STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	) CASE NOS.	13,900
	)	13,901
APPLICATION OF EL PASO E&P COMPANY, LP, FOR AN EXCEPTION TO NMAC 19.15.3.104.C.(3) TO ALLOW INFILL DRILLING AND SIMULTANEOUS DEDICATION, COLFAX COUNTY, NEW MEXICO	)	13,902
	)	13,903
	)	13,904
	)	13,905
	)	13,906
	)	(Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: WILLIAM V. JONES, Jr., Hearing Examiner

July 26th, 2007

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, WILLIAM V. JONES, Jr., Hearing Examiner, on Thursday, July 26th, 2007, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

July 26th, 2007
Examiner Hearing
CASE NOS. 13,900, 13,901, 13,902, 13,903,
13,904, 13,905 and 13,906 (Consolidated)

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E X H I B I T S

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A P P E A R A N C E S

FOR THE DIVISION:

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* * *

WHEREUPON, the following proceedings were had at 10:19 a.m.:

EXAMINER JONES: At this time let's call Case Number 13,900, consecutively through Case 13,906. So that should be about seven cases.

Any -- Call for appearances?

This is Application of El Paso E&P Company, LP, for an exception to Division Rule Number 104.C.(3) to allow infill drilling and simultaneous dedication, Colfax County, New Mexico. All seven of those cases are styled in exactly the same way.

Call for appearances.

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

EXAMINER JONES: Any other appearances?

Will the witnesses please stand to be sworn?

(Thereupon, the witnesses were sworn.)

LAURA SMITH,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name for the record?

A. Laura Smith.

Q. And where do you reside?

A. I live in Denver, Colorado.

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

A. I'm a senior staff landman for El Paso Oil and Gas.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert petroleum landman accepted as a matter of record?

A. Yes, they were.

Q. And does your area of responsibility at El Paso include this part of northeast New Mexico?

A. Yes, it does.

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

A. Yes.

MR. BRUCE: Mr. Examiner, I'd tender Ms. Smith as an expert petroleum landman.

EXAMINER JONES: Ms. Laura Smith is qualified as an expert petroleum land manager.

Q. (By Mr. Bruce) Ms. Smith, could you identify Exhibit 1 for the Examiner?

A. Sure. Exhibit 1 is just a large overview of the Vermejo Park Ranch. As you can see, that's primarily located in New Mexico, but there is a small portion up in

Colorado. And included within the large overview are two inserts. One is labeled the A and E pods, and the second is the B pod, and those are the two areas where we are requesting the simultaneous dedication.

Q. Okay. Now it says 80-acre infill pilot areas. What is the well spacing in this area?

A. The well spacing right now is 160-acre spacing, and we are requesting simultaneous dedication for seven wells, seven well units.

Q. Okay, and you're not seeking to downspace; this 80-acre just simply denotes that you're seeking two wells per 160?

A. That is correct.

Q. Okay. And is Exhibit 1A simply a reiteration of what wells are involved on each particular well unit?

A. That is correct.

Q. Okay. Now let's move on to your Exhibits 2 and 2A, which are blowups of the areas that you previously discussed. What do they show?

A. It's just a more detailed version, showing the wells that have been drilled already in these immediate areas. The green diamonds indicate where we would like to drill the second well in each unit.

Q. What is the ownership of the Vermejo Park Ranch?

A. Vermejo Park Ranch is a -- this is a landman's

dream. The surface is owned by Vermejo Park, LLC. El Paso is the only working interest owner within the whole ranch. The majority -- and the vast majority under the ranch, El Paso is actually the oil and gas rights owner.

On Exhibit 2 you will see a yellow -- the yellow color. That indicates Highway 555. And in that particular case the County of Colfax owns the minerals under the highway, but we have an oil and gas lease from them. So there again, we're the only working interest owner within the park outline.

Q. And so since there is only one mineral owner in essence, and that is El Paso, there was no need to notify anybody of the offset --

A. That is correct.

Q. -- any offsets of the Application?

A. Correct.

Q. Okay. Were Exhibits 1, 1A, 2 and 2A prepared by you or under your supervision?

A. Yes, they were.

Q. And in your opinion is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 1 through 2A.

EXAMINER JONES: Exhibits 1 through 2A will be admitted.

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

EXAMINATION

BY EXAMINER JONES:

Q. The surface owner restrictions, are they --

A. We have a very detailed surface agreement with Vermejo Park, LLC. It's called the mineral extraction agreement. It was prepared many years ago, it's been amended and restated, and it's very specific as to what is allowed. Within the mineral extraction agreement, it does allow for 14 wells to be drilled on essentially this 80-acre development, and so these will be our test cases for that.

Q. Okay. So El Paso actually owns the minerals that -- Did they buy these from Pennzoil; is that right?

A. Yes, through a series of ownership, but yes, from Pennzoil. Really it was from Devon to El Paso, but Devon acquired Pennzoil.

Q. Okay. And does it extend out of the park? I mean, as far as the --

A. If you'll look on Exhibit 1, you'll see kind of a strange little blob there to the -- directly west of the ranch. That is also the ranch ownership.

And then there is another parcel that is located south and east of that particular tract that's not depicted on that map. Again, it's kind of offset, it's not contiguous to the ranch outline. But there again, that's also park -- Vermejo Park surface and El Paso oil and gas Rights.

EXAMINER JONES: Okay, that's -- Do you have any questions for --

MR. THOMAS: (Shakes head)

EXAMINER JONES: Okay, well thank you very much.

THE WITNESS: Thank you.

MR. BRUCE: Mr. Examiner, the exhibits I've handed you are in two different packages. One relates to the A and E pods previously noted, and one pertains to the B pods. So although it's similar data, they cover different areas.

HOWARD W. MUSGROVE,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name for the record?

A. My name is Howard Musgrove.

Q. And where do you reside?

A. Parker, Colorado.

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

A. I work for El Paso Oil and Gas as a senior staff reservoir engineer.

Q. Have you previously testified before the Division?

A. No, I have not.

Q. Would you please summarize your educational and employment background?

A. I graduated from the Colorado School of Mines with a degree in geological engineering. I've worked 38 years in the oil and gas. Since January of 2003, I've been working the Vermejo Park CBM project as a reservoir engineer, prior to that the previous seven years with Coastal/El Paso and tight gas projects in Utah as a reservoir engineer.

Q. What other companies have you worked for over the years?

A. I've worked for Tenneco Oil and Gas for 18 years, I've worked for EOG as a geological manager, and I've spent four years consulting in Denver.

Q. Your degree is in geological engineering, and you are a reservoir geologist, but do you have any certifications?

A. I'm certified as a certified petroleum geologist with the AAPG. I'm a member of the SPE, and I believe

that's it.

Q. And does your area of responsibility at El Paso include this portion of New Mexico?

A. Yes, it does.

Q. And are you familiar with the reservoir engineering matters involved in this Application?

A. I am.

MR. BRUCE: Mr. Examiner, I'd tender Mr. Musgrove as an expert reservoir engineer.

EXAMINER JONES: Mr. Musgrove is qualified as an expert reservoir engineer.

Q. (By Mr. Bruce) Mr. Musgrove, could you refer to your first exhibit, El Paso Exhibit 3, and identify that for the Examiner?

A. Exhibit 3 is an isopach map of the total Raton coals that are perforated in the wells indicated and are contributing production in those wells.

Q. And what is Exhibit 4?

A. Exhibit 4 is a total isopach of the Vermejo coals, which are also perforated and contributing to production in the indicated wells.

Q. Are the Raton and the Vermejo coals the two main producing zones in this area?

A. That is correct.

Q. Is the Raton above the Vermejo?

A. The Raton is the shallowest of the two coal intervals that are producing at Vermejo Park Ranch.

Q. And what is the approximate depth in this area of this coal?

A. The TD of the wells are approximately 2300 feet.

Q. Okay. Now there have been a number of wells drilled out there obviously over the years, correct?

A. As of January 1, we had 685 producing wells at Vermejo Park, and we are drilling about 161 coalbed methane wells this year.

Q. And so you do have a good production history on these wells, correct?

A. We do.

Q. And what is Exhibit 5?

A. Exhibit 5 is a reference of the decline curve showing both the monthly production figures and the water, as well as our daily production rates and the forecasted decline curve, which gives us the estimated ultimate recovery for each of the wells.

Q. Now if you could go through just the very first one. I know there's a lot of wells contained in Exhibit 5, but if you could just do one well, what do these wells normally -- Take this well. What is the initial producing rate and what is a typical recovery out here?

A. We see the initial rate being somewhere around 25

to 40 MCF a day, which slowly inclines to a peak rate of around 140 MCF a day. In about 36 months there's a period of flat production, and then they go on terminal decline.

Q. And what is the approximate life of these -- Are all the wells out there still producing?

A. Yes, they are.

Q. And so they do have relatively long lives?

A. These wells have generally about 35-year lives.

Q. And what is -- Like on the VPR E Number 19, what would be the estimated ultimate recovery from this well?

A. About 848 million cubic feet of gas.

Q. Okay. And again, these are just --

A. -- just for the reference of how we get to the estimated ultimate, which you'll see on the summary chart in just a moment.

Q. Okay, let's move on to that summary chart, Exhibit 6, and could you describe its contents for the Examiner?

A. Exhibit 6 is a summary of the 20 wells indicated on the exhibit. The feet of coal is from the Vermejo isopach map, which was Exhibit 4. The bulk gas content, the gas in place in the Vermejo. Likewise from the Raton isopach the thickness of coal, bulk content in the original gas in place in the Raton. The total gas in place for 160 acres and the decline curves then gave us the estimated

ultimate reserves from each of the wells listed.

Q. And after going through that data, what do you estimate as the recovery factors in these wells?

A. You can see the individual recovery factors range from about 12 percent to nearly 32 percent, with an average of 23.8 percent recovery, which is extremely low in a coalbed methane project.

Q. What is a normal recovery or average recovery in a coalbed methane prospect?

A. We would expect to see somewhere in the 50- to 65-percent range recovery.

Q. And based on these numbers do you believe that by drilling an additional well in these well units El Paso will recover additional economic gas reserves?

A. I do.

Q. Now Exhibits 3 through 6 were for what you call the A and E pods. Are the remaining exhibits with respect to the VPR B pod?

A. It is.

Q. And are they similar to what you've just presented?

A. They're exactly the same, starting with the Raton isopach map, which is the shallowest coal producing intervals, the Vermejo isopach map, the decline curves of the wells in that area, as well as a summary sheet.

Q. Now in looking at the summary sheet, the average recoveries here are even lower than in the other pods?

A. That is correct.

Q. And so again, based on this data you would expect one additional -- at least one additional well per well unit not to adversely affect the existing wells in those well units?

A. That is correct.

Q. Were Exhibits 3 through 10 prepared by you or under your supervision?

A. They were.

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

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I'd move the admission of El Paso Exhibits 3 through 10.

EXAMINER JONES: Exhibits 3 through 10 will be admitted into evidence.

EXAMINATION

BY EXAMINER JONES:

Q. Okay, Mr. Musgrove, so the Vermejo is the deepest; is that --

A. That is correct.

Q. Okay.

A. Vermejo formation is approximately 300 to 350 feet in this area, in thickness.

Q. Oh, okay.

A. So approximately 2000 feet to 2300 feet.

Q. Okay. And the Raton coals are on deeper --

A. They're shallower, and they're over --

Q. They're shallower.

A. -- about a 1000-foot interval.

Q. Okay. So the Vermejo is basically better -- it's not quite as thick, it looks like, but it's got better gas content?

A. That is correct.

Q. Pretty decent gas content, actually. Were those all -- How often do you get your gas content numbers?

A. We have 43 coreholes on the ranch where we've taken core and done desorption tests on all the various coals.

Q. Were they wireline-retrievable whole cores?

A. They were whole cores, wireline-retrievable.

Q. On the other wells besides those, do you do any sidewall coring or --

A. No, sir.

Q. How about ash content here? How's your density log look?

A. Our density log looks pretty good as far as the

rugosity of the hole. We use a cutoff of 2.0 grams per cc. bulk density on a high resolution curve.

Q. Okay.

A. Ash content in this general area is about 13 to 18 percent in range.

Q. Okay. So I've seen Fruitland that's higher than that in some cases.

A. Correct.

Q. And you're using a pretty high cutoff, so you've got -- I guess you're -- that's been determined that that's -- it is producible up to that cutoff?

A. Yes, sir.

Q. The recovery factors are real low. And that's based on the 160-acre spacing, I guess, the -- just the --

A. It's just the estimated ultimate recovery by decline curve, divided by the volumetric on a 160-acre basis.

Q. Okay. Now do you play around with a coalbed simulator on this stuff, or did you use that to kind of make a prediction on your --

A. We have matched on -- we have actually run fairly large simulations on total of six wells with varying IPs and varying recovery factors just to get a feel for how they should behave, the permeability, *in situ* perm. We've also used some fairly easy simulators to agree with it. We

also have out of the 685 probably, I believe the number is somewhere in the -- 160-acre -- 160 wells that are on their terminal decline.

Q. Okay, so you've got pretty much zeroed in on what it looks like you're going to get now, except for your economic limit. I guess that would be kind of a hard thing to do.

A. With 93 percent NRI we're fortunate. We're probably down around --

Q. Yeah.

A. -- the 10 MCF, maybe slightly lower on that --

Q. Yeah.

A. -- true incremental operating cost basis.

Q. What about water dropoff as your wells produce? Are they dewatering pretty good?

A. It takes about three years to dewater these wells, primarily due to the fact that we have so many reservoirs commingled in a given well.

Q. Okay. So by that time your peak production -- so is that totally dewatered, or is this the most -- the bulk of the water is --

A. Bulk of the water.

Q. Okay. So they're always producing a little bit of water?

A. Yes, sir.

Q. And are you frac'ing these two zones separately down the casing, same-day-type deal?

A. What we will normally do on a completion, we will frac coals to about a 120-foot straddle, both Vermejo and Raton, and immediately commingle.

Q. So you're saying -- you're implying that you've got several -- a bunch of little stringers then?

A. We have anywhere from four to 16 different coal seams open in a given well.

Q. Okay.

A. That's why you'll see in several of the decline curves a hyperbolic shape and then flattening to an exponential. It's because of the stacked reservoirs.

Q. Okay. Well, I guess you've never tried -- of course, with that situation there was no cavitation option here at all, I guess.

What about CO_2 production, how it's behaving now and how it's predicted to behave?

A. We are to a point where we start seeing an increase in our CO_2, a percentage of our gas. Currently we're well below our pipeline specs.

Q. Below 3 percent?

A. Yes, sir. And so we do monitor our gas content, BTU, CO_2 across the field in every well on a monthly basis, but we have not seen the increase in CO_2 yet, which you

would expect towards the tail end of a CBM life.

Q. Has there -- basically for as far as costs go, you're extremely lucky, I guess, except for having to put pumping -- little pumping units on these wells.

Q. Yeah, our average well cost is about $580,000 a well through to the actual hookup and sales. And so it's a moderate price.

Q. Yeah. And you own the gathering system and all the -- to the point? Where's the delivery point?

A. Delivery point is at the Rita station up in Colorado, CIG, and we do own all the gathering and compression up to that point.

Q. Okay. So this recovery factor based on 160 acres, what do you expect to get it down to on the 80 acres?

A. I would expect to see most of your 80-acre wells be in the 50- to 60-percent range --

Q. Okay.

A. -- which agrees with our -- we have done drainage area or calculations. Averaging the A pod area it's about 78 acres --

Q. Okay.

A. -- and so we'd expect to see higher recoveries, more in line with what you get off a desorber test.

Q. Okay. Your desorption isotherm -- you probably

have it -- you know, you don't have to show us one of those. Is that pretty typical? I mean, is it --

A. Well, the --

Q. -- is it saturated coal to start with or --

A. Slightly undersaturated initially. But as you can see, we're -- you know, it depends. Again, we are commingling many reservoirs.

Q. Yeah.

A. Some of them are slightly undersaturated, but on the bulk of the Vermejo we're at saturation.

Q. Okay.

A. And we get most of our gas as we draw the reservoir pressure down between 100 p.s.i. and on to zero. Currently our system is at about a 7 to 13 p.s.i. compression inlet pressure.

Q. Okay. So you're basically -- each well -- a typical well, depending on where it's at on the ranch, I guess, is pretty low. You've got it down to 7, 7 pounds?

A. In the D pod, yes, sir.

Q. Oh, wow, that's good.

A. 12 percent for most of our inlet pressures in the --

Q. 12 pounds?

A. 12 pounds, p.s.i., yeah.

Q. So you're doing everything you can to get the

pressure down on it, so it doesn't seem like that's going to -- there's much more room for that to -- improvement on that?

A. No, I don't think at the wellbore we can change very much. What we're trying to do, of course, is affect the average reservoir pressure across the drainage area.

Q. Yeah. I think one of the operators in the San Juan has -- they worked to get the allowable pressure down below zero gauge pressure, you know, so --

A. On a vacuum.

Q. Yeah, so -- and of course you've got Powder River, you know, that they're doing that. So are you guys anticipating any of that, trying to draw it down?

A. Well, the two main differences between the Powder River coals and the San Juan Basin is, we are a sub-pressured area --

Q. Okay.

A. -- and our initial reservoir condition is about a .30-p.s.i.-per-foot gradient --

Q. Okay.

A. -- whereas they're at a -- pretty much a normal. We can't hold a freshwater column. And that's another reason for our pumping units.

Q. Speaking of that, has that water got some kind of bicarbonate or something, that you can't put it out on the

surface? Is that --

A. By agreement, our mineral extraction agreement calls for subsurface disposal of water.

Q. And is that working out okay? You've got plenty of capacity on your saltwater wells?

A. So far. As we add additional wells, obviously we'll need additional injection capacity so we're on the ranch.

Q. Yeah. Are you guys causing those earthquakes up there?

A. I don't believe so.

Q. What about monitor wells? Are you going to put any monitor wells here to --

A. We have --

Q. -- look at the different zones?

A. We have a series of monitor wells that are actually operated and monitored by the ranch. Predominantly they were concerned about us drawing down any freshwater aquifers, but the data also suggests that we're not seeing crossflow between the Raton nor the Vermejo, and I -- off the top of my head I don't remember how many monitor wells we have on the ranch.

Q. Okay, but your individual little coal seams, as far as having a monitor well to look at the pressure drawdown between your 160 -- have you ever done that, have

a well between your 160 that --

A. No, most of our monitor wells are basically set up multiple wells on a single pad, one with the Vermejo coals open in one monitor well, Raton coals open in the other.

Q. So you do have some?

A. We do have some.

Q. And does that help on your decision to go for this infill drilling?

A. Two things have influenced it. One is the fact that we have a very low recovery of a 160-acre, gas-in-place-type of mechanism.

The other is that, you know, even though we are probably on vacuum at the wellbore, these wells are seven years old, we haven't affected the full drainage area yet. And we want to make sure that we can draw that down through time into the 25-50 p.s.i. over the entire drainage area.

Q. So your permeability in your coals are decent; is that --

A. In areas of the ranch they're from excellent to decent.

Q. Okay. But --

A. We also have some when they get real thin are very tight.

A. Very tight, they're going to take longer. What

about -- how does this relate to the Pioneer stuff up north? Is it the same coals and same recoveries?

A. They have two advantages that we do not. They actually have a higher thermal gradient, their coals are thicker than ours. And so the way they produce their wells, they generally drill two wells on a pad, one to the Vermejo and pump it separately and frac it separately, and then one to the Raton.

Q. Is it 160-acre spacing up there?

A. No, sir, it's 40-acre spacing.

Q. 40-acre spacing.

A. And most of their sections have anywhere from five to eight wells.

Q. Wow. Well, they have surface owner disputes up there, I understand.

A. They have also been doing surface disposal of water up there and have a few problems.

EXAMINER JONES: Okay, that's -- thank you very much for coming in. I appreciate it very much.

That's the end of that case, we'll take Cases 13,900 consecutively through 13,906 under advisement.

(Thereupon, these proceedings were concluded at 10:48 a.m.)

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

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL July 29th, 2007.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2010