,  
5 right?

6 A. That is correct.

7 Q. Okay. Just one was multiplied out for 250  
8 patterns or 72 patterns, correct?

9 A. That is correct.

10 Q. And so this is an output for oil production,  
11 water production, CO2 recycle volume, CO2 injection  
12 rate, right?

13 A. Yes, sir.

14 Q. And each of these models assumes continuous  
15 CO2 injection, right?

16 A. That is correct.

17 Q. And not water alternating gas, correct?

18 A. That is correct. Standing for WAG.

19 Q. Standing for WAG. Okay. So that's what  
20 this chart is.

21 And this next exhibit here, I-27, is the  
22 spreadsheet that generated those outputs, correct?

23 A. This is the economic summary that was part  
24 of the output, yes.

25 Q. So I don't see anywhere here where you

1 got -- I'm trying to understand how you came up with  
2 an 18 percent oil recovery factor based on this chart,  
3 resulting in this oil production. Is it somewhere in  
4 your testimony where you explain how arrived at that  
5 18 percent recovery factor?

6 A. It's all -- you know, so we arrived -- no,  
7 didn't put it in the testimony, but it's in the  
8 spreadsheet sheet itself. And it's 18 percent and  
9 it's based on Kinder Morgan's economic model that they  
10 built. So they had a couple engineers on the staff  
11 that brought the model over, and it's a pretty good,  
12 you know, initial economic analysis of the CO2.  
13 Whenever you don't quite have a full compositional  
14 model and, you know, we don't quite have the fluid  
15 from the San Andres, a few things.

16 So this allows us to build that out and  
17 you put pressure in, and it's a pretty good little  
18 model.

19 Q. Now, is there anybody else who has testified  
20 for Empire that addresses how Empire arrives at an  
21 18 percent oil recovery factor for this economic  
22 model?

23 A. Stephen Melzer gave you indication of  
24 different things that could be recovery factors that  
25 he's seen in ROZ and different projects.

1 Q. Has Mr. Melzer conducted any assessment or  
2 evaluation, based any on any of the geologic data or  
3 engineering data related to the EMSU?

4 A. You've just got to use analogous fields.

5 Q. Did Mr. Melzer testify that the EMSU was  
6 analogous to any of the fields from which his recovery  
7 factors were derived, to your knowledge?

8 A. I don't remember exactly. He talked about  
9 Seminole, he talked about Tall Cotton. He talked  
10 about lots of different fields.

11 Q. So, again, Mr. West, I'm looking at your  
12 testimony and I don't see any reference to a recovery  
13 factor. Is it in your testimony?

14 A. I should have put it in there. But it was  
15 in the backup data.

16 Q. Is there anywhere in your testimony where  
17 you describe or explain how you came up with an  
18 explanation for how you're arriving at a certain value  
19 of amount of oil?

20 A. You know, the simple -- it's a 30 percent  
21 oil saturation, it's using a 10 percent porosity in  
22 the model. It's all in the input to the model there.  
23 I should have just made a table to put in here to  
24 summarize that up.

25 Q. But there's no explanation, right? I was

1 looking for it, trying to understand it. And I don't  
2 see it. But you're telling me that you're using an  
3 18 percent oil recovery factor and you're relying on  
4 Mr. Melzer's testimony and opinions for that?

5 A. His opinions and other literature, the  
6 different pieces and using the previous model that,  
7 you know, a company that does a lot of CO2 and ROZ  
8 projects, like Kinder Morgan, using that as a  
9 representative good start.

10 Q. Is 18 percent the number that Kinder Morgan  
11 was using for its projects; is that what you're  
12 telling me?

13 A. Yes, sir.

14 Q. That's not stated anywhere in your  
15 testimony, is it?

16 A. That is correct.

17 Q. And do you know -- what field was Kinder  
18 Morgan using the 18 percent oil recovery factor for?

19 A. It's from all their projects that they had  
20 across the Permian Basin and from company experience.

21 Q. And you're telling me that Kinder Morgan  
22 uses the same recovery factor for all of its fields,  
23 no matter what and where it is?

24 A. Whenever they get more data and want -- and  
25 this is for a screening process, so this is a first



1 pass. There are some fields that get better than  
2 that; some that may get worse than that.

3 Q. How is 18 percent recovery factor comparing  
4 with what the recovery factor has been for the  
5 secondary recovery in the EMSU?

6 A. I don't recall off the top of my head what  
7 the recovery factor has been in the waterflood.

8 Q. Now, this portion of your testimony here,  
9 from F, from Subpart F, that's the sole -- that's the  
10 complete testimony that you provided that explains  
11 your economic evaluation for the CO2 recovery project  
12 in the EMSU, correct?

13 A. Correct.

14 Q. And you're providing this testimony and the  
15 exhibits that relate to it as evidence that a ROZ  
16 project can be economically implemented across all  
17 three unitized intervals -- rather, all three unitized  
18 areas in the AGU, EMSU and EMSU-B?

19 A. Yes.

20 Q. And this analysis applies only to continuous  
21 CO2 injection, correct?

22 A. Correct. We didn't take into -- you know,  
23 the benefits of what a WAG would be. It would reduce  
24 your CO2 purchase greatly.

25 Q. So you didn't provide us with an assessment

1 of what the potential economics would be for a WAG  
2 project, right?

3 A. No. But they would be better.

4 Q. So you mentioned one of the assumptions of  
5 your economic model is that there's an average oil  
6 saturation of 30 percent, correct?

7 A. That is correct.

8 Q. And I started talking with you about this  
9 the other day and I want to revisit it. But if you  
10 recall, Mr. West, you testified to me in your  
11 deposition that this economic model is based on a  
12 400-foot interval with a continuous average oil  
13 saturation of 30 percent. Do you agree?

14 A. Never said continuous.

15 Q. I'm going to close out some of these  
16 documents, because my PDF is going to get fussy.

17 This is part of your 30(b)(6) deposition  
18 when you and I were discussing these economic models  
19 and I was trying to understand them. So I asked  
20 you -- at the time of your deposition, I asked you --  
21 and this is Page 232 of your deposition, and this is  
22 again, your 30(b)(6) deposition, I asked you, "Where  
23 are we getting the 30 percent oil saturation from?"

24 And you told me that you're getting it  
25 from the log analysis and petrophysical data and it

1     could be a little bit conservative of it 30 percent.  
2     Do you recall that testimony?

3             A. Yes, sir.

4             Q. And then I asked you, "Is that oil  
5     saturation an average across the entire San Andres?"

6             And you said, "It's a good evaluation  
7     number for the San Andres."

8             And then I asked you: Because this  
9     model doesn't change the oil saturations by depth in  
10    the San Andres?

11            It doesn't change, right? Your model is  
12    using a consistent 30 percent oil saturation across  
13    the entire 400-foot interval, correct?

14            A. That is correct.

15            Q. It's the same oil saturation in the model  
16    for the entire 400 feet, correct?

17            A. The 400-foot. That would be out of a  
18    1200-foot reservoir of the San Andres.

19            Q. That's right. And your model is assuming a  
20    consistent, continuous 30 percent oil saturation  
21    across that entire 400 feet, correct?

22            A. Yes, for it -- it is using 400 foot as the  
23    interval, the net interval.

24            Q. Okay. And do you recall my testimony --  
25    were you present for Mr. McShane's testimony?

1           A. Yes.

2           Q. And did you hear Mr. McShane testify that he  
3 did not identify any section of any of the log  
4 intervals that contain average saturation of  
5 30 percent that would extend 400 feet across the  
6 San Andres?

7           A. I'm trying to understand your question.  
8 Could you rephrase it.

9           Q. Do you recall Mr. McShane testifying that he  
10 did not identify any interval in the San Andres that  
11 had an average oil saturation of 30 percent that  
12 extended for 400 feet?

13          A. That was a -- I think you had said in that  
14 piece that it was a continuous one.

15          Q. Correct.

16          A. That is correct.

17          Q. Okay. And so none of NuTech's well log  
18 interpretations provide a continuous interval of  
19 30 percent oil saturation that would justify that  
20 assumption in your economic model. Agree?

21          A. Rephrase it again, make sure I --

22          Q. None of NuTech's well log interpretations  
23 provide a continuous interval of 30 percent oil  
24 saturation that would justify your economic model  
25 assumption. Agree?

1           A. If you break it up, it's going to be  
2 relatively the same in the economic model.

3           Q. Your economic model is assuming an average  
4 30 percent oil saturation for 400 feet across the top  
5 of San Andres. Agree?

6           MS. HARDY: Objection. Asked and answered.  
7 This has been established.

8           HEARING OFFICER HARWOOD: Overruled. He's  
9 laying foundation.

10          A. I have a net interval across the San Andres.

11          Q. Now, I just was asking you, because you just  
12 told me that the economic model doesn't have any net  
13 intervals, right? It's a continuous interval of 400  
14 feet, is what you're assuming in your economic model.

15          A. I'm taking a 400-foot injection interval, a  
16 net interval.

17          Q. So I'm asking you, is there any of the well  
18 log interpretations or petrophysical log analyses that  
19 were presented by or sponsored by any of your experts  
20 that reflect a continuous 30 percent oil saturation of  
21 400 feet, across a 400-foot interval, similar to what  
22 you're assuming in the economic model?

23          A. My economic model is using a net 400 foot.  
24 But no, there is not a log that has just a continuous  
25 400 foot.

1 Q. Did you have one of your experts or  
2 petrophysics or log analyses experts sponsor an oil  
3 saturation analysis that you used in your economic  
4 model?

5 A. I used lots of different bits of, pieces of  
6 data. As you can tell, there's a lot of different  
7 varying opinions on an analysis. Right? Because when  
8 you take logs and you do log analysis, it's always an  
9 interpretation, and so some were high, some were low.  
10 And if you take the core and average, it seemed like,  
11 you know, that would be a good representative, would  
12 be 30 percent. Because you don't know until you start  
13 to take more core of the interval and a larger  
14 interval than your currently have.

15 Q. Is that oil saturation that you're using in  
16 the economic model, is it based on any of your  
17 experts' opinions or any of the expert work that Ops  
18 Geologic did? Or is it based on the oil saturations  
19 that were prepared by Ops Geologic, for example,  
20 number one?

21 A. It's taken into account for what they all  
22 said and saying that hey, a good representation would  
23 be 30 percent.

24 Q. But you're not using -- for example, you're  
25 not taking the evaluation or assessment that Ops

1 Geologic did and then using that for your economic  
2 model, correct?

3 A. Not using one individual one. I'm taking  
4 all the data points.

5 Q. And you didn't take NuTech's analysis of  
6 their oil saturations that they did or even that  
7 Empire instructed them to do. You're not using that  
8 for you economic model. Agree?

9 A. Looked at NuTech's, looked at Ops Geologic.  
10 Looked what, you know, Exxon had said before, looked  
11 at all of them and said, you know, let's -- you know,  
12 look at the cores and said that 30 percent would be a  
13 good representative to build a model off of.

14 Q. Then you took what they did and you made it  
15 a continuous 30 percent oil saturation across 400  
16 feet, correct?

17 A. Right. I don't have a fancier model that I  
18 could break it out.

19 Q. You couldn't vary the oil saturations to  
20 match one of your expert's opinions?

21 A. Not in the model.

22 Q. It doesn't have a cell representative of  
23 each foot? You couldn't evaluate it based on what  
24 your experts are telling you the oil saturations are?

25 A. You know, the model is over 10,000 acres.

1 Picking one individual log would be incorrect.

2 Q. Okay. So rather than trying to match what  
3 your experts are saying or doing, you made your own  
4 decision about what the oil saturation should be  
5 across a 400-foot interval. Agree?

6 A. Yes.

7 Q. Okay.

8 HEARING OFFICER HARWOOD: Mr. Rankin, would  
9 this be a convenient time for a mid afternoon break?

10 MR. RANKIN: It would be a greet time,  
11 Mr. Hearing Officer.

12 HEARING OFFICER HARWOOD: Let's take  
13 15 minutes.

14 (Recess held from 3:00 to 3:15 p.m.)

15 HEARING OFFICER HARWOOD: Let's proceed.

16 Mr. Rankin, do you have any idea,  
17 forecast, of how much more you might have?

18 MR. RANKIN: I'm afraid to get into the  
19 business of prediction, but I really do want to try  
20 to finish relatively soon. So I'm hoping that  
21 sometime within the next hour I'll be done.

22 There's basically two main topics left  
23 that I want to discuss, and I'm partway through one  
24 of them. So I'm hoping that within the next 30 to 40  
25 minutes, I'll be done.



1           HEARING OFFICER HARWOOD:   Okay.   Well, it is  
2 all relative.

3           MR. RANKIN:   It is all relative.

4           HEARING OFFICER HARWOOD:   Thank you.

5           MR. RANKIN:   I understand.   Are we ready to  
6 go, Mr. Hearing Officer?

7           HEARING OFFICER HARWOOD:   Sure.   Please  
8 proceed.

9 BY MR. RANKIN:

10           Q. Mr. West, we were, prior to the break,  
11 discussing the economic model that you presented in  
12 your testimony.   As I understand it, the economic  
13 model presents two cases, one for a 72-pattern CO2  
14 injection case, and the other for a 250-pattern  
15 injection case, correct?

16           A. Yes, sir.

17           Q. And for each of those patterns, you only ran  
18 one output, right?

19           A. That is correct.

20           Q. So you didn't run any sensitivities on any  
21 of the variables or inputs that you used in economic  
22 calculations, did you?

23           A. Not at the time when we did that.

24           Q. And you didn't present the Commission with  
25 any sensitivities based on different input parameters

1 for most models, have you?

2 A. I have not presented any.

3 Q. So no ranges for costs of CO2, for example?

4 A. Correct.

5 Q. And no ranges for different oil saturations,  
6 correct?

7 A. Correct.

8 Q. And no ranges for prices of oil, correct?

9 A. Correct.

10 Q. And, in fact, you assume for your oil  
11 pricing starting out at \$75 per barrel, correct?

12 A. That is correct.

13 Q. And you assume a 1 percent incremental  
14 increase, escalation every year, correct?

15 A. Yes, a pretty conservative one over the 43  
16 years of the project, I believe.

17 Q. Okay. And among the assumptions, as you  
18 state in your testimony, you're assuming that  
19 75 percent of the wells for the San Andres ROZ  
20 projects are going to have to be new drills, correct?

21 A. I'd have to sit down and think on that  
22 project. I mean, we've got, like, 105 existing  
23 wellbores that we could deepen to reduce some of those  
24 costs. But I think in the project, yeah, I think we  
25 did assume, yes. That's what we assumed in the

1 project. Kind of little bit heavy on it.

2 Q. No problem. I guess my question is, why  
3 wouldn't you need to drill 100 percent new wells?

4 A. Because you've got 105 -- roughly 105  
5 wellbores within the EMSU that have at least 7-inch  
6 casing down to the bottom. So you could use full-size  
7 conventional tools to deepen that well.

8 Q. Are those wellbores in a condition suitable  
9 for injection of CO2?

10 A. Whenever you drill the bottom part of it,  
11 that would be an extra image you would run, and so  
12 yes, it would be.

13 Q. And the cement would be in a condition  
14 that's approvable for CO2 injection by the Division?

15 A. You would be, you know, drilling down into  
16 the new intervals, so you would do cement to match  
17 that.

18 Q. Okay. So have you evaluated whether or not  
19 those wells, those 25 percent of the wells what you'd  
20 be able to reenter, would qualify under the  
21 Divisions's rules and regulations for injection of  
22 CO2?

23 A. You would be drilling a new hole into it  
24 because they're not presently deep enough. And so you  
25 would put, you know, what's the spec of the cement

1 that would match the regulations of the Commission.

2 Q. My question is, did you do an assessment to  
3 determine whether or not the condition of those -- the  
4 25 percent of wells that you would need to drill new,  
5 have you made an assessment to determine if those  
6 wells would qualify under the Division's requirement  
7 for injection of CO2?

8 A. I guess I would need to see the  
9 requirements. But you're drilling a new hole where  
10 you're going to inject. You're putting whatever spec  
11 cement in the well.

12 Q. I think you've answered my question, because  
13 you haven't reviewed the Division's requirements for  
14 CO2 injection?

15 A. No.

16 Q. Okay. On your economic modeling which way  
17 would the economics go if you decreased the ROZ  
18 interval?

19 A. If you decrease the ROZ interval, the CO2  
20 would pass through the reservoir quicker, so you would  
21 move the production forward and you would use less CO2.  
22 And so your rate of return would go up and it would be  
23 a little bit higher.

24 Q. You think the economics would go up if you  
25 decreased the CO2 interval -- I'm sorry. You think the

1 economics go up if you decreased the oil saturation  
2 interval?

3 A. The net thickness? Which --

4 Q. Your economic model uses an oil saturation  
5 of 30 percent over 400 feet, correct?

6 A. That's correct.

7 Q. And if you reduce that ROZ interval to 300  
8 feet, what would that do to the economics of your  
9 project?

10 A. So you shorten the thickness of the  
11 interval, the CO2 would be able to impact the rock  
12 quicker and you would produce oil back faster, would  
13 move through the reservoir quicker. So that would  
14 bring forward your oil curves and it would also bring  
15 forward your CO2 recycling.

16 Q. Have you done that analysis in your economic  
17 model?

18 A. Since then we've played with the model.

19 Q. Have you done an analysis to evaluate what  
20 happens when you decrease the ROZ thickness?

21 A. Yes.

22 Q. And what does that do to your economics?

23 A. Like I said, it will bring your net present  
24 value -- it will increase that. Overall, you know,  
25 since there's less reserve, the overall, you know,

1 cash would go down a little bit. Your rate of return  
2 would go up because you're getting product back  
3 faster.

4 Q. And overall, what does it do to the  
5 economics?

6 A. I just -- which piece of the economics are  
7 you talking about? There are a lot of --

8 Q. Bottom line.

9 A. Which -- there's lots of -- I mean, people  
10 look at lots of different pieces of economics.  
11 Which -- do you know, you know, which category?

12 Q. So what I'm trying to figure out, when I  
13 look at your PowerPoint, for example, and you're  
14 telling the Commission that there's going to be a  
15 cumulative cash flow of \$5.5 billion, what does the  
16 decrease in the ROZ interval, say, from 400 feet to  
17 300 feet do to your cash flow?

18 A. It will reduce it.

19 Q. What happens when you reduce the oil  
20 saturation in your model?

21 A. It'll reduce the cum cash a little bit.

22 Q. You talked about just now that there --  
23 about the potential for reducing the cost by recycling  
24 CO2. Do you recall you just mentioning about there  
25 would be a -- if you decrease the interval of the ROZ

1     that it would increase the rate that you gave your CO2  
2     back, correct?

3             A. It will come back earlier.

4             Q. Have you done any analyses to determine at  
5     what rate CO would come back?

6             A. Can you clarify your question?

7             Q. You're telling me that if you decrease the  
8     ROZ interval, that you're going to get CO2 back more  
9     quickly, right?

10            A. That is correct.

11            Q. So I'm asking you, have you done any  
12     analyses to determine at what rate you're going to get  
13     CO2 returns in your CO2 project?

14            A. It'll come back earlier. I mean, it would  
15     have to be a particular run and run a sensitivity on  
16     it. It's going to come in faster.

17            Q. I guess my question is, you're just telling  
18     me that right now. Is that off the top of your head  
19     or is that based on your experience? Or did you  
20     actually conduct an analysis to determine what the  
21     rate of return of CO2 would be for the San Andres?

22            A. It's just a mass balance. So if you're  
23     putting in the same amount of CO2 and there's less  
24     reservoir, it's going to come out the other end  
25     quicker, so you would have it back into place to put

1 back in.

2 Q. So that's just based on your rationale or  
3 logic, that response?

4 A. Just two particles can't be in the same  
5 space at the same time.

6 Q. My question is simply, like, did you do some  
7 sort of engineering analysis to determine what your CO2  
8 return would be?

9 A. The model will do it.

10 Q. In your testimony, where does it do it in  
11 the model?

12 A. I mean, you can see there where it's, you  
13 know, the CO2 recycle volumes, or whatnot. It would  
14 calculate and make that curve.

15 Q. Do you address that anywhere in your  
16 testimony?

17 A. I did not run those sensitivities and put  
18 them in my testimony.

19 Q. Did you describe how you made that  
20 determination in your testimony, how the model makes  
21 that determination, in your testimony?

22 A. Which part of it?

23 Q. The CO2 return, the CO2 recycle volume, how  
24 it calculates that.

25 A. We provided you with the data sheet that has



1 all the inputs and the spreadsheet. It's not in my  
2 testimony, but you were provided the data, the whole  
3 model.

4 Q. Okay. But it's not in your testimony, it's  
5 not in your exhibits. Agree?

6 A. Agree.

7 Q. So the Commission hasn't seen that and it  
8 wasn't provided to the Commission. Agree?

9 A. Agree.

10 Q. Okay. So when I go back to your PowerPoint  
11 presentation, I think you're discussing the larger  
12 project here, the 250-pattern project in Slide 7 of  
13 your presentation, correct?

14 A. Correct.

15 Q. And the capital costs here are calculated  
16 from your economic model for that pattern, correct --  
17 for that project?

18 A. The 250-pattern project.

19 Q. And the total capital expenditure would be  
20 1.2 billion over the entire life of the project,  
21 correct?

22 A. That is correct.

23 Q. We heard yesterday in testimony from  
24 Mr. Wheeler about the financial status of the company  
25 over the last two years. How will Empire finance this

1 project \$1.2 billion?

2 A. We'll get funding for it. It won't be a  
3 problem.

4 Q. Who is going to fund it?

5 A. It'll be funded by investors.

6 Q. Okay. Have you prepared any statements for  
7 investors to consider how Empire is going to pursue  
8 this project?

9 A. I've got to stop this pollution first before  
10 we can ever go to raise money.

11 Q. So Empire has undertaken no steps at this  
12 point to put together a proposal for developing any  
13 investment for this project; is that correct?

14 A. There's been discussions. You know, upper  
15 management and things had discussions of this project  
16 in particular with people that would be able to well  
17 fund it. But we cannot move past initial discussions  
18 until you stop the pollution into the reservoir.

19 Q. Empire has had discussions with potential  
20 funders?

21 A. The investors, chairman and things, yes, he  
22 has.

23 Q. To your knowledge, Mr. Mulacek has had  
24 discussions with potential funders for a CO2 project in  
25 the EMSU?

1 A. Yes.

2 Q. Do you know who those potential funders  
3 would be?

4 A. No, I do not.

5 Q. Have you obtained any bids or estimates for  
6 any of the wells facilities or other costs that would  
7 be required to undertake a CO2 project of any kind  
8 November EMSU?

9 A. At this point in the process, we have  
10 estimates, as you don't really go out to bid until  
11 you're ready to buy equipment.

12 Q. So you do have estimates for costs for a  
13 potential project? Yes?

14 A. They're in the model.

15 Q. They're in the model. Okay. What are those  
16 assumptions based on?

17 A. They're based on the rough price of what the  
18 equipment would be that you would plan to acquire for  
19 the pipelines, the facility, the wells.

20 Q. Did you provide any basis or substantiation  
21 for the assumptions made on those prices in your  
22 testimony.

23 A. I think you're early in the project and all  
24 of it, so, you know, you make the assumptions. You  
25 don't go out for bids.

1 Q. And briefly, we discussed your starting  
2 price of oil at \$75 a barrel, correct?

3 A. Correct.

4 Q. I just happened to look at the oil price  
5 last night, and it's down to \$58 a barrel, or  
6 something. And have you run any -- I think you know  
7 the answer to this question, but just to be clear, you  
8 haven't run any other models of variation of range of  
9 prices. Agree?

10 A. There wouldn't be a need to at this point in  
11 time.

12 Q. Why not?

13 A. Because 75 is a good starting point whenever  
14 the model was ran at the beginning of the year. And  
15 you're not starting the project right now until we get  
16 this cleared up. And if you, you know, look in the  
17 history of the oil, that's a very reasonable starting  
18 point for where we're at.

19 Q. But you didn't run a flat price scenario,  
20 did you?

21 A. No one would really do a flat price scenario  
22 for a 42-year project.

23 Q. Mr. Marek ran a flat price analysis for the  
24 EMSU waterflood, didn't he?

25 A. Why don't we pull up that analysis of

1 Mr. Marek's, that Cobb Report, because it has a 5  
2 percent escalation point in there, too.

3 Q. It does, it has an escalation. It has a  
4 range. He did a range. He did 5 percent and he did  
5 flat price. So he had a range of analyses that he  
6 did, correct?

7 A. That's correct.

8 Q. And you only ran one analysis, correct?

9 A. At 1 percent, pretty conservative. If you  
10 go back the last 42 years, that's about a 1.82 percent  
11 increase, annual percent increase. So one is pretty  
12 fair.

13 Now, he ran a pretty aggressive  
14 5 percent case in that economic analysis. We're not  
15 anywhere near a 5 percent.

16 Q. Okay. And is past performance an indication  
17 of future performance, Mr. West, in your experience?

18 A. You got to use the past to help to build a  
19 model to predict the future. So, you know, past  
20 indications of oil, where you have a long history,  
21 that's a pretty good .

22 Q. Generally, isn't a flat price required for  
23 and SEC report?

24 A. For SEC, but that's just looking, like, in  
25 the short term, and that's been like a year.

1     Actually, that's not looking for something that  
2     somebody would invest in a 42-year project.

3             Q. In other words -- I'm sorry, I didn't mean  
4     to interrupt you.

5             A. If we took Mr. Marek's project, right, where  
6     I think it was \$18 a barrel of oil, and if you just  
7     took that as a point and ran a flat case and a  
8     5 percent and if you took that, escalated it to the  
9     beginning of this year, that was about a 3.88 increase  
10    annually. So, you know, kind of undershot on the one,  
11    maybe overshot, I mean, add them, you know, flattened  
12    out after a while.

13            Q. I guess my point simply is, though,  
14    Mr. West, that he provided a range of potential  
15    outcomes, not just a single scenario. Correct?

16            A. Correct.

17            Q. Now, another assumption in your model is  
18    that you used a \$1 price per MCF for CO<sub>2</sub>, correct?

19            A. That is correct.

20            Q. And you state that the project would allow  
21    for 471 cubic feet of CO<sub>2</sub> to be sequestered as a result  
22    of the injection, correct?

23            A. Yes. It could be.

24            Q. Have you done any studies to confirm that  
25    volume of CO<sub>2</sub> could actually be sequestered in the

1 San Andres?

2 A. There would be some that would be left  
3 behind, just by the nature of the flood. And it's,  
4 you know, a reasonable number.

5 Q. My question is, did you do any studies to  
6 determine whether that volume could be sequestered?

7 A. Any extra studies, no.

8 Q. So that was just a reasonable number that  
9 you chose as a potential amount that could be  
10 sequestered?

11 A. Yes. So talking with, you know, other  
12 people, staff and things and putting together, yes.

13 Q. Okay. And you, among other experts, on  
14 behalf of Empire testified that there are natural  
15 fractures all through the San Andres and Grayburg,  
16 correct?

17 A. That is correct.

18 Q. Causing the formations to be in fluid  
19 communication, correct?

20 A. That is correct.

21 Q. How would this project ever qualify for a  
22 45Q tax credit just based on Empire's testimony and  
23 the exhibits that it has presented in this case?

24 A. So the top of the reservoir, there's an  
25 established -- used to be a gas cap up there. And so

1 you've got an established gas cap up there.

2 Also, you've got a really pretty good  
3 perm barrier around Zone 3 or 4 in the Grayburg. And  
4 that part that's a baffle, you could -- one of the  
5 ways you could go about it, you could flood Zones 1  
6 and 2 with a lot of water, add another water cap,  
7 which is very common in a CO2 project. So there's a  
8 lot of different ways to add extra barriers in.

9 Q. Beyond just conceptual discussion, have you  
10 done any actual engineering or geologic determinations  
11 to confirm whether that would meet the requirements of  
12 a 45Q tax credit?

13 A. We'd have to, you know -- we have sister  
14 companies and things that do a lot of that business,  
15 and it seems reasonable that we would be able to go  
16 through all that, but there's a lot of expense and a  
17 lot of things that go into that. And we can't really  
18 move forward with an investment while there's ongoing  
19 damage to that ROZ.

20 Q. My question is, though, have you done any  
21 determination -- I mean, you're making a big  
22 assumption that it would qualify and would have big  
23 impact on your economics, correct? If you can  
24 qualify, it has a big impact on the economics of this  
25 project. Agree?



1           A. It's not necessarily solely on the  
2       sequestration.

3           Q. So part of the assumption is that you or the  
4       seller of the CO2 would be able to qualify for a 45Q  
5       tax credit. Agree?

6           A. Agree. That can -- you know, that's a lot  
7       of things that can affect that CO2 price.

8           Q. I'm just talking about the model. You made  
9       an assumption that based on qualification for the 45Q  
10      tax credit, you would be able to buy CO2 at a \$1 per  
11      MCF, correct?

12          A. No. Made an assumption that we'd be able to  
13      buy CO2 at \$1 an MCF.

14          Q. Okay. And that was based on the 45Q tax  
15      credits. Agree?

16          A. That could affect the price of the CO2.

17          Q. When I deposed you, Mr. West, you told me  
18      that that basis for the 50 cent discount was based on  
19      the 45Q tax credit, correct?

20          A. That's definitely something that can give  
21      you the discount.

22          Q. So if you aren't able to acquire a 45Q tax  
23      credit, then what's the basis for the \$1 per MCF  
24      price?

25          A. That's a negotiation. You could, you

1 know -- it's, you know, "Hey, I've got this project.  
2 I want to buy this much CO2," and you negotiate  
3 different terms.

4 Q. And just to be clear, who would benefit from  
5 the 45Q tax credit? Would it be Empire or would it be  
6 the seller of the CO2?

7 A. I'm not sure. Depends on which deal was  
8 negotiated.

9 Q. When I deposed you, you told me that the  
10 seller of CO2 would be the beneficiary of the tax  
11 credit, correct?

12 A. Probably. It could be either way, but yeah,  
13 I mean.

14 Q. That's what you testified to in your  
15 deposition, correct, that the seller of the CO2 would  
16 be the direct beneficiary of the tax credit?

17 A. I'll believe what you say. That's one  
18 scenario for sure. We have not negotiated a contract,  
19 so it's hard to say.

20 Q. Okay. Well, I'm not going to spend the time  
21 impeaching you, Mr. West.

22 So the question I have, then, is, have  
23 you had any discussions, then, with any CO2 suppliers?

24 A. People within the company have.

25 Q. And under the 45Q tax credit, in order to

1 qualify, would it have to be anthropogenic CO2?

2 A. That's one method.

3 Q. Are you aware of any other methods to  
4 qualifying for the 45Q tax credit that are not  
5 anthropogenic?

6 A. I think you can get some if there ends up  
7 being some that stays in the reservoir and it's stored  
8 in the reservoir.

9 Q. Okay. So you're assuming that some is going  
10 to be stored in the reservoir, but you haven't done  
11 any analyses or studies to confirm what volumes would  
12 actually be stored, correct?

13 A. No studies where volume is concerned. But,  
14 you know, you put it down in there, not all of it is  
15 going to come back.

16 Q. And you haven't done the study to evaluate  
17 how much of that CO2 would likely stay in the  
18 reservoir. Agree?

19 A. Agree. We would need to go ahead and gather  
20 more core and we would need to do more analysis.

21 Q. You haven't yet done that analysis. Agree?

22 A. That's correct.

23 (Pause in the proceedings.)

24 HEARING OFFICER HARWOOD: All right. We're  
25 back on the record.

1                   Mr. Rankin, you better speak fast.

2                   MR. RANKIN: Mr. Hearing Officer, thank you  
3 very much.

4 BY MR. RANKIN:

5                   Q. Mr. West, in terms of the proposed CO2  
6 injection, has anyone from Empire, to your knowledge,  
7 met with OCD to discuss Empire's proposed CO2 injection  
8 plans to see if CO2 would even be approvable by the  
9 Division in this formation?

10                  A. No need to do that until we get this cleared  
11 up first. But then yes, the intention will be to.

12                  Q. I guess if it's not approvable by OCD, then  
13 maybe it's not an issue. Agree?

14                  A. Say that again.

15                  Q. If the CO2 injection is not approvable by  
16 OCD, given the conditions in the formation, then maybe  
17 it's not even an issue. Agree?

18                  A. Well, it would take a lot of work to make  
19 that determination and probably gathering core and  
20 different pieces of data that we do not have at  
21 present time.

22                  Q. Well, I'm asking about the CO2 containment.  
23 You haven't discussed anything with any agency about  
24 whether or not there's sufficient containment by the  
25 formation to determine if CO2 injection is approvable

1 in this zone, correct?

2 A. There's a long process and there's a lot of  
3 data that you better bring to the table, and some of  
4 that we do not have now. So we do not have all the  
5 data to make that proposal to them yet.

6 Q. So the answer is you haven't met with OCD to  
7 discuss whether it would be approvable, correct?

8 A. That is correct.

9 Q. Now, are you aware that there's a history of  
10 fluid communication between the Grayburg and the  
11 overlying Penrose and Queen Formation?

12 MS. HARDY: Objection. States facts not in  
13 evidence.

14 HEARING OFFICER HARWOOD: You might have to  
15 lay more foundation for that.

16 MR. RANKIN: Sure, Mr. Examiner. I'll bring  
17 up what I'm going to mark as Goodnight Cross Exhibit  
18 Number 24. As soon as I get my screen-sharing, I'll  
19 pull that up so everybody can see it.

20 Mr. Hearing Officer, this is a  
21 prehearing statement in Case Number 12320 before the  
22 Oil Conservation -- I believe it's before the  
23 Division. And this is regarding an application by  
24 Chevron for the approval of additional waterflood  
25 injection wells in the EMSU. I'm going to move this

1 prehearing statement and its attachment as Goodnight  
2 Cross Exhibit Number 24. And I'll share it with  
3 Ms. Hardy.

4 MS. HARDY: I object. I think a prehearing  
5 statement is an argument filed by a party. It is not  
6 any sort of evidence submitted in a case.

7 HEARING OFFICER HARWOOD: I'm not hearing  
8 what it's being offered to prove, I mean, so --

9 MR. MOANDER: Mr. Hearing Officer, I'd like  
10 to point out that pleadings are generally admissible  
11 in most proceedings because they've been filed as a  
12 matter of record.

13 MS. HARDY: Well, I'm not sure this is  
14 Mr. Moander's exhibit. I don't believe it is. So I  
15 think that the Commission can take administrative  
16 notice of pleadings, but it's certainly not evidence.  
17 And it wasn't evidence in the case in which it was  
18 filed either.

19 HEARING OFFICER HARWOOD: What's the purpose  
20 for offering this?

21 MR. RANKIN: Mr. Hearing Officer, I  
22 appreciate the question. I'm happy to pull up the  
23 evidence from the record. I thought this was a  
24 shortcut, but I can actually -- I'm happy to present  
25 the evidence what Mr. Doyle Hartman presented showing

1     that there was communication up in the Penrose from  
2     waterflood injection in the EMSU. And I'm happy to  
3     bring that up.

4             My simple point here I wanted to make  
5     was that an overlying operator of wells made the  
6     claim at the time that there was fluid communication  
7     from the EMSU into the shallower gas producing wells  
8     as a result of the waterflood injection.

9             And I'm happy to do it, I can do into  
10    the OCD records and pull up the data that shows where  
11    wells that previously had not been producing water  
12    that are gas producing wells started producing water  
13    following the waterflood injection.

14            HEARING OFFICER HARWOOD: I'm going to take  
15    that statement as an offer of proof as to this  
16    potential exhibit. But my understanding is you had a  
17    pending question with this witness about the  
18    communication between the Grayburg and the Penrose, I  
19    believe, above it.

20            MR. RANKIN: My question was whether he was  
21    aware that there was a history of fluid communication  
22    issues between the Grayburg and Penrose.

23            HEARING OFFICER HARWOOD: So my  
24    understanding is you're going to try to use this  
25    document to establish the foundation for that and see

1 if the witness has a better answer.

2 MR. RANKIN: That's my intent, Mr. Hearing  
3 Officer.

4 HEARING OFFICER HARWOOD: I'll let you make  
5 that effort.

6 BY MR. RANKIN:

7 Q. So, Mr. West, this is a prehearing statement  
8 that was filed in this case by Mr. Doyle Hartman.  
9 He's an operator of oil and gas wells and shallower  
10 formation at the time and made a complaint and  
11 objected to Chevron's application for additional  
12 waterflood injection wells.

13 And according to his prehearing  
14 statement, Mr. Hartman states that he's experiencing  
15 significant produced water in his Eumont gas wells  
16 within the boundaries of Chevron's waterflood.

17 As a senior VP of operations in the  
18 EMSU, have you been aware of any issues about fluid  
19 communication between the shallower formations in the  
20 EMSU?

21 A. I've never seen this document before.

22 Q. That's not my question. My question is,  
23 have you been aware, as a senior vice president of  
24 operations of Empire for the EMSU, of fluid  
25 communications between the Penrose and Queen and the



1 Grayburg in the EMSU?

2 A. I know that the Penrose, a lot was the, if I  
3 believe right, the gas cap piece of the reservoir.  
4 And that's kind of always been in that unit  
5 documentation.

6 Q. So I don't think that answered my question.  
7 Are you aware of a history of fluid communication  
8 between the Queen and Penrose and the Grayburg in the  
9 EMSU?

10 A. I mean, you know, if it's the gas, gas is a  
11 fluid, so that would be -- you know, that's part of  
12 the gas cap. Then that's...

13 Q. Are you aware that there's fluid  
14 communication between the Penrose and the Grayburg?  
15 Yes or no.

16 MS. HARDY: Objection. I think there's not  
17 been sufficient evidence to establish that there's  
18 migration between --

19 MR. RANKIN: I'm asking if he's aware of it,  
20 and he can say yes or no, "I am aware" or "not  
21 aware."

22 HEARING OFFICER HARWOOD: All right. I'm  
23 going to construe that has a hypothetical, because I  
24 don't see this statement, Hartman's statement of the  
25 case on the screen as establishing a foundation for

1       that.

2               MR. RANKIN:   Okay.

3               HEARING OFFICER HARWOOD:   So we'll treat  
4       your question as a hypothetical.  There hasn't been a  
5       straight answer to it, so it is a yes or no question.

6               A.  Can you repeat the question?

7               Q.  Sure.  Are you aware of a history of fluid  
8       communication between the Penrose and Queen formations  
9       and the Grayburg in the EMSU?

10              A.  You know, gas is a fluid and it's being  
11       considered as part of the gas cap.  Am I aware of what  
12       the pieces of this case of -- this case, I've never  
13       seen that part before, no.

14              Q.  So are you telling me that because gas is a  
15       fluid and you have gas in both the Penrose and  
16       Grayburg, that there is communication between those  
17       formations?

18              A.  Yes.  I mean, you know, gas is a fluid.

19              MR. RANKIN:  No need to move to admit that  
20       exhibit, Mr. Hearing Officer.

21              HEARING OFFICER HARWOOD:  I'm sorry, what  
22       was that?

23              MR. RANKIN:  No need to move to admit that  
24       exhibit, Mr. Hearing Officer.  Thank you.

25              HEARING OFFICER HARWOOD:  All right.  It's

1 withdrawn, then.

2 MR. RANKIN: Thank you.

3 BY MR. RANKIN:

4 Q. Mr. West, are you also aware of the issue  
5 presented at the EMSU unitization hearing regarding  
6 122 wells that were drilled in the '30s and '40s with  
7 open hole completion that had commingled production  
8 between both the Penrose and the Grayburg within the  
9 EMSU?

10 A. I can't say I reviewed all those wells  
11 from -- restate your question.

12 Q. Sure. I'll start over okay. This is  
13 Goodnight's Exhibit B-49 from Mr. McGuire's testimony.  
14 And it shows a map of the EMSU and identifies 122  
15 wells that are commingled between the Penrose and  
16 Grayburg. And it was presented at the unitization  
17 hearing. Are you familiar with this map?

18 A. I'm not familiar with it, but it looks like  
19 the unit and what was in it.

20 Q. Are you familiar with the fact that there  
21 are these wells that had commingled production between  
22 the Penrose and Grayburg?

23 A. If I remember correctly, on the unit  
24 agreement, isn't it -- doesn't it extend 100 feet  
25 above the Grayburg to address a lot of these issues?

1           Q. Partially. But some of these wells are  
2 completed in the Eumont gas pool.

3           A. I don't see documentation that says that it  
4 is or not on this. I don't...

5           Q. So you're not aware about the issues that  
6 these wells were completed in the Eumont gas pool and  
7 they were also completed down into the Grayburg?  
8 You're not aware of that?

9           MS. HARDY: Objection. I don't see that  
10 this exhibit necessarily shows that. I mean, it --

11           MR. RANKIN: It does. It's says -- the  
12 title says, "Completions Overlapping Eumont and  
13 Eunice - Monument Oil Pools." So there's two  
14 different pools and these wells are commingled in  
15 both those pools.

16           HEARING OFFICER HARWOOD: Does that resolve  
17 your objection, or not?

18           MS. HARDY: Well, I can't tell if the wells  
19 are commingled. I understand the map is showing two  
20 overlapping fields, but I'm not sure that's the same  
21 thing.

22           MR. RANKIN: Mr. Hearing Officer, if I may  
23 respond.

24           HEARING OFFICER HARWOOD: Go ahead. I  
25 frankly don't have the technical expertise to

1 evaluate the merits of the objection.

2 MR. RANKIN: Sure. What this map is  
3 showing, it says that there are completions. Okay?  
4 Which means that the wells are completed and that  
5 perforations in the casing allow them to communicate  
6 with the formation. And what it's saying here, is  
7 that there are completions in two different pools;  
8 one in the Eumont gas pool and the other in the  
9 Eunice pool. So there are two different pools.

10 And the point of this exhibit, which was  
11 discussed extensively in the unitization hearing, is  
12 that these wells are commingled between not just  
13 wells intended to be unitized, but also shallow -- a  
14 shallow gas pool.

15 HEARING OFFICER HARWOOD: Okay. I'll  
16 overrule the objection.

17 BY MR. RANKIN:

18 Q. My question, Mr. West, is simply whether  
19 you're aware of this issue. Number one, are you aware  
20 of it?

21 A. This was -- I'm still unclear of the way  
22 this is, that I don't necessarily say that it says  
23 that it's commingled into it. And I don't know what  
24 they did from the 1930s to the unitization to each one  
25 of those wellbores to -- you know, to form the unit,

1 if they put plugs in them or not.

2 Q. I understand. That's my question, just  
3 whether you're aware of it, whether you have knowledge  
4 about these wells, whether they have been addressed or  
5 not. And you're telling me that you're not aware,  
6 correct?

7 A. This is an old document. If I'm aware of  
8 your document that you put in front of me now, that's  
9 about it.

10 Q. And so you don't know whether these wells  
11 have been remediated to correct -- assuming they are  
12 completed in two different pools, you don't know, as  
13 you sit here today, whether those wells have been  
14 remediated so that they're no longer commingled in  
15 those different zones, correct?

16 A. I would assume that in the formation, the  
17 unit has agreements that they worked on the wells to  
18 be the different -- you know, so one's in the unit,  
19 one's in the bowls to remedy that. I would assume  
20 that they remedied that.

21 Q. That's just an assumption, correct?

22 A. Correct.

23 Q. Mr. West, this is Exhibit B-6.1 from  
24 Goodnight's direct testimony, Mr. McGuire's direct  
25 testimony. And it's also from the unitization

1 documents. Have you ever seen this exhibit before?

2 A. Yes.

3 Q. Do you agree with me this is basically a  
4 cartoon characterization of the generalized  
5 cross-section of the EMSU? Correct?

6 A. A generalized tract section, right.

7 Q. What you're describing to me is that the  
8 unitized interval is defined as minus 100 feet subsea,  
9 which in some areas captures the Grayburg and some  
10 areas goes above the Grayburg, correct?

11 A. And this is what this diagram shows?

12 Q. Is that not the case in reality? Does the  
13 minus 100 feet not go above the Grayburg in some  
14 portions of the unit?

15 A. I'd have to look at -- you know, this, I'd  
16 have to look at the maps to determine that. I don't  
17 know that off the top of my head. You're going to  
18 have to show me.

19 Q. Very well.

20 A. Like you said, this is a cartoon.

21 Q. So, Mr. West, this is Goodnight  
22 Exhibit F-26. And do you recognize this document,  
23 which is the basis for your 250-foot subsea formation  
24 pressure? Correct?

25 A. Could you scroll up to the stop so I can

1 see?

2 Q. Well, it's an excerpt from that document,  
3 correct?

4 A. I don't know. I guess I don't know which  
5 document you pulled it out of.

6 Q. This is from Mr. McGuire's Exhibit F-6. And  
7 these are the cross-sections that were presented at  
8 the EMSU unit hearing. This is Figure 98. Do you see  
9 that?

10 A. Figure 98, on the bottom left?

11 Q. When I scroll through, there's a series of  
12 these cross-sections in each one of the different  
13 figures from the EMSU unitization hearing. Okay? And  
14 it shows that you have the top of the Queen is the  
15 black, the top of the Penrose is the green, and the  
16 top of the Grayburg is the red. Do you see that?

17 A. Okay. Yeah, I see that's what the diagram  
18 is depicting.

19 Q. So Figure 100 from the EMSU unit hearing, it  
20 shows that minus 100 subsea in some places is below  
21 the Grayburg, in some places it is above the Grayburg,  
22 especially when you get off the structure to the west  
23 and southwest. Do you see that?

24 A. Yes. Just looking at the directions. Okay?  
25 Looks like it's an east/west line.



1           Q. So as you go to the west, you get off  
2 structure, the minus 100 subsea goes -- or rather,  
3 above the Grayburg. Do you see that?

4           A. Yes, I see that.

5           Q. So, as you explained to me, the reason they  
6 did that was in order to ensure that they could  
7 capture production from the Penrose, correct?

8           MS. HARDY: Mr. Examiner, I'm going to  
9 object to this entire line of questioning. I don't  
10 think it's relevant to the issues that are before the  
11 Commission. We're not here on a unitization  
12 application filed by Empire. This is taking us far,  
13 far afield, and we've already taken a very long time.

14          HEARING OFFICER HARWOOD: Where are you  
15 going with this?

16          MR. RANKIN: Mr. Hearing Officer, Mr. West  
17 testified that there's communication, gas  
18 communication, fluid communication, between the  
19 Penrose and the Grayburg.

20                 And I'm establishing here that within  
21 the EMSU and the boundaries, there's no barrier  
22 between the Grayburg and the Penrose.

23          MS. HARDY: I don't think he did testify to  
24 that. I think Mr. Rankin has attempted to establish  
25 that. It's not at issue anyway.

1 HEARING OFFICER HARWOOD: Okay. What is the  
2 relevance, even if he --

3 MR. RANKIN: Well, my point --

4 HEARING OFFICER HARWOOD: I think what he  
5 said is that if you consider gas as a fluid, then  
6 there's going to be an occasion between the two --

7 MR. RANKIN: Right.

8 HEARING OFFICER HARWOOD: -- in answer to  
9 your question. Assuming that's true, what is the  
10 relevancy?

11 MR. RANKIN: The relevance here, Mr. Hearing  
12 Examiner, is that when Empire seeks to inject CO2 into  
13 the EMSU, there's no containment within the EMSU to  
14 hold that CO2 in place. And it's an issue that cannot  
15 be resolved by engineering or any type of operational  
16 approach.

17 And my point here is to establish on the  
18 record that there's no basis for them to inject into  
19 the EMSU because there's no way that they're going to  
20 be able to contain that CO2.

21 HEARING OFFICER HARWOOD: Response.

22 MS. HARDY: Yes. We are not here on a  
23 unitization application. And I can pull up the  
24 orders from the Commission on the original  
25 unitization application, which did refer to tertiary

1 recovery. So it has been contemplated and it has  
2 been discussed.

3 And regardless, I think it's not  
4 relevant. I think Goodnight is trying to turn this  
5 into a case about unitization by Empire on tertiary  
6 recovery, and that's not why we're here.

7 MR. RANKIN: One response, Mr. Hearing  
8 Examiner, and I want to make this point very clear,  
9 that Empire has said throughout this hearing that the  
10 only way to move the ROZ oil in the San Andres is to  
11 use CO2, that's the only way to recover that oil. So  
12 it's absolutely at the heart of this case.

13 If it's impossible for them to get  
14 approval for CO2 injection because there's no way to  
15 contain the CO2, which is a gas, in the EMSU, then  
16 it's very critical to this case.

17 HEARING OFFICER HARWOOD: All right. Well,  
18 I'm going to rule in favor of Empire on this issue.  
19 You still have your entire case to put on,  
20 Mr. Rankin. You can establish that with your  
21 witnesses.

22 MR. RANKIN: Mr. Examiner, because this is  
23 Empire's last witness, and a critical one, I might  
24 ask just for three minutes to confer with my clients  
25 to make sure I have no further questions.

1 HEARING OFFICER HARWOOD: Totally.

2 MR. RANKIN: Thank you.

3 HEARING OFFICER HARWOOD: We'll come back at  
4 4:15.

5 MR. RANKIN: Thank you.

6 (Recess held from 4:10 to 4:15 p.m.)

7 HEARING OFFICER HARWOOD: Go ahead.

8 MR. RANKIN: Thank you, Mr. Hearing Officer.  
9 After having a chance to confer, I have no further  
10 questions at this time for Mr. West.

11 I appreciate the testimony, Mr. West.

12 And thank you, Mr. Hearing Officer.

13 THE COURT: Thank you, Mr. Rankin.

14 All right. Mr. Moander.

15 MR. MOANDER: Yes. I have a relatively  
16 short cross-examination, recognizing that's coming  
17 from a lawyer. But I'll go ahead and get started  
18 here.

19 CROSS-EXAMINATION

20 BY MR. MOANDER:

21 Q. So just to confirm, you're senior vice  
22 president of operations at Empire; is that right?

23 A. That's correct.

24 Q. And you were presented here today, if my  
25 notes are correct, as a petroleum engineer with, we'll

1 call it, maybe specialization in production and  
2 operations, right?

3 A. Yes, sir.

4 Q. Your attorneys in this case filed your  
5 direct testimony in this case. And I'll represent  
6 that was about August 26th, 2024. Does that sound  
7 about right?

8 A. That sounds about the right time frame.

9 Q. And then after that, you were called to a  
10 deposition on December 3rd and 4th of 2024, correct?

11 A. Yes, sir.

12 Q. And I asked you some questions that day,  
13 right?

14 A. Yes, sir.

15 Q. We're going to walk through this a little  
16 bit, because I just want to firm up what was  
17 discussed. So at that deposition you were sworn under  
18 oath to tell the truth, correct?

19 A. Yes, sir.

20 Q. During that deposition, I asked you some  
21 questions about Empire's anticipated plans for  
22 development of the ROZ that forms the core of this  
23 case, correct?

24 A. Yes, sir.

25 Q. And one of the questions I asked about that

1 anticipated development plan for the ROZ was whether  
2 or not Empire had factored in Safe Drinking Water Act;  
3 is that right?

4 A. Yes, sir.

5 Q. And when I made inquiry of you about that,  
6 what you testified to was that Empire would handle  
7 that issue through surface casing depths and surface  
8 casing settings and proper isolation through concrete.  
9 Does that sound right to you?

10 A. Correct for wells, yes.

11 Q. And that's what we're focusing on here, is  
12 the wells. Would you agree with that, as well?

13 A. Yes, sir.

14 Q. All right. And then we had a discussion, as  
15 well. I asked you about whether or not Empire's  
16 anticipated ROZ development plans addressed migration  
17 from the San Andres to the Hobbs Channel to the  
18 Capitan Reef, right?

19 A. Correct.

20 Q. And when I inquired about that, you referred  
21 me to Empire's expert, Robert Lindsay?

22 A. Correct.

23 Q. But prior to that, I asked you whether the  
24 anticipated ROZ development plan referenced the Hobbs  
25 Channel in and of itself; do you recall that?

1           A. I lost you in the question. Can you repeat  
2 it, please?

3           Q. I can repeat that. Verbosity is a problem  
4 with these things.

5                   At the time that you were deposed, did  
6 the anticipated ROZ development plan incorporate or  
7 factor in the Hobbs Channel?

8           A. Since that time, I believe we had the  
9 discussion that we would be working on the full plan  
10 of the ROZ. We did not have the full development plan  
11 put together yet.

12           Q. And so at that time, you did not, in fact,  
13 address the Hobbs Channel in the anticipated ROZ  
14 development plan, right?

15           A. Correct. But we would anticipate -- take  
16 all factors in.

17           Q. One last question, though, about the  
18 San Andres to Hobbs Channel to Capitan Reef. Aside  
19 from referring me to Dr. Lindsay, I inquired whether  
20 or not the plan at the time had incorporated that  
21 concern. And do you recall your testimony in response  
22 to that?

23           A. I can't say I remember it word for word.

24           Q. Fair. I'll read this back to you. You  
25 said: Into this plan right now in its current state,

1 no, we don't have that.

2 Do you have a reason to dispute that?

3 A. It's because we just hadn't developed the  
4 plan.

5 Q. Subsequent to your deposition rebuttal  
6 testimony was filed on your behalf and all other  
7 witnesses on or about February 10th of 2025. Do you  
8 have a reason to dispute that?

9 A. No. Sounds about right.

10 Q. Have you had a chance to review that  
11 rebuttal testimony in anticipation of today?

12 A. I've reviewed a bunch of testimony, so yeah.

13 Q. Is that a yes?

14 A. Yes. It was part of it that I reviewed, but  
15 there's been a lot.

16 Q. Would you agree with me there was  
17 approximately a two-month gap between your deposition  
18 and filing of that rebuttal testimony?

19 A. Yeah. It was what, December? So yes.

20 Q. Approximately?

21 A. Yeah, right. Dates blend together in my  
22 brain.

23 Q. It's okay to use your fingers.

24 Would you agree with me, then, that your  
25 rebuttal testimony does not address the Safe Drinking



1 Water Act?

2 A. We didn't put anything else in there to  
3 address that.

4 Q. Would you agree with me that your rebuttal  
5 testimony didn't address the topic of just the Hobbs  
6 Channel?

7 A. That is correct.

8 Q. And would also agree with me that your  
9 rebuttal testimony didn't address migration from the  
10 San Andres to the Hobbs Channel to the Capitan Reef?

11 A. That is correct.

12 MR. MOANDER: I'll pass the witness,  
13 Mr. Hearing Officer.

14 HEARING OFFICER HARWOOD: Rice?

15 MR. BECK: No question.

16 HEARING OFFICER HARWOOD: Mr. Suazo, for  
17 Pilot?

18 MR. SUAZO: No questions.

19 HEARING OFFICER HARWOOD: Okay. So this  
20 would normally be the point when we would turn this  
21 over to the Commission. Mr. Rozatos, let me bring  
22 you into the discussion on that.

23 It's 4:22 p.m. To me, that seems a  
24 little early to quit, on one hand. On the other  
25 hand, I want the Commission to be fresh and ready for

1 its questioning. What are your thoughts and what is  
2 the Commission's preference?

3 CHAIR ROZATOS: Ironically, Dr. Ampomah is  
4 smiling, so, to me, it is a little early, but I do  
5 want the commissioners to be able to have their  
6 questions answered. I don't think Dr. Ampomah is  
7 going to -- no offense, Dr. Ampomah, but I know you  
8 probably have a lot of questions. Mr. Lamkin  
9 probably has a lot of questions, as well. It may  
10 behoove us to you call it here and start fresh with  
11 questions in the morning.

12 Commissioners, how do you feel?

13 COMMISSIONER LAMKIN: I'm fine either way.  
14 It's up to whether or not Dr. Ampomah wants to get  
15 into it.

16 CHAIR ROZATOS: Dr. Ampomah?

17 COMMISSIONER AMPOMAH: Do you have any  
18 questions?

19 COMMISSIONER LAMKIN: I have a few.

20 COMMISSIONER AMPOMAH: Yeah, so he barely do  
21 have a few. Probably he can go through it and then I  
22 can start mine tomorrow morning.

23 CHAIR ROZATOS: Okay. So let's start with  
24 Commissioner Lamkin right at the moment, and then we  
25 can call it. And then Dr. Ampomah can start us in

1 the morning with his set of questions.

2 HEARING OFFICER HARWOOD: Sounds like a  
3 great compromise.

4 EXAMINATION

5 BY COMMISSIONER LAMKIN:

6 Q. Good morning, Mr. West. Thank you for  
7 testimony. I just have a few clarifying questions.

8 The east unit that you guys referenced  
9 in your testimony for the depths into the San Andres,  
10 do you know where that is on trend with the fairways  
11 previously mentioned by Dr. Lindsay?

12 A. Can you clarify?

13 Q. The flow paths of the meteoric water that  
14 were discussed.

15 A. Oh, that big --

16 Q. I think the Artesia Fairway was the fairway  
17 underlying the EMSU. I don't know if you know the  
18 other units that you referenced, that takes you along  
19 the same fairway or not.

20 A. Yes, it would have been on the fairway as  
21 you went up and across. I mean, because the whole  
22 fairway would extend all the way in the Guadalupe  
23 Mountains, all the way up on top of the Central Basin  
24 Platform to the other side.

25 Q. Right. But there were several different

1 flow paths, different fairways in those channels. I  
2 think maybe the San Simon system or something is the  
3 overarching name of the channel system, but there were  
4 several different fairways in the channel system?

5 A. I do vaguely remember the slide. Your  
6 memory is better than mine, I'd have to say. We could  
7 maybe be able to find it and bring it up.

8 Q. Well, I mean, if -- yeah, your answer would  
9 just be interpolating it off the slide, then?

10 A. That's correct. He's way more of a master  
11 of geology than myself.

12 Q. The next question I had was with regard to  
13 the precipitates that have been discussed, the  
14 sulfides in the San Andres water. Can that issue be  
15 mitigated by pretreating the chelating agents?

16 A. You can, you know, try to prevent the barium  
17 scale and different things by different chemicals,  
18 different chemistry. Most of the time you still end  
19 up with a little bit of it. Whenever it wants to form  
20 and bound, it's tough to totally get away from it.

21 We have treated in the field -- I can't  
22 remember the exact chemical makeup to help to try to  
23 prevent the barium sulfate. But it's a tough one,  
24 right? I'd much rather deal with calcium carbonate or  
25 something like that, where you can, you know, dissolve

1 easily.

2 Q. Thank you for that. On the slide that you  
3 guys showed, the radius of influence from the  
4 injection volumes from the Goodnight SWDs, do you know  
5 how you determined what those radii were?

6 A. So we took the perms in there, and that's  
7 your, you know, net interval. And then we took the  
8 porosity, and that one is referenced. And then, you  
9 know, you would take out your 30 percent for your oil  
10 saturation, and then just did a, you know, 50 percent  
11 net to gross.

12 And then, you know, every barrel you put  
13 in, push another barrel. Right? So really, the outer  
14 circle is the influence right, because you pushed  
15 other fluid to there and so it's where it is. So, you  
16 know, this barrel pushes that barrel, so that's the  
17 structure of the way that it was built.

18 Q. So it was more mass balanced than anything  
19 empirically derived?

20 A. Yes.

21 Q. Okay.

22 A. And it's just a simple circle, right, to  
23 make the math easier.

24 Q. Some of those higher vertical permeability  
25 zones that have been discussed between the San Andres

1 and the Grayburg Formation, do you see those as being  
2 potential impediment to establishing a successful  
3 tertiary recovery project?

4 A. I think in the tertiary here, you're going  
5 to have vertical migration be part of it. And  
6 Mr. Melzer had one possible thing that we haven't  
7 looked to and would improve the economics, too, is the  
8 idea of a horizontal injector. So you could lay  
9 underneath a bunch and that would save a lot of cost,  
10 right? So you drill that, you lay it underneath the  
11 reservoir. You let it extend out and let it migrate  
12 up.

13 And I don't think in this field you can  
14 get away from the vertical fractures. It's a part of  
15 it. It's shown up on the core. Mr. Lindsey looked  
16 back at the RR Bell, too. It's got fractures all the  
17 way and down it, vertical fractures.

18 And so, you know, you're just going to  
19 have to engineer it into the factor, right? And I  
20 think one of the great ideas Melzer has, and some  
21 people are doing it, too, you just put it in, let it  
22 soak, it'll go out radially. But then you'll come up  
23 and catch it.

24 And in this reservoir, you've got around  
25 Zone 3 or 4, there's a real reference of a pretty good

1 high perm streak in the Grayburg, and that could be  
2 the top of everything. You could flood Zones 1 and 2  
3 with water, and you could have that as the barrier, so  
4 you migrate things up to that catch. And since those  
5 have been the least swept, those would be where you  
6 would gather a good recovery of oil.

7 Q. So then the potential EOR project would  
8 utilize more of a huff and puff, rather than constant  
9 CO2 injection?

10 A. Not a huff and -- it would be a constant CO2  
11 or a WAG.

12 Q. Well, then how would you create the soaking  
13 period if you were constantly pushing CO2?

14 A. Whenever you push, it's going to soak into  
15 it. So the idea behind the huff and puff is that you  
16 would pump it out into the formation, it would go into  
17 the oil, work on the viscosity or different things.  
18 And that's kind of your -- a little bit of soaking  
19 period, and you're letting it just -- you know, that  
20 pressure, you know, radial pressure, work its way out  
21 to the reservoir, right?

22 And then what you do is you turn it  
23 around after that distributes. Because its got to  
24 push through the rock. And you don't want to, like,  
25 blow back the pressure real quick. So that's kind of

1 the soaking. And then you would allow it to come back  
2 in, and hopefully it moves. You know, the idea behind  
3 it, it'll move that oil, it'll reduce the viscosity  
4 and would have pushed the oil out of the tighter pore  
5 throats into the bigger ones and allow it to come back  
6 into the wellbore.

7 Q. Okay. Let me see if that was -- oh, one  
8 other question I had. On the study that you did for  
9 the abnormally high water production volumes in the  
10 EMSU, was that data -- or I guess were those data  
11 points determined from publicly available data or was  
12 that from internal data supplied from XTO?

13 A. That was -- publicly and historically,  
14 there's a time frame in there where, I can't remember,  
15 where OC records go back to. There's part of it  
16 historically that brings you forward in a lot of  
17 documentation. I can't remember exactly, so it would  
18 be publicly -- data, you know, if you pieced together  
19 all the records, you could piece it together. I can't  
20 remember exactly. It's been so much data that I've  
21 worked through. But it's, you know, representative of  
22 that time.

23 Q. Okay. I think that's the last question that  
24 I have. Thank you.

25 A. Good questions. Thank you, sir.



1                   HEARING OFFICER HARWOOD:   Okay, folks.  
2   We'll give everybody a chance to rest their brains  
3   and their voices.   Until tomorrow morning we'll be  
4   off the record, then, and reconvene promptly at  
5   9 o'clock.

6                               (Proceedings adjourned 4:32 p.m.)  
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AFFIRMATION OF COMPLETION OF TRANSCRIPT

I, Kelli Gallegos, DO HEREBY AFFIRM that on April 10, 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 in this matter and that I have no interest in the final disposition of this matter.

April 28, 2025



Kelli Gallegos

VERITEXT LEGAL SOLUTIONS

500 Fourth Street, NW- Suite 105  
Albuquerque, New Mexico 87102

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[believe - call]

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[called - choosing]

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[chose - communication]

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[communication - context]

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[misstates - need]

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[needs - officer]

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**[picked - precipitates]**

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[reference - requirements]

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[waterflooding - working]

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[workover - zones]

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