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. 11,798
APPLICATION OF COLLINS AND WARE, INC., FOR SPECIAL POOL RULES, LEA COUNTY, NEW MEXICO	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

June 12th, 1997

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, June 12th, 1997, 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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I N D E X

June 12th, 1997
Examiner Hearing
CASE NO. 11,798

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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:

RAND L. CARROLL
Attorney at Law
Legal Counsel to the Division
2040 South Pacheco
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

* * *

WHEREUPON, the following proceedings were had at 10:24 a.m.:

EXAMINER CATANACH: At this time we'll call Case Number 11,798.

MR. CARROLL: Application of Collins and Ware, Inc., for special pool rules, Lea County, New Mexico.

EXAMINER CATANACH: 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 and Sheridan. We represent Collins and Ware, Inc., and I have one witness.

EXAMINER CATANACH: Will the witness please stand to be sworn in?

(Thereupon, the witness was sworn.)

BRENT LOWERY,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Brent Lowery.

Q. And where do you reside?

A. I reside in Midland, Texas.

Q. By whom are you employed?

A. My employer is Collins and Ware, Inc.

Q. And what is your position with Collins and Ware?

A. I'm an operations engineer.

Q. Mr. Lowery, have you previously testified before this Division?

A. I have.

Q. At the time of that testimony, were your credentials as a petroleum engineer accepted and made a matter of record?

A. They were.

Q. Are you familiar with the Application filed in this case on behalf of Collins and Ware?

A. Yes, sir, I am.

Q. And are you familiar with the development of the Tubb formation in the East Warren-Tubb Pool and the surrounding area?

A. Yes, sir.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER CATANACH: They are.

Q. (By Mr. Carr) Mr. Lowery, would you briefly summarize for Mr. Catanach what it is Collins and Ware seeks with this Application?

A. Collins and Ware seeks adoption of permanent special pool rules and regulations for the East Warren-Tubb Pool which provide for a special limiting gas-oil ratio of

6000 cubic feet of gas for each barrel of oil produced.

Q. When was the East Warren-Tubb Pool created?

A. The East Warren-Tubb Pool was created by Order Number R-9467 on March 1st of 1991.

Q. And the name of the pool was --

A. -- subsequently changed to the East Warren-Tubb Pool.

Q. Let's go to Exhibit Number 1. Would you identify this and review it for Mr. Catanach?

A. Exhibit Number 1 is a plat with the East Warren-Tubb field limits highlighted in yellow, and the well locations spotted on the map are all wells that are produced from the Tubb. And included on that are cumulative production through August of 1996 of wells from the Tubb Pool.

Q. This plat also shows the gas-oil ratios for Tubb wells in the area?

A. Yes, sir, it does.

Q. There are a number of Tubb wells in Sections 26 and 27. In what pool are those wells actually completed?

A. The wells in Sections 26 and 27 are in the Warren-Blinebry-Tubb Oil and Gas Pool.

Q. And that abuts the pool that's the pool in question in this particular case?

A. And also shown on the exhibit is a trace for a

cross-section--

Q. Why don't we go to the cross- --

A. -- that will be Exhibit 2.

Q. Okay, why don't we go to that cross-section now, and I would ask you to explain to Mr. Catanach what this exhibit shows.

A. Exhibit Number 2 is just a cross-section --

Q. Just a second. Okay.

A. Exhibit Number 2 is a cross-section of wells in the East Warren-Tubb Pool, as outlined on Exhibit 1. The top log sections are porosity logs, the bottom log sections are resistivity type logs.

This exhibit, really, is to serve as a type log for the field, but it shows a couple of different things. One is the vertically stratified, horizontally discontinuous nature of the field, and it shows significant variations in porosity from well to well.

Q. Okay. It's not possible to track the individual porosity stringers when you look at the cross-section, is it?

A. Some of the larger ones can be, many of the smaller ones cannot be.

Q. Do you see substantial porosity variations well by well?

A. Yes, sir, I do.

Q. If you would keep out Exhibit Number 1, the area shaded in yellow is the East Warren-Tubb Pool, I believe you testified?

A. Yes, sir, it is.

Q. What are the rules that govern development in that pool?

A. The current rules that govern development in the pool are statewide rules, which are 40-acre spacing for oil wells and a depth bracket allowable of 142 barrels of oil per day, with a limiting gas-oil ratio of 2000 to 1.

Q. So what you're authorized to produce, then, would be about --

A. It's 284 MCF a day, based on 142 barrels of oil per day and 2 MCF per barrel.

Q. In the adjoining pool, the Warren-Blinebry-Tubb Oil and Gas Pool in Sections 26 and 27, what rules govern the development in that pool?

A. The governing rules in that pool are 40-acre spacing for oil wells, and there is no allowable restriction on liquid or gas.

Q. So there's no depth bracket allowable in that pool?

A. No depth bracket allowable or --

Q. And no gas-oil ratio?

A. And no GOR limit.

Q. Do you have the order number for those rules?

A. Yes, sir, the -- It's Rule Number 5.

Q. And were they adopted by Order Number R-9497?

A. Yes, sir, they were.

Q. Why is Collins and Ware seeking an increase in gas-oil ratios for this pool?

A. We recently completed two wells in the East Warren-Tubb Pool that produce in excess of the GOR limit of 2000 to 1.

Q. And which wells are those?

A. The Payday Number 1, which first produced on March 1st of 1997 and as of June 5th had a gas-oil ratio of 4,655 cubic feet per barrel.

Q. And the other well?

A. And the M&M Number 1, which first produced on March 23rd of 1997, as of June 5th, 1997, had a GOR of 12,496 cubic feet per barrel.

Q. So in essence what we have is, in the East Warren-Tubb field we have wells that are offset by the pool to the south and west in which there's no GOR and no depth bracket allowable?

A. That's correct.

Q. Let's go now to Collins and Ware Exhibit Number 3. Would you identify that, please?

A. Exhibit Number 3 is a tabulation of various

parameters for every well that is produced from the Tubb formation, shown on Exhibit Number 1.

The highlights of this exhibit include cumulative liquid and gas production for these wells, with the calculated cumulative gas-oil ratio.

Also included on this exhibit, further to the right, are annual production through October of 1996 for the year of 1996, and a calculated GOR for production from that year.

And at the bottom of the exhibit, the cumulative GOR for all wells on the plat is calculated as 12,005 standard cubic feet per barrel. And the annual gas-oil ratio for 1996 production of wells in the area, the cumulative GOR for those is 7961 cubic feet per barrel.

Q. Mr. Lowery, will the requested gas-oil ratio of 6000 to 1 solve problems that Collins and Ware is currently experiencing with wells it is operating in this pool?

A. Yes, sir, I believe it will.

Q. And that's because when you take that allowable, in fact, you're going to get to a production rate that will keep you from being allowable-restricted; is that right?

A. Yes, sir, that's correct.

Q. How are you currently producing the Payday and M&M wells?

A. Both wells are flowing. The Payday Number 1 is

flowing out at 16/64 -- or, excuse me, 14/64 choke, with roughly 1000 pounds of flowing tubing pressure. And the M&M Number 1 is producing with a 17/64 choke. It also has a flowing tubing pressure of about 1000 pounds.

Q. What is the reservoir drive mechanism in the pool?

A. This is a solution gas drive reservoir.

Q. Is this reservoir rate-sensitive?

A. No, sir, it doesn't appear to be, by virtue of the fact that these wells historically have produced at a relatively high GOR, and they've produced at a high GOR even with the small drawdown.

Q. When we look at the logs on the wells in the pool, you have a number of discontinuous stringers, do you not?

A. Yes, sir, we do.

Q. Just physically, is there a potential for the development of a gas cap in the reservoir?

A. Just from the physical geometry of the pay stringers in this well, a significant gas cap, secondary gas cap, doesn't appear that it could be formed.

Q. Will approval of the increased gas-oil ratio, in your opinion, result in a waste of reservoir energy?

A. I don't believe it will.

Q. Could you identify what has been marked Collins

and Ware Exhibit Number 4 and review that for Mr. Catanach?

A. Exhibit Number 4 is a tabulation of monthly production for each well in the Warren-Tubb East Pool. This also shows the calculated gas-oil ratio by month, and also accumulated gas-oil ratio at the bottom of each box.

Review of the data indicates that most wells produce in excess of the 2000-to-1-GOR limit, and wells that have higher cums on liquid production produce significantly more than the 2000-to-1 gas-oil ratio.

But it does show that gas-oil ratio varies significantly from well to well.

Q. When we look at this, in fact, there are only two wells on the exhibit that have a GOR of less than 2000 to 1; isn't that right?

A. That's correct.

Q. And when we compare the location of these wells, like the Federal 24 Number 1 and the Kyte Number 3, we're offset -- our Collins and Ware wells are offset by wells with substantially higher GORs than 2000 to 1?

A. That's correct.

Q. Let's move to Exhibit Number 5. What is this?

A. Exhibit Number 5 is a tabulation of daily estimated producing rate on the Collins and Ware Payday Number 1 and the M&M Number 1. It lists barrels of oil per day produced, MCF of gas per day, barrels of water per day,

and a calculated gas-oil ratio on a daily basis, and the flowing tubing pressure is also listed there.

And this is intended to show that -- You know, if you'll notice the shut-in tubing pressures when the wells have been shut in, it's roughly 1700 pounds per square inch gauge. And the flowing tubing pressures, in general, are in the 1000-pound to 1200-pound range, yet we produce with a significantly higher gas-oil ratio than the 2000 to 1, even with little drawdown. And this would indicate that the properties of the reservoir fluids dictate that we produce at a higher gas-oil ratio.

Q. Is Collins and Ware Exhibit Number 6 an affidavit confirming that notice of this hearing has been provided to affected interest owners in accordance Division rules?

A. Yes, sir, it is.

Q. And to whom was notice provided?

A. Notice was provided to all operators in the East Warren-Tubb Pool and all operators of Tubb wells within one mile of the boundaries of the East Warren-Tubb Pool.

Q. Does Collins and Ware have any further development plans for this reservoir?

A. Yes, sir, we've drilled two west offsets to the M&M Number 1 and Payday Number 1 that we have not completed the Tubb, and we're moving a rig tomorrow to spud a northeast offset to the M&M Number 1. And as soon as we

finish drilling that well, we'll drill a north offset to the M&M Number 1. There are shallower horizons out here that we're able to produce from in case the Tubb doesn't show up, but we're continuing to develop the field or define the limits of it.

Q. In your opinion, will approval of this Application and the change in the -- or the adoption of special pool rules for the East Warren-Tubb Pool be in the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes, sir, I think it will be.

Q. Were Exhibits 1 through 6 either prepared by you or compiled at your direction?

A. Yes, they were.

MR. CARR: At this time, Mr. Catanach, I would move the admission into evidence of Collins and Ware Exhibits 1 through 6.

EXAMINER CATANACH: Exhibits 1 through 6 will be admitted as evidence.

MR. CARR: And that concludes my direct examination of Mr. Lowery.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Lowery, the Warren-Blinebry-Tubb Pool, isn't that in a waterflood?

A. There has been some injection into it, although it's been limited in these two sections.

Q. That's operated by -- Most of that stuff is operated by Conoco, is it not?

A. Yes, sir, it is.

Q. Okay, I think that's in an area where we approved that waterflood project in the Warren-Blinebry-Tubb Pool, which would be the reason that it doesn't have an allowable GOR limit.

A. Looking at the map -- and this is from memory -- in those two sections I think there might have been a total of four injection wells, possibly six, but that's from memory. So that's, you know, in my mind, fairly limited water injection.

And also, I'd like to point out, as per Exhibit Number 3, that there's only seven wells on this map that are still producing from the Tubb formation and four of those that are in the Warren-Tubb East field. So most of the wells in Section 26 and 27, they're shut in, or at least not producing from the Tubb formation.

And also, the cumulative GOR on that production is roughly 12,000 to 1.

Q. This is the same reservoir, is it not, as what is in Section 26 and 27?

A. It appears to be, yes, sir.

Q. The producing GOR hasn't been a problem before you drilled your two new wells? It wasn't a problem before then?

A. It wasn't for us, because we didn't have any production. Historically, they have been high on other wells in the pool.

Q. Okay, these are the first two wells that you've drilled in this pool?

A. Yes, sir.

Q. Okay. Who else operates in this pool?

A. Stevens and Tull is the other significant operator. And then Mewbourne has one well. It's the well down in Section 36 that, for all practical purposes, most likely has been an uneconomic venture.

Q. As far as you know, is there any existing gas caps in this Tubb?

A. As far as I know, there are not. From the cumulative GORs in, you know, Section 26 and 27, it appears that this is just a high-GOR reservoir, relative to the arbitrary 2000-to-1-GOR statewide rule.

Q. Are you saying that you're producing from intervals that are vertically segregated in these wellbores?

A. Yes, sir.

Q. So they're not in communication?

A. At least not until we completed the wells, the large frac.

Q. Have you or -- Are you knowledgeable of any PVT data that's ever been conducted on this reservoir?

A. I'm not aware of any that's been done, at least in our wells.

Q. I believe you testified that you didn't think that producing at a 6000-to-1 GOR would waste reservoir energy. What do you base that on, Mr. Lowery?

A. In general, solution gas drive reservoirs -- in general, mind you -- they're generally not rate-sensitive.

And also, referring back to Exhibit Number 5, I believe that it shows our production -- You know, rate sensitivity would show up with high drawdowns.

You know, if we depleted the reservoir down to, you know, 200 pounds of flowing tubing pressure or, you know, bottomhole pressure that's significantly lower than what we are, and we saw an increase in GOR because of that, you know, that would indicate rate sensitivity.

But we're producing at a high GOR with the wells pinched back, with relatively little drawdown. Just based on flowing tubing pressure, we're anywhere from, you know, 30- to 40-percent drawdown, and we still have high GORs.

But without the backup of actual PVT data testing, you know, the high GOR with low drawdown would

indicate a high-GOR fluid.

And one other thing to consider also is the vertically segregated nature of the reservoir, and with multiple small stringers, you know, with the vertical -- or fracture stimulation that we assume is in a vertical orientation, would connect all of these.

And it's really -- You know, different stringers can have different fluid characteristics, different gas-oil ratios. Some might have entirely gas while others have a lower GOR oil-producing characteristic. And, you know, that can account for some of the variation that we see in producing GOR on our wells, with other wells in the field.

It's like producing 10 or 15 different reservoirs, with potentially different characteristics.

Q. Have you seen any evidence from these logs that any of these Tubb zones are just maybe gas-productive?

A. We haven't done log calculations that would necessarily show that, partially because of the resolution of electric logs and the thickness of some of these stringers. You know, to get accurate log calculations out of one- and two-foot stringers is very difficult.

Q. Did the development in this pool essentially start around the same time, around 1991?

A. The major development really didn't occur until the first part of 1996. That Gulf State Number 1 down in

Section 36 is the well that was completed in 1991 and has produced intermittently since that time.

Q. Is that the discovery well?

A. I believe it was.

Q. So all the other development has occurred relatively recently?

A. Yes, sir. In fact, on Exhibit 4, with the exception -- See, I didn't include the Gulf State Number 1. With the exception, I believe, of the DK Number 2, this represents the entire producing history to date of the Warren-Tubb East Pool.

Q. Why are the wells in Sections 26 and 27 not producing from the Tubb? Have they been depleted in here?

A. I assume they've been depleted.

Q. So development in that area was much earlier?

A. Yes, sir.

Q. Increasing this GOR, will that help any of the other operators in the pool? Are any of them restricted, as far as you know, with the current GOR?

A. They produce at higher GORs, and it would be in their benefit as well.

Q. Have you talked to any of them?

A. No, sir, I haven't.

Q. But you did notify them of your proposal?

A. Yes, sir, we did. And Stevens and Tull is a

working interest owner, I know for sure, in the Payday. I'm not sure in the M&M. But they also have an interest in our -- at least one of our wells.

EXAMINER CATANACH: Okay, I don't have anything further.

MR. CARR: That concludes our presentation.

EXAMINER CATANACH: Okay, there being nothing further in this case, Case 11,798 will be taken under advisement.

(Thereupon, these proceedings were concluded at 10:48 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11,798, heard by me on June 21, 1997.

David R. 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 June 16th, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998