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:

ORIGINAL

APPLICATION OF DEVON ENERGY PRODUCTION COMPANY, LP, FOR SPECIAL RULES AND REGULATIONS FOR THE SCANLON DRAW-BONE SPRING POOL, TURKEY TRACK-BONE SPRING POOL, AND WINCHESTER-BONE SPRING POOL, EDDY COUNTY, NEW MEXICO

Case 14970

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID K. BROOKS, Presiding Examiner
PHILLIP GOETZE, Technical Examiner
RICHARD EZEANYIM, Technical Examiner

May 16, 2013

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID K. BROOKS, Presiding Examiner, and PHILLIP GOETZE, Technical Examiner, RICHARD EZEANYIM, Technical Examiner, on Thursday, May 16, 2013, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Room 102, Santa Fe, New Mexico.

REPORTED BY: Jacqueline R. Lujan, CCR #91
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A P P E A R A N C E S

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EXAMINER BROOKS: Back on the record.

We'll call Case Number 14970, application of Devon Energy Production, LP, for special rules and regulations for the Scanlon Draw-Bone Spring, Turkey Track-Bone Spring and Winchester-Bone Spring Pools, Eddy County, New Mexico. Call for appearances.

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

EXAMINER BROOKS: Would the witnesses please stand and identify themselves?

MR. McKINNEY: Curt McKinney, geologist with Devon Energy.

MR. BENTLEY: Jeff Bentley, reservoir engineer with Devon.

(Two witnesses were sworn.)

MR. BRUCE: Mr. Examiners, a couple of introductory matters. If you look at Exhibit 1, we're here today for, as you said, the Scanlon Draw, Turkey Track and Winchester-Bone Spring Pools.

Exhibit 1 simply gives the current legal description of the pools. As you will see from some of the geologic exhibits, there are wells that are attributed to those pools in the Division's records, but the pools haven't been officially expanded under the

procedure yet.

I also put in the acreage for the Parkway-Bone Spring pool. The reason why is a lot of the data out here is in the Parkway-Bone Spring Pool, and that pool already has a 10,000-to-1 GOR under Order Number R-9160, which is submitted as Exhibit 2. And since these pools are all in close proximity, Devon is requesting that the other three pools be granted a 10,000-to-1 GOR, just as the Parkway-Bone Spring Pool has been.

EXAMINER BROOKS: Very good.

CURT McKINNEY

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. McKinney, could you state your name and city of residence?

A. My name is Curt McKinney. I reside in Oklahoma City, Oklahoma.

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

A. I work for Devon Energy Corporation. I'm a petroleum geologist.

Q. Have you previously testified before the Division?

A. Yes.

Q. Were your credentials as a petroleum geologist

accepted as a matter of record?

A. Yes.

Q. Are you familiar with the geology involved in this application?

A. Yes.

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

EXAMINER BROOKS: He is so qualified.

Q. (By Mr. Bruce) Mr. McKinney, could you identify Exhibit 3 for the Examiner and discuss its contents?

A. Exhibit 3 is a map of the area under consideration, 19 South, 29 East, Eddy County. Several of the wells have a color code associated with them that would designate what Bone Spring pool they are assigned to. So the only wells that have color are Bone Spring wells, and they're just distinguished one from the other according to what pool they belong to. And then the yellow color fill on some of the sections represents Devon's lease position in an overall sense.

Q. And what is Exhibit 4?

A. Exhibit 4 is the same map -- same area that we just looked at, and it also has the yellow acreage shown. And then there's a dashed blue outline that shows the extent of the Parkway West unit. It's a state unit. And

then the wells with colored attributes surrounding the well symbol are Bone Spring producers. And I've just assigned a color, depending upon which part of the Bone Spring formation is productive from that particular well.

There's also just a zigzag line of a cross-section here that we'll show you later, just to demonstrate the relative continuity of the reservoir across this area.

Q. Up in the upper right, the color code does give what zone these wells are producing from, does it not?

A. Yes, that's correct.

Q. In what zone has Devon done most of its development out here?

A. Our efforts to date have been in the Second Bone Spring sand and the First Bone Spring sand. And in a general sense, everything you see that's in kind of a greenish color would be Second Bone Spring sand production, and everything you see that's in a reddish color is First Bone Spring. And then other colors just represent different members of the Bone Spring.

Q. Over on the left side of the map primarily, I see some blue circles. What are those?

A. Those are Third Bone Spring producers. There's just a small number of them.

Q. Down to the south or southeast, there's a few purple circles. What is that?

A. Those are produced from what's called the Avalon sand member of the Bone Spring.

Q. So pretty much every Bone Spring zone is productive out here?

A. Yes, that's correct.

Q. Let's move on to Exhibit 5. Could you discuss the structure out here?

A. Again, same area, so same scale. Everything is the same, so there will be no confusion there.

At the well symbols, you'll see a Sub C value. That's the top of Second Bone Spring lime, which is easily correlated across the area.

And this is a map that's at the top of the Sub C structure of the Second Bone Spring lime. The purpose of this map is just to show there aren't any known faults out here in the Bone Spring. There isn't any significant structural closure. It's more or less a monoclinal dip from northwest to southeast, roughly at about a degree, just to show that structure doesn't play a significant role in the trapping of these sands.

Q. Let's move on to your first cross-section that was denoted on this map.

A. Same cross-section line of section. This

first one is just to show the continuity of the First Bone Spring sand. The cross-section is hung on the top of the First Bone Spring sand. The sand is designated by the orange color. The carbonate above and below are in the blue hues, generally.

These are all either sonic or density neutron logs. So you've got the gamma ray on each well, the gamma ray on left track, and then the porosity curve is on the right. And we color filled the porosity, anything greater than 8 percent, just to help the porosity to bounce out.

We have larger scale copies of this, if this not large enough to review. I tried to make this big enough so you can see the numbers.

This is a horizontal play for Devon and for other players. We generally, in the First Bone Spring, land at approximately 6,900 to 7,000 feet and drill laterally across these sections. The entire sequence is productive, so we just frack our way through all of that.

Q. What is Exhibit 7?

A. That's an interval isopach of a member. This is my nomenclature. Every geologist is going to subdivide these sands according to their own interpretation. I break the First Bone Spring sand interval out into four members that I think are

contributing to the production. This is an interval isopach of the --

EXAMINER EZEANYIM: Excuse me. Which exhibit are we talking about now?

MR. BRUCE: Exhibit 7, Mr. Examiner.

THE WITNESS: It should be the one with the red contours.

This is -- again, it's an interval isopach of what I call the middle B sand of the First Bone Spring sand interval. It's really just -- this is generally the zone that we land in, because it's about two-thirds of the way through the overall sequence. Most of frack height, when we stimulate these, goes up, and some of it goes down. So we think we are able to frack the entire sequence.

And basically what the map is designed to show is that the reservoir is present across the area. There isn't really anything to segregate one area from another. It thickens and thins, but it's generally present across the area. We have found it, in fact, productive across the area where we've drilled.

The color coding on the wells -- I've only got the First Bone Spring producers turned on, if you will, or designated on this map, so you can sort of focus on where the First Bone Spring is actually productive. It's

widespread across the area, also across multiple pools.

Q. Let's discuss the Second Bone Spring. What -- maybe I'll let you run with it.

A. It's the same line of cross-section that you've seen. We just dropped down approximately 800 feet down section to the Second Bone Spring sand interval.

This one is also stratigraphically hung on top of the Second Bone Spring sand. It's this one. It's a thicker section. The Second Bone Spring sand interval is thicker than the first, but it's very similar in terms of its productivity for us.

Here again, I subdivided out. But we generally land our wells in the Second Bone Spring around 7,850 across the area. And the purpose of the cross-section is, again, just to show you that the sands are present across the area. I just kind of started on the far west side and went to the far east side. That's all that's demonstrated -- that's all I'm trying to demonstrate with this.

Again, we've color filled in the porosity just to show you that there is porosity in the sands across the area. It thickens and thins. The quality varies. But with laterals, we're able to access all the reservoir that's available to us and bring it on.

EXAMINER EZEANYIM: Is there any

indication of the first sand in here?

THE WITNESS: Of the what?

EXAMINER EZEANYIM: First Bone Spring sand. Do you indicate anything on this?

THE WITNESS: No.

EXAMINER EZEANYIM: Just for the second?

THE WITNESS: This is just for the second. They're all the same wells. Every well is just moved down section. In order to be able to see it and look at it, I had to blow it up, so we had to break it into two pieces.

And then the final exhibit is the -- again, it's an isopach of the member of the Second Bone Spring sand interval that we land in. I designate that as the lower sand.

It's also -- again, you can see that it's present across the area. I've got -- each well symbol has the thickness of this particular mapped interval shown next to the well. It varies in thickness, but it's always present. It's a series of channels, basically, but it's never absent. And that's the purpose of the exhibit, to show its continuity across the area. There's nothing to segregate it, really.

Again, we've turned on just the wells that produce from the Second Bone Spring. And I guess if you

could show these two on your desktop next to each other, the isopach of the First and the Second, you'll see that we've drilled quite more -- Industry and Devon have drilled quite a bit more Second Bone Spring wells to date than the First.

We're just about finished -- at least Devon is -- with drilling the Second. We've got it just about fully drilled up. By the end of this year, I suspect we'll be completely drilled up on the First Bone Spring. So we're moving pretty fast on this. We've had a couple of rigs running out there for a period of time now.

Q. (By Mr. Bruce) Although there are four Bone Spring pools in this area, is there any reason geologically to differentiate between the four pools?

A. I don't believe so.

Q. And did Devon Energy's Land Department check the OCD records to determine all of the Bone Spring operators in these four pools and the outlying areas where the wells have been attributed to the pools?

A. Yes.

Q. Does Exhibit 10 reflect all of the operators in this area, Bone Spring operators?

A. Yes, it does.

MR. BRUCE: And Mr. Examiner, Exhibit 11 is simply my Affidavit of Notice to the operators in the

pool, and they all did receive actual notice of the hearing.

Q. (By Mr. Bruce) Mr. McKinney, were Exhibits 3 through 9 prepared by you?

A. Yes.

Q. Were Exhibits 1, 2, 10 and 11 just compiled from company business or Division records?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 1 through 11.

EXAMINER BROOKS: Exhibits 1 through 11 are admitted.

(Exhibits 1 through 11 were admitted.)

MR. BRUCE: I have no further questions of the witness.

EXAMINER BROOKS: Very good.

Mr. Ezeanyim?

EXAMINER EZEANYIM: No questions.

EXAMINER GOETZE: No questions.

EXAMINER BROOKS: I have no questions, either.

JEFF BENTLEY

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Please state your name for the record.

A. Jeff Bentley.

Q. And where do you reside?

A. Oklahoma City, Oklahoma.

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

A. I work for Devon Energy as a reservoir engineer.

Q. Have you previously testified before the Division?

A. Yes.

Q. Were your credentials as an expert reservoir engineer accepted as a matter of record?

A. Yes.

Q. Are you familiar with the reservoir matters related to this application?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I tender the witness as an expert engineer.

EXAMINER BROOKS: He's so accepted.

Q. (By Mr. Bruce) Mr. Bentley, let's go through these exhibits a couple at a time. Looking at Exhibits

12 and 13, you're looking at particular wells, these Osage federal wells. Why did you pick out these wells for these exhibits?

A. These were, I guess, wells that were drilled that target the First Bone Spring sand. They have a long history to them. They have a lot of production data. And I was just trying to capture that so we could see how it behaved through time.

Q. Were these wells used in the application which resulted in the special pool rules for the Parkway Bone Spring pool?

A. Yes, they were.

Q. Looking at this -- well, just go ahead and describe the exhibits,

A. The first exhibit, Exhibit 12, is just showing a production graph. You'll see the gas in red and the oil in green. You see that for the last 20 years, they've been tracking very nicely, very close. I don't see any divergence. I don't see gas diverging away from the oil production.

Q. And Exhibit 13 is just simply a GOR graph?

A. Yes. Exhibit 13 is just showing that that is exactly what's happening. You see the GOR is very consistent for the past 20 years, roughly around 10,000 standard cubic feet per barrel.

Q. What are Exhibits 14 and 15?

A. Exhibits 14 and 15 are going to mirror these two exhibits, but these are horizontal First Bone Spring wells that we've drilled. There's -- we started the horizontal on a few of our wells back in 2012 and have continued. We only have a dataset of about nine currently.

But we do see that the oil-to-gas ratio is increasing on us beyond the 2000 pooling agreement that we have, standard cubic feet per barrel. It's approaching that 10,000 mark.

Q. So it looks like, based on Exhibit 15, the GOR increased for about two months, and then it's been slowly fluctuating or increasing since then?

A. Sure, sure. I just want to point out that these things have -- a lot of these have recently been brought on production. We only have about a half a year's worth of history.

Q. You would anticipate that these horizontal wells would mimic the vertical wells, the Osage wells, and eventually have a GOR of about 10,000-to-1?

A. I do believe that's the nature of the Bone Spring.

Q. What type of reservoir is this?

A. A solution gas drive reservoir.

Q. Now, you're concentrating mainly on the First Bone Spring. Have you seen increased GOR in the Second Bone Spring also?

A. You know, initial results, it was fairly steady. But I am seeing -- you know, our Second Bone Spring development has been going on longer. Those GORs are starting to increase also.

Q. In all of these pools, there is no horizontal severance among the Bone Spring zones. They are all covered by the pool rules of the four pools?

A. That's correct. There's no difference between the First, Second or the Third. We see the Bone Spring as the entire interval, several thousand feet thick.

Q. In your opinion, will the granting of this application reduce the ultimate production from the pool? In other words, will it adversely -- will increasing the GOR adversely affect production for the pool?

A. No, it will not.

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

A. Yes.

Q. Were Exhibits 12 through 15 prepared by you?

A. Yes, they were.

MR. BRUCE: Mr. Examiner, I move the

admission of Exhibits 12 through 15.

EXAMINER BROOKS: Exhibits 12 through 15 are admitted.

(Exhibits 12 through 15 were admitted.)

MR. BRUCE: I have no further questions of the witness.

EXAMINER BROOKS: Very good.

Mr. Ezeanyim?

EXAMINER EZEANYIM: Okay.

EXAMINATION

BY EXAMINER EZEANYIM:

Q. Do you happen to know what the bottomhole pressures are?

A. This is a normally-pressured reservoir. We see about 7,000 feet down, 7,100 feet down.

Q. It's normally pressured?

A. It's normally pressured. So you're looking at around 3,200 psi.

Q. Then there's three pools you're asking for?

A. Yes.

Q. Since I'm on the three pools, I have Scanlon, Turkey Track and Winchester. Which one is producing from the First Bone Spring?

I mean these pools -- I mean I'm trying to -- because you have the Avalon shale, you have the First

Bone Spring, Second Bone Spring.

And then on these three pools, what I'm asking is -- the information here is only on the First Bone Spring. Do you have anything on the Second Bone Spring? Because the Second Bone Spring is always more prolific than the First. Correct me if I'm wrong, but I don't have any demonstration from the Bone Spring.

It appears to me that some of these pools might be producing from the Second Bone Spring. We'll come back to that. But let me go through what I wanted to ask you before we go to that and then look at your analysis.

Do you have any idea about the bottomhole pressure? Do you have the bubble point? And what is the current pressure? Do you have the bubble point pressure? What is the current pressure right now; do you know?

A. Well, the current pressure right now is going to be just a little bit under the 3,200 psi that I mentioned before, because they've recently been brought on production. I don't have that with me, but I can definitely find out.

As far as -- what was your other question?

Q. Bubble point pressure.

A. We're in the early stages of getting some PVT samples out there. I don't have the bubble point

pressure in this pool or this area, Parkway. But we have done PVT analysis in Parkway, which is, I don't know, 10 miles over to east. And we see First Bone Spring bubble point pressure around 3,800 psi.

So that tells me that this reservoir is probably slightly below bubble point. That's my opinion at this point. I don't have actual PVT analysis to support that.

Q. You should get that PVT analysis on the offsets. I know you say Parkway had 10,000 gas/oil ratio in 1990. Things change. It's a concentration, but things change.

Now, the wells are producing below bubble point; right? We can safely say that? Even without the PVT analysis, we can say those wells in the three pools are producing below bubble point; right?

A. On the First Bone Spring?

Q. On the First Bone Spring.

A. Yes.

Q. So are you above bubble point in the Second Bone Spring?

A. I don't have that data with me.

Q. What about Avalon? I need to have that information. So it's only on the First Bone Spring that the production is below bubble point, only the First Bone

Spring?

A. Yes.

Q. That's where you gathered this information?

A. Yes.

Q. So it's safe to assume that the Second Bone Spring is still above bubble point? I mean you don't have a PVT to demonstrate that?

A. No.

Q. It depends on the state of production that we can know how much gas/oil ratio to give you. We need to establish that. That's why I'm asking the question.

A. I know the Second Bone Spring produces at a GOR a lot less than the First Bone Spring. And since we're horizontally developing the First Bone Spring, we're looking at seeing that that gas ratio to oil increases, and that's why we're looking at a 10,000-to-1.

Q. Everybody says, "Well, we got it for the Parkway." Yeah, you got it for Parkway. It might be different for the other pools. And then how many years from now, 13 or 14 years? Things change. We need to look at that PVT analysis to see what the well is doing. I know you said that the drive mechanism is what, solution gas drive?

A. Yes, depletion drive.

Q. Initially, do you have a gas cap?

A. No, we do not see a gas cap.
Q. There was no gravity segregation? It's just solution gas drive?
A. It's a solution gas drive reservoir.
Q. You don't have -- as you're producing gas, no gas cap is developing?
A. We do not see that.
Q. So only primary energy gas solution?
A. Yes.
Q. Did you say you are going to do a PVT analysis?
A. We are collecting PVT samples on the First Bone Spring.
Q. Do you have any idea about the allowables in these pools?
A. Allowables are 2000 to 1.
Q. Not allowable --
A. Oh, the --
MR. BRUCE: Mr. Examiner, I looked that up. In the Parkway Bone Spring pool, it's 187 barrels a day; in the Scanlon Draw, it's 230 barrels a day; in the Turkey Track, it is 230 barrels a day; and in the Winchester, it's 187 barrels a day.
EXAMINER EZEANYIM: Okay. So we're not even getting close to that allowable. So that's

indicating that most of them may be below bubble point. You know, the ones that are below bubble point will produce more gas. And then when we produce more gas, we lose a little bit.

Q. (By Examiner Ezeanyim) But anyway, let's go back to these. These are the wells -- the Osage, these are federal wells. Are they in Parkway or the Scanlon? Which pool are these --

A. These are in Section 34.

MR. BRUCE: They're in the Parkway Bone Spring.

Mr. Examiner, for future reference, if you -- Exhibit 3 has the pool boundaries. Exhibit 4 would show the First and Second Bone Spring wells. So you can figure out which is which.

Q. (By Examiner Ezeanyim) Right now what we are analyzing -- what is your name?

A. Jeff.

Q. Okay. So what we are analyzing now is the Parkway, because the Parkway already got approval for 10,000; right?

A. Yes.

Q. And that's where you got this?

A. Yes.

Q. It appears they are making 10,000, if you

calculate it from this. That's one of the questions I wanted to ask, whether you are really getting up to 10,000 gas/oil ratio. We're trying to reduce waste by producing only gas. When we approve this, that's what we're going to be looking at. I want to produce more oil than gas. Of course, you want to do that?

A. Yes.

Q. Okay. Why do you want 10,000 gas/oil ratio?

A. I want the 10,000 because I need that gas. I can't pinch the gas back because I guess you'll proportionately decrease your oil. I believe you're still going to be at 10,000. It's hard to pinch a well back to a GOR ratio. That added back pressure is going to reduce your oil flow into the wellbore. It might to the point where it's detrimental, and you are creating waste because that gas has a lower viscosity. It's going to want to come through the reservoir first.

So pinching it back could, in my professional opinion, produce more gas and leave more oil trapped in the reservoir, thus producing waste, which is what we're trying to prevent.

Q. That is something wrong with solution gas drives, that's true. But now I put it to you that most of these pools are below bubble point. Because if they're above bubble point, you wouldn't be allowed to do

10,000. I mean you know that you wouldn't be allowed to do 10,000. That's why PVT analysis is very important. You're not going to be allowed to do 10,000 when you are above bubble point because I don't think you want to get $2.50 on mcf. You don't want to do that. So we need to handle it carefully. I just assumed that -- how long have these wells been producing; do you know?

A. I showed that on that one graph, the production graph. It showed only half a year. And that's -- the longest one has produced half a year. So we started a half a year ago producing these things. We started seeing these GOR increases.

Q. Because the bubble point is close to the bottomhole pressure. So you can just start to IP the wells, and you see within four months you are below bubble point. I've seen wells do that. So it's safe to say that most of these pools are operating below bubble point.

And that's a very good condition because we want to help you produce whatever you could, but we need to get more data. I'm sorry we don't have PVT. But from what you presented to me, I think they are below bubble point, even if the well is normally pressured.

I should have asked this question. I wanted to get the porosity and the permeability in this area.

A. The porosity is going to be 10 to 15 percent, on average. And the permeabilities, you're talking in the tenths of millidarcies, probably .01 to .5. It's a very tight reservoir.

Q. That's what you have with solution gas drive.

Let's talk about -- I can see here this oil production here is production from these wells?

A. Yes, the vertical wells.

Q. So really they're very, very marginal production. The oil production from the pools are marginal. If you look at -- I mean the --

A. They're long lived. Yeah, they're marginal.

Q. Yeah, very, very marginal. And they have been producing for less than a year. I would love it to be, you know, better.

I know you have approval for Parkway. Are you asking for temporary pool rules or permanent pool rules? Do you want to make it permanent right now?

A. Yes.

EXAMINER EZEANYIM: No further questions.

EXAMINER BROOKS: Mr. Goetze?

EXAMINER GOETZE: No questions for this witness.

EXAMINER BROOKS: I have no questions.

MR. BRUCE: I have nothing further in this

case, Mr. Examiner.

EXAMINER BROOKS: Case Number 14970 will be taken under advisement.

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____, heard by me on _____ _____.

_____, Examiner
Oil Conservation Division

REPORTER'S CERTIFICATE

I, JACQUELINE R. LUJAN, New Mexico CCR #91, DO HEREBY CERTIFY that on May 16, 2013, proceedings in the above captioned case were taken before me and that I did report in stenographic shorthand the proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

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

WITNESS MY HAND this 29th day of May, 2013.

Jacqueline R. Lujan, CCR #91
Expires: 12/31/2013