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:

APPLICATION OF MEWBOURNE OIL COMPANY FOR POOL EXPANSION AND SPECIAL POOL RULES FOR THE QUERECHO PLAINS-STRAWN POOL, LEA COUNTY, NEW MEXICO

CASE NO. 13,242

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

April 1st, 2004

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, April 1st, 2004, 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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I N D E X

April 1st, 2004
Examiner Hearing
CASE NO. 13,242

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A P P E A R A N C E S

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* * *

WHEREUPON, the following proceedings were had at 8:31 a.m.:

EXAMINER CATANACH: At this time I'll call Case 13,242, the Application of Mewbourne Oil Company for pool expansion and special pool rules for the Querecho Plains-Strawn Pool, Lea County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe, representing the Applicant.

I have three witnesses to be sworn.

EXAMINER CATANACH: Any additional appearances in this case?

Okay, there being none, can I get the witnesses to please stand and be sworn in?

(Thereupon, the witnesses were sworn.)

STEVE COBB,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence for the record?

A. Steve Cobb, Midland, Texas.

Q. Who do you work for?

A. Mewbourne Oil Company.

Q. And what's your job with Mewbourne?

A. Petroleum landman.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert landman accepted as a matter of record?

A. They were.

Q. And are you familiar with the land matters involved in this case?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I'd tender Mr. Cobb as an expert petroleum landman.

EXAMINER CATANACH: Mr. Cobb is so qualified.

Q. (By Mr. Bruce) Mr. Cobb, what does Mewbourne Oil seek in this case?

A. We seek to expand the existing Querecho Plains-Strawn Pool and to institute special rules for the pool.

Q. What is Exhibit 1?

A. Exhibit 1 is a Midland Map Company plat covering part of Township 18 South, 32 East. The Querecho Plains-Strawn Pool currently covers the southwest of Section 15 and the west half of Section 22.

Q. And what acreage do you seek to add to the pool?

A. The southeast quarter of Section 22.

Q. And has Mewbourne completed a Strawn well on that acreage?

A. Yes, we have.

Q. And what's the name of that well?

A. It's the SF 22 Fed Well Number 1.

Q. Are there any other producing Strawn wells in this pool?

A. No, there are not. However, Pecos is in the process of completing a well in the northwest quarter.

Q. Of Section 22?

A. That's correct.

Q. What formation are they completing it in?

A. I believe the Morrow formation.

Q. Okay, but there is Strawn potential in that well, is there not?

A. Correct.

Q. Okay, and our next witness will testify about that; is that correct?

A. That's correct.

Q. What special rules does Mewbourne seek for the pool?

A. We're requesting 80-acre spacing with an allowable of 720 barrels of oil per day and a gas-oil ratio of 4000 to 1.

Q. And is the current allowable 365 barrels a day under the statewide rules?

A. That's correct.

Q. What well-setback requirements does Mewbourne request?

A. 330 feet from a quarter quarter section line.

Q. Now, referring to Exhibit 2 just very briefly, what type of leases cover the southeast quarter of Section 22?

A. They're covered by four federal leases, each covering a quarter quarter section.

Q. Okay, and those leases are identified on Exhibit 2?

A. That's correct.

Q. Now, the SF 22 Fed Number 1 is located in the southeast quarter, southeast quarter of that section?

A. That's correct, that's correct.

Q. And --

A. That would be the Fed Com, sorry.

Q. Fed Com.

A. Fed Com Number 1.

Q. It was originally drilled as a Morrow well, was it not?

A. That's correct.

Q. Okay. Now, you've shown the overriding royalty

owners in the other three quarter quarter sections. Are the overriding royalty interest owners in the southeast southeast identified on Exhibit 3?

A. Yes, they are.

Q. Okay, and the -- Again, it's all federal leases, so the entire southeast quarter is the same royalty owner, is it not?

A. Correct.

Q. Is working interest ownership common throughout the southeast quarter of Section 22?

A. Yeah, the east half of 22 is covered by a joint operating agreement which covers all the working interest in the east half.

Q. Okay, so there is no working interest owner who would have his interest diluted by this Application?

A. Correct.

Q. Now, who was notified of the Application?

A. We notified the BLM and all overriding royalty owners in the southeast southeast and Pecos Production Company.

Q. Okay, the operator in the west half of 22?

A. Correct.

Q. And is Exhibit 4 simply the affidavit of notice with the notice letters attached?

A. It is.

Q. Has any interest owner objected, to the best of your knowledge?

A. No, they have not.

Q. And what is Exhibit 5?

A. Exhibit 5 is a -- I've notified Pecos of this Application today, and this is just their acceptance and support of this hearing today.

Q. Okay. Were Exhibits 1 through 5 prepared by you or under your supervision or compiled from company business records?

A. They were.

Q. And in your opinion is the granting of Mewbourne's application in the interests of conservation and the prevention of waste?

A. Yes, it is.

MR. BRUCE: Mr. Examiner, I'd move the admission of Mewbourne Exhibits 1 through 5.

EXAMINER CATANACH: Exhibits 1 through 5 will be admitted.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Cobb, the well in the northwest quarter of 22, the Pecos well, that is going to be a Morrow well; is that your --

A. That's my understanding, right.

Q. But it has the potential to be a Strawn producing well?

A. Right.

Q. What 80 acres would you plan to dedicate to the 22 Number 1?

A. I believe we would put those on standups.

Q. So that would be the east half of the southeast?

A. Right, right.

Q. You guys notified Pecos and all of the interest owners -- I'm sorry, all of the overrides in the southeast quarter, southeast quarter?

A. Right.

Q. And I guess Pecos is the only operator in this area that may be affected; is that your testimony?

A. Yeah, that's correct.

Q. This is not -- I guess there's no other Strawn producing wells in this area?

A. I don't believe there are, no.

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

MR. BRUCE: Thank you, Mr. Examiner.

Call Mr. Nelson to the stand.

Mr. Examiner, with respect to your last question, there are some other Strawn wells, but they are in defined pools or they soon will be in defined pools. And I think Mr. Nelson's exhibit should show that.

RALPH L. NELSON,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence for the record?

A. Ralph Nelson, Midland, Texas.

Q. And who do you work for and in what capacity?

A. Mewbourne Oil Company, as a petroleum geologist.

Q. Have you previously testified before the Division as a geologist?

A. I have.

Q. And were your credentials as an expert accepted as a matter of record?

A. Yes.

Q. And are you familiar with the geology involved in this Application?

A. I am.

MR. BRUCE: Mr. Examiner, are Mr. Nelson's qualifications acceptable?

EXAMINER CATANACH: They are.

Q. (By Mr. Bruce) Mr. Nelson, could you identify Exhibit 6 for the Examiner and discuss the Strawn production in the Strawn pools in this area?

A. Exhibit 6 is an area map of Township 18 South, 32 East, showing the Strawn pools within the township. It gives their names and also any special pool rules or whatever the pool rules are for those pools. Notice that we have the Querecho-Strawn Pool, the Young-Strawn Pool, the North Lusk-Strawn Pool, and what is essentially the north end of the Lusk-Strawn Pool into Section 32 and part of 31.

North Lusk-Strawn Pool is statewide 40-acre spacing, but with this special 20,000-to-1 GOR, and the Lusk-Strawn Pool is special 160-acre spacing with 4000-to-1 GOR.

Q. Now, the Young-Strawn Pool, that is the subject of the next application, is it not --

A. It is.

Q. -- Mr. Nelson? And that is currently on statewide rules?

A. That's correct.

Q. Okay. And then with respect to this case it shows the current boundaries and the proposed expansion acreage. I know you'll get into this in more detail later, but what is the status of the two Strawn wells you have located within the current boundaries of the Querecho Plains-Strawn Pool?

A. The Strawn well located in Section 15 has been

P-and-A'd. The Strawn well in the K location in 22 has been recompleted and is currently a Morrow producer.

Q. Let's move on to your Exhibit 8. What does that show?

A. Exhibit 8, or 7?

Q. Seven, excuse me.

A. Exhibit 7 is a structure map on top of the Strawn formation around the subject area. Overall shows a northwest-southeast-trending anticlinal structure on which the Strawn mounds grew.

Q. Now let's move on to Exhibit 8. What does this map demonstrate?

A. Exhibit 8 is a gross isopach in the Strawn interval. On it shows two apparent mound buildups, one with the thickest part in Section 21 in the H location in 21, and then one associated with the Mewbourne SF 22 Fed Com Number 1.

The discovery well for the Querecho Plains was the Shell Querecho Plains Unit Number 1 in the K location of Section 22, which before being deepened to the Morrow made 1.1 BCF and 546,000 barrels of oil.

Q. And what year was that well completed, approximately?

A. I believe that well was completed in 1957.

Q. And produced for about 40 years?

A. Close to it, yes.

Q. One other thing on this map -- now, it shows -- you don't show much of a reservoir around the well in the southwest quarter of Section 15. Was that a marginal producer in the Strawn?

A. It was. Yes, it only produce for a brief time, and the production records indicate it made about 5000 barrels of oil.

Q. One other item on this map. In the northwest quarter of the southeast quarter of Section 23, you have a well spotted. What is that well? The northwest southeast of 22.

A. The northwest -- excuse me?

Q. The northwest quarter of the southeast quarter of --

A. That is the Pecos Production well.

Q. No, in the southeast quarter. The northwest quarter of the southeast quarter.

A. The K location in 22?

Q. No, no, no --

A. Oh, I'm sorry, that's a Mewbourne-proposed location, a staked location, the Number 2 SF 22 Federal Com.

Q. And is that proposed as a Morrow test?

A. It is proposed as a Morrow test.

Q. With the Strawn also an objective?

A. Yes.

Q. Okay. What is Exhibit 9, Mr. Nelson?

A. Exhibit 9 is a cross-section of the various wells as shown on both Exhibits 7 -- well -- or, excuse me, Exhibit 8, showing wells in the pool.

I would like to go through these, starting first with the well in the middle, the Shell well, the Querecho Plains Unit Number 1, showing the Strawn interval. The Strawn was drill stem tested, flowed oil on drill stem test, had a final shut-in pressure in excess of 5800 pounds. It was completed in the Strawn in January of 1957, and through 11-94 had made the 546,000 barrels. There in 12 of '94 it was deepened to the Morrow, where it produces today.

The next well I want to talk about is the Mewbourne Oil Company SF 22 Federal Com, as an offset, has a similar appearing zone to the Shell well. It was drill stem tested and also flowed oil on the test, had a shut-in pressure of 3991, showing some depletion, apparently, from the old Shell well.

Just -- the well on the right side, the Federal E, the Mark Production Federal E, shows a minor amount of mound but no porosity, and therefore nonproductive, showing an edge to the reservoir.

The well on the far left is the Ingram Federal 21 C, drilled in 1986, and found a very thick Strawn interval. But through all their completion attempts, they were unable to effect a commercial completion in the Strawn and subsequently made a poor Bone Spring completion.

Now, just recently Pecos drilled the Querecho Plains Number 2 in the E location in Section 22, 660 from the west line, or just 990 feet from the old Ingram well, and found a thicker section, not as thick, but with significant amounts of porosity. They ran a drill stem test, they did not flow oil to the surface, and they had a final shut-in pressure of 1357, showing significant depletion in the reservoir.

Currently their plans -- and currently they are completing in the Morrow formation, however results to date have not been promising.

Q. Okay. Now, in looking at this map and the other plats that have been presented, Mewbourne has requested well-location requirements for being able to place wells 330 feet from a quarter quarter section line. Are there both geologic and surface reasons for this request?

A. Yes, there are. The Strawn reservoir apparently can come and go rather quickly, although we did see some communication apparently between our well, the SF 22 Federal Com Number 1 and the old Shell well. Communication

is marginal at best, as compared to what happened to Pecos when they drilled their well and found that zone depleted.

Q. What was the approximate pressure in the Mewbourne SF 22 well?

A. Approximately 4000 pounds.

Q. Substantially higher than in the Pecos Production well?

A. Substantially higher.

Q. Okay. So because the reservoir comes and goes quite quickly, you want a little more relaxed well location requirement?

A. That's correct.

Q. Are there surface matters also?

A. Yes, there are many shallow wells in the area, as well as pipelines, etc., to complicate surface location.

Q. Okay. And to the best of your knowledge, is this federal surface on this section?

A. I don't know about that.

Q. Were Exhibits 6 through 9 prepared by you or under your supervision, Mr. Nelson?

A. They were.

Q. And in your opinion, is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd move the admission of Mewbourne Exhibits 6 through 9.

EXAMINER CATANACH: Exhibits 6 through 9 will be admitted.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Nelson, Mewbourne has staked a location in the northwest of the southeast. That's going to be a Morrow and a Strawn test?

A. Yes, we are drilling it to the Morrow, however with the possibility of the Strawn being there.

Q. Well, do you believe the Strawn is there at that location?

A. I do believe the Strawn may be there at that location. The risk involved would be, is it communicated to which reservoir? I believe our SF 22 Federal Com Number 1 has to be, in a sense, connected to the old Shell well, but only in an indirect, tortuous manner, and that the risk that we see with the Strawn, with the Number 2, would be its close proximity to the Shell well.

Q. So you don't believe that these two Strawn structures are separated?

A. They're separated to a degree, yes, because the pressures are so vastly different between the Querecho -- the Shell Querecho -- excuse me, the Pecos Querecho Plains

Number 2 and our SF 22 Fed Com Number 1.

Q. Separated by what? Porosity, tight porosity?

A. Porosity, yes. There must be some perm barrier between the two, not completely separating them, but partially so.

Q. Now, the 22, has that been completed yet, the 22 Number 1?

A. It is -- I'm not sure it's been officially potentialed, but it is testing and producing oil in the Strawn.

Q. Is that going to just be at this point completed in the Strawn, or do you --

A. Yes.

Q. And the original reservoir pressure in the discovery well was --

A. -- 5880, according to the drill-stem test.

Q. 5880. Now, how did you determine the presence of these Strawn structures? Did you guys have just well control, or did you use something else?

A. Something else. 3-D seismic.

Q. Okay. So at this point, how does the northwest quarter -- I'm sorry, the northeast quarter of Section 22, is there any potential up there?

A. There could be, yes.

Q. You don't show it, though?

A. Not currently. We're keying off of several seismic attributes, of which those attributes found in the SF 22 Number 1 are not present in that part of the northeast quarter of 22.

Q. Okay. In terms of the porosity and overall reservoir quality, does the 22 Number 1 compare to the discovery well for the pool, the Shell well?

A. I think it compares fairly favorably, yes. The log we're looking at for the Shell well is an old gamma-ray neutron, so a good, direct comparison is somewhat difficult, as log scales aren't exact. But the flow rates would indicate that from the drill stem test we have better perm in our well than the old Shell well had, from the flowing pressures.

Q. Do you know what the problems were associated with the well in Section 21, why they never could make a well out of that?

A. It's tight, and reading through the completion reports, they were never able to produce any higher oil cut than eight percent. We've seen this type of thick and tight reservoir before in the Strawn, both wells we've drilled and other operators as well.

Q. And you guys are asking for the 330 setback just to give you additional flexibility to locate these wells. Is it -- Do you believe it's necessary, Mr. Nelson?

A. I do, yes.

EXAMINER CATANACH: Okay, I have no further questions.

MR. BRUCE: I have nothing further of this witness.

EXAMINER CATANACH: Okay.

MR. BRUCE: Mr. Examiner, before we begin with Mr. Montgomery's testimony, he is presenting a set of exhibits which will be the exact same set that is going to be used in the next case. As you've seen on Mr. Nelson's exhibits, the next case involved is only a section over, so what I propose to do is have Mr. Montgomery testify through this set of exhibits as to both pools, and for the next hearing we can just incorporate this testimony.

EXAMINER CATANACH: Okay.

BRYAN M. MONTGOMERY,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Bryan Montgomery.

Q. Where do you reside?

A. In Tyler, Texas.

Q. Who do you work for and in what capacity?

A. For Mewbourne Oil Company, as manager of reservoir engineering.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert reservoir engineer accepted as a matter of record?

A. Yes, they were.

Q. And are you familiar with the engineering matters involved in both this Application and the application regarding the Young-Strawn Pool?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I tender Mr. Montgomery as an expert reservoir engineer.

EXAMINER CATANACH: Mr. Montgomery is so qualified.

Q. (By Mr. Bruce) Mr. Montgomery, would you identify Exhibit Number 10 and discuss the wells in this area which form your basis for increasing the allowable in this pool?

A. Exhibit 10 is a table of well data that I use to summarize some information and also in making calculations of drainage and my analysis.

The first three wells in the table, the Querecho Plains Unit Number 1 we've talked about already. That's in

22 K, and that was a 1957 completion. And you see the pressure there I have slightly different from my notes on the DST of 5820, but in a sense that was virgin pressure.

Then the second well and the third well are also in this pool we've talked about already.

And then the last three wells are in an offsetting pool a mile to the west.

So let me start with the Querecho Plains Pool. As I mentioned, that first well was the discovery well, and it did have a DST that flowed oil to surface. The initial GOR in that well was reported at 1700 standard cubic feet per stock tank barrel, and in a minute I'll have a monthly production curve showing the GOR history of that well. It had oil gravities 42 to 44 degrees, which are very similar to the Mewbourne well that we now have producing, this SF 22 Federal Com Number 1. There also we had a DST, and that would have been last year, September, where we found the reservoir pressure, after analysis, to be 4003 pounds.

So as was previously testified, we have a very slight -- remarkably slight pressure reduction, after so much oil that was produced from the first well, to be this far away, which gives us a feeling that there is just a small leak, if you will, of pressure and fluid between this well and the old well, the Shell well, the 22 K, which was very encouraging. The rates, as we're going to see later

in the plot, are very strong for this well. They would be similar, I think, to what we'd expect from initial pressure rates.

Using the PVT data, the gas-oil ratios that I have here, the oil gravities, the pressures, I've calculated the bubble point to be somewhat below 4000 pounds. 3500 pounds is a good round number. So here we are with a well many, many years later, after over 500,000 barrels produced in close proximity, with pressures above the bubble point and producing it -- basically initial GORs.

Q. Mr. Montgomery, one thing, the DST on this well was last September.

A. Yes.

Q. That well was, again, initially completed in the Morrow, was it not?

A. It was, that explains the gap. We DST'd the well, drilled down to the Morrow, made a Morrow completion, produced Morrow gas. We had some reservoir depletion from the south and produced at economic rates. We knew we had a great zone up above here, but that production deteriorated rapidly and we began to make plans to put a plug in the well and come up to the Strawn.

And so by February you see some initial completion notes in this table on this well that show some

GORs and other things. That's when we really began producing, and that will become apparent when I show you a daily plot of this well.

Q. Okay.

A. And then the last well on here of the first three, the Querecho Plains Unit Number 2, it also had a DST, we've already heard. The results of that were not as good. They did not flow oil to surface. They flowed oil into the drill pipe, but it was such low pressure, shut-in at 1357 p.s.i., that the oil flowing into the drill pipe effectively killed the production, and it was not able to flow to surface.

Q. That's the Pecos Production well?

A. That's the brand-new Pecos Production well at 22 E.

So what we decided was what we have here was sort of a two-tank system. We have the big 500,000-barrel well that must have preferentially drained back to the northwest, based on the pressures and the DST results of the Pecos -- the new Pecos well -- and then a separate but slightly connected tank that the Mewbourne 22 Number 1 is in.

With the geologic information and this pressure data we began to formulate this two-tank system, and that's what we know today, and that's why we feel like these wells

can drain more than 40 acres. We see the well at 22 K affecting a well caddy-corner 40 acres to the northwest significantly. That's an 80-acre sort of egg, if you will, or compartment size, and yet in the other direction it was only slight.

So it's very complicated. And I think I'm going to show later with some drainage area calculations on some other wells that 40 acres is probably just too small and that 80 acres is the optimum place to begin developing these Strawn Pool reservoir wells.

Q. Let's discuss the Young-Strawn Pool wells. What do those show?

A. Those, if you look back at the Exhibit 6, you'll see to the west, Section 20 and 17 have three wells. These are those three wells. They're important for the Querecho Plains in that they become a nice analogy of what's going on typically out here, and so one pool is a nice analogy for the other. So I've just listed them all together here.

Going through these, you see the Young Federal Number 1 was the first well drilled, the discovery well for the Young-Strawn Pool. DST there in 1975 showed initial reservoir pressure, 5710 p.s.i., and initial GORs around 1200, with the oil gravity at 46.1. Their initial completion shows slightly higher gas-oil ratios. I think that's just partly due to the inability of any of these to

be exact numbers.

But subsequent to that well producing -- and I have a plot in a future exhibit to show that -- there were two wells drilled by Mewbourne after this well was abandoned and made about 100,000 barrels. And to the north in Section 17, Mewbourne completed two Strawn wells called the 17 Number 1 and the 17 Number 2, the 17 Number 2 being in the J location, closer to the old Young well. And it's the prolific producer.

The 17 Number 1, I'll show later, is tight. It has to be pumped. We didn't DST either one of these, but we're flowing -- testing by production both of them, and we know that the 17 Number 2 can flow at high rates and has good permeability and porosity on the logs, everything seemed to make sense. The 17 Number 1 was just a poor reservoir quality.

Q. Okay, Mr. Montgomery, let's move on to your Exhibit 11. What does that show?

A. This one takes us back to the Querecho Plains Unit Number 1, and I believe it's stapled together with a second curve. Let's look at the first page, the Querecho Plains Unit Number 1. Here you notice my production starts in 1970, and that's because of the data accumulated by the service they used begins there, but since 1957 it had been producing, and those cumulatives are shown in my cumulative

table. If you look at the look at the top right-hand corner of the plot you see cumulative oil at 546,451 barrels. It also shows the gas, the water and the location.

The curves are -- the green is the oil and the red is the gas, the black is the gas-oil ratio, and the water is the blue.

And what I think this shows is that the gas-oil ratio increased from 1990 -- I'm sorry, from 1970 to 1997, when the well was -- or 1994, let's say, when the well was recompleted to the Morrow, that that GOR did start around 2000 but for much of its life was above 2000 and actually spiked up to 5000 or 10,000 and settled in close to 3500 or 4000 when it was finally abandoned for the Morrow.

I calculated a drainage area using the porosity feet of this well and just did an average area, what would that equate to, and I came up with 95 acres. By doing that, I did incorporate the porosity of the Pecos well, the new Pecos well.

Because they were in pressure communication, and it has slightly higher porosity, I took the average of those two and backed in with this cumulative production of 95 acres. And that again helped support the fact that these wells, if they're prolific -- and they're poor, they just won't do it, but if they're good wells they can easily

drain over 40 acres.

Then the second page is again a good analogy for this first pool hearing, but it's also helpful for the second one that we'll be talking about. This is the Young Federal Number 1 in Section 20, the same kind of plot, with oil being the green. It began production in 1975, so I have the initial rates there on a daily basis. That very peak at the top of the green in 1975 would be about 110 barrels a day. So it's not this super porosity. I don't believe they would have pinched this back. The allowable was 365 barrels a day in this pool also.

But it's a good well nonetheless, it's not marginal. It made 100,000 barrels. The gas-oil ratio here, again, is erratic. Sometimes that's based on surface separation and pipeline pressures, pump efficiencies. But in a sense it went from 2000 to 3000, and it dipped down to 1000, worked its way back up over to -- maybe to 2500. I believe that the gas-oil ratios for these wells were basically around 1500 for these kind of fluids. And because of depletion and the natural increase in gas-oil ratio would cause these to increase to 3000 or 4000 quite easily.

The drainage area I calculated this well was 51 acres, and it was based on -- solely on the wellbore itself, not averaging anything up to the north. I just

took the porosity they had there, with the help of our geologist, and backed into 51 acres, again showing in excess of 40 acres. This well was recompleted to the Wolfcamp in about 2001, so it's no longer producing in the Strawn.

Q. Let's discuss the new wells that have been completed in these two pools. What does Exhibit 12 show?

A. Exhibit 12 is an exhibit with three plots, encompassing the three wells in the two different pools. First of all, we start with -- back on the Querecho Plains-Strawn Pool, the well that we drilled in Section 22, the SF 22 Number 1.

Here again, you have some colors showing the different data that's plotted versus time. These are just daily numbers off of our gauge estimates that we record at Mewbourne, the green being oil again, the red being gas, the purple stars are choke sizes -- you can see us opening the choke back and forth -- and then the gas-oil ratio is the brownish circles.

And what I think this is showing me is that there is a prolific nature to this well. We -- During the first two weeks, if you notice, when the choke size is around 15/64, our oil production is about 450 barrels a day, and the GOR at 1500. It bounces around, but it's roughly 1500.

And the next two weeks we aggressively opened the

choke, after obtaining permission by the OCD to test this well for higher rates above the allowable, and found we could get in excess of 900 barrels a day. And the trend, in my mind, is somewhere between 850 to 650 barrels a day.

But the gas-oil ratio remained, in fact, maybe slightly declined from 1500 to 1200. So by increasing the oil rate, the gas-oil ratio changed very little. In fact, it maybe gradually went down as the reservoir is trying to reach all its boundaries and stabilize.

Then the last two weeks we closed the well back in, basically, to get it back to allowable, and the oil went back to near 400 barrels a day. And the gas-oil ratio again remained at 1200.

So it's apparent to me that producing at higher rates does not change the GOR appreciably in these good wells and is not detrimental to recoveries in the reservoir.

Then lastly, I want to mention that this production profile is prolific. This is the good stuff, and it lines up quite nicely with the way we look at these logs. There's a good correlation between looking at a good log and finding a good producer. And I believe this well should have an oil allowable that's proportionate -- in proportion to its productivity, and that's why we're asking for 720 barrels of oil per day.

Q. And again, the data you have doesn't show any harm to the reservoir by increasing the rate?

A. None at all.

The next page, we will -- we could get into more detail at the next hearing, or while I'm on a roll I guess I'll just go into some detail here, and then we'll look at them again if we want to.

These are the two new wells in Section 17 that Mewbourne drilled. The first one that I have shown --

Q. These are the Young-Strawn wells?

A. These are the Young-Strawn, Young-Strawn Pool wells.

The first one I have shown is the 17 Number 2, and I do that because it's the prolific well. The second well does not have a lot of good data to really analyze. But in the 17 Number 2 again you see it's a good producer, and that's confirmed by very excellent log characteristics.

The oil rate here was changed, after we had testing allowable approval by the OCD, from 350 barrels a day, up to over 750 barrels a day, and then back down to 250 barrels a day, with a relatively stable GOR, although the GOR is much more erratic on this well, and it's a little lower, 1200 to 700 standard cubic feet per barrel, bouncing around, it may have ended up close to 1100. We're still gathering data on this well.

It's interesting to note, if you see there when we opened the choke up and the green squares move up to the higher rates, the oil was highest when the GOR actually became its lowest, which I think is still strong evidence that high oil rates are not causing high GORs. In fact, because of the way fluids move in the reservoir, we actually had a lower GOR at that time. But it's certainly not detrimental to oil recovery. And again, this well should be given an oil allowable to accommodate its high productivity, and that's why we're asking in this other pool -- I know we're not quite there yet -- for the same 720 barrels per day.

Q. And then what is the final page?

A. The final page is a poor producer. The well is on pump, and the GOR is really all over the place, and there's not much we can do to analyze this well to really give us a feel for the reservoir. It's so tight that it doesn't give us good information.

So that takes care of the data up to about last week on the three wells that we have producing in these two pools.

Q. What is the final exhibit, Number 13?

A. The final exhibit is a little better analogy, because it's monthly production from a pool nearby, instead of daily. It does have prolific wells, and this would be

the North Lusk-Strawn Pool you see on Exhibit 6, to the south. There are five wells in Section 28, 29, 32 and 33 that produce from this pool. It's a fairly new pool, and it's offsetting a massive -- as you know, the Lusk-Strawn Pool is just to the west and south of here.

And it's interesting to note that when this pool was first discovered, the North Lusk Pool, it had high rates and virgin pressures being separated from that massive Lusk-Strawn Pool.

And what I've done here is just put five curves on, and I'd like to go through them briefly to show a couple things. One that -- how oil rates have not been detrimental to the recoveries; two, the GORs have increased over time; and three, that it's more typical that these are draining 80 acres than 40 acres.

The best way to do that is to look at the first two curves as a pair. And if you look at the first well on the exhibit, the Spear Federal Number 1, this well is in 33, and there's another well right next to it you see on the map, on Exhibit 6.

The first well, the Spear, came on in 1997. And here the green is oil. It's not real prolific. You see the monthly oil rates around 6000 or 200 barrels a day. The black is GOR, around 1700. But in 1998, the GOR increased dramatically to over 10,000.

And if you flip to the second page, that's when a prolific well came on right next to it, showing that over those two 40s they were direct communication. It actually had a slightly lower GOR, which is probably the true GOR for the initial above-the-bubble-point pressure. But within a couple months in 1998, it too began an increase in GOR up to -- close to 10,000, has slowly come down.

You'll also note the oil on this well was higher initially. It was the prolific well of the two, it was much better perm.

So that shows excess of 40 acres being able to be in communication.

Again, this can be shown on the next two plots, which are a pair of wells. If you look on Exhibit 6, the south of 29 and the north of 32, 40-acre-type offsets. The first well that came on was this well in 29, and it was a prolific well at about 500 barrels of oil per day, which would have been in excess of its oil allowable, slightly. That would have been a 365.

And I think it was actually a 2000 GOR at that point in time. On our map here it shows 20,000. That was just recently granted.

But you can see on this first well the GOR began at around 1200 again and went up to 10,000, is now a little over maybe 20,000 GOR. And about the time that the second

well came on, if you flip to the next page, the well in 32 came on in 2002, you see the GOR was instantly at about 10,000 and the oil rate was below 1000 per month.

Flipping back to the first curve, at that same time in 2002 the GOR is there at 10,000 or just under. The oil rate is a little higher, showing this well just has better productivity.

So once again, the connectivity, in my mind, is definite due to the correlation in GORs. So I think this again shows 40 acres is too small for a prolific Strawn producer and that they can drain in excess of 40 acres.

Then the last well is its own little, I think, limited tank in Section 28, so there's nothing really for me to describe here, but I did put it in to be complete. And you see the GOR starting under 2000 and getting to 20,000. But I believe the well is finished producing, it was a small, high-perm pocket.

Q. Okay. So in summary, Mewbourne is asking for 80-acre spacing?

A. Yes, that's correct.

Q. And based on your drainage calculations, your decline-curve analysis and the offsetting pools, you think that's justified?

A. I do.

Q. And secondly, an allowable increase to what

level?

A. For oil, 720 barrels of oil per day, and GOR 4000.

Q. And do you believe that is justified not only by the production characteristics of the new wells, but by the offsetting production?

A. Yes, that's correct.

Q. And are you asking that these rules be temporary for a year or a year and a half?

A. A year and a half, I think, would be sufficient.

Q. Were Exhibits 10 through 13 prepared by you?

A. They were.

Q. And in your opinion is the granting of Mewbourne's Application in the interests of conservation and the prevention of waste?

A. It is.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibits 10 through 13.

EXAMINER CATANACH: Exhibits 10 through 13 will be admitted.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Montgomery, looking at your Exhibit Number 11 for the Querecho Plains Unit Number 1 --

A. Yes.

Q. -- it appears that the GOR for that well stayed pretty stable for a few years. Well, let's see, this is -- as a matter of fact, this produced for a long time before 1970?

A. That's correct, and it's my belief it was probably under 2000 at one time. The DST showed 1700, but it's my opinion that the GOR was probably below 1500 for those 13 years prior to this picking up and slowly coming up, showing evidence of a large reservoir.

Q. Okay. So the GOR remained stable for several years after initial production at a point below 2000?

A. Right, and that's because the productivity of the well, versus the area it was draining, was in a situation that allowed that to occur. When you have high-productivity wells with more moderate-size tanks, the GORs will move up more rapidly as the depletion occurs more rapidly.

What we've seen, of course, is the Pecos well in direct connection to this well with the 1350 pounds, but then the Mewbourne well was a slight leaking of pressure. And I believe that helped keep the GOR down, in fact. It was a great indication of a place to try to drill a well.

Q. So how do you characterize -- do you believe that the reservoir that the 7 -- that the 22-1 is in -- how does that compare to the one that the Querecho Plains Number 1

was in?

A. I believe them to be in the same common compartment with a high degree of connectivity in that the 22 Number 1 mostly drained back to the northwest, to the Querecho Number 2 Pecos well. And that's why I believe when they come on with their Strawn well they're going to have very low rates and higher GORs than we do, even though they have very, very good porosity.

And contrast that to the Mewbourne well back to the east that did have some connectivity, 4000 pounds. We weren't virgin pressure, it's not a completely sep- -- but there's a minor leak there, and that's allowing us to have virgin GORs, or at least -- we're above the bubble point so we have GORs, and I believe they'll be there until we get below the bubble point.

But at 720 barrels a day and at the high productivity, that will happen rapidly, as we saw in the North Lusk Pool, that the GORs could easily get over 2000. Instead of 13 years to get there, one year, two years. And the North Lusk Pool in about five years, all those wells were at 10,000 GOR.

It depends on the size and the productivity, how fast you can get to that GOR. And it's unknown at this time, so we just need more data.

Q. Uh-huh. Well, I mean from the data that you've

got now, it doesn't appear that you need the GOR increase at this point in time.

A. You could make that argument, but what we've seen, I think, in a couple of the wells, if you look at the well in the Young field, this next monthly plot, you see it was bouncing around between 2000 and 3000 GOR from the very beginning of time. It's an older well, not as prolific. It's a slightly different -- It's a monthly plot that was in the same exhibit that we had.

And so there's evidence in once case, the Querecho Plains original well, that had 500- -- eventually made 500,000 barrels and surprisingly enough didn't even finish draining one of the compartments, I think that's the exception, to tell you the truth, Judge. I think that the GORs will move higher with these prolific wells that we have, much more rapidly than those many years it took that well to get above 2000. I think we'll be above 2000 fairly rapidly.

But we're not there yet, we've only been on for a month, you're right.

Q. But you may be back in a year and a half, and it may be at that time that you may need the GOR increase?

A. Right, or if we don't get the relief at this point, we may ask for it sooner than a year and a half if we see that, that's correct.

Q. Okay. The new wells -- I'm sorry, you presented some drainage --

A. Yes.

Q. -- testimony, but you didn't present any drainage calculations.

A. That's correct. Yeah, I don't have it as an exhibit. I'm sorry, if that would have been more helpful, but I can go through my notes and we can talk about those drainage calculations.

Q. Well, let's see, you did it on the well, on the discovery well --

A. -- for the Querecho, yes.

Q. -- yeah, the State -- the 20 --

A. -- and for the -- right.

Q. Okay, for the two discovery wells.

A. That's correct, that had lots of production. I felt I could make that calculation. I did not do any for the North Lusk field analogy that I brought.

Q. Okay. Can you supply me with those calculations at some point after the hearing?

A. Sure, yes, absolutely.

Q. Those would be helpful. And you did come up with 51 acres in the Young pool?

A. Yes.

Q. And 95 acres --

A. -- 95 acres in the Querecho.

Q. Okay. And did you do any preliminary data on the 22 Number 1 well, any preliminary-type drainage calculations?

A. Sure, yeah. We take, you know, the pressure and we take 40 acres and assume we have that kind of porosity and try to come up with some -- we don't have the production to -- It's more volumetric, I'd call it, yes, not drainage but volumetric.

Q. Well, what did you determine in that well?

A. Well it's very similar to this 95 acres, because we're a little lower pressure but we're still above the bubble point. So if 550,000 barrels can drain 95 acres, it wouldn't be unreasonable to say that 80 acres could recover -- maybe not quite that much, because we're at a little lower pressure, but somewhere close to that. We do have good porosity here.

It matters, of course, what you're really connected to, and we know now that the original Querecho well was connected to what the Pecos well drilled, a very, very nice, thick, porous zone near a thick and tight well just to its west. So it depends what we're connected to. But yes, if we just assume cost and porosities, it would be on that order of magnitude.

Q. Okay. Have you done any similar analysis of the

two new wells in Section 17?

A. Yes, yes, the well in 17 Number 1 has very low porosity, and so it will have -- it will be unable to drain large areas due to its lower permeability and porosity.

The well in 17-2, the well further to the south, does have good porosity, prolific rates, higher than the Young well. So I think it has the ability to drain whatever it's connected to, is the way I like to put it. We don't really know if there's a barrier between the 20 Number 1 to the south and the 17-2 or if the 20 Number 1 just was unable to completely drain that.

You notice the GORs there didn't get 10,000 like they did in the north Lusk. So again, we felt like it would be an excellent well to offset, hoping that it was evidence of a larger tank, from an engineering side.

But yes, I have some preliminary calculations on what 40 acres or 80 acres would provide for the 17 Number 2.

Q. And that 17 Number 2, did that data indicate an area in excess of 40 acres?

A. Well, wee don't have the data to show that. I don't have any calculation. I just assume 80, but we don't know geologically, we haven't produced enough.

We know the well to the south only had 51. That's not an exact number, but let's assume that's

correct. So it doesn't quite spill over into 17.

So if there's a barrier, and that's why it has 51 acres, or if it just -- that's as far as it could drain, then certainly with the mapping we have, even though we have a tight well to the north, we have 160 acres in the southeast of 17 that could be productive, and basically very low drainage from the old well that made 100,000 barrels.

We are contemplating, you know, drilling a well south of that well and just -- those are risks. You compete with yourself, and is the well going to be tight or permeable?

Q. We've had a little experience with Strawn reservoirs in the recent history. Are these the same kind of reservoirs, volatile-oil reservoir-type situations?

A. These are not as volatile. The initial GORs in some of the hearings you alluded to, our Shugart Pool, were closer to 2000, 2500.

And if you go further west, they go to completely gas, almost all gas Strawn -- This is again further east, and the GORs are slowly coming down, but they would actually still fall in a classic volatile range and they just would not be as gassy.

But I think as evidenced by the -- The North Lusk Pool has given me a lot of things to think about. It's in

this region and its GORs are getting quite high, and I think part of it has to do with the productivity of these wells also.

I would point out that the big Lusk Pool is 160-acre spacing with a 4000-to-1 GOR.

Q. But you didn't go into any analysis of the Lusk-Strawn Pool --

A. No, no, it's a massive pool, it would take a large study to do that.

Q. And the 22 Number 1, that's capable of over 900 barrels a day; is that right?

A. That's correct. That's correct, we produced a few days over 800 and two days over 900.

Q. Okay so you'll still be pinching it back somewhat with a 720-barrel allowable?

A. Right, there's no way to know how much or how long, but yes.

Q. And the 17-2 is capable of -- I think you had a day in excess of 900 on that?

A. I did, one day, right. There were four or five, six days at 750 or above and one day over 900 before we pinched it back.

We had a testing allowable set up with the OCD to run these high rates, with 125 percent of allowable, so we tried to design a test that allowed us more than one or two

days.

They were never produced -- Neither well was ever produced absolutely wide open. They were always choked back to some degree, even at the high rates.

Q. Do you believe that the short nature of these tests will give you an accurate view of whether or not the GOR will remain low or --

A. In compass with everything I know, with the other pools we've talked about, the type of fluid, the type of productivity, I strongly believe the GORs will not stay at 2000 for very long. Being able to accumulate the kind of oil rates we think we're going to be able to accumulate will cause those GORs to increase above 2000 in the near future.

Q. But you don't believe the high rates of oil are going to detrimentally cause waste?

A. No, I don't. I haven't seen any evidence of that, to support that.

EXAMINER CATANACH: Okay, I believe that's all I have, Mr. Bruce.

MR. BRUCE: I have nothing further of the witness.

EXAMINER CATANACH: So there's nothing further in this case, Mr. Bruce?

MR. BRUCE: Nothing further in this matter, Mr.

Examiner.

EXAMINER CATANACH: Okay, there being nothing further in this case, Case 13,242 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:43 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 13242 heard by me on April 1 2004.

David K. Catanach, Examiner
Oil Conservation Division

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 2nd, 2004.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006