STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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| IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING: | ) | CASE NO. 12,400 |
| APPLICATION OF YATES PETROLEUM CORPORATION FOR SPECIAL POOL RULES AND AMENDMENT OF THE DEPTH BRACKET ALLOWABLE FOR THE NORTHWEST SHOE BAR-STRAWN POOL, LEA COUNTY, NEW MEXICO | ) | ORIGINAL |

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner



May 4th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, May 4th, 2000, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

May 4th, 2000
Examiner Hearing
CASE NO. 12,400



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E X H I B I T S

| Applicant's | Identified | Admitted |
|---|---|---|
| Exhibit 1 | 8 | 11 |
| Exhibit 2 | 9 | 11 |
| Exhibit 3 | 11 | 11 |
| Exhibit 4 | 16 | 27 |
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| Exhibit 6 | 21, 23 | 27 |

* * *

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 11:55 a.m.:

EXAMINER CATANACH: Okay, at this time we'll call Case 12,400, the Application of Yates Petroleum Corporation for special pool rules and amendment of the depth bracket allowable for the northwest Shoe Bar-Strawn Pool, Lea County, New Mexico.

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 and Sheridan. We represent Yates Petroleum Corporation in this matter, and I have two witnesses.

EXAMINER CATANACH: Any additional appearances?

Will the two witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

ERIC CUMMINS,

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. Eric Cummins.

Q. Mr. Cummins, where do you reside?

A. Artesia, New Mexico.

Q. By whom are you employed?
A. Yates Petroleum Corporation.
Q. What is your position with Yates Petroleum Corporation?
A. Geologist.
Q. 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 Application filed in this case on behalf of Yates Petroleum Corporation?
A. Yes, I am.
Q. Have you made a geological study of the area which is the subject of this case?
A. Yes, I have.
Q. Are you prepared to share the results of that work with the Examiner?
A. Yes.
MR. CARR: Are Mr. Cummins' qualifications acceptable?
EXAMINER CATANACH: They are.
Q. (By Mr. Carr) Would you briefly summarize what

Yates Petroleum Corporation seeks with this Application?

A. Yates seeks an increase in the depth bracket allowable for the Northwest Shoe Bar-Strawn Pool to 365 barrels a day for each 40-acre unit, to conform to the depth bracket allowable to the depth from which wells in the pool are currently producing, and we also seek an adoption of special pool rules and regulations for the pool, including a gas-oil ratio of 6000 cubic feet of gas per barrel of oil produced.

Q. Mr. Cummins, why does Yates seek to increase the authorized producing rates for wells in this pool?

A. The wells are capable of producing in excess of the current allowables, and we can do so without damaging the reservoir.

Q. So in fact, you've got to do something because at this time you can't produce them within the allowable; is that right?

A. That is correct.

Q. When was the Northwest Shoe Bar-Strawn Pool created?

A. November 18th, 1958, Order Number R-1283. It created the North Shoe Bar-Pennsylvanian Pool. The discovery well for the pool was the Sinclair F.J. Danglade Well Number 1. It is located in Section 15 of Township 16 South, 35 East, the northwest quarter of the southeast

quarter.

Q. And that well was drilled when?

A. It was drilled in 1956.

Q. And at the time it was drilled, did they test the Strawn formation?

A. Yes, they did. It was tested from a depth interval of 10,954 to 10,980. The well, however, was completed in the Devonian formation. Subsequent to that, in August, 1958, it was recompleted to the Strawn.

And by Division Order Number R-6876 on January 22nd, 1982, it contracted the vertical limits of the North Shoe Bar-Pennsylvanian Pool to the Strawn formation and redesignated the pool the Northwest Shoe Bar-Strawn.

Q. So what we have is a pool created in 1958, and the name of the pool was the North Shoe Bar Pennsylvania Pool?

A. Correct.

Q. The Strawn was tested, and that depth interval --

A. That's correct.

Q. -- was in the range from 10,000 to 10,999 feet?

A. That is correct.

Q. And it was in 1982 that the pool was then contracted to just the Strawn interval, and the name of the pool changed?

A. That's correct, to the Northwest Shoe Bar-Strawn.

Q. The discovery well remains the Danglade?

A. That is correct.

Q. What depth bracket allowable has been set for this pool?

A. The depth bracket allowable has been set to 320 barrels of oil per day pursuant to OCD Rule 505 for each 400-acre unit, 320 barrels.

Q. And this again is tied to the depth range for the Danglade well, correct?

A. Correct, from between 10,000 and 10,999 feet, which is what the Danglade well was perforated in the Strawn from.

Q. Let's go to what has been marked for identification as Yates Petroleum Corporation Exhibit Number 1. Could you identify and review that, please?

A. Exhibit Number 1 is a land plat that shows in green the boundaries of the Northwest Shoe Bar-Strawn Pool. It's Township 16 South, Range 35 East, Section 15, the north half and the southeast quarter.

And the wells currently producing from that pool, as indicated on the land plat, the Nearburg Eidson Number 1 with a perforated interval of 10,987 to 11,043, and the Sinclair well previously referred to, perforated 10,954 to 10,980, and the TMBR Sharp Carlisle "15" Number 1, perforated interval 10,952 to 10,972 and 10,978 to 11,012.

Recent development in the area has been the Yates Petroleum Big Flat ASN Number 2, which is in the southeast southeast of Section 10, perforated interval 11,304 to 11,321. And the Yates Petroleum Corporation C.O. Jones Number 2, which is a horizontal well, producing from a true vertical depth of 11,320 to 11,385, that well is in the southwest southwest, surface location with the horizontal leg extending due east into the southwest of the -- sorry, the southeast quarter of the southwest quarter.

Q. And these pools are classified as undesignated Northwest Shoe Bar-Strawn pools; is that correct?

A. That is correct.

Q. Let's go to what has been marked Yates Exhibit Number 2, your cross-section. I'd ask you to first review the line of the cross-section, and it may be contained on this exhibit.

A. Exhibit Number 2 is a structural cross-section that shows the depths from which the Strawn produces. The first well, on the left-hand side of the cross-section, is the Sinclair Danglade Number 1, the discovery well for the pool. And it shows in red the perforated interval. I'm sorry, let me refer to the line of section first.

The well on the left is the Sinclair well in Section 15, the second well is the Yates Pet Big Flat Number 2 in the southeast southeast of 10, and then the

last well is the C.O. Jones Number 2 pilot hole, which is in the southwest southwest of Section 11.

This cross-section shows the depths from which the Strawn has produced and where the perforated interval was in the discovery well. And that interval again, at the bottom of the log on the cross-section, 10,954 to 10,980.

And then it shows in the Big Flat Number 2 and the C.O. Jones Number 2, the perforated interval is deeper than 11,000 feet in the Big Flat Number 2, 11,304 to 11,321 marked in red. And the C.O. Jones Number 2, the TVD completed interval is 11,320 to 11,385.

Q. What is the status of the discovery well at this time the F.J. Danglade?

A. It is P-and-A'd.

Q. If the depth bracket allowable is increased to the depth bracket allowable for wells completed in the 11,000- to 11,999-foot interval, how much would the allowable for each of these wells be increased?

A. It would be increased from 320 barrels a day to 365 barrels a day.

Q. Will this increase in allowable alone be adequate to resolve the problem that is currently experienced in this pool with having to curtail production?

A. No, it would not. We also seek an increase in the GOR allowable for the pool.

Q. Will Yates call an engineering witness to review the request for the increase in the gas-oil ratio?

A. Yes, we will.

Q. Is Yates Exhibit Number 3 an affidavit confirming that notice of this hearing was provided to affected interest owners in accordance with OCD rules?

A. Yes, it is.

Q. And to whom was notice provided?

A. To all Division-designated operators of the wells in the pool and all Division-designated operators of Strawn wells within one mile of the pool, unless placed in another pool.

Q. Were Exhibits 1 through 3 either prepared by you or compiled at your direction and under your supervision?

A. Yes, they were.

MR. CARR: Mr. Catanach, at this time we move the admission into evidence of Yates Exhibits 1 through 3.

EXAMINER CATANACH: Exhibits 1 through 3 will be admitted as evidence.

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

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Cummins, is this the typical Strawn-type reservoir that we see in the southeast, the algal-mound-

type reef -- I mean that kind of --

A. It is somewhat different than what we see in the Strawn reservoirs to the north. We believe that porosity development within this area of Strawn production in Section 11 and 10 in 16-35 is different than what we see in, for example, the West Lovington-Strawn Pool to the north. We do see algal mound development.

However, the porosity development within this pool seems to be completely independent of Strawn carbonate thickness as it -- in the north it appears that you can map Strawn thicks and find porosity. Here, it is completely -- appears to be completely independent of Strawn carbonate thickness, and the porosity is preferentially developed in mostly algal mound facies, but we do not have a full understanding of the porosity network developed in the southern portion here where we see the Strawn wells.

Q. So the way you have this mapped, you're looking at the same producing interval in Section 15 and in Section 10 and 11; is that correct?

A. That's correct.

Q. So you've just got some dip to the north there?

A. The Sinclair well, the discovery well for that pool, is actually up on a structure. There is a structural high to the southwest -- to the southwest of the Big Flat Number 2 and the Jones Number 2, and then Section 15 it is

much structurally higher. And this high is a northwest-southeast-trending structural high in the area where several Devonian wells have been drilled.

And not much Strawn production has been established, but when it was encountered with the Danglade well, since it was at a depth of less than 11,000 feet, that's why the depth bracket allowable was placed the way it was, 10,000 to 10,999.

As you go to the northeast, the structure drops off significantly. It is the same formation, just structurally lower.

Q. So structure really doesn't have a part in producing capabilities?

A. No, it does not out here, it doesn't. It's more of a porosity development, and it appears to be independent of structure.

Q. Do you know what the status is of the two wells in Section 15 that are producing? I mean, are those wells still producing, as far as you know?

A. You are referring to the Nearburg well and the TMBR Sharp well?

Q. Yes, sir.

A. No, I do not know the status of those.

Q. Do you know at this point what the extent of this particular Strawn structure is? I mean, do you know --

have you mapped out the location of this Strawn structure? Is there going to be any additional wells drilled that you know of?

A. To my knowledge, there are not going to be any more Strawn wells in this pool, but we do not know that. We are still in the process of mapping the Strawn reservoir. The Big Flat Number 2 and the C.O. Jones Number 2 are fairly recent wells, and we have mapped -- We have mapped this particular reservoir, and we believe that it appears to be limited to the southwest of 11, the southeast of 10 and the wells that are in Section 15, as well as the northwest part of Section 14 where Arrington has recently drilled some wells.

Those are also very recent. We do not know exactly what's going on with those wells, but they are -- they appear to be in the same reservoir.

Q. There appears to be three wells in Section 14, that those are recently drilled wells, you said?

A. In Section 14, yes, those are all very recent.

Q. And those are all Strawn tests?

A. Those are all Strawn tests, yes, sir.

Q. So at this point you believe that that's the extent of the structure, that it's not going to -- you're not going to get any more wells in that area?

A. Well, when you say "structure", I think that --

The structure itself is to the south, is mostly confined to Section 15 where the wells are much structurally higher. We believe that the Strawn wells that are offstructure to the north, to the northeast and to the east are the limited extent of this particular reservoir.

A. Okay. And at this point you don't know -- Are the wells in Section 14, or do you know, are they structurally low like the one's you've drilled?

A. Yes, sir, they are.

Q. They are? But you don't know about the producing rates of those wells or if they've been completed or anything?

A. No, sir, I think that they are in the process of completion.

EXAMINER CATANACH: Okay, that's all I have of this witness.

MR. CARR: Mr. Catanach, at this time we call David Pearson.

DAVID PEARSON,

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 Pearson.
Q. Where do you reside?
A. Artesia, New Mexico.
Q. By whom are you employed?
A. Yates Petroleum.
Q. And what is your position with Yates Petroleum?
A. I am a reservoir engineer for Yates Petroleum.
Q. Mr. Pearson, have you previously testified before this Division and had your credentials as an expert at petroleum engineering accepted and made a matter of record?
A. Yes, I have.
Q. Are you familiar with the Application filed in this case on behalf of Yates Petroleum Corporation?
A. Yes, I am.
Q. Have you made an engineering study of the area which is the subject of this case?
A. Yes, I have.
Q. Are you prepared to share the results of that work with Mr. Catanach?
A. Yes, I will.
MR. CARR: Are Mr. Pearson's qualifications acceptable?
EXAMINER CATANACH: They are.
Q. (By Mr. Carr) Mr. Pearson, let's go to what has been marked as Yates Petroleum Corporation Exhibit Number

4. I'd ask you to identify this exhibit and review the information on this exhibit.

A. This exhibit -- there are four parts to it -- are the production plots for the wells, the four wells that are currently producing from the Northwest Shoe Bar-Strawn Pool, and that -- I hesitate to hedge a little bit here, but it's for the data that's available from the public databases at this point in time and from the Yates database.

It's an area of very active development right now, and so as you previously heard from the geologist, the status of the wells in the northwest quarter of Section 14 is -- I think they're still completing them, so I'm not sure -- I believe they're going to be assigned to this pool, and I believe they're either right at the verge of being on production or they haven't been started on production, but the exhibit shows the four production plots for the data that's available to us on the wells that are currently assigned to the pool at this point in time.

Q. Mr. Pearson, Mr. Catanach a few minutes ago had questions concerning the status of the Eidson well and the Carlisle Number 15. You have production plots for each of those wells, do you not?

A. That is correct.

Q. What does this exhibit show you?

A. What it shows you, the left-hand two scales on each of the -- on the first two plots are the oil daily production rate and the water daily production rate. The oil is shown in green, and the oil production rate for each well is shown in a green line. The water production rate is shown as a blue dashed line or is read -- the blue values on the left-hand scale. The gas, the daily gas production rate in MCF per day, is read off the right-hand scale and is the long dashed red line.

And in addition, it shows the cumulative production from the well, both oil and gas, and the pool to which the well is assigned, as well as the operator of the well.

The first one is the recently drilled Carlisle 15 (1), which is in Section 15. Today it produces about 18 or 20 barrels of oil a day.

The second plot is the Nearburg Eidson Number 1. It has been on production for some period of time, from late 1986, and currently produces four or five barrels of oil a day.

The next two plots are the Yates-operated wells. And because of the delay in getting data available in public databases, these are Microsoft Excel plots that are on a different format from our internal databases. But they show essentially the same thing.

The left-hand scale is a logarithmic scale showing the daily production rate of oil, gas and water. The oil rates are barrels of oil per day, the water rates are barrels of water per day, and the gas rate is in MCF per day. And then the X axis or horizontal axis is time. And colors are the same as they were on the other plots.

And the first plot is for the Big Flat ASN Number 2. It's currently producing approximately 300 barrels of oil a day and roughly 900 MCF per day of gas. It is able to produce -- It is producing at its oil allowable, or actually was producing at its oil allowable, until February when we discovered that we were overproducing our gas allowable. Our systems internally aren't really set up to keep track of that very well.

And we then restricted the production rate somewhat. As it was a brand-new well, we brought it back up to see what it would do and have filed the Application for this hearing.

The next well, the final plot, is the Jones Number 2, the same type of plot. Basically what it will show is that the well is producing at allowable. It's a daily production plot. Current production rates in that well were running just over 600 barrels a day. Normally what we'll do is, we'll produce it slightly in excess of the allowable, and then for the last few days of the month

restrict the production to meet the monthly allowable for that month's.

Q. When we look at this production information, what is the general range, the production range, for wells in the pool?

A. It ranges from a low of about three barrels of oil a day to a high of -- in the new wells that are downdip, of 640 or 650 barrels of oil a day.

Q. What percentage of the total pool production is actually being produced by the two Yates wells, the Big Flat and C.O. Jones?

A. The Yates wells produce about 950 barrels of oil a day, and the two other wells produce roughly 25 barrels of oil a day. And it's 99 -- I haven't done the exact numbers in my head, but 99 percent of the oil is coming out of --

Q. -- of the two --

A. -- of the two Yates wells.

Q. Could you identify what has been marked as Yates Petroleum Corporation Exhibit Number 5 and just explain what that shows?

A. Yes, Yates Petroleum Exhibit Number 5 is the Form C-103 that we filed with the Oil Conservation Division here. And basically, these are included to show where the perforated intervals are. The first one is the C-103

sundry notice form for Big Flat Number 2. The perforated interval in that well is 11,304 to 11,321.

The second page is the C-103 form for the C.O. Jones Number 2, and it shows the well is completed open hole from a measured depth of 11,412 to 13,228. That's a true vertical depth of about eleven- -- As was shown on Eric's exhibit, on the previous exhibit, I believe the true vertical depth is between 11,320 and 11,385.

Q. Will an increase in production rates that would result from the change in the pool depth bracket allowable resolve the overproduction problems that you're experiencing in this reservoir?

A. No, they wouldn't.

Q. That's why you're asking for also a GOR increase?

A. That's correct. Our allowable -- or the amount of liquids that we can produce is, in fact, actually constrained by the total gas allowable for the pool, or the GOR times the oil allowable, rather than by the liquids allowable.

Q. You cannot effectively produce these wells under the current rules, can you?

A. No, we can't.

Q. Would you go to Exhibit Number 6, your PVT data, and using this exhibit, one, review the information on the exhibit, but explain to the Examiner the problems that you

have in trying to operate under the existing wells.

A. Okay.

Q. And I think what we should start with is nothing that this is a sample -- based on a sample from the Runnells Number 3 well. That well is not one of the wells in this pool, is it?

A. That's correct.

Q. Why is that a representative fluid sample for you to use in the --

A. It's from the same stratigraphic interval, and if you'll refer to Exhibit Number 1, you'll see that the two Yates wells are located basically at the south half of Section 11, or at the south boundary of Section 11 and the south boundary of Section 10.

The well that the PVT sample, the bottomhole PVT sample, was taken from is in the northeast quarter of Section 11. It's the horizontal well that you see over towards the east side of Section 11 in the northwest quarter, called Runnells Number 3.

It's a bottomhole sample of PVT data that was taken immediately after completion of the well. The reservoir pressure in the well at the time was about 4150 pounds at a temperature of 173 degrees, as measured from a pressure transient test. The well has a very high productivity index, and we were able to collect a

bottomhole sample while the well was flowing at about 3950 pounds.

The PVT data that is in -- We've collected two separate samples to compare for quality control purposes and took them to Core Laboratories in Midland, who did some preliminary analysis on them and determined that it was indeed a volatile oil and that they didn't have the right facilities, and we had to move it to Dallas to have the analysis done on the oil.

And what we've submitted as Exhibit 6 is the summary of that PVT data provided by Core Laboratories. Basically, it determined the saturation pressure to be about 3800 pounds. The initial solution gas-oil ratio of the reservoir fluid is 2779 standard cubic feet per barrel. The formation volume factor is about 2.65.

And given the conditions, the second page of this shows an analysis, rather than continuous flash with the gas off, the actual separator conditions that we run in the field. The first pressure step is from 3800 pounds in the reservoir down 350, which is where our high pressure separator is. The second step, we go from a high-pressure separator to a low-pressure separator at about 30 pounds, roughly 100 degrees. And then the final step is the ambient conditions at the stock tank. And given those pressure steps, the initial solution gas-oil ratio was just

over 2000, it was 2038.

The consequence of this, basically, has been -- and you can see it in the production plots that are there -- the GOR -- this particular pool, of the three that have come together right here, is on statewide rules essentially and has 40-acre spacing and a 2000-GOR limit.

And we started -- This is not a typical crude, this is a volatile oil. And in my experience, a typical crude, light crude, in southeast New Mexico would have a GOR of about 600 or 800, and so you would have a factor of two or three times your initial solution GOR to accommodate -- break out a gas in a volumetric reservoir and let you still be able to produce at the oil allowable for some period of time.

Because of our extremely volatile reservoir fluid, we started out basically at or above the GOR allowable for the field. And so we have been able -- If we're going to stay within the rules, we're going to have to continue to restrict the liquids production from the wells to meet the GOR limits placed on the wells.

And this is really a function -- It's not a function in the free gas saturation and a gas cap that we're depleting the reservoir energy; this is actually a function of the initial conditions of the reservoir fluid.

And so what we had asked for was a GOR of 6000,

again using the rule of thumb that the sort of typical light crude, it looked like it was about three or four times what I would have expected the GOR to be, to give us a little bit of room for growth here as we start to establish a free gas saturation.

Q. In the other reservoirs that come together in this area, the North Shoe Bar-Strawn Pool, special gas-oil ratios have been approved for those pools, have they not?

A. They've been approved for one of the three pools. There are three pools that basically have a budding proration unit here, and this may help the question as well that I think Examiner Catanach had.

In Section 14, there is a Strawn well in the northwest -- excuse me, in the northeast quarter, that is in the -- another pool, the name of which escapes me. It's one of the Shoe Bar -- I think it's Shoe Bar Northeast, but I'm not certain about that. And that well has a GOR -- it has 160-acre spacing and a GOR allowable of 4000.

In Section 11 two pools, Big Dog South and Northwest Shoe Bar, come together. The proration units actually abut against each other. And in addition there's a proration unit that is a part of the -- what I think is the northeast Shoe Bar. It's the same pool that the well in Section 14 is. And the pool rules there, one of the pools has 80-acre spacing and a 2000-GOR allowable, the Big

Dog South.

The other pool, which I believe is the Northeast Shoe Bar, has a 4000 GOR and 160-acre spacing. And the well -- The Runnells Number 2, which is in the southeast quarter of Section 11, is included in that pool. And then this Yates C.O. Jones Number 2, which is in the southwest of Section 11, is in the Northwest Shoe Bar Pool, which has statewide -- essentially statewide rules.

So what we've applied to do is to increase the GOR allowable in Northwest Shoe Bar-Strawn, and then our subsequent case today is to increase the GOR allowable in Big Dog South-Strawn.

Q. In your opinion, will increasing the production rates as requested damage the reservoir?

A. I don't believe so.

Q. Would approval of this Application, both adjusting the depth bracket allowable and authorizing the increase in the gas-oil ratio, be in the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. I think so.

Q. Were Exhibits 4 through 6 prepared by you or compiled under your direction and supervision?

A. Yes, they were.

MR. CARR: At this time, Mr. Catanach, we move

the admission into evidence of Yates Exhibits 4 through 6.

EXAMINER CATANACH: Exhibits 4 through 6 will be admitted as evidence.

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

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Pearson, this Runnells well is in, again, the northwest quarter of 11?

A. The Runnells well that the PVT data samples are from?

Q. Right.

A. Correct, it's in the northwest corner of 11. If you -- Do you want me to locate it for you, or were you just --

Q. No, that's not necessary. But it is not within the pool that you are currently seeking the rules --

A. The rule change for, that is correct.

Q. What pool is it in?

A. It is in the Big Dog South Pool, and the proration units from the Big Dog South Pool are physically adjacent to -- They're 80-acre proration units, and they are physically adjacent to proration units for the Northwest Shoe Bar Pool.

Q. Is this in the same reservoir?

A. Yeah, some of the wells, the pressure evidence is somewhat -- is mixed. Some of the wells in the Big Dog South Pool are clearly in pressure communication with wells that are in the Northwest Shoe Bar Pool. There are wells in the Northwest Shoe Bar Pool that aren't obviously in pressure communication with other wells that are in the Northwest She Bar Pool.

Q. And the South Big Dog-Strawn is currently on statewide also; is that right?

A. No, South Big Dog-Strawn has special pool rules for 80-acre proration units and has an unusual diagonal offset sort of a rule. I believe the GOR is statewide, and the oil allowable is the statewide values for 80-acre proration units.

Q. We're going to be talking about this pool this afternoon; is that correct?

A. That's correct.

Q. And you're also going to be requesting a GOR increase for that pool?

A. That's correct.

Q. To the same, 6000?

A. Correct.

Q. And is that going to be partially based on this evidence from the Runnells 3 well?

A. Yes, it will be.

Q. So in your mind, this is all the same reservoir?

A. Yes, I believe that it's the same -- the crude is from the same source, and it is all the same reservoir interval. Stratigraphically, these are equivalent. Some of the wells between the two pools are in pressure communication, and clearly it's the same fluid. Wells that are within the Northwest Shoe Bar Pool itself aren't obviously in pressure communication, but the fluid properties appear to be the same, just from the production properties -- I mean from the production behavior of the wells.

If you look at the API gravity and the gas gravities and a limited -- not as extensive as this PVT, but the first six or seven components of the oil and the gas, which we get from our gas sales, then you see that they look like they're very similar if not identical.

Q. Okay. We are dealing with a solution gas drive reservoir here?

A. I believe that it's a solution gas drive reservoir with a weak aquifer.

If you look on the production plots you'll see that both the Big Flat Number 2 and the Jones Number 2 make some water. In Jones Number 2 it's a relatively small volume, and I'm not sure that that's not just more or less in trade with the oil. But Big Flat Number 2 definitely

has a mobile water saturation. It makes between 180 and 200 barrel of water a day.

And it, in fact, is structurally the highest well of the group of wells -- As you come from Section 11, you're coming from updip. Let me just put it -- into Section 15, you're coming updip. It is structurally higher than the Jones Number 2. It makes water, more water than Jones Number 2 does.

Q. Uh-huh. So your testimony is that in a normal -- Normally, you would expect the solution gas-oil ratio to be much smaller than it is? I'm sorry, that -- You testified something about you expected it to be a third of that.

A. Oh, yes, and I guess what I was doing is, I was presenting my rationale for why the State might have set the GOR ratio at 2000 for statewide rules, and how I got from my interpretation of the State's rationale to picking a number of 6000.

In my experience, normally, 40 gravity or mid-40s gravity crudes are going to have GOR ratios in the 600 to 8000 range, and the State had selected a GOR that was above that for the statewide rules, and so I was looking for a rule of thumb about what to ask for, as to -- you know, whether to ask for 4000 or 6000 or 8000. That was kind of how I came around to 6000. Not a very technical conclusion.

Q. Have you guys done any kind of testing on the wells as far as trying to determine the MER, or maximum efficient rate, or anything like that?

A. No, we haven't. They produce at extremely low drawdowns. The two horizontal wells -- for example, the Runnells 3 -- well, both of them have produced at allowable of less than 100 pounds drawdown. So the likelihood that we're having -- you know, that we're going to see coning or cusping problems are fairly low. Unless -- I don't know off the top of my head what the drawdown required to produce the 320-barrel-a-day allowable in Big Flat Number 2 is, but it's a relatively small change from 320 to 365. So I didn't...

Q. Well, looking at your PVT data, it really doesn't support the 6000 Number. Are you in agreement with that?

A. Well, I don't know -- I my mind, it does -- Well, I'm not sure I understand what your question means.

The free gas -- You're going to begin to evolve free gas once you cross the bubble point at about 3800 pounds, and my interpretation of why the State is setting GOR limits where they are is to prevent you from producing -- or wasting the energy in the reservoir by producing at high -- a disproportionate share of the energy from the gas phase.

And again, my feeling was that this is -- that

they didn't set it at 600 or 800 or 1000, which would be more characteristic of most of the oils that you see in New Mexico, and we don't see that many volatile crudes, and so I just assumed that they gave us some breathing room in there so that we could begin -- If you don't have enough vertical relief in your porosity, you don't have a clearcut place where you're going to form a gas cap, that leaves us between a rock and a hard place as to how we produce the wells at their -- the attractive -- you know, the rates that we'd like to produce them at.

Q. Do you know what the current reservoir pressure is?

A. I have that data. I don't have it right in front of me. I have the data for -- I could give you a good estimate for the Jones Number 2, but it would take me about five minutes to go get it.

Q. Are you still above the saturation pressure?

A. I don't believe we're above the saturation pressure in either well. I think we are in the 2900 -- I think both wells, Big Flat 2 and C.O. Jones Number 2, are in the 2900-to-3500-pound range.

I think there's a significant pressure -- I know it doesn't look like there should be from the map, but I'm fairly certain there's a significant pressure differential between Jones Number 2 and Big Flat Number 2, with Big Flat

Number 2 being about 3500, and I think Jones 2 is about 2800 or 2900.

Q. So it's your opinion that both the increase in oil allowable and the GOR is not going to have any -- is not going to reduce ultimate recovery from the pool?

A. I don't think so, because I don't think we have a situation where we can create a gas cap and produce just from the oil leg. You know, it's a little hard to explain why you would have such high pressures and high production rates. The initial pressure in both these wells was about 4100 pounds downdip of the two wells that have been producing for some considerable period of time in Section 15, and they have -- Why do you not see the gas cap forming up there and the GORs going through the roof? Those are the updip wells.

I think the correct conclusion is that the porosity here is very complex and -- the continuity in the porosity is pretty complicated and hard to predict, and it's not clearcut that we're going to be able to do what would be the optimum way that we would be able to exploit this in the way that would be the very best which we could. I mean, there's always a balance between operational practices and what's cost-effective to do.

Q. Mr. Pearson, are your wells currently in a state of overproduction?

A. With respect to the gas allowable, I believe both of them are. The oil allowables, we are within our oil production rates.

Q. But is that problem with the casinghead gas -- Are you attempting to correct that problem?

A. We are. As of -- Let me check and make sure I don't tell you something that's not true from the plot.

I believe that the Jones Number 2, if it is in overproduction with respect to the casinghead gas at all, it's very limited. My understanding from conversations with our operations manager was that we, beginning -- that we had begun -- I thought that we had begun in February, but it isn't obvious from this that we had. I'm sorry I didn't make a GOR plot. I didn't include the GOR rate on this.

I believe that Jones 2 is not in overproduction with respect to the casinghead gas, and I'm sure that the Big Flat Number 2 is significantly overproduced, although it's only been on production for about a month and a half. I'm sure that it is significantly overproduced with -- or could be overproduced with respect to the casinghead gas that we've been producing. And it's our intention to -- depending on the outcome of this hearing, to choke it back and make up for that overproduction.

Q. Well, let me ask you this: Have you seen a

relationship between your producing GOR and the oil rates?

A. No. As a matter of fact, the -- Or yes, you do see a relationship. The relationship has been essentially constant.

And as a matter of fact, one of the unusual things about Big Flat Number 2, if you'll look at the tail end of that production plot, is that we've been gradually -- the GOR has fallen off in that well, and we've been gradually increasing the oil-production rate back up to the oil allowable.

And just in the last two weeks, I wouldn't conclude that there's too much of a trend there, but the reality is that there's no evidence of cusping at this stage of the game. In fact, it's doing just the opposite. The GOR has fallen off somewhat as we've increased the oil rate.

Q. Can you supply us with a GOR plot for these wells?

A. Yeah.

Q. Okay.

A. I'd be happy to. And I should have -- I apologize, but I should have -- The plots that you'll see for Big Dog South include GOR, and these I didn't get that on there.

EXAMINER CATANACH: Okay. I think that's all I

have, Mr. Carr.

MR. CARR: That concludes our presentation in this case.

EXAMINER CATANACH: Okay, there being nothing further, Case 12,400 will be taken under advisement.

(Thereupon, these proceedings were concluded at 12:38 p.m.)

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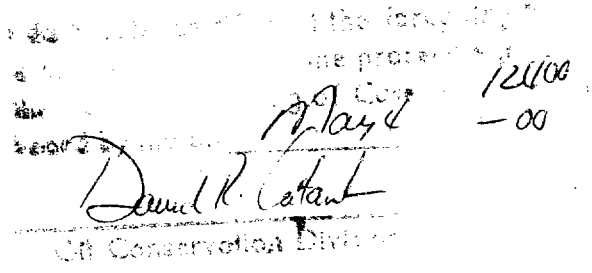

CERTIFICATE OF REPORTER

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 May 14th, 2000.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002