NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10453

IN THE MATTER OF:

The Application of Yates Petroleum Corporation for a Nonstandard Gas Proration Unit and an Unorthodox Gas Well Location, Eddy County, New Mexico.

BEFORE:

MICHAEL E. STOGNER

Hearing Examiner

State Land Office Building

March 19, 1992

REPORTED BY:

CARLA DIANE RODRIGUEZ
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

ROBERT G. STOVALL, ESQ.
General Counsel
State Land Office Building
Santa Fe, New Mexico 87504

FOR THE APPLICANT:

SANDERS, BRUIN, COLL & WORLEY, P.A.
Post Office Box 550
Santa Fe, New Mexico 88202-0550
BY: **DAMON RICHARDS, ESQ.**

I N D E X

E X H I B I T S

EXAMINER STOGNER: I'll call next case, No. 10453.

MR. STOVALL: Application of Yates Petroleum Corporation for a nonstandard gas proration unit and an unorthodox gas well location, Eddy County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. RICHARDS: I'm Damon Richards for Yates Petroleum Corporation.

EXAMINER STOGNER: Are there any other appearances?

Mr. Richards, do you have any two witnesses?

MR. RICHARDS: I will have two witnesses, Randy Patterson and D'Nese Fly.

EXAMINER STOGNER: Will the witnesses plesae stand to be sworn at this time.

(The witnesses were duly sworn.)

EXAMINER STOGNER: Mr. Richards.

MR. RICHARDS: Okay. Mr. Patterson, please.

This is the application of Yates Petroleum Corporation. They seek approval to complete the Mojave "AJY" Com Well #1 in the

undesignated Cemetery-Morrow Gas Pool, at an unorthodox gas well location, 990 feet from the north line and 660 feet from the east line of Irregular Section 35.

We'll give you some maps in a little bit, and we'll show you that this is a very irregular section. There's only approximately 340 acres in the entire section.

RANDY PATTERSON

Having been first duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. RICHARDS:

Q. Will you state your name and address, please?

A. I'm Randy Patterson. 1705 Washington, Artesia, New Mexico.

Q. How are you employed and what is your position?

A. I'm land manager for Yates Petroleum in Artesia.

Q. How long have you been in that employment?

A. 15 years.

Q. Have you had your credentials

previously accepted and of record with the OCD?

A. Yes, sir, I have.

MR. RICHARDS: I'll submit Mr. Patterson as an expert land person.

EXAMINER STOGNER: Mr. Patterson is so qualified.

Q. In your Mojave "AJY" Com #1 well, what was your primary objective?

A. The primary objective of the Mojave "AJY" Com #1 well is the Canyon formation. We have secondary objectives in the Morrow, Atoka and Strawn.

Q. What would be the proration unit for the Canyon formation in this well?

A. The Canyon formation in this well will be all of Section 35, Township 20-1/2 South, Range 23 East, Eddy County, New Mexico. It's all of the section because it's a very irregular section. It's composed of 344.92 acres, the whole section.

Q. Generally a proration unit is 320 acres, but since this one is the entire section, which is 340 acres, the proration unit will cover the entire section, is that correct?

A. That's what we're requesting, yes.

Q. Is 990 feet from the north line and 660 feet from the east line the orthodox location for a Canyon formation well?

A. Yes, sir, it is, under the rules of the South Dagger Draw Field.

Q. Is that where this well is staked?

A. Yes, sir, that is the location for this well.

Q. What happened to make you decide to drill to the Morrow formation also?

A. We had submitted our AFEs to our partners and had submitted an application or permit to drill to the OCD, which was approved. And then our partner, a majority partner, Conoco, requested that we carry the well on down to the Morrow formation.

Q. What is the status of drilling at this time?

A. The well is presently drilling at 5200 feet yesterday.

Q. So it has not yet reached the Canyon formation?

A. That's correct.

Q. What would a proration unit for a Morrow well be?

A. Normally it would be a 320-acre unit. In this case we would again request that it be the whole section.

Q. So the proration unit would not be changed if you drill down to the Morrow, is that correct?

A. That's correct.

Q. What's an orthodox location for a Morrow well?

A. Normally an orthodox location in this section would be 660 feet from the north and 1980 from the east.

Q. Did you instruct me to file an application for an unorthodox location?

A. Yes, sir, we did.

Q. Please explain the reason for that.

A. Well, as I said, our primary objective was the Canyon formation and our APD was already approved. And then our majority partner, Conoco, requested that we carry it on down to the Morrow formation.

At that time we were very close to drilling the well, and the location was--it wasn't our desire to change the location, so we requested to file an unorthodox location for the

Morrow and the other Pennsylvanian formations.

Q. Has someone under your supervision at Yates Petroleum Corporation examined the county, federal and state records to determine the offset operator?

A. Yes, sir, we have.

Q. Who are the offset operators?

A. The offset operators are Conoco, Marathon, Phillips and other Yates leases.

Q. Were notices sent to all the offset operators and received by them?

A. Yes, sir, they were.

Q. Please refer to your Exhibit No. 1, which is a land plat map of this area. Explain to the Examiner how you prepared this map and what it shows.

A. This land plat shows their Section 35, 20-1/2 South, 23 East, which is the proration unit we're requesting, which is colored in orange and surrounded in red, red line around the section. The location of the well is spotted with a red dot.

Yates lease is shown in yellow, the Conoco offset is shown in green, the Marathon offset is shown in purple, and the Phillips

offset is shown in blue.

Q. What is the ownership working interest in the proration unit for this well that would be the orange color?

A. The working interest is 56.68-and-a-small-fraction Conoco, and the balance of that is Yates companies.

Q. And Conoco is also an offset operator, is that correct?

A. That's correct.

Q. Directly to the north of the proposed location?

A. Yes, sir, that's correct.

Q. You indicated that Conoco notified you of its desire to drill on down to the Morrow. When did they notify you that they wanted to drill down to the Morrow?

A. It was after our APD was approved. It was approximately a month ago and just before we filed this application. We filed this application after they asked us to do that.

Q. Conoco is the majority working interest owner in this proration unit, as well as an offset operator to the north and to the west, is that correct?

A. Yes, sir, that is correct.

Q. How much deeper will Yates Petroleum Corporation need to drill to test the Morrow formation?

A. Approximately 1400 feet more.

Q. Will testing the Morrow formation in this well be in the best interest of conservation of the financial resources?

A. Yes, it will.

Q. Why will that be?

A. Well, if we carry this well on down to the Morrow, which is not much further to go to take a look at the Morrow, we don't have to drill a new well.

Q. Okay. Look at Exhibit 2, please. Exhibit 2 is a copy of a letter giving notice of this hearing. Would you explain who that was sent to and whether or not they received it?

A. Okay. This letter was sent to Conoco giving notice of the hearing. It was sent certified, return receipt, which is shown on the copy, and it requests that Conoco waive its right to appearance to the hearing.

Q. Now look at Exhibit No. 3. That is a response from Conoco, is it not?

A. Yes, sir, it is. Exhibit No. 3 is a letter back to us from Conoco saying they are offset operator, they have received notice, and that they waived objection to the location and its right to appearance to this hearing.

Q. It was actually Conoco who wanted to drill on down to the Morrow, isn't that correct?

A. Yes, that's correct. Conoco suggested we do this.

Q. Look at Exhibit No. 4. That is a notice that was sent to Phillips with the return receipt, is that correct?

A. Yes, sir, that's a similar notice to Phillips Petroleum with a return receipt.

Q. Did you receive a response from Phillips?

A. No, we did not get any response from Phillips.

Q. Phillips is located on the complete west side, which is not even close to the location of the well?

A. Yes, sir, that's correct.

Q. Look at Exhibit No. 5 and explain it, please.

A. Exhibit No. 5 is a similar notice

letter to Marathon Oil Company, with a return receipt.

Q. Please look at Exhibit 6.

A. Exhibit 6 is a letter from Marathon to Yates Petroleum, advising us that they've received notice of the hearing and they waive objection to the application and request that we send them logs and information off the well.

Q. Does Yates Petroleum Corporation agree to provide them the logs and test information?

A. Yes, we did agree to let them have the information.

Q. It's my understanding that a communitization agreement is being prepared. What is the status of that?

A. The communitization has been prepared and has been executed by working interest owners. We're presently securing the executions of the final overriding royalty owners.

Q. Please look at Exhibit No. 7 and explain it, also.

A. Exhibit 7 is a consent to pooling signed by Mobil Producing, Texaco and New Mexico, Inc. The reason for this consent to pooling was because Mobil's fee lease contained no pooling

clause, and they have agreed to pool themselves into this Section 35.

Q. And that's even if you drill down to the Morrow, is that correct?

A. Yes, sir, that's correct.

Q. In your opinion, will approval of this application be in the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes, sir, we believe it will.

MR. RICHARDS: Mr. Stogner, do you have any questions of this witness?

EXAMINER STOGNER: I have no questions of Mr. Patterson at this time.

MR. RICHARDS: We would like to call D'Nese Fly.

D'NESE FLY

Having been first duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. RICHARDS:

Q. Please tell us your name and give us your address.

A. My name is D'Nese Fly, and I live in Artesia, New Mexico.

Q. Where are you employed and what position do you have at that company?

A. I'm a geologist with Yates Petroleum Corporation.

Q. How long have you been in that position?

A. I've been employed with Yates for three years.

Q. Have you previously testified before the Oil Conservation Division and your credentials been accepted as an expert geologist?

A. Yes.

MR. RICHARDS: We submit D'Nese Fly as an expert geologist.

EXAMINER STOGNER: Miss Fly is so qualified.

Q. As part of your duties with Yates, have you mapped the geological structures of the South Dagger Draw-Upper Pennsylvanian Association Pool?

A. Yes, I have.

Q. Briefly describe for us the characteristics of the Canyon formation in the South Dagger Draw Pool.

A. The Dagger Draw-Upper Penn field produces oil, sour gas and water from a combined

stratigraphic and hydrodynamic trap, consisting of a lens of porous and permeable fractured dolomite, pinching out updip into a tight sealing limestone.

Downdip production is limited by water. Structure on top of the dolomite reservoir is important. There is no water-free production in the Dagger Draw fields. Even the best wells, perforated high in the dolomite, produce significant amounts of water.

Importantly, there's a hydrodynamically southwest-down-to-the-northeast tilted surface, below which the dolomite reservoir is virtually all water-filled. This hydrocarbon-producing column in any well is the subsea datum of the Big Water minus the subsea datum of the top of the dolomite reservoir.

Picking the Big Water in any given well is just an approximation. In the older wells without having mud logs, DST and perforation information is useful for approximating the Big Water pick.

In our experience, it shows that the best information to pick the Big Water are the use of the mud logs, showing the clear base of

gas kick in the dolomite. The base of the gas kicks is interpreted to be the top of the Big Water. It is economically crucial not to perforate the Big Water or channel down into it because disastrous amounts of water will be produced, along with reduced amounts of hydrocarbons.

South of the Dagger Draw field is the Indian Basin-Upper Penn field, which is a continuation of the same dolomite reservoir with the dolomite being thicker and structurally higher. Short paper by Hugh Frenzel discusses the hydrodynamic nature of the Indian Basin field, stating in this field also there's a southwest-to-northeast tilted gas-water contact, which descends 632 feet between two wells in the field, which are about seven miles a part. And that is my Exhibit No. 1.

Q. Which would be Exhibit No. 8 for the Examiner?

A. Excuse me, yes.

Q. And that's a paper that was written on the water on the Indian Basin of the Pennsylvanian, is that correct?

A. Yes.

Q. Please refer to your Exhibit 9. This is an isopach map that was prepared by you, is that correct?

A. Yes.

Q. Please explain the legend on it; the markings.

A. Okay. This exhibit is a combined top of canyon dolomite structure map and the top of the Big Water map. The solid contours show the structural configuration on the top of the Canyon dolomite reservoir in hundred-foot intervals. The dotted contours show the approximate configuration of the surface within the dolomite reservoir, known as the Big Water, and it's in 50-foot contours.

The east and west limits of the dolomite reservoir are shown by the zero dolomite lines. Canyon or deeper penetrations are identified by the circled well spots. Green colored well spots are Canyon or Upper Penn oil wells, and red well spots are Canyon gas wells.

The uncolored gas spots or well spots indicate production from zones other than the Canyon, which, in this case, are mostly Morrow.

The proration unit, consisting of the

entire irregular section of 35, is outlined in red and the proposed location is shown.

One can see that the proposed location will have a thicker hydrocarbon-producing column in the Dagger Draw dolomite reservoir than it would in a location which would be orthodox for a Morrow. This is a small red circle to the left of the proposed location.

For the proposed location, it may be seen from the map that the Big Water will be encountered at a minus 3927 subsea, which is there above the proposed location spot. Also from the map it can be seen that the dolomite reservoir will be encountered at a minus 3840 subsea.

In subtracting these numbers, I come up with 87 feet of hydrocarbon-bearing dolomite in this location. If I was to move this to the east for our proposed--for an orthodox location on the Morrow, I would come up with 63 feet of hydrocarbon-bearing column. And that is about 24 feet less of hydrocarbon-bearing dolomite than in our main objective location, which is orthodox for the Canyon.

This map also shows that, as I move to

the west, towards the orthodox position for a Morrow test, I'm going updip on my water level, which are the dotted contours on this map.

In addition, the proposed location is on the south flank of a southeast plunging nose, whereas the smaller red circle there is near the axis of a northwest plunging syncline.

The Conoco Preston Federal #1 in Unit L of Section 35, to the north of the proposed location, is on the axis of the southeast plunging nose, and is an excellent well, having proposed about 4 Bcf of gas, 23 MBO, and 2.7 million barrels of water.

Q. In preparing this Exhibit 9, did you also refer to some logs that you've attached as Exhibit 10?

A. Yes.

Q. This map will assist you in explaining the Big Water, won't it, and depicts the Big Water?

A. Right, these logs here. This is a segment of the neutron lithodensity porosity log on the left, and the correspondomg mud log on the right, of a nearby Dagger Draw-Upper Penn south well, the Yates John #4 located in Unit H of

Section 14 of 20 South, 24 East, which sits about a mile or two above my map, the previous exhibit.

The interval includes the entire Dagger Draw dolomite reservoir with pertinent correlations marked on the log including the top of the Canyon limestone, the top of the Canyon dolomite, the Big Water, and the base of the Canyon.

One can see on the gas perfs and the mud log where the gas kicks decreases significantly. It is at the base of these gas kicks that the Big Water is encountered. Matching the drill time and the gas kicks of the mud log to the petrophysical log, gives the log depth of the Big Water which, in this case, is at 7784 feet.

Note that the perforations do not go below the Big Water, and that a tight interval is present between the base of the perforations and the lower zones of the porous and permeable dolomite below. By not perforating in the Big Water and by not channeling down into it, the completion process of the John #4 made a good Dagger Draw-Upper Penn oil well with a

potential--with an IP of about 515 barrels of oil per day plus 1800 Mcf gas per day and 750 barrels of water.

Q. Based upon your training, education and experience, and after your review of these documents and the mapping of the area, did you arrive at an opinion as to whether or not you believe this well will be productive in the Canyon formation?

A. Yes, I feel it will be.

Q. Your testimony to this point has been that you feel like the orthodox location for the Canyon well is a much better location than the orthodox location for the Morrow well?

A. Right.

Q. Your primary objective is in the Canyon formation, is it?

A. That's correct.

Q. Was your decision to drill deeper and Conoco's decision to drill deeper, in part based upon the mapping of the Morrow formation and the area of the Mojave "AJY" #1 well?

A. Yes.

Q. Does Exhibit 11 correctly and accurately depict your mapping of the Morrow

formation in this area?

A. Yes, it does.

Q. Please explain that to Examiner Stogner, please.

A. All right. Exhibit 11 is a combined Morrow structure and net sand map. The dotted lines are the structural contours on the top of the Lower Morrow, and the contour interval there is about 100 feet.

The solid lines are contours showing the varying thickness of the total clean Morrow sands in the area of the proposed location. The contour interval on this is 20 feet, I have written on here. That's correct, 20 feet.

"Clean sand" is defined as the sand with less than 50 gamma ray API units on the neutron density or sonic logs in the area. According to the map, the proposed location should encounter almost 50 feet of clean sand. If the sands are not water wet and/or tight, 50 feet of sands is more than adequate to make a Morrow gas well.

Note the well in Unit I, Section 6 of 21 South, 24 East, which is on the far right side of the map, the Irregular Section 6. This well

has produced 4.6 Bcf and has a sand count of 50 feet. But a good sand count does not--is not always enough to make a good economic gas well in the Morrow, because the sands can either be tight or wet, which is the case in numerous other wells around this area.

Also, according to the map, the Morrow structure is an east regional dip, and the structure does not play a real significant role in determining an economic or non-economic Morrow gas well. It has to do more with your sands, the thickness of your net sands, and if they are not tight or water wet.

The point is that the well drilled at the proposed location should encounter an adequate thickness of Morrow Pool to justify drilling an additional 1400 feet to test a secondary objective below the primary objective of the Upper Penn.

Q. Did your log, Exhibit 12, also assist you in this mapping?

A. Yes.

Q. Will you explain your Exhibit 12?

A. Okay. Exhibit 12 here is a portion of the neutron density porosity log from the

Marathon Indian Hills State #1 located in Unit G of Section 36, 20 South, 24 East. This interval includes the entire Morrow clastic section.

The pertinent correlations marked on the log include the top of the Morrow, the top of the Morrow clastics, the Lower Morrow and the Austin cycle of the Mississippian system.

On the left side of the log, sand bodies are colored in yellow where they are less than 50 gamma ray API units, and on the right side of the log, the gas effect of the sand bodies is colored in red. Perforations are also marked in the depth column.

One may count the sands on the left side of the log and see that there's about a total of 36 feet of net sand in this well, and this well produced 2 Bcf of Morrow gas before it was recompleted in the Upper Penn. It is expected that our proposed location will have some 14 feet more sand than the Indian Hills State #1 well shown here.

Q. Can you, then, summarize your testimony this morning?

A. Yes. To sum all this up, the necessity for this nonstandard location is based upon the

conditions prevailing in the upper hole primary objective Canyon dolomite formation of the Dagger Draw-Upper Penn South field.

The proposed location is standard for a Dagger Draw-Upper Penn completion, but it's an unorthodox location for the Morrow completion. Because it's only about 1400 feet more to evaluate the Morrow formation and because the Morrow has sufficient potential as a secondary objective at this location, the decision was jointly made between Yates and Conoco to drill the additional footage before the Dagger Draw-Upper Penn South primary objective, to test the Morrow.

If gas production potential is found below the Dagger Draw-Upper Penn interval, principally in the Morrow formation, Yates seeks approval to complete in and produce from the said gas zones in an unorthodox location of 990 from the north line and 660 from the east line of the Irregular Section 35, Township 20-1/2 South, Range 23 East.

Q. In your opinion, will approval of this application be in the best interest of conservation, prevention of waste and the

protection of correlative rights?

A. Yes.

MR. RICHARDS: Examiner Stogner, do you have any questions?

EXAMINER STOGNER: I have no questions of Ms. Fly.

Do you have anything further, Mr. Richards?

MR. RICHARDS: I would move the introduction of Exhibits 1 through 12 at this time.

EXAMINER STOGNER: Exhibits 1 through 12 will be received into evidence.

Does anybody else have anything further in this case? If not, Case 10453 will be taken under advisement.

(And the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10453 heard by me on 19 March 1992.

Michael E. Stogner, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; 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 March 31, 1992.

Carla Diane Rodriguez

CARLA DIANE RODRIGUEZ, RPR
CSR No. 4