NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10791

IN THE MATTER OF:

The Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico

BEFORE:

MICHAEL E. STOGNER

Hearing Examiner

State Land Office Building

August 26, 1993

ORIGINAL

REPORTED BY:

SUSAN B. SPERRY
Certified Court Reporter
for the State of New Mexico

A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

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BY: William F. Carr, Esq.

I N D E X

E X H I B I T S

EXAMINER STOGNER: Hearing come to order again. Call the next case, No. 10791.

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

EXAMINER STOGNER: Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge & Sheridan. I represent Yates Petroleum Corporation, and I have two witnesses.

EXAMINER STOGNER: Are there any other appearances in this matter? Will both witnesses please stand to be sworn?

ROBERT BULLOCK

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

EXAMINATION

BY MR. CARR:

Q. (By Mr. Carr) Would you state your name for the record, please?

A. My name is Robert Bullock.

Q. Where do you reside?

A. I reside in Artesia, New Mexico.

Q. By whom are you employed?

A. Employed by Yates Petroleum Corporation.

Q. What is your current position with Yates Petroleum Corporation?

A. I'm a landman.

Q. Mr. Bullock, have you previously testified before this Division?

A. Yes, sir.

Q. At the time of that prior testimony, were your credentials as a landman accepted and made a matter of record?

A. Yes, sir.

Q. Are you familiar with the application filed in this case on behalf of the Yates Petroleum Corporation?

A. Yes, I am.

Q. Are you familiar with the status of the lands in the subject area?

A. Yes, sir.

MR. CARR: Are the witness's qualification acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Mr. Bullock would you briefly state what Yates seeks with this application?

A. Yates seeks the application for an unorthodox well location to drill the Beauregard ANP State Com No. 1 well. It's to be drilled 660 feet from the north line, 1980 feet from the east line, Section 14 Township 18

South, Range 27 East, Eddy County, New Mexico, with the dedication of the well to be the east half of Section 14.

Q. Have you prepared exhibits for presentation here today?

A. Yes, sir.

Q. Let's go to what has been marked Yates Exhibit No. 1. I'd ask you to identify this for Mr. Stogner, and then review the information contained thereon.

A. This is our map with the proposed location of the Beauregard ANP State Com No. 1 Well. We have attempted to define with the red line a working interest unit known as our Beauregard Unit. Yates Petroleum is the operator of that unit.

We have in that, within the boundaries of that unit, we have drilled a Morrow gas well in the south half of 23. We are presently drilling a canyon well in the west half of Section 14.

And then we have, we would like to spud our proposed unorthodox gas well location prior to mid-October, that location is shown in the box, with an arrow pointing to it.

We've also shown wells in Section 11 of the section immediately north of this section, and a few other wells around that Mr. Fly will comment on in his geological presentation.

Q. So, what we have here in the red outline is a working interest unit?
A. That's correct.
Q. Operated by Yates?
A. That's correct.
Q. The well is going to be dedicated to an east half stand-up unit?
A. That's correct.
Q. And, accordingly, it is too close to the northern boundary of the dedicated acreage?
A. Yes, sir.
Q. Who is the operator of the offsetting track to the north?
A. That operator is Amoco Production Company.
Q. Do they have a Morrow well in the southwest quarter of Section 11?
A. Yes, sir, they do.
Q. And that's the only interest on whom Yates is encroaching; is that correct?
A. That is correct.
Q. Has notice of today's hearing been provided to Amoco in accordance with OCD rules?
A. Yes, it has.
Q. And, is Exhibit No. 2 a copy of an affidavit confirming that that notice has been given with, attached

thereto, the letter to Amoco, and the return receipt?

A. Yes, sir.

Q. Will Yates be calling a geological witness to explain the reasons for this particular location?

A. Yes, they will.

Q. Were Exhibits 1 and 2 either prepared by you, or compiled at your request and direction?

A. Yes, sir.

MR. CARR: At this time, Mr. Stogner, we would move the admission of Yates Exhibits No. 1 and 2.

EXAMINER STOGNER: They will be admitted into evidence.

MR. CARR: That concludes my direct examination of Mr. Bullock.

EXAMINATION

BY EXAMINER STOGNER:

Q. The working interest unit shown in red, is that 100 percent Yates?

A. No. No, Yates has approximately 30 percent ownership in that unit.

MR. STOVALL: When you say "Yates," do you mean all the related Yates companies that usually share --

THE DEPONENT: I would say Yates Petroleum Corporation and Yates Drilling Company.

MR. STOVALL: MYCO and all the others are not involved?

THE DEPONENT: They're not involved in this unit.

Q. (By Examiner Stogner) The well down to the south, Beauregard Common 1?

A. Yes, sir.

Q. That's part of that working interest unit?

A. That's correct.

Q. The Beauregard "ANM" State No. 1 in the west half of 14, is that a proposed well or existing?

A. It's being drilled right now.

Q. And, under the working unit agreement?

A. Yes.

Q. And this will be an east half dedication. You've included the Abo. Is there a particular reason that I'm not seeing? Or, perhaps you're not the one I need to ask.

A. Why don't you address that to Mr. Fly?

EXAMINER STOGNER: Okay. With that, I'm through with Mr. Bullock. He may be excused.

MR. CARR: At this time, Mr. Stogner, to answer questions, we'll call Mr. Fly.

EXAMINER STOGNER: Thank you.

STERLING FLY, III

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

EXAMINATION

BY MR. CARR:

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

A. My name is Sterling Fly, III.

Q. Where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?

A. Yates Petroleum.

Q. What is your current position with Yates Petroleum Corporation?

A. I'm a petroleum geologist.

Q. Have you previously testified before this Division?

A. Yes, I have.

Q. And, at the time of that testimony, were your credentials as a petroleum geologist accepted and made a matter of record?

A. They were.

Q. Are you familiar with the application filed in this case on behalf of Yates Petroleum Corporation?

A. Yes, sir.

Q. Have you made a geological study of the area involved in this application?

A. Yes, sir.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Did you initially, Mr. Fly, advise the Examiner what formations are the primary objectives in the proposed well?

A. Okay. Our primary objectives are the Upper Penn Dolomite Reservoir and the Morrow clastics.

Q. You're also going to test other zones?

A. We will test anything that we deem necessary.

Q. Primary zones are the Upper Penn Dolomite, and the Morrow?

A. Yes, sir.

Q. Why is Yates proposing to drill a well at an unorthodox location?

A. Well, the necessity for the unorthodox location is based on geologic conditions prevailing within this half section.

An unorthodox location is more critical to the -- for proper or for successful completion of the Upper Penn Dolomite, but it's also very important for the Morrow clastics.

Q. Let's go to what has been marked for identification as Yates Petroleum Corporation Exhibit No. 3, and I ask you to identify that, and then review the information on this exhibit for Mr. Stogner.

A. Okay. Exhibit No. 3 is a map which is contoured on top of the Upper Penn dolomite. The contours depict the subsea topography of a dolomatized carbonate buildup or knob, which has become reservoir rock. The contours do not reflect regional or tectonic structure.

Contour interval on this map is 100 feet. The reservoir is productive one and a half to two miles to the south southwest of the proposed location. Those two wells are indicated by blue-colored well symbols.

The initial completion of those two, which was a reentry, the Yates Chalk AKH Federal No. 1, located in Unit I of Section 22, this well was originally drilled to the Morrow by Oryx and abandoned.

Yates reentered it, and made completion in the Upper Penn dolomite in June of 1993. The Upper Penn averaged 2.6 million cubic feet of gas per day, plus 70 barrels of condensate per day, and 283 barrels of water per day.

The other well was a south offset by Yates, the "Chalk" AKH Federal No. 2, located in Unit B of Section 27. In May of 1993, this well averaged 644,000 cubic feet

of gas per day, plus five barrels of condensate, and 434 barrels of water per day.

The second well's lower production is a function, primarily, of its lower structural position relative to the Chalk No. 1. In other words, it's 365 feet low to the first well on top of the Upper Penn dolomite, and has 386 feet less of hydrocarbon-bearing reservoir.

On the map, the dashed line indicates a gas water contact of minus 4571 feet. That was determined by two drill stem tests which were taken in the confirmation well, the Chalk No. 2. The upper test yielded gas, and the lower test yielded water.

At this point, we don't know whether the gas-water contact is tilted or not. These two wells have been included within the East Red Lake Upper Penn field.

I would also point out in Section 14, unit L, Yates is currently drilling the Beauregard "ANP" State No. 1. We have not drilled deep enough yet to get a data point to add to this map.

Section 15, Unit N, that well there, as you'll notice, is above the gas-water contact. We feel it might produce some gas, and probably a lot of water from this particular dolomite. At current, at present, it's producing gas from the Morrow.

Other Morrow wells in Section 22, Unit F, Section 23, Unit K, and Section 27, Unit E, are all too low structurally to encounter the hydrocarbon column.

The well down there at Section 27 Unit E did do a drill stem test, which produced 5,636 feet of water.

Mud logging is a very important tool in evaluating this particular reservoir. We look for drilling breaks with gas kicks and sample shows that indicate potentially productive hydrocarbon productive rock.

Drilling breaks without a gas increase, or with only a slight gas increase, indicate a water-productive dolomite. And a good example of this, the significance of mud logs, is seen in the Chalk Fed No. 2. The upper 21 feet of dolomite had a drilling break and a good gas kick, and subsequently was perforated and completed as a gas well.

The next 65 feet of dolomite had drilling breaks with *no* gas increase in the other 5,601 feet of formation water. The Chalk Federal No. 1, the original operator did not put a mud logging unit on until the 344 feet into the dolomite, so we don't have mud logging information for the Chalk No. 1.

So, the proposed non-standard location is positioned to be high on Upper Penn dolomite knob,

separate from the dolomite knob to the south. In the map area, there are no DSTs from wells that penetrate the Upper Pen. The apparent highest well in Section 12, Unit E, is Amoco Diamond Fed. It was a 1973 Morrow test, which was a dry hole, had no DST reported in the Upper Penn.

The only mud log available to Yates in this northern knob was in Amoco Federal "DH", located in Unit M of Section 11. That mud log had a drilling break at the top of the Upper Penn Dolomite, but no gas increase, and it was not drill stem tested.

I'd like to point out that log saturation calculations have proven to be unreliable in evaluating this Upper Penn dolomite.

Now, as the mud logging discussion would indicate, the Upper Penn dolomite in the Amoco Federal "DH" is determined to be water wet, based on having no sample show again, or no gas shown.

It is therefore necessary to encounter the Upper Penn dolomite in this knob high enough to be, to have a chance for hydrocarbon productive. Using sub-surface data, proposed location maps out to be about 130 feet high to the Federal "DH" No. 1.

Q. So, basically, what you're trying to do, as shown on Exhibit No. 3, is maximize the location in the Upper Penn dolomite?

A. The most favorable structural position is at the northern extreme on the east half of Section 14.

Q. To date, there's been no production from this northern knob that you're trying to complete in?

A. No, there are no DSTs, no perforations. And, really, the only information is that Amoco "DH" which had a mud log with no gas.

Q. Now, on this exhibit, there's a trace for a cross-section?

A. Yes.

Q. Was that Yates Exhibit No. 4?

A. Yates Exhibit No. 4. It is shown on Exhibit No. 3 as a northwest to southeast trace.

Q. All right.

A. Southwest to northeast trace, excuse me.

Q. All right, Mr. Fly. Let's now go to the cross-section, it's the large exhibit. And I'd ask you to identify, review for the Examiner, the information set forth on this cross-section.

A. Exhibit 4 is the southwest to northwest structural cross-section which is hung on a subsea level of minus 5,000 feet. Cross-section shows pertinent correlations, including the top of the Upper Penn dolomite. The cross-section shows the depth dimension to augment the Upper Penn map.

And what I mean is, in the middle of the cross-section showing the proposed location, just to the right of it, shows a big trough-like feature in the top of the Upper Penn dolomite. And that corresponds to the low, which separates the southern and northern dolomite knobs.

Because the southern dolomitized buildup produces gas along with the water, and the Amoco Federal "DH" is believed to be water wet at the top of the Upper Penn dolomite, necessitates the presence of two separate dolomite knobs.

In other words, the "DH" is actually high to gas production to the south. DST and completion information are also shown on the cross-section, and indicate where these operations were performed. On the Federal "DH", a rise in Strawn reflects a south-plunging nose located -- well, beneath the Federal DH or on the DH.

Vertical scale on the cross-section is two and a half inches; two and a half inches equal 100 feet. And no horizontal scale is intended.

Q. Could you identify what has been marked Yates Exhibit No. 5?

A. Exhibit 5 is a combined structural and sand isolate map, the dotted lines are structural contours on top of the Morrow clastics. Contour interval is 50 feet. Solid lines, solid black lines, are isolate contours

showing the varying thicknesses of total clean Morrow sand in these 15 map sections.

"Clean sand" is defined as those sands with less than 50 gammy ray API units. Contour interval for isolate is 20 feet.

The proposed location is on the axis of a Morrow sand thick, extending through proration unit under discussion. Also of importance is the structural position at the Morrow level. The proposed location is the highest structural Morrow location which would be allowed in the east half spacing unit.

To be structurally high is of importance because the two nearest well down dip to the south, have thick but water-wet channel sand reservoirs. Yates Chalk "AKH" Federal No. 1, in Section 22, Unit I, has a 44-foot thick Morrow distributary channel sand, and indicates wet on the logs, a log analysis.

In Section 23, Unit K, the Yates Beauregard No. 1, is 47-foot distributary channel sand, and that calculates wet on the logs. And was drill stem tested, recovered 8300 feet of formation water.

The Beauregard No. 1 was subsequently completed in a different, thinner Morrow sand. Both of these wells are indicated on Exhibit 6, the accompanying cross-section.

As can be seen from the map, the proposed location is 100 feet high to the two channel Morrow wells -- to the two water-wet channel sands in Section 22 and 23. And it's also 25 feet high to the nearest orthodox location.

Also at the other primary objective level, the Upper Penn, a well in Unit A or Unit B would have been acceptable. But, at the Morrow level, a well located at Unit B is more desirable than one located at Unit A.

Q. All right. Let's go to the cross-section, your Exhibit No. 6. Could you review the information on that exhibit for Mr. Stogner?

A. Exhibit 6 is a southwest to northeast stratigraphic cross-section which is hung on the top of the Morrow clastics. Pertinent correlations are shown. In other words, Morrow clastics and the Chester lime down below.

The yellow coloring on the gamma ray curve indicates how the isolate values were obtained. And, you'll notice the two down-dip water wells are the two wells to the left side of the cross section.

Q. Mr. Fly, what conclusions have you been able to reach, based on your geologic study of this particular area?

A. Well, the proposed location is geologically the

best allowable location in the east half spacing unit for both of the primary objectives. For the Upper Penn dolomite, the proposed location affords the chance to encounter the reservoir high enough to be hydrocarbon productive.

And, for the Morrow objective, the proposed location should encounter a maximum amount of sand at the structurally highest position within the east half spacing unit.

Q. In your opinion, will approval of this application and the drilling of Beauregard well as proposed enable Yates to produce preserves that otherwise will not be recovered?

A. Yes.

Q. Will approval of the application be in the best interest of conservation, and prevention of waste, and the protection of correlative rights?

A. Yes, sir.

Q. How soon does Yates need to spud this well?

A. Before October 14.

Q. Have you reviewed Exhibits No. 3 through 6, and can you testify as to their accuracy?

A. Yes, I have.

MR. CARR: At this time, Mr. Stogner, we would move the admission of Yates Exhibits 3 through 6.

EXAMINER STOGNER: Exhibits 3 through 6 will be admitted into evidence.

MR. CARR: And that concludes my direct examination of Mr. Fly.

EXAMINATION

BY EXAMINER STOGNER:

Q. Let's go to Exhibit No. 3. The trough that you're showing separating the two pod, did you say, or how do you identify that?

A. Knobs.

Q. Knobs. Are you utilizing any other data besides well information? Was there any kind of seismic information that you can go by that, perhaps, showed this?

A. No. What we know is that we have a gas-water contact at minuus 4751. So, and then we also know that Amoco Federal "DH" up there is minus 4117, which would be above the gas-water contact if it were continuous with that southern knob.

So, therefore, there has to be a separation between the two knobs.

Q. What indication do you have that knob up to the north, where the Federal "DH" is, is all contiguous with that Diamond Federal 1, the Chalk Bluff Federal No. 2, and the Amoco Malco Federal No. 3?

A. Well, there's nothing to say that there isn't,

so, you know, going by the trend of similar occurrences, they have a certain typical size. They may not be.

They may not be all within one knob, but there's no reason to say they aren't.

Q. Now, you've given me a pretty localized or, again, referring to Exhibit No. 3, a pretty localized rendition of this pod-like structure out here.

If you had a bigger one, or extended this particular exhibit, say, a township in all directions, would there be plenty more of these pods that have been developed, show up in it?

A. Yes. To the southwest, along the -- I can't recall the field name, but there's numerous small fields off to the southwest. To the northeast, there's at least one well that had 600 or 700 feet of this same type of pod development.

Q. And, how about to the south and east, and then to the north and the west?

A. No.

Q. None whatsoever?

A. Well, none that would be within this same facies tract or trend.

EXAMINER STOGNER: Mr. Carr, I'll scratch my question that I asked Mr. Bullock, that I wanted to ask Mr. Fly. I notice that there's a difference between the

application and the ad that corrects, the reason why I asked that question.

So, I'll withdraw that. And, with that, I have no other questions of Mr. Fly.

MR. CARR: We have nothing further of this case, Mr. Stogner.

EXAMINER STOGNER: Does anybody else have anything else further in case No. 10791? If not, this case will be taken under advisement. Let's take a ten-minute recess.

(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. 10791, heard by me on 26 August 1993.

, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Susan B. Sperry, 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 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 September 5, 1993.

Susan B. Sperry

SUSAN B. SPERRY, RPR, CM
CCR No. 156