STATE OF NEW MEXICO

ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF CONSIDERING:
Case Nos. 23614-17, 23775,
24018-20, 24025, 24123

Docket No.
D-1-GN-24-006094

HEARING

DATE: Friday, April 25, 2025
TIME: 9:03 a.m.
LOCATION: State Of New Mexico Oil Conservation Commission
Pecos Hall, First Floor
Wendell Chino Building
1220 South Saint Francis Drive
Santa Fe, NM 87505
REPORTED BY: Nicole Johns
JOB NO.: 7225931

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Preston McGuire
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Johnathan Markell
Patrick Ryan
Patrick Walker
Carl Chavez
Rachel Chapul
John Waymeyer

I N D E X

WITNESS(ES):	DX	CX	RDX	RCX
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THOMAS TOMASTIK				
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E X H I B I T S

NO.	DESCRIPTION	ID/EVD
Empire:		
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Exhibit 2	Goodnight Fluid-Level Data with Graphic Representation of Data	17/18
Exhibit 3	Kinder Morgan Screening Tool Dimensionless Curve	18/**
Exhibit 4	Water Saturation from the EMSU Working Interest Owners Meeting, 1990	22/23
	(**Exhibit rejected.)	

NO.	DESCRIPTION	ID/EVD
Goodnight:		
Exhibit 1	Slide Number 10	22/23

NO.	DESCRIPTION	ID/EVD
Empire Cross:		
Exhibit 1	Simulation Model Vertical Permeability Spreadsheet	47/47
Exhibit 2	Simulation Model Vertical Permeability Distribution	47/47

E X H I B I T S (Cont'd)

NO.	DESCRIPTION	ID/EVD
Empire Cross:		
Exhibit 3	1959 Pressure Calculation For Eme Number 20	47/47
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Exhibit 10	Goodnight Fluid Level Data, 04/07/2025	47/47
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P R O C E E D I N G S

MR. RAZATOS: Good morning to everybody. Happy Friday. Can you hear me in Pecos Hall?

MS. APODACA: Yes, we hear you.

MR. RAZATOS: Excellent. Thank you.

My name is Gerasimos Razatos. I am the acting director for the Oil Conservation Division, and also the acting chair for the Oil Conservation Commission. Today is Friday April the 25th. This is the continuation of our evidentiary hearing for the consolidated cases by Goodnight Midstream and Empire New Mexico.

The case numbers are case numbers 24123, 23614-17, case number 23775, and case numbers 24018 through 24020, and 24025.

I am remote. Acting Commissioner Lamkin is also on the platform as well, and he is remote just to let everybody know.

So, Mr. Hearing Officer, we transfer it over to you. Just as a reminder, we do have the timeframes for this afternoon to make sure that we finish on time.

THE HEARING EXAMINER: Thank you, Chairman Razatos.

Yes, the timeframes being, I believe, we need to be out of here by 3 p.m. And I have the -- set for 2:45 as a fifteen-minute warning.

MR. RAZATOS: Excellent. Thank you.

THE HEARING EXAMINER: Are we ready in the back there, Sheila?

MS. APODACA: Yes. We are.

THE HEARING EXAMINER: And good morning, Madam Court Reporter. Are you ready to start?

Let's see. I see some --

THE REPORTER: Okay. There.

THE HEARING EXAMINER: There you go.

THE REPORTER: There you go.

THE HEARING EXAMINER: So --

THE REPORTER: Yes.

THE HEARING EXAMINER: All right. Let's go on the record when you're ready.

THE REPORTER: Give me one second. Let me just get one more thing. All right.

THE HEARING EXAMINER: Okay. Thank you.

THE REPORTER: Today -- oh, I'm sorry.

THE HEARING EXAMINER: No, go ahead.

THE REPORTER: Today is April 25, 2025.

The time is 10:03 a.m., and we are on the record.

THE HEARING EXAMINER: 10:03 a.m. wherever you are.

THE REPORTER: Oh, I'm sorry. 9:03 a.m. Mountain Standard Time.

THE HEARING EXAMINER: Okay. Great. All right.

Mr. Rankin, are there any preliminary matters before we get on with the redirect of Dr. Lake?

MR. RANKIN: There are some housekeeping matters that we'll raise after Dr. Lake is redirected, but Dr. Lake has a flight in Albuquerque and we're trying to get him out of here so he can make his flight.

THE HEARING EXAMINER: Well, that'll be up to you, I guess.

MR. RANKIN: Yeah. He will.

THE HEARING EXAMINER: All right. The plan will rest squarely on your shoulders.

MR. RANKIN: Dr. Lake is staring me down right now.

THE HEARING EXAMINER: Dr. Lake, I'll just remind you -- not that I need to, but I'll just remind you, you're under oath.

Mr. Rankin?

MR. RANKIN: Thank you, Mr. Hearing Officer.

REDIRECT EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Dr. Lake, do you recall a question from the Commission yesterday about Dr. Buckwalter's [ph] relative permeability curves that you presented on Slide 8 of your summary slides?

DR. LAKE: Can you show it?

MR. RANKIN: Yeah. Is this your Slide 8 from your summary slides?

DR. LAKE: Yes.

MR. RANKIN: And do you recall questions yesterday from the Commission about the relative permeability curves from Dr. Buckwalter's [ph] model relating to the Grayburg?

DR. LAKE: Yes.

MR. RANKIN: Do you recall that you were asked whether you thought it was possible that Dr. Buckwalter [ph] adjusted or changed the endpoints on his relative permeability curves for his final model fit?

DR. LAKE: When you say "endpoint," do you mean the saturations of the -- of the endpoints on

the relative perm.?

MR. RANKIN: Yeah. And I'm specifically addressing the irreducible water saturation that he set at .35.

DR. LAKE: Yeah. We -- I recall that, yes.

MR. RANKIN: Okay. And you said it was likely. Do you recall that?

DR. LAKE: Yes.

MR. RANKIN: Now, your Slide 8 shows Dr. Buckwalter's [ph] relative permeability curve for the Grayburg used an irreducible water saturation of 35 percent; correct?

DR. LAKE: Yes.

MR. RANKIN: Okay. And I'm going to bring up the slide that Dr. Buckwalter [ph] presented to the Commission as part of his summary testimony that you listened to. Is that correct, Dr. Lake?

DR. LAKE: Yes.

MR. RANKIN: Okay. This is a slide from Dr. Buckwalter's [ph] summary testimony to the Commission showing what his input parameters were for his final model. This is his Slide 10. Do you recall seeing this from Dr. Buckwalter's [ph] presentation?

DR. LAKE: I think so. Yeah.

MR. RANKIN: Now, it shows -- does it show that the irreducible water saturation on his relative permeability curve used in his model simulation was set to 35 percent?

DR. LAKE: Yes.

MR. RANKIN: Okay. And it was also the relative permeability curve that he provided to you; correct?

DR. LAKE: Yes.

MR. RANKIN: Okay. And what does that indicate to you was the goal of the simulation?

DR. LAKE: Well, it's fairly common to adjust parameters on the input of a simulator. I -- I'm going to strike "fairly common." It's inevitable that you adjust parameters to make it match a given target. And so it seems to me that he's loaded too much water into the simulation here, and I think that may be to basically force the simulator to take water from the -- the San Andres formation or somewhere.

MR. RANKIN: And input it where?

DR. LAKE: Into the -- into a simulator, into a Grayburg.

MR. RANKIN: Thank you, Dr. Lake.

Mr. Hearing Officer, I have no further questions for Dr. Lake.

THE REPORTER: I'm sorry. Can someone let my -- my audio into the room? I just noticed that my audio is still in the waiting room, my backup audio. It should say "reporter audio."

MS. APODACA: Can you try to join it again?

THE REPORTER: Yes. I will join with the meeting directly give me one second. I apologize.

THE HEARING EXAMINER: Madam Court Reporter?

THE REPORTER: Yes.

THE HEARING EXAMINER: Let's solve this after we excuse this witness, if you don't mind. He's trying to catch a plane in Albuquerque.

THE REPORTER: Absolutely.

THE HEARING EXAMINER: All right.

Empire, may Dr. Lake be excused?

MS. SHAHEEN: Absolutely.

Thank you, Dr. Lake.

THE HEARING EXAMINER: OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: Dr. Lake, thank you for your time and safe travels.

MS. APODACA: Ms. Johns, I see your audio's on the platform now.

THE REPORTER: Yes, it is -- yes, it is. Sorry. Thank you.

THE HEARING EXAMINER: Okay. So are you ready to proceed, Madam Court Recorder?

THE REPORTER: I am. Thank you.

THE HEARING EXAMINER: All right.

And who is your next witness, Mr. Rankin?

MR. RANKIN: Good morning, Mr. Hearing Officer. Our next witness will be Mr. Tomastik. But we do have some housekeeping matters. I think Ms. Shaheen has some exhibits that you would like to move. And at the pleasure of the Hearing Officer, we can deal with these housekeeping matters now or at a more appropriate time.

THE HEARING EXAMINER: Go ahead, Ms. Shaheen.

MS. SHAHEEN: Thank you, Mr. Hearing Officer. These are papers and slides that were used with the cross-examination of Dr. Lake, the first one being the SPE paper that he relied on. And I can show

that to everyone if they would like.

(Empire Exhibit 1 was marked for identification.)

THE HEARING EXAMINER: Any objection from Goodnight?

MR. RANKIN: No objection.

THE HEARING EXAMINER: OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: Okay. That will be admitted.

(Empire Exhibit 1 was received into evidence.)

MS. SHAHEEN: Thank you. The second thing is the fluid-level data that Goodnight recently provided to Empire, along with the graphic representation of that fluid-level data. That was the slide that was used in our cross-examination of Dr. Lake yesterday.

(Empire Exhibit 2 was marked for identification.)

THE HEARING EXAMINER: I doubt if

you'll object to that, but --

MR. RANKIN: Let me think about it. No objection.

THE HEARING EXAMINER: OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: It will be admitted.

(Empire Exhibit 2 was received into evidence.)

MS. SHAHEEN: Third is the slide of the dimensionless curve that Mr. West used in his testimony, and that illustrates it came from the Kinder Morgan screening tool.

(Empire Exhibit 3 was marked for identification.)

MR. RANKIN: We do have an objection on that, Mr. Hearing Officer. We were not -- we asked repeatedly the source of that curve. We were not told it was the Kinder Morgan screening tool. We asked for them to provide us with the paper, the backup, the data that supported it.

We were never provided any of that information repeatedly. It took us weeks to get them to tell us where it came from, what the basis for it was. We couldn't get any data that substantiated whether it was a main pay zone or an ROZ.

I strenuously object to it being entered into the evidence, because it was part of his direct case, and it was not part of his testimony that he was required to submit back in August of 2024. It took us months to get that information, and only yesterday did we learn that it came from Kinder Morgan.

It's unreasonable, totally unfair. We had no notion of where it came from, and we asked repeatedly.

THE HEARING EXAMINER: Let me ask. Not to put you on the hotspot, Mr. Shandler, but do you think that this exhibit would be useful to the Commission?

MS. SHAHEEN: And I'm happy to respond to Mr. Rankin's statement, because I disagree with his representations of what's --

THE HEARING EXAMINER: Well, why don't you do that, and that'll give Mr. Shandler more information.

MS. SHAHEEN: Mr. West specifically testified that he used the SPE paper that we reviewed yesterday with Dr. Lake for his dimensionless curve, and he also testified that it came from the Kinder Morgan screening tool. So Goodnight has clearly had the SPE paper, because it was produced by Goodnight as a paper that Dr. Lake himself relied on.

MR. RANKIN: To be 100-percent clear, we had the SPE paper. We only learned from this hearing that it was part of the screening tool, and we asked repeatedly where it came from. And we were given that SPE paper, which did not reference, to my knowledge, that it was a Kinder Morgan -- part of the Kinder Morgan screening tool.

MS. SHAHEEN: And I'm happy to respond further if it would be helpful to the Commission.

THE HEARING EXAMINER: Go ahead.

MS. SHAHEEN: Thank you, Mr. Officer. Dr. Lake had the SPE paper and produced it as a document that he relied on. It seems to me that with Dr. Lake's experience that he would have been well aware of where that dimensionless curve came from that was represented in the paper that he produced that he relied on.

THE HEARING EXAMINER: Does the paper

itself referenced the source?

MS. SHAHEEN: That --

THE HEARING EXAMINER: Does the paper itself reference the source?

MS. SHAHEEN: The source of the curve?

THE HEARING EXAMINER: Right. The Kinder Morgan.

MS. SHAHEEN: That, I don't recall.

THE HEARING EXAMINER: Does it?

MR. RANKIN: No. And we've asked. They just tell us. We asked repeatedly.

MS. SHAHEEN: And Mr. West told you in his testimony.

THE HEARING EXAMINER: Okay. Well, I think -- my thoughts on the subject are it sounds to me like an unfair surprise. I mean, the testimony is -- I mean, we can't unring the bell on the testimony, but it sounds to me like it's going to be limited to being a demonstrative exhibit unless Mr. Sandler thinks we really need it.

All right. So the objection is sustained. That one will not be admitted.

MS. SHAHEEN: The final slide is the shot of the initial water saturation from the EMSU working interest owners meeting in 1990.

(Empire Exhibit 4 was marked for identification.)

THE HEARING EXAMINER: Mr. Rankin?

MR. RANKIN: Well, let me address that. I have no -- that's part of the Commission's -- I believe it's part of the Commission's administrative record. I will add that it was also part of Dr. Buckwalter [ph] Slide Number 10.

And at the time Dr. Buckwalter [ph] represented his testimony in slides, I believe that the Hearing Officer made the point that that Slide Number 10 would be part of the record, so I don't know that we need a separate admission of that.

But I do want to also make clear that -- and I discussed this with Ms. Shaheen -- that we would want to make sure -- and I didn't see it separately admitted as an exhibit by Empire -- but I would want to make sure that that Slide Number 10 is part of the record in this case.

(Goodnight Exhibit 1 was marked for identification.)

MR. RANKIN: That does also include that image from the technical committee meeting minutes from -- or working interest owner meeting minutes from 1990.

THE HEARING EXAMINER: Ms. Shaheen?

MS. SHAHEEN: No objection to admission of Dr. Buckwalter's [ph] Slide 10.

THE HEARING EXAMINER: All right. So we'll treat that exchange as a stipulation.

Based on that stipulation, OCD, any objection?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: All right. It will be admitted subject to Empire Exhibit 10 being admitted as well, if it isn't already.

(Empire Exhibit 4 and Goodnight Exhibit 1 were received into evidence.)

MR. RANKIN: Just to be clear for my colleague, because he's keeping track, both would be admitted; correct?

THE HEARING EXAMINER: Yes.

MR. RANKIN: Okay.

Anything else, Ms. Shaheen?

MS. SHAHEEN: That's it for me. Thank you.

MR. WAYMEYER: We do have additional sets of exhibits to admit.

Can you please publish the slides?

Mr. Hearing Officer, you'll recall yesterday that there was quite a fuss over brand new slides, brand new analyses that the commission acknowledged was brand new analysis conducted by Mr. Knights [ph].

Those were the slides where he'd gone in and created new barriers with the blue shading on them, and there were some related exhibits that, again, were brand new analyses. And over Empire's objection, those slides were received in evidence, and we don't fuss with that.

I think Mr. Moander -- and I may be misattributing this -- has cited the goose and gander doctrine as part of these proceedings. And so what we have here -- and I'll go through the same fashion through all of the exhibits the way Mr. Rankin did, and then if the commission wants his response -- the first slide that we'd be offering was used in the testimony of Mr. West [ph].

It just required the correction. The explanation was made where the zeroes were changed to dots. And when the zeroes were changed to dots for

presentation, the decimal just carried over. So this is the corrected 99-grid block out of 34,500-grid block slide.

Additionally, this was used and testified to in the testimony of Mr. McBeth.

If we can go to the next slide.

This slide is also the --

THE HEARING EXAMINER: Hold on just a second, Mr. Waymeyer.

So, Mr. Rankin, make notes of these.

MR. RANKIN: I'm trying, yeah.

THE HEARING EXAMINER: So I appreciate your approach. I'd like to go through all of them, and then we'll go through any objections to all of them. Go ahead, Mr. Waymeyer.

MR. WAYMEYER: Thank you. The second slide, again, this was just the corrected one. This was visited about with Mr. West prior to correction with Mr. McBeth after correction.

This was just showing in graphical display the grid blocks that had the vertical permeability adjustments made to them to clarify the confusion that there was a uniform blanket adjustment to vertical permeability that was made. That was not the case.

If we can have the next slide.

This was the pressure calculation that was testified to in Mr. McBeth's testimony. Again, this EME Number 20, the Rice data came in late. This is just showing that in comparison to the existing Buckwalker [ph] model, using the brand new information on that Rice owl, Dr. Buckwalter's [ph] model would've only been off by 12 PSI.

Again, this was visited about under oath with Mr. McBeth.

Next slide.

This was testimony visited on with Mr. McBeth. This is working the Rice pressure data from surface down. These were -- this is Rice data here.

If we can have the next slide.

Also, Rice data just showing with a diagram to decide where this is in vertical depth. And this is showing the pressure calculation from the EME Number 20 if you work it vertically down. And, again, this was all visited about during Mr. McBeth's testimony.

If we can have the next slide.

The next three slides come from Mr. Scott Birkhead [ph], and this is just showing the

impact of rock facies on oil saturation and water saturations. These were visited about both with Mr. Knights [ph] and with Mr. McBeth.

If we can have the next slide.

This shows the suspicious data that was excluded from the core analyses as part of Mr. Birkhead's [ph] analysis for the reason that they had unreasonable end values. This was visited about with Mr. McBeth and with Mr. Knights [ph].

It also provides the average oil saturations, both on a corrected basis and an uncorrected basis and with suspicious data out and with suspicious data in that Dr. Ampomah had asked about in terms of just show me what the core saturations are.

Next slide.

This is uncorrected core average saturations for Grayburg and San Andres with and without the suspicious, you know, really high end values in versus out. This was, again, material that was inquired about by Dr. Ampomah. This was visited about with Mr. Knights [ph] and Mr. McBeth. I believe it certainly, at least with Mr. McBeth.

And this accords reasonably closely with the information that we got from Mr. McBeth in

response to testimony from Mr. Rankin's questioning.

This was the economic sensitivity graphical display. This was visited about with Mr. McBeth in illustrating his testimony. And then we showed the Grayburg conventional core measurements out of the EMSU 649 and vertical perms.

Next slide.

MR. RANKIN: Sorry. I need to -- can you go back one slide just so I may I'm -- you are moving quickly. I just want to make sure I catch this. So this is slide 16. There was one before this, slide 15?

MS. SHAHEEN: Yeah. These -- the last -- sorry. I'm going the wrong way. I think this is the first of the conventional core measurements. There's four of these slides.

MR. RANKIN: And what would -- okay. And remind me who these were presented to.

MR. WAYMEYER: I know these were visited about with Mr. McBeth. And these are starting to blend together. I just -- with taking these witnesses out of order, I can't say with certainty if it was Mr. Knights [ph] and Mr. McBeth, but certainly Mr. McBeth. I believe we visited on these.

These are conventional core

measurements on the 650, the 653, the 710, and the 649.

Are we to the end of it, Ms. Shaheen?

So, again, one, we were presented with brand new analyses that we'd never seen, had a chance to test, do anything with. All of these slides were visited about in detail with Goodnight's witnesses.

We would move for their admission. I also think it would be very helpful to the Commission in terms of illustrating the verbal testimony. So on this flat testimonial record that'll come back on a transcript, these are necessary to give fairness to the verbal testimony.

And I would also just add with the manner of presentation we have, Empire does not have a rebuttal case here. I think everybody in here would vomit if we had a case in chief, a responsive case, and then a rebuttal case.

So Empire is a bit hamstrung in terms of just the procedure because we can't bring witnesses back behind the Goodnight witnesses. We're not asking to do that. But to the extent that the commission has any concerns about these coming in through Goodnight witnesses, that's largely just the function of us not having a typical rebuttal case.

So that would be our offer. Thank you.

THE HEARING EXAMINER: Okay. Thank you, Mr. Waymeyer. That last point is pretty well taken. You know, it's unusual in my experience at least for there to be before trial all this rebuttal, surrebuttal. I mean, that went back and forth.

But, you know, the fact of the matter is no matter how well you prepare with the witness, they're always going to say something unexpected. And so, you know, this sort of falls within that category. I've got -- by my numbering, I have 14 proposed exhibits.

Mr. Rankin, why don't -- for sake of -- to expedite things, are there any of the 14 -- can we go through those and you tell me if there are any you do not -- give me the list of the ones you don't object to, and then we'll go to the rest.

MR. RANKIN: May I ask accommodation of Ms. Shaheen just to go back to the beginning, and I'll quickly just say -- some of these I can handle very fast; okay --

THE HEARING EXAMINER: Okay. That's great. I'll make check marks and Xs.

MR. RANKIN: All right. So Slide Number 1, no problem with this slide coming in,

Mr. Hearing Officer. We want the Commission to understand what the actual values were in the model in every matter.

I just want to make sure the record is clear whether this slide is representative of all the KV values or is it just a sampling? Because I wasn't 100-percent clear, but I think that this is intended to be representative. And then the next slide shows the distribution of all the KV values.

THE HEARING EXAMINER: Mr. Waymeyer, is that correct?

MR. WAYMEYER: It has all the KV values, so those are two-acre grid blocks across 34,500.

MR. RANKIN: So the first slide shows all the KV values that were used in the model. I have no problem with that.

Second slide, that shows the distribution of those modified KV values across the model grids. I have no problem with that.

This slide here, Mr. Hearing Officer, I have a problem with it only because we were only given certain output files from the model, and we were not given this date.

I understand that the H-20 pressure

survey came in late and if Dr. Buckwalter [ph] had that data at the time he was testifying, he would've likely checked his model to see where it came up. So I don't think I can strongly object to this, because I think it's reasonable, so this is fine to come in.

Okay. This data is -- yeah. Okay. This one is fine. Yeah.

Sorry. The previous slide that you showed, Sharon, was one that we already admitted; correct?

Okay. All right. This next slide here, Slide 5 shows Rice's EME bottom hole pressure survey. I don't have any problem with this. However, there are -- there's additional information on here that didn't relate just to the survey. Somebody inserted some values of chloride. I don't know where that came from.

Is that from the -- was that from the survey report itself? I don't have it in front of me, the actual document. So I don't know if that was inserted or if it came from the document, and that's my problem with this slide.

Otherwise I don't have a problem with it. I just don't know where that insertion box came from and if it is from the survey report itself or

not.

THE HEARING EXAMINER: Mr. Waymeyer, can you clear that up?

MR. WAYMEYER: It's a reasonable value that's representative of the composition of Grayburg water.

MR. RANKIN: I don't know where that came from. There's no foundation for it. If they redact that or take it out, I have no problem with it coming in. I just don't know what that is or where it came from.

MR. WAYMEYER: And by way of reply, there's been plenty of testimony about the TDS and chlorides in Grayburg water as a representative matter. This is certainly in line with the testimony about the composition of that water.

MR. RANKIN: I have no problem with it coming in if it just comes off. I don't know where that came from.

THE HEARING EXAMINER: Well, what witness put in the numbers or these -- what witness put in these additions?

MR. WAYMEYER: Mr. West. And, again, I would be sick to ask to have to bring him back in a rebuttal case to offer something of such pedestrian

value.

MR. RANKIN: If he's -- Mr. Hearing Officer, if I may, he's testified to what Grayburg values are. He's got historical ranges in his testimony already in his direct. I don't see any need to put it in here.

THE HEARING EXAMINER: Well, if he testified to it and it's just written in here and it's consistent with his testimony, that's not enough of an objection.

MR. RANKIN: I just don't know -- that's my point.

THE HEARING EXAMINER: All right. Well, I've marked that as an -- well, I'll rule on it in a minute. For now, it's objected to. Next?

MR. RANKIN: I don't have an objection to this. It appears to be taking OCD data and putting it on a slide, so no objection.

The pressure depletion from EME 20 bottom hole pressure showing calculated pressures with what Empire has represented as the top of the San Andres -- their pick for the top of the San Andres and then an existing slide from Mr. West.

I don't have an -- I understood this served as a demonstrative for Mr. McBeth. I think

it's cumulative, because the data on the left has already been admitted now and the RFT has already been admitted.

So I don't see the purpose. I think this served its purpose for crossing Mr. McBeth, and so I don't see the purpose for his submission. That's an objection.

THE HEARING EXAMINER: Next.

MR. RANKIN: Okay. These were a bunch of slides that -- I think the next series of slides all go to petrophysics. That should have been properly directed to Dr. Davidson. Instead, they attempted to -- I have no problem with them crossing Mr. Knights [ph] or Mr. McBeth on these issues, but they should have been properly directed to Dr. Davidson

And I've seen no -- there's no foundation for it. These were new and created by Dr. Birkhead [ph]. And I understand situation with the sequencing. That said, this should have been directed to Dr. Davidson.

These are petrophysical issues that go to Dr. Davidson's petrophysical analysis, and it should have been properly directed to him to address. Instead they chose to address it to Mr. McBeth and

Mr. Knights [ph] who relied on aspects of Dr. Davidson's analysis. And it was proper for purposes of a demonstrative cross.

But I don't see any basis for admission, because there's been no foundation laid. We don't know exactly how Mr. Birkhead had did it. And, again, it should have been directed to Dr. Davidson.

So this slide and -- Sharon, the next one -- this slide, this slide. Those three slides -- those slides we just addressed all go petrophysics. Don't have the foundation for how they were created, include characterizations of values that don't -- are not substantiated by Empire's own witnesses.

And I believe that they're proper for demonstratives and they were useful for cross -- but I don't see any basis for them to come in and as actual evidence.

THE HEARING EXAMINER: Mr. Waymeyer, some of these -- two of these look familiar to me. The first one -- was the first one used with -- this one, was that used with any witness?

MR. WAYMEYER: Yes. All of these were used. And I just don't want to misrepresent to the

Commission. I know they were used with Mr. Knights [ph] who, again, his testimony wraps its arms around the testimony of Dr. Davidson. And he said he understood these and was familiar with them.

So he could have said, "I have no clue how this would work into my testimony that wraps its arms around Dr. Davidson's for validity." He didn't say that. We talked through it at length. I think two of them were also -- not this first one, but the second two were also visited about with Mr. McBeth.

But the first one -- with Mr. Knights [ph]. He didn't claim ignorance of them, didn't claim he didn't know how they work or what they demonstrate by way of his testimony. And then the second two were also with Mr. McBeth.

THE HEARING EXAMINER: All right. Thank you. Let's move on to the one on -- what I have labeled "Economic Sensitivity." There we go.

MR. RANKIN: Okay. So this slide, I think -- just so I maybe can group them, Sharon, is there another one about economics too after this?

MR. WAYMEYER: No.

MR. RANKIN: Okay. So this one here, so I do have a serious concern about this, because it is Empire's case in chief to demonstrate that there is

an economic basis for their proposal for this ROZ. And this -- Mr. West dedicated two paragraphs to that in his direct testimony and none in his rebuttal; okay?

He did one model run for two different sets of patterns. That was it. And if he wanted to present, as he now feels he should have, a more robust economic analysis with greater sensitivities across a greater range of scenarios, that should have been done in his direct when he filed it in August of 2024.

That was not done. And now they're using cross to try to get that into the record, which is improper. It should have been done in the direct case. We pointed out the failures of the economic model in our rebuttal, and we pointed it out again here and on -- with Mr. McBeth's summary.

And my point about this is that it is not appropriate to try to get in and to bolster their direct case now with this additional exhibit.

THE HEARING EXAMINER: Mr. Waymeyer, was this exhibit used with Dr. West?

MR. WAYMEYER: It was not used with Mr. West; it was used with Mr. McBeth. And may I reply very, very briefly?

THE HEARING EXAMINER: Okay.

MR. WAYMEYER: First, we disagree with the characterization of an economic burden here by way of this commission proceeding for Empire. We vigorously disagree with that.

Secondly, again, you know, this is just a math exercise based on the data that's -- the underlying data that's already there.

Additionally, the Commission will recall it allowed surrebuttals in the middle of this proceeding by Dr. Davidson, by Mr. Knights, and I think Mr. McBeth did a surrebuttal, too. Certainly Preston McGuire did a surrebuttal.

So we've got brand new testimony on economic things that came in three weeks ago and, again, this is not controversial. This is a math exercise. It's incredibly helpful to the Commission.

THE HEARING EXAMINER: Was it testified -- did a witness testify about these numbers?

MR. WAYMEYER: Mr. McBeth did. We went through them with him.

THE HEARING EXAMINER: Okay. All right.

Next?

MR. RANKIN: So this next series of

slides all relate to Grayburg values, core measurements in the Grayburg. So I think as to these, as long as it's clearly marked for each of these that they're Grayburg, no -- I mean these are all in, in what everybody would call Grayburg. Every one of these.

If I go through, I think -- Ms. Shaheen, if you wouldn't mind scrolling forward.

These are all within what everybody would call Grayburg and I think they're all labeled as such.

Is that the last one?

MS. SHAHEEN: Yes.

MR. RANKIN: Okay. Yeah. No objection to these coming in.

THE HEARING EXAMINER: All right. So let's go back to Slide Number 1, 99-grid block. That'll be admitted. Number 2, the vertical permeability distribution slide, that'll be admitted. Number 5, the Rice -- I have Rice EME depletion.

MR. RANKIN: Oh, maybe this one is first, Mr. Hearing Officer, Exhibit Slide 3. Oh, I'm sorry. You're just going over admissions. I apologize for interjecting.

THE HEARING EXAMINER: Right. So okay. I believe you agreed to this one with -- no, you didn't, because of the additions; right?

MR. RANKIN: Right.

THE HEARING EXAMINER: What's the next one? Next slide. Is this the one you agreed to?

MR. RANKIN: Correct.

THE HEARING EXAMINER: That'll be admitted, Rice's EME-20 wellbore diagram.

Then -- okay. And then the last four, the Grayburg core measurements for EMSU 649, 656, 653, and 710.

Okay. Then let's go back to Slide Number 3. The 1959 pressure calculation for EME Number 20. Okay. Now, I recall seeing this being used as a demonstrative exhibit with some witness. Who was this used with?

MR. WAYMEYER: This would've been used with Mr. Knights who, again, his whole testimony wraps itself around Dr. Davidson.

MR. RANKIN: Actually, I believe it was Mr. McBeth, because it was about the model and, and Mr. McBeth testified about the model. I believe this was cross on Mr. McBeth. Not that it makes much of a difference, but this is relating to

Dr. Buckwalter's [ph] model --

THE HEARING EXAMINER: Okay. It'll be admitted over your noted objection, Mr. Rankin.

Next slide.

And this is -- my understanding is you object to this because it has the written-in comments that weren't on the original?

MR. RANKIN: Correct. I don't mind the calculations that were done, but I don't know a basis or foundation for that and if it's merely meant to be representative of Mr. West's testimony, which is already in the record and is more accurate, because it includes the range of historical values. And I don't see the purpose of this, and I can't verify as I sit here right now.

THE HEARING EXAMINER: Okay. Well, at best -- your objection is cumulative of what the witness said, so that goes to the -- this slide will be admitted.

Next.

Okay. This one was admitted.

Next.

And my understanding is you object to this one as well, Mr. Rankin, basically because it's cumulative of other exhibits?

MR. RANKIN: That's correct.

THE HEARING EXAMINER: All right. It'll be admitted over that objection.

Then the next three are the rock facies, and -- all right. So I'm sorry. Refresh my recollection on why you object to this.

MR. RANKIN: Sure. These were directed -- these are petrophysical issues. I have no problem with Mr. Waymeyer crossing Goodnight's witnesses who did not prepare the petrophysical analysis on this for their basis for relying on Dr. Davidson and probing them on that.

However, I don't have the foundation for the creation of these documents, and I do think it was more appropriate -- should have been at least directed to Dr. Davidson. If he was challenging the basis for the petrophysics, these should have been directed at least to Dr. Davidson to establish on a petrophysical basis what they mean.

Instead, he used them against a geologist and a reservoir engineer. And my point is, like, if he wants to establish the validity and reliability of these as representative of -- geologics analysis or whether they're even reasonable, it should have been directed to a petrophysical expert.

Instead, he avoided that and used them against other folks who don't have that expertise. Now, it's fair to use them for cross. I have no problem with that. But my point is simply that it's not a basis for laying a foundation for admission, and for that reason it should be not admitted.

THE HEARING EXAMINER: Okay. And I take it that objection goes to all three of those sides?

MR. RANKIN: Yeah.

THE HEARING EXAMINER: Let me have a brief response from you, Mr. Waymeyer.

MR. WAYMEYER: Again, Mr. Knights and Mr. McBeth testified to their understanding of the information communicated. None of them said: "We don't understand it. We disagree with it." There was none of that. They testified at length about it and identified no inaccuracy in it.

And, again, we don't have a rebuttal case. If he wants these super formalities, we just don't have that format here. And to Mr. Moander's goose and gander these are appropriate under what happened yesterday.

THE HEARING EXAMINER: Okay. Well, you know, the criticism that these were used with the

wrong witness, you know, you can certainly make that argument, Mr. Rankin. I think that that goes to the weight and not the admissibility of these exhibits.

And, you know, you can make the argument that the Commission should disregard them because they were brought up with the wrong witness.

I'm going to admit those three exhibits. That takes us to the last objected one, the economic certificate slide.

Okay. And -- all right. And, again, this was, this was used with at least one of the witnesses in the case, and so there's testimony about all this information that's in the slide, is three not, Mr. Rankin.

MR. RANKIN: Well, I think I'd have to go back and review exactly what Mr. McBeth said. I think he said he didn't know, hadn't seen these, so he had to run the model. So he doesn't know -- he can't represent the veracity or validity of these numbers, is my recollection.

He was asked about them. He was queried on them. I do believe he said he didn't know. because he didn't have the model. These were -- my point, again, is that they're attempting to back in information and testimony that they failed to put in

on a direct case. And that's my point about this, and it's improper.

And if -- you know, Mr. McBeth addressed the, the in his rebuttal and there was no discussion up until this cross exhibit from them about the need or desire to put anything else in the record, and so they're trying to back this in at the last minute to bolster their economic case, and I think that's inappropriate.

THE HEARING EXAMINER: So this was used as a demonstrative exhibit with Mr. McBeth; is that right?

MR. WAYMEYER: Yes. You're correct. We went through all of these columns and rows with Mr. McBeth in detail.

THE HEARING EXAMINER: All right. Well, I'm going to give this one to Mr. Rankin. It's cumulative of whatever testimony was elicited from the witness with respect to this. So we won't admit this economic sensitivity. That will be excluded.

MR. WAYMEYER: May I make an alternative motion? I respect the decision. May we alternatively request that this be appended to the record as a demonstrative exhibit, not an exhibit accepted for the accuracy of its context, but a

demonstrative exhibit to assist those reviewing the flat testimonial record?

THE HEARING EXAMINER: Well, you know, that's a very creative motion. I've never heard it before. I've never seen it entertained. I mean, the reason it's a demonstrative exhibit is it's not a part of the record in any way, shape, or form.

I mean, there's a distinction between demonstrative aids and exhibits that have enough of a foundation to be made part of the record. So motion denied. Nice try.

MR. WAYMEYER: Thank you.

(Empire Cross Exhibits 1 through 11 were marked for identification and received into evidence.)

THE HEARING EXAMINER: Anything else? It's 9:47. Do we have any other preliminary matters?

MR. RANKIN: I think we have another matter, but I prefer to bring it up at another time. I think --

MR. WAYMEYER: Well, I think we need to bring it up now. Last night, after all of -- after conferring per the Commission's request and reaching an -- we reached a tentative agreement on time. That was retraded. And after it being retraded, we agreed

to that.

And now, last night, after we all made stipulations on the record in terms of buckets of time to allow this to be concluded on Wednesday with time for Commission questions and time for closing argument, there's yet another attempt to retrade to put more time into the Goodnight bucket.

We object strongly to that. Why we have to retrade -- the stipulations could not have been clearer in terms of the time buckets. And so that's what he's alluding to, and we object to any more time being moved around

THE HEARING EXAMINER: Mr. Rankin --

MR. RANKIN: We can address it. So when we -- it's absolutely correct. We had understood something different than we thought we had reached an agreement on. So when we sent an email over and maybe Mr. Jurgensen can put up the spreadsheet that shows what we thought we intended.

And the bottom line is here, Mr. Hearing Officer, is we are asking for one additional hour so that we can cross most of these witnesses. What we had proposed to counsel in our email exchange was time for Goodnight to do its direct and redirect.

We did not, unfortunately, understand or apprehend that what this was going to do was going to limit our time to actually cross OCD's witness. I made that realization yesterday as I was considering what was sent over.

And I raised the issue with Mr. Waymeyer yesterday. I said: "Hey, Mr. Waymeyer. Considering this is our understanding, is it also your understanding?" He said: "No, it is not. I do not agree." We asked for an additional hour.

And after yesterday, understanding from the hearing officer that we had actually undercalculated the amount of time, even through Wednesday and we had some additional time on Thursday, I didn't think it would be a substantial issue to ask for one additional hour to make sure we had a fair opportunity to cross these witnesses.

So that's where it stands. We just was just asked for an additional hour. Did not adjust in any way or affect Empire's time or any of the other party's time. We just wanted a little more time to make sure we had time to cross OCD's witness.

MR. WAYMEYER: May I respond very briefly?

THE HEARING EXAMINER: Briefly.

MR. WAYMEYER: Yeah. So, again, first and foremost, the Commission needs to be able to ask its questions. Those are the most important questions, and those have been the most focused and relevant questions.

The reason we're in this time crunch is the result of incredibly meandering cross-examinations that looked far more like depositions than a cross-examination. You've seen Empire's cross-examinations have been to the point and tight.

And if we just -- let's just reality check this time that we've got left. He has two witnesses today, Preston McGuire on Monday, which is likely to go into Tuesday. OCD has at least one witness, possibly two.

This is an effort to just -- we agreed to buckets and work within the buckets and allowing sufficient time for commission questions. There's no way we're going to get this done with an opportunity for the closing arguments by monkeying with the time.

THE HEARING EXAMINER: Okay. I'm going to hold you both to the times you specified. What I have here is Empire agreed to a total of 13 and a half hours; Goodnight agreed to a total of seven and a half hours; and one and a half hours cumulative between

OCD, Rice, and Pilot for a total of 22 and a half hours.

I'm going to hold you all to that. There's a reason for it, and we're just going to have to work within those time constraints.

MR. RANKIN: Mr. Hearing Officer, understood. And I just want to make sure Mr. Moander understands that, because I don't think he understood, and I don't think Mr. Waymeyer understood that this agreement was limiting OCD's ability to put on its case, and that that would be the effect of this agreement.

MR. WAYMEYER: And I want to make my position clear. As part of the stipulation, we said that those buckets were plus OCD having reasonable time, so absolutely we do not contend that they were in that bucket. My understanding is that the quote unquote reasonable time they're asking for is 1.25, and of course we have no problem with that.

THE HEARING EXAMINER: Mr. Moander, what I have written down here is the one and a half hours for others, which would be you, Rice, and Pilot.

MR. MOANDER: And from my perspective, in order to get this moving forward, it is highly likely I'm withdrawing one of my witnesses, because I

don't think they are going to do anything for any parties or the Commission. That would leave my primary expert, Mr. Gatz.

I think I've demonstrated I tend to be in and out with witnesses, and my directs are frankly no different. I would anticipate a maximum of an hour on my direct, and I may even be able to shorten that down with quick motions to admit resumes and things like that in order to expedite.

Also, addressing my anticipation on cross, despite the fact the next three Goodnight witnesses have significant things to say to OCD, I would be shocked if I end up taking a total of 90 minutes across all three of them.

I don't intend to spend lots of time, you know, wrestling on nuance and stuff like that. I've got some points I want to get in and score, and that's it. So I will be running I think a tighter ship than anybody thus far. Easy for me to do with one witness.

So I think the bigger concern here is going to be the cross examinations. I'm not clear on what Empire may want to do with Mr. Gatz. My suspicion is it'll be somewhat limited. And then Goodnight will likely want some extensive time with

Mr. Gatz.

And if I were a betting man, which I'm not, Dr. Ampomah is eagerly looking forward to having an in-depth and lengthy discussion with Mr. Gatz.

THE HEARING EXAMINER: Okay. Well, I didn't hear any objection from OCD or the interveners yesterday to the one and a half hours --

MR. MOANDER: No. And I did not object --

THE HEARING EXAMINER: -- to others, so I'm going to hold you to the same agreement. You guys agreed to the timeframes yesterday. Those are going to be the timeframes.

MR. WAYMEYER: Thank you.

THE HEARING EXAMINER: Absent a truly extraordinary or extenuating circumstances, and hopefully there won't be any.

Anything further from the parties?

MR. WAYMEYER: Not from Empire.

MR. RANKIN: Nothing from Goodnight. Thank you.

THE HEARING EXAMINER: All right.

MR. MOANDER: Nothing from OCD either.

THE HEARING EXAMINER: Thank you.

Rice?

MR. BECK: Nothing from Rice.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: Nothing from Rice [sic]. Just to know that any questions that Pilot may ask are going to be pretty limited probably to just one witness and probably no more than five minutes, Mr. Hearing Officer.

THE HEARING EXAMINER: Okay. Thanks for the heads up.

Your next witness, Mr. Rankin?

MR. RANKIN: Thank you, Mr. Hearing Officer. Next witness is Mr. Thomas Tomastik.

THE HEARING EXAMINER: Good morning, Mr. Tomastik.

MR. TOMASTIK: Good morning.

THE HEARING EXAMINER: You know the drill. If you'll raise your right hand, please.

WHEREUPON,

THOMAS TOMASTIK,

called as a witness and having been first duly sworn to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

THE HEARING EXAMINER: All right.

Mr. Rankin?

MR. RANKIN: Thank you, Mr. Hearing

Officer.

EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Mr. Tomastik, will you please state your name for the record.

MR. TOMASTIK: Thomas E. Tomastik.

MR. RANKIN: And by whom are you employed and in what capacity?

MR. TOMASTIK: I'm employed by A-L-L Consulting. I am chief geologist and regulatory specialist.

MR. RANKIN: Have you previously testified before the Commission?

MR. TOMASTIK: Yes. Approximately six to eight times.

MR. RANKIN: And are you familiar with the application filed by Goodnight in these consolidated cases?

MR. TOMASTIK: Yes.

MR. RANKIN: And you're familiar with the applications filed by Empire seeking to revoke Goodnight's existing saltwater disposal wells?

MR. TOMASTIK: Yes.

MR. RANKIN: And is your education and background included as an exhibit to your written

direct testimony?

MR. TOMASTIK: Yes.

MR. RANKIN: And does it outline that you have a background and expertise in Safe Drinking Water Act, underground injection control program, and permitting?

MR. TOMASTIK: Yes.

MR. RANKIN: And regulation of saltwater disposal wells?

MR. TOMASTIK: Yes.

MR. RANKIN: As well as carbon sequestration and groundwater and fluid migration and carbonate systems?

MR. TOMASTIK: Yes.

MR. RANKIN: And you also have expertise in the evaluation of geochemistry issues as it pertains to scaling and corrosion and oil and gas injection operations?

MR. TOMASTIK: Yes.

MR. RANKIN: Have you conducted a study of the history of production and operations at the EMSU?

MR. TOMASTIK: Yes.

MR. RANKIN: And have you conducted a study of the water encroachment from the edge water

around the EMSU and past and current geochemistry in and around the EMSU?

MR. TOMASTIK: Yes.

MR. RANKIN: And are you familiar with scaling issues and treatment in Class 2 injection wells generally?

MR. TOMASTIK: Yes.

MR. RANKIN: And, in fact, were you not previously a regulator of for State of Ohio overseeing Class 2 injection operations?

MR. TOMASTIK: Yes.

MR. RANKIN: Have you also conducted analysis of the history and factors affecting scaling and corrosion in around the EMSU?

MR. TOMASTIK: Yes.

MR. RANKIN: And have you prepared written rebuttal testimony in exhibits that are marked as Exhibit C and Exhibit C1 through C27?

MR. TOMASTIK: Yes.

MR. RANKIN: Were the exhibits prepared by you or compiled under your direction and supervision?

MR. TOMASTIK: Yes.

MR. RANKIN: And any corrections or changes to the testimony exhibits that were filed?

MR. TOMASTIK: No.

MR. RANKIN: Do you adopt the testimony as your -- in your self-affirmed statement and rebuttal statement that are marked as Exhibit C as your sworn testimony today?

MR. TOMASTIK: Yes.

MR. RANKIN: Mr. Hearing Officer, I would tender Mr. Tomastik as an expert witness in petroleum geology, underground injection control permitting of groundwater, and ejection wells; and has been previously qualified as an expert in these fields before the Commission.

THE HEARING EXAMINER: Any objection from Empire?

MS. SHAHEEN: No objection.

THE HEARING EXAMINER: OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: He'll be so recognized.

MR. RANKIN: Mr. Hearing Officer, I would also at this time move the admission into

evidence of Mr. Tomastik's direct testimony and rebuttal testimony and his attached Exhibits C1 through C21.

THE HEARING EXAMINER: Empire?

MS. SHAHEEN: No objection.

THE HEARING EXAMINER: OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: They'll be admitted.

DIRECT EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Mr. Tomastik, have you been present for or did you listen to the summary testimony, the cross examinations, and redirect of the witnesses in this proceeding?

MR. TOMASTIK: Yes.

MR. RANKIN: Did you hear the direct testimony and cross that has been conducted to date of Goodnight's own witnesses as well?

MR. TOMASTIK: Yes.

MR. RANKIN: And did you prepare

summary slides reflecting your up-to-date opinions, including any additional opinions formed as a result of hearing that testimony and cross-examination?

MR. TOMASTIK: Yes.

MR. RANKIN: And did you prepare some slides providing an overview of your testimony and conclusions?

MR. TOMASTIK: Yes.

MR. RANKIN: Mr. Tomastik, I'll go ahead and share my screen. If you would just walk through at a very high level each of these slides so we understand -- I'll direct you as we walk through them -- what your opinions are and how they relate to your testimony.

This first one, just give us an overview of what topics you addressed -- Goodnight asked you to address in your testimony.

MR. TOMASTIK: Yes. It's basically addressing the issues of disagreement, water encroachment, fractures in carbonate rocks, chemistry, corrosion issues, the existence of the ROZ, the allegations that the aids -- San Andres SWDs were in communication with the Capitan Reef, the monitoring wells in the Capitan Reef near the EMSU, well integrity issues, and regulatory concerns and

solutions.

MR. RANKIN: Okay. Next slide here, I think, gets you into the first top topic of discussion, edge water encroachment into the EMSU. Just give us a brief overview of the research you did and the evaluation of the history of this issue in the EMSU.

MR. TOMASTIK: Basically, I researched all the historical publications, both published by the Bureau of Mines and the New Mexico Bureau of Mines and Geologic Survey. There's been documentation since the 1930s of water encroachment into the EMSU.

There's also states that it's both a solution gas drive and a partial water drive. You have Chevron publications from the 1990s and 2000s that continue to show water encroachment from the west, the southwest.

There is very strong evidence that with water encroachment from the Goat Seep aquifer, which is part of the Capitan Reef complex into the Grayburg formation when the Grayburg production created a coat of depression. The fracture systems in the Grayburg and the carbonate rocks do not extend hundreds of feet from in Goodnight's injection wells into the Grayburg.

There's documented evidence of high

water flows in the Penrose Zone 1 that Chevron documented. There is no real evidence showing plumes of water coming up from the San Andres, and there's no communication for hundreds of feet through those formations.

Additionally, there's historic publication documentation of wells being drilled deeper into the San Andres in the 1930s. One document indicates at least 500 feet into the San Andres.

MR. RANKIN: Before I leave this slide, Mr. Tomastik, real quick. On the third-to-last slide, we talk about Chevron documented high-water flows. Explain to me the significance of that finding and how it relates to concerns about -- regulatory concerns about containment of any ROZ project in the Grayburg and also potential additional source of water in the EMSU.

MR. TOMASTIK: Yes. The EMSU Number 139 was one of the ones that was on the bubble map Mr. West presented with over a million barrels of water produced, and I was able to find sundry notice that indicated that Chevron had shown that the water influx was coming through the Penrose Zone 1, which is indicative of water migration higher up and no confinement.

That actually goes back through 2000 Chevron order that was asked for for the pressure increase. That was objected to due to alleged migration of water flood fluid moving off location and into the shallower reservoir.

MR. RANKIN: What does this next slide show and how does it relate to your analysis about the encroachment of edge water into the EMSU?

MR. TOMASTIK: This was a rebuttal exhibit from Mr. West, N18, and what I've highlighted is -- is it shows both actually from Mr. -- or Dr. Lindsay's [ph] testimony exhibit that there is edge water coming in from the Goat Seep and into the Grayburg reservoir. That's well documented both by those experts.

MR. RANKIN: Explain to us what this next slide shows, especially pointing out the red arrows and what it relates to in terms of your opinion about vertical migration of fluids.

MR. TOMASTIK: This is an example, and I've done extensive work when I was with the Ohio Department of Natural Resources during groundwater investigations of fractured carbonate rocks.

And what is very evident that I've learned and experienced over my career doing hundreds

of groundwater investigations related to fractured carbonate rocks is fluid migration vertically moves upward, but then hits bedding planes that serve as horizontal barriers to flow.

As you can see in this photograph, the red arrows are pointing to water actually flowing out horizontally from a bedding plane that's actually indicating that it's -- it's a barrier to continued flow upwards.

You can see typically driving on the highway along outcrops if you look at the rocks or the road cuts, you can see water flowing out of the rocks when it's rained or icicles are typically horizontally indicating that that's where the barrier to the flow has stopped.

So it's -- it's -- and Mr. Knight has testified to this that bedding planes serve as a barrier to vertical flow.

MR. RANKIN: And that would include both tight rock, low vertical permeability rock, and also very high permeability rock intervals; is that right?

MR. TOMASTIK: Yes.

MR. RANKIN: Okay. What does this next slide show? And explain what it relates to your

analysis about the potential for containment within the EMSU of an ROZ and potential source of additional water into the EMSU.

MR. TOMASTIK: Yeah. This is -- this is the Chevron sundry notice that I referenced on my slide before of the high water flows from the Penrose Zone 1 in EMSU 139 that was documented in 1988.

Chevron basically said this well was a candidate for a liner due to a high water production from the Penrose Zone 1, and that's one of the wells that was on Mr. West's bubble map that showed water production over a million barrels.

MR. RANKIN: This next slide here, I think we're moving to a new topic. If you would just give the Commission an overview of what you have to say here about geochemistry issues and potential corrosion and scaling issues in the EMSU.

MR. TOMASTIK: So basically the corrosion and scaling issues have been documented in EMSU since 1940s. There -- there's documentation that the Grayburg oil itself is sour oil with sulfur contained in it.

There's chemistry data both from 1966 that shows hydrogen sulfide levels that are fairly high in the Grayburg, which is a well-known corrosive

agent.

There's also been -- with the injection of the 340 million barrels of San Andres water for makeup water for the waterflood has increased the corrosion and scaling issues in the EMSU water flood.

Chevron did extensive chemical analysis of this data in the early 1990s, and they clearly showed variability and chemistry changes not only in chlorides and sulfide concentrations from year to year, so which shows that there's no geochemical fingerprinting constituent that can be used in EMSU, especially not chloride concentrations.

Chevron and XTO had extensive geochemical treatment programs to try to address the scaling issues and the corrosion. Empire has really provided very little detail of any kind of chemical treatment program.

And they provided no physical evidence, photographs, documents showing corrosion of downhole equipment, wellheads, fittings, pipelines, or pumping equipment that allegedly was caused by injection operations by Goodnight.

MR. RANKIN: Mr. Tomastik, before I leave this slide, I want to make sure something is very clear. I'm going to ask you two questions.

It's your understanding based on the representation at the time the waterflood was filed with the commission that the applicant represented to the Commission that the source of waterflood water in the San Andres was, in fact, compatible with the Grayburg formation fluids; is that correct?

MR. TOMASTIK: Yes.

MR. RANKIN: And then subsequently, was it represented in published papers that the San Andres water was known, in fact, to be incompatible with the Grayburg; correct?

MR. TOMASTIK: Yes.

MR. RANKIN: And, in fact, as a result of that incompatibility, what -- did that relate -- did that give rise to the scaling that Chevron encountered during its operations in subsequent --

MR. TOMASTIK: It -- it furthered the -- the corrosion and scaling problem that they were already addressing.

MR. RANKIN: Thank you. This next slide here addresses your overview of the ROZ issue. If you'd just give a brief overview of, in your opinion, what the evidence shows about a potential for an ROZ here.

MR. TOMASTIK: Yep. Basically, XTO drilled several wells in 2005 as an effort to allege it produced the -- the San Andres oil. All three wells swapped uneconomic and not-paying quantities of oil.

Additionally, none of the six water supply wells that Chevron drilled that were swapped and pumped any oil was reported to be from those tests. In fact, no oil has been reported or documented during the withdrawal of at least 340 million barrels of makeup water from the San Andres since the 1980s.

And -- and pumping the San Andres would've been a primary oil production attempt. This is not a greenfield ROZ. It has been produced, and basically very minor, if any, oil was -- was documented being produced.

And the depressurization of the San Andres during that time of dewatering would've had to produce some oil if it was mobile at that point, and there's no indications of any accumulations of economic or paying quantities of oil.

MR. RANKIN: On to the next topic here, Mr. Tomastik. This next slide provides an overview of your analysis and opinions regarding the potential of

communication between Goodnight's disposal zone and the overlying formation and reservoir. Will you please review your determinations as to that topic.

MR. TOMASTIK: Yes. Basically publications by multiple authors clearly shows the San Andres is not in geologic or hydrogeologic communication with Capitan Reef complex.

The eastern section of the reef, based on Lewis Land's recent work shows that concentrations are above 10,000 total dissolved solids, so it's not a underground source of drinking water of USDW.

The existence of the Hobbs channel is seriously in doubt as a geologic feature or a hydrodynamic feature that was first identified by Hiss [ph] based on chloride concentrations that were improperly contoured and then cited in Wilson and Hollands Groundwater Protection Association 1984 publication.

That, again, was based on chlorides. There was no actual groundwater measurements or a potential metric surface mapping to determine sub-surface groundwater flow direction.

And Jones in 2016 basically shows his elimination of the Hobbs channel and the Capitan Reef complex is in communication with the Grayburg and

possibly the Penrose, but not in communication with the San Andres injection zone of Goodnight's wells.

MR. RANKIN: And, in fact, Mr. Tomastik, Empire's experts agree on this point; correct?

MR. TOMASTIK: Yes.

MR. RANKIN: Next slide here relates to your comment about or analysis of the Jones work. Just briefly explain what this shows with respect to the Jones paper in 2016.

MR. TOMASTIK: Yes. This is -- this is from OCD Exhibit Number 19, and this is from the Jones paper. As we can see on the left, there is flow up to the top right towards Hobbs, which is what they were calling the Hobbs channel of Hiss in -- in 1980.

And then Jones altered that after the development of Pecos River Complex and changed that flow direction in -- in the groundwater, basically eliminating the Hobbs channel as a geologic or hydrodynamic feature.

MR. RANKIN: And then this next comment addresses some aspects of OCD's proposal for monitoring. If you would just give us a brief overview of your opinion about what the fluid levels reflect in terms of potential communication with the

San Andres based on the pressures you've evaluated base.

MR. TOMASTIK: Basically, in 1966, the United States Geologic Survey took over and plugged back a number of existing deep oil and gas wells, plugging them back into the Capitan Reef complex to perform fluid-level monitoring.

Basically, they -- they monitored the fluid levels from about 1966 to 1980. Then the monitoring cease. And then they did come back and start monitoring again in 2012 to 2017, but there was no indication that there was communication between the Capitan Leaf complex and Goodnight's San Andres SWDs.

MR. RANKIN: Next slide here, Mr. Tomastik, relates to your assessment of the potential for the EMSU to qualify for CO2 injection based on the existence of the well boards, quality of the wellboards, and whether any of the geology would suffice to seal CO2 in place; correct?

MR. TOMASTIK: Yes.

MR. RANKIN: Just give us a brief overview of your assessment.

MR. TOMASTIK: So, basically, I looked at -- at the regulatory issues, looked at a lot of well files, sundry notices, Chevron's published papers

in 1991, 1996, and 1998.

There's a number of documented casing and liner leaks, cement squeeze jobs, fluid migration to the surface, historic frack jobs, flood backs to shallow reservoirs into the Queen, the Yates.

There's -- and -- and it clearly shows that there's well integrity issues, which I'll just talk about a little bit more on the next slide coming up.

The injection of CO2 becomes a far greater risk to migration into the underground sources of drinking water into the surface with injection of CO2 versus the injection of fluid CO2.

After it reaches a depth of less than 2,600 feet, it goes from super critical fluid to a gas, gas obviously having a greater affinity migrate to the USDWs and to the surface.

And Empire has not identified what confining zones they're going to have to prevent vertical migration of CO2 out of the ROZ that potentially could impact the underground sources of drinking water, which is the primary goal of the underground injection control program.

MR. RANKIN: Next slide here, just give us a brief overview of what this shows relating to

your concerns about potential for well integrity issues across the EMSU.

MR. TOMASTIK: So this is from Chevron, Tracy Love, et al., 1998 SPE paper, and this is us showing some of the conformance focus issues they've had. There's a list of 26 wells on this little chart here.

22 of the wells have showed squeeze jobs, acid communications with other parts of the formation behind pipe, integrity issues, leaks. This -- this is -- becomes a serious concern when you're going from water flooding to CO2 tertiary injection.

The integrity, the fact that CO2 as far -- going to be corrosive, not only to steel pipe, but also to Portland cements, presents a higher risk for loss of integrity confinement into the injection interval.

MR. RANKIN: And, Mr. Tomastik, as it relates to Empire's proposal, whether it's a continuous CO2 injection or a WAG, is there a difference in your opinion about the concerns with the quality of these wells, whether it's WAG or continuous CO2?

MR. TOMASTIK: No.

MR. RANKIN: Give us an overview of your conclusions based on your assessment and evaluation.

MR. TOMASTIK: So, basically, water encroachment is well documented coming from the Goat Seep, the Capitan Reef complex. There's no proof of vertical fracturing communication between the Grayburg and the San Andres SWDs of Goodnight. That would've -- it needed to exceed hundreds of feet of vertical height to reach the Grayburg saltwater disposal zones.

Dr. Lindsay [ph] testified the maximum vertical height he saw in the core was 1 to 3 feet. I've gone back and looked at Dr. Lindsay's [ph] PhD dissertation of his outcrop photos from the Guadalupe Mountains of showing hundreds of feet of Grayburg and San Andres exposure in the rocks.

And there's no evidence of hundreds of feet of vertical fracture extension at the surface where actually fractures are more likely to be open; whereas in the subsurface, fractures tended to be closed or mineralized with a separate mineral as a secondary mineralization.

Corrosion has been historically documented in the MSU. There's been no -- no evidence

provided by Empire that the corrosion of the injection from Goodnight's SWDs has caused any -- any corrosion issues. They provided no documentation or evidence of corrosion.

Their chlorides -- and I've dealt with chloride injection across the United States. Chlorides is not a viable corrosion issue as much as CO2 or microbial bacteria corrosion or hydrogen sulfide corrosion or barium sulfide scale formations.

Additionally, Goodnight treats all of their injection fluids with a very robust treatment system that's documented in my self-affirmed statemen. On the ROZ, we've had no confirmation of paying quantities of oil, even though 340 million barrels of water have been withdrawn and depressurized.

The formation, we would've expected some kind of oil production injection operations by Goodnight in the San Andres, and their injection zone is not in communication with the Capitan Reef complex.

And then it's well documented on the eastern portion of the Capitan Reef that the total dissolved salts exceed 10,000 milligrams per liter, so they're not a USDW.

The well integrity issues in the EMSU are well documented. And if CO2 injection occurs,

they prevent far greater risk to CO2 migrating out of the ROZ injection zone, converting to gas, and potentially contaminating underground sources of drinking water and possibly reaching the surface.

MR. RANKIN: Thank you, Mr. Tomastik.

Mr. Hearing Officer, I have no further questions of Mr. Tomastik and make him available for cross-examination.

THE HEARING EXAMINER: Okay. Thank you, Mr. Rankin. It's almost 10:20 a.m. Let's take our morning break and come back at 10:35.

THE REPORTER: We are off the record at 10:35.

(Off the record.)

THE REPORTER: All right. We are back on -- we are back on the record. The time is -- y'all are an hour behind; right? Yeah. 10:35 a.m.

MS. HARDY: Thank you.

CROSS-EXAMINATION

BY MS. HARDY:

MS. HARDY: Hello, Mr. Tomastik.

MR. TOMASTIK: Hello.

MS. HARDY: I just want to be sure that it's very clear for the record what you are testifying about and what you're background is. You don't have a

degree in any type of engineering; correct?

MR. TOMASTIK: I do not have a degree in engineering, but I've done a lot of petroleum engineering work in my career.

MS. HARDY: Okay. And if you would just answer the question I've asked, I think this will go faster.

You're not licensed as an engineer in any state, are you?

MR. TOMASTIK: No.

MS. HARDY: And you don't have the ability to stamp documents with a professional engineering stamp, do you?

MR. TOMASTIK: No.

MS. HARDY: And you've never been qualified as an expert in petroleum engineering by any tribunal; correct?

MR. TOMASTIK: No.

MS. HARDY: And your work as a petroleum geologist focuses on injection wells; correct?

MR. TOMASTIK: No. I've done geologic work in groundwater investigations, injection wells. I drilled 26 oil and gas wells in the '80s. I converted six wells to Class 2 injection. I've

plumbed up wellheads. So I've done about every aspect of the oil and gas industry in my career.

MS. HARDY: And let me just share, then, your CV that is attached to your testimony. I've looked at the matters that it includes. And I'm looking -- do you see my screen?

MR. TOMASTIK: Yes.

MS. HARDY: Here starting at page 2, you list relevant experience; correct?

MR. TOMASTIK: Yes. That's my last relevant experience in my over ten years with ALL Consulting. My other experience below that has 25 and a half years with the Ohio Department of Natural Resources Division of Oil and Gas and then six years as a consulting geologist drilling and completing oil and gas wells and converting wells to injection in Ohio.

MS. HARDY: And, Mr. Tomastik, I'm scrolling through here, and I think, you know, going from about page 2 to page 13 of your CV, you list relevant experience; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And I've actually looked at those, and I think everything but about five of them relates to injection; is that fair?

MR. TOMASTIK: A lot of it does, yes.
MS. HARDY: Okay. And you've never worked on an enhanced oil recovery project in New Mexico, have you?
MR. TOMASTIK: No.
MS. HARDY: And you've never been the lead geologist on a carbon sequestration project, have you?
MR. TOMASTIK: Not a lead geologist, but I've been involved on a national level since about 2005 with all the major oil companies and also was instrumental with the major companies, working with US EPA --
MS. HARDY: Mr. Tomastik, I'm going to jump in here, because --
And I'm going to move to strike that.
My question was, you've never been the lead geologist on a carbon sequestration projection --
MR. TOMASTIK: No.
MS. HARDY: -- and I think your answer is yes; correct?
MR. TOMASTIK: I have not, no.
MS. HARDY: Okay. Thank you. In none of the matters identified on your CV involve development of a residual oil zone; correct?

MR. TOMASTIK: Correct.

MS. HARDY: And you've never worked on any residual oil zones anywhere; correct?

MR. TOMASTIK: Correct.

MS. HARDY: You've never been involved in converting a waterflood project to a CO2 project, have you?

MR. TOMASTIK: I regulated and permitted a huff and puff that Mr. Meltzer [ph] was involved with back in the mid-2000s.

MS. HARDY: Okay. And do you remember when you were deposed in this case?

MR. TOMASTIK: Yes.

MS. HARDY: And that was on December 10, 2024?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And let's look at page 6 here of your testimony, starting at line 18, and I'm going to read this. The question is, "Have you ever been involved in a conversion from waterflood to CO2"; and your answer was, "No." Did I read that correctly?

MR. TOMASTIK: Yes. I've not been involved, but I permitted one.

MS. HARDY: Okay. Thank you. And

you've never designed a waterflood, have you?

MR. TOMASTIK: No.

MS. HARDY: As a geologist, you're not giving opinions here on economics, are you?

MR. TOMASTIK: No.

MS. HARDY: Okay. You've testified for Goodnight in all of its New Mexico SWD hearings; correct?

MR. TOMASTIK: Yes.

MS. HARDY: You're familiar with New Mexico laws, rules, and regulations that apply to injection wells; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And wouldn't that include division and commission orders that govern injection and production in the area where an injection well will be located?

MR. TOMASTIK: That was typically not my part of the work on completing C108s. Typically Nate Alleman or Oliver Seekins would've done that kind of work.

MS. HARDY: Let's talk for a minute about your involvement in this case. You consulted with Preston McGuire in preparing your testimony; correct?

MR. TOMASTIK: Excuse me?
MS. HARDY: You consulted with Preston McGuire in preparing your testimony that you've submitted; correct?
MR. TOMASTIK: I've had discussions with both the attorneys and Preston McGuire. But Preston McGurie did not, you know, basically write any of my testimony, no.
MS. HARDY: Well, you consulted with him, didn't you?
MR. TOMASTIK: I had discussions with him, yes.
MS. HARDY: Okay. And Mr. McGuire is employed by Goodnight; correct?
MR. TOMASTIK: Yes.
MS. HARDY: And you met with him three to five times about your testimony; right?
MR. TOMASTIK: I don't know how many times. Several.
MS. HARDY: Okay. And he reviewed drafts of your testimony, and he gave you input; correct?
MR. TOMASTIK: My drafts went through the attorneys, so I don't know.
MS. HARDY: And let me just pull up

here -- and I'm looking at page 13 of your deposition testimony. Starting at line 10, you stated that you had meetings with Mr. McGuire; correct?

MR. TOMASTIK: Yes.

MS. HARDY: Okay.

MR. TOMASTIK: With -- with the attorneys.

MS. HARDY: Right. And then here, at line 19, you stated that you probably met with them three to five times; correct?

MR. TOMASTIK: That's probably accurate.

MS. HARDY: Okay. And then you go on to state that you submitted drafts of your statement for approval and discussion; right?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And how many times have you talked with Mr. McGuire since you submitted your testimony?

MR. TOMASTIK: Several.

MS. HARDY: You don't have a range?

MR. TOMASTIK: No.

MS. HARDY: Okay. You didn't do any original work on the geology in this case, did you?

MR. TOMASTIK: No.

MS. HARDY: You didn't prepare any cross-sections; correct?

MR. TOMASTIK: No.

MS. HARDY: You relied on information your received from Mr. McGuire; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And you didn't do any independent evaluation regarding whether there is a residual oil zone within the San Andres in the EMSU, did you?

MR. TOMASTIK: No.

MS. HARDY: Let's talk about your opinions a little bit on water encroachment, and I want to pull up the slide that you showed earlier during your summary. I believe it is your Slide Number 6. Can you see that there?

MR. TOMASTIK: Yes.

MS. HARDY: Let me enlarge it. Okay.

And my understanding of your summary was that this --

THE REPORTER: Can we go off the record?

THE HEARING EXAMINER: I'm sorry. What was that?

THE REPORTER: Can we go off the

record?

UNIDENTIFIED SPEAKER: The court reporter wants to go off the record.

THE HEARING EXAMINER: Okay. Madam Court Reporter, what's going on?

THE REPORTER: I'm having tech issues. It's not registering any -- any volume or -- or language. It just stopped --

MS. HARDY: She said she's having her technical issues, but --

THE HEARING EXAMINER: Okay.

THE REPORTER: I apologize. We are off the record at 10:44.

(Off the record.)

THE REPORTER: We are back on the record. The time is 10:46 a.m.

THE HEARING EXAMINER: You want to repeat that question, Ms. Hardy, please.

MS. HARDY: I'm not sure what my last -- I think he answered my last question.

UNIDENTIFIED SPEAKER: Yeah. You didn't ask. You were bringing this up.

THE HEARING EXAMINER: Oh, okay. All right. Go ahead, please proceed.

MS. HARDY: Okay. Thank you.

Okay. Mr. Tomastik, during your summary, you testified regarding this Slide 6 that references the 139 well, the M2 139. And I think you -- my understanding of your testimony was that it shows evidence of high water flows from the Penrose; right?

MR. TOMASTIK: Correct.

MS. HARDY: And I think you referenced the bubble map that was provided by Mr. West --

MR. TOMASTIK: Correct?

MS. HARDY: And the location of the 139 well?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And my understanding was that you were stating that this 139 well, was located in the middle of the bubble map and shows high water flows from the Penrose; is that correct --

MR. TOMASTIK: I did not say where it was located. I said based on my recollection of writing down the information from the bubble map of Mr. West's testimony that that well produced over a million barrels of water.

MS. HARDY: Okay. And this document here, it's difficult to read, but it looks like -- I guess you can see it there at the bottom. The date is

1988; correct?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And I'm going to show Mr. West's bubble map, which has been admitted into evidence. And if you look here, the 139 well is over here where I'm denoting with my cursor. Can you see that?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And then the 239 well is here more in the center where I'm now marking with my cursor; is that correct?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. So the 139 is located to the west; correct?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And Empire has agreed, hasn't it, that there is some edge water migration to the east --

MR. TOMASTIK: Yes.

MS. HARDY: Okay.

MR. RANKIN: Ms. Hardy, just for my benefit, which exhibit was this that was admitted? I can't -- I don't recall the number.

MS. HARDY: I actually don't have the number off the top of my head, Mr. Rankin, but it was

in Mr. West's redirect.

MR. RANKIN: Okay.

MS. HARDY: Thank you.

In your testimony -- and I can pull that up if you'd like -- at page 8, you state there was a low porosity and low permeability barrier at the top of the San Andres; correct?

MR. TOMASTIK: Yes.

MS. HARDY: You didn't actually pick the top of the San Andres, did you?

MR. TOMASTIK: No.

MS. HARDY: You relied on Preston McGuire's pick?

MR. TOMASTIK: Yes.

MS. HARDY: Isn't it true that in some locations, Goodnight has determined that the top of the San Andres is below the Lovington Sand?

MR. TOMASTIK: I really didn't evaluate that. I was evaluating confinement of their injection zone and whether there was a confining interval above the injection interval.

MS. HARDY: And at your deposition, you stated that you had never heard of the Lovington Sand; correct?

MR. TOMASTIK: That's true.

MS. HARDY: And you state in your file testimony that there's no evidence of vertical fractures extending from the Grayburg into the San Andres; correct?

MR. TOMASTIK: I said there is no -- no evidence of it extending hundreds of feet from the Grayburg into Goodnight's saltwater injections zone.

MS. HARDY: And here I've pulled up page --

THE HEARING EXAMINER: Madam Court reporter, are we having issues?

UNIDENTIFIED SPEAKER: Mr. Hearing Examiner, taking --

THE HEARING EXAMINER: Okay.

MS. HARDY: Okay. Thank you. That seems to be resolved now.

Mr. Tomastik, I've pulled up your direct testimony, and I'm looking at page 8 here. And you state "There is no evidence of vertical fractures extending from the Grayburg into the San Andres and no evidence of fluids migrating between the formations." Is that what your testimony states?

MR. TOMASTIK: That was my original self-affirmed statement, yes.

MS. HARDY: Okay. And you didn't do a

geomechanical fracture study in this case, did you?

MR. TOMASTIK: No.

MS. HARDY: Okay. Regarding chemistry and corrosion, you don't have a degree in chemistry; correct?

MR. TOMASTIK: No.

MS. HARDY: And have you ever been responsible for a chemical program in a producing field?

MR. TOMASTIK: I have worked with a number of my clients and with ChemTreat. ChemTreat is the second largest chemical treatment company in the United States and has been involved in the oil and gas industry since probably 2015, 2016.

And I've worked with them with a number of clients, helping them develop a treatment program to ensure that the injection fluids are not causing downhole plugging or scaling issues or corrosion.

MS. HARDY: Have you ever done a geochemical fingerprinting analysis?

MR. TOMASTIK: I've done analysis, and -- and I've done groundwater sampling analysis when I was at the Ohio Division of Oil and Gas. And I -- so I'm aware of sampling protocols, chain of custody commands, and -- and have reviewed and

fingerprinted when I do have a constituent that can be used as a -- as a fingerprinting mechanism.

MS. HARDY: So is the answer to my question yes? That you have done a geochemical fingerprinting analysis? Or that you haven't --

MR. TOMASTIK: I have not done a laboratory geo-fingerprinting analysis, but I have testified on geochemical fingerprinting in the tall -- the K&H Partners litigation from several years ago.

MS. HARDY: Okay. And you didn't obtain a geochemical fingerprinting analysis here, did you?

MR. TOMASTIK: I did no -- no sampling, no.

MS. HARDY: Okay. Goodnight is injecting produced water from the Delaware Basin into the San Andres; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And the water is from other leases; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And formations other than the San Andres?

MR. TOMASTIK: Yes.

MS. HARDY: And those include the Bone Spring and the Wolfcamp; right?

MR. TOMASTIK: Yes.

MS. HARDY: The produced water would include frack fluid, wouldn't it?

MR. TOMASTIK: It would be some intermixing of frack fluids.

MS. HARDY: And the TDS of the injected water is higher than the San Andres formation water; correct?

MR. TOMASTIK: Yes.

MS. HARDY: And Goodnight's injected water also has higher salinity than the San Andres water; correct?

MR. TOMASTIK: Yes.

MS. HARDY: Your testimony doesn't discuss strontium sulfate scale, does it?

MR. TOMASTIK: No.

MS. HARDY: And you didn't perform a water compatibility study, did you?

MR. TOMASTIK: No.

MS. HARDY: Are you aware that Goodnight had to rework its rhino [ph] well?

MR. TOMASTIK: I think it's been brought up somewhere in testimony. But I'm not

familiar with it, no.

MS. HARDY: So you don't know whether that reworking was necessary due to scale?

MR. TOMASTIK: I do not know.

MS. HARDY: Okay. Regarding the existence of the San Andres residual oil zone, paragraph 64 of your testimony states the water supply wells would've produced oil if a ROZ exists in the San Andres; correct?

MR. TOMASTIK: Typically, when you -- when you've depressurized a reservoir to the point where gas starts coming out of solution, some oil is produced.

And I actually used an example from Oklahoma from the hunton limestone where they've actually had depressurized a reservoir and then produced hundreds of thousands of barrels of water a day and started making oil from that zone after the fact.

So you would expect to see some movable oil from the depressurization of the ROZ when you withdrew 340 million barrels of water out of the reservoir.

MS. HARDY: Okay. And you have no idea whether there is a ROZ at the top of the San Andrews,

do you?

MR. TOMASTIK: I've not looked into that, no.

MS. HARDY: Okay. And I think as you've already testified, you've never been involved in a tertiary recovery project to produce a ROZ; correct?

MR. TOMASTIK: No.

MS. HARDY: And regarding the hunton limestone that you just mentioned -- and that is mentioned here in your testimony -- that didn't involve a ROZ, did it?

MR. TOMASTIK: I'm not aware if it did or not. I didn't do -- look at that.

MS. HARDY: And regarding your testimony and your summary on well integrity issues in the EMSU, again, you're not an engineer; correct?

MR. TOMASTIK: No.

MS. HARDY: Let me just pull up the slide I wanted to ask you about here, and I'm looking here at your Slide 13.

And before I ask you about that, isn't it true that a professional engineer stamp would be required for a Class 2 injection well design?

MR. TOMASTIK: Some states -- lots of

states do not require. Class 1 injection in some states do require or Class 6, but a lot of states -- New Mexico does not require a PE stamp on a Class 2 application.

MS. HARDY: Okay. And here on your Slide 13, you have no idea what well reworking would be done to convert the wells in EMSU to a CO2 project, do you?

MR. TOMASTIK: I have not seen Empire's plan for reworking of the wells in the EMSU.

MS. HARDY: Okay. And regarding this slide, I think you testified earlier that this is from the Love SPE paper; correct?

MR. TOMASTIK: Correct.

MS. HARDY: And the Love paper addresses conformance issues in the top two zones in the Grayburg; correct?

MR. TOMASTIK: Yes.

MS. HARDY: Okay. And, again, you've never managed an EOR project; right?

MR. TOMASTIK: No.

MS. HARDY: And isn't it -- or do you know whether in an EOR project, it's necessary to do squeeze work to divert flow as part of conformance work?

MR. TOMASTIK: That does occur, yes.

MS. HARDY: Okay. Thank you.

I have no further questions for Mr. Tomastik.

THE HEARING EXAMINER: Okay. Thank you, Ms. Hardy.

OCD, cross-examination for Mr. Tomastik?

MR. MOANDER: OCD has no questions for this witness and will pass the witness.

THE HEARING EXAMINER: Thank you.

Mr. Beck, for Rice?

MR. BECK: No questions.

THE HEARING EXAMINER: All right.

Mr. Suazo, for Pilot?

MR. SUAZO: Yes. Mr. Hearing Officer, I do have a few questions for Mr. Tomastik.

THE HEARING EXAMINER: Okay.

CROSS-EXAMINATION

BY MR. SUAZO:

MR. SUAZO: Good morning, Mr. Tomastik. My name is Miguel Suazo; I'm representing Pilot Water. And I would just like to kind of clarify some of the information in your slides with regard to the Hobbs channel. And as I understood your slides, your

testimony today is that there is communication between the Capitan Reef and the Hobbs channel.

MR. TOMASTIK: No. My testimony is -- is saying that based on the published works of -- or I think it was Jones, yes, 2016, his -- his figures show the elimination of the Hobbes channel, which is basically the two arrows coming out at the top of the northwest of that figure with the development of the Pecos River system that -- that outflow no longer existed.

Basically, his work in 1976 and 1980 was done mapping chloride concentrations from multiple reservoirs, including the San Andres, Queen. I mean, there was multiple formations. And the contouring was not done based on standard geologic principles for contouring, and chloride concentrations have nothing to do with groundwater flow direction.

So there's only been really two publications, the Hiss -- the Hiss work and then the work done in -- by Holland and the -- and the other author in 1984 regarding the existence of the quote unquote Hobbs channel. It's not documented in any geologic or hydrogeologic or hydrodynamic publication as a unique geologic feature.

MR. SUAZO: Okay. So then if there's

no Hobbs channel, there clearly can't be communication between the Hobbs and the Capitan Reef; is that right?

MR. TOMASTIK: Yes.

MR. SUAZO: Okay. And did you look beyond, you know, the Hobbs to other, you know, places where there might be communication like the Jal [ph]?

MR. TOMASTIK: No, I did not.

MR. SUAZO: Okay. All right. Thank you.

No further questions for this witness, Mr. Hearing Officer.

THE HEARING EXAMINER: Thank you, Mr. Suazo.

All right. Why don't we start with the remote commission members.

Mr. Lamkin, questions for Mr. Tomastik?

MR. LAMKIN: I do have a couple questions.

CROSS-EXAMINATION

BY MR. LAMKIN:

MR. LAMKIN: Good morning, Mr. Tomastik.

MR. TOMASTIK: Good morning.

MR. LAMKIN: Thank you for your testimony.

Did you find any wells besides the 139 that had a potential explanation for higher water production?

MR. TOMASTIK: I didn't look. I mean, I looked at dozens of wells, but unfortunately I didn't look at every well in the EMSU and all the sundry notices.

When I have looked at a lot of the sundry notices, I have found, you know, issues with well integrity, casing leaks, intermediate casing flows to the surface. But I -- I had not found any additional information regarding water inflows

MR. LAMKIN: For the issues that Chevron documented with casing and cement integrity previously in the EMSU, did you correlate any of that to potential communication pathways between the San Andres and the Grayburg?

MR. TOMASTIK: No. Those -- those were basically well-integrity issues that they were experiencing in the Grayburg. The way I looked at -- and the way I'm looking at well integrity is from my former career of 25 and a half years as a regulatory person overseeing Class 2 and Class 3 injection.

That well integrity issue becomes a

critical aspect of Class 2 CO2 permitting because of the corrosive nature of CO2 with steel and Portland cement.

So the fact that we've had evidence of communication on acid jobs on the back side of pipe and -- and flows to surface, those are serious concerns from moving from a tertiary -- or from a waterflood scenario to a tertiary CO2 scenario from a regulatory standpoint.

MR. LAMKIN: Okay. And then with respect to your comment about fluid level monitoring, wasn't there data presented yesterday showing that fluid levels had risen in the Goodnight wells?

MR. TOMASTIK: That -- that has -- was showed yesterday. One of the things that nobody mentioned, every one of those wells were still on vacuum, but what -- those were limited shut-ins other than the piper [ph], which was shut in, I think, for two months, and you could see a drop of about 300 feet.

Likely if all of those injection wells were shut in for a longer period of time, your static fluid levels would reach an equilibrium, and most likely every one of those wells would be pretty well balanced out at the -- pretty much the same level and

would drop.

MR. LAMKIN: Okay. Thank you.

Those are all my questions.

THE HEARING EXAMINER: Thank you, Mr. Lamkin.

Mr. Razatos, questions for Mr. Tomastik?

MR. RAZATOS: No, I do not.

Thank you, Mr. Tomastik, for your time. We appreciate it.

THE HEARING EXAMINER: All right. Dr. Ampomah, you're up.

CROSS-EXAMINATION

BY DR. AMPOMAH:

DR. AMPOMAH: Thank you, sir, for your testimony today. I do have a couple of questions for you. So we can have your slides up and then also your direct testimony up. I do have couple of questions through that.

So we'll start with your Slide Number 3. You described the water encroachment and then the fracture flow. Now, with regards to -- you're saying that fracture system in the Grayburg and San Andres carbonates do not extend hundreds of feet vertically. Do you have any evidence

to back this up?

MR. TOMASTIK: Again, I -- I looked at Dr. Lindsay's [ph] outcrop photographs that show hundreds of feet of Grayburg with his -- his contact with the San Andres in the Guadalupe Mountains, and there's no evidence of vertical fracture communication extending hundreds of feet in those rocks at the surface.

Dr. Lindsay [ph] testified or in his self-affirmed statement that the vertical fracture in the core extended only one to three feet, and there's no evidence of vertical fracturing extending that high. And as Mr. Knights testified and I've testified, vertical fractures will hit a horizontal bedding plane that acts as a barrier to flow and then flow will go horizontal.

And that's likely the -- the scenarios that we're seeing not only in the Grayburg, but also in the lost-circulation zones in the San Andres. Those are horizontal permeability zones that have been stopped by a barrier above that.

DR. AMPOMAH: And I read that in your direct testimony, so thank you for confirming that.

So Ms. Hardy brought up the bubble map of the production history in the Grayburg. Do you

recall that?

MR. TOMASTIK: Yes.

DR. AMPOMAH: So here on your Point Number 4, you are describing where you believe that there is water encroaching into the Grayburg. Now, does this section that you are presenting to the Commission here explains the high water production that we are seeing in isolated wells that was shown in the bubble map?

MR. TOMASTIK: Yes. That -- although I believe the one bubble map I saw from Mr. West's testimony actually had volumes on it that actually had showed how much water had been produced. Again, based on the Bureau of Mines 1939 publication, edge water encroachment had been going on since the '30s, mainly from the east, but also from the south or from the west and from the south.

But there's -- there's -- you're dealing geologically with a ramp, platform-type system, so water is going to -- as you're depressurizing the -- the Grayburg from primary production, you're going to cone water in from outside lower elevation areas.

DR. AMPOMAH: Okay. You know, you make mention of a vacuum. Yeah. You've used that term.

And when my other colleague commissioner asked you about the fluid levels, you attributed that nobody talked about the vacuum. I want to talk about the vacuum. How do you define the vacuum?

MR. TOMASTIK: Basically vacuum at -- at the surface that the injection fluid is going down the tubing at no pressure other than atmospheric, and sometimes you could even put your hand over the tubing and it will actually suck on your tubing, so it's actually pulling the fluid down the borehole.

DR. AMPOMAH: So you are not necessarily referring to the reservoir that the fluid is going in there?

MR. TOMASTIK: In the -- in the Goodnight San Andres injection wells, yes.

DR. AMPOMAH: But you are not referring to the reservoir itself that is in the vacuum, so it's taking all the fluid that comes in it?

MR. TOMASTIK: I -- I mean -- it -- it's under the vacuum system at the surface. And also when -- when Chevron started injection in the EMSU in 1986 and '87 -- you can go through the sundry notices -- most of the injection wells in the Grayburg started under vacuum conditions.

DR. AMPOMAH: Do you certainly know the

fluid flow path within the San Andres from Goodnight's injection?

MR. TOMASTIK: I -- I -- from what we've seen from Mr. Meltzer [ph] and Dr. Trentom's [ph] testimony, the San Andres over that central basin platform is basically an open system.

There's really no boundary to horizontal flow from that standpoint, so it -- it's not a closed system, although the injection zone that we're -- that Goodnight is injecting to -- into in the San Andres is a confined aquifer.

DR. AMPOMAH: It's a confined aquifer? How does that square up with open system?

MR. TOMASTIK: Well, the -- the water is moving laterally out of the system basically.

DR. AMPOMAH: To where?

MR. TOMASTIK: One of -- one of the other areas of the San Andres maybe where our other production is -- is pulling it in. I -- I mean, that could get into a lot of complex geologic and engineering development.

DR. AMPOMAH: Well, did Goodnight did any analysis to prove to the Commission that this is the flow path of the injection?

MR. TOMASTIK: That -- I mean -- I

mean, you could -- you would have to have multiple wells outside of the EMSU where you had static fluid levels and wells probably would be -- have to be shut in to be able to reach equilibrium to try to develop a potential metric sub-service groundwater flow map of the San Andres.

But that would -- that would require -- like I said, I think there's, what, somebody said 60 well -- injection wells and a 5-mile radius. But you have to have the data to be able to map the groundwater flow out of -- out of the system.

DR. AMPOMAH: But you've listened to other testimony. Now, do you believe that Empire through their models presented an alternative potential flow path to the Commission?

MR. TOMASTIK: A flow path in the San Andres?

DR. AMPOMAH: Yes.

MR. TOMASTIK: Or a flow path communication with the Grayburg?

DR. AMPOMAH: All of it.

MR. TOMASTIK: The -- if -- if there -- and -- and Empire's experts have testified that there's communication between the San Andres. If -- if the ROZ is limited to the San Andres, then

you have a regulatory confining zone issue, because now you're moving fluid out of the proposed ROZ injection zone.

Again, that becomes a regulatory problem, 'cause you're not allowed to migrate fluid out of your confining zone.

DR. AMPOMAH: You know, so you're saying that you believe that the San Andres is an open system, but Goodnight's injection is in the closed system? I mean, I don't know how that squares out. But you are saying that the fluid that has been displayed is more or less going horizontally.

Now, we've listened to testimonies about fractures even from Goodnights's experts. So do you have any evidence to prove to the Commission that your testimony saying that the fluid path is going horizontally? Taking into consideration all these geological features, is there no potential vertical migration?

MR. TOMASTIK: Well, everything that we've seen between the -- the work that Chevron has done with the attempts to squeeze off high permeability flow zones in the Grayburg all seem to -- to relate to horizontal flow. Again, as Mr. Knights testified that he believes also that bedding

planes are acting as a barrier.

There -- there is a confining zone within the Goodnight SWDs above the injection zone; otherwise, they would not be permitted. You have to have a confining zone that prohibits vertical migration of fluid out of your injection zone.

So -- and -- and there's been no evidence other than the core data that supposedly shows a one-to-three-foot vertical fracture. How are we extending vertical fracture height hundreds of feet from Goodnight's injection zone in the San Andres into the Grayburg? We don't -- we don't see that.

Now, as I testified, and also in my self-affirmed statement, there is documentation since the 1930s that there were wells drilled deeper into the San Andres. Were those wells properly plugged back? That, we don't know.

DR. AMPOMAH: So you said something that I thought was very interesting. You are saying that there's no way Goodnight would have been allowed to inject into the San Andres if there is no caprock or, let's say, any barrier?

MR. TOMASTIK: Yes.

DR. AMPOMAH: So from all the testimonies that we've listened to throughout -- we

are in the third week. Can you show a strat column delineating the well-established barrier that has been presented to the Commission?

MR. TOMASTIK: I believe on the -- the C108 permit applications and testimony at that time by Steve Drake, who was the former geologist with Goodnight, that they presented cross-sections showing the -- the barrier zone above their proposed injection zones in their San Andres SWDs.

DR. AMPOMAH: And has that been presented to the Commissioner or tendered in as an evidence?

MR. TOMASTIK: I suspect Mr. McGuire may be presenting that.

DR. AMPOMAH: I'll look forward to that. Thank you.

Let's go to your Slide Number 8. While the Slide Number 8 is coming up, I want to ask you. Do you have any changes to your conclusions that you've made or any of the analysis that you've made based on all the testimonies that you've listened to throughout the whole weeks?

MR. TOMASTIK: No. I'm -- I'm pretty well affirmed with my conclusions.

DR. AMPOMAH: Okay. So you're talking

about there's been a lot of wells being drilled into the San Andres being tested and oil produced water. Is that a fair description?

MR. TOMASTIK: There have -- have been -- I don't say there's a lot, but there's been a number of wells drilled into the San Andres, yes.

DR. AMPOMAH: Do you believe there is any ROZ in the San Andres?

MR. TOMASTIK: I think there might be a ROZ in the San Andres directly below the base of the Grayburg, but I've not done any studies on that.

DR. AMPOMAH: So when Empire's experts and also even Goodnight's experts, they've all -- they've all presented to the Commission, at least based on the evidence, there is an ROZ. Do you -- does that change your perspective about whether there is existence of ROZ or not?

MR. TOMASTIK: Well, as -- as we've heard testimony, the ROZ changed from 400 feet to a 1,000 feet, so we -- I do not believe there's an ROZ in the -- the part of the San Andres where Goodnight is injecting in the San Andres.

DR. AMPOMAH: Now, within the unitization, is there any distinction between what we call the upper San Andres and the lower San Andres?

MR. TOMASTIK: I really haven't got into that. I -- I focus more on the injection zone in the San Andres for the Goodnight wells.

DR. AMPOMAH: So let me ask you. Since you -- you discussed about the geochemistry and the impacts, you know, and all of that, why do the regulators ask for water compatibility analysis?

MR. TOMASTIK: Basically, I mean -- I mean, the -- the C108 applications require the submittal of your -- your produced water, which has been shown in -- in testimony and then also an analysis of your -- of your fluid within the reservoir.

Typically, Oil Conservation Division has required swabbing of the wells to see if there's any -- any commercial or paying quantity oil production. I know that Goodnight performed those, so that's probably where the fluid analysis for the San Andres came from: from their wells.

DR. AMPOMAH: So was Goodnight's treated water chemistry and all of that presented to the Commission as part of these hearings?

MR. TOMASTIK: In -- in my self-affirmed statement, I -- I went into great detail into how Goodnight is treating their injection fluid

prior to injection. There's basically a list of all of the chemical treatments they're doing: scale inhibitors, acid -- acid surfactants. They're using corrosion inhibitors.

So in my self-affirm statement, I -- I had got all that information from Goodnight, because that's what I had to see. And most of your Class 2 saltwater disposal operators will treat their fluid. Injecting produced water that's untreated or unfiltered typically leads to downhole scaling or plugging of the -- of the reservoir for injection in -- in basically the wellbore.

And Chevron basically in their paper that was published made that statement that the scaling that they were seeing, the barium sulfate was occurring within the wellbore and not within the reservoir.

DR. AMPOMAH: Okay. Thank you for that. So you do have a regulatory background; right?

MR. TOMASTIK: A what?

DR. AMPOMAH: Regulatory background? You -- you've helped --

MR. TOMASTIK: Over my career, I've done pretty much every aspect of the oil and gas industry. Like I said, I -- I drilled wells, I -- I

ran casing, cemented, perforated, hydraulic fracture, sample descriptions. When we weren't drilling, I had a client -- I mean, he had me help plumb up wellheads.

I pumped wells, free-flowed. We didn't have pump jacks. We free-flowed wells. So I learned -- I learned a lot in the six -- first six years of my career in the 1980s in oil and gas, and then 25 and a half years of doing Class 2 and Class 3 injection permitting and oversight.

But I also would go out in the field and witness mechanical integrity tests. I plugged wells, and then I also conducted hundreds of groundwater investigation related to --

DR. AMPOMAH: So sorry to interject. You know, the timing. So, you know --

MR. TOMASTIK: I -- I have a unique career.

DR. AMPOMAH: Okay. I appreciate that. And sorry to interject, but the timing. So I just wanted to know that you have experience in Class 2 wells?

MR. TOMASTIK: Yes.

DR. AMPOMAH: Now, you've established that. Now, let me ask you. For several years of your experience, have you seen any operator that does not

have any interest in the unit being allowed to inject into the unit?

MR. TOMASTIK: Again, on the -- on the permitting aspect here in -- in New Mexico or Texas, I pretty much focus on doing the -- the geologic analysis. I do look at the induced seismicity potential with my geophysicist.

So most of the actual work on a C108 here in New Mexico, like I said, was done either by Nate Alleman before he -- he left; and then Oliver Seekins replaced him, and now he's moved on, and Reed Davis is now handling most of that application process.

DR. AMPOMAH: Okay. So you are not necessarily involved with regards to whether they can inject or not inject? Is that your testimony?

MR. TOMASTIK: Other than if there's a problem well, an area of review, or there's not a confining zone above the injection interval. Those are the kind of things that I look at on the applications.

DR. AMPOMAH: Okay. Yeah. So I do have a question that probably I'll hold on for Mr. McGuire about the rights and obligations of unit operators.

Section 10 of Empire's Exhibit Number 1 that I believe that was presented to us by Mr. Willow [ph] on that, so I do have a question on that. And since you said that you are not involved in whether they have the -- they have the opportunity to inject or not; so if Mr. McGuire is in the room, probably he can be ready for that.

Section 10 of the -- that is going to be the unitization documentation. Under the last Section 10, there is a rights and obligations of the unit operator. So I'll move on.

Now, on Number 89 of your -- I think we've talked about the vacuum, how you described the vacuum. So I'll move on from that one.

Now, 91 of your direct -- that would be page 28 if Mr. Rankin can bring that up. Page 28, that will be item number 91.

MR. RANKIN: I apologize, Dr. Ampomah. I was momentarily not paying attention. Direct testimony?

DR. AMPOMAH: Yes.

MR. RANKIN: Page 28?

DR. AMPOMAH: Page 28, Item 91.

So on Item 91, you made a lot of important statements here, and I just want to know,

are you -- and I don't want to read all of that. But is it based on someone's testimony? Or is it based on your own analysis?

MR. TOMASTIK: This is based on my analysis of a number of existing EMSU Grayburg completions and looking at the lower-most perforation or the total depth of the open hole and the depth below those production areas within the Grayburg to the top of the perforations in the Goodnight Midstream San Andres saltwater disposal wells. And those are anywhere from 285 feet to 463 feet deeper than the production from the Grayburg.

DR. AMPOMAH: So, sir, you said that additionally, according to Steve Drake's [ph] self-affirmed statement and cross-section exhibits from 2002, there is not only a low porosity and a low permeability barrier that separates the producer zone in the Grayburg from the disposal zone in the San Andres. Do you have evidence to support this?

MR. TOMASTIK: I relied on those exhibits.

DR. AMPOMAH: And is this exhibits in evidence as presented to the Commission?

MR. TOMASTIK: I -- I believe they -- they were probably presented within Nate

Alleman's C108 exhibits, and it's possible Preston McGuire may present them also.

DR. AMPOMAH: So are you saying all -- so Mr. Knights testified about the barriers, whether there's going to be a communication. He showed some barrier. So if there is an established barrier, then why did he not show the Commission? Or you said Mr. McGuire will probably show us?

MR. TOMASTIK: That's what we're assuming, yes.

DR. AMPOMAH: Okay. I'll move on to Section 101, Item 101. So on Item 101, you are more or less alluding to Dr. Lindsay's [ph] PhD dissertation. Let me ask. Did you -- again, also did you only depend on the analysis to substantiate this as you are relying upon as part of your testimony?

MR. TOMASTIK: I -- I did not do my own analysis, but -- but I did find that Dr. Lindsay [ph], some of his self-affirmed statement or testimony contradicted with statements that he had in his PhD dissertation.

DR. AMPOMAH: So let's move on to 103. You made a very important statement there, which I really want to know more about it. So on Item 103 -- I'm reading from line 3 -- you said that

Goodnight Midstream's SWD injection fluids into the San Andres would not migrate upward, since the San Andres formation pressure is now under pressured.

Do you know whether the San Andres has ever been a normal-pressured reservoir?

MR. TOMASTIK: That, I don't know. We would need -- and, I -- I mean, obviously maybe based on the Rice work that they had presented from the well from 1959, there was indication that it's been on vacuum since. That's an indication that the San Andres has been under-pressured for -- I guess for time at that point.

With the withdrawal of 340 million barrels, I'm sure it helped bring the pressure down even more.

DR. AMPOMAH: Yeah. But -- so when you say "now," so is it your testimony that you believe that it has -- it has probably in the past been a normal-pressured reservoir?

MR. TOMASTIK: I -- I mean, everything that we've -- based on what data that we have on the San Andres before the water flooding and before the use of the San Andres for makeup water, I did not have that -- that data from the Rice well when I did this, so I did not know that it was under pressurized at

that point.

DR. AMPOMAH: Okay. And, you know, Item 104, you went ahead and said that in order for the San Andres reservoir to even start repressurization all of the pore space in the reservoir would need to be refilled to accommodate the reconstructed estimate that over 340 million barrels of water has been redrawn from the San Andres formation within the EMSU alone.

My question to you is, has Goodnight done any analysis to account for how the pressure is going to change with the existing injection wells and then also the proposed injection wells?

MR. TOMASTIK: That, I don't know. Preston McGuire would be the person to ask that question of.

DR. AMPOMAH: Do you know that Empire did that analysis and presented it to the Commission?

MR. TOMASTIK: I believe there was a slide presented showing the depressurization during the withdrawal of the 300 million -- 340 million barrels of water and then the start of repressurization and then the dash line projecting out to 2030.

The problem with that graph is Empire

is using the injection volumes from the applications there. They -- they were estimating, I think, 323 million barrels a day. There is no Class 2 injection well that I'm familiar with that injects continuously the same amount day in and day out.

Class 1, where you have an industrial waste product, that's 24/7, 365 days a year. You're injecting constantly. On Class 2, it's based on supply and demand.

When you -- when you have horizontal well flowbacks that start, obviously you're going to have a big increase in injection volumes. But when that's slows down, then injection volume slows down. So it's not a continuous day and day out at that injection rate.

DR. AMPOMAH: And I'm glad that you were able to recollect that -- that testimony or even that exhibit, 'cause I don't want to pull it up to delay our time here.

Now, you talked about the methodology that Empire used. You told me that the water has been displaced -- that water that has been injected has been displaced. And I asked you, "Do you know where it's going?" You said, "No" --

MR. TOMASTIK: Well, again, as my

statement above, like, that's why you do a waterflood, you know, is -- is if you've taken fluid out of the reservoir, you have to refill the pore spaces, as you're aware.

So if we've taken 340 million barrels out, you really have to refill that fluid before you start seeing a pressure increase, and that's how waterflood operates.

And that's what we see in the Grayburg. The Grayburg was down to about 200 pounds when the waterflood initiated, and -- and that, you know, by refilling the -- the reservoir is how waterflood works and how you repressurize the reservoir and move the oil front to your producing wells.

And based on the data that I looked at from the Oil Conservation Division on the waterflooding in the Grayburg, they've run over a billion barrels through that water flood; so --

DR. AMPOMAH: Well, so based on the methodology that Mr. West presented to us, I mean, he was just being generous in such a way that he said: "Okay. You take one fluid. You put it in there." So he was using the permitted rates that Goodnight, you know, do have, and then even the newer ones as well that they are requesting.

He used that to do more or less material balance. You put this one in; you take this one out. So I'm not sure what -- so is it your testimony that Goodnight is going to present to us an alternative as to how they view how the pressure is going to build up as a result of their injection? Is that your testimony?

MR. TOMASTIK: Again, I'm not sure exactly how Mr. McGuire is going to present the testimony on that. But like I just testified to, you cannot use an injection rate on a permit as a continuous injection rate for a Class 2 well. That never happens. They -- they go up and down based on supply and demand.

So one day I might be injecting 40,000 barrels, and the next day I'm injecting three, because I don't have the supply of water to get rid of at that point.

DR. AMPOMAH: So, sir, let me ask you. Assuming we have one single pool, San Andres, and then Goodnight is injecting -- they do have their permit -- that they are injecting, and another company comes in and also wants to inject, is Goodnight not going to use the permitted injection rate to contest whether they are going to have interference?

MR. TOMASTIK: As -- as far as I know, I've not -- not seen any evidence from Goodnight that there's well interference on any of the wells at this point.

DR. AMPOMAH: Okay. Let me -- I was just putting a hypothetical case, you know, because you are saying that the rates that NMOCD puts on permits are not relevant. Is that your testimony?

MR. TOMASTIK: Well, that -- no. You -- you have an area of review that limits the spacing of your injection wells. I mean, so you're -- you're not putting injection wells right next to each other.

DR. AMPOMAH: Well, you use your injection rate to delineate your area of review?

MR. TOMASTIK: No -- no. That's -- that's not what that's based on.

The area of review is -- is based on either a fixed radius that is part of the UIC primacy program, or it's based on a zone of endangering influence calculation, which I don't -- have not seen in New Mexico, anybody actually going in and doing a zone of endangering influence calculation, which is basically a modified Theis [ph] equation, which is based on homogeneous rocks and -- and that -- that

really doesn't work in the geologic realm. So -- so basically your area of review is based on a fixed radius.

Now, there has been changes in New Mexico to the Delaware Mountain Group where you're now moving a mile between two wells due to the potential of not well interference between the injection well, but pressuring the formation up that would impact producing wells drilling through the injection interval.

DR. AMPOMAH: You know, I will hold it on there, and then probably we will have more discussion with Mr. McGuire, so I'll just leave it there.

Now, just to confirm, on your Item 105, you talk about -- 105, you talk about these verticals. So you describe that there is 285 feet to 463 below the lowest producing Empire's Grayburg oil production. I know you've talked about this, but I just want to put it on record.

You're saying that this vertical separation comprised of tight intervals with low porosities and higher resistivities with anhydrate immediately above the top of the injection zone would serve as an additional barrier to vertical fluid

migration into the Grayburg formation.

My question to you is, do you have any evidence where you've mapped what you are alluding here and showing to the Commission?

MR. TOMASTIK: Again, that is based on the -- the cross-section work that Steve Drake [ph] did in 2022 for -- with the submittal of the applications.

DR. AMPOMAH: And Mr. McGuire will show us?

MR. TOMASTIK: Yes.

DR. AMPOMAH: Okay. Thank you, sir, for your time.

THE HEARING EXAMINER: Thank you, Dr. Ampomah.

Redirect examination, Mr. Rankin?

REDIRECT EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Mr. Tomastik, do you recall questions from Ms. Hardy regarding whether or not the produced water that Goodnight is disposing would contain fracture fluids from the Delaware Basin?

MR. TOMASTIK: Yes.

MR. RANKIN: Do you recall in your review of the history of well completions and

production in the EMSU whether or not the EMSU operators in the Grayburg also fractured their wells?

MS. HARDY: I'm going to object to the question. I think that Mr. Rankin is testifying about information that Mr. Tomastik has not testified about. I don't think you can put words in the witnesses mount.

THE HEARING EXAMINER: Overruled.

MR. RANKIN: Mr. Tomastik, I didn't get the chance to finish my question. But you reviewed the well completion history of the operators in the EMSU and the Grayburg; correct?

MR. TOMASTIK: Yes.

MR. RANKIN: Did those operators fracture their wells?

MR. TOMASTIK: Yes. There's not only hydraulic fracturing that's been performed in the Grayburg, but also in the Penrose and the Queen and the Yates.

MR. RANKIN: Ms. Hardy asked you about strontium scaling. Do you recall those questions?

MR. TOMASTIK: Yes.

MR. RANKIN: Did Mr. West address strontium scaling in either his direct testimony or his rebuttal testimony?

MR. TOMASTIK: I believe he mentioned it. I don't know if it was in testimony. But I've -- I've seen no indication of strontium sulfate. Barium sulfate seems to be the main scale problem that has been addressed in the EMSU.

MR. RANKIN: Do you recall questions from the Commission regarding the potential direction or pathway of flow in the San Andres?

MR. TOMASTIK: Yes. And -- and that's just totally relying on that -- that Jones paper from 2016.

MR. RANKIN: Well, actually I -- I think what I was asking you about was the Commission's questions to you about which direction the flow in the San Andres may go; right? Which direction it is going?

MR. TOMASTIK: Oh, horizontally basically, and it's an open system.

MR. RANKIN: Okay. I'm going to ask you a couple questions about that.

MR. TOMASTIK: Yes.

MR. RANKIN: But do you recall Dr. Trentom's [ph] testimony about the ROZ, the creation of the ROZ in the EMSU through the San Andres fairway?

MR. TOMASTIK: Yes.

MR. RANKIN: And do you recall that Dr. Trentom [ph] identified the flow pathway in the San Andres through that fairway?

MR. TOMASTIK: Yes.

MR. RANKIN: Which direction was that flow?

MR. TOMASTIK: To the east mainly, some to the south.

MR. RANKIN: Okay. So looking at this chart where he's identified the EMSU and AGUB, which direction is that pathway, that flow?

MR. TOMASTIK: It looks -- in the EMSU, it looks like he has it going from the west to east and then to the south.

MR. RANKIN: Okay. And through the -- from the EMSU, which direction is it going?

MR. TOMASTIK: South.

MR. RANKIN: You referred to, I believe, Mr. West's exhibit where he showed the volumes of water. He did a mass balance of volumes of water injected and withdrawn from the San Andres in and around the EMSU. Do you recall that?

MR. TOMASTIK: Yes.

MR. RANKIN: And those volumes, do

those volumes equate to pressure? Is there an equation -- I mean, you don't know what the effect on pressure is going to be based those --

MR. TOMASTIK: I -- I didn't look at that, no.

MR. RANKIN: But did Mr. West look at that in that --

MR. TOMASTIK: I believe he did.

MR. RANKIN: In that exhibit, was it just addressing volumes? Or was it also addressing pressures?

MR. TOMASTIK: I recall -- I definitely remember volumes. I don't remember if there was pressure on there or not. It may have been.

MR. RANKIN: Okay. But you don't recall as you sit here today?

MR. TOMASTIK: No. I'd have to see the -- the diagrams.

MR. RANKIN: The exhibit speaks for itself that we're referring to?

MR. TOMASTIK: Yes.

MR. RANKIN: Okay. Mr. Hearing Officer, I have no further questions for Mr. Tomastik at this time.

THE HEARING EXAMINER: Okay. Thank

you. It's 11:41. I'm assuming you have one last witness, Mr. McGuire; is that correct?

MR. RANKIN: Mr. Hearing Officer, we're going to do Mr. David White today because of the time frames. We don't have a lot of time to do Mr. McGuire today. We can finish Mr. White, and that we would give us uninterrupted time for Mr. McGuire on May 19th.

THE HEARING EXAMINER: Mr. White?

MR. RANKIN: Yeah.

THE HEARING EXAMINER: I don't have him on your list.

MR. RANKIN: Mr. White is our rebuttal witness to address the Capitan issues. He's on our list as a rebuttal witness.

THE HEARING EXAMINER: Okay. All right. Empire's on board with that.

Let me ask you, Mr. Rozatos. What would be the Commission's preference on this?

MR. MOANDER: So, Mr. Hearing Officer, I've got an issue. Are we releasing this witness? That's first question, and then I got an issue I do want to bring up, but I want to do these in order.

MR. RAZATOS: That was going to be my question, too, Mr. Hearing Officer. Are we releasing

this witness?

THE HEARING EXAMINER: Any objection to that, Empire?

MS. HARDY: No objection.

THE HEARING EXAMINER: Mr. Tomastik, thank you for your time. You're free to go or stay. All right. Okay.

MR. MOANDER: I do need to bring this up now, Mr. Hearing Officer. So in Mr. Tomastik's -- it's both his rebuttal and his amended rebuttal -- OCD needs to move to strike paragraphs 28 through 39 and exhibits C23 through C27. Those were not testified to in any way today.

And OCD's position is they are highly prejudicial. They were not brought up on direct, and so were not a subject of cross-examination. My concern here is if this were before a jury, it would be very easy to give an instruction to the jury to disregard something like that.

In this instance, the OCD -- or the OCC has seen these. In this case, we've had a couple months where these documents have been out floating. They've been filed.

And I've got a concern at this point that it -- I don't have any assurances or what I would

maybe otherwise describe as a corrective instruction that could be issued to basically instruct the jury or a decision maker that these were not actually statements that were put into evidence, nor were the exhibits.

And I would like to see some type of remedy crafted for that, if possible.

THE HEARING EXAMINER: Okay. Well, can we see what we're talking about here? Can you bring them up?

MR. MOANDER: Well, my concern is if I put it up, I'm actually just making my situation worse --

THE HEARING EXAMINER: Okay. Let's hear from Mr. Rankin.

MR. RANKIN: Mr. Moander, can you tell me what paragraphs you're talking about?

MR. MOANDER: It would be paragraphs -- and this is for both the original rebuttal and the amended -- paragraphs 28 through 39 and Exhibits C23 through C27.

MR. BECK: Okay. Mr. Hearing Officer, weren't these admitted into evidence the beginning of Mr. Tomastik's presentation of evidence?

THE HEARING EXAMINER: Well, that's a

good question, Mr. Beck.

Mr. Rankin, were those moved into evidence?

MR. RANKIN: They were.

MR. MOANDER: And I was not entitled to the knowledge that that would not be covered until pretty much the end of testimony, so I had no ability to -- I would've had no basis to object at that point. I was only alerted to this at the end -- essentially the end of his direct --

THE HEARING EXAMINER: Well, you could --

MR. RAZATOS: Mr. Rankin, before you speak. Mr. Rankin, you're sharing your screen. Since there is that concern, you may want to stop sharing your screen.

MR. MOANDER: I mean, Mr. Hearing Officer, I had no -- there was no way of me knowing this until those had already been entered into evidence; otherwise, I would've quite obviously objected. And this is the only remedy I'm left with.

THE HEARING EXAMINER: Well, weren't these provided to OCD by Goodnight --

MR. MOANDER: Absolutely.

THE HEARING EXAMINER: -- for the

hearing?

MR. MOANDER: They were.

THE HEARING EXAMINER: All right. And then you heard Mr. Rankin move the exhibits into evidence?

MR. MOANDER: Absolutely. But at this point --

THE HEARING EXAMINER: And you didn't object?

MR. MOANDER: Of course not, because I didn't realize there would be no testimony. I couldn't even examine. I would've been objected to if I had started examining that witness about --

THE HEARING EXAMINER: Yes. But your remedy was to try and make the record and then rebut Mr. Rankin's objection; instead, you didn't question the witness about it, and you're asking me to strike the testimony.

MR. MOANDER: Of course I wouldn't have asked the -- I would not have asked a question about something that was totally outside the scope at that point of the direct.

THE HEARING EXAMINER: It's not outside the scope of the exhibits that were presented --

MR. MOANDER: All right. Well, I'm

making my record on this, because it's prejudicial regardless.

THE HEARING EXAMINER: All right.

MR. MOANDER: So I guess we got one more appellate issue we'll be dealing with in a few weeks.

THE HEARING EXAMINER: Okay. I'm not going to strike the evidence. Anything further, Mr. Moander?

MR. MOANDER: No, Mr. Hearing Officer.

THE HEARING EXAMINER: Okay. All right. So let's see. That brings us back to the issue of timing. It's now 11:47.

Mr. Razatos, so what are your thoughts? Should we break now and come back a little earlier than 1:15 for the next witness?

MR. RAZATOS: Yeah. Why don't we break now, and we'll come back? Let's do 1:05 just to give some time, 'cause one o'clock sometime gets a little rough for people. So we'll be back at 1:05.

THE HEARING EXAMINER: All right. Great. With your next rebuttal witness, Mr. White?

MR. RANKIN: Mr. White. We don't have a Mr. Green today, but sometimes we've had that situation. We've had a Mr. Green and Mr. White, but

today it's just Mr. White. And hopefully we'll get done with him by the end of the day.

THE HEARING EXAMINER: Thank you, Mr. Rankin.

(Off the record.)

THE REPORTER: We are back on the record. The time is 1:06 p.m.

THE HEARING EXAMINER: Okay. Mr. Rankin, you have another witness, David White; is that correct?

MR. RANKIN: Thank you, Mr. Hearing Officer. Yeah. Mr. David White will be our next witness.

THE HEARING EXAMINER: And I'm assuming he's remote? I don't --

MR. RANKIN: No. Actually, Mr. White is here. He drove from Albuquerque this morning.

THE HEARING EXAMINER: All right. I thought I saw a new face in the audience.

Mr. White, if you'll raise your right hand.

WHEREUPON,

DAVID WHITE,

called as a witness and having been first duly sworn to tell the truth, the whole truth, and nothing but

the truth, was examined and testified as follows:

THE HEARING EXAMINER: Thank you, sir.

Mr. Rankin?

MR. RANKIN: Thank you, Mr. Hearing Officer.

EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Mr. White, good afternoon. Will you please state your full name for the record.

MR. WHITE: David Allen White.

MR. RANKIN: By whom are you employed and in what capacity?

MR. WHITE: I am employed by Geolex, Incorporated. I serve as the vice president and senior geologist.

MR. RANKIN: And have you previously testified before the Commission?

MR. WHITE: I have.

MR. RANKIN: Are you familiar with Goodnight's application filed in these consolidated cases?

MR. WHITE: I am.

MR. RANKIN: Have your credentials as an expert witness in saltwater disposal and acid gas injection, well permitting and design, petroleum

geology, hydrogeology, seismic interpretation, and fault-slip probability modeling been accepted and made a matter of record before the Commission?

MR. WHITE: Yes.

MR. RANKIN: Did you conduct an independent review of the geology and stratigraphy in the area of Goodnight Midstream's SWDs within the EMSU?

MR. WHITE: Yes, I did.

MR. RANKIN: And did you also investigate the relationship between the San Andres's Formation and the geologic formations adjacent to and overlying it?

MR. WHITE: Yes, I did.

MR. RANKIN: And did you do a peer review of Goodnight's analysis of its updated regional evaluation of the San Andres Formation groundwater characteristics?

MR. WHITE: Yes, I did.

MR. RANKIN: Any corrections or changes to the testimony exhibits that were filed?

MR. WHITE: No.

MR. RANKIN: Do you adopt the testimony in the self-affirmed rebuttal statement marked as Exhibit I as your own sworn testimony today?

MR. WHITE: I do.

MR. RANKIN: At this time, Mr. Hearing Officer, I would move -- or rather tender Mr. White as an expert witness in saltwater disposal and acid gas injection, well permitting and design, petroleum geology, seismic interpretation, and fault-slip probability modeling.

THE HEARING EXAMINER: That's a long list.

MR. RANKIN: It is.

THE HEARING EXAMINER: Empire, any objection?

MR. PADILLA: No objection, Mr. Examiner.

THE HEARING EXAMINER: Thank you, Mr. Padilla.

OCD?

MR. MOANDER: No objection.

THE HEARING EXAMINER: Rice?

MR. BECK: No objection as long as I get a list of what those things are afterwards.

MR. RANKIN: I didn't want Mr. White to be downgraded, because he's got a list. And then I want to make sure that every time he appears, he's always qualified on that list; so --

THE HEARING EXAMINER: Okay. Fair enough.

Pilot?

MR. SUAZO: No objections.

THE HEARING EXAMINER: He'll be so recognized.

MR. RANKIN: At this time, also, Mr. Hearing Officer, I move the admission into evidence of Mr. White's rebuttal testimony in Exhibit I, Attachment 1, and Exhibits I one through I13.

THE HEARING EXAMINER: Empire, any objection?

MR. PADILLA: No objection, Mr. Examiner.

THE HEARING EXAMINER: OCD?

MR. MOANDER: I'm going to object to this to be admitted until the completion of his full examination to confirm that it actually reflects his testimony.

THE HEARING EXAMINER: Okay.

Mr. Beck?

MR. BECK: No objection.

THE HEARING EXAMINER: And Pilot?

MR. SUAZO: No objection.

THE HEARING EXAMINER: All right.

We'll reserve -- well, I'm not sure how to -- I'm going to admit the exhibits over OCD's objection.

OCD, you're going to need to keep track of what is and isn't covered in that objection -- I mean in the exhibits. And, you know, you're welcome to cross-examine on all of it, including stuff that wasn't covered; okay?

MR. MOANDER: I'm acutely aware of that, Mr. Hearing Officer. Thank you, though.

THE HEARING EXAMINER: All right.

Mr. Rankin?

MR. RANKIN: I guess if I -- depending on what happens with his objection, I just wanted to reserve the right to respond to anything, because my understanding has been that we're simply providing a summary opinion and/or any additional responses to testimony provided. So yeah.

THE HEARING EXAMINER: Absolutely. You'll have the right to respond. I guess, you know, if you tender an exhibit from an expert witness that has listed areas that -- you know, of testimony and information that are covered, basically you're opening the door, in my view, to cross-examination on that, whether you examine the witness on direct on those points or not.

MR. RANKIN: I understand. That's my understanding as well.

THE HEARING EXAMINER: Okay. Good.

DIRECT EXAMINATION

BY MR. RANKIN:

MR. RANKIN: Mr. White, did you prepare summary slides reflecting your analysis and opinions?

MR. WHITE: I did.

MR. RANKIN: I'm going to move to these slides. I'll walk you through them. And if you would, Mr. White, at a high level just review for the commission -- one second. Not working. Give us an explanation of what you did with -- your analysis was with respect to the stratigraphic analysis and what are your opinions based on your work.

MR. WHITE: Yeah. So as we'll -- we'll cover in -- in some of the slides in this overview presentation, one of our objectives was to review the stratigraphy of -- of what we'd refer to as the project area, the area in and around Goodnight's SWD injection wells for the purposes of confirming stratigraphic relationships that have been delineated in -- in regional stratigraphic models.

To provide a little bit of overview in the slide that's currently shown, we summarize

information relevant and opinions relating to that stratigraphic analysis, first being that Goodnight's existing and proposed wells are located on the western edge of the central basin platform, which to the west transitions into the Delaware Basin.

Strata of the Capitan Reef and the Goat Seep are not present or have not been identified in Goodnight's well locations and the San Andres margin and Capitan Reef complex from our stratigraphic analysis appear to be separated laterally by about two to 2.6 miles.

In reviewing regional stratigraphic models and -- and as demonstrated by local well control, we interpret that the -- and confirm that the San Andres formation is not stratigraphically or temporarily equivalent to the Capitan Reef Complex.

Down towards the basin, San Andres shelf facies, which are utilized as -- as saltwater disposal injection zone grade to slope carbonates and basinal equivalent strata.

Specifically the San Andres is more -- is correlative to the lower Cherry Canyon and Brushy Canyon, members of the Delaware Mountain Group, all of which, as we'll see, underlie the Capitan Reef Complex.

The San Andres formation in general reflects cyclic deposition of shallow marine carbonates and fore-slope carbonates, which grade, as we mentioned, into the deeper basin to fine-grained, low-porosity, and low-permeability slope carbonates and further to tight silt stones, shales in some instances, and fine sandstones further from the shelf basin -- shelf-edge and basin-equivalent strata.

Porosity within the San Andres Formation, as I think some of the testimony has -- has mentioned at times in this case, is generally facies-specific. As sediments transition basin-ward to more slope fine-grained carbonates, we see a general diminishment of porosity from that shelf-to-slope transition and fore-slope environments.

And ultimately facies tracks, and -- and as shown in some of the work of other authors, ultimately preserves porous and non-porous zones in a particularly torturous way.

MR. RANKIN: Just for clarification, Mr. White, I think I heard you say "temporarily equivalent," but I think you meant to say "temporally"?

MR. WHITE: Temporally. That's correct.

MR. RANKIN: Thank you. Explain what this next image shows and how it relates to your stratigraphic analysis.

MR. WHITE: So as I mentioned, what we -- one of our objectives was ultimately confirm results of regional stratigraphic models that are more modern and are commonly presented in -- in literature and -- and what we view as being -- reflecting the best understanding of stratigraphic relationships.

This slide shows work by multiple authors, including Charlie Kerans [ph], which is presented in recent conferences and literature and would be one of the most widely accepted stratigraphic models.

In this model, which as you can see from some of the annotations, is an exhibit that has been submitted already as part of this case by other experts. It shows the has annotations for the Grayburg formation as well as the San Andres formation.

And my apologies that that some of the detailed information in this is probably a little difficult to read.

But ultimately showing the Grayburg formation being stratigraphically equivalent to the

Goat Seep and Bell Canyon geologic intervals as it moves from shelf to basin sediments, whereas the San Andres is stratigraphically equivalent to the Brushy Canyon and the Cherry Canyon portion of the stratigraphy.

MR. RANKIN: And just for clarification, Mr. White, the additional annotations here were inserted by Mr. McGuire; correct?

MR. WHITE: I believe that's correct, yes.

MR. RANKIN: Anything further on this slide?

MR. WHITE: No. Only to that effect that some of the -- the text on the diagram itself is in accordance with those annotations.

MR. RANKIN: Okay. Explain what this next graph shows and where it came from and what you did to annotate or change it in any way.

MR. WHITE: Absolutely. And this is -- what is shown in here is -- is a more simplified stratigraphic model that has similar interpretations of the relation -- the stratigraphic relationships published as noted there in Mellum and Shoal [ph], which, again, in a more simplified way and -- and probably easier to read, shows the stratigraphic

relationships of the Grayburg formation adjacent to the Goat Seep Formation and Bell Canyon members as well as the San Andres and -- and Cherry Canyon tongue being equivalent to the Cherry Canyon and Brushy Canyon Formations.

Now, what was modified from this diagram was the portion of the diagram to the left of the vertical red bar. The original publication did not include the San Andres. But as we're using this as a means to more clearly show those relationships, that area was filled in -- in accordance with the stratigraphic relationships shown in the Kerans [ph] model.

MR. RANKIN: Anything further on this?

MR. WHITE: No.

MR. RANKIN: Okay. In this next graph here or slide here, explain what these cross-section lines are and how they relate to your analysis that you're going to address in the subsequent slides.

MR. WHITE: Sure. In the general location map shown to the right, we have wells in the greater project area plotted as well as the transect lines of four cross-sections, which were evaluated to -- with the -- the primary objective of confirming -- or with an objective of confirming that

regional stratigraphic model interpretations are what is observed and the relationships of the San Andres and the Capitan Reef Complex are in agreement with those regional interpretations.

MR. RANKIN: Anything further on this slide?

MR. WHITE: No.

MR. RANKIN: Next slide here, is this one of the cross-section lines that you showed on the previous map?

MR. WHITE: That's correct.

MR. RANKIN: Will you review what this shows in your analysis?

MR. WHITE: Yes. And -- and this is one of the cross-sections from the written testimony that was submitted previously. This cross-section is cross-section T1 through T2 -- T1 prime, which would be the northernmost cross section in the location map on the previous slide.

And just to make sure everybody's clear with this, the cross-sections move from east to west or towards the basin, such that for clarity of -- of reviewing them and comparison to regional models, they are both oriented in the same way.

So what we see as we move from the left

side of the cross-section, you see various colored lines connecting well log information, in which various geologic formations have been identified.

The interval that is a matter of this hearing, the San Andres formation, has been illustrated with the -- the background and -- and annotation for disposal zone.

Where we interpret the transition of the San Andres into various basinal-equivalent facies or slope-to-basin facies have been illustrated with brown and various infilled backgrounds.

MR. RANKIN: And just to be clear, Mr. White, if I'm looking at this from -- on the left side is east and the right side is west; correct?

MR. WHITE: That is correct. Moving from shelf to basin environments.

MR. RANKIN: And that's true for each of the following cross sections; right? Is that true for each of the following --

MR. WHITE: That would be -- that would be correct. However, for -- for the purposes of -- of this overview presentation, this is the only cross section that is included in this presentation.

MR. RANKIN: Got it.

MR. WHITE: However, the other

cross-sections that were shown in the location map are included in the written testimony.

MR. RANKIN: Thank you. Okay. What does this next slide show and, again, how does it relate to your analysis regarding es stratigraphy in the area?

MR. WHITE: Could we -- could we also go back to the previous slide so I can make one more kind of description?

MR. RANKIN: Oh, yeah.

MR. WHITE: So overall as we look at the cross-section, what we interpret is that the stratigraphy and through the analysis of -- of other cross sections as we moved from basin -- or from shelf to basin, north to south across the project area is that we do see results that are in agreement with regional stratigraphic models where Delaware Basin-equivalent strata are -- are stratigraphically equivalent to San Andres Formation in the way of the Brushy Canyon member and the Cherry -- the lower Cherry Canyon member of the Delaware Mountain Group.

We also see in the westernmost portion of this cross section the last and the previous wells as being the wells where we interpret the Capitan Reef

and/or Goat Seep brief being present.

MR. RANKIN: Thank you. Anything further on this slide, Mr. White?

MR. WHITE: No.

MR. RANKIN: Okay. Next slide here, explain what these two diagrams show and how they relate to your analysis of the San Andres.

MR. WHITE: So in conjunction with the stratigraphic analysis, we also want to understand any potential connectivity to overlying an adjacent strata.

And what our research and log analysis has yielded is ultimately we expect that towards the basin -- as San Andres formation shelf deposits transition to finer grain muds and slope transitional sediments into the deeper basin, we expect and literature would support a diminishment of porosity in that direction.

And what is shown in Panel A of this slide is a figure modified from Sarge and Leman [ph] 1986 in which San Andrew's formation facies tracks were -- were assessed in about -- described. And the Panel A shows the facies tracks associated with the San Andres from left, more landward facies progressing to the right to more basinal facies or basin-ward

facies.

And I think it's been provided in testimony and in characterization of the San Andres formation, porosity generally is most frequently found in grainstone-dominated facies; whereas more landward evaporite facies, porosity is less developed and also less developed within the basin or -- or the shelf-to-basin transition intervals.

And so what's shown here diagrammatically in Panel A is as the San Andres formation is a progradation or a reflection of progradation systems, these facies, of which porosity develops at times and facies in which -- are less likely to have porosity development, as these shelf systems prograde basin-ward, it ultimately can produce complex vertical units of porous and non-porous carbonates.

MR. RANKIN: Anything further on that slide, Mr. White?

MR. WHITE: Yeah. I'd like to move to Panel B.

MR. RANKIN: Oh, yeah.

MR. WHITE: Panel B is the result of the work of one of our geologists in a consulting fashion, which was completed on the Penwell field in

Ector County, Texas.

And what we're seeing is the resultant interpretation of that work, which included the description and collection of core from the San Andres as well as the description and investigation utilizing cuttings.

And based on these spacing -- or -- or based on this analysis, the final interpretation was in accordance with the -- the reservoir characteristics in Panel A in that the interpretation included intervals of stacked and more complicated intervals of porous and -- and non-porous carbonates.

MR. RANKIN: Didn't mean to cut you off on Panel B. Anything further on this one?

MR. WHITE: No. I don't think so.

MR. RANKIN: Okay. This next slide here, Mr. White, explain what these two images show and how they relate to your assessment about the San Andres relative to the Capitan Reef.

MR. WHITE: So the diagrams included in this slide are ultimately a product of -- of demonstrating the results of our stratigraphic analysis.

The first shown in the top left, which is annotated as Panel B illustrates a cross-sectional

view of the project area as we understand it from well log analysis; whereas we see the approximate western extent of the San Andres shelf, the approximate western extent of the Grayburg shelf, and an annotation of the lateral distance between the San Andres shelf margin and the back reef extent of the Capitan Reef Complex. That's denoted by the red double-ended arrow.

Also, what is shown is diagrammatically the vertical offset and the intervening strata of the Bell Canyon member that separates basinal equivalent San Andres Formation sediments from the base of the Capitan Reef Complex.

In the panel to the right, which is labeled as A, we see a map view of that interpretation where based on the well log data we approximate the San Andres shelf edge we -- and to approximate the basin-to-slope transition area and the -- the eastern-most edge of the Capitan Reef Complex.

MR. RANKIN: Anything further on this one, Mr. White?

MR. WHITE: No.

MR. RANKIN: Review for us what you did in terms of reviewing and confirming the work that Goodnight had done evaluating the chemistry aspects of

the San Andres.

MR. WHITE: Sure. And similar to one of the previous slides, the information in this slide just provides a review of some of the critical information about this work as well as our opinions regarding this work.

And as stated here, Geolex was asked to conduct essentially what would be a peer review of Goodnight's methodology for verification of groundwater data.

This was based ultimately on their objectives to better characterize what available groundwater data they had for the San Andres formation, which as part of our peer review included USGS-reported sampling, the NATCARB, gotech databases as well as review of the Hiss 1975 data within the greater project area.

In completing this review data, you know, reported samples were scrutinized to gather as much information about the well construction history. Well documents were reviewed to verify if the circumstances of each particular well or sample was adequate for identifying it to be solely sourced from the San Andres formation rather than being a commingled sample, a sample that was incorrectly

reported or incorrectly transcribed.

And as part of this, the -- Goodnight had, I believe through a FOIA request, attained some of the supplemental tabulated information from the Hiss 1975 work. So those data were crosschecked against map data to -- to ensure that all of the data could be confirmed.

So some of the examples of a sample that couldn't be verified is -- I -- I briefly mentioned would be looking at the data and seeing that a well never was drilled to the depth to reach the San Andres. In those instances, those data would not be included in a regional analysis, as they could not be verified to be solely reflective of San Andres.

Additionally, if weld documents or records suggested that the sampling was done in an open hole that -- that appeared to be commingled with another formation, those would not be included in Goodnight's kind of regional compilation of data and verification of data.

With respect to the area that we reviewed, which is, I believe, 14 contiguous sections in the area of -- of Goodnight's wells near Hobbs, New Mexico, we have on a sample-by-sample basis reviewed those documents and -- and agree with

Goodnight's verification of those data.

MR. RANKIN: Anything further on this slide?

MR. WHITE: Yes. But -- but there's a little bit of -- one more thing. So kind of separate from this, moving to a different topic, as described in the last bullet point here, as the topic of potential communication with the Capitan Reef and underground sources of drinking water, we also reviewed and did brief -- brief review of -- of documents in and around the Hobbs and Eunice, New Mexico, area to understand if those communities or municipalities had any reliance on the Capitan Reef.

MR. RANKIN: And you'll address that in a subsequent slide?

MR. WHITE: That's correct.

MR. RANKIN: Okay. Anything further in this slide?

MR. WHITE: No.

MR. RANKIN: Okay. Here, explain what you've done to verify the data and what the results show.

MR. WHITE: Shown in this slide is the result of our peer review, which show the mapped locations for groundwater sample data that were

available to us for the review. Ultimately, this verification process was applied, as I mentioned previously, to the USGS data, the NATCARB, and -- and gotech data.

And in this map, we show those data points which have -- can be confidently verified as being sourced from the San Andres formation. This map also includes additional data that have been reported in -- in published literature, for example, of Strickland, et al, and samples that were the analysis records were provided and are reflective of Goodnight Midstream's SWD wells.

MR. RANKIN: Anything further on this slide?

MR. WHITE: Only that the -- it may be a little difficult to see -- but kind of the -- the pinkish, reddish polygons that are coloring in certain township and ranges are the location -- or are the locations for which our review was completed.

MR. RANKIN: Okay. I think this is your last slide. Mr. White, just explain what you did in addition to the chemistry study to evaluate potential reliance on drinking water in the communities around this area.

MR. WHITE: Yes. This slide shows

essentially three excerpts and -- and sources of information about groundwater supplies or water supplies for areas of Hobbs, New Mexico; Eunice, New Mexico; and a quick excerpt from a regional water plan developed by the office of the State engineer.

What excerpts of the text of these reports is included is for Hobbs and Eunice, respectively, statements in these reports that confirm that these municipalities currently have no reliance on the Capitan, solely sourcing their municipal water supplies from shallow groundwater of the Ogallala aquifer.

These reports are -- were -- or were distributed in 2023. Since submittal of my written testimony, I have reviewed 2024 Hobbs, New Mexico, reports that -- that show that this is still in accordance.

The Lea County regional water plan, the excerpt that is included here ultimately speaks to the quality of groundwater resources in the Capitan being characterized as very poor and as has been communicated by other experts in this case, ultimately that total dissolved solids concentrations range in excess of 10,000 parts per million or milligrams per liter and ultimately exceed thresholds required for

USDW groundwater.

MR. RANKIN: Anything further on this last side, Mr. White?

MR. WHITE: No.

MR. RANKIN: Now, Mr. White, this testimony you just provided is a summary of the testimony that you've adopted as your own in your Rebuttal Exhibit I; correct?

MR. WHITE: That is correct.

MR. RANKIN: And each of these reports that you refer to, they're included in their entirety and as attachments or exhibits to your testimony?

MR. WHITE: That is correct.

MR. RANKIN: And you didn't address every one of your exhibits in your testimony, but through the adoption of your rebuttal testimony, those exhibits are incorporated and referenced in your testimony; correct? In your written testimony?

MR. WHITE: That is correct.

MR. RANKIN: Mr. Hearing Officer, I don't believe I have any further questions of Mr. White and make them available for cross-examination on not only what he said here, but on his written rebuttal testimony as well.

THE HEARING EXAMINER: Thank you for

making that perfectly clear.

Empire?

MR. PADILLA: Mr. Examiner, we've agreed with Mr. Moander that he be allowed to go first. We don't have any cross-examination of Mr. White unless Mr. Moander can come up with something dramatically different.

THE HEARING EXAMINER: That piques your interest? All right.

Mr. Moander, you're up.

MR. MOANDER: And I'll represent that that is correct from Mr. Padilla. I don't anticipate going into areas that will arouse a need for further examination or any examination by Goodnight.

CROSS-EXAMINATION

BY MR. MOANDER:

MR. MOANDER: Mr. White, I'm going to need just a second to get my screens up, and my poor computer is really tired of my PDF collection. All right. There we go. All right. And can -- do I need to zoom in for you a little bit, Mr. White? Because that's -- I realize I highlighted it. It also doesn't look great on the screen.

MR. WHITE: No, sir. I can -- I can navigate it.

MR. MOANDER: Excellent. And I think you could probably guess just reading this that this comes from your rebuttal testimony; is that right?

MR. WHITE: That is correct.

MR. MOANDER: And that'd be -- at this point we're looking at paragraphs 13 and 14, so paragraph 13 outlines what I'll describe here as sort of data sources that both, I'd say, you and Goodnight relied upon; is that correct?

MR. WHITE: That's correct.

MR. MOANDER: That includes -- and this won't be a comprehensive list, but to give some examples and particularity -- USGS data?

MR. WHITE: That's correct.

MR. MOANDER: Gotech data?

MR. WHITE: That's correct.

MR. MOANDER: NATCARB as well?

MR. WHITE: That's correct.

MR. MOANDER: Independent well data?

MR. WHITE: That's correct.

MR. MOANDER: And we saw just saw the municipal reports on the last document; is that right? We'll call them municipal or county documents that you --

MR. WHITE: You -- you mean summarized

on the last slide?

MR. MOANDER: Yes.

MR. WHITE: Oh, yes. That's correct.

MR. MOANDER: And then you had some test data from individual wells?

MR. WHITE: That's correct.

MR. MOANDER: So then going to paragraph 14, this is what I've labeled sort of the methods or methodology. For example, one of the things that was done is data was controlled through screening for confirming formations and interval depth?

MR. WHITE: That's correct.

MR. MOANDER: Would it surprise you to hear that OCD thinks this is a good model, and we appreciate the work that was done on it?

MR. WHITE: No. I don't think so.

MR. MOANDER: And in your opinion, would you construe this as comprehensive, your report and your analysis?

MR. WHITE: I mean as a -- as a scientist, I think it is comprehensive in -- with respect to the available data.

MR. MOANDER: That's an excellent point, Mr. White. I appreciate that. So more quality

data improves analysis, doesn't it?

MR. WHITE: Absolutely. And -- and I think ultimately that is some of the motivation for this work in making sure however these reservoirs and -- and relationships are interpreted, they are based on data that there is a confidence in.

MR. MOANDER: And OCD absolutely agrees with you. And, in fact, if we look at paragraph 13, the second sentence says "Goodnight has completed a review of available groundwater data for the purpose of developing a more thorough spatial assessment of regional groundwater characteristics and building upon the work of prior investigators"; right?

MR. WHITE: That's correct.

MR. MOANDER: And then Geolex also seems to really believe in that, because the first sentence in paragraph 15 says "As part of our retention, Geolex completed a peer review of Goodnight Midstream's methodology for the verification of groundwater chemistry data"; right?

MR. WHITE: That's correct.

MR. MOANDER: I do not have any additional questions for this witness. I will pass the witness.

THE HEARING EXAMINER: All right.

We're going to call him one of OCD's witnesses based on that cross-exam. Just kidding.

All right. Rice, questions for Mr. White? Oh, I'm sorry.

MR. MOANDER: I'm going to stop the sharing here, too.

THE HEARING EXAMINER: Thank you.

Mr. Padilla, was there anything there that was of such significance to Empire that you would like to cross examine Mr. White?

MR. PADILLA: Nothing, Mr. Examiner.

THE HEARING EXAMINER: Thank you.

All right. Mr. Beck, for Rice?

MR. BECK: No questions.

THE HEARING EXAMINER: And, Mr. Suazo, for Pilot?

MR. SUAZO: No questions.

THE HEARING EXAMINER: Okay. Thank you.

MR. SUAZO: Let's reverse order. Dr. Ampomah, let's start with you.

CROSS-EXAMINATION

BY DR. AMPOMAH:

DR. AMPOMAH: Thank you, Mr. White, for your testimony today. I probably will be very, very

short and brief.

So I want to know. So from -- if we can have your Slide Number 3 up, I do have a quick question there. Okay. Now, and probably maybe let's go to the Number 4. I think that one was more or less much better. Yeah. Right here.

So is the -- is the Goat Seep in communication with the Capitan Reef based on your analysis?

MR. WHITE: So we didn't really look at the relationship of the Goat Seep Reef to the Capitan and that interface and what to expect in terms of -- of communication between the two.

In looking at the base of the Goat Seep and the Grayburg, it -- it does look like the base of the Goat Seep is more dolomitic. It seems a little tighter, at least for a limited interval at that interface. But didn't explore the relationship between the Goat Seep and Capitan with respect to communication.

DR. AMPOMAH: Now, let me ask. Is the Goat Seep an aquifer that is a concern?

MR. WHITE: An aquifer in terms of a USDW?

DR. AMPOMAH: Yeah.

MR. WHITE: I don't believe so.

DR. AMPOMAH: Now, you said you did not really look into the relationship between the go see and the Capitan Reef.

Now, don't you believe -- or could there be a possibility where, let's say, if there is any communication between the Goat Seep and the reservoir, either the Greenberg, or the San Andres, there could be a the point in time where there can be some impact, you know, on the Capitan Reef from the Goat Seep?

MR. WHITE: Well, I think ultimately the characteristics of the -- the geologic strata that separate vertically those two intervals, we have confidence and they -- and they display characteristics that I -- that I don't think they would have much transmission capability between them.

As we move out of the San Andres in the basin-ward direction, we expect to see and facies-tracked progression would expect to see low permeability, and -- and thus reduced communication in the basin-ward direction.

Additionally, when we're transitioning into the silts and the finer grain clastic sediments, again, we would expect not a lot in terms of vertical

communication potential.

DR. AMPOMAH: Are there any existing monitoring -- monitoring wells -- or let's say monitoring capabilities that is probably in the -- that exist in the Capitan Reef that you know?

MR. WHITE: Not that I am immediately aware of at this moment. I know -- I know there's limited data I think at times in terms of -- of being able to monitor it.

DR. AMPOMAH: Now, do we know the chemistry of the Capitan Reef? The water chemistry?

MR. WHITE: While we didn't, you know, complete any comprehensive water chemistry study, I think, you know, the aggregate of -- of kind of water compilation data could be utilized for that.

DR. AMPOMAH: So if OCD is requesting for monitoring in the Capitan Reef as a result of any operations that is ongoing, do we have a baseline?

MR. WHITE: Well, I think we would -- I think we would need to establish one.

DR. AMPOMAH: Okay. Thank you, sir.

No further questions.

THE HEARING EXAMINER: Okay.

Mr. Lamkin?

MR. LAMKIN: I do not have any

questions for Mr. White. Thank you.

THE HEARING EXAMINER: All right.

Chairman Razatos, questions for Mr. White?

MR. RAZATOS: I do not have any questions for Mr. White either.

Thank you, Mr. White.

THE HEARING EXAMINER: Mr. Shandler, any questions from you?

All right. Then we come back to Mr. Rankin for redirect of Mr. White.

MR. RANKIN: Mr. Hearing Officer, I have no redirect for Mr. White.

THE HEARING EXAMINER: Okay.

Empire, may this witness be excused?

MR. PADILLA: Yes, sir, he may.

THE HEARING EXAMINER: OCD?

MR. MOANDER: Yes, sir.

THE HEARING EXAMINER: Rice?

MR. BECK: Yes.

THE HEARING EXAMINER: Pilot?

MR. SUAZO: Yes.

THE HEARING EXAMINER: All right. Thank you. I think, for the record, that sets a record for witness duration in this case.

MR. WHITE: I'm glad that I hold it.

THE HEARING EXAMINER: Okay. So what are we going to do now, Mr. Rankin?

MR. RANKIN: I want to stick around for the duck quack. I'm just kidding. I think we can all get 15 minutes of our lives back. We will -- at the pleasure of the Commission, I would ask that we resume on May 19th with our final witness, Mr. Preston McGuire.

THE HEARING EXAMINER: Okay. He's not available now?

MR. RANKIN: No. Nor have we completed a summary slide, since we haven't shared them with counsel. I did not expect that we would've set a record today, so I didn't know that we were going to be done.

THE HEARING EXAMINER: Well, I'll just tell you what John Conway told me a number of years ago: when you're out of witnesses, you are out of trial.

MR. RANKIN: Well --

UNIDENTIFIED SPEAKER: I second that motion.

MR. RANKIN: Yeah. I understand.

THE HEARING EXAMINER: All right.

Okay. Well, you guys have done really well on the timing. It makes me wish that we'd impose these time limits three weeks ago.

MR. RANKIN: Mr. Hearing Officer, I guess there's one item that's open still on the last witness, and that was I guess Mr. Moander's objection to admission of that Exhibit I, so -- and his attachment, so I just want to make sure that that's been resolved.

MR. MOANDER: I'll withdraw my objection.

THE HEARING EXAMINER: Okay. Thank you. They were admitted over your objection now they're admitted under your objection. Thank you.

MR. RANKIN: I just wanted to make sure that was -- I didn't know if the record was clear.

THE HEARING EXAMINER: Okay. Appreciate it.

Mr. Shandler?

MR. SHANDLER: During the next break of time, are the parties going to get together and have a stipulated post-hearing schedule of findings of fact, et cetera? And when would we expect to see that?

MR. MOANDER: Just to clarify you mean not right now? Like, during the interim, prior to the

reconvening of the hearing?

MR. SHANDLER: Mr. Hearing Officer. Yeah. I'm not going to put you on the spot now, but I would like you during the interim to work together and have a stipulated calendar post hearing.

MR. MOANDER: OCD will agree to work on that. I don't think that should pose a problem unless somebody else does.

MR. RANKIN: I think that's a good idea, Mr. Shandler. And we will engage with parties to confer.

THE HEARING EXAMINER: And we're just talking about the timing of those submissions? Or --

MR. SHANDLER: Mr. Hearing Officer, that's probably going to be an important point. I would like the parties to think about page limits, but I'm not dictating things. Hopefully, they can agree to what they think they can make their presentation with without being cumulative.

MR. RANKIN: One other item, Mr. Shandler, I guess you mentioned findings of facts and conclusions of law. Are there other post-hearing submissions that you were contemplating we confer about?

MR. SHANDLER: So, Mr. Hearing Officer,

I remember someone saying they wanted to legal briefs. I don't know if that can be wrapped into the conclusions. I'll let you guys figure that out.

MR. RANKIN: Okay. And then on the assumption that we will be able to complete, I guess it's an open question whether we'll be able to reserve time for closing arguments. In the event we don't, does the Commission prefer written closings to go with the findings of fact and conclusions of law in the event we do not have time for oral closings?

MR. SHANDLER: These are all details for the lawyers to figure out.

MR. RANKIN: Okay. Very good. Before we confer, I wanted to know if there was a preference from the commission. I guess that was my -- that's why I raised it; so --

MR. SHANDLER: I guess my last word is concise and excellent findings of fact that I can cut and paste.

MR. RANKIN: Sure. That will be all of our goals. Yeah. Thank you.

THE HEARING EXAMINER: I think Mr. Shandler's at a bit of a disadvantage, because he wasn't here when these issues were first discussed. So, you know, you guys wanted the oral closing

arguments, and if there's time, we'll hear that.

I think the point that was made early on in these proceedings is that the Commission is probably more interested in findings of fact and conclusions of law than it is -- I mean, I know that your erudite closing arguments will be of great assistance to the Commission.

But by the same token, we all have heard -- and cringed, probably -- at the jury instruction that says that, you know, what lawyers say is not evidence. So that's just to recap, you know, what we discussed early on before Mr. Shandler took over the reins here.

All right. Well, I guess you guys unless you want to hang around for the duck quack.

MR. WAYMEYER: And I apologize. My understanding was that there had been some request that on the exhibits we handled earlier today, that we, that we clicked through them with a number assigned to them just for the record.

I'm happy to do that. If that's not something productive, I don't need to do that. But my understanding was someone made that request. Ms. Apodaca. This will take two minutes or less. I'll put on the record --

THE HEARING EXAMINER: Are these the 14 exhibits that we went over this morning?

MR. WAYMEYER: So what I have is Empire Cross, all of these will be Empire Cross Exhibits. Number 1 will be the simulation model vertical permeability spreadsheet. Number 2 will be simulation model vertical permeability distribution.

Number 3 will be 1959 pressure calculation for EME Number 20. Number 4 will be Rice's EME 20 bottom hole pressure survey. Number 5 will be Rice's EME 20 wellboard diagram. Number 6 will be pressure depletion from EME 20 BHP in 1959 to RFT pressure points in 1986.

Number 7 will be the impact of rock facies on oil saturation. Those are three slides. Those are the Scott Birkhead slides. Number 8 will be Grayburg conventional core measurements. Those are four slides, being the EMSU 649, 650, 653 and 710. Number 9 will be the SPE 122921 estimates of potential CO2 demand for CO2 EOR in Wyoming basins.

Number 10 will be Goodnight fluid level data as of April 7, 2025. Number 11 will be water saturation from EMSU working interest owners meeting in 1990.

That concludes the numbered exhibits

that'll be coming for filing.

THE HEARING EXAMINER: Okay. And that doesn't include the one that I have that was not admitted, the economic sensitivity?

MR. WAYMEYER: That's correct. That one is not in that list.

THE HEARING EXAMINER: Okay. Well, all right. Okay. Well, thank you for -- that'll, I guess, make the record clear.

Anything further from Goodnight for today, at least?

MR. RANKIN: No. Thank you very much.

THE HEARING EXAMINER: Anything further from Empire?

MR. WAYMEYER: Nothing further from Empire, and we thank the Commission and all participants for their patience and time.

THE HEARING EXAMINER: I see OCD packing up. I suspect that means nothing further for --

MR. MOANDER: I have nothing further to discuss, say, or talk about this case for the rest of the day. I've said all I got to say.

THE HEARING EXAMINER: Rice?

MR. BECK: Nothing from Rice.

THE HEARING EXAMINER: And Pilot?

MR. SUAZO: Nothing further from Pilot.

THE HEARING EXAMINER: All right. Well, thank you all for an interesting week. We'll see you back again on May the 19th.

Mr. Razatos, any parting comments or items you need to cover before we go off the record?

MR. RAZATOS: No, I do not have anything. Thank you, everybody. Have a great weekend.

THE HEARING EXAMINER: Okay. Thank you all.

Madam Court Reporter, we'll be off the record until May the 19th.

THE REPORTER: We are off the record. The time is 1:59 p.m.

(Whereupon, at 1:59 p.m., the proceeding was concluded.)

CERTIFICATE

I, NICOLE JOHNS, the officer before whom the foregoing proceedings were taken, do hereby certify that any witness(es) in the foregoing proceedings, prior to testifying, were duly sworn; that the proceedings were recorded by me and thereafter reduced to typewriting by a qualified transcriptionist; that said digital audio recording of said proceedings are a true and accurate record to the best of my knowledge, skills, and ability; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

NICOLE JOHNS

July 1, 2025

Notary Public in and for the State of Texas

CERTIFICATE OF TRANSCRIBER

I, JACOB MYERS, do hereby certify that this transcript was prepared from the digital audio recording of the foregoing proceeding, that said transcript is a true and accurate record of the proceedings to the best of my knowledge, skills, and ability; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

July 1, 2025

JACOB MYERS

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