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 NO. 12,751
IN THE MATTER OF CASE 12,751 BEING REOPENED PURSUANT TO THE PROVISIONS OF DIVISION ORDER NO. R-11,721, WHICH ORDER PROMULGATED TEMPORARY SPECIAL POOL RULES FOR THE PECOS SLOPE-PENNSYLVANIAN POOL IN CHAVES COUNTY, NEW MEXICO, INCLUDING PROVISIONS FOR 320-ACRE SPACING UNITS AND DESIGNATED WELL LOCATIONS	)	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

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

March 27th, 2003
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, March 27th, 2003, 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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March 27th, 2003
Examiner Hearing
CASE NO. 12,751

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A P P E A R A N C E S

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By: WILLIAM F. CARR

* * *

WHEREUPON, the following proceedings were had at 8:47 a.m.:

EXAMINER JONES: At this time we'll call Case 12,751, which is temporary pool rules for the Pecos Slope-Pennsylvanian Pool in Chaves County, New Mexico. The case is reopened after six months.

Call for appearances in this case.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe office of Holland and Hart, L.L.P. We represent Yates Petroleum Corporation in this matter, and I have two witnesses.

EXAMINER JONES: Any other appearances?

Will the witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

TIM MILLER,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Tim Miller.

Q. Mr. Miller, where do you reside?

A. I reside in Carlsbad, New Mexico.

Q. By whom are you employed?

A. I'm employed by Yates Petroleum Corporation.

Q. And what is your current position with Yates Petroleum Corporation?

A. I'm a petroleum geologist with Yates.

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

A. Yes, I have.

Q. At the time of that testimony, were your credentials as an expert in petroleum geology accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the area that is the subject of this Application?

A. Yes, I am.

Q. Have you made a geological study of this area?

A. Yes, I have.

Q. And are you prepared to share the results of your work with the Examiners?

A. Yes, I am.

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

EXAMINER JONES: They certainly are.

Q. (By Mr. Carr) Mr. Miller, would you briefly state what Yates seeks in this case?

A. Yates seeks to basically make the temporary pool rules for this Pennsylvanian-Cisco oil zone permanent.

Q. And is the purpose of your testimony here today to provide the geological background for the engineering testimony that will be presented by Dr. Boneau?

A. Yes, it is.

Q. Have you prepared geological exhibits for presentation in this case?

A. Yes, I have.

Q. Would you refer to what has been marked for identification as Yates Petroleum Corporation Exhibit Number 1 and review the information on that exhibit for the Examiner?

A. Okay, Exhibit Number 1 is a gross isopach or thickness map of what Yates Petroleum Corporation calls the George-Cisco zone. As you can see on this gross isopach map, there are four producing wells out of this Cisco oil zone.

And if we start from the left and work to the right, the first well that produces out of it is the Powers 6. The next well, down to the southeast quarter of Section 27, is the George 2Y. In Section 26, in the southwest quarter, it's the George Number 10, and down in the northwest quarter of Section 35 it's the George Number 9.

All these wells, as you can see on here -- the good wells, which are basically the Georges 10 and 9, which are in -- 10 is in the southwest quarter of 26, and 9 is in

the northwest quarter of 35 -- have 22 feet and 26 feet of gross thickness of this limestone. This is a Cisco limestone. George 2Y has 21 feet, and the Powers Number 6 in Section 27 has 18 feet.

And we have found out that it seems to substantiate, if you have a good oil well out of this zone, you need at least around 18 feet or better to have production. And on the Georges 10 and 9, these wells initially started out around 500 barrels a day flowing, with no water.

The George 2Y in Section 27 and the Powers 6 in the southwest quarter of 27, they were old Abo gas wells that had lived out their time as Abo production, and we decided to deepen these to test the zone, and we found the Cisco oil zone in both of these wells.

Once again, this is a gross isopach showing the gross thickness of the zone. Basically what we're thinking it trends, relatively speaking, from the northwest down to the southeast. The thicker part of the limestone runs through the north half of Section 27, down into the west half and the southwest quarter of 26, down into the northwest quarter of 35.

Q. Mr. Miller, let's now go to the net isopach, Yates Exhibit Number 2.

A. The net isopach in Exhibit Number 2 is a net

porosity map of this zone with a cutoff porosity of 4 percent or better. We have found that if you have 4 percent on up in porosity, the well will produce oil with some gas in it.

Once again, this is a met porosity map, and it sort of is the same as the gross isopach map. Once again, we start on the left side.

In the south half of 27 you see the Powers 6 with a net porosity of 6 percent or 6 feet. The George 2Y down in the southeast quarter has 12 feet. Moving just directly east of that, the George 10 has 12 feet. And then moving just south of that, the George 9 has 10 feet.

And we have found that with the Powers Number 6, which is in the southwest quarter of 27, that seems to be about the thinnest net porosity you can have that still remains productive out of this oil zone.

Q. Let's go now to Exhibit Number 3. This is your west-to-east cross-section, A-A'. There's a trace for this on both the preceding exhibit and there's an index map.

A. Okay, this is -- as Mr. Carr said, is a cross-section from basically west to east. This -- What I've done, this shows the Cisco oil interval that we are producing from. And if we start on the left-hand side of the cross-section, the first well on it is the Yates Petroleum Corporation Red Rock "NB" Federal Number 1.

As you can see, the gross interval, or the limestone interval, is colored in blue on the cross-section. And if we had any porosity in the interval, it is colored red, and that basically all these logs are a compensated neutron density log. Where I have the red color, the solid line is the density curve, and that dashed line is the neutron curve, representing we have some gas in the formation.

As you can see over on the Red Rock, the well on the far left, there basically is no porosity in this well. That's basically why this well has no production out of the Cisco.

As we move to the east, to the Powers 6, you can see the porosity increasing. The net porosity in this is 6 feet, and that's where were are perfed in this well. The perfs are, as you can see down below, 4985 to 4995. So far is has cumulated 1441 barrels of oil, 49 million cubic feet of gas and 983 barrels of water. This well is the newest well out there. It went on line in October of last year, and this production is up through the end of January of this year.

Moving southeast of that is the George 2Y. This is one of the old Abo wells that was deepened for this pay. As you can see as we're moving east, the net porosity gets better. We have 12 feet of net in here. We are producing

from perfs 4979 to 4984 and 4987 to 4991. So far it's accumulated basically 7806 barrels of oil and 69 -- almost 70 million cubic feet of gas, and it makes 36,000 barrels of water. This went on in June of 2002, and the production is up from 2003.

Moving to the next well in the cross-section is the George 10. This was the initial well in the field. As you can see, this has 26 -- that's the gross, but it has 12 feet of net porosity but has -- if you compare the George 2Y, which they both have the same amount of net porosity, the George 10 has a lot higher porosity, just by looking at the solid line. The density curve is reading out at 16 percent, as opposed to over in the George 2 Y where it is reading out at just about 16 or about 15 percent.

Overall, this well is the best well out there. You can see the perfs from 4996 to 5012. So far it has made 145,000 -- almost 146,000 barrels of oil. It's cumulated 115 million cubic feet of gas. It has made very little water, 136 barrels, and it went on line in August, 2001, through January, 2003.

And I must say, all these three wells so far that are producing, they're still flowing oil. We do not have to pump them yet, so obviously they're very good oil wells.

The next one on the cross-section is south southeast of the George 10. This is the George 9. Once

again you can see the perfs on it, 5004 to 5018. This well has cumulated 98,000 barrels of oil, 141 cubic feet [*sic*] of gas, and it has been producing for a year.

And of all the four wells that produce out of this zone, this has the highest porosity. As you can see, that density curve is reading right at 23 percent. And normally when you have the density and you see the dashed curve, the neutron, coming out, that is a signature and hint that -- before you perf the well, that this zone probably has oil in it. That's just kind of a signature of a neutron density curve.

Moving to the east, the last well on the cross-section, the Cottonwood Ranch MK Number 6, it basically is not producing out of this formation. And as you can see, it's wide, has very little porosity. I have colored what is left of the porosity in it. It basically has a net porosity -- basically it's less than 4 percent, so I've given it zero feet. If you tried to make a figure on it, the density curve is just basically reading at 1 percent. So this is nonproductive out of this zone.

And as you can see on this cross-section, this kind of shows which is comparable to the two maps, the gross isopach and the net porosity map, that the best wells, the Georges 10 and 9, are in the heart where you have the thickest carbonate limestone zone and you have the

better net porosity of the productive porosity in the wells.

Q. Let's go now to Exhibit Number 4, your cross-section B-B', trending northeast southwest.

A. Okay, this gives another perspective of the reservoir from the -- basically from the northeast to the southwest. Once again, it is depicted just like the A-A' cross-section that we looked at a few minutes ago.

Starting up in the left-hand side on the cross-section, which is the northernmost well, the Cottonwood Federal Number 5, as you can see it basically has very little porosity. There is some red colored in there, but basically you have probably 1-percent porosity, and obviously that is nonproductive. We feel you at least have to have 4 percent or better of net porosity.

As you come to the next well on the cross-section, we have seen this before on the other one. This is an example of the George 10, and you can see it has very good porosity and why it has produced 145,000 barrels, so far, of oil.

The next well, which was on the other cross-section, the George 9, once again you can see the porosity.

Then as we move down to the west, or west southwest of this, the Sacra 17, basically the zone thins, which obviously we're out of the reservoir, out of the

carbonate, you have very little of it, and once again you have no porosity.

Moving to the next well, the Sacra 21, which is southeast of the Sacra 17, you have about 2 feet of 4-percent or better net porosity. Even though the carbonate is thicker here, the porosity just is not developed. Obviously, this is nonproductive.

There is one more well that possibly could have been productive, which is the next well in the cross-section, the Yates Petroleum Five Mile Draw Number 1. It has all the criteria of a well that should have made oil and some gas out of the zone. We drilled -- This was one of the first deep wells drilled in the field out there, back in the late 1970s. Not having a mudlogger on the well kind of made it difficult for them to actually know what they were looking at, at the time.

Most of the gas you found out here, if you drilled below the Abo into the Wolfcamp or the Cisco, was mainly sandstones, and there would be a sandstone up above this, and I think they just thought this was a sandstone. And when we tried to complete it and treat it, we gel-frac'd it and we think we just basically plugged the permeability up in it. So it has never really produced any oil or gas out of this zone. But the signatures say it should have, it should have been a good producer.

The last well on the cross-section is west of this, the Five Mile Draw Number 2. It has very little net porosity. We did try it and we got a trace of gas when we perforated that porosity.

So as you can see on the cross-section, once again what I've tried to do with this cross-section going northeast to southwest is basically show the east-west limits going to the southwest of the field and where the better wells would be in the heart of where we've mapped on the gross isopach and the net porosity map through the center of the field.

Q. Mr. Miller, with your geological work have you basically defined the limits and confirmed the size of the reservoir we're talking about here today?

A. We basically have not yet. We are still in an exploration mode, and we have recently shot 3-D seismic over this area, and hopefully by summertime we will start our next round of drilling for this zone, hopefully north to northwest of the George Number 10. We still have not really defined the limits.

Q. Do you have anything further to add to your testimony

A. No, I do not.

Q. Were Exhibits 1 through 4 prepared by you?

A. Yes, they were.

MR. CARR: At this time, Mr. Jones, we move the admission into evidence of Yates Exhibits 1 through 4.

EXAMINER JONES: Exhibits 1 through 4 will be admitted to evidence.

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

EXAMINATION

BY EXAMINER JONES:

Q. Okay, Mr. Miller, the logs you ran out there -- So you said in the 1970s when they ran that log they didn't have a mudlogger, and the electric log, they ran it on a sandstone matrix or they were looking for sand? Is that what you were saying?

A. Well, from what was known back there, this was -- what you're referring to, the Five Mile Draw Number 1 --

Q. Yes.

A. -- that well was drilled in 1979, and that was one of the first wells drilled in the Pecos Slope field to begin with. And back then I think everybody's feeling was, we're drilling for Abo sands. I guess they just decided to drill this one to basement, otherwise to Granite or Granite Wash.

And since we're just drilling Abo sands, we -- most operators did not put mudloggers on it, and I think when -- what was out there was, they probably had a well-

site geologist or the driller, when they saw the pink Granite Wash, the basement, that's when they stopped drilling.

And even though they have this nice gas crossover on the neutron density and the -- in the signature, if you look just up above it, above 4929 -- about 20 feet up -- now, I don't have it colored, but that is the sand up above. You see crossover on the -- You can see what I'm looking at it, it's probably -- 90, 80 -- between 4860 and -70. If you count up, you'll see.

Q. Yeah.

A. That is one of those Cisco sands, and see, it has crossover. So we feel that over 20 years ago when we were trying to complete that, they tried to complete those at the same time and they started with the lowest one first. And of course, for these sands you usually frac'd them and gel-frac'd them back then, and they did the thing down in the limestone.

And we just feel that we basically fouled the completion up, and we think that we just plugged up the permeability and it's never been able to, you know, produce.

Q. Okay. These -- I pulled the production on this field in this area, and the only thing I have so far on the records is the George 9 and the George 10, and the George

10 shows a little bit of water production, but not much.

A. Right.

Q. Is that a valid number there?

A. Yeah, and I think that was early on in the completion, same thing as the -- well, the George 9 has not made any water.

And if you ask about the Powers Number 6 and the George 2Y, we had -- especially the George 2Y, we had -- that was a deepening of an old Abo well. You have to drill a slimhole. We had problems with the well when we were trying to log it. We couldn't get back in the old hole, and they finally did. We figured that we were drilling in and out of the hole that we already drilled.

So when we got down to what we thought was TD and we completed, of course, we drilled it all the way to basement Granite Wash. And Granite Wash out there sometimes has a lot of water in it, and we've never been able to really determine if that water is coming from the Granite Wash or somewhere uphole.

Q. Okay, so that Granite Wash water, is that high-pressure water, or is it just normally pressured?

A. Normally pressured, most of the time.

So that well has been an enigma there. We probably feel that that well that's made 36,000 barrels probably is not coming out of that zone, but it's been very

hard to try to prove it or disprove it.

Q. And you convinced management to run a 3-D seismic on this area?

A. Yes.

Q. Seems like you have pretty good definition of it.

A. Well, as you can see, we've tried some other wells. If you just look at the net porosity isopach map for reference, the well that's up in the southeast quarter of 26, the Cottonwood 5, Federal 5, that was our stepout to the northeast of the George 10, and we basically just did not have the porosity.

Q. Okay.

A. And then we drilled our -- the -- if you look again at that, in Section 34, the Sacra 17, you know, we stepped out to the west a little over a mile and we struck out there.

And then down in the southwest quarter of 35, which is southwest of the George Number 9, again we struck out.

Q. Okay.

A. So we figured we'd need a little more help than just going out there and drilling blind.

Q. That would be cheaper than drilling wells?

A. In the end, in the long run, yes.

Q. And you can see that Cisco on the --

A. From what we -- our 3-D, we have an idea we can see at a certain depth, because we ran a more expensive, a more detailed than what you normally run, our geophysicist who designed it. And we think we see it but we haven't tested it yet, so that's still a question. We think we see this zone, but until we actually drill a well for it, it's still available.

Q. Do you have any sonic logs on these wells?

A. Yes, yes.

Q. So you can correlate, you can calibrate your seismic?

A. Yes, right.

Q. You know, before the engineering, Dr. Boneau, comes up, what is your say on the spacing out here and the development on the 320 acres?

A. Well, I know Dr. Boneau in the first hearing we had, if I remember right, and I may be wrong on the figure, but of course at that time we only had the first well, George 10, to do any analysis on, and I think he had stated it as probably draining about 299 acres, and that's obviously why you gave us the temporary 320.

Right now, you know, I still don't know. The jury's still out. And I think if we can get some more wells drilled in there, maybe we'd have a better idea how much it really does drain.

Q. Part of the original testimony was that the idea was maybe to have everything on 320 so that your Abo would be -- I'm not sure I totally understood that, but it would sort of be consistent with the other spacing out here. Is that your impression also?

A. Yeah, in case -- when we drill another well, you know, if it would be in the other 160 or 320 and say we'd strike out like we have seen in some of these wells --

Q. Okay.

A. -- you can fall back on the Abo uphole.

Q. Oh, okay, I see that.

A. You wouldn't end up drilling a dry hole. You at least have some pay interval uphole.

EXAMINER JONES: Okay, Mr. Brooks?

MR. BROOKS: No questions.

EXAMINER JONES: Thanks a lot.

THE WITNESS: Thank you.

MR. CARR: Mr. Examiner, at this time we call David Boneau.

DAVID F. BONEAU,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your full name for the record,

please?

A. David Francis Boneau.

Q. Dr. Boneau, where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?

A. Yates Petroleum Corporation.

Q. And what is your position with Yates Petroleum Corporation?

A. I work there as engineering manager.

Q. Have you previously testified before this Division?

A. Yes, sir.

Q. At the time of that testimony, were your credentials as an expert in petroleum engineering accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Application filed in this case and in the initial case by Yates?

A. Yes, I am familiar with that.

Q. Are you familiar with the subject matter of today's hearing?

A. Yes, sir.

Q. Have you made an engineering study of this particular reservoir?

A. Yes, we've done that.

Q. And are you prepared to share the results of your work with the Examiners?

A. Yes, sir, you bet.

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

EXAMINER JONES: Dr. Boneau is so qualified.

Q. (By Mr. Carr) Dr. Boneau, Yates was the Applicant in the original case; is that correct?

A. That's correct.

Q. I think it would be helpful at this point if we would refer to what has been marked for identification as Yates Exhibit Number 5. I'd ask you to refer to that exhibit and then provide an overview of how we got here and generally an overview of the case here today using this exhibit, and then we'll go into the detail that follows.

A. Okay, I'll try to do that. Mr. Miller told you some of the details. We'll see if we can get the picture on one canvas here.

At the original hearing -- Well, I have seven items here listed on this page, and first four of them are history, and then history up to the first hearing, basically, tell you where we were at the first hearing. Then items 5, 6 and 7 are what's happened since. Like I say, you've heard some of this from Mr. Miller, but...

The original hearing was November 1, 2001, and

the order was issued in February of 2002, so we're approximately a year later than the order. At that time we asked for a 320 spacing unit with a second well allowed in the other quarter section, 660 setbacks from the outer boundary, an oil allowable of 694 barrels of oil per day for the 320-acre spacing unit. And originally the west half of Section 26, which is the George Number 10 well, was assigned to the pool.

My item 3 here, let's see if I can explain this. This is actually not exactly what Mr. Miller said, so item 3, our idea at the first hearing was that the rules we asked for would be consistent with, I'd say, Pennsylvanian gas rules, Morrow rules.

As an example -- and I don't know if this actually happened, but what we had in mind was, we would drill these wells to basement, and if we found an oil pool we wanted it to fit with the same set framework as if we found a Strawn sand that made gas, or a Wolfcamp sand that made gas or a Siluro- -- and the zones out here are Silurian, Strawn, Cisco, Wolfcamp, have been the targets.

So we wanted to be able to drill -- and this is not a big deal, but I'm trying to say something a little bit different from what Mr. Miller said. We wanted the rules to be such that we could drill the basement, and if we found oil or gas we'd have consistent rules for the

Pennsylvanian or for the deep zones. So that if we found a Cisco oil zone we could have the same -- we wouldn't have to come every time to get the spacing, et cetera, rules, so they'd be consistent with if we found a Strawn sand that made gas. That was -- If I'm making any sense at all, that was the idea.

Let's go on, anyway.

At the time of the first hearing, Yates had one well, the George Number 10, and I presented evidence and estimates that said it might drain 199 acres, is, I think, the number.

So that's where we were a year or so ago. We had this one well, it was producing lots of oil, et cetera.

Since that time, we have looked pretty hard for what's going on out there, as item number 5 here says. And I don't -- Well, so we have drilled six more -- eight more wells in the area, looking to define this field. And Mr. Miller pretty much outlined that.

Items 5.d. and g. and h., which are in bold, are the ones that found the zone. So we drilled the George 9, and it has the same good Penn zone as you saw in the logs. And then we deepened these two wells, the George 2Y and the George -- and the Powers 6, and found the zone that you saw on the logs, but we drilled five other things that didn't find the zone. So we have been active, unbelievably

active, I think, trying to find where this reservoir really is.

Okay, and then my testimony will show -- My testimony is basically aimed at what do we think the four wells that we have are draining? So we have four wells, the George 2Y, which I would call a gas well -- and it's actually, as you noted, not in the Pecos Slope-Pennsylvanian Oil Pool; it's now listed in the Cottonwood Ranch-Pennsylvanian Gas Pool, where it is in your records.

So we have 2Y as a gas well, Numbers 9 and 10 George are definitely oil wells, and the Powers 6 looks to me like a gas well, and it also is in that Cottonwood Ranch-Pennsylvanian Gas Pool in the official records at the moment.

And you'll see a lot of my testimony is calculation of drainage areas of those four wells, and I get the numbers shown there, 138, 126, 300 and 84, totaling about 640 acres. So four wells, 640 acres, two wells per 320. I mean, it more or less fits with the picture that we're talking about previously.

And that basically is our case, is, we can tell now these wells on average are draining 320 for two wells or 640 for the four wells, and we think that's consistent with the present rules, and we think they should be left alone and made permanent.

So that's what you're going to hear from me. And if you haven't heard it the first time, the second time we'll try a little -- with different details.

Q. So Dr. Boneau, Yates is here seeking adoption on a permanent basis of the temporary pool rules that were adopted a year ago?

A. That's exactly correct, yes, sir.

Q. And if I heard you correctly, what you have, you believe, is a reservoir that has both oil wells and gas wells?

A. Yes, and it looks like what you would call an associated oil pool, a pool with a gas cap, is what it looks like to me.

Q. And that may go beyond today's hearing, but that is the character of the reservoir as you're stepping out and developing it?

A. Yes, and to me that's halfway consistent with the idea of we have these rules that fit, whether it's gas or oil. So...

Q. Let's move to Exhibit Number 6, the orientation plat, and I'd ask you to review the information on that for the Examiners.

A. Okay, Exhibit 6 is a Midland map of the area, and it just shows that there's a lot of Abo gas wells there too that are not really the subject of this hearing.

I've also tried to show with standup 320 boxes the pools involved. It's hard to tell -- or I'm color-blind and so it's hard for me to tell the colors. Maybe you can tell the colors better.

But there are two red boxes, in the west half of 26 and west half of 35, and those are Pecos Slope-Pennsylvanian Oil assignments now.

In Section 27 there are two standup blue boxes, and those are the George 2Y and the Powers 6. And they are, like I said, now assigned to the Cottonwood Ranch-Pennsylvanian Gas Pool. And they're all standup 320s, just for orientation.

Q. Let's go to Exhibit 7. What does this show?

A. Exhibit 7 is a cleaner map, I hope. It's bright yellow too. It's the same area, but it shows only the deep wells, the wells where the TD is below 4800 feet, what I'm calling the deep wells. But it shows the deep wells, and I think there are 23 of those, and it also shows Yates' acreage position in yellow.

So of the 16 sections that we're showing he in this area, it's all operated by Yates except in the north where Great Western has the Quail Federal lease that's a pretty big lease.

Q. Dr. Boneau, there are no other operators in this pool as defined; is that correct?

A. That's correct.

Q. Are there no other operators of Cisco wells within a mile of that pool?

A. That is also correct, yes, sir.

Q. So there's no one to notify of this hearing?

A. Yates notified Yates of this hearing, basically.

Q. Let's go to Exhibit Number 8, the table.

A. Okay, Exhibit 8 shows some -- what I call basic data, spud dates and perforations, et cetera, for the 23 deep wells in this area. And it's not my intention to go through this, but it's a place to look for answers to your questions, maybe. So I really don't want to spend time on this unless the Examiner wishes to.

Q. All right, let's move then to the next exhibit, which is the table of monthly production from this Cisco reservoir.

A. Okay, so Exhibit 9 is the table of monthly production, and it -- well, it covers various things that have come up to date. Well, you can see it's listed from left to right in the George 2Y, George 9, George 10, Powers 6 order, what I would call alphabetical order, but anyway it's my order.

The George 10 is the earliest well. It's been producing since August of 2001; it's made 146,000 barrels of oil, as Mr. Miller said. You notice that the little

water produced from it was basically in one month, and I don't know if that's real or not or what that story is, but those are the numbers we turned in, and I think somebody at Yates believes they're right.

So the water is -- I don't know if it really made a burst of water that one month or if it's just a mistake we made someplace, frankly. But the George 10 has made 146,000 barrels of oil and essentially no water.

The second well to come on was the George 9 in January of 2002, a year ago, which made 99,000 barrels of oil since then and no water reported.

The third well, started in production in June, 2002, is the George 2Y. And it's made 70 million of gas, 36,000 barrels of water and a little oil, and the oil actually started three months into its productive life.

I'm not sure -- I'd like to -- George 2Y was an Abo-producing well at 4200 foot total depth or something, and we deepened it out of 4-1/2-inch casing. So a tiny little bit out the bottom of this casing, like Mr. Miller said, drilled down to the Granite Wash. And there was some water there, and actually we ended up sidetracking the small borehole.

So there's actually two tiny wellbores out of the bottom of this case casing, and we -- Anyway, because of this kind of screwed-up affair, we think the water is not

really coming from the Pennsylvanian zone, that it's coming from a lower water zone that we have been unable to shut off.

And so -- I don't know if that helps, but the George 2Y is a convoluted story, and the water -- There's a pretty good reason to believe the water is not coming from the Cisco zone.

And then the newest well, the Powers 6 out on the west edge, it is mostly a gas well and a month or so it started making some oil too. And I do not have an explanation for its water, really, is the truth, although these deepenings with these small bits have been a real challenge. We don't want to do too many more of those, I think. Anyway, Number 9 shows the month-by-month production history of the four wells in there.

And the rest of my testimony is aimed at making a drainage area calculation for these four wells. That's all that the rest of my exhibits do, basically.

Q. All right, let's go to Exhibit 10, the production plots, and I'd ask you to --

A. Okay, so what we're doing is, we're trying to estimate -- and estimate is the right word -- we're trying to estimate an ultimate drainage area, so we -- What oil is the well going to produce? You know, estimate that and then try to say how much volume would that occupy in the

reservoir? That's what we're trying to do.

So in Exhibit 10 we have production plots for the four wells and extrapolations into the future of what they will produce. And the first two, the George 9 and the George 10, the good oil wells, have a year, a year and a half of history and a fairly good trend. And I would tend to believe our extrapolations are based on good data.

The newer wells don't have much history, and I've made projections but somebody could argue with those projections if you really wanted to, because there's just not that much data.

Q. Let's go to Exhibit 11, your reserve and economics calculation.

A. Yeah, and then Exhibit 11 is just a computer program to add up the additional oil and gas under the projections in the previous exhibit. The real answer from Number 11 is found in the boxed-in numbers.

So the first page, George 2Y, we think that it will make 722 million cubic feet of gas over its lifetime, and it's a -- I'm looking at is it a gas well, and I'm calculating drainage area for that one on the basis of the gas that it's pulling in.

On the second page, the George Number 9, the boxed-in number is 240,000 barrels of oil. We're estimating that -- it's made about 100,000 -- that it will

make 240,000 barrels over its lifetime.

Similarly on the third page for George 10, the boxed-in number is 418.889. We're estimating that that best well will make 418,000 barrels of oil in its lifetime.

And on the fourth page the poorest well, the Powers 6, is also mostly a gas well, and we're estimating it's going to make .2 BCF. Well, the actual boxed-in number is 194.989. We're estimating it's going to make .2 BCF in its lifetime. Not really an economic well, in reality.

Q. What is Exhibit 12?

A. Exhibit 12 is a cartoonlike -- a stick structure map. It helped me believe that there really could be a gas cap in an oil zone. Actually it goes from east to west, which is backwards in your head, but that's the way it goes.

So on the left, the George 9 and the George 10 have their perforated zones relatively deep. And on the right-hand side the George 2Y and the Powers 6 have their perforated zones 20 or 30 feet higher and, you know, no big deal, it's just -- The structure out there is consistent with the oil wells being somewhat downdip, the gas wells being updip and there being a gas-oil contact in the minus 1230-foot range.

So it's just a cartoon to put those in -- for a,

you know, a dumb engineer to see what's going on, kind of idea.

Q. Okay, Dr. Boneau, would you identify and review Exhibit 13?

A. Okay, to do these drainage -- to make these drainage area calculations we need to analyze feet of pay and feet of porosity in the logs, and so Exhibit -- whatever number this is --

Q. Thirteen.

A. -- 13, are little pieces of the logs from the four wells. And you've seen them in Mr. Miller's testimony, and the crossover is colored in, the perfs and everything.

I think it's more instructive in the engineering approach to go on to the next, to 14, where we have tried to put numbers to these logs. And so Exhibits 14, you know, I call log analysis but it's just -- measure the porosity and the resistivity at each foot of pay in these intervals, and we use a 4-percent cutoff and figure out what feet are above 4 percent and calculate a hydrocarbon pore volume.

So the first page talks about George 10. Kind of amazingly, Mr. Miller and I got the same 12 feet of pay, a good sign. But you go through the calculations depicted there, and the first page says that there's 0.769 feet of

hydrocarbon pore volume, so there's three-quarters of a foot of oil in that 12 feet of pay. And the numbers that we're going to need for the calculations are in the lower right-hand corner. So the George 10 is the best well. And it has not the best logs, as you've already seen. But its hydrocarbon pore volume is that .769.

The second page is a similar calculation for the George Number 9. You saw that it has the highest porosity. It's not as thick, 10 feet of pay, and I get more hydrocarbon, 1.047.

The third page is the George 2Y, and it has hydrocarbon pore volume actually like the George 10, .773. It's just up in the -- mostly up in the gas zone.

And then the fourth page is the Powers 6. It's thinner, six feet of pay, and it's lower porosity. And its hydrocarbon pore volume is the least by far of the four wells, 0.344 feet.

And those numbers, then, are going to go into the calculation of drainage areas which are the subject of Exhibit --

Q. -- Exhibit Number 15.

A. -- Exhibit 15.

Q. And let's go to that now.

A. And so again, Exhibit 15 is a four-page exhibit, one page for each well, and the -- each page shows the

drainage calculation for that well. It probably -- It's definitely worth going through at least one of them.

The first page is the George 10, where we're calculating the drainage area of the 419,000 barrels of oil that we expect this well to drill. So item number 1 is the equation for original oil in place in terms of hydrocarbon pore volume and areas, et cetera.

Item number 2 restates the result of the log analysis, 0.769 feet of hydrocarbon pore volume.

Item number 3 is the formation volume factor, relating the volume on the surface to the volume in the reservoir. And that's taken from correlations, and the answer is 1.28 for B_{oi}.

Item number 4 is the recovery factor, and I am using 30 percent recovery for this oil well on the basis that there's a gas cap drive helping the recovery. If it was just a solution gas reservoir, the recovery predicted from wherever you would look in the literature would be in the low 20s, is where it would be. But the gas cap adding in, it's going to be higher than that, and I have simply estimated that it's going to be 30 percent. It's going to be in the 30- to 35-percent range. And that is -- I wrote down 30 percent, just based on it's going to be better than solution gas drive.

And then item 5 is, put all those numbers

together into the oil produced as a function of the volume and the recovery factor, and you get that the George 10 making 419,000 barrels of oil will drain 300 acres, the best well in a big drainage area.

The other -- I don't think it's necessary to go through in depth all the others, but they're the same kind of calculation, gives 126 acres for the George 9 oil well, 138 acres for the George 2Y gas well, and 84 acres for the Powers 6 gas well. And if you add those four numbers together they're actually 650 acres, approximately.

And I just maintain that that's consistent with the present rules, they're a pretty decent-sized drainage area. We don't want to talk about 40 or 80 acres here, we need a bigger -- per well, we need -- 160 acres per well is reasonable, and we went through all this why we wanted 320 with two wells.

Q. What does Exhibit 16 show us?

A. Exhibit 16 is another cartoon. Basically it's just, do I believe that 650-acre drainage area, you know, fits with the spatial situation that we have here? And so I have drawn a 650-acre there with straight sides. I mean, it's -- I doubt that really has straight sides or is exactly that area, but Exhibit 16 does illustrate that there's room for 650 acres of reservoir among the wells, and actually if you went to the northwest you could make

quite a bit more room, I think. But to me it's just a feel-good thing about the story does hold together, is what Exhibit 16 is.

Q. Dr. Boneau, what plans does Yates have for further development of this reservoir?

A. A couple plans, and Mr. Miller mentioned a 3-D seismic. We're going to drill another well in Section 26, looking to tap into this pool or maybe extend this pool a little. That's one thing that we're definitely going to do.

And the 3-D seismic has given us some leads on other places in the nearby region where these relatively small accumulations could be, and we're going to chase those.

Q. What conclusions have you reached from your study?

A. The conclusions are that the data that we've gathered over the last year to year and a half is consistent with the original -- pretty much guess, that we made in coming, that these temporary pool rules are the right rules and they've been working and they will continue to work, and we'd ask that actually they be made permanent.

Q. Dr. Boneau, the original -- or the temporary pool rules establish a special depth bracket allowable of 649 barrels a day. Is that --

A. I think it's --

Q. -- an appropriate number?

A. I think the number is 694, but --

Q. That's right.

A. -- it's a pretty big number, and that's for a 320-acre spacing unit. The two oil wells -- I think that actually still makes sense. The two oil wells that we have started making in the 300- to 400-barrel-a-day range, so to gather something like that kind of allowable, and those wells have -- We're not overdraining the area. Those wells have held up, their production has held up really well. I'm just convinced that we're doing a pretty good job of draining with that kind of allowable.

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.

Q. Were Exhibits 5 through 16 prepared by you?

A. Me and my helpers, yes.

Q. Have you reviewed them, and can you testify as to their accuracy?

A. I have reviewed them, and I provided most of the numbers for them. They're accurate, yes, sir, as far as I can tell.

MR. CARR: Mr. Jones, at this time we'd move the admission into evidence of Yates Petroleum Corporation Exhibits 5 through 16.

EXAMINER JONES: Exhibits 5 through 16 should be made part of the record.

MR. CARR: And that concludes the direct examination of Dr. Boneau.

EXAMINER JONES: Thank, Mr. Carr.

EXAMINATION

BY EXAMINER JONES:

Q. Mr. Boneau, I had a lot of questions until you started, and I don't have as many now. But --

A. That's a good sign.

Q. Yeah, I guess so, I guess so.

Did you plot a GOR-vs.-oil plot to look and see how the GOR was changing with time? In other words, can you talk about the formation or the bubble point in your reservoir then, or -- Is it below the bubble point in pressure already?

A. I don't have a plot that says that, but you can --

Q. I could get it from this data.

A. -- we can look at the numbers on Exhibit 9, I think, the data, the production data. And George Number -- Well, George Number 10 started with a GOR in the 500-600-

standard-cubic-feet-per-barrel range, and it's now up to maybe a thousand, 1-to-1-type basis. And the George 9 is up to maybe 2000, you'd say.

Anyway, the GOR has gone up. We have a little pressure data, and the pressure -- original pressure is around 2300 pounds in the reservoir, and the latest -- well, the only other measurements we have, the later measurements we have, are 1200 to 1500, anyway, down.

All the evidence I have says that we are now below the bubble point --

Q. Okay.

A. -- both the GOR and the pressure.

Q. How did you get the initial pressure? Did you estimate when it was shut in after completion and you shot a fluid level or something?

A. Oh, we ran bottomhole bombs in there for 72 hours.

Q. Did you get a permeability? Is that on the first well?

A. Oh, boy. Well, we did real pressure buildups on the first two oil wells.

Q. Okay.

A. I don't remember --

Q. Well, just --

A. -- the data is in my briefcase somewhere.

Q. Just an order of magnitude for permeability?

A. Yeah, millidarcy kind of --

Q. Yeah, okay.

A. Yeah, I really don't remember, but --

Q. Okay.

A. -- you know, not .00 stuff --

Q. Oh, okay.

A. -- but units of millidarcy, .5 to 5 millidarcy, say, is what my memory is.

Q. Okay. And the 72-hour pressure tests, were they still -- they reached some kind of pseudo-boundary out there or some kind of -- In other words, they weren't all transient flow over 72 hours, were they, transient --

A. There were not clear boundaries in that time.

Q. That's good news.

A. Yes.

Q. What about any kind of directional permeability out here?

A. I really don't have anything to help you with that.

Q. Before I forget, you said Yates owns all this acreage. Does that mean they own 100 percent of all this acreage, or is there other working interest owners?

A. It means Yates operates all that acreage, and Yates owns a majority of the interest. I'm not going to

tell you that there are no other interest owners, but there are not very many other, and they're pretty small.

Q. Okay. The Cottonwood Ranch-Penn Gas Pool, I was looking at that to try to find exactly where it's defined at right now, and I saw the west half of 26 for some reason. But you're saying it is over in the Section 27? It includes those two gassy wells?

A. Yes. I looked those up in --

Q. Okay.

A. Well, I looked them up in *Byram*, which could be a few months behind, but the data I could find was exactly consistent with what I showed in Figure 6, Exhibit 6.

Q. Okay. So your volumetrics match your economics, and they also match your decline curves, or pretty close, I notice; is that --

A. Well, all those things are intertwined, they're --

Q. Okay.

A. -- all part of the same calculation.

Q. Okay.

A. They're not independent, they're all one ball-of-wax calculation.

Q. Okay. These oil pools like this may or may not have a pure gas cap on top, but -- it's relatively gassy, but GOR less than 100,000; is that your testimony?

A. That's what the numbers say, yes.

Q. The numbers say that. And so oil pools like this may exist. Have you seen any others that are real similar to this in -- maybe this county or --

A. I'm having trouble thinking of another one right now, but --

Q. Okay.

A. -- that doesn't mean there aren't --

Q. Doesn't mean there's not more?

A. That doesn't mean there's not more.

Q. Okay. And how did you get a log on that slimhole? That's kind of --

A. Yeah, my memory is, it's the log on the second sidetrack, on the one that's actually producing, on the one that we're in now.

Q. Okay.

A. But we have -- Well, I don't know that the first hole is completely shut off or that the water -- They're so close together, the water may be going from one to the other.

Q. Yeah.

A. Anyway, the log is in the second of the slimholes.

Q. Yeah. Well, I guess the big question, then, is do you -- deposit's less than 100,000 GOR. Do you still

consider it to be classified as an oil pool and not an associated pool, or would you change your classification?

A. I think technically it does not fit associated at this point, as -- I'm agreeing with you on that. You know, the re-opening is basically your hearing, and give us the answer you want.

But right now the data says it could just be an oil pool, and things do fit to this point.

EXAMINER JONES: Okay. Mr Brooks?

MR. BROOKS: No questions.

EXAMINER JONES: Mr. Boneau, do you have anything else you'd like to say about this?

THE WITNESS: I didn't know I knew this much about the --

(Laughter)

EXAMINER JONES: Okay, thank you very much.

MR. CARR: Mr. Examiner, that concludes our presentation in this matter.

EXAMINER JONES: Thank you, Mr. Carr.

With that, Case 12,751 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:48 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12751 heard by me on [illegible] 19

Oil Conservation Division, Examiner

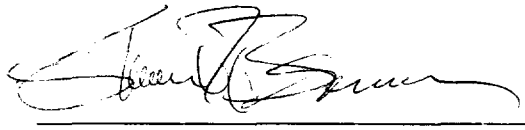
CERTIFICATE OF REPORTER

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 April 3rd, 2003.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006