NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10670

IN THE MATTER OF:

Case No. 10670 Being Reopened Pursuant to the Provisions of Order No. R-9912 Which Order Promulgated Special Rules and Regulations for the Northeast Jenkins-Devonian Pool, Including a Provision for 80-Acre Spacing Units.

BEFORE:

JIM MORROW

Hearing Examiner

State Land Office Building

June 9, 1994

REPORTED BY:

JUN 19 1994

CARLA DIANE RODRIGUEZ
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE & SHERIDAN, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87504-2208
BY: **WILLIAM F. CARR, ESQ.**

I N D E X

E X H I B I T S

EXAMINER MORROW: Call Case 10670, which is the matter of the special rules for the North Jenkins-Devonian Pool.

Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the Santa Fe law firm Campbell, Carr, Berge & Sheridan. We represent Maralo, Inc., in this case, and I have two witnesses.

EXAMINER MORROW: Any other appearances?

Will the witnesses please stand to be sworn.

[And the witnesses were duly sworn.]

MR. CARR: At this time, I call Shane Lough.

CARL SHANE LOUGH

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

EXAMINATION

BY MR. CARR:

Q. Will you state your name for the record, please.

A. Carl Shane Lough.

Q. Where do you reside?

A. Odessa, Texas.
Q. By whom are you employed?
A. Maralo, Incorporated.
Q. What is your current position with Maralo?
A. I'm a senior staff geologist.
Q. Have you previously testified before this Division?
A. Yes.
Q. In fact, you were the geological witness at the time the temporary pool rules were adopted for this pool, is that correct?
A. That's correct.
Q. At the time of that testimony, were your credentials as an expert in petroleum geology accepted and made a matter of record?
A. They were.
Q. Are you familiar with the Northeast Jenkins-Devonian Pool?
A. Yes.
Q. Are you familiar with the recent development in the Devonian formation in this area?
A. Yes.
MR. CARR: Are the witness's

qualifications acceptable?

EXAMINER MORROW: Yes.

Q. Mr. Lough, would you briefly state what Maralo seeks by appearing in this case?

A. Yes. Maralo requests that the temporary rules for the Northeast Jenkins-Devonian Pool, identified as the east half northwest quarter, and the northeast quarter of Section 20, Township 9 South, Range 35 East, Lea County, New Mexico, these rules which are currently temporary field rules established by Order R-9912, we request that these be established as permanent rules.

Q. When were these temporary rules effective?

A. They were effective May of 93.

Q. And these rules provide for 80-acre spacing proration units in the Devonian, is that right?

A. That's correct.

Q. Have you prepared exhibits for presentation here today?

A. I have.

Q. Would you refer to what has been marked as Maralo Exhibit No. 1, and identify and review

this for Mr. Morrow?

A. Maralo Exhibit No. 1 is a general orientation plat, with the Jenkins-Northeast Pool highlighted in red. Four additional Devonian fields with individual Devonian wells, highlighted in green, are also shown on this map.

The significance of this is, these fields currently were established with 80-acre field rules when they were drilled, with the exception of Crossroads West, which went under statewide rules of 40 acres. However, the field was developed by a single operator under 80-acre spacing.

Also, to the southwest of our Jenkins-Northeast Field, in the subject field, there's a single well highlighted in green. That is the Jenkins-Devonian Pool. This well will be shown on an additional exhibit.

EXAMINER MORROW: Which one was that, sir?

THE WITNESS: That's the well located on the left portion of the map, approximately a mile and a half southwest of the Jenkins-Northeast.

Q. Mr. Lough, you indicated that the pool boundaries, as defined by the Division, of Jenkins-Northeast, include the northeast quarter and the east half of the northwest quarter?

A. That's correct.

Q. And Jenkins is south and west of there? That's a separate pool?

A. That's a separate pool.

Q. You'll show that with subsequent geological exhibits?

A. That's correct. We'll show separation.

Q. Each of the other pools shown on this exhibit are Devonian pools, and they're either developed on 80-acre spacing because of the rules, or are on an effective 80-acre spacing pattern?

A. That's correct.

Q. Let's go to Exhibit No. 2, your structure map. Will you review that, please?

A. Exhibit 2 is a structure map contoured on the top of the Devonian. The significance of this map is, this map shows separation from the Jenkins-Northeast Pool, compared to the Jenkins Pool located approximately a mile and a half south/southwest of the Jenkins-Northeast Pool.

This exhibit also shows effective pay for the Jenkins-Northeast Pool, that being highlighted in green.

This exhibit also has highlighted in green, within the small circles, the Devonian completions in the area.

It also shows a recent field development, that being the Maralo Bonds No. 1, shown on this as a sidetrack well, located in the south half of the northeast quarter of Section 20.

And the trace, or line of section for a cross-section to be presented, is also indicated on this map, that being a west-to-east cross-section, A - A', which goes through the Jenkins 1 Well field, across a dry hole separating the Jenkins Field from the Jenkins-Northeast Pool, across the Jenkins Pool to a dry hole on the eastern side of the Jenkins-Northeast Pool.

Q. So, this exhibit shows all the development in the area?

A. Yes, it does.

Q. And you have included on the exhibit all the pertinent information on each of those

wells, including the significant dry holes in the immediate area?

A. Yes, that's correct.

Q. As to the ownership of the tracts surrounding this pool, are there any other operators in the Devonian formation?

A. No, there are not.

Q. Are there any other Devonian operators or operations within a mile of this pool?

A. No, there are not.

Q. Let's go to your next exhibit, the isopach, and I would like you to review the information on this exhibit for Mr. Morrow.

A. Okay. This is Exhibit 3, which is a porosity isopach of the Devonian formation. It's the porosity or net effective porosity above the oil/water contact as identified for this pool.

The significance of this exhibit, again it shows reservoir separation from the Jenkins-Devonian Pool to the Jenkins-Northeast Devonian Pool.

Q. There's also DST pressure information on this exhibit?

A. That's correct. Each of the Devonian penetrations in this area have been posted, with

the Devonian drill stem test data to each well. And the significance of that is, it shows that the wells that are currently producing in the Jenkins-Northeast Devonian Pool have very similar pressures to the other Devonian wells in the area.

Q. This exhibit again contains the trace for your cross-section?

A. Yes, it does. It's, again, labeled A - A', west to east.

Q. Let's go to that cross-section. Would you review the information on this exhibit for Mr. Morrow?

A. Yes. This is Exhibit 4. It's a structural cross-section across the #1 well, Jenkins-Devonian Pool, and across the Jenkins-Northeast Devonian Pool. This cross-section is hung on a datum of minus 8,000 feet.

It shows structural separation from the Jenkins 1 well, Jenkins-Devonian pool, and also has the most recent well posted on this cross-section, and it's the third wellbore from the right. That's the Maralo Bonds No. 1, drilled as a sidetrack directional well, as a

reentry of an original Hanson No. 1 Bonds.

This well is a Devonian completion that indicates that this Devonian Pool in question has, as our best estimate, between a 40-foot and a 60-foot oil column. This well also establishes that we have a very good Devonian reservoir present.

Q. This well was, in fact, drilled after the temporary pool rules was promulgated?

A. Yes, it was. That's right.

EXAMINER MORROW: Which one is that, now?

THE WITNESS: It's the third well from the top, sidetracked hole, labeled "Devonian completion," and it's highlighted in green.

Q. Mr. Lough, what geologic conclusions can you reach from your study of the area?

A. That the Jenkins-Northeast Pool is a separate reservoir from the Jenkins-Devonian Pool. It's a separate structure and is separated stratigraphically from the Jenkins Pool as a result of the structuring.

Q. In terms of the geologic characteristics of the pool, is it similar to the other Devonian reservoirs in this area?

A. It is.

Q. Will Maralo be calling an engineering witness to review the engineering aspects of this application?

A. Yes.

Q. Were Exhibits 1 through 4 prepared by you?

A. Yes.

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

EXAMINER MORROW: 1 through 4 are admitted.

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

EXAMINATION

BY EXAMINER MORROW:

Q. I was looking at the cross-section and wondering about the lows and highs between your control points there and how you--I assume you tied that in some way with the structural control? Is that what you did?

A. Yes, sir, we did. The isopach map and the structure map are constructed from both geological and geophysical data.

Q. So these lows between wells are taken off of here and transferred over to your cross-section?

A. That's correct. Yes, sir, they are. The line of section follows the structure map.

Q. Will the next witness give us information about the quality of the sidetrack hole, and how much it's produced?

A. Yes, sir, he will.

EXAMINER MORROW: Thank you, sir. We appreciate your testimony.

MR. CARR: At this time we call Richard Gill.

RICHARD GILL

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

EXAMINATION

BY MR. CARR:

Q. State your name for the record, please?

A. My name is Richard Gill.

Q. Where do you reside?

A. Midland, Texas.

Q. By whom are you employed?

A. By Maralo, Incorporated.

Q. What is your current job with Maralo?

A. I'm the division petroleum engineer.
Q. Have you previously testified before the Division?
A. Yes, I have.
Q. You also testified in the original case that resulted in temporary rules for this pool?
A. Yes, I did.
Q. At the time of that testimony, were your credentials as an expert witness in petroleum engineering accepted and made a matter of record?
A. Yes, they were.
Q. Are you familiar with the application filed in this case?
A. Yes, I am.
Q. Are you familiar with the Northeast Jenkins-Devonian Pool and have you made an engineering study of the pool?
A. Yes, I have.
MR. CARR: Are the witness's qualification acceptable?
EXAMINER MORROW: Yes, sir.
Q. Mr. Gill, have you prepared exhibits for presentation here today?
A. Yes, I have.

Q. Let's go to what has been marked Maralo Exhibit No. 5, and I would ask you to identify that and review it for Mr. Morrow.

A. Exhibit No. 5, there are three different pages here, and it starts off with some oil in place calculations for a couple of the surrounding fields or the nearby Devonian fields.

I did this in a effort to try to determine what would be a decent recovery factor for the production in the area. The data for both of these fields, the Crossroads South Field and the Bough Field, were data presented in hearings to the Commission for field rules for those two fields.

Running through the calculation of these, I found, based on the total field recovery to the oil in place recovery factor, of around 40 to 42 percent would be pretty decent.

The second page was stuff presented at the original hearing we had on this field on the Barnes 20 No. 1, which is the first well drilled, and I ran cases where I had assumed a productive acreage of 40 acres and came up with an oil in place of 111,000 barrels.

Applying the 42 percent recovery factor, I came up with an ultimate recovery of almost 47,000 barrels under that 40 acres.

Looking to see what it would do under an 80-acre proration unit, I came up with oil in place of 290,000 barrels. Applying the same recovery factor, I've shown an ultimate recovery of almost 122,000 barrels.

Q. And the last page of this exhibit?

A. The last page is the oil in place calculations I did on the Bonds No. 1, the last well we drilled. I ran those strictly on an 80-acre basis and, using the net pay thickness off the isopach and whatnot, came up with an oil in place of 894,000 barrels.

Using the same recovery factor of 42 percent, I show an estimated ultimate recovery of 375,000 barrels for that well.

Q. Let's move now to Maralo Exhibit No. 6 and review this for the Examiner.

A. Exhibit No. 6, the first page of that is just the production curve on the Barnes 20 No. 1. I've pencilled in our predicted decline rate of 18 percent on that curve.

The second page is the production

history on the Bonds No. 1, again, with the production decline rate drawn on.

The third page is just tabulated production for the field. It shows the Barnes No. 1 being in production in September of 1992, to date, has produced 14,500 barrels of oil.

The Bonds No. 1 came on production in April of 93, and through March of 94 has produced almost 98,000 barrels; currently producing about 250 barrels a day.

Q. And this is the sidetrack well?

A. The sidetrack well, right. The next page shows our decline curve analysis on the Barnes 20 No. 1, where I took the initial rate of 26 barrels per day and took it down to economic limit at the decline rate shown on the production curve, and came up with a remaining recovery of 38,600 barrels. Add that to the 9,000 barrels its already produced, it shows a total recovery of about 47,400 barrels.

The last page is the decline curve analysis on the Bonds which again, starting at the current rate of 250 barrels a day and taking it to economic limit at the decline rate shown on the production curve, I come up with the

remaining recovery of 310,800 barrels. Add that to the 98,000 barrels it's already produced, it shows it's going to produce an ultimate 408,574 barrels.

The significance of that, comparing that to the oil in place calculations, it shows that the Bonds, based on decline curve analysis, will produce actually a tad bit more than what we're showing an 80-acre drainage would be for that well at that location.

Q. All right. Would you identify Exhibit No. 7.

A. Exhibit No. 7 is just a little bit of pressure data that we had. The initial bottomhole pressure for the reservoir we determined from the drill stem test on the Barnes 20 No. 1, showed a bottomhole pressure of 4807 pounds.

We were unable mechanically to run a drill stem test in the Bonds No. 1, the sidetracked well, but we recently ran a shut-in bottomhole pressure in that well, that showed a current bottomhole pressure of 4699, which shows only a little over a hundred pound draw-down from the original bottomhole pressure from the field.

The current bottomhole flowing pressure in the Bonds No. 1 is 4633, which is only 66 pounds less than the bottomhole shut-in pressure, which is showing us we have an excellent reservoir capable of a tremendous amount of production.

The flowing bottomhole pressure is only 66 pounds less than the bottomhole shut-in pressure on the Bonds No. 1 which, to me, indicates we have a very prolific reservoir that is nowhere near being depleted at this point after almost a hundred thousand barrels of production, indicating that we should surely produce as much as we're predicting.

Q. Are you able to make a recommendation or estimate of what the average wells in this pool should drain, in terms of total number of acres?

A. I think the wells in the better part of the reservoir, like the Bonds No. 1, should easily produce 80 acres. The wells downdip somewhat will have water problems and may only drain as little as 40 acres. But the bonds No. 1, I think, all the evidence proves it will certainly drain 80 acres.

And I think we have several other locations that should be high enough that they'll drain 80 acres as well.

Q. Since temporary rules were adopted, you reentered and completed the Bonds?

A. That's right.

Q. What are your future development plans?

A. Our immediate plans will be for a well just north of the Bonds, an exploration unit north of the Bonds. And then, of course, depending on results there, the next location, I think, would be north of that, in the next section north, and then possibly there may be one to the section east of the Bonds as well.

Q. This is based on an assumption that you'll be developing the pool on an effective 80-acre pattern?

A. Right.

Q. Do you, in your opinion, Mr. Gill, have sufficient information now to make a recommendation to the Commission for permanent rules for the pool?

A. Yes, I do. I think the performance of the Bonds No. 1 certainly is an indication that drainage of 80 acres won't be a problem for this

field.

Q. In your opinion, would 40-acre development result in the drilling of unnecessary wells?

A. Absolutely. You would be spending twice as much money to get the same reserves.

Q. In your opinion, will approval of the application and continued development of the Northeast Jenkins-Devonian Pool, be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, I do.

Q. Were Exhibits 5 through 7 prepared by you?

A. Yes, they were.

MR. CARR: At this time, Mr. Morrow, we move the admission of Exhibits 5 through 7.

EXAMINER MORROW: 5 through 7 are admitted.

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

EXAMINATION

BY EXAMINER MORROW:

Q. Mr. Gill, on Exhibit No. 5, on the first page, did you take the total recovery from

these other pools and then just--well, go through that again.

A. The data for these other fields I took was from the data they presented at the hearing for their field rules, the public data presented. Based on that number, I calculated the oil in place for those fields, and then divided that into the actual recovery for the fields, and came up with some sort of recovery factor.

Q. That's what's been recovered to date, then?

A. Right. I think these fields are both pretty late history kind of fields, so that's pretty much what has been produced.

Q. On the next page, on the Barnes 20 No. 1, the two calculations are just based on an assumption that you would drain either 40 or 80, is that right?

A. That's right.

Q. And you've got less net pay where the well is drilled than you have on the other half-section or quarter-section?

A. Yes, sir.

Q. So this would assume this one well

would drain the entire 80, and if you had to go to 40-acre spacing, you would have to drill another well to get the drainage, is that right?

A. That's right.

Q. Why do you think it would drain 80 as well as two wells would drain 80 acres?

A. On the Barnes 20 No. 1, I believe that, based on the structure, almost 40 acres of that is probably nonproductive. It's getting downdip.

On the production tabulation, you can see it's making water at a rate of nearly 40 barrels a day, and has made water since the initial completion. So we know we're right at or very close to the oil/water contact.

Q. Your decline curve analysis apparently indicates it won't even drain 40 acres?

A. I think, based on our calculations, it will probably drain just right at 40 acres. The oil in place calculation came up with 46,900, and the decline curve came up with 47,700, but that's due to the other part of that 40 acres being downdip, and it would be wet.

Q. So, the other part of the 40 acres shown on Exhibit 5, or the other part of the 80

acres, rather, is shown as being productive but it's really not productive?

A. At this location it's not. That's right.

Q. Is there an active water drive in the pool?

A. That's what most people claim the Devonian is. Most people say it's an active water drive. There's definitely water encroaching from the bottom.

Q. Has that served to keep your pressures up?

A. I think to a big degree it will. You'll see some decline in pressures but, for the most part, you won't see a big decline.

EXAMINER MORROW: All right. Thank you, Mr. Gill.

MR. CARR: That concludes our presentation in this case, Mr. Morrow.

EXAMINER MORROW: Case 10970 will be taken under advisement.

(And the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10670, heard by me on June 9 1994.

Oil Conservation Division, Examiner

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, 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 July 18, 1994.

CARLA DIANE RODRIGUEZ, RPR
CCR No. 4