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:	)	CASE NO. 11,169
IN THE MATTER OF CASE NO. 11,169 BEING REOPENED PURSUANT TO THE PROVISIONS OF DIVISION ORDER NO. R-10,327, WHICH ORDER PROMULGATED TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE NORTH HARDY TUBB-DRINKARD POOL IN LEA COUNTY, NEW MEXICO	)	

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

February 8th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, February 8th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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Examiner Hearing
CASE NO. 11,169

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A P P E A R A N C E S

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By: W. THOMAS KELLAHIN

* * *

WHEREUPON, the following proceedings were had at 11:00 a.m.:

EXAMINER STOGNER: At this time I'll call Reopened Case Number 11,169.

MR. CARROLL: In the matter of Case Number 11,169 being reopened pursuant to the provisions of Division Order Number R-10,327, which order promulgated temporary special rules and regulations for the North Hardy Tubb-Drinkard Pool in Lea County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the original Applicant, Conoco, Inc., and I have one witness to be sworn.

EXAMINER STOGNER: Any other appearances?

How many witnesses do you have?

MR. KELLAHIN: Just one, sir.

EXAMINER STOGNER: And has that witness been previously sworn in previous cases?

MR. KELLAHIN: Yes, sir, Mr. Damian Barrett continues to be the witness.

EXAMINER STOGNER: Let the record show that this witness, Mr. Damian Barrett, was sworn in, presented testimony and had his credentials accepted in Case Number 11,459.

I remind you, Mr. Barrett, you're still under oath.

MR. KELLAHIN: Mr. Examiner, we're revisiting the North Hardy Tubb-Drinkard Pool. Mr. Barrett presented this to you back in December of 1994, and on March 8th of 1995 the Division approved the request by Conoco for special rules for the pool. It's Order Number R-10,327. The principal special rule is a 10,000-to-1 gas-oil ratio. This pool is spaced upon 40-acre oil spacing.

And Mr. Barrett is here to present to you his justification for a request by Conoco to make these rules permanent and to continue the gas-oil ratio, special rule.

He's organized his display so that the first portion of the exhibit book contains copies of those relevant exhibits from the prior hearing. And then after the green tab divider you'll have the exhibits that are new for this case.

DAMIAN G. BARRETT,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Barrett, for the record would you identify yourself again?

A. Yes, I'm Damian Barrett. I work for Conoco,

Inc., as a reservoir engineer in southeast New Mexico. I reside --

Q. Yes, sir, if you'll turn to the exhibit book, to the first exhibit page, mine starts with what is numbered Exhibit 2. Is yours done that way?

A. That's correct.

Q. All right, sir. What are we seeing when we look at Exhibit 2?

A. Exhibit Number 2 is a map of the Drinkard formation with the producing wells and the offsetting pools to the Hardy 36 State. And the purpose here is to show the different pools that surround the Hardy 36 State and their limiting GORs, all of which have been changed to something greater than the standard of 2000.

Q. For wells in the North Hardy Tubb-Drinkard Pool, are we still dealing with wells in Section 36?

A. Yes, we are.

Q. The pool has not been expanded to extend beyond the original Section 36?

A. That's correct.

Q. Within the current pool, you originally presented a request that had three wells; you had the Number 1, the Number 3 and the Number 7 well?

A. That's correct.

Q. All right. You've got the map on the Drinkard.

Show us your map on the Tubb formation and the pools in the Tubb formation in this vicinity. If you'll turn to Exhibit 3 and let's look at that.

A. Okay. Again, Exhibit 3 is the same type of a map, showing the Tubb producers and their various pools surrounding the Hardy 36 State, the Hardy North Tubb-Drinkard Pool, again with GORs that are higher than the standard 2000 GOR.

Q. All right, turn to Exhibit -- These are from the prior hearing, and that's why they're not complete sets. You've simply taken out those exhibits from the prior hearing that were useful to you in refreshing the Examiner's recollection?

A. That's correct.

Q. So we're moving now to Exhibit 8 from the prior hearing?

A. That's correct.

Q. What are you showing here?

A. This is the cumulative Drinkard production from the offsetting analogous pools that we just showed you the map of. And what we're seeing here is the GORs that are plotted from each of those different pools, based on the well data in those pools. And we're showing at the red line, on the 50-percent line there, pointing to what a typical well would be, which would be a 10,000 or greater

GOR.

Q. All right. Let's go now to Exhibit 10 from the prior case.

A. Exhibit Number 10 is showing, again, the offsetting pools that have varying wells. And what I've tried to show here, that you can have a high-structure Tubb well that will have a GOR that's low, and you can have a high-structure Tubb well that has a GOR that's high. You can do that with a low-structure well also, again for the Tubb, low GOR, high GOR.

The same with the Drinkard. You can be high or low on structure for any given well, and have a high or a low GOR.

And this is just showing that structure doesn't always have everything to do with the GOR being high or low.

Q. Why is that important to you as an engineer?

A. It's important in that it can be not real clear sometimes as to whether you might have a gas cap or something else going on in the wellbore that might cause you to have a higher GOR.

Q. All right. If the pattern here had been consistent where the higher structural wells had higher GORs, then you would be concerned about a gas cap, you might make further investigation as to whether or not you

needed to control gas withdrawals in order to preserve reservoir energy to get the oil production?

A. That's correct.

Q. And here you have enough information to say that that is not the situation?

A. That's correct.

Q. All right. Exhibit 11 from the prior case is what, sir?

A. This is the economics that we had run at the point in time that we came to hearing before on the flow streams that we had at that point in time. And what we're showing here is that a Tubb single well was producing at the allowable with a low GOR and a very good net present value of $913,000.

Q. The issue, then, was whether or not it would be appropriate to combine the Tubb and the Drinkard into one pool?

A. That's correct.

Q. And you found in the prior study that that was appropriate?

A. Correct.

Q. The vertical limits for the pool should include both of those formations?

A. That's correct.

Q. All right. Does that continue to be the answer

to --

A. Yes, it has.

Q. Let's turn to Exhibit 13 and have you identify and describe that.

A. Could I also show back on Exhibit Number 11 --

Q. Yes, sir.

A. -- there's another important point here.

With the Drinkard single, it shows that it's not economic, but there's also the point that it was making 284 MCF a day. And with that -- It was making oil and gas out of the Drinkard zone, but with a 2000 GOR we would not be able to add that to the Tubb zone.

So it was important to increase the GOR here, because producing the Drinkard as a single was not economic, or dualing the Tubb and the Drinkard was not as economic; it's just the Tubb single, all by itself.

So really, the answer was the combined, along with the increased GOR, so that we could maximize recovery from the reservoir and prevent waste.

Q. Exhibit 13?

A. Exhibit Number 13, again, is from the previous hearing. It's basically a well, the Britt B Number 10 in the Tubb. It's in the offset pool to the north of the North Hardy Tubb-Drinkard.

We're showing oil and gas in the top portion of

the curve, the GOR in the middle, the bottomhole pressure in the bottom, and this well was an allowable 60-barrel-of-oil-per-day well for about three years.

And what we're showing here with this data is that this was a textbook example of a solution gas drive reservoir. We have PVT data that showed when we reached bubble-point pressure at 2373 the GOR at that point in time increased, as would happen in a solution gas drive reservoir.

Q. All right, sir.

A. And I guess, again, the purpose for this is to show that our offset is the same kind of reservoirs that we have on the North Hardy Tubb-Drinkard solution gas drive reservoirs.

Q. All right, sir. Then Exhibit 14?

A. Exhibit Number 14 is the well test by formation that we had at that point in time again. And the main point again here is that the Drinkard had low rates, that the economics again said, by itself, wouldn't want to go after that. But with the gas of 362 MCF a day, we could not add that to the 208 MCF per day out of the Tubb and still stay below a 2000 GOR. So we needed the increased GOR to produce the two and prevent waste.

Q. You have test data on the Number 3 and the Number 1. What about the 7?

A. At that point in time, we had not tested the Number 7 in the shallow because it was a deep well.

Q. All right, sir. Let's turn now to the new information.

If we'll look at the presentation for today's case, we're going to start with the reopened case number and we'll start with Exhibit 1. If you'll find that display, let's talk about the color codes so we understand what you're showing us.

A. Okay, this is a Tubb structure map showing the high point on structure as the light brown or -- I'm not sure exactly what color you'd call that. But the contour that encompasses the Number 1 and Number 2 wells, Hardy 36 Number 1 and Number 2, that's high on structure. And as the colors grade into a darker color and blue, that's where you go lower off structure.

Q. It also shows that you've added the Number 2 well, the Number 4 well and, way up there in the northeast corner, the Number 18 well?

A. That's correct.

Q. Explain for us why you twin the Number 2 well. See how close those wellbores are together?

A. That's correct. In the Number 1, it was our discovery well for the lease in the deep, the McKee and the Ellenburger. We also saw good indications on electric logs

and mud logs that the Tubb and the Drinkard both would be a good reservoir to go after.

Because of the deep, that's why we decided to drill the Number 3 well next for our Tubb and Drinkard discovery.

We then went back after such good results in it, went back and tested the Number 1. We had 7-inch casing there, attempted to dual the Tubb and Drinkard -- or the Drinkard in the Number 1, with the deep zone, and it just wouldn't work. We just had too many troubles to keep both of them going.

Q. All right. Do you find any information since you last testified on this case that's inconsistent with the conclusions you reached in the prior case?

A. No, I don't.

Q. Everything continues to confirm your original opinions?

A. That's correct.

Q. 10,000-to-1 gas-oil ratio is appropriate and necessary, that this is a traditional solution gas drive reservoir?

A. That's correct.

Q. And that as we move below the bubble point of the reservoir pressure, then the gas-oil ratio takes off?

A. That's correct.

Q. And there's nothing you can do about that?

A. That's right.

Q. All right. Exhibit Number 2?

A. Okay, this is again a production plot showing the oil and gas in the top portion on a daily rate. In the bottom portion of the graph it's the GOR for the Hardy 36 State Number 3 well. This -- We're going in chronological order as these wells were drilled. It's the Number 3 well. That was our discovery of the Tubb and Drinkard for this lease.

With that, you see a higher GOR at the very start of the graph in June of 1994. The reason for that high GOR at that point in time is because the well was cleaning up, and our oil had not come on line because of our stimulation. We fracture-stimulate these wells.

With this well under a 2000 GOR, we would have had to choke this well back from day one to -- I'm sorry, not from day one. It took a while before we exceeded the 2000 GOR, but it was an allowable oil well. It would have taken just a few months before we would have exceeded that 2000 GOR.

Q. Exhibit Number 3?

A. This is the Hardy 36 State Number 1 Drinkard test that we mentioned. This was the deep well that we discovered the McKee and Ellenburger in.

After we drilled the Number 3 and had such good results, we decided to test the Number 1 and dual that wellbore. We had so many problems with the dual that it just wasn't economic to continue that way, and decided at that point that we would twin this with the Number 2 at a later time.

Q. Exhibit Number 4?

A. This is the Number 7 well. Again, the production characteristics of it, it's on the west side of the lease. I don't know what else to say.

Q. Not useful information with regards to making a decision about this case?

A. That's correct.

Q. All right. Exhibit Number 5?

A. Now we go to the Hardy 36 State Number 2 well. This is the twin to the Number 1 well, the one that we attempted the dual test earlier on.

It started out from day one with a high GOR, and that's the purpose of continuing with that exhibit from the previous hearing, showing that you can be high on structure or low on structure and have an anomalous well that has a high GOR, and we feel like this is one of those wells, at a high GOR from day one.

However, it's just a diagonal offset to the Number 3 well and is difficult to explain why such a

difference with the GOR, especially since there's very little difference in structure between the two.

I'll point out that this was -- it started out as an allowable -- the gas -- we were at allowable on the gas, using the 10,000 GOR. You can see there in May of 1995 it was above when it was -- real close to 1420 MCF a day, which is what the gas allowable would be here.

Q. All right, sir. Let's look at Exhibit 6.

A. Exhibit Number 6 is very important. On that Number 2 well, we decided that we needed to at least attempt to curtail or try to decrease that GOR.

And what this is showing is, as we restricted the choke size in the wellhead, that the gas rate would fall off. It wasn't significant. But as we did so, we decreased the oil production from 33 barrels of oil per day down to three barrels of oil per day. And at that low rate, we still were not able to get down to a 2000 GOR. The 2000 GOR would limit us to 284 MCF a day, and the wellhead would freeze off and we couldn't produce the well.

Q. Your depth bracket allowable, you're on what? 40-acre spacing?

A. Forty-acre spacing.

Q. You get 142 barrels a day on 40?

A. That's correct.

Q. And if you would have had a 2000-to-1 GOR, it

would have been the 284 MCF a day?

A. That's correct.

Q. At the 10,000 to 1 it's obviously -- what? 1.4 million?

A. Correct.

Q. At 1.4 million, that would -- Under the current 10,000-to-1 GOR, you're not constrained with the gas limit --

A. That's correct.

Q. -- for this well, on this test day?

A. That's correct.

Q. All right. But what it does show you as you continue to choke back the well, the well simply doesn't perform well?

A. That's correct.

Q. It likes the open choke setting, and it's at its most efficient rate where it maximizes its oil recovery in relation to gas recovery at those higher choke settings?

A. That's correct.

Q. All right. Is that characteristic of the other wells, or is this unique only to the Number 2 well?

A. No, that is characteristic of the other wells. It's happened on the Warren Unit and in other places also where you're seeing with the solution gas drive, as you start choking it back the oil will decrease.

Q. All right, let's turn to Exhibit 7. Identify and describe that display.

A. This is the Hardy 36 State Number 4 -- it's the next well we drilled -- again with oil, gas, GOR and bottomhole pressure information.

Again, we were close to an allowable well in the Tubb only. With the 2000 GOR we would have to choke this well back, and again the oil rate would have dropped off in this well also.

Q. Okay, Exhibit 8?

A. This is the Hardy 36 State Number 18. It's the last well that we have currently drilled. It was an allowable well from day one. It still is on the oil production at 142 barrels of oil per day.

The GOR, as you can see in the middle, started out below 1000 and has continued that way until this last month. At that point in time, we have taken some PVT data on this well that shows that the bubble-point pressure is 1605 p.s.i. We took a buildup in January when that GOR was increasing, and sure enough, we are starting below the bubble point, which is typical of a solution gas drive reservoir. Once you start below that bubble point, the GOR increases, and that's exactly what it did.

Q. All right, sir, and finally Exhibit 9?

A. The last exhibit is the PVT data that we obtained

on that well, again just showing original reservoir pressure, the bubble-point pressure of 1605 p.s.i. and the initial GOR of 619.

Q. Any indication to you that the wells in the North Hardy Pool here in this section are any way connected with any of the other pools for those formations?

A. No, that's another purpose behind that structure map that we have as the first exhibit. It shows the structure dropping off, and there have been some other dry holes between the offsetting pools.

Q. So everything since the last hearing continues to confirm that this is a separate pool from those other Drinkard and Tubb pools?

A. That's correct.

Q. All right. What's your recommendation to the Examiner, Mr. Barrett?

A. The recommendation would be to make permanent the 10,000-to-1 GOR and allow us to continue to produce at that rate.

MR. KELLAHIN: That concludes my examination of Mr. Barrett.

We move the introduction of his Exhibits 1 through 9.

EXAMINER STOGNER: Exhibits 1 through 9 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Barrett, is there any plans or is there any other wells being drilled in this pool presently?

A. Yes, there is, the Number 19 is being drilled as we're speaking, one location south of the Number 18.

Q. And what's the status of that well at this time?

A. I'd say roughly we're probably at 4000 feet on the drilling, 4000 to 4500.

Q. And it's south of which well?

A. It's south of the Number 18 and due --

Q. Oh, Number 18.

A. Correct. -- due east of the Number 3.

Q. Now, the subsequent well was drilled after the original well. I guess that was the Hardy 36 Number 1, was it?

A. That was the deep well.

Q. That was the deep well.

A. Right. The discovery for the Tubb and Drinkard was the Number 3 well.

Q. The Number 3 well. The subsequent wells drilled since then, have they been perforated in both the Drinkard and Tubb formations?

A. That's correct, except for the Number 18.

Q. The Number 18. And that had perforations where?

A. In the Tubb.

Q. Just in the Tubb?

A. Correct.

Q. Any particular reason why?

A. The Drinkard porosity did not appear to be quite as good in the Drinkard formation on the Number 18 well.

Q. Was that determined from logs or --

A. From logs.

EXAMINER STOGNER: Any other questions of this witness?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: You may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Does anybody else have anything further in Reopened Case Number 11,169?

Then this case will be taken under advisement.

(Thereupon, these proceedings were concluded at 11:25 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11162 (Reopened) heard by me on 8 February 1996.

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 February 17th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998