STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

24 May 1989

EXAMINER HEARING

IN THE MATTER OF:

In the matter of cases called on this date and continued or dismissed without testimony presented.

CASES
9675
9109
9572
9573
9682
9683

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

21 June 1989

EXAMINER HEARING

IN THE MATTER OF:

In the matter of Case 9109 being re-opened pursuant to the provisions of Division Orders Nos. R-6129-A and R-8446, whereby the Benson-Strawn Pool was redesignated as a gas pool and developed on statewide 320-acre gas spacing units, Eddy County, New Mexico.	CASE 9109

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:	Robert G. Stovall Attorney at Law Legal Counsel to the Division State Land Office Building Santa Fe, New Mexico
For Yates Petroleum Corporation:	David R. Vandiver Attorney at Law FISK, VANDIVER & CATRON Seventh & Mahone/Suite E Artesia, New Mexico 88210
For Meridian Oil, Inc.	W. Thomas Kellahin Attorney at Law KELLAHIN, KELLAHIN & AUBREY P. O. Box 2265 Santa Fe, New Mexico 87504

I N D E X

E X H I B I T S

MR. CATANACH: We'll call now Case 9109.

MR. STOVALL: In the matter of Case 9109 being reopened pursuant to the provisions of Division Orders Nos. R-6129-A and R-8466, whereby the Benson Strawn Pool was redesignated as a gas pool and developed by statewide 320-acre gas spacing units, Eddy County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. VANDIVER: Mr. Examiner, I'm David Vandiver of Artesia, appearing on behalf of Yates Petroleum Corporation and I have one witness to be sworn.

MR. CATANACH: Any other appearances?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin & Aubrey, appearing on behalf of Meridian Oil, Inc.

I have no witnesses.

MR. CATANACH; Will the witness please stand and be sworn in at this time?

(Witness sworn.)

DAVID F. BONEAU,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. VANDIVER:

Q Please state your name, your occupation and by whom you're employed.

A My name is David Francis Boneau. I work as Engineering Manager for Yates Petroleum Corporation in Artesia, New Mexico.

Q You have previously testified, have you not, before the New Mexico Oil Conservation Division and had your qualifications accepted and made a matter of record?

A Yes, sir,

Q Have you made an engineering study of the Benson Strawn Gas Pool in response to the Division's Order R-6129-A?

A Yes, sir.

MR. VANDIVER: Mr. Examiner, are the witness' qualifications acceptable?

MR. CATANACH: They are.

Q Mr. Boneau, what does Yates Petroleum Corporation seek to show in this reopened case today?

A Yates seeks to show that the Benson Strawn Pool should remain a gas pool with 320-acre spacing. The majority of the evidence at the original hearing on this case in March of 1987 showed that the reservoir fluid is a retrograde condensate gas and the wells can drain 320 acres.

At that time the Commission ruled that the Benson Strawn is a gas pool on statewide 320-acre spacing and today, two years later the evidence is stronger than it was at that time that the Commission was right and that 320-acre spacing should be retained.

Yates will present evidence on two main points. First, the gas production rate has held relatively constant while the oil production rate has declined. This is behavior typical of a gas well.

And second, Yates will show that the drainage areas of the main wells in the field are consistent with 320-acre spacing.

Q All right, sir, now if I could refer you to Yates' Exhibit Number One and ask you to identify it and tell the Examiner what that exhibit shows.

A Exhibit One is a map showing the five producing wells in the Benson Strawn Gas Pool. The area on the map includes four sections in Townships 18 South, 19 South, Range 30 East of Eddy County, New Mexico.

The wells are indicated by the red dots on the map.

Three of the wells, Benson Deep Unit No. 1 on the map is called BDU No. 1.

Benson Deep Unit No. 4 and Benson Deep FS No. 1 are operated by Yates Petroleum. The other two wells are operated by Meridian Oil, Incorporated, and those two wells are the Benson No. 3 Federal and the Benson 34 Federal No. 1 in the east half of Section 34.

The exhibit also lists the completion date for each of the wells. It's called the start date on the map.

There is information on the cumulative production of each well and recent producing rates at each well.

The Strawn formation in these wells lies at about 10,800 feet. You can see from the production values that three of the wells are excellent wells and two are not so great.

The excellent wells are the Yates Benson Deep No. 4 in the west half of Section 3; the Meridian 3 No. 1 in the east half of Section 3; and the Meridian Federal 34 No. 1 in the east half of Section 34.

The Benson Deep Unit No. 4 has produced 690-million cubic feet of gas and 203,000 barrels of con-

densate. The current production of that well is 302 MCF per day and 12 barrels of condensate per day.

The Benson 3 No. 1 has produced a cumulative of 653-million cubic feet of gas and 82,000 barrels of condensate. It's current producing rate is 842 MCF per day and 8 barrels of condensate per day.

The newest well is the Meridian Benson 34 No. 1. It was drilled after the hearing in 1987. It's cumulative production is 352-million cubic feet and 70,000 barrels of condensate.

Currently, which is in April of 1989, it's producing 474 MCF per day and 43 barrels of condensate per day.

Those are the three excellent wells.

The Benson Deep Unit No. 1 in the south half of 33 was the discovery well. It's been a steady producer at relatively low volumes.

And the Yates Benson FS No. 1 in the east half of Section 4 has always been a very poor well.

The current production at the Benson Deep Unit No. 1 is 94 MCF per day and 5 barrels of condensate per day and the FS No. 1 in April produced 3 MCF per day and no condensate.

(Not clearly understood) the three excellent on the east side of the map.

Q Now, Mr. Boneau, if I could refer you to what's been marked as Applicant's Exhibit Number Two through Exhibit Number Five and explain what these show.

A Exhibit Number Two shows the production history of the good Yates well, the Benson Deep Unit No. 4. Gas production is shown in red and the oil production is shown in green. I believe the rate at the time of the hearing in 1987 for the well was about 500 MCF a day and 200 barrels of condensate per day.

In late 1986 the well was shut in for overproduction which was resolved at that hearing (not clearly understood) December of 1987.

The story I want to tell you is simply that the original production from the well back in 1985 was about 600 MCF a day and 300 barrels of condensate per day. At the time of the hearing it was 500 MCF a day and 200 barrels of condensate. It now is about 300 MCF a day and 12 barrels of condensate, so the gas has held relatively constant at 600, 500, 300, while the condensate has decreased from 300 to 200 and has dropped sharply, you can see on the green line, to 12 barrels of condensate per day.

The oil is going away while the gas rate is being maintained. It looks like a gas well now, whereas in 1987 it looked debatable as to what it was.

Q Now if I could refer you to (not clearly

understood.)

A Exhibit Three is the production history for the newer Meridian well, Benson 34 Federal No. 1. Again the gas is in red, the oil is in green, and I don't think it's necessary to go through all the numbers but the green oil line is declining while the gas rate has held quite constant. It's looking more and more like a gas well, also.

And the other exhibits, I guess the lawyer will call, but the point of the other -- next three exhibits is to show a similar kind of thing on the others.

Q Will you go on to Exhibit Four?

A Exhibit Four is a production history for the older of the two Meridian wells, the Benson 3 No. 1, and again the point is that the gas production in red has held relatively stable at near 1000 MCF a day, a million a day, while the oil has dropped from more than 300 barrels a day down to 12 barrels a day.

So the story on the three remaining wells is that the gas rate is holding up and the oil rate is declining (not clearly understood.)

Exhibits Five and Six are the production histories of the poorer wells and they're consistent with what we're saying only they're not as relevant.

Exhibit Five is a production history of

the Benson Deep Unit No. 1. You can see that the oil rate has declined while the gas rate has stayed up pretty much.

I guess I should say that all of these curves have a forecast out to the right, which we'll refer to later.

The story on Exhibit Five is that the oil rate has declined and the gas rate has stayed up and that well's looking to be consistent with being a gas well.

And Exhibit Six is the production history of the almost dry hole, the Benson Deep Federal FS No. 1. It doesn't produce hardly anything but it produces gas, a little gas and hardly any condensate.

So the production history of the five wells is all consistent, producing gas wells and very small oil production any more and still considerable gas production.

Q I'll call your attention to Exhibit Number Seven and ask you to identify that and describe what is shown.

A Exhibit Seven tries to summarize the production history from Exhibits Three through Six and it does it in the terms of gas/oil ratio. It's simply a comparison of gas/oil ratios in the 1987 at the time of the previous hearing with the current gas/oil ratios.

The gas rate has held relatively con-

stand while the oil rate has declined and the gas rate has (unclear).

So again, the main attention needs to be drawn to the good wells, which are the Benson Deep 34 -- the Benson Deep Unit No. 1 and the Benson 34 Federal No. 1, the GOR's for those wells which in 1987, as seen in column 4, were about 3-or-4000 at the time of the hearing. It's debatable whether they were oil or gas wells.

The GORs of those wells now are a low of 11,000 for the newest Meridian well, 26,000 for the Yates Deep Unit 4 and about 100,000 for the Benson Deep Federal No. 1.

The GORs now look like the wells are (unclear).

Q Mr. Boneau, column four, which is April, 1989, that reflects production only for that month and not the month of May is that correct?

A Yeah, columns five, six and seven are -- column five is the gas production in April; column six is the condensate production in April; and column seven is the ratio of those two strictly for the month of April and it's representative of this area.

Q Now if I could refer you to what's been marked as Yates Exhibit Number Eight and ask you to identify that and explain what that shows.

A Okay. My second argument is that the actual drainage area of the wells in the Benson Strawn Pool are consistent with 320 acre spacing.

Exhibit Eight shows the results of a calculation. my calculation of the drainage areas for the five wells in the pool.

The results are the drainage areas which are shown in the righthand column of Exhibit Eight, column seven of Exhibit Eight.

The Benson Deep Unit No. 4 has a drainage area of 334 acres.

The Benson 34 No. 1 has a drainage area of 267 acres.

The Benson 3 No. 1 is draining 427 acres.

The two poorer wells are draining smaller areas, 49 and 5 acres.

The three wells, the top three wells in Exhibit Eight produce 95 percent of the oil and gas and they have drainage acres between 257 and 427 acres. The average is 340 acres.

The drainage areas are consistent with the present 320-acre spacing. That statement has been proved and I think I should make a statement about the calculations that resulted from that information.

Columns two, three and four of Exhibit Eight are reserves for the five wells.

Column two is the reserves in million cubic feet of gas.

Column three is the reserves in thousands of barrels of condensate, and these are what I call ultimate reserves, current production plus future, ultimate production.

Column four is the oil converted to gas and so you get one reserve number in terms of the total MCF of gas.

These reserve numbers were taken from the decline curves, the forecast in Exhibits Two, Three, Four, Five and Six, is where these numbers come from.

Column five of Exhibit Eight is the feet of pay from the logs of these wells.

Column six of Exhibit Eight is porosity from the electric log of each well.

Exhibit Nine shows the details of the formula that was used to calculate the drainage area. The bottom line on Exhibit Nine states that the drainage area in acres is found by multiplying 0.118 times the reserves in millions of cubic feet and dividing by the feet of pay and the porosity.

And the body of Exhibit Nine goes

through that volumetric formula.

I used the formula in Exhibit Nine, plus the date in column four, five and six of Exhibit Eight, to obtain the drainage areas in Column Seven in Exhibit Eight. That's briefly where those numbers came from.

That really concludes my testimony and I come to two conclusions.

First, that the productive acreage (not clearly heard).

Second, the main wells in the field are draining about 320 acres each, and I think those two arguments show that it should remain a gas pool with statewide 320-acre spacing.

Q Mr. Boneau, were Yates Exhibits One through Nine prepared by you or under your direction and supervision?

A Yes, they were.

MR. VANDIVER: Mr. Examiner, I would offer Exhibits One through Nine into evidence and I have no further questions for this witness.

MR. CATANACH: Exhibits One through Nine will be admitted into evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Boneau, how -- how would you explain the initial high oil production rate?

A I think that the rates are consistent with the reservoir being a retrograde condensate gas reservoir. That means it's -- it's a gas in an oil form but lots of liquids condense out of the gas as the pressure falls so that the fluid flows into the reservoir when the reservoir is new and carries all that liquid with it. That liquid falls out at the bottom of the well and flows to the surface and you've got gas with a high oil to gas ratio or low GOR.

As the pressure falls in the reservoir, that liquid falls out in the reservoir instead of in the wellbore and does not move to the wellbore so more and more of it gets trapped in the reservoir and the original gas holds this much liquid but as time goes on not as big a fraction of the liquid goes to the wellbore and so what you see at the wellbore at the surface is the declining oil rate. While the gas continues to decline the well remains relatively steady or declines at a smaller, slower, more normal fashion.

Q Okay. Is there a fairly simple explanation why these poorer wells in the field aren't draining as

big an area?

A Well, the near dry hole doesn't have hardly any reservoir there and, you know, it's -- what reservoir there is real tight and you're just not going to get the gas to flow that way. It's going to flow preferentially towards the other wells, so that my feeling is that gas that's five acres away from the FS has a better chance to flow over to one of the better wells than it is to flow to the very tight limestone that exists in that well. Okay? Anyway, that's my answer to that question.

The FS No. 1, it was discussed in considerable detail at the original hearing, that was actually completed in the upper part of the Strawn interval, which all -- middle Strawn interval. It's not really connected and we're not going to worry about that, I hope, but it really is not connected to the reservoir that produces in the other five wells.

So it's a little bit different beast and it's not draining that big an area, and if you look at the decline curve, I've put a decline on (unclear) that really was pretty flat, to get -- when the gas production was really pretty flat, I put a pretty steep decline on it. I could have jacked that up some so as to make the drainage area bigger and, you know, I really don't know if it will drain 50 or 150 or 200 acres, but it's a slow, steady pro-

ducer and it may actually drain a larger area over a long period of time.

But my main answer is that it's not in the reservoir that we're talking about so I don't consider that a really bad problem.

Q I see. Is that middle sand present in that wellbore?

A No, it is not.

MR. CATANACH; Okay. I believe that's all I have.

Any other questions of this witness?

If not, he may be excused.

Is there anything further in this case?

MR. VANDIVER: Nothing further.

MR. CATANACH: If there is nothing further, this case will be taken under advisement and the hearing is adjourned.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9108, heard by me on June 21 1979.

David R. Catanach, Examiner
Oil Conservation Division