NEW MEXICO OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

CASE NO. 10546

IN THE MATTER OF:

The Application of Phillips Petroleum Company for an unorthodox gas well location and for simultaneous dedication, Lea County, New Mexico.

BEFORE:

MICHAEL E. STOGNER

Hearing Examiner

September 3, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

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BY: **W. THOMAS KELLAHIN, ESQ.**

I N D E X

E X H I B I T S

EXAMINER STOGNER: Hearing will come to order. I'll call the next case, No. 10546, which is the application of Phillips Petroleum Company for an unorthodox gas well location and for simultaneous dedication, Lea County, New Mexico.

At this time I'll call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin, of the Santa Fe law firm of Kellahin & Kellahin, appearing on behalf of Phillips Petroleum Company. I have two witnesses to be sworn.

EXAMINER STOGNER: Are there any other appearances?

Will the witnesses, please, stand to be sworn at this time.

[The witnesses were duly sworn.]

EXAMINER STOGNER: Mr. Kellahin.

MR. KELLAHIN: Thank you.

EXAMINER STOGNER: I'm sorry, I said 545. This is 546. I apologize for that.

EXAMINER STOGNER: Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Examiner. Mr. Balke and I are back before you in the South Four Lakes Unit area operated by

Phillips Petroleum Company for additional administrative orders so that Phillips can continue to drill for and explore for Devonian production.

This particular application has a couple of unusual elements to it. As best Mr. Balke and I can determine, we are within the Four Lakes Devonian Gas Pool, except this gas pool has no gas wells in it. These are all oil wells. Part of our technical proof is to show you that everything that we can find within our geologic and engineering presentations are that these are oil wells.

Now, when you look at the maps, what you and I have originally concluded prior to the hearing is that what is shown as the No. 8 well within the northeast quarter of Section 2 is currently classified before the Division as a gas well.

As a practical matter its gas-oil ratio is below, I think 3,000 to 1. In filing the case then, we've asked for some remedies here, and we may simply have to shop through and find a solution.

What Mr. Balke proposes with this

particular case is when you look at his display and you see the open red circle in the southeast of the northeast of the section, that represents what he will identify for you as his No. 13 well.

He will show that that's at the highest structural point in this Devonian reservoir, and there is a possibility it could be a gas well. In all probability it may be an oil well. In either regard we will be at an unorthodox location because he's too close to the south boundary of the spacing unit. And as we look through the various rules, he's simply too close.

In addition, if it is characterized as a gas well and if the No. 8 well is not reclassified, we are looking at, at least, the potential of two gas wells in a spacing unit in a non-prorated pool, and he's prepared to present technical evidence on that issue.

In addition, Ms. Pam Boring is our petroleum reservoir engineer, and she will present her engineering discussion. But I wanted to identify for you that this is an unusual creature, and it may require orders approving

simultaneous dedication of the 13 and the 8 as gas wells. And after drilling the 13, we may in fact find that we have to reclassify these.

The end result of the whole process, though, has got a substantial comfort factor to it because we're all well within a unit area entirely operated and controlled by Phillips. But we're running up against some unusual rules with regards to what is classified as a gas pool when all we can see in here are oil wells.

EXAMINER STOGNER: With that, Mr. Kellahin, I'm assuming you're referring to order No. R-1371.

MR. KELLAHIN: 1371, Yes, sir. Here's a copy of the order. It's contained in the exhibit package. It's an old Humble order. The pool was originally classified as an oil pool and then converted after that hearing to a gas pool. That's all we have. It's a very old order.

EXAMINER STOGNER: With that, Mr. Kellahin, what I might suggest, too, because I've read that order and it is somewhat confusing, there was some findings made and it really in my opinion didn't go anywhere and there's several oddities about it. Even though it's not

prorated, there was a limit set on how much each well can produce in a month without any indication of what we were to do if it exceeded that.

Perhaps what I might suggest to you and Phillips is to perhaps approach our Hobbs District Office, since it's down in Lea County, about reclassifying this to an oil pool through regular nomenclature process, or should there be some other method in which it might be handled, to come back in, classify it again as an oil pool, and that way it can revert back to 40-acre spacing, if that's what science indicates might be the best thing in this particular area.

It might be in such a way that this is depleted to the point where it needs to be reclassified. But there are other remedies perhaps instead of coming here with these unorthodox locations all the time, or I might suggest that.

MR. KELLAHIN: And we're pursuing that, Mr. Examiner, because there has to be a better solution to what we're doing here. And the case before you is a temporary remedy. And when we get the well drilled, I think we're going to have

some more science and we can come back and update these rules.

I read the same order you did, and it's simply no help or no assistance to us in figuring out how to process these cases.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

MR. KELLAHIN: I'd like to call Mr. Balke.

SCOTT C. BALKE

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

EXAMINATION

BY MR. KELLAHIN:

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

A. Scott Balke. I'm a petroleum geologist with Phillips Petroleum.

Q. Mr. Balke, on prior occasions did you testify before this Hearing Examiner concerning this same reservoir?

A. Yes.

Q. Have you continued your study of this reservoir in an effort to further develop and improve the unit production out of the reservoir?

A. Yes.

MR. KELLAHIN: We tender Mr. Balke as an expert petroleum geologist.

EXAMINER STOGNER: Mr. Balke is so qualified.

Q. If you'll turn, sir, to what is marked as Exhibit 1, identify for us the proposed location of the well that has been identified as the unorthodox location well.

A. The unorthodox location is the open circle, Mr. Examiner. It's located in letter "H" in Section 2, Township 12 South, 34 East.

Q. In what way is that well unorthodox?

A. It should be -- it's too far to the south. It should be 330 off the south boundary.

Q. And regardless of whether it's a gas well or an oil well, it will be unorthodox with regards to the pool rules?

A. That's correct.

Q. Describe for us what additional information is displayed on this exhibit.

A. What you see here in yellow is Phillips leasehold. It's 100 percent Phillips. All minerals here are state minerals. There's no special burdens to any of the leases here.

Outlined in the turquoise is the South Four Lakes unit.

What's seen here in red are the wells that have penetrated the Devonian either produced from them and has since been plugged or currently could be producing, as in the case of the No. 8 well. The 160 acre proration unit is also dashed right there.

Q. What is the production information displayed, the low sum of the well symbols, what does that represent?

A. Each of them represents the cumulative production for each of the wells, both with oil and gas. The No. 5 did not produce from the Devonian. It was found to be uncommercial. It never produced, but produced from the Penn uphole.

Q. Let's turn now, sir, to Exhibit No. 2. Would you identify and describe this display?

A. This is our -- the C-102 Form, or the survey for the unorthodox location, or the South Four Lakes No. 13.

Q. And this specifically describes the exact footage location that you're seeking approval for?

A. That's correct, both north and from the east.

Q. Let's turn now to the geology. Identify for us Exhibit No. 3.

A. Exhibit No. 3, Mr. Examiner, is our interpretation based upon 3-D seismic of the South Four Lakes area. This 3-D was confirmed by the modern log that we've received off the No. 8, which was drilled in 1986, and then a sonic on it. We produced a synthetic. So we based all our interpretation both upon well control and what we found on our 3-D seismic survey.

Q. I realized you've explained to this Examiner in a prior hearing the 3-D seismic concept and technology. But give us a quick summary again for this record, particularly with regards to the grid pattern and the orientation of that pattern, in order to develop this kind of geologic information.

A. The grid pattern is something which each company has proprietary information on how close or how far away they want to space their north-south and east-west lines. However, we're looking on somewhere between each north-south line and each east-west line being spaced around

500 feet apart from each other.

And again each one of the faults has been confirmed by more than one line. And, again, very close pattern on seismic.

Q. You take the 3-D seismic information and verify it with the log information available from wells?

A. That is correct. The No. 8 was a very good example since we had a synthetic that we can make from a modern sonic log. The other wells that we also tied in within our seismic to make sure that we're picking the right reflectors for the right formations.

Q. How does the operator or the contractor out in the field generate the data within this grid pattern that results in this type of information?

A. There's a series of geophones set up, and normal four thumper trucks produce the energy. But there's a series of grids or gridding of geophones across the area.

Q. Has that information been utilized by you and your company in order to determine whether it's a reliable and effective geologic tool by which to pick well locations?

A. Yes, it has.

Q. When you look at the information as displayed, what does it show you?

A. What it shows me, Mr. Examiner, the green dot you can see, it's located in essentially letter "H" of Section 2, is the orthodox location. The unorthodox location, our proposed South Four Lakes No. 13, is the blue dot. We can be approximately greater than 100 feet structurally up-dip and in a more favorable position drilling in the unorthodox locations as opposed to the orthodox location.

Q. When you look at the other information, there is a yellow line. It appears to be almost a channel, if you will, that intersects the wellbore, the dry hole symbol with the No. 2 above it and moves across the display in a west to east direction. What is that?

A. That is a fault. The throw on that fault is several hundred feet. That is what we say is a sealing fault, which allows no communication between the fault block to the south, where our well proposal location is on, and the fault block. That's where the No. 8 well location is at.

Based upon subsurface information also, when you compare the No. 8 with the No. 2, you're looking at around 150 to 200 foot of closure between the two of structural difference.

Q. Are there Devonian reserves within the spacing unit that because of geologic reasons cannot be produced by a wellbore located where the No. 8 well is located?

A. Yes, there are.

Q. And in summary what are those conclusions?

A. Essentially the most show with cross-sections here on Exhibit 4 and 5, but the No. 8 has not penetrated deeper horizons that the No. 2 has penetrated. Also because we do have this sealing fault in between the two, the reserves at the No. 8 has produced have no effect on any of the reserve potential that the proposed location is at because of the sealing fault which separates the two.

Even in a close proximity, as an example the No. 8 well in Section 2, if you compare that to the No. 3 well directly to the west -- excuse me to the east, the structural changes are significant, even though you're not

moving far away.

So we can show that we're looking at totally different fault blocks. Structure can change. And these -- the fault itself is a sealing fault, which has separated both reservoirs.

Q. When you look within the portion of the spacing unit that is located south of the sealing fault --

A. Uh-huh.

Q. -- where is the best opportunity then within that area to locate the next well?

A. The best opportunity is our South Four Lakes No. 13. It's on the structurally highest position of that southern fault block.

Q. Is the geologic opportunity for further development in the Devonian achieved if you're required to drill the well at the closest standard location? Can you satisfy the geologic desires to recover these Devonian hydrocarbons at the closest standard location?

A. No, you cannot.

Q. When you look to the adjoining spacing units that are within the unit --

A. Uh-huh.

Q. -- how have those been developed thus far?

A. The spacing of the wells within the unit?

Q. Yes, sir. When we look to the south 160 acres that's still within the unit --

A. Uh-huh.

Q. -- how has that that been developed?

A. The No. 2 well is the only well that's in the -- that has penetrated any of the reserves in that southern fault block itself. Is that what you're referring to --

Q. Yes.

A. -- referring to? It is the only one along with No. 6, which is located in letter "I" of Section 2 also. However, that well is on the order of 200 feet structurally lower than what we're hoping to achieve.

Q. Do you desire to use the flexibility provided to you within the concepts of unit exploration and development to locate the No. 13 well then at the highest structural position within this analysis of the reservoir?

A. That's correct.

Q. Let's turn now to Exhibit No. 4 and

have you identify and describe that display. Let's take a minute and unfold one of these.

A. Yes.

Q. Identify and describe the display for us.

A. The first display, Exhibit No. 4, Mr. Examiner, is a B-to-B prime cross-section. It goes through well No. 2, well No. 8, and well No. 3 within the South Four Lakes Unit. As you can see here, it's a structural cross-section with drill stem test information and the zones of Woodford and Devonian picked on the cross-section.

The drill stem test information is located by a number. It also has its corresponding depth. And it also can be referenced on the log itself.

Q. What's the summary that you reach as a geologist from an analysis of this display?

A. First is the structural changes that can occur very quickly. Second, all the existing wells in the unit itself on the South Four Lakes No. 2 has penetrated what we classify as the Lower Devonian. On the South Four Lakes No. 2 down around 12,782 feet, you'll see a hot shale

marker there. It's actually what Phillips refers to as Unconformity B.

We see that none of the other wells in the other cross-section, Exhibit 5, will also show that none of the other wells have penetrated that low end depth, which is a reservoir which has potential, we feel, has immense potential and has not ever been drilled to and produced from.

Our drill stem test information, as you go through each one of these drill stem tests, will show various final flow pressures, various recovery, recoveries for each one. If I can reference one real quickly, the drill stem test No. 3 had a gas rate of 206 million cubic feet a day. Go to drill stem test No. 5. It had no hydrocarbon recovery, only mud. Then go quickly down to drill stem test No. 6. It had gas flow recovery of 4.4 million cubic feet a day.

Essentially hydrocarbon on top of water and back to hydrocarbon again. The only way you can have that is having separate reservoirs. Thus our conclusions that we're dealing with separate reservoirs.

Q. To identify these as separate reservoirs, you're still confined within the

vertical limits of this Devonian pool as described within the Division nomenclature?

A. That is correct.

Q. Let's turn now to Exhibit No. 5. Lead us through your analysis now of Exhibit No. 5.

A. Exhibit No. 5, Mr. Examiner, is a cross-section through A-to-A prime, through wells South Four Lakes No. 4, South Four Lakes No. 2, and South Four Lakes No. 6. Again it has on reference our Devonian top and Woodford tops in comparison again with the two with the rest of the wells that have penetrated or produced from the Devonian.

We see again that none had penetrated deeper than our Unconformity B marker. Also we see on South Four Lakes No. 4 -- excuse me -- yes, No. 4, we again have differences in drill stem test information. We have a slight show of oil, 30 foot of oil on top of another reservoir that had good gas and good oil shows. Different pressures totally. Again evidence besides the No. 2 showing differences of reservoir.

Again this structural complexity in here could not really be achieved without having the 3-D seismic survey that we've obtained to

give us the best possible location for this area.

Q. As a result of your complete analysis of the reservoir from a geologic point of view, what is your ultimate conclusion with regards to locating this well as you proposed to locate it?

A. The most productive location is one that's going to be on the structurally highest position of this structure. Also we need to take it down to depths that have been penetrated in the No. 2. And again there may be increasingly reservoirs that are even below that may be productive also. We need to test these zones.

And we do know that we do have separate reservoirs, separate fault blocks, and we need to take this all into account to give us our most favorable location.

Q. Do any of the existing wells within the spacing unit currently provide an opportunity to adequately and effectively develop the spacing unit?

A. No, they do not.

MR. KELLAHIN: That concludes my examination of Mr. Balke. We move the introduction of his Exhibits 1 through 5.

EXAMINER STOGNER: Exhibits 1 through 5 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. When I refer to Exhibit No. 1, that No. 2 well --

A. Uh-huh.

Q. -- that was not a Devonian producer, or was it? I'm confused.

A. That is a Devonian producer. All this cumulative production here is strictly out of the Devonian.

Q. Do you know what the history of that particular well was?

A. Drilled early in the 50s, had produced -- I'll give you the history of the field here itself. The No. 1 well, which is located north of the No. 2, was the initial well that was drilled. They had mechanical problems with the well. They could not go deeper into the Devonian, so they produced uphole in the Penn.

Humble Oil then came down and drilled the No. 2, which they did not have any mechanical problems. They drilled that No. 2 well down to the lowest portions that you see here in Devonian

itself and produced from the bottom on up.

Q. How about the No. 8 well?

A. The No. 8 well was drilled in 1986 based upon a 2-D line that was coming -- came across there. They were hoping to penetrate some of the Lower Devonian; however, they found they were 200 foot low and running low and did not wish to take the well down to Lower Devonian and stopped, I believe, just 350 feet into the Devonian itself. And it's currently producing from two reservoirs within the Devonian.

Q. Now, is that the only Devonian producer at this time?

A. That is correct. The No. 3, for reference, is we found -- and again, this was operated by Exxon up until a couple of years ago. Exxon's records are quite poor, we're finding out, so we're learning new things as we go along.

The No. 8 has a fish and tubular strings in the hole. And the No. 3 also has a fish and tubular strings. You find a whole lot of interesting things that were just left in the hole, which cause a lot of production problems.

No. 3 is temporarily abandoned in the

Devonian and in the Penn and just been left open-hole since 63.

Q. No indication that any of these wells ever communicated or had an effect on any other well?

A. I do not believe so. Nothing I've seen in the comparative fields that I've studied within New Mexico show that you shouldn't have any major communication within the reservoir on a 40-acre pattern.

Q. What's your opinion of 160-acre spacing out here?

A. I couldn't believe it.

Q. I refer to Exhibit No. 3 at this time, and you referred to the -- what I'm looking at here on this Exhibit No. 2. When I'm looking at the northeast quarter of Section 2, I believe you called it a -- I don't know what to call it -- that little yellow mark.

A. It's a fault. It's a normal fault that comes across there. Cuts across which seals off this block to the south from the block that the No. 8 is producing from.

Q. And all these other yellow marks in this map are also faults?

A. They're also faults. The one that you see on the western side of the area that basically divides Section 2 in half, as you can see, that has a throw of around 700 foot from when you go from the eastern side of it to the western side of it.

As you notice, the South Four Lakes No. 5 well has a Devonian top at 8700 feet. The No. 8 well is 8400 feet. Essentially 300 foot of throw right there. That fault is pretty predominant across there.

You also have to the south of that fault, which is just south of the South Four Lakes No. 6 and cuts across at the northeast-southwest direction, it also has a 200- to 300-foot throw on that fault also.

EXAMINER STOGNER: Anything further of this witness?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: If not, he may be excused.

Mr. Kellahin.

MR. KELLAHIN: I'd like to call our engineering witness at this time, Ms. Pam Boring.

PAMELA BORING

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

EXAMINATION

BY MR. KELLAHIN:

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

A. Pamela Boring, reservoir engineer with Phillips Petroleum in Odessa.

Q. Ms. Boring, on prior occasions have you testified as a petroleum engineer before the Division?

A. No, I have not.

Q. Summarize for us your education.

A. Okay. I graduated from the University of Tulsa with a bachelor of science degree in 1984 in petroleum engineering and from Oklahoma State University in 1990 with a master's degree in business administration.

Q. Summarize for us your employment as a petroleum engineer.

A. I worked for the Bureau of Land Management in Tulsa, Oklahoma, for a year-and-a-half, and for the last two-and-a-half years I've worked for Phillips in Odessa

primarily as a reservoir engineer.

Q. Do your reservoir engineering duties include examining the production and reservoir characteristics within Phillips' unit described as the South Four Lakes Unit?

A. Yes, it does.

Q. And have, as part of that study, you made an analysis of the economics of this project, the classifications of the wells in terms of oil or gas and other reservoir engineering data in details upon which then you have reached conclusions?

A. Yes, I have.

MR. KELLAHIN: We tender Ms. Boring as an expert reservoir engineer.

EXAMINER STOGNER: Ms. Boring is so qualified.

Q. Let me ask you to turn to your displays, and, as we move through them, I want to ask you certain conclusions about your work. Let's take Mr. Balke's Exhibit No. 1, simply to keep track of where these wells are.

In looking at Exhibit No. 1 and finding the No. 8 well, have you tabulated all the production and plotted that production on a

display?

A. Yes, I have. That's Exhibit No. 6.

Q. Let's take that exhibit and have you summarize for us the information that is of importance to you as reservoir engineer.

A. Okay. As far as the gas-oil ratio on the South Four Lakes No. 8, if you calculate it based on a cumulative volume, the highest it's ever been is 2380 cubic feet per barrel. And at present, based on our latest well test, it's 1956 cubic feet per barrel. So that would classify this well as an oil well.

Q. In looking at the entire productive life of this well, do you find any point in time where you would characterize this as a well that qualifies for classification as a gas well?

A. No. At no point in its history since it was drilled in 86.

Q. As part of your literature search through the Exxon files that were received by your company when you purchased this property, in addition to your search of the well files at the Oil Conservation Division, do you find any explanation or ability to understand how come this reservoir has been characterized as a gas

reservoir?

A. Not a real clear-cut indication. There was something in the lease file that indicated there was some concern about pressure maintenance in the Devonian reservoir. A reference was made as far as trying to -- they were worried about trying to keep the reservoir pressure above the bubble point.

So I don't know, that could have possibly been the substantiation for trying to get it classified as a gas reservoir. But it was unclear as to why it was.

Q. Based upon your study of the available engineering data that you've analyzed, do you have an opinion at this point as to whether or not this is a gas reservoir or an oil reservoir?

A. It seems to be very clearly an oil reservoir to me.

Q. Let's turn now to Exhibit No. 7.

A. South Four Lakes No. 2, its overall cumulative gas-oil ratio is 3490 cubic feet per barrel. And at no time in its history has it ever been much over that, it doesn't look like, not enough to be classified as a gas well anyway.

Q. When you look within the spacing unit, which is the 160 acres in the northeast quarter of Section 2, the only wells that have currently produced in this pool are the No. 8 and the No. 2?

A. That's correct.

Q. In analyzing the cumulative production of hydrocarbons out of that spacing unit, do you have an opinion as to whether or not those wells have effectively and efficiently depleted the Devonian hydrocarbons within that spacing unit?

A. That would be hard to answer because we have very poor data on pressure.

Q. When you look at the oil recoveries by the No. 8 well and the No. 2 well, would you believe that there are still remaining hydrocarbons in the Devonian within the spacing unit that can be produced?

A. I would say that's quite possible, but mostly based on geology.

Q. When you look at the geology and look at the cumulative production of the No. 8 well, what is your conclusion about the production from the No. 8 well in terms of its development of the spacing unit?

A. It's been very poor. The production on the No. 8 has been very poor. The well was IP'd at about 30 barrels of oil per day when it was completed. It stabilized at about 20. It has cum'd approximately 20,000 barrels of oil, which is very, very poor recovery. The well has habitual and chronic mechanical problems since it was drilled.

Q. What is its current status?

A. We recently performed a workover on the well. And we just have two or three days' worth of production since the workover. And our production right now is 45 barrels of oil per day. And we suspect that a lot of that may be flush production, so we're kind of in a wait-and-see mode just to see how it stabilizes out.

As Scott mentioned, we have a fish in the hole approximately 200 feet above the top-most perforation. We have a fluid level in the well 4,000 feet above the top-most perforation. And that's pretty much been the situation since it was drilled. It's very hard to pump. It has enough gas to where it's extremely hard to pump oil.

Q. I recognize the absence of pressure information precludes you as a reservoir engineer from having definitive conclusions about the depletion and development of hydrocarbons from the spacing unit. But apart from the lack of pressure data, can you estimate volumetrically from the information you have and the poor performance characteristics of the No. 8 well in relation to its small ultimate recovery and reach any conclusions about the effectiveness of the No. 8 well in depleting the spacing unit?

A. Because the No. 2 well was drilled on a fault and it's very unclear which side of the fault block it's drained and also because of the extremely poor performance of the No. 8, probably -- I would say that this northeast quarter of that section has not been drained.

Q. Okay. When you look for further opportunities to recover hydrocarbons out of the Devonian and Mr. Balke proposes a well in a location, as he justifies it geologically, what are your reservoir engineering conclusions about that location?

A. I think that it's the optimal location to drill the well because it's a totally separate

reservoir than the reservoir the No. 8 was drilled into.

Q. Is the No. 13 well a necessary well in order to properly drill and produce the spacing unit within the Devonian pool?

A. I think it is. I definitely think it is. And it will increase the net present value of the revenue stream drastically to drill it now rather than wait until the No. 8 is depleted.

Q. Let's go on now to Exhibit No. 9. I'm sorry, I've skipped an exhibit. Let's go to Exhibit No. 8, which is the South Four Lakes No. 6 well. This is the one south of your proposed location. Identify for us the information on Exhibit No. 8.

A. Okay. This is a production plot starting in 1959 when the well was drilled through 63 when it was plugged back.

Q. At any point in the life, the productive life of this well, do you find a gas-oil ratio such that that well would have been classified as anything other than an oil well?

A. No.

Q. Let's go now to Exhibit 9. Identify where this production plot is from.

A. Okay. This ranges from 1970 to -- well, pretty much up to 1988.

Q. And what well are we looking at?

A. The South Four Lakes No. 3.

Q. What does this information show you?

A. It shows that it's had a gas-oil ratio, overall cumulative gas-oil ratio of 5200 cubic feet per barrel. At no time has it been high enough to classify it as a gas well.

Q. Let's turn now to Exhibit 10. Identify the well for us and explain the display.

A. Okay. This is a production plot of gas -- or rather, not gas, oil, I'm sorry, from 1957 through 59, when the well was plugged back to the Penn.

Q. In examining other information about the No. 4 well, do you find at any point in the life of that well it was anything other than an oil well?

A. No, not anywhere. It never came close to being classified as a gas well.

Q. Let's go on now to Exhibit No. 11. Identify and describe that for us.

A. Okay. This is a wellbore sketch and mechanical status summary of the South Four Lakes

No. 8.

Q. Let's go ahead and identify all the wellbore schematics, and then let's talk in general about this information. Exhibit 11 is the schematic on the No. 8. What's Exhibit 12?

A. South Four Lakes Unit Well No. 2.

Q. 13?

A. South Four Lakes No. 6.

Q. 14?

A. And 14, South Four Lakes No. 3.

Q. In examining the wellbore data, the mechanical configuration of the wells and relating that to Mr. Balke's geologic interpretation, do you see anything about the way these wells were completed or set up for production that would explain the gas-oil ratio?

A. No, I don't. I don't see anything mechanically that would have affected the gas-oil ratio appreciably. I think it's just a function of the reservoir characteristics.

Q. Do you find any evidence in here that any of the wells were completed in a structural position where they were producing gas or condensate out of a gas cap? Do we have a gas cap reservoir here?

A. Not that I know of, no.

Q. Do you see any indication of water encroachment or water drive to the reservoir?

A. There is water drive in the lower section of the Devonian, a strong water drive. In the upper part of the Devonian, it's primarily a solution gas drive.

Q. Until we come to some better arrangement on the regulatory hurdles to jump for this production, we are faced with the issue that the No. 8 is classified as a gas well. And you're seeking a No. 13 location that may be a gas well, although in all probability it's going to be an oil well.

Assuming for purposes of my discussion that we have an application that will have simultaneous dedication of a spacing unit to two wells classified as gas wells, do you see any reason to preclude production of those wells so that you cannot produce them concurrently and simultaneously?

A. No, I don't because I believe No. 13 will be classified as an oil well based on the history of the field in general.

Q. In terms of delaying the drilling of

the 13 well until the No. 8 well has been plugged and abandoned, regardless of how it's classified, do you see any reason to postpone that approval?

A. No, I don't. If we were allowed to drill the No. 13 and produce it simultaneously with the No. 8, and we had planned to drill it later in the year probably in December, our net present value would be increased 1-1/2 million dollars over waiting until the No. 8 is at its economic limit.

And I'm assuming that the production stays up, levels out at 20 barrels of oil per day on the No. 8, and it would have an economic life at that time of 12 additional years. So assuming we have to wait 12 additional years to drill our No. 13 well, there's a 1-1/2 million dollar net present value difference between the two scenarios.

Q. As a reservoir engineer, do you see any reason that the Division should not approve the request to drill this well as Phillips proposes to locate it and to drill it?

A. No, I don't. It will increase the net present value of the revenue stream to the state, to Phillips, and also, as probably I've indicated

in my discussion, this field is nearing its economic life, very near it.

Q. Will this well afford an opportunity to produce hydrocarbons out of the Devonian reservoir that are not currently being produced by any well?

A. I believe so. I believe so due to the mechanical problems in the past on the No. 8 and the very low overall recovery and due to geological considerations definitely.

MR. KELLAHIN: That concludes my examination of Ms. Boring. We move the introduction of her exhibits, I believe it's 6 through 14.

EXAMINER STOGNER: Exhibits 6 through 14 will be admitted into evidence.

I'm sure this is the most frustrating for Phillips. I'm looking at some of the exhibits on the wellbore. Ms. Boring, I'm not through with you. I have some questions.

THE WITNESS: Oh, you're not? I'm sorry.

EXAMINATION

BY EXAMINER STOGNER:

Q. You mentioned in your testimony about

the upper portion of the Devonian being a solution gas drive and the lower having a strong water drive.

A. Uh-huh.

Q. And I'm assuming that your testimony also and Mr. Balke's that, of course being a separate reservoir -- did you have any indication on the production on the older wells, was that from the upper portion or the lower portion of the Devonian?

A. A combination. In some of the wells it's just completed in the Lower Devonian. In others it's completed in both. Most of the wells out there are completed in both.

Now, in the South Four Lakes No. 8, that's just the Upper Devonian. Because it's just gone in here about 350 feet of the Devonian, as Scott mentioned.

Q. And you're still seeing indications of solution gas drive?

A. Yes. And that's where -- well, most of our recovery from Devonian comes from the Lower Devonian. The vast majority of the cumulative recovery comes from the Lower Devonian. That probably is another factor in the low recovery

that we've had from the No. 8 aside from mechanical considerations.

As Scott mentioned, though, it would be impossible to deepen this well into the Lower Devonian. It has 5-1/2 inch casing and a fish in the hole, and it would just be impossible to ever deepen the well.

Q. As far as the -- I'm referring now to Exhibit No. 6, in which you have a cumulative GOR and a current GOR for this particular South Four Lakes No. 8. And you've done quite a bit of reservoir work out there.

Do you have any idea or any figures or anything that would show perhaps what the highest GOR ever encountered out there was?

A. Yes, I do. I have that tabulated here. The highest GOR we've ever had in that field was on the No. 3 well in our field, if you're speaking about our field solely. And 5200 cubic feet per barrel.

Q. And when was that --

A. Now, that's based on cumulative volumes.

Q. That's cumulative?

A. Yes.

Q. How about in the early days of its production, did you take a look at its individual yearly, annual or montly production figures?

A. Yes. I looked at my production plots and calculated GORs on the highs, and they never came anywhere near the 100,000 cubic feet per barrel.

EXAMINER STOGNER: Perhaps Mr. Nutter should have stuck around for this particular case.

MR. STOVALL: He didn't write the order, did he?

EXAMINER STOGNER: No, he did not. This was written in 1959.

Just for additional information, this was before the concept of associated oil and gas pools, which Order R-5353 reclassified many of these pools as. This was before that order, and I have not had a chance to take a look at the case file or any previous information on this, like it sounds like both of these witnesses have done.

Q. But I have an indication from, and I imagine you, Ms. Boring, will probably echo Mr. Balke's testimony on this, if you drill your No.

13 well, that additional information should be able to suffice coming back in and telling what this pool is or getting it straightened out, if it needs to be straightened out as an oil pool to get it reclassified as such?

A. I would think so, yes.

Q. And if this order is approved, that might even be a stipulation. Would Phillips have a problem with that, to use that information to come back in and reclassify this?

A. No. I think that would be fine.

EXAMINER STOGNER: Okay. Does anybody else have any questions of Ms. Boring? If not, she may be excused.

Do you have anything else, Mr. Kellahin?

MR. KELLAHIN: No, sir, not in this case.

EXAMINER STOGNER: Does anybody else have anything further in Case No. 10546? If not, this case will be taken under advisement.

[And the proceedings were concluded.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10546 heard by me on 3 Sept 1992.

Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL OCTOBER 12, 1992.

Debbie Vestal

DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3