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:

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL, EDDY COUNTY, NEW MEXICO. CASE NO. 20475

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

July 25, 2019

Santa Fe, New Mexico

BEFORE: PHILLIP GOETZE, CHIEF EXAMINER
WILLIAM V. JONES, TECHNICAL EXAMINER
KATHLEEN MURPHY, TECHNICAL EXAMINER
DAVID K. BROOKS, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Phillip Goetze, Chief Examiner; William V. Jones and Kathleen Murphy, Technical Examiners; and David K. Brooks, Legal Examiner, on Thursday, July 25, 2019, at the New Mexico Energy, Minerals and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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EXHIBITS OFFERED AND ADMITTED

(8:49 a.m.)

EXAMINER GOETZE: All right. Let's go to 20475, application of NGL Water Solutions Permian, LLC for approval of a saltwater disposal well in Eddy County, New Mexico.

Call for appearances.

MS. BENNETT: Good morning. Deana Bennett on behalf of NGL Water Solutions Permian, LLC, the Applicant in this case.

MR. RANKIN: Adam Rankin with the law firm of Holland & Hart appearing for COG.

EXAMINER GOETZE: How many witnesses?

MS. BENNETT: I have two witnesses.

EXAMINER GOETZE: Will the witnesses please stand and be sworn in by the court reporter, please?

(Dr. Zeigler and Mr. Duncan sworn.)

MS. BENNETT: Thank you.

I'd like to call my first witness, Mr. Neel Duncan.

EXAMINER GOETZE: Please.

NEEL L. DUNCAN,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MS. BENNETT:

Q. Good morning, Mr. Duncan.

A. Good morning.

Q. Will you please state your name for the record.

A. Neel Duncan.

Q. And for whom do you work?

A. Integrated Petroleum Technologies or, new, IPT, Inc., and we're a consultant to NGL Water Solutions.

Q. What are your responsibilities as a consultant for NGL?

A. Drilling and operations for saltwater disposal wells in southeast New Mexico and some regulatory interactions here with the hearings.

Q. Thank you.

Have you previously testified before the Division or the Commission?

A. Yes, I have.

Q. Were your credentials accepted as a matter of record?

A. Yes, they were.

Q. And you just testified a moment ago that your area of responsibility includes areas of southeastern New Mexico, right?

A. Yes. That's correct.

Q. And are you familiar with the application that NGL filed in this matter?

A. I am.

Q. And are you familiar with the saltwater disposal well that is the subject of this application?

A. Yes, the Whitt No. 32.

MS. BENNETT: At this time I'd like to tender Mr. Duncan as an expert in operations and engineering matters.

EXAMINER GOETZE: Mr. Rankin?

MR. RANKIN: No objection.

EXAMINER GOETZE: Very good. He's so qualified.

MS. BENNETT: Thank you.

Q. (BY MS. BENNETT) Let's turn to Tab 1, please. Is Tab 1 the application for the Whitt 32?

A. Yes, it is.

Q. And what does NGL seek under this application?

A. We seek a water injection well to the, air quotes, "Devonian," and it will be constructed such that we can have a string of 7-inch-by-5-1/2-inch tubing in the well and constructed to protect fresh water. And it will inject in the Devonian with a rate of about 50,000 barrels per day instantaneously.

Q. And is the 50,000 barrels per day the maximum

rate that NGL is seeking?

A. Yeah. That's maximum. It'll actually average quite lower.

Q. How about the average pressure for the well? What is NGL seeking for the average pressure?

A. We are seeking .2 psi per foot of depth to the top of the injection interval. We don't know an exact pressure yet.

Q. Uh-huh. But in the application, NGL did do a calculation of the .2 times the depth --

A. Yes.

Q. -- and came up with an accepted psi?

A. That's correct.

Q. And what is that anticipated psi?

A. I don't remember.

Q. On paragraph four of the application, the very first page, page 1 of paragraph four.

A. It's not in your -- oh, yes. 2,276 psi, the initial apply [sic] for pressure.

Q. Thank you.

Do you see that Mr. Rankin is here on behalf of COG?

A. Yes, I do.

Q. Did any other parties enter their appearance in this case as far as you know?

A. No. I don't even think the State Land Office did this time.

Q. No, they didn't.

A. Yeah. Yeah.

Q. Do you know why COG entered its appearance in this case?

A. Yes. They -- after our Whitt 32 application, they applied for the Littlefield SWD.

Q. And do you know about how close the Whitt 32 well is to the COG Littlefield 33 Fed well?

A. Yes, about seven-tenths of a mile.

Q. Do you know when approximately COG filed its Littlefield application?

A. I'd have to look back through my notes, but it was about, I think, May 13th, 2019.

Q. And so that was after NGL filed the Whitt 32 application?

A. Yes. We filed that around March 26th or maybe even mid-March.

Q. And do you know if -- well, do you know whether COG asked NGL to continue this case when it was originally set?

A. Yes, and we agreed to, to the continuance to today's date.

Q. And did COG ask NGL for another continuance, to

continue today's hearing?

A. Well, yeah. We got to today, but I don't think there was more than one continuance.

Q. Uh-huh.

A. Yeah.

Q. So one of the benefits or one of the things that NGL is seeking in this application, which has become sort of a standard ask these days, is the larger tubing size for these deep Devonian wells. What's the benefit of having a larger tubing size?

A. It reduces friction pressure, therefore, reducing horsepower, more water per one well, less disposal wells, just better economics, greener, and it's something we've been doing. The OCD has previously approved.

Q. Now, did NGL or has NGL considered the ability to conduct fishing activities if needed in this size of tubing?

A. Yes, we have. And as long as the 7-5/8 casing, which is the smallest casing in the well, is 39 pound or lighter, then we can fish -- fish the 5-1/2.

Q. And who did you discuss that fishing procedure with? Was it Steve Nave?

A. It was Steve Nave. He's a fishing expert in the Carlsbad-Artesia area, and he's done jobs where he's

fished 5-1/2 and 7-5/8.

Q. Now, NGL has been to hearing a number of times before the OCD, right?

A. Yes.

Q. And we have -- NGL has presented information from a petroleum -- well, a reservoir engineer and seismologist and also a geologist; is that right?

A. Yes. And in order to streamline the process, we've done this by affidavit, in agreement with the OCD.

Q. So in the materials that I've prepared, is Tab 2 an affidavit from Scott Wilson?

A. Yes, it is.

Q. And is Scott Wilson the reservoir engineer that NGL hired or retained to conduct the reservoir engineering study?

A. Yes. He's with the Ryder Scott Company.

Q. Has he testified before the Division before?

A. He has, and his qualifications have been accepted.

Q. And he testified on behalf of NGL?

A. Yes.

Q. And he walked through the studies in prior cases for the Division?

A. Yes, he has.

Q. And in his affidavit, does he testify that

using the increased tubing size will only have a very small impact on pore pressures in the formation?

A. Yes, he does.

Q. And does he testify that in his opinion, increasing the tubing size will not cause fractures in the formation?

A. That's correct.

Q. Does he conclude that over a period of 20 years, the majority of fluids injected will stay within a mile of where the well is located?

A. Yes, he does.

Q. Let's look at Exhibit 4, Tab 4. A moment ago we talked about how NGL has retained a couple of seismologists and a geophysicist; is that right?

A. That's correct.

Q. And is the seismologist Dr. Steven Taylor?

A. Yes, he is.

Q. And is the first couple of pages of Exhibit 4 Dr. Taylor's affidavit?

A. Yes, it is.

Q. Has Dr. Taylor testified before the Division before?

A. Yes, he has, for NGL, and his qualifications have been accepted.

Q. Does Dr. Taylor operate a seismic monitoring

station dedicated to NGL wells?

A. Yes, he does. He operates the network for all of NGL's operations in the United States, from North -- formally North Dakota, Colorado, New Mexico and Texas.

Q. Is his study -- does his study start on page 59 in the materials that are labeled Exhibit 4A?

A. Yes.

Q. Did NGL also retain Mr. Todd Reynolds, a geophysicist?

A. Yes. He's with Platt Sparks. He's testified before this Division, and his qualifications have been accepted.

Q. Did he in the past and did he for this case run a fault slip probability analysis?

A. Yes. He used the Zoback fault slip probability analysis from Stanford University.

Q. And does his study -- does it start on page 63 of the materials and go to page 80 of the materials?

A. Yes, it does.

Q. In Mr. Taylor's -- in Dr. Taylor's affidavit and in the study prepared by Mr. Reynolds, did they conclude that there is very little risk of induced seismicity if this well is drilled?

A. Yes.

Q. Let's look at Exhibit 5. Is Exhibit 5 an

Affidavit of Notice prepared by me?

A. Yes, it is.

Q. And if you turn to page 82, is that a list of names to whom certified letters were sent?

A. Yes, it is.

Q. And is page 83 the summary of the status of those mailings?

A. Yes, it is.

Q. Page 84, is that an Affidavit of Publication showing proof that notice of this case was published in the newspaper on 4/18/19?

A. Yes, it is.

Q. Turning to 5B, is that an affidavit of Chris Weyand?

A. Yes, it is.

Q. And who is Chris Weyand?

A. He's an engineer with Lonquist in Austin, Texas, and he prepares the C-108 with the well design information from my firm.

Q. And he is the one who provides me with the addresses for the affected parties, right?

A. Yes.

Q. And in his affidavit, does he testify that he, in paragraph six, compiled a list of all the parties entitled to notice, reviewed county and Division records

and followed the sort of stepwise requirements that are laid out in the New Mexico Administrative Code?

A. Yes.

Q. Does he note that there was an adjacent landowner in Texas?

A. Yes.

Q. And did he testify that he provided that notice information to me?

A. Yes.

Q. Were Exhibits 1, 2, 4 and 5 created by you or prepared under your supervision or direction or compiled from company business records?

A. Yes, they were.

MS. BENNETT: At this time I'd move to have Exhibits 1, 2, 4 and 5 admitted into the record.

EXAMINER JONES: Mr. Rankin?

MR. RANKIN: At this time I don't have any objection to those affidavits or the attached exhibits.

EXAMINER GOETZE: Very good. So Exhibits 1, 2, 4 and 5 are so entered.

(NGL Water Solutions Permian, LLC Exhibit Numbers 1, 2, 4 and 5 are offered and admitted into evidence.)

MS. BENNETT: Thank you.

And I don't have any further questions for

Mr. Duncan at this time.

EXAMINER JONES: Mr. Rankin?

MR. RANKIN: I do have some questions.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Mr. Duncan, good morning.

You had some discussions with COG Operating regarding this location of NGL's proposed well?

A. They -- they called a long time ago? I don't remember the approximate time, but yes.

Q. So you did have some discussions.

Do you recall what the concerns were about the location of the proposed well?

A. Proximity. They -- after they applied and had seen our application, they questioned their proximity to our well.

Q. Proximity to what exactly?

A. The Whitt 32.

Q. Did they raise any other concerns about proximity to any of their other facilities?

A. Not that I recall.

Q. Is the NGL well -- is it going to be on COG's lease; do you understand?

A. Well, it's on NGL's surface. We do not inject into minerals, so I don't know --

Q. So do you know whether or not that's on COG's lease -- operating lease, that location?

A. I can't testify to that. I know it's on our -- it's on NGL's surface -- private surface.

Q. So would you turn to page 21 of the materials in your exhibit? I guess it's behind Tab 1. It's page 21 of your materials. Do you see that map that you've got in your own exhibits there?

A. Yes, I do.

Q. And the Whitt 32 is indicated by that cross mark, is that right --

A. Yes.

Q. -- kind of in the center of the map?

And do you see there is an existing well -- horizontal well, and it appears to be an east-to-west orientation well; is that right? Do you see that?

A. That's correct.

Q. Just to the north of your location?

A. Uh-huh.

Q. Do you know anything about that well?

A. I know it was looked at for anticollision purposes when this well was sited, but I don't think there is -- I will testify there is not a collision risk, in our -- in our -- in our mind.

Q. Okay. So do you know how far away that well

is -- that lateral is from your proposed location?

A. It's probably 200 feet or so. It's in this -- it's in this window. We always try to put these wells in the setback so we wouldn't provide -- we wouldn't have a collision risk.

Q. So you evaluated the collision risk for this well?

A. We always do. Yeah. And we'll look at your -- we'll provide a directional survey for this well. We'll look at any actual directional surveys that you have.

Q. And when NGL is drilling the proposed Whitt 32, what protocol does it have in place to ensure it will not interfere or collide with the existing well?

A. I mean, we always have directional tools in the hole, and we continuously monitor our -- our -- where the bit is. We're -- we're very close behind the bit with directional tools and very accurate. That information comes up on mud pulses, and it's a continuous operation.

Q. In the event there is an issue, do you have a protocol in place for notifying COG and the Division about any issues during drilling?

A. We would probably not see -- if there was a collision, I don't know that we would see it. COG would see it first. And, of course, they would probably

notify NGL and the Division. But the normal protocol is avoid -- avoid wells. You know, the directional tools are very accurate these days, especially going vertical.

Q. So if you're not sure at the time of drilling whether you've had a collision or not, how do you know that you're staying away from COG's location and their lateral area?

A. By the mathematics, just by the triangulation. We have a -- we have a very professional directional company and continuous monitoring. I've been doing this a long time, and I haven't hit one yet.

Q. Okay.

MS. BENNETT: (Knocks on wood.)

Q. (BY MR. RANKIN) So you've evaluated that, and in your opinion, there is no risk of collision but -- and in your view, you have tools in place to protect against collision?

A. Yes, sir.

Q. But at the same time, you can't sit here today and say that as you're drilling, you know whether or not you've had an impact or an interference with COG's well lateral in that location?

A. Well, if you get off track and you know you're in the wrong lane, you know you'll probably have a collision. We stay -- we stay in our lane. So it's

just like driving down the highway.

Q. Now, I'm going to --

MR. RANKIN: If I might, Mr. Examiner, approach. I have a map I'd like Mr. Duncan to review with me if I could.

EXAMINER GOETZE: Very good.

Q. (BY MR. RANKIN) Mr. Duncan, I'll represent to you that this is a map that COG prepared, and I just want to review it with you. And I understand that you're just looking at it now for the first time, but I just want to walk through it with you and make sure I have the right locations and distances as best you understand them.

Looking at the map, do you see how there are two circles, approximately one-mile radius?

A. Yes, I do.

Q. And do you see how the center of those circles on the left is the Whitt 31 SWD, and that's an NGL well that was filed for hearing in Case 20404; is that correct?

A. Yeah. Whitt 31 is actually under advisement. We went to hearing on May 2nd.

Q. And what was the volume of injection for that well -- maximum requested volume of injection for that well?

A. Maximum requested for that one was 50,000.

Q. And that is approximately one mile from the proposed location for this Whitt 32 well; is that correct?

A. That's correct.

Q. And the maximum injection volume rate for this well is also 50,000 barrels per day; is that correct?

A. Yes. Yes. Recognizing that they're a mile apart, we did go on record to say we will work with the Division on rate.

Q. Okay. When you say work with the Division on rate, what do you mean by that?

A. We want to make sure we're always addressing any concerns of the Division about induced seismicity and we also have our monitoring program for these wells. So, you know, we're a bit flexible on rate. We'll apply for a maximum of 50,000, and that's an instantaneous rate. Average will be less than that.

Q. Okay. But you have said here today that you don't know what those rates are going to be, what the average rates will be for either of these wells?

A. That depends on a lot of factors. I just can't testify to that at this time.

Q. Are these wells contracted for? Do you have water -- water disposal rights set up for these wells

for injection?

A. That's an end of the business I'm not in. I'm not into NGL's commercial side.

Q. Now, just to the east of the Whitt 32 is the smaller box in which it's labeled "Littlefield 33 Fed SWD No. 1." Do you see that?

A. I do. It looks like it's right on top of a horizontal well.

Q. And that's the Littlefield well that COG has raised issues with NGL; is that right?

A. Yes, it is.

Q. And that's the well you've identified as being approximately seven-tenths of a mile from your Whitt 32, right?

A. Yes. When COG filed it, we noticed it was seven-tenths of a mile away from our Whitt 32.

Q. And do you understand that COG is intending to operate that well as a lease disposal well only?

A. I don't, but -- is that your -- is that what you're --

Q. I'm asking if you have that understanding, if you understood that COG is intending to operate that well as a lease disposal well?

A. I do not know. If it's in their application, it's probably on record as such, but -- can you point

where that election was made in the application for me?

Q. No. I'm just wondering -- I'm just asking your understanding of COG's intentions for that well.

A. No. I actually don't. I think some operators -- I know I've heard of some operators actually taking other volumes, but I don't know what COG's intentions are.

Q. Okay. So COG came to you and had raised concerns about the proximity of your well based on the location of their proposed injection well and the volumes that NGL is proposing to inject here. Is that your understanding of the concerns essentially?

A. Yes. They came to us, of course, after we had already filed our application to talk about -- asked if we could move it, and we really can't. We're on a small space of private land, so we're constrained.

Q. So COG came to you not just to ask for a continuance but to actually ask about moving the location; is that right?

A. Yes. But we can't -- we can't move. But, again, COG came afterward -- afterward.

Q. So I just want to make sure. Do you have any disagreements of how this map depicts the locations and distances here between the pending Whitt 31, the Whitt 32 and COG's Littlefield injection well that's currently

pending before the Division administratively?

A. So you're saying 3,382 feet, according to your -- your measurements. That's approximately -- is that seven-tenths of a mile? Let me do the math.

Q. Yeah. That's fair.

A. Yeah.

I think it's a little bit further than that. That's showing six-tenths, but -- but I think it's around seven-tenths.

Q. Okay. So roughly accurate in your view.

Now, the other distance here that I want to draw your attention to, Mr. Duncan -- you testified to the best of your recollection that the horizontal lateral just to the north of your proposed location that's operated by COG -- you testified, I believe, was about 200 feet away from your proposed location?

A. It's somewhere in that range. I think that the horizontal lateral is probably 350 feet from the section line. I don't -- I don't recall.

Q. COG, based on your application and locations, has mapped that distance as 130 feet from their existing lateral.

A. Yeah. That's -- that's not -- that's not close from a directional standpoint.

Q. So that doesn't change your opinion or your

testimony about concerns about interference or collision with COG's existing lateral well?

A. It does not, no.

Q. You don't dispute the map location of about 130 feet?

A. I don't -- I can't agree. I can't dispute. I can't really see it on this map. I assume you have -- you have your opinion. It might be right.

MS. BENNETT: Yeah. I just would object to any further questions asking him to confirm the distance, given this is the first time he's seen the map, and there are no real markers on here that denote distance; there is no scale.

And also the box there says "Sidewinder No. 1, 133 feet from Whitt 32." And so is Sidewinder No. 1 the name of your COG well?

MR. RANKIN: It is. And it's on your exhibits as a well within the one-mile area of review.

MS. BENNETT: So I would just say that, to the extent this map says what it says, it does say that, but I don't think that Mr. Duncan can confirm or deny the measurements on this map based on the information we have in front of us.

MR. RANKIN: Well, I was just asking Mr. Duncan to confirm. If he can, he can, and if he

can't, he can't, and that's fine.

Q. (BY MR. RANKIN) Now, I want to ask you some more questions, Mr. Duncan, about the facilities. Are you aware that COG also has concerns about surface facilities that NGL may be proposing and how those may interfere with COG's future well development plans and activities in that area?

A. I'm not familiar with your surface facilities discussions. No.

Q. What are NGL's plan for surface facilities in the area? Are they going to have pipelines? Is it going to be -- is water trucked to the location? Will there be a trucking station? How much area do you know that NGL's going to be occupying on the surface?

A. I actually do not know that. My -- my -- my work is concerned with the downhole work, the drilling of the wells. The topside stuff is handled by a different group at NGL.

Q. So you have no knowledge about, you know, whether there are going to be pipelines or how much acreage or where the pipeline is going to be located or how at all NGL's looking at trying to avoid or working with COG on the surface?

A. I do not know those. I haven't been privy to those discussions.

Q. Who at NGL would be the person that would be able to answer those questions?

A. You'd probably have to talk to -- I would start with Doug White, and he would give you a contact for that.

Q. Now, a couple questions about the proposed injection. In the exhibits I notice that the interval actually extends into the Montoya, below the Devonian; is that correct? Is that the intent?

A. We actually have a geologist here that can testify to the geology, if you want to --

Q. Okay. But as far as the completions proposal, talking more of the engineering side, is the plan to actually inject into the Montoya formation, as depicted on the C-108?

A. Yeah. We stop in the Montoya. That's a good stopping point.

Q. Okay. For all your prior applications, have you always targeted the very top of the Montoya with your injection?

A. Yes. It's a -- it's a -- it's a good -- it's a good marker to know where to stop.

Q. But do you intend to inject into the Montoya actually?

A. It will be exposed. Whether or not it takes

any fluid is another matter, but it will be exposed.

Q. Okay. And are you aware of the Division approving injection into the Montoya in any of your prior cases or applications?

A. I'm not sure what you're --

Q. I'm just asking. Have you been approved to inject into the Montoya in any of your other --

A. We've been approved to drill 200 feet into the Montoya. Yeah.

Q. But you're not sure whether or not you've been actually authorized to inject into the Montoya?

A. It's part of the -- it's part of the group. I think -- I think it's better to discuss that with the geologist.

Q. Okay.

A. I'm not going to testify to geology.

Q. Okay. And then, Mr. Duncan, for each of these wells -- and I don't have, I believe, Mr. -- Mr. Wilson in front of me today to ask these questions, but if you can answer, I'd appreciate it. For the modeling that was done for the Whitt 32 and the Whitt 31, were the models run at the maximum capacity that NGL's requesting, the 50,000 barrels per day?

A. No, because that won't be the actual injected -- the models are run at 40,000 barrels a day.

Q. So the models are run at less than what you're asking for?

A. They're run at a presumed high case average rate. You want to permit a high instantaneous rate. Just in case there is a blip on your chart, you want to make sure you're always in compliance. But the average rate will be less.

Q. But -- but -- but NGL has a model that evaluates the potential impacts of what those high rates would be for either of its two proposed wells in this area?

A. We have modeled what 40,000 barrels per day would look like as an average injection rate, and still that's a very aggressive -- I don't know if aggressive is the right word, but it's a very conservative modeling because to maintain 40,000 barrels a day over 25 years is impossible. You're not going to have that much -- that much water. So we're just trying to protect -- trying to protect ourselves and OCD, make sure that -- you know, worst-case scenario, we wouldn't have an injection that would exceed frac pressure anywhere to cause induced seismicity.

Q. But not as conservative as modeling at 50,000 barrels per day?

A. Well, you could. But, I mean, I don't know if

you want to model something that's just not going to happen.

Q. But you're asking for it?

A. We're asking for an instantaneous rate. There is a difference. You know, it's -- when you pull out of the parking lot and hit the gas, you know, you might bump up above the speed limit, but you back down and then you run the speed limit.

Q. Sure. But the conditions would be that you can inject up to 50,000 barrels per day, and it wouldn't be limited to an instantaneous rate. It would simply be a maximum injection rate of 50,000 barrels per day?

A. Well, when OCD writes the order, they can write it as an instantaneous rate and an average rate of 40,000. That's fine with me.

Q. Now, did the modeling also include the maximum injection rate that would be injected through the Littlefield -- COG's Littlefield well as well?

A. Yeah. I think they used -- they may have used your average rate. I'd have to go back into the model in the exhibits.

Q. But you're not sure what rate they used, but they used a rate --

A. They used a representative rate. That's what's done. Actually -- yeah. Given that we submitted our

application prior to yours --

Q. I can't tell.

A. -- I guess -- I guess I could ask the question in reverse. Did COG model these wells? Yeah. So they're in here. So they are modeled.

Q. But Mr. Wilson might know what the rates were that he used to model those, but sitting here today, you don't know what those rates are?

A. I think it's in his exhibit. Let me just find it because I don't want to give you hearsay.

Q. Yeah.

MS. BENNETT: For purposes of efficiency sake, I might just offer that we would provide a supplemental affidavit from Mr. Wilson describing the amounts he used to model on the Littlefield.

THE WITNESS: Yeah. I think --

MS. BENNETT: And I can also ask a question on redirect. That might help clarify this as well.

MR. RANKIN: Sure. I don't want to belabor it. I just wanted to see if Mr. Duncan knew if it was in the materials.

THE WITNESS: It normally is. If there has been an application filed, we'll use the maximum rate we see in the application.

MR. RANKIN: Okay.

Q. (BY MR. RANKIN) Based on Mr. Wilson's modeling, whichever numbers he used, did it reflect any interference between the wells at any point in time during the injection?

A. I don't think there is a -- there is not really a conflict, it seems, from the modeling, but you can have your well, too.

Q. So --

A. But that's up to the Division.

Q. That's up to the Division. Correct.

But your understanding is based on your proposed maximum injection rates and whatever rates Mr. Wilson used to model COG's wells, that there would be no interference and no problems with a full operation and full capacity for any of these wells?

A. That's correct, the way we intend to operate the wells.

MR. RANKIN: No further questions.

Mr. Examiner, at this time I'd like to admit what's been marked as COG Exhibit A into the record.

EXAMINER GOETZE: Ms. Bennett?

MS. BENNETT: I don't object to the admission of Exhibit A so long as it's given the weight it's entitled to, knowing that we haven't had a chance

to verify the actual footages.

EXAMINER GOETZE: Welcome to our world.

So Exhibit A -- COG Exhibit A is so entered into the record.

And you're done with your examination?

MR. RANKIN: No further questions.

(COG Operating, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: Thank you.

Mr. Brooks, do you have any questions?

EXAMINER BROOKS: No questions.

EXAMINER GOETZE: Mr. Jones?

EXAMINER JONES: I will touch on a couple.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. This business about the Pennsylvanian having -- what adjustments have you guys made in the cement or the placement of the cement across the higher-pressure gas zones?

A. Well, one of the main things we do is gas-tight threads.

Q. Gas what?

A. Gas-tight threads.

Q. Oh, okay.

A. So if there is a cement failure, you don't get

gas. We've already seen a problem with one of the wells where we got a bad cement job and do see some gas, so everything now is gas tight through.

Q. Is that just NGL, or has that rippled through the industry?

A. That's through the industry. I've been called by a couple of people that had the issue, so yeah.

Q. I'm not going to open up any more cans of worms here but the business about fishing, that's really been done on shallow wells, right? It hasn't ever been done on a real deep SWD?

A. Well, the deeper well is just going to take a little bit longer; you're going to have a bigger rig. But, you know, it's basically, you know, milling a collar and going in with a turned-down overshot to drill out the body.

Q. Okay. But just for the record, so far it's never been done on anything deeper than about 5,000 feet, right?

A. I don't know. I thought Steve had fished some wells that were deeper than that.

Q. Like 6,000?

A. Yeah. We talked about that.

Q. Okay.

A. But fortunately I don't think there's been a

fishing job on a Devonian well in New Mexico yet that I'm aware of.

Q. We had some people try to just pull the tubing the other day, and it was -- it was very expensive, and it took a whole rig and spalled off into the coating on the inside. So anyway, a million-dollar operation just to pull the tubing.

A. It is a million-dollar operation to pull the tubing. That's why, you know, I gave the OCD an AFE for plugging one of these wells and suggested the bonding requirements go up even higher than they are.

Q. Okay. You were talking about a mud motor. Are you going to run a mud motor on this well?

A. Yes. We always run --

Q. Through what depth?

A. All the way.

Q. Oh, okay.

So even -- not shallow zones, right? You're going to --

A. No. We even drill surface with -- with motors nowadays.

Q. Oh.

A. Yeah. Just so much more efficient.

Q. You're reducing -- a straighter hole, reducing your friction, your drag?

A. Yeah. It's -- you just get more rotation at the bit. You've got a little bit of rotation from the top drive --

Q. It's faster.

A. -- and then plus the additional rpm from the -- from the motor.

Q. So it's faster and straighter hole?

A. It's straighter because you have continuous monitoring, and you've got a bent -- you usually have a bent motor in there, you know, a slight bend in the motor so that you can -- you're ready to -- you can slide, and you can orient -- orient -- orient your bit all the time.

Q. So just quickly, the bottom-hole assembly is the bit, the motor and IBX or something and -- collar? Is that right still?

A. Yes. They still do that.

Q. Still do that?

A. And then -- but the directional gear will send up pulses in the mud that are detected at the surface even all the way from down there.

Q. So your directional is basically still 30 feet back from your bit, right?

A. We have some -- some -- some tools that are even closer, but usually -- usually you're a little ways

back, but not -- but yeah, 30 feet is kind of on the high end anymore.

Q. Okay. So the maximum deviation on any 200-foot interval, how many degrees do you think would this well have?

A. You know, we've been kicked off, but if you get kicked off a couple degrees -- and what we do is we set -- we set a target around the well. And then depending on what's around us, right -- sometimes we'll have a property line that we don't want to cross. Sometimes we'll have -- in this case we have a horizontal well we don't want to get close to. So we'll set a target around the well and then make sure we stay in that target. If we start to deviate, we know earlier, and then we'll -- we stop the -- stop the rotation from the surface and just slide with the mud motor, orient and slide and get back on track and then go back to drilling where you're turning the whole thing.

Q. Okay.

A. Yeah.

Q. So are you running a gamma ray or any other log?

A. There is a gamma ray on -- on -- in our tool string, and we do continuously run gamma.

Q. Just gamma? No other logging while drilling?

A. No. You can do more, but you're still limited to -- you've got a really low baud rate with mud pulses. So gamma and directional data is pretty sufficient to stream through pulses. But if you start trying to do density information and electric logging, you've got more expensive tools, and you don't have a way to get the data to the surface really quickly. A lot of those packages where you do more logging, you'll have a chip that's -- that's contained in the tool that grabs the data, but you don't see it at the surface until you pull the tool and download.

Q. I saw in the paper this morning that the longest well that's been drilled so far in the Permian is, what, three-and-a-quarter mile --

A. Yup.

Q. -- is what it said. How do they do that? Is it because of friction?

A. Usually in those cases, you'll even use steerable, so you're constantly -- so you've got -- you've got a motor that can orient the bit on the fly instead of just a regular -- instead of a bent sub that you have to orient to surface. And you have to have a little bit of trial and error to make sure you're changing direction the way you want to do. But with the

directional -- with some of these tools, you can actually steer up, down, left, right continuously while you're drilling with the top drive.

Q. But here you're just doing the bent sub and the mud motor?

A. Yes.

Q. Okay.

A. Yes, and directional.

Q. And a directional.

A. And directional tools.

Q. Okay. That's all from me.

MS. MURPHY: I have no questions.

EXAMINER GOETZE: Very good.

Well, first general discussion, go back to notice. Between you two, you did do the Texas side?

MS. BENNETT: Yes.

EXAMINER GOETZE: Okay. So we've covered that.

MS. BENNETT: Uh-huh.

EXAMINER GOETZE: Thank you.

I will note for the record that the fault slip model, we do have a fault identified that was based upon BEG, Bureau of Economic Geology. Mr. Reynolds has done extensive research as to structure maps in the areas and does not recognize that in his information but

still ran a mile fault being present, so make that part of the record.

We also did a 50,000 barrels a day for the two wells, as well as 40,000 barrels a day for Concho's proposed well.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. So, Mr. Duncan, in your assessment of COG's horizontal well, for the record, the proximity -- the closest proximity of the proposed SWD to the horizontal well would be looked at approximately? What formation?

A. It'll be in the Wolfcamp about 9,500-ish feet.

Q. So I'm assuming, when I look at the COG projections we have, that is based on the borehole and not the reach of the frac zone; is that correct? In other words, my concern that I raise is that we have a projected -- basically what we have here is a line representing the borehole and a completed borehole, but we do not -- or did COG offer any information as to the lateral extent of their frac pattern?

A. No, but that's usually not the concern in what we've -- in what we've -- in our experience. You know, we're going to -- we'll set casing after the first Wolfcamp, and so --

Q. But if you're drilling through it and you hit a

frac zone --

A. We might have a little bit of loss of mud. But so far, you know, in the wells in the past where we've hit fracs, we've never seen operators report mud. So so far, so good. I think those fracs aren't as extensive as they -- as we sometimes think they are.

Q. They vary depending upon interpretation by each presentation.

A. Right. Right.

Q. I just want to make sure that we have some sense of control should it happen --

A. Yes.

Q. -- that we will not have a gripe [sic] from COG.

A. Yes.

Q. Let's see. So is this -- the two Whitt wells are a part of a larger system, pipe system?

A. Yeah, in general. I didn't want to get into specifics with Mr. Rankin, but, in general, NGL is a piped well operation in New Mexico with very limited trucking. If they install a truck bay, I didn't want to go on record saying that that would not happen because it always could.

Q. Just in the interest of having two wells in close proximity, which is a discussion of another series

of cases, the Division still has its apprehensions.

With that, I would also ask -- we have two Whitt wells, and we are on the Texas border. We have a seismic array that NGL operates, which is up closer to the Striker wells in that area up there.

A. We'll put the -- we'll have seismic on the Whitt 32. You can write that in the order if you wish. And we still have the array down in Texas that NGL has all the way up in Reeves and Loving Counties.

Q. That's your array down in Texas?

A. Yes. We have a private array down there.

EXAMINER GOETZE: So you've got a second witness? Dr. Zeigler?

MS. BENNETT: I do. I just have a couple of questions for Mr. Duncan.

EXAMINER GOETZE: Yeah. I just wanted to see what other questions I might have. We'll give you another chance.

MS. BENNETT: Okay.

EXAMINER GOETZE: With that knowledge, I'll go ahead and -- my questions are done. Thank you.

MS. BENNETT: Thank you.

REDIRECT EXAMINATION

BY MS. BENNETT:

Q. Mr. Duncan, I just have a couple of follow-up

questions for you. Mr. Rankin was asking you about injection into the Montoya. And if the Division were to include in the order a requirement that NGL not drill into the Montoya, would NGL accept that condition?

A. Or plug back. First you've got to find the Montoya.

Q. Uh-huh.

A. And no one can tell me exactly where it is until we hit it with a bit.

EXAMINER GOETZE: We will make a point of clarification. We do understand and we do put in the order there is no injection in the Montoya, so it is the operator's responsibility to know where they are and to deal with it. And as such they want to roll the dice and think that they have sufficient permeability barrier that they are not injecting into the Montoya, then so be it. But at some time we will come back and we will ask for an injection survey. And if such that we see it going to the bottom of the hole, at that time --

THE WITNESS: We'll be bumping some cement.

EXAMINER GOETZE: -- we'll be doing something.

THE WITNESS: Yeah.

EXAMINER GOETZE: So the Division does not condone and we do specify in the orders you are to have

the means to be able to go down the road and be able to see where the Montoya is. I'm sure your next witness will testify that the data points are few and far between.

So continue, please.

MS. BENNETT: Thank you.

Q. (BY MS. BENNETT) So based on that conversation, is NGL comfortable with what has been written into prior orders and what would be written into this order with respect to the Montoya?

A. Yes.

Q. And you're not asking for any exceptions for that general practice?

A. We are not.

Q. Now, there were some questions from Mr. Rankin about COG's lateral and the potential impact of the Whitt 32 on COG's horizontal well. I wanted to -- and I apologize. I didn't bring enough of these to pass around. This is COG's prehearing statement that's been filed in this case, and I wanted you to just take a quick look at that, the opposition statement of the case, and see if you see anywhere in there that it says any opposition based on the location of Whitt 32 to a proposed or existing horizontal COG lateral.

A. No, it doesn't.

Q. So their opposition in their prehearing is limited to the proximity of Whitt 32 to Littlefield 33; is that right?

A. Right. It was probably written by someone who understood directional drilling is pretty accurate.

Q. And so before today, had you had any indication that COG was concerned about the proximity to this Sidewinder #1 well?

A. No.

Q. Looking at Exhibit A that Concho prepared, you noticed I think quite aptly that the Littlefield 33 is actually proposed much closer to some of COG's own laterals than the Whitt 32, is that right, based on what we see on this map?

A. Based on the scale of the map, yes.

Q. Okay.

MS. BENNETT: Those are my only questions.

EXAMINER GOETZE: Okeydokey.

So at this point, we'll conclude with this witness and go to the next witness?

MS. BENNETT: Yes. I'll call my next witness, Dr. Kate Zeigler.

KATE ZEIGLER, Ph.D.,

after having been previously sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MS. BENNETT:

Q. Good morning, Dr. Zeigler.

A. Good morning.

Q. Thanks for being here.

Can you please state your name for the record?

A. Kate Zeigler.

Q. And for whom do you work and in what capacity?

A. Zeigler Geologic Consulting on behalf of NGL, and I'm a geologist and stratigrapher by training.

Q. Have you previously testified before the Division or the Commission?

A. Yes.

Q. Are you familiar with the application that NGL filed in this case?

A. I am.

Q. Are you familiar with the status of the lands where the well is proposed to be?

A. Yes.

Q. And are you familiar with the drilling plan for this well?

A. I am.

Q. Have you conducted a geologic study of the area embracing the proposed location of this well?

A. Yes, I have.

Q. Have you prepared similar studies for NGL's prior applications?

A. Yes.

Q. And those applications -- or those studies -- I'm sorry -- have been submitted to the Division in support of NGL's prior applications?

A. Yes.

MS. BENNETT: At this time I'd like to tender Dr. Zeigler as an expert in geology matters.

EXAMINER GOETZE: Mr. Rankin?

MR. RANKIN: No objection.

EXAMINER GOETZE: She is so qualified.

MS. BENNETT: Thank you.

Q. (BY MS. BENNETT) Please turn to Tab 3. Are the materials behind Tab 3 your geologic study?

A. Yes.

Q. And there are three components behind Tab 3 -- or maybe four components, 3A, 3B, 3C and 3D. Can you just briefly tell us what is behind Tab 3? Give us an overview of everything that's in there before we talk about each thing individually.

A. So there is a brief review of the basic lithologic descriptions of the different rock units that are at question in these deeper injection intervals, and

that's a brief summary compiled from various sources of literature, including a lot of Mr. Ron Broadhead's work, and then a schematic depiction of that stratigraphy so that we can see it as an image and see the order of the rock units and where the features are in the subsurface, and then a series of isopach maps that show the location of the well and the wells that we use to develop the attendant cross section to show what we see, we think we can interpret about the subsurface given, as Mr. Goetze just very correctly pointed out, the lack of deep well data.

Q. And then the final tab -- or the final bit of your study is your cross section?

A. Yes.

Q. Now, you've presented a similar set of exhibits in your prior studies, right?

A. Yes.

Q. Without taking too much time, is there anything in particular you want to say about 3A, the brief descriptions?

A. This is really intended to just be, like I said, a summation of, you know, decades' worth of studies talking about the specific details of all the lithologies in these different units.

And this is mostly to showcase a couple of

different features in the stratigraphy out there, one being the upper and lower permeability units, the Woodford Shale, the upper permeability barrier, and the various descriptions in the literature that show what types of rocks are involved in that permeability barrier and its approximate thickness, and that varies depending on where you are, and then working through the entire injection interval, which, depending on where you are, can include the Thirtyone Formation or not. That's a package that's only present in the very, very, very southeast corner of the area.

And then the Wristen and Fusselman, and we include the Montoya because a lot of these wells are tending to bottom out into the uppermost Montoya, and so making sure that we adequately discuss that unit.

And then the Simpson Group, which has been identified as a potential lower-permeability barrier and the -- it's a heterogeneous unit, but in looking at the depositional environments that are represented by the Simpson Group, the potential for that to be a good permeability barrier because a lot of -- there is a fair amount of shale in that that can act as a lower barrier.

And then we include the Ellenburger Formation as a -- to be complete in our discussion of the sedimentary rock units that are frequently discussed

in these types of cases.

Q. And when you say the Simpson Group, can you discuss it -- or it's discussed in this overview as a potential permeability barrier. In your opinion, does the Simpson Group act as a permeability barrier?

A. I think given the data that we do have from the deep parts of the basin, which, again, those data points are few and far between, but the log data that we see for the Simpson does suggest a fair amount of -- or the presence of a fair amount of shale in that unit, and it also can be quite thick with multiple shale beds within it. So the trick is understanding the complete lateral expression of the Simpson Group everywhere in the Basin, and we simply don't have enough data at this point to really understand that. But what data we do have suggests that it would be a perfectly viable lower barrier.

Q. And when you say it's got a lot of shale, is shale an indicator of lack of permeability both to lower formations?

A. It's a very fine grain rock unit. It can have porosity that frequently has low permeability, which does not generally allow for the transference of significant volumes of fluid through it.

Q. Then turning to -- unless you have anything

else you'd like to say about that summary.

A. (Indicating.)

Q. Turning to 3B, which is on page 39, is 3B a chart that you created for this case?

A. This is derived from Ron Broadhead's review of the entire Permian Basin in the New Mexico Bureau of Geology special publication that was published in 2017, and so this is for the Delaware Basin. This is the basic stratigraphy of the area.

Q. And you've reviewed this chart and prepared it for this hearing -- or gave it to me as materials for this hearing?

A. Yes.

Q. And when we're talking about the -- well, let's go to the isopachs next, which are behind Tab -- well, they're 3C, pages 50 to 54. Can you walk the examiners through these isopachs and let us know -- give us an indication of what they tell you in terms of the depths of the different formations?

A. So these are --

Q. Or thickness. Sorry.

A. Yeah, thickness.

So these are isopach maps derived from the Texas Bureau of Economic Geology database, so the isopach -- the thicknesses come from those projections,

as well as we have two sets of structure of faults shown on here both from the Texas Bureau of Economic Geology and also what we've been able to compile from Ron Broadhead's and other folks' various figures and different pieces of literature and us trying to figure out which are the faults that the Bureau of Economic Geology is representing and which ones are not represented in their database just for completeness sake.

And, again, just coming back to this idea that we have so little data for the deep basins here that the projections of the base faults are very much approximate. And so it's -- and this is something that Mr. Reynolds has brought up numerous times in his previous testimony. Until we have access to significant seismic data for the deep basin, it's really hard to precisely pinpoint exactly where these things are, but we show them for completeness sake, to indicate that somebody thought there was a structure there in the course of their own research.

So we will go through these. These are going from the bottom up because that's how geologists like to do things, from oldest to youngest.

So starting with the Ellenburger, looking at this, on each of these maps, the yellow star down on

the Texas-New Mexico state line showing the position of the well and then wells in the area we were able to find that had log data that went far enough down for us to feel like we were getting a better picture of the injection zone. There actually -- we struggled to find well logs that were publicly available that were deep enough to really help us. We see a lot of this -- this deeper country, but the ones we have are to the north, and those are the purple circles with the orange-dashed line showing line of cross section that we will look at in a subsequent exhibit.

And so you can see how we projected the Whitt 32 well. That's the blue line, projecting it into that cross section so that you can see how we've placed the well.

In looking in terms of the thickness of the Ellenburger, we're just shy of a 750-foot-thick isoline, which is just to the northwest, and so an estimated thickness of probably 800 feet thick. Again, not a whole lot of data to help constrain those isopachs, and so this is an estimated thickness.

Q. Okay. And then the next one?

A. The next one is the Montoya, and so we're moving upsection. Oh, my goodness. Our Simpson is out of order.

Q. Yeah. Yea. I apologize.

A. Hold on. Okay. I'm very sorry (laughter).

MS. BENNETT: Yeah. Sorry about that.

THE WITNESS: If we could move the Simpson forward.

EXAMINER GOETZE: The stratigraphy is there. That's good enough.

MS. BENNETT: Yeah. Yeah.

THE WITNESS: I would be fired on the spot for that.

(Laughter.)

MS. BENNETT: Luckily, lawyers aren't --

(Laughter.)

THE WITNESS: So page 53 needs to move forward two pages. I was thinking wow (laughter).

Okay. So going from the Ellenburger to the Simpson, looking at the Simpson with the isopach lines deprived again from the Bureau of Economic Geology study, Whitt 32 is projected to sit right on the 400-thick isoline, same information on this map as on the Ellenburger map.

Q. (BY MS. BENNETT) And so just to clarify, does that mean that you would project that the bottom Simpson would be about 400 feet here?

A. About 400 feet thick.

Q. About 400 feet thick.

A. Uh-huh.

Q. Okay.

A. Move upsection really, finally into the Montoya, and here looking at a Montoya that's on the order of about 375 feet thick. In this case the isolines are the sort of orangeish-yellow-colored lines.

Q. And so between the Simpson and the Montoya, there is about -- projecting that there is 400 and 375, approximately, to about 575 feet?

A. Approximately.

Q. Yeah.

A. Yeah.

And the Wristen and very poorly spelled Fusselman. I apologize. We will correct that. Whitt 32 -- this is -- so this is the combined -- for where the Wristen is present, plus the Fusselman combined as our Siluro-Devonian target injection interval, looking at approximately 1,300 feet of those combined units in this area, and then the Woodford as our upper permeability barrier above that. And here the isolines are very spread out from each other. So you have -- the 100-foot-thick area is way up in the northwest corner of the map. And the 200-foot is way down in the southeast corner of the map, and it's the sort of purplish-red

line. And so looking on the order of 150- to 160-feet thickness for the Woodford.

Q. And the Woodford would be the upper permeability barrier?

A. Yes.

Q. And just a moment ago, you said that you would project the Wristen-Fusselman to be about --

A. On the order of 1,300.

Q. 1,300.

And that's the injection zone?

A. Yes.

Q. Thank you.

And then turning to page 55, it's marked as Exhibit 3D. Can you explain to the examiners what that is?

A. So this is our cross section developed from the set of wells to the north of the Whitt 32 location, and this is us attempting to find wells that penetrated deep enough that we not only got an image of what we think the Woodford Shale is doing but also to see as far down into the subsurface as we could. And so this is arranged from west to east across the area.

And we included 3Bear's Cottonwood SWD No. 001 on the far west end in part because that one, when we look at the information from that well log

compared to the Gravitas 2, which is just to the east of it, we do see a significant offset down to the east. And so I put this in here to show that one of the faults that had been projected on several of the various literature searches and the Bureau of Economic Geology, that there does appear to be offsets between those two wells. Of course, those two wells are still pretty far apart to exactly where that fault is in between them. We need a little more information to understand, but this is just for completeness sake.

And then as we move eastward through these various logs, they're all hung off the bottom of the Mississippian Limestone, and we can see the Woodford Shale as our upper permeability barrier on the order of 100 feet thick or so.

Below that, what's called the, quote, "Devonian" plus the Fusselman. And to reiterate this again, that the Devonian in terms of an actual time unit is not -- drillers use Devonian to speak about these units because back in the day, they thought they were Devonian in age, and then as more data came forth, especially in terms of biostratigraphic data, it turns out most of these units are actually Silurian. So to stay in the driller lingo and the lingo that is used for these wells, we're going to keep referring to it as the,

quote, "Devonian." But just for completeness sake, to note that it's not actually Devonian in age. So we're using Devonian here to stick with how tradition has called that.

And so looking through the log data that we have available that penetrates deep enough to really show these units, seeing generally not much variation in the thickness, not much variation in the lithology sequence of limestone-dolostone that ranges up to 1,300, 1,400, even 1,500 feet thick in places, the deepest well we were able to find in this area just barely penetrates the top of the Simpson and that's the Golden Child 6. And so we didn't find really good log data that went far enough in this corner of the basin.

But if you go just two townships to the east -- and I know a township has a lot of space going east. But as we go east towards Jal, there are wells that penetrate through the Simpson all the way through the Ellenburger, and they show significant heterogeneity in the Simpson Group as you go east. And so other wells to the north also show that same heterogeneity and shale -- shale units within the Simpson. Unfortunately, we were not able to anything that went deep enough here to show that.

Another feature of this is one of the

projected Bureau of Economic Geology faults that is projected to run between the Willow 17 and the Willow 285. Given the distance between those two wells and the apparent offset of the bottom of the Mississippian Limestone, we chose to dash that fault in because it's not clear that there is significant vertical offset between those two wells that would be fault related so much as it could be simply a depositional or a slight regional dip that's creating an apparent offset between those two wells. So we chose to dash that fault in, since we don't have enough data to be certain that there is a fault there with significant vertical offset.

Q. Thank you.

So one of the questions I have for you and that I ask you every time is whether, in your opinion, the drilling of this well will impact the correlative rights of mineral interest owners.

A. I don't believe so.

Q. And is that because there is no economically viable hydrocarbons in the injection interval?

A. The literature suggests that if there are viable traps in the Siluro-Devonian injection interval, they're small. They're going to be difficult to target without significant -- for example, doing a lot of 3D seismic to kind of find these little traps, and it may

just not be worth anybody's time to attempt to target them. They have not been historically targeted.

Q. Okay. And let's turn back to the Broadhead chart, which is page 49. In your opinion, is there a risk to freshwater resources or underground sources of drinking water if the Whitt 32 well is drilled?

A. No. If it's -- it it's drilled to design, to specification, there should be no concerns of freshwater resources. The target injection interval is several tens of thousands of feet below -- not tens -- several thousand feet below the freshwater resources known for the area. Generally, the freshest potable water even by livestock standards is generally only to about, at most, 5- or 600-feet depth, and even then you're getting into saltier waters that are pushing the limit of even livestock drinking water. You also have a number of units in between the freshwater resources and the target injection interval that will act as permeability barriers for any upward migration of the fluid injected into the --

Q. Were the Tab 3 exhibits prepared by you or compiled under your direction and supervision?

A. Yes.

Q. And is the information contained in those exhibits complete, to the best of your knowledge?

A. Yes.

Q. In your opinion, then, is the granting of this application designed to protect correlative rights and the prevention of waste?

A. Yes.

MS. BENNETT: At this time I'd like to move the admission of the Tab 3 exhibits into the records.

EXAMINER GOETZE: Are you going to move around figures, or are you just going to give one and put it in and we'll just keep it?

MS. BENNETT: It's up to you. I'm happy to submit a new --

THE WITNESS: Well, we need to fix the spelling of Fusselman.

EXAMINER GOETZE: She feels an honor to do it properly. Therefore, we will accept --

Mr. Rankin?

MR. RANKIN: No objections, and no objections to their proposed corrections.

EXAMINER GOETZE: Okay. So we'll go ahead and admit Exhibit 3; is that correct?

MS. BENNETT: That's right, Exhibit 3.

EXAMINER GOETZE: And then we'll have the correction provided, and we'll provided Mr. Rankin a copy, please.

MS. BENNETT: Yes. Yes. And the materials I scan and submit to the Division, I'll correct the spelling --

EXAMINER GOETZE: Give us a real one?

MS. BENNETT: -- and the pagination, and I'll cc Mr. Rankin on that as well.

EXAMINER GOETZE: Okay. Mr. Rankin?

MR. RANKIN: No questions.

EXAMINER JONES: No questions?

MR. RANKIN: No questions.

EXAMINER GOETZE: Mr. Brooks?

EXAMINER BROOKS: No questions.

EXAMINER GOETZE: Mr. Jones?

EXAMINER JONES: I better leave it up to you.

EXAMINER GOETZE: Oh, come on.

Ms. Murphy?

MS. MURPHY: I have no questions.

(NGL Water Solutions Permian, LLC Exhibit Number 3 is offered and admitted into evidence.)

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. As your previous presentations, you've been pretty thorough.

In your evaluation of deep wells, I assume they're still in the basin or not associated with the uplift when you --

A. Yeah.

Q. So stay off the uplift?

A. Yeah.

Q. So our best guess is it's good.

I have no further questions of this witness.

MS. BENNETT: Thank you.

At this time, then, I'd like to ask that Case Number 20475 be taken under advisement.

EXAMINER GOETZE: Okay. One point of -- a question. You had an interest in Mr. Taylor's assessment and how the model -- reservoir model was run? Or not Mr. Taylor.

MR. BENNETT: Yes, Mr. Taylor. I'm sorry. Mr. Wilson.

EXAMINER GOETZE: Yes, Scott Wilson.

Is it such that you want to have clarification of that?

MR. RANKIN: I think Ms. Bennett mentioned she would just provide us with -- did you clarify it, I think?

EXAMINER GOETZE: Well, we're clarifying

that now.

What I'm thinking is that you would provide an affidavit to respond to COG's request as to the parameters of the model and what was used.

MS. BENNETT: Yes. I'm happy to do that from Mr. Wilson's testimony affidavit. I would note that Mr. Duncan testified that Mr. Wilson's practice is to use the amount that's submitted with the application.

EXAMINER GOETZE: That's fine. But, you know, whatever -- let's spell it out with clarity and then provide that to both Division and to COG.

MS. BENNETT: Certainly.

EXAMINER GOETZE: And as such, COG -- since you're hanging out there, the fact that we take this under advisement is no concern of yours at this point?

MR. RANKIN: Not at this point.

EXAMINER GOETZE: Okay. With that, on the record, let's go ahead and take Case 20475 under advisement.

And I think we've made everyone suffer a long time, so let's take 15.

MS. BENNETT: Before we take a 15-minute break, though, or as part of our 15-minute break --

EXAMINER JONES: Happy birthday.

(Laughter.)

MS. BENNETT: Yes.

-- I wanted to remind everyone it's my birthday, as if I haven't reminded you enough during the past few months. So in honor of myself, I brought a cake, but also in honor of David and his bittersweet retirement. So the folks at Costco were kind enough to put two messages on the cake, "Happy Birthday To Me" and "Happy Retirement, David."

So happy retirement, David.

EXAMINER BROOKS: Thank you. I appreciate the sentiment. And I think it's more appropriate "congratulations," which is the usual sentiment for retirement.

MS. BENNETT: So please, there is cake in the back if anybody would like cake.

(Case Number 20475 concludes, 10:07 a.m.)

(Recess, 10:07 a.m. to 10:40 a.m.)

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, Certified Court Reporter, New Mexico Certified Court Reporter No. 20, and Registered Professional Reporter, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings that were reduced to printed form by me to the best of my ability.

I FURTHER CERTIFY that the Reporter's Record of the proceedings truly and accurately reflects the exhibits, if any, offered by the respective parties.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this case.

DATED THIS 2nd day of August 2019.

MARY C. HANKINS, CCR, RPR
Certified Court Reporter
New Mexico CCR No. 20
Date of CCR Expiration: 12/31/2019
Paul Baca Professional Court Reporters