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 ENERGEN RESOURCES CORPORATION TO INCREASE THE GAS-OIL RATIO FOR THE WEST LOVINGTON-STRAWN POOL, LEA COUNTY, NEW MEXICO

CASE NO. 12,850

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

April 18th, 2002

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 18th, 2002, 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 18th, 2002
Examiner Hearing
CASE NO. 12,850

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E X H I B I T S

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A P P E A R A N C E S

FOR THE DIVISION:

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FOR THE APPLICANT:

MILLER, STRATVERT and TORGERSON, P.A.
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Suite 300
Santa Fe, New Mexico 87501
By: J. SCOTT HALL

ALSO PRESENT:

WILL JONES
Engineer
New Mexico Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, NM 87501

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WHEREUPON, the following proceedings were had at 8:21 a.m.:

EXAMINER CATANACH: Okay, at this point I'll call Case 12,850, the Application of Energen Resources Corporation to increase the gas-oil ratio for the West Lovington-Strawn Pool, Lea County, New Mexico.

Call for appearances.

MR. HALL: Mr. Examiner, Scott Hall of Miller, Stratvert and Torgerson, Santa Fe, on behalf of the Applicant, Energen Resources Corporation. We have one witness this morning.

EXAMINER CATANACH: Okay, any additional appearances?

There being none, can I get the witness, please, to stand up and be sworn in?

(Thereupon, the witness was sworn.)

<u>BARNEY I. KAHN</u>,

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

DIRECT EXAMINATION

BY MR. HALL:

Q. For the record, please state your name, sir.

A. Barney I. Kahn.

Q. Mr. Kahn, where do you live and by whom are you employed?

A. I live in Birmingham, Alabama. I'm employed by Energen Resources Corporation. I'm the chief engineer.

Q. And you've previously testified before the Division and had your credentials accepted as a matter of record, have you not?

A. Yes.

Q. And are you familiar with the Application that's been filed in this case?

A. Yes.

Q. And are you familiar with the West Lovington-Strawn Unit and the West Lovington-Strawn Pool which are the subject of the Application?

A. Yes.

MR. HALL: Mr. Examiner, we'd offer Mr. Kahn as an expert in petroleum engineering.

EXAMINER CATANACH: Mr. Kahn is so qualified.

Q. (By Mr. Hall) If you would, please, Mr. Kahn, explain what it is Energen seeks by this Application.

A. Energen seeks to increase the current GOR limit, which is 2000 to 1. We seek to increase that to 4000 to 1.

Q. If you would, let's refer to Exhibit 1 and orient the Examiner to the unit and the pool. Why don't you identify Exhibit 1 for the record?

A. Exhibit 1 is a plat of the West Lovington-Strawn Unit outlined in yellow. The red locations are the wells that were drilled to the Strawn in the unit.

You'll see in Section 1, there's a Unit Well Number 7. That's the gas injection well which is providing pressure maintenance for the unit.

Wells are numbered 1 through 21. 21 wells have been drilled and completed in the Strawn. That's the total number of well in the unit at this time.

Q. And the unit has undergone a couple of expansions over the years, has it not?

A. Yes, it has. I don't have shown on this map what the original unit boundaries were, and I haven't shown what the first expansion and the -- but this represents the second expansion and the current unit outline.

Q. Now, have the productive limits of the West Lovington-Strawn reservoir been reasonably defined by development?

A. Yes, it has. We drilled Well Number 19 which you'll see in the northwest corner of Section 33 -- that was a recent well drilled -- Well Number 20 which you'll see in Section 34, and then well Number 21 which you'll see in Section 32. Those three wells were drilled after the unit boundary was established, and they did confirm the unit boundary.

Q. And the horizontal extent of the productive limits of the reservoir are recognized in Order R-10,864-B, which approved the second expansion, is it not?

A. Yes.

Q. If you would, provide the Hearing Examiner with a brief overview of the nature of unit operations for the unit.

A. The Strawn Pool is a volatile oil reservoir. It was discovered in June of 1992, with an initial bottomhole pressure of 4392 p.s.i.

By December of 1992, the reservoir pressure had reached the bubble-point pressure of 4115 p.s.i. Below the bubble-point pressure, gas was released from solution and began to form a secondary gas cap.

By September, 1995, the reservoir pressure had declined to 3300 p.s.i., and gas injection for pressure maintenance was initiated in the recently formed West Lovington-Strawn Unit.

Residue gas has been reinjected, along with extraneous gas purchased to replace oil withdrawals. To date, 5.5 BCF of residue gas and 5.2 BCF of purchased extraneous gas have been injected into the unit. The cumulative oil production is 5,113,778 barrels through February of 2002, and the reservoir pressure is currently 3130 p.s.i.

Gas injection has supplemented the solution gas drive to achieve an estimated recovery factor of 34.6

percent of the 19.5 million barrels of oil in place.

Q. If you would refer to Exhibit 2 and identify that for the Examiner.

A. Okay, as part of Exhibit 2, on the first page is a summary sheet that summarizes the PVT analyses that are behind it. Basically what it does, it shows that this is a volatile oil. It has an API gravity greater than 40, it has a GOR greater than 2000 to 1, and it has a formation volume factor greater than two reservoir barrels per stock tank barrel, and the heptanes plus are between 12.5 and 20 mole percent.

Behind it you'll see the copies of the original PVT analysis that were taken. Phase Behavior, Inc., sampled the Speight Number 1, which is the West Lovington Number 7 which I identified earlier as the gas injection well, and that was done on December 12th, 1992, right after the field was discovered. And it had a GOR of 2716 standard cubic feet per stock tank barrel, and when you correct that to the pressure base of 15.025 it converts to 2649 standard cubic feet per stock tank barrel.

Core Labs then sampled the Hamilton Federal Number 1, which is now designated as West Lovington Strawn Unit Number 1, a year later. And their analysis resulted in a GOR of 2463 at a pressure base of 15.025.

So these analyses establish this as a volatile oil.

Q. All right, what are the current operating rules in effect for the pressure maintenance project in the pool?

A. The special rules for the East Big Dog-Strawn Pool, which was Order Number R-9722, it was subsequently changed to the West Lovington-Strawn Pool by Order R-9722-A, and it originally had a special project allowable of 445 barrels of oil per day times the number of developed, prorated units. And this was transferrable among the wells.

By Order R-9722-C/R-10,448-A, the project allowable was subsequently abolished and reduced to 250 barrels of oil a day across the entire pool for each producing well. And this was also extended beyond the unit boundaries at that time, which was the original unit. So this included any wells that were in the pool that were not yet incorporated into the unit.

In 2001, following the second expansion of the unit, a special project allowable was reinstated at 250 barrels of oil a day, and the transfer of allowables among the wells was permitted by Order R-9722-F/R-10,448-B.

Q. Has the standard 2000-to-1-gas-oil-ratio limitation always been applicable to this pool?

A. Yes. The depth acreage allowable for the pool was originally 445 barrels a day and 890 MCF a day, and by

Order 9722-C the allowable was reduced to 250 barrels a day on February 26th of 1997, and a 250-barrel-a-day allowable with the actual depth allowable of 890 MCF a day would result in a GOR limit of 3560 instead of 2000 to 1.

Q. Now, why is the standard GOR limitation a problem now?

A. Well, a GOR limit of 2000 to 1 would always be a problem in a volatile oil reservoir because the initial solution ratio for this particular crude was 2717, and that's 36 percent higher than the 2000 limit.

Q. All right, let's look at Exhibit 3. If you would identify that, please, explain that to the Examiner.

A. Okay, Exhibit 3 is a tabulation by month of the oil production from the unit and the gas production from the unit, and the GOR. And you can see close to the bottom of that first page, in October of 1995 gas injection for pressure maintenance was initiated, and gas was reinjected into the reservoir along with extraneous gas. At that time the oil allowable, based on the number of wells in the unit, was 3000 barrels a day, and the gas allowable was 6000 MCF a day.

You'll see another column over there which then converts that into an allowable gas per month based on the number of days per month.

And then the last column shows what the unit would have overproduced based on that gas allowable. Of course, there was no overproduction from 1995, as you can see, all the way through to -- Let's go down to the last month of actual history, which is February of 2002, on the last page, and you can see that the unit is still underproduced on the basis of the gas limit.

But I have forecast March through December of '02, and based on the increasing gas-oil ratio, at some point in the middle of 2002, around June, you can see that at the current gas limit the unit will be overproduced, based on the increasing GOR.

Q. Now, at that point will the unit operator be obliged to cut back oil production to avoid violating the gas limitation for the field?

A. Yes, when the production exceeds the allowable we will have to cut back on the oil production.

Q. In your opinion, will that result in economic waste?

A. Yes, it will definitely decrease the revenue. Since there's no gas being sold, it will decrease the revenue of oil production to working interest owners and the royalty interest owners, as well as reduce the severance tax.

Q. Let's turn to Exhibit 4, please. If you'd identify that for the Hearing Examiner.

A. Exhibit 4 is a semi-log plot of barrels per month versus time, MCF per month versus time, and GOR versus time.

The top curve, in dark -- in the heavy line, is identified as barrels per month. And you can see that is the production history of the unit through February of 2002.

You can also see the gas, which is the lower curve.

And then the curve in the middle is the resulting gas-oil ratio.

Q. All right, let's look at Exhibit 5. What does that exhibit show?

A. Exhibit 5 is a plot of the same type of information on a plot of gas-oil ratio versus cumulative oil. And you can see a vertical line drawn right past 5 million barrels, and that's the current cum through the end of February of 2002, which is the 5,113,778 barrels.

And then the points beyond that line are the forecast points that we saw earlier on Exhibit 3, which shows the increasing GOR up through the end of 2002.

Q. Now, are the wells in the pool capable of producing at the current 250-barrel allowable without damaging the reservoir?

A. Well, the 250-barrel-a-day oil allowable relates to -- for the project, would be 5343 barrels a day. But the capacity of the field is about a third of that on the oil allowable.

Q. Okay. Energen does not seek an increase in the oil allowable, does it?

A. No, we do not.

Q. Now, would increasing the GOR limitation result in any harm to the reservoir or the premature dissipation of reservoir energy?

A. Well, the reservoir reached the bubble-point pressure back in December of 1992 and is currently 985 pounds, p.s.i., below the bubble-point pressure. So we're not going to be releasing any solution gas prematurely.

Q. Now, will increasing the GOR limit reduce the ultimate recovery from the pool?

A. Well, the gas being produced now is mostly free gas from the standing secondary gas cap. Eleven of the high-structure wells are shut in due to the high GOR, and nine low-structure wells are producing with increasing GORs.

The reservoir has reached the stage where recycling of the injected gas does not significantly increase the oil recovery. So increasing the GOR limit will increase the present worth of the pool to the State and the royalty interest owners in terms of production revenue and severance tax, even though it may decrease the ultimate oil recovery by less than one percent.

Consequently, the accelerated revenue avoids economic waste, which more than offsets the relative low -- small reduction in ultimate recovery.

Q. Now, is the requested 4000-to-1 limitation in accord with existing precedent for the operating rules for other Strawn pools in the area?

A. Yes, there is an Order Number R-9722-E/R-10,448-C for South Big Dog Pool and Order R-11,449 for the Northwest Shoe Bar-Strawn Pool, where those limits were increased to 4000 to 1.

Q. With the increased GOR limitation, will the unit operator continue to be able to manage the reservoir pressure in the gas cap in a prudent manner?

A. Yes.

Q. And will Energen be able to more efficiently and economically produce the wells in the unit?

A. Yes.

Q. In your opinion, would granting this Application serve the interests of conservation, result in the protection of correlative rights and prevention of waste?

A. Yes.

Q. And were Exhibits 1 through 5 prepared by you or at your direction?

A. Yes.

MR. HALL: Mr. Examiner, at this time we'd move the admission of Exhibits 1 through 5, as well as Exhibit 6, which is the notice affidavit.

That concludes our direct of this witness.

EXAMINER CATANACH: Exhibits 1 through 5 and Exhibit Number 6 will be admitted as evidence.

MR. HALL: I also have copies of the orders the witness testified about if you need those.

EXAMINER CATANACH: Mr. Hall, who was notified of this case?

MR. HALL: We notified every operator and working interest owner on properties without operators within a mile of the pool boundaries, and we did not exclude other pools.

EXAMINER CATANACH: Quite a list.

MR. HALL: It is. I should point out to you, Mr. Catanach, that I've looked at the definitions of the pool in *Byram's*, the Division's pool books upstairs and all of the orders I could find on the various iterations of this pool. None of them agree.

The definition I set forth in the Application and used for the notice was based largely on the definition of the pool in the last expansion order, which contained findings saying that this is the areal extent of the pool.

I believe it's probably the most reliable description of the pool, so that's what I utilized.

EXAMINER CATANACH: But that doesn't agree with the current nomenclature that we show for the pool boundaries?

MR. HALL: It does not. But in any event, I believe it's over-noticed. The description I used was larger than those various definitions of the pool that are in disagreement.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Kahn, Energen is the operator of the unit; is that correct?

A. Yes, sir.

Q. Are there still other working interest owners in the unit?

A. Yes, Energen currently has about 89-percent working interest, and then there are probably 20 other working interest owners that account for the other 11 percent.

EXAMINER CATANACH: Okay. Were these owners notified, Mr. Hall?

MR. HALL: No, they were not.

EXAMINER CATANACH: They were not notified?

MR. HALL: Well, I take that back. I'd have to look and see. There was no obligation to notify them, but we may have notified them anyway because this is the master notice list from all of the various West Lovington-Strawn hearings over time, and they are all in there in some form or fashion, and it's been updated as ownership has changed.

I believe it's current. I see Yates, Tara-Jon, Myco, Lario, so it appears that -- ADIA, they're a working interest owner -- it appears, yes, that they were all notified.

Q. (By Examiner Catanach) Okay. Mr. Kahn, has any of the interest owners or offset operators expressed any interest in this case, either negative or positive?

A. Well, earlier in the year we had a working interest owners' meeting, and we told them that we would be applying for a 4000 ratio increase, and nobody had any objections to that.

Q. Okay. Now, does the unit take into account the whole pool, or is there parts of the pool outside the unit?

A. Currently, there are no parts of the pool outside the unit.

Q. Okay.

A. And we don't believe that there are any, based on the results of the last three wells that were drilled.

Q. And it's not likely the thing is going to be expanded by drilling additional wells outside the unit?

A. No, sir, I don't really see an area where we could be countershot at this time. Of course --

Q. We've been through that a couple times, haven't we --

A. -- we don't want to go through that again.

Q. -- at least?

Okay. Now, your Exhibit Number 3, I'd like to ask you a couple of questions about that. The allowable that you show starting in October, 1995, the oil allowable, that's for the entire unit; is that correct?

A. Yes, sir, that's the project allowable with the transferrable allowables between the units, between the prorated units.

Q. Okay, and that has gone up as a result -- Has that gone up as a result of more wells being drilled?

A. Yes, sir. The original unit had 11 wells in it. The first expansion added Wells 12 and 13, the second expansion added Wells -- well, 14 was drilled, then, within the unit, and then the second expansion added Wells 15 through 18. And then since then we've drilled Wells 19, 20 and 21.

Q. Okay. And the corresponding gas allowable is just the project oil allowable multiplied by 2000 to 1?

A. Yes, sir.

Q. Okay. Now, all of the -- Is it correct that all of the gas that you're producing is being reinjected?

A. Yes, sir. It goes through a plant that recovers natural gas liquids, and the residue gas, then, is returned to the unit, reinjected along with extraneous gas we purchase from a natural gas pipeline, to -- The extraneous gas is needed to offset the oil withdrawals and maintain pressure.

Q. Okay. So you're purchasing gas in addition to -- and that's the 5.5-BCF cum production, that's produced gas, 5.2 is --

A. Yes, 5.2 I think is the extraneous gas, and 5.5 is the residue gas that's been returned to the unit.

Q. Okay.

A. And that's through February of 2002.

Q. Okay, so the produced gas has gone up considerably over the years, it looks like?

A. Yes, the gas-oil ratio has -- as you can see, it started out -- if you look at Exhibit 5 where the gas-oil ratio is plotted versus cumulative oil, you'll see that it started out somewhat above 2000 to 1, dipped below 2000 to 1 as the solution ratio decreased due to decreasing pressure. And then as you started producing free gas, then the ratio started to climb.

There are several instances where you see the ratio decrease. That's because new wells were drilled downdip that came in with a low gas-oil ratio, which then reduced the overall gas-oil ratio for the entire unit.

So there were two large instances of that happening. You can see one of them happening around 3,400,000 barrels, then you can see another one happening around 4 million barrels. At that time there were several wells drilled downdip with low ratios. And then you can see it again close to 5 million where a couple of other wells were drilled with low ratios.

It might even show up better on Exhibit 4, which is the semi-log plot. You can see there -- at the beginning of the year 2000 you can see a big spike in the oil production. That's due to two wells being completed. That was Well Number 17 and Well Number 18.

Q. Okay. Now, if we increase the GOR to 4000, is that going to be enough for the next several years to keep you guys --

A. Yes, we don't anticipate being -- producing. That would approach approximately 20 million a day, and we don't anticipate ever producing more than 20 million a day out of the reservoir.

Q. Now, you said that most of the gas is being produced from high-structure wells?

A. No, most of the high-structure wells have been shut in due to high gas-oil ratios. Typically what we would do is, if the ratio consistently stayed above 10,000 to 1 for a month, then we would shut that well in. We would turn it back on maybe three or four months later, produce it for maybe a month before the ratio would build back up again, and we've been managing the gas-oil ratio in that manner.

Most of the new wells that have been drilled are downdip wells that -- For instance, Well Number 14, which you can see in Section 33, that well came in -- would have been the solution ratio for the oil at that pressure, and stayed at a pretty low ratio until it started producing free gas, and now its ratio is up to about 3000 to 1.

Well 21 is another case of a well that was recently completed. It was actually completed in January of this year, and it came in at a solution ratio at that time which would have been around 1700 to 1, and then it's built up to about 2200 to 1.

So by drilling wells downdip, we've been able to produce them at low ratios and maintain the oil rate for the unit, even though we have all of the high-structure wells shut in due to high gas-oil ratios.

Q. So if you don't get any -- and if you don't get any relief in this Application, you're going to have to start cutting back on the oil production in what, three or four months?

A. It appears that sometime by June or July we will be reaching the total allowable, gas allowable for the unit, and have to start cutting back on the oil production.

Q. Now, you mentioned something when you were talking with Mr. Hall about a 1-percent reduction in the ultimate recovery from the unit as a result of this?

A. Yes, sir.

Q. Can you elaborate on that?

A. Yes, we did a simulation of the reservoir and ran several cases.

One of the cases was the case that we would like to produce on, and -- which shows that the ultimate recovery would be, under that case, an additional 1,760,000 barrels, which would result in an ultimate recovery of 6,865,000 barrels, which then relates back to that percentage that I had mentioned earlier, which was 34-point -- I believe it was 34.6 percent of the 19.5 million barrels in place. And so that came from a simulation study.

We also ran a simulation where we extended the current ratio limit for another year, and it resulted in an incremental increase, oil recovery, of 66,450 barrels.

So taking that 66,450 barrels, divided into the ultimate, I came up with .97 percent. That's where that less than 1 percent came from. So we ran a simulation just to see what the effect of not increasing the ratio would be.

Q. But that's just for a one-year period, isn't it?

A. Yes, sir. Yes, sir.

Q. So did you do a simulation on leaving the reservoir as it is now and then do a simulation based on the new GOR?

A. Well, that's -- on the -- you mean by increasing it to 4000 to 1?

Q. Right.

A. Yes, sir, that was the case that I was just saying that you would recover an additional 1,760,000 barrels.

Q. If you left the GOR as it is now?

A. No, sir, let's back up.

Q. Okay.

A. If we increased the GOR to 4000 we would recover an additional 1,760,000 barrels. If we leave it where it is, we would have a remaining of 1,826,000 barrels. And the difference between those two is the 66,000 barrels.

Q. Oh, I see, okay. That's over what time period, Mr. Kahn?

A. That was a one-year delay in increasing the GOR, one year being from the end of the year. So it would really be -- From now it would be 20 months' delay. In other words, it was delayed until January of 2004.

Q. So if we increase the GOR to 4000 to 1 in the near future, I mean, what effect is that going to have ultimately on the reservoir?

A. Well, first of all, it will, we feel from the simulation, reduce the oil recovery by a small percentage.

But second of all, it will increase the cash flow because you won't have to be shutting back the oil wells. So from an economic-analysis standpoint, the present worth is so much greater in the case where the allowable is increased versus where the allowable is not increased.

Q. Did you guys consider going to anything less than 4000, maybe 3000, or did you guys think about that?

A. Well, you know, like I commented before, if we would have had the depth acreage allowable for gas, it would have been equivalent to about a 3650 gas-oil ratio. We cut back to the 250, you know, that was decided among all of the participants in the unit and the operators of the wells outside the unit at that time, to voluntarily reduce the allowable from 445 to 250.

Q. Standard allowable being 445?

A. Yes, sir.

Q. Okay.

A. And the standard gas allowable would have been 890, instead of 500 were we are now.

EXAMINER CATANACH: Okay, I've got it.

EXAMINATION

BY MR. JONES:

Q. Mr. Kahn, I just had a couple of questions. First of all, on the reservoir limits outlined, I notice you've got some dry holes around it. Were those the strongest -- In other words, to define the reservoir limits, was it because of poor reservoir quality or because of stratigraphic pinchout or what?

A. Okay, we didn't provide this as an exhibit, because it's been provided as an exhibit --

Q. Okay.

A. -- in previous hearings, but can I bring you this map and then explain it from there?

Q. Sure.

MR. HALL: Why don't you identify that for the record, what we're referring to?

THE WITNESS: Okay, this is what we call the hydrocarbon pore map of the Strawn unit, and it shows all of the different tracts in the unit, it shows the oil-water contact and it shows the limits of the porosity in the Strawn. And this has been provided as an exhibit in previous hearings, but I don't recall what the exhibit number was.

Q. (By Mr. Jones) Okay, it's a structure -- well --

A. This doesn't show the structure, but it's very similar to the structure in the sense that it's the pore volume. So what you have if you consider this as a structural representation, we have a structural high here.

EXAMINER CATANACH: Could you please, Mr. Kahn, for the record, identify where you're pointing to? You say you have a structural high. This is in Section --

THE WITNESS: Okay, that's in Section 1. And the structural high would be at the point of West Lovington-Strawn Number 7, which is currently the gas injection well.

Towards the northwest you lose structure, it goes downdip. This was established in Well Number 19, which is in Section 33. It's in the northwest portion of Section 33. In fact, it was so low that its main porosity was below the oil-water contact.

Q. (By Mr. Jones) So there is an oil-water contact?

A. Oh, yeah, definitely. As you can see here, this is where the oil-water contact would be on the base of the Strawn, this is where the oil-water contact is on the top of the Strawn.

Q. Is it a gradational contact?

A. No, it's not. In fact, it's a pretty well-defined contact.

Q. So the reservoir itself, is it oil-wet or water-wet?

A. It's probably oil-wet.

Q. It's oil-wet, so there's no possibility of secondary recovery?

A. Well, we did investigate, and one of the simulations was a water-injection simulation, but we felt that the relative permeabilities that we had, and the fact that it appeared to be oil-wet, that we would not have recovered very much additional oil with water injection.

And I believe that was the reason the original study suggested gas pressure maintenance, rather than going directly to water injection at that time. One of the problems, we felt like, in the simulation was that we would convert some of these really low-structure wells that have most of the good porosity in the water leg into water-injection wells.

The trouble with that is, our best producers are offsetting those wells, and we felt that premature breakthrough would occur and we'd be losing our best oil producers due to water breakthrough.

Q. Okay, that was the gist of my questions. I just wanted to ask a real expert on reservoir engineering what kind of additional recovery you could get in the future, even if your oil price was $30 and --

A. Well, it's possible that at some later date, that water injection might be tested. But we feel that premature breakthrough on our good oil producers was one of the real factors that caused us not to consider that any further.

Q. Okay, what about increased density on your wells?

A. There's such good communication between the wells. In fact, in May of 2001 we shut the entire field in for a month and ran pressure interference tests, and there was very good communication between the wells, so we felt the 40-acre infill was not justified.

In fact, we did run a simulation with drilling Well Number 22, which would have still been an 80-acre proration unit, but the simulation showed that Well 22 would not recover any incremental oil.

And we didn't run a simulation trying some other location where it looks like it could be another legitimate 80-acre prorated unit, because we felt like with as good a communication as there is, that additional wells at this time would not recover enough incremental oil to justify the cost.

MR. JONES: Okay. Thank you, Mr. Kahn. That's all the questions I have.

EXAMINER CATANACH: Okay, I think that's all the questions we have of this witness.

Anything further, Mr. Hall?

MR. HALL: No, Mr. Hall.

EXAMINER CATANACH: There being nothing further, Case 12,850 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:03 a.m.)

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I do hereby [illegible] that the foregoing [illegible] a c[illegible] record of the proceedings in the Examiner hearing of Case No. 12850 heard by me on April 18 2002.

[signature], 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 19th, 2002.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002