STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF: APPLICATION OF YATES PETROLEUM CORPORATION FOR AN EXCEPTION TO DIVISION GENERAL RULE 303 A, EDDY COUNTY, NEW MEXICO.	)	CASE NO: 10132

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: JIM MORROW, Hearing Examiner

November 28, 1990
9:30 a.m.
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on November 28, 1990, at 9:30 a.m. at Oil Conservation Division Conference Room, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Deborah LaVine, RPR, Certified Shorthand Reporter No. 252 and Notary Public, in and for the County of Santa Fe, State of New Mexico.

FOR: OIL CONSERVATION DIVISION

BY: DEBORAH LAVINE, RPR
Certified Shorthand Reporter
CSR No. 252

I N D E X

November 28, 1990
Examiner Hearing
Case No. 10132

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A P P E A R A N C E S

BEFORE: JIM MORROW, Hearing Examiner

FOR THE DIVISION: ROBERT G. STOVALL, ESQ.
General Counsel
Oil Conservation Commission
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

FOR THE APPLICANT: LOSEE, CARSON, HAAS & CARROLL, P.A.
Attorneys at Law
BY: ERNEST L. CARROLL, ESQ.
300 American Home Building
Artesia, New Mexico 88211

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EXAMINER MORROW: I'll call case 10132.

MR. STOVALL: Application of Yates Petroleum Corporation for an exception to Division General Rule 303.A., Eddy County, New Mexico.

EXAMINER MORROW: Call for appearances.

MR. CARROLL: Mr. Examiner, I'm Ernest Carroll of the law firm of Losee, Carson, Haas & Carroll of Artesia, New Mexico. And I'm here appearing on behalf of Yates Petroleum Corporation, and I will have two witnesses.

EXAMINER MORROW: Will the witnesses please stand and be sworn.

JANET RICHARDSON

the witness herein, having been first duly sworn by the Notary Public, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARROLL:

Q. Would you please state your name, address and occupation for the record.

A. I'm Janet Richardson. I live at 1108 Yates, Artesia, New Mexico. And I'm a landman for Yates Petroleum Corporation.

Q. Ms. Richardson, have you had occasion to testify before before this commission, and have you had your credentials accepted as a petroleum landman?

A. Yes, I have.

MR. CARROLL: Mr. Examiner, I would tender Ms. Richardson as an expert in the field of petroleum land.

EXAMINER MORROW: Her qualifications have been accepted.

Q. (By Mr. Carroll:) Now, Ms. Richardson, are you familiar with the application that is presently being heard by this commission?

A. Yes, I am.

Q. And then this is an application wherein Yates seeks to commingle the Wolfcamp formation with the Canyon formation; is that correct?

A. Yes, it is.

Q. And we're here on an amended application by Yates; is that correct?

A. Yes.

(Applicant's Exhibit No. 1 was marked for identification.)

Q. Now, Ms. Richardson, you have prepared an exhibit, Exhibit 1, a plat of this area, have you not?

A. Yes, I have.

Q. Would you please explain this particular plat to the examiner.

A. Yes. In Township 20 South, 24 East, Section 23 in the west half, I've delineated the proration unit for the Hill View AHE Com Number 3 well, which is in the southeast corner of the southwest quarter. The orange outlined proration units

surrounding this proration unit are operated by Yates Petroleum Corporation. There is one proration unit to the southwest in the east half of section 27 which does not have a producing well on it. But Yates Petroleum Corporation owns the leasing rights on it, 100 percent.

Q. And the red dot that is depicted on this plat is the Hill View well; is that correct?

A. Yes, it is.

Q. So with respect to the obligation of Yates to give notice concerning this application, such notice would only have gone to itself because it operates or controls all surrounding acreage?

A. Yes, it does.

MR. CARROLL: I pass this witness, Mr. Examiner.

EXAMINER MORROW: Do you have anything, Bob? No questions?

MR. STOVALL: Real simple.

MR. CARROLL: This one will be quick. Mr. McWhorter?

PINSON McWHORTER

the witness herein, having been first duly sworn by the Notary Public, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARROLL:

Q. Would you please state your name, address, and occupation.

A. My name is Pinson McWhorter. I live at 310 South 8th Street, Artesia, New Mexico, and I'm a petroleum engineer.

Q. And you're employed by Yates Petroleum, Mr. McWhorter?

A. Yes, I am.

Q. Mr. McWhorter, have you had occasion in the past to testify before this commission and have your credentials accepted as a petroleum engineer?

A. Yes, I have.

MR. CARROLL: Mr. Morrow, I would tender Mr. McWhorter as an expert in the field of petroleum engineering.

EXAMINER MORROW: His qualifications are accepted.

Q. (By Mr. Carroll:) Mr. McWhorter, are you familiar with the application that is now pending before this commission concerning the Hill View AHE Com Number 3 well?

A. Yes, I am.

Q. Would you briefly then for the examiner explain the history of this well, how Yates came to operate this well, and kind of set the stage for your testimony with respect to the application.

A. Yes. This well was originally drilled in '71 by Roger Hanks. In 1981, Conoco acquired these leases from Roger Hanks. And this year, 1990, Yates Petroleum, in a trade, acquired the leases from Conoco. And since then, we have been the operators of this.

Q. Now could you also explain basically the steps that Yates Petroleum has gone through with respect to this well since its acquisition of it.

A. Yes. Essentially, the scenario is that we went out to the well. We had a procedure to go out there, and we were going to recomplete into a Pennsylvanian zone, the Dagger Draw south, upper Penn zone that had been the initial completion of this well. Subsequently, it had been recompleted into the Wolfcamp. We were going to go into the well for another completion in the upper Penn.

When we went to the well, it had 1100 pounds of shut-in tubing pressure on it, and that was the effects of the Wolfcamp zone that was still open in the well bore. So we opened that up and blew it down. And it bled down very quickly. Within a day's time, the pressure bled down. But we did have an unmeasured quantity of gas, hydrocarbon gas, from the Wolfcamp zone and approximately 10 to 11 barrels of flush oil production at that time.

Q. And that did come from the Wolfcamp?

A. That did come from the Wolfcamp zone.

Q. Could you continue.

A. Subsequent to that, we set the Wolfcamp zone behind a packer and went in and recompleted or completed in the upper Penn zone, a Canyon dolomite zone, and did some reperforating and some acid stimulation work in that zone. And we swab

tested it for a day or so. And then we ran a submersible pump, which is our normal operating procedure in this area. Once we ran the submersible pump, the packer had to be pulled. And once the packer was pulled, then the Wolfcamp zone and the Penn zone were both open in the well bore. And they were both being commingled at that point once that occurred.

Q. Now, Mr. McWhorter, could you state the reasons why Yates does not want and chose not to initially plug off or squeeze off, excuse me, the Wolfcamp formation.

A. Yes. There are basically three reasons why we do not want to do this. And one is that there are hydrocarbon reserves in the Wolfcamp zone. And subsequent exhibits will demonstrate that it's not in and of itself economic to produce the Wolfcamp zone alone. There are reserves there, hydrocarbon reserves there to be produced though.

Secondly, a squeeze job which would be necessitated if we were to try to isolate the Wolfcamp off and produce only the Pennsylvanian zone has an element of risk with it also, just a pure mechanical risk. And any time we're doing work in a well bore, there's always a mechanical risk of something happening and losing a well bore. And there is an element of risk there.

There's also, thirdly, there's an element of risk which is even a higher risk of just the squeeze job just not performing properly and not really isolating the zone off.

And that has a higher risk than the mechanical risk of losing the well bore. And given the fact that there's probably a 30 to 40 percent chance that the squeeze job would not work, we'd still have zones that were essentially commingled.

Q. Mr. McWhorter, you have prepared some exhibits today to help acquaint the commission with what is going on out in this particular well, have you not?

A. Yes, I have.

(Applicant's Exhibit No. 2 was marked for identification.)

Q. Would you turn first of all to your Exhibit Number 2, and would you explain what that is and its significance with respect to Yates' application.

A. Well, what this is is this is just a simple rate versus time production curve for the Dagger Draw, upper Penn south, the initial completion in the well that was initially completed by Roger Hanks in 1971, in May of '71. And it was produced, it was first produced by hydraulic pumping. And then it was produced via gas lift as a lifting mechanism. It had a very erratic production history.

In 1982, in May of '82, it was finally set under a bridge plug by Conoco and a subsequent recompletion into the Wolfcamp. This zone in the Pennsylvanian produced 124 barrels of oil, 532 million cubic feet of gas, and almost 1.4 million barrels of water. This dolomite is a very highly water

productive zone, and one of the reasons that it was abandoned on the gas lift is just there was not an efficient lift mechanism to lift that volume of fluid. What the curve does show is that there was a lot of potential on lift in the upper Penn, and that was the thing that attracted Yates Petroleum that through use of a different lift technology, we could produce more oil and gas.

Q. And this technology was the use of the submersible pumps?

A. Submersible pumps.

(Applicant's Exhibit No. 3 was marked for identification.)

Q. Would you turn to your Exhibit Number 3 and explain what it is and the significance with respect to this application.

A. The significance of this exhibit is to show that Conoco's attempt to make a completion in the Wolfcamp, which is around 6,700 feet, in March of 1983 had rather lackluster results. They essentially went in and perforated the Wolfcamp and acidized it and made a barrel of oil and about 220 mcf of gas and about 13 barrels of water. And that was on the 10th of March, 1983.

The second page of this exhibit at the bottom shows a test that was performed on the 17th, seven days later. And it was making two barrels of oil, two barrels of water and 23

mcf of gas in 24 hours, so it had fallen off significantly after the acid job and very uneconomic rates at that point.

Q. With respect, though, to the Wolfcamp formation, the results of this particular effort by Conoco does show that there are hydrocarbons in the Wolfcamp formations?

A. That's correct.

(Applicant's Exhibit No. 4 was marked for identification.)

Q. Would you turn to your Exhibit Number 4 and explain what that is and the significance of this particular exhibit.

A. Exhibit Number 4 is a sundry notice and a chronological from the Conoco well files that show the results. In June of '83, they decided to go in and frac the zone hoping to thereby increase the productivity and make an economic well. The test rate at that point was zero oil, 18 water, and 176 mcf in a 24-hour period after the hydraulic fracture stimulation treatment. Within a matter of -- in that same time period, we see that really a fracture stimulation didn't significantly improve the hydrocarbon production above what it had been after just the initial acid job. What it does show is two things. The zone is not a commercially productive well, but it is productive of hydrocarbons still.

(Applicant's Exhibit No. 5 was marked for identification.)

Q. Mr. McWhorter, would you turn to your Exhibit

Number 5 and explain what that is and its significance with respect to this application.

A. Yes. Exhibit Number 5 is a completion report filed by Yates Petroleum Corporation and a daily chronological report from Yates Petroleum Corporation that shows the work that we instituted this year, in July and August of this year, 1990. And it shows the work that we have done as far as adding perforations and treating the existing perforations that were in the hole. We had to pull the bridge plug off of the top of the Canyon zone, and we went in and treated the existing perfs and added additional perfs and treated those perfs. And that was the scenario referred to earlier where we had done that perforating work and then the stimulation work under a packer. And the Wolfcamp at that point was still isolated off from the Canyon.

The chronological report will show that we did swab the Canyon zone. And on the 8th of August of 1990, we had the well shut in. We were preparing to run a sub pump. And subsequent to that, we ran a sub pump and filed the first production report on 8/9/1990 for a potential for 89 barrels of oil, 216 mcf of gas, and 2083 water. And that was under submersible pumping conditions. And that was, of course, when we went to a submersible pumping condition, that is really with both zones open to the well bore.

(Applicant's Exhibit No. 6 was

marked for identification.)

Q. Would you next turn to your Exhibit Number 6 and explain what that exhibit is and its significance.

A. Yes, sir. Exhibit 6 is a current water analysis from the produced water from the Hill View 3. The second page of this exhibit is a water analysis from the initial completion in the Pennsylvanian zone, the south Dagger Draw, upper Penn zone, by Roger Hanks. And this water analysis was taken in 1975. The significance is that there's almost no difference between the reported water being produced now and the reported water that was being produced from the Canyon zone in 1975.

What that says to me is that right now, there seems to be no -- it's a piece of evidence that shows there's no effects of crossflow between the two zones at this point. And I believe the effects of crossflow are dissipated by the fact that we have a submersible pump in the hole which is creating a significant pressure drawdown into the well bore and would ameliorate any effects of a tendency to crossflow from one zone to the other. The water analysis helps to demonstrate that.

The fact that we had 1100 pounds shut-in tubing pressure in the Wolfcamp zone when we first entered the well says that we had probably somewhere in excess of 1700 pounds of Wolfcamp bottom hole pressure. So we know that the

Wolfcamp was probably at least 1700 psi. The sub pump's pump intake pressure currently is 1221 psi, so there's more of a drawdown into the sub pump. And there would be more resistance of any type of flow from the Canyon into the Wolfcamp would be resisted at that point because there's more pressure in the Wolfcamp than there is in the well bore.

Q. Now, Mr. McWhorter, considering your last few statements then, is it your expert opinion that there is no likelihood of damage that might occur from cross migration or flow between these two zones based on the factors that you just talked about, the pressure gradient, the pressure drawdown by the submersible pump?

A. Yes, that is correct. I don't think there would be any crossflow or any damage in this situation.

Q. Mr. McWhorter, in your opinion, expert opinion, do you feel that the granting of this application is reasonable and is one that the commission should do?

A. Yes, I do.

Q. Could you basically summarize what the reasons are for that.

A. The reason that I think that this is a reasonable request is that there are hydrocarbons in the Wolfcamp zone. The Wolfcamp zone is not a zone that would be produced in and of itself. I think that was demonstrated by Conoco. And even Yates Petroleum itself decided not to produce the Wolfcamp

zone in and of itself. And also the Wolfcamp zone is not a zone that one would at the point of depletion of the Canyon come back and recomplete in the Wolfcamp. It's just not a commercially productive zone. However, because there are hydrocarbons that are being produced in the well bore there, some quantity of them, it's not something that we want to plug off and leave behind and actually in a sense promote waste by doing that.

Q. Well, then, Mr. McWhorter, as you're well aware, the commission works within the confines of two very important principles, and that's the prevention of waste and the protection of correlative rights. Is it your opinion then that the granting of this application would prevent waste?

A. Yes, it is.

Q. And, Mr. McWhorter, is it also your opinion that the granting of this application would protect correlative rights?

A. Yes.

MR. CARROLL: Mr. Examiner, I would tender Yates Petroleum Exhibits 1 through 6 at this time.

EXAMINER MORROW: 1 through 6 are accepted into evidence.

(Applicant's Exhibits Nos. 1 through 6 were admitted into evidence.)

MR. CARROLL: Mr. Examiner, I would pass this witness at this time.

EXAMINATION

BY EXAMINER MORROW:

Q. Mr. McWhorter?

A. Yes, sir.

Q. On the exhibit that showed the water, oil and gas, are those daily volumes that are shown there?

A. No, sir. Those are monthly volumes that apply there.

Q. So the average water production, what would the average water production be during that period from --

A. Well, the average --

Q. -- '79 to '82?

A. Yes, sir. The average water production in there at that point --

Q. Just roughly.

A. -- is about 500 barrels a day on average. It increased toward the end of the life of --

Q. Are there other Wolfcamp producing wells in the area?

A. No, sir, there are not.

Q. So this would be just a single --

A. Isolated --

Q. -- Wolfcamp.

A. -- occurrence. There are other shows on mud logs and logs in the Wolfcamp, but there's not been any Wolfcamp

production in the area.

Q. Tell me again what you would expect the Wolfcamp to produce on a daily basis based on the tests that you discussed earlier.

A. I would expect that the Wolfcamp would probably produce somewhere in the neighborhood of one to two barrels of oil per day, probably somewhere 10 to 20 barrels of water per day, and gas production probably 50, 60 -- 50 to 70 mcf per day of gas production.

Q. Have you made any estimates of what total recovery you would expect to get from the Wolfcamp?

A. Yes, sir. I think from the Wolfcamp that we could probably expect somewhere in the neighborhood of 12 to 1500 barrels of oil. I think that we could also expect the gas production to be in the neighborhood of 150 to 200, meaning cubic feet, total gas production.

Q. I wanted you to explain the reasons why you felt there would be no crossflow to me again.

A. Okay, sir.

Q. The water analysis now, you indicated that that indicated to you that there had not been any crossflow.

A. Right, that's right.

Q. How long had the two zones been turned together at the time you --

A. At the time of the water analysis?

Q. -- collected that water for analysis?

A. Yes, sir. They had been put together for about a month at that point when we collected the water analysis.

Q. And then you separated the two zones in some way and got the water out from --

A. No, sir. This is the effects of the commingled water. They had been commingled for about a month when we took this water analysis. And I thought it was significant that the water analysis from the two commingled zones was essentially the water that had been produced earlier in the Pennsylvanian zone alone which suggests that there's not much in the way of water, volumewise, entering the submersible pump. This was taken at the pump.

Q. So you're not comparing Wolfcamp and Canyon waters here, but Canyon waters without the Wolfcamp and Canyon water with the Wolfcamp?

A. Yes, sir, that's correct.

Q. And let's see. Which one is which?

A. Okay, sir. The first page there in that exhibit is the current commingled water production, which is essentially all Canyon water production. The second page is the original Canyon completion which is purely Canyon waters.

Q. Now the chloride change there is from 344 on the top page to 1600, if I'm reading this correctly; is that right?

A. That's correct.

Q. That's a fairly significant change.

A. Right. There is some change in the chlorides there, but most of the other constituents are fairly significantly the same. Total dissolved solids are relatively the same. Specific gravity is the same. pH of the waters are the same. And really for all intents and purposes, it's pretty much the same water. You know, if anything, the Wolfcamp in that area, in that general area, is a much more of a brine. So if, you know, if a Wolfcamp were influencing the chlorides, I would expect the chlorides to go up, to increase rather than decrease.

Q. Well, they did go up, I guess; is that right?

A. No, sir.

Q. It went down.

A. They went down. They originally, on the original report, were 1600, and now they're being reported to 44, yes, sir.

Q. I had it backwards. So I guess what this really says is that the Wolfcamp by its production of water is not affecting the water analysis?

A. Not heavy influencing the water.

Q. But it real doesn't tell us that there's not some Canyon water going into the Wolfcamp?

A. No, that doesn't. And the thing that we look at

there is -- the other piece of reasoning there for that is this, that, like I said, when we first entered the well, we had the 1100 pounds of shut-in tubing pressure which was poorly Wolfcamp tubing pressure. And that translates into better than 1700 pounds of bottom whole pressure when we finally got the well configured with the submersible pump and both zones were open. The submersible pump right now has a pump intake pressure of 1221 psi which means that the well bore, essentially the flow and bottom hole pressure of the well bore right now is 1221 psi. Now so what I'm saying is the path of least resistance for any fluids to flow would be towards the 1221 psi as opposed to 1700 pounds plus of Wolfcamp pressure.

Q. Do you know what your fluid level is in the well when you're producing it with that intake pressure down there of 1200 and some psi?

A. Well, fluid level for that zone --

Q. Right. Or is this a measured fluid level you're going to tell me about or one you've calculated.

A. No. We would calculate the fluid levels based upon the pump intake pressure. And the pump intake pressure will be also influenced by how much back pressure you hold on the casing. But most of the time, we tune our pumps to keep the fluid almost completely pumped off. We have to keep a little bit of fluid above the submersible pump just because of

heating conditions, but we pretty well keep them pumped on.

I could calculate a fluid level based upon that, but then that would be assuming that we have zero casing pressure. And we don't really have zero casing pressure. We have 200 pounds of flowing casing pressure at this point.

Q. Well, I'm wondering if a calculated fluid level just based on that intake pressure would be of much valve because you'd be assuming there that everything that the well is capable of producing would be coming into the pump because of that bottom hole pressure. And that might or might not be the case.

A. That's true. And all of hydrocarbons that are produced in the well are not coming into the pump because the way we produce these wells is that essentially the annulus, the casing valve, is opened also into a flow line into the separator and we produce gas up the back side. See, right now in that well, we're producing 88 barrels of oil a day, 1286 mcf of gas a day, so essentially 1.3 million cubic feet of gas and 1500 barrels of water per day. And the gas, if we were to put that much gas through a sub pump, you'd lose your efficiency rather rapidly. So what we do is the gas migrates up the back side, and it's produced out through the casing valve. And the water, oil and some gas are produced through the pump.

EXAMINER MORROW: Yes, sir. Thank you.

EXAMINATION

BY MR. STOVALL:

Q. Is there any need to make an allocation for reporting purposes between the two formations, and do you have any recommendations, if there is?

A. Yes. I would recommend that we allocate 95 percent of the oil production to the Pennsylvanian zone and essentially 100 percent of the gas production to that Pennsylvanian zone. Now I would like to add that as a further point, if through test data we decided that there should be a change in allocation, we would propose a change at that point, if there is really an effective change.

Q. And you request, I would assume, that that could be done administratively as opposed to --

A. Yes, sir.

EXAMINER MORROW: Oh, you'd request a change administratively?

THE WITNESS: Yes, sir.

Q. (By Mr. Stovall:) Yeah, if the data showed it to have the need for a change, you'd request that you be able to do that?

A. Yes, sir.

Q. Probably go to the district office; would that be desirable?

A. That would be our easiest approach, yes.

EXAMINER MORROW: Okay.

MR. STOVALL: I have nothing further.

MR. CARROLL: Mr. Examiner, that would complete Yates' evidence with respect to this case.

EXAMINER MORROW: The witness may be excused, and we'll take case 10132 under advisement.

(The foregoing hearing was adjourned at the approximate hour of 10:00 a.m.)

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

REPORTER'S CERTIFICATE

I, DEBORAH LAVINE, RPR, a Certified Shorthand Reporter and Notary Public, DO HEREBY CERTIFY that I stenographically reported these proceedings before the Oil Conservation Division; and that the foregoing is a true, complete and accurate transcript of the proceedings of said hearing as appears from my stenographic notes so taken and transcribed under my personal supervision.

I FURTHER CERTIFY that I am not related to nor employed by any of the parties hereto and have no interest in the outcome hereof.

DATED at Santa Fe, New Mexico, this of 21st day of December, 1990.

November 28 10132 90

Examiner
Oil Conservation Division

DEBORAH LAVINE, RPR
Certified Shorthand Reporter
CSR No. 252, Notary Public

My Commission Expires:
August 6th, 1993