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 ROCKCLIFF OPERATING NEW MEXICO, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL, EDDY COUNTY, NEW MEXICO. CASE NO. 15791

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

August 17, 2017

Santa Fe, New Mexico

BEFORE: MICHAEL McMILLAN, CHIEF EXAMINER
SCOTT DAWSON, TECHNICAL EXAMINER
DAVID K. BROOKS, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Michael McMillan, Chief Examiner, Scott Dawson, Technical Examiner, and David K. Brooks, Legal Examiner, on Thursday, August 17, 2017, 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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(8:39 a.m.)

EXAMINER McMILLAN: What I'd like to do now is call Case Number 15791, application of Rockcliff Operating New Mexico, LLC for approval of a saltwater disposal well, Eddy County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe representing the Applicant. I have two witnesses.

EXAMINER McMILLAN: If the witnesses please stand up and be sworn in at this time.

(Mr. Weatherly and Mr. Block sworn.)

EXAMINER McMILLAN: Any other appearances?

Please proceed.

DUSTIN WEATHERLY,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence?

A. Dustin Weatherly. I live in Bixby, Oklahoma.

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

A. I work for Rockcliff Energy as a completion engineer.

Q. And have you previously testified before the Division?

A. No, sir.

Q. Would you please summarize your educational and employment history for the Examiner?

A. I have a bachelor's degree in industrial technology. I have a master's degree in energy and technology management from Oklahoma State University.

I've worked in the industry for over 20 years managing completions, production and operations for companies like ConocoPhillips, Burlington Resources, Petrohawk Energy. Recently, I've worked as an operations manager and vice president of operations for a couple of small companies in Tulsa, Oklahoma, Nemaha Oil & Gas and Wagon Wheel Exploration.

(The court reporter requested the witness speak louder and slower.)

A. And I'm currently working for Rockcliff taking care of completions, production and operations with them.

Q. And are you familiar with the engineering and operational matters related to the proposed SWD well?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I submit Mr. Weatherly as an expert operations engineer.

EXAMINER McMILLAN: So qualified.

MR. BRUCE: Our exhibits are kind of out of order here, Mr. Examiner. We're starting with Exhibit H, which I've handed you.

Q. (BY MR. BRUCE) Could you identify Exhibit H briefly, Mr. Weatherly?

A. Exhibit H is a copy of the Form C-108 for this project.

Q. And referring to page 11 -- let's go first to page 11. Could you identify the proposed saltwater disposal unit?

A. Yes, sir. The proposed disposal is noted on page 11 as SCBU Number 1.

Q. And is the wellbore sketch at pages 3 and 4 of the application?

A. Yes, sir. That's correct.

Q. Could you describe the history of this well?

A. The well was spud in 1977 -- November of 1977, drilled -- let's see. It set about 418 feet of surface casing, 3/8-inch casing, has a 9-5/8 intermediate string, and then drill to 11,769 and set 7-inch casing at 129 feet of open-hole section where it produced for several years there.

In 2005, a cast-iron bridge plug was set at 9,500 feet, and the well was perforated in the 2nd Bone

Spring, and that's where it's produced since 2005.

Q. There is another sketch at page 14. Could you describe its current status and how it will be re-entered and completed as a saltwater disposal well?

A. Currently, the well has been shut in. The tubing has been removed. The packer has been removed. The 2nd Bone Spring perforations have been squeezed. Going forward, we will remove the cast-iron bridge plug at 9,500 feet, go in. There is some tubing left in the hole at 11,750. We'll have to remove that with the packer and clean out the open hole where we plan to inject. We will clean out the 129 feet of open hole and run 3-1/2-inch internally coated tubing.

Q. How many wells are in the area of review? And what pages -- I think it starts at page 21, the description of the wells in the area of review --

A. The area --

Q. -- the one-half mile area of review.

A. Yes, sir.

On page 16, there is a land map showing our area of review on the half-mile radius. Within this radius there would be 18 wells.

Q. That's shown on page 17, right?

A. Yes, sir. On page 17 is a list of those wells.

Q. And are all of those wells properly completed,

and will they prevent the movement of fluid between zones?

A. Yes, sir, they will.

Q. Are any of these wells P&A'd?

A. No, sir. There are no P&A'd wells in this area.

Q. In turning to page -- I think it's on page -- starting on pages 7 and 8, would you summarize the proposed injection operations?

A. We propose to inject a rate of around 10,000 barrels of produced water per day, a maximum being about 20,000 barrels of water per day.

Q. And what will be the injection pressure?

A. We expect our injection pressure to run 2,000 pounds, not exceeding 2,350 pounds.

Q. And if there will be any higher pressures, will you do step-rate tests and submit those to the Division?

A. Yes, sir. That's correct.

Q. Is there a proposed stimulation program for the injection well?

A. If needed, we would propose pumping 2,800 gallons of 50 percent hydrochloric --

Q. And it's an open-hole completion?

A. Yes, sir. That's correct.

Q. Are there any sources of fresh water in the

area?

A. If you look at page 33, there is a list of 16 wells within a one-mile radius and five wells within a half-mile radius, the deepest of which is 360 feet, which gives us greater than two miles of separation.

Q. And analyses of the water are mentioned or --

A. Yes, sir. They are attached.

Q. What is the -- what will be the source of your injection water?

A. The primary source of the injection will be the Brushy Canyon, Bone Spring and Wolfcamp. There is potential to inject other produced water from Permian wells, maybe the Atoka or Morrow. Some of those analyses of those formations we have included. We don't see any compatibility problems.

Q. Are these from Rockcliff's own wells?

A. Yes, sir, they are.

Q. There is not a commercial facility?

A. No, sir.

Q. Did Rockcliff examine land information to determine which offset interest owners need to be notified?

A. Yes, sir, they did.

Q. And is that at page 7 of Exhibit H?

A. Yes, sir.

MR. BRUCE: Mr. Examiner, the very last line shows one of the interest owners as Kerr-McGee. I verified with Anadarko that they are the successor to Kerr-McGee.

So we would submit -- Exhibit I is my affidavit, the Affidavit of Notice to those parties. The green card from Anadarko has not come back yet, so as a result, I have to continue the case for two weeks to get that information.

Q. (BY MR. BRUCE) Mr. Weatherly, if you were granted this application, would it be in the interest of conservation and the prevention of waste?

A. Yes, sir, it is.

Q. And was Exhibit H prepared by you or under your supervision and direction?

A. Yes, sir, it was.

Q. And do we have a geologist here to further discuss the technical aspects of this application?

A. Yes, sir. We have Dan Block here to discuss that.

MR. BRUCE: Mr. Examiner, I would move into admission Exhibits H and I.

EXAMINER McMILLAN: Exhibits H and I may now be accepted as part of the record.

(Rockcliff Operating New Mexico, LLC

Exhibit Letters H and I are offered and admitted into evidence.)

MR. BRUCE: And I have no further questions.

EXAMINER McMILLAN: Okay.

CROSS-EXAMINATION

BY EXAMINER McMILLAN:

Q. Okay. Why was the Atoka abandoned? Was it below abandonment pressure?

A. Yes, sir. The well was shut in at, basically, zero pounds pressure for a very long time. It made not hardly any gas or water.

Q. So basically it couldn't be -- there is nothing there?

A. No, sir.

Q. So you couldn't get a compressor or anything and --

A. Over the history of the well, it's made a lot of gas, and there is just -- there is not much there.

Q. It's depleted?

A. Yes, sir, depleted.

Q. Okay. And here is my next question: Will you agree to run a casing integrity log and go over the results with Artesia?

A. Sure.

Q. Okay. And then you will -- you will provide a summary of that with a sundry notice to Santa Fe and to Artesia?

A. (Indicating.)

Q. Just for clarity purposes, I was concerned because when I was going through the well file, it said that Red Adair had to put the well out.

A. The well -- the initial drilling operation, there was a blowout.

Q. Yes.

A. They produced it for a few months to get the pressures down. They have re-entered, and it is sidetracked. They put in 7-inch casing that was run after all of the blowout operations and stuff were done. So that -- that --

Q. So then I looked at that, and I got -- I got concerned, because you're trying to inject a well that Red Adair did a workover on. You can't -- it creates a lot of questions. And then so what I did is I had the Artesia District Office -- they have an engineer on staff who is really good at looking at cement bond logs, and he is concerned about the cement below 7,000 feet.

A. Okay.

Q. And the other -- okay. And after you run the casing integrity log, assuming everything's okay, do you

agree to run a falloff test or just give it -- or provide the pressure of the reservoir before you start injecting?

A. Yes, sir. We can do that.

Q. And, once again, you'll be expected to supply that to both Artesia and to Santa Fe.

A. Yes, sir.

Q. Okay?

Will the Applicant agree to make the SWD for the operator only?

A. Yes, sir.

Q. If the Applicant is no longer the operator, do you agree that this order will no longer be valid?

A. Yes, sir.

MR. BRUCE: To clarify, Mr. Examiner, but just so we don't P&A a well that may be a good SWD well, could the new owner --

EXAMINER McMILLAN: We're talking about this well and this well only.

MR. BRUCE: Yeah, I know. But if a new operator comes back and gets --

EXAMINER McMILLAN: For this well?

MR. BRUCE: Yeah.

EXAMINER McMILLAN: No. This application will be for this well only, for this Applicant only.

MR. BRUCE: Yes. But I don't want a requirement that if they sell it, they immediately have to P&A it if the new operator wants to come and --

EXAMINER McMILLAN: Well, this application will be for this --

MR. BRUCE: Okay.

EXAMINER McMILLAN: -- operator only. And if they sell the well, they're going to lose the injection rights.

MR. BRUCE: They will, yeah.

EXAMINER McMILLAN: But that needs to be clearly stated as part of the record.

MR. BRUCE: Okay. Well, he stated that.

EXAMINER McMILLAN: Okay. I want that to very clear.

Q. (BY EXAMINER McMILLAN) And will the Applicant agree to run, say, another falloff test or some other test two years afterwards?

A. Yes, sir.

Q. And then you will agree to come back to hearing and provide the results?

A. Yes, sir.

Q. And will the Applicant agree that if it wants to run a step-rate test, it will have to go to hearing and provide proper notice?

A. To increase pressures?

Q. Yes.

A. Yes, sir.

Q. By the way, I thought there was one well that actually penetrated and was recompleted in the Brushy Canyon -- or the Delaware recompletion, right?

A. In the -- one Atoka penetration?

Q. Yeah, penetration.

A. There was one, yes, sir, that penetrated the Atoka. It has been plugged back to the Brushy Canyon. That's correct.

Q. Okay. And the other point that needs to be clarified, technically Rockcliff is out of 5.9 compliance because they have three wells, but once you bring this well back on line, you would be in compliance.

Okay. The injection interval is 11,750 to 11,879, correct?

A. Yes, sir. That is correct.

Q. And, what, there is currently 25 feet of porosity greater than 8 percent?

A. I believe that's correct, but I would defer that to the geologist, Mr. Block.

Q. And just where are your water samples?

A. The produced water samples?

Q. Yeah.

MR. BRUCE: Almost at the end of the exhibit, there's --

THE WITNESS: Yes, sir. They're listed starting at page 21 in the table, pages 21 and 22.

Q. (BY EXAMINER McMILLAN) Okay. So you've got Delaware, Atoka.

Okay. I don't see a Wolfcamp water sample.

A. I will provide you that.

Q. Yeah. That will be required.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Is that a 2nd Bone Spring producer?

A. Yes, sir, it was.

Q. I don't see a 2nd Bone Spring producer -- 2nd Bone Spring sample on this one either.

EXAMINER McMILLAN: They've got a Bone Spring producer in here.

You'll provide that, right?

THE WITNESS: Yes, sir.

EXAMINER McMILLAN: Go ahead.

Q. (BY EXAMINER DAWSON) Were you there when they squeezed the 2nd Bone Spring?

A. No, sir. I wasn't on-site, but I was over the operation.

Q. Did they run a CBL after that and pressure-test it?

A. We pressure-tested, 700 pounds pressure test.

Q. 700 pounds.

Are there any other producing Atoka wells nearby?

A. No, sir.

MR. BRUCE: The geologist will testify as to --

EXAMINER DAWSON: Okay. That's all the questions I have.

CROSS-EXAMINATION

BY EXAMINER BROOKS:

Q. Okay. There was some testimony about Red Adair having been involved in this well, or was it John Wayne?

(Laughter.)

A. I was reading some of those reports. It was like a storybook. It's kind of interesting.

Q. I assume there was a blowout at some point?

A. Yes, sir. That's correct.

Q. When was that?

A. It was in early 1978, the initial -- the initial --

Q. It's been quite a long time ago?

A. Yes, sir, it was.

Q. Have you-all investigated the situation that caused that? Are you familiar with that history?

A. Right. They -- they took a kitic mat [sic; phonetic] around 11,790, somewhere in that range, and actually washed out a choke on the surface, and it blew out their choke.

Q. Are you satisfied that there are not any dangerous pressures in that well now?

A. Yes, sir, I am.

Q. Okay. I guess that's all the questions I have.

MR. BRUCE: Just another blown-out well, I can add to my list. I think I've got more on my record than anybody (laughter).

Do you have any more questions, any of you?

EXAMINER McMILLAN: No, I don't believe.

DANIEL BLOCK,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence for the record?

A. Daniel Block, McKinney, Texas.

Q. Who do you work for and in what capacity?

A. Rockcliff Energy, senior geologist.

Q. Have you previously testified before the Division?

A. No, I have not.

Q. Could you summarize your education and employment background for the Examiners?

A. I graduated in 1999 with a Bachelor of Science honor in geology from the University of Saskatchewan, Saskatchewan, Canada. So I've been in the industry 18 years.

I worked five years for a company called Rackett [phonetic] Petroleum Consultants doing basin analysis and hydrodynamics. I worked one year for Intermarket Solutions doing A and B advising as a geologist; then nine years with Encana Corp. up in Canada, and then down here in Dallas, Encana USA, as a geologist; one-and-a-half years at Matador Resources as a geologist, team lead, and finished off as exploration manager; and then two years with Rockcliff Energy as senior geologist.

Q. And did your experience at Matador and Rockcliff include the Delaware Basin?

A. Yes, it did.

Q. And does your area of responsibility at Rockcliff include this area of southeast New Mexico?

A. Yes, it does.

Q. And are you familiar with the geological matters involved in this case?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I tender Mr. Block as an expert petroleum geologist.

EXAMINER McMILLAN: So qualified.

Q. (BY MR. BRUCE) Let's start off with the 8-and-a-half-by-11 exhibits, Mr. Block. What is Exhibit A?

A. Exhibit A is a structure map on the top of the Atoka Formation. That's the formation that Rockcliff is applying to dispose saltwater into. Also included on that page is a type log showing the log character of the interval in question. We can go over that in more detail on the larger cross section where you can see the log character much better.

The data points on the map are subsea structure depths for the top of the Atoka in black below the well symbols, and then the publicly reported cumulative gas for either Atoka or Morrow for each well is bubbled and listed in red above the well symbol. And the reason I included this as an exhibit is to show there does not seem to be a direct correlation between structure and cumulative gas produced, indicating that the reservoirs are stratigraphic in nature.

Q. And there has been quite a bit of Atoka in the area; has there not?

A. Yes, sir.

Q. And was it your understanding that one of the reasons this matter had to go to hearing is because there is Atoka production within two to three miles of this proposal?

A. Yes.

Q. Could you summarize Rockcliff's reasons why this application should be approved?

A. Yes. Upon detailed review of the wells surrounding the SCBU #1 listed on that structure map, even though they're labeled as Atoka producers, upon review of the perforated interval, you can see some of those are actually Strawn producers, and there are also some others that are targeting different Atoka sands than what was completed in the SCBU #1. So Rockcliff would like to show the proposed disposal zone as effectively depleted and that it will not adversely affect any wells. Further disposal into the Atoka and SCB 1 is most economical.

Q. And what is Exhibit B?

A. Exhibit B, if you turn to the next page in your exhibit package, is a map highlighting the individual or commingled zones that have been perforated in 61 wells

surrounding the SCB 1. Highlights for perforations within the overlying Strawn Formations and underlying Morrow Formation and five distinct Atoka members informally labeled "A, B, C, D" and "Lower" are provided.

Please note that the reds -- the wells highlighted in a red circle are the ones -- these wells are the ones that have been perforated in the same zone, the Atoka C, as the SCB 1 well.

Some of those wells are commingled either with Morrow or with other Atoka, either the A, B or D, intervals. But the Atoka C Sand, the SCB 1, produced 15 bcf of gas just by itself out of -- out of that one wellbore of that zone.

Q. And that's the proposed injection well?

A. That's correct.

Q. Mr. Block, I've handed you Exhibit C. What does that reflect?

A. Exhibit C is a stratigraphic cross section crossing through each of the wells within one mile of the SCB #1 that penetrated the Atoka Formation, including the SCB 1, which is in the middle of the cross section.

And what is important to note is the perforations are listed in magenta on the depth log.

And so if you -- if you point your attention to the South Culebra Bluff #1 well in the cross section, you can see the open-hole completion starting at 11,759 going down to 11,875. And then the nearby wells, the perforations are predominantly in the Strawn Formation overlying the Atoka, highlighted in blue, and you can see the magenta cross -- magenta perf intervals in the leftmost well, in Ingalls Gas #1, at 11,400; at the South Culebra Bluff U #2, at 11,4- -- let's call it 490; again in the South Culebra Bluff Unit #5, at 11,520; and then over on the Donaldson Com A #1, 11,4- -- let's call it 85; and then falling across the Pardue Farms, 11,4- -- let's call it 485 again, 490.

And then in the Williams Gas Com #1, there is no perforation in the Strawn or the Atoka, and you have to scroll down into the Morrow Formation to see the four zones that are perforated there, from 12,500 down to 12,775, roughly.

So within a mile of the SCB 1, the other perforated -- oh, important to note -- excuse me -- in the South Culebra Bluff Unit #5, there is a perforation in the Atoka A, as well as the Strawn. That's the well immediately to the left of the South Culebra Bluff #1.

So none of the wells within a mile have been completed in the same interval.

Q. What is Exhibit D, Mr. Block?

A. Exhibit D is another stratigraphic cross section. And now the wells on this cross section are those wells within two miles that have been completed in the same zone. The one exception on this cross section to that is the Donaldson Com A #1, which I just simply included to show that it is only 1,357 feet away from the subject well, and yet the stratigraphic equivalent, the yellow highlighted interval, is pinched out and has lost much of its reservoir quality.

But if you look at the other wells, that yellow interval, which I have informally labeled the Atoka C, is thick, has porosity greater than 8 percent, which, on the far-right log -- or log trace, greater than 8 percent is highlighted in green shading. And then to highlight the tight nature of some of the other intervals, anything less than 5 percent is shaded in black. So you see a lot of black in the interval, but then the green stands out when you see the Atoka C as prospective and where they perforated that interval.

Q. And based on this, is it your belief that the well will be capable of receiving the planned volumes that Rockcliff plans to inject?

A. Yeah. With having produced 15 bcf of gas, with there being no other wells within a mile that are

completed in this interval and you have to go into a two-mile radius to find wells that have been completed in the same interval, the volumetrics allow for significant amounts of water to be injected into this interval given that, based on our calculations, anywhere from 80 to 100 percent of the volume in our mapped reservoir has been drained. Now, drainage polygons that give you 100 percent drainage, you know that that's not possible. So there has to be even a larger area that's been drained, meaning -- you know, meaning that there is more void space available to us than even what we can just show in a two-mile drainage radius.

Q. Let's move on to Exhibit E. Is the Atoka reservoir continuous across this area?

A. So the Atoka C map is a channel that trends south-southeast -- it trends southeast from the northwest, and it is as thin as one mile wide but as long as, in this area, seven miles long.

The reason I provide that cross section showing the well within two miles that have been perforated in this interval, you can see that they track along that channel, and net porosity feet, which is greater than 10 percent on a limestone scale, are posted in orange beside of the wells along Exhibit E. And wells completed in the Atoka C center are highlighted

with the red circles.

So you can see with the one-mile radius circle and the two-mile radius circles that no wells have been perforated within that one mile, and only five wells have been perforated within two miles. Four of those wells, five including the SCB 1, have been plugged at that interval. Only the Nymeyer #1 is still sort of producing out of that interval, but it's at 2 Mcf a day for the last 13 years. It is operated by Chevron, who is our 50 percent partner in much of our produced acreage, and they have not objected to our -- they're a 50 percent partner in this injection well, and they have not objected to the disposal of water into this zone.

Q. And is the Nymeyer production data shown on Exhibits F and G?

A. Yes. You can see, on Exhibit F, there is the graph that shows the -- sort of the maintenance production or -- and then it's tabulated on Exhibit G, showing that this is monthly data, so it's in the 10 to 1923 Mcf a month of gas. So we do not think that we'll adversely affect this well by injecting water into this zone.

Q. Are there any faults connecting any freshwater zone with any other producing zones in this area?

A. No, there are not.

Q. Were Exhibits A through G prepared by you or under your direction?

A. Yes. They were prepared by me.

Q. And in your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. Yes. The SCB 1 -- SCB #1 wellbore is an asset already in place, and its conversion to an SWD well will prevent unnecessary cost and the environmental risk of drilling a new SWD well in this field.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits A through G.

EXAMINER McMILLAN: Exhibits A through G may now be accepted as part of the record.

EXAMINER BROOKS: Hold on a minute. I notice on these exhibits there is a legend on the lower, left-hand side that says "Proprietary and Highly Confidential." I'm concerned about that because there is a statute that requires this department to maintain the confidentiality and correctly segregate and treat as confidential information that which is submitted as confidential.

And my question, before we admit this, is: Is Rockcliff prepared to waive the confidentiality for purposes of this hearing and allow this -- because our

normal procedure is to put all these exhibits -- post all these exhibits on the OCD Web site. And if they're going to be admitted under seal, we don't want to do that, but we would, of course, prefer that we not be put to those pains.

MR. BRUCE: No. I think Rockcliff will waive that. As you can see, Exhibits F and G are known as public data.

EXAMINER BROOKS: Okay. Well, this legend is on all exhibits, A through G.

MR. BRUCE: Yes, I know. We'll waive it.

THE WITNESS: Yeah.

EXAMINER BROOKS: Okay. I will advise the Examiner that this may be admitted and posted on the Web site as other exhibits are.

EXAMINER McMILLAN: Exhibits A through G may now be accepted as part of the record.

(Rockcliff Operating New Mexico, LLC Exhibit Letters A through G are offered and admitted into evidence.)

CROSS-EXAMINATION

BY EXAMINER McMILLAN:

Q. Okay. First question I've got is I'm looking at -- okay. I'm essentially looking at Exhibit C, and I'm looking at the #5 and the #1. Now, it's your

testimony that your injection interval is not present in the #5; is that correct?

A. No, that it was not perforated in the #5. The interval is present, but it wasn't of high enough reservoir quality for the operator to perforate it.

Q. Now, I see that in the #5, within the Atoka, you have perforated that, right?

A. They have perforated the Atoka A.

Q. But when you do an injection interval, you're approving a formation, not necessarily -- you're approving an interval. And is the #5 producing?

A. No. The #5 has been plugged.

Q. Okay. And the next question I have -- let's just -- looking -- I guess the 5's, what, a quarter of a mile away?

A. Three-quarters. It's -- at the top of the cross section, you can see that it's 4,885 feet.

Q. Where is the well that's actually closest?

A. The Donaldson Com A #1, immediately to the right.

Q. Looking at this log, where would be your vertical barriers?

A. Well, because these wells are not fracked, you can see that they're perforating each prospective zone individually, because they do not feel like if they

perforate one zone, they're going to capture the resource from the other zones. You can see that in some of the other wells. On cross section D, D prime, for example, the Yarbro A Com #1, there were several zones that they thought were prospective in the Atoka C, and so they perforated each of the intervals. It was not the practice to perforate one zone and frac up to capture the rest of the resource. So we think that there's -- that the shales that separate these wells provide enough of a seal. If we stay below frac pressure, we won't adversely affect --

Q. So where are they on this? So tell me -- point -- I want you to point and tell me exactly where the barriers -- exactly where the barriers are on the Donaldson.

A. Sure. You can see. The gamma ray on the left-hand side is shaded in several colors, blue, yellow and brown. The brown is showing the hot gamma ray, which are the shales that are fairly contiguous across the cross section. If you look at cross section D, in the Donaldson Com A 1, the shale from 11,725 down to 11,750 is -- and that's a 25-foot thick shale that actually stems across -- fairly consistently across the cross section. Now, the gamma rays are not uniform, and so the shading -- the color shading does change from

well to well, but you can see that that shale is a consistent and thick shale across the cross section.

Q. Okay. So the base at 11,775 will prevent the downward migration?

A. That -- so when we -- when we go into the SCB 1 and inject into the interval starting at 11,750, we do not believe that there will be any upward migration of our disposed water.

Q. So that lower shale at the base of 11,775, at the Donaldson, will be a barrier, right? I'm just picking it because it has a complete log package.

A. Yeah. Yeah. So in the Donaldson, the shale you see at 11,760 --

Q. Okay. I just picked it. Yeah, that's fine. Probably the same thing?

A. Yeah. That will --

Q. That will not be --

A. You can see in the porosity log to the right in the Donaldson that below 11,750 -- well, let's say below 11,775, it's shaded black. It's all below 5 percent porosity, and it's actually, you know, 2 to 3 percent porosity, everything below that. So even the open-hole portion of the SCB #1, there really is only that porosity in the --

Q. The 20- --

A. -- 25 feet -- yeah, 23 feet.

Q. And so then you're saying that that shale at 11 -- the top at crudely 11,725, that'll provide -- that'll provide an upward barrier?

A. Yes. Yeah. That shale is thick and competent.

Q. Okay. So are there any wells within two miles irrespective of whether or not it's your -- part of A, B and C? Are there any wells producing from the Atoka?

A. Just the Nymeyer #1.

Q. And it is a producer?

A. It is producing 2 Mcf a day, on average, 9 Mcf a month, and operated by our partner who has not objected to the disposal.

There are some other Morrow wells.

Q. We're talking about the Atoka.

A. Yeah. So the issue is that they are often publicly labeled as Atoka wells, but they're not, and so I have to clarify that.

Q. Yeah. But like I said, you can't inject into an active producing zone.

A. Yeah. So we think, in this situation, the reservoir has been so effectively depleted and our injection rates are not going to -- or our injection volumes are not going to expand, you know, upwards of two miles within the engineering future to adversely

affect the Nymeyer #1.

EXAMINER McMILLAN: Any questions?

EXAMINER DAWSON: I do.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Have you talked to Chevron about their plans for the Nymeyer #1? I mean, why would they want to keep a well that produces that minimal production?

A. I'm not sure. They operate two 2nd Bone Spring horizontals in that section, and so it could be that they're trying to maintain their rights below the 2nd Bone Spring for future Wolfcamp development, horizontal development, but I don't want to speak for them.

Q. But you don't feel that this well will impact that well whatsoever?

A. I do not. I do not think so. It certainly won't -- it won't water -- it won't water that well out.

Q. On your Exhibit D --

A. Yes.

Q. -- your open-hole interval from 11,750 to 11,880 --

A. Yes.

Q. -- where would that 11,880, the bottom of your open-hole interval that you're injecting into, where would you correlate that lowermost perf to the Donaldson

Com A #1 on your cross section?

A. So that would correlate to the tight rock at 11,850 to 875, very similar depth.

Q. And that's pretty much --

A. It's a tight --

Q. -- negative porosity?

A. Tight carbonate, yeah, zero to 1 percent, 2 percent.

Q. Okay.

A. The porosity divisions are at 2 percent picks, so they're, you know, 2 to 3 percent at most.

Q. So you're feeling that less than 1 percent would be a barrier for downward migration of the fluids?

A. Correct.

Q. Okay. That's all the questions I have.

EXAMINER BROOKS: No questions.

EXAMINER McMILLAN: Okay. I've just got one thing to tell you. If you want to come back to the OCD, you need more professional attire. I'm serious. I get up at 4:30 in the morning. I take Bill's Boondoggle. I wore a tie. I assume you spent the night in Santa Fe.

THE WITNESS: Yes.

EXAMINER DAWSON: When he says Bill's Boondoggle, he's talking about the Railrunner.

EXAMINER McMILLAN: And if I have to get up that early and wear a tie, I don't think it's out of the realm for a professional to have on proper attire, and if you come back, you will wear a suit and tie.

THE WITNESS: Yes, sir.

EXAMINER McMILLAN: Your attire is inappropriate.

THE WITNESS: Yes, sir.

EXAMINER McMILLAN: Okay. Anything else?

EXAMINER BROOKS: Nothing from me.

EXAMINER McMILLAN: Okay. Therefore, Case Number 15791 shall be continued until next week -- excuse me -- until the 31st.

Thank you.

Let's take a 15-minute break.

(Case Number 15791 concludes, 9:28 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.

MARY C. HANKINS, CCR, RPR
Certified Court Reporter
New Mexico CCR No. 20
Date of CCR Expiration: 12/31/2017
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