STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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March 22, 1993

KELLAHIN AND KELLAHIN
Attorneys at Law
P. O. Drawer 2265
Santa Fe, New Mexico 87504

RE: CASE NO. 10678
ORDER NO. R-4988-A

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Sally

Sally E. Leichtle
Administrative Secretary

cc: BLM - Carlsbad

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 CONOCO, INC.

CASE NO. 10678

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

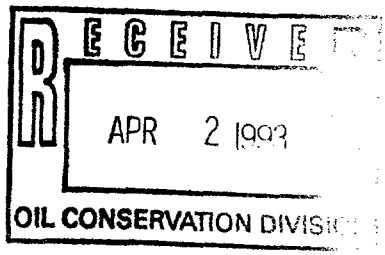
BEFORE: David R. Catanach, Hearing Examiner

March 4, 1993

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on March 4, 1993, at 11:01 a.m. at the Oil Conservation Division Conference Room, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Freda Donica, RPR, Certified Court Reporter No. 45, for the State of New Mexico.

ORIGINAL



I N D E X

March 4, 1991
Examiner Hearing
CASE NO. 10678

* * *

E X H I B I T S

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL, ESQ.
General Counsel
Oil Conservation Commission
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

FOR THE APPLICANT: KELLAHIN & KELLAHIN
117 N. Guadalupe
Santa Fe, New Mexico
BY: THOMAS KELLAHIN, ESQ.

EXAMINER CATANACH: At this time we'll call Case 10678.

MR. STOVALL: Application of Conoco, Inc. for an unorthodox gas well location and to amend Division Order No. R-4988, Lea County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin & Kellahin appearing on behalf of Conoco, Inc., the applicant, and there are two witnesses to be sworn.

EXAMINER CATANACH: Any other appearances? Will the witnesses please stand and be sworn in?

(Witnesses sworn.)

MR. KELLAHIN: Mr. Examiner, my first witness is Miss Susan Haycock. She's a petroleum geologist with Conoco, Inc.

SUSAN HAYCOCK

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

EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name and occupation?

A. Yes. My name is Susan Haycock. My title

is senior geophysicist. I work for Conoco in Midland, Texas.

Q. Have you on prior occasions testified either as a geologist or a geophysicist before the Division?

A. No, I have not.

Q. Summarize for us your education.

A. Okay. I graduated with a bachelor of science degree in geology from New Mexico State University in 1985 and then received my master of science in geology from Baylor University in 1987.

Q. Subsequent to graduation, have you been employed either as a geologist or a geophysicist in the oil and gas industry, particularly with regards to producing properties in New Mexico?

A. Yes, since 1987 I have been employed with Conoco. The first two years I worked in the Gulf of Mexico; however, since 1989 I have worked in this area of Lea County, New Mexico, doing joint reservoir studies with a petroleum engineer.

Q. Have you made a geologic investigation that affects certain spacing units that are under the operation of Conoco in the Eumont Gas Pool in Lea County, New Mexico?

A. Yes, I have.

Q. Does any of your work require you to utilize your knowledge and expertise as a geophysicist?

A. Yes, it does. However, in this particular instance, it's based on pure geology and not any geophysics.

MR. KELLAHIN: We tender Miss Haycock as an expert petroleum geologist.

EXAMINER CATANACH: She is so qualified.

Q. (By Mr. Kellahin) Let me have you turn to what is marked as Exhibit 1. Identify that display for us.

A. Okay. Exhibit Number 1 is a production plat of current Eumont producing wells. The only wells shown on this plat are currently producing from the Eumont. It does not show a few other wells within our proration unit that have produced in the Eumont in the past.

Q. What is the significance of the area that's stippled in blue?

A. That is Conoco's Lockhart B 480-acre proration unit.

Q. That is the subject of this hearing?

A. That is right.

Q. There currently exists on that spacing unit

a producing well in this pool?

A. Yes. In Section 13 in the southwest quarter there is a Conoco Lockhart B Number 9 well which is currently producing from the Eumont Gas Pool from the Penrose member of the Queen Formation. And it is currently making about 90 MCF a day. And it is the only well currently producing the 480-acre proration unit.

Q. When you look on that display in the stippled area, there is a proposed Lockhart B-11 Well. What is that?

A. Okay. This is a well that we are requesting the unorthodox location for. It is the Lockhart B Number 11 Well. Its proposed location is 760 feet from the north line, 660 feet from the east line of Section 14 in Township 21 South, Range 36 East, of Lea County, New Mexico.

Q. Pursuant to the Eumont Gas Pool rules for a nonstandard proration unit of 480 acres, what do the rules require you to be in order to have a well at a standard location?

A. As I understand it, the rules call for the well to be 660 and 990 from the outer limits of the proration unit. And in this case, we need the 660 requirement; however, our proposed location is 760

from the north line. And that's why it would be an unorthodox location.

Q. Too close to the north line by a couple of hundred feet?

A. Right.

Q. Give us an overview of the Eumont Gas Pool as it has been produced on the Lockhart nonstandard proration unit. And what has caused you to conclude that you need the unorthodox location?

A. Okay. On the Lockhart B, 480-acre proration unit, the -- in the past the only part of the Eumont Gas Pool that has produced is a Penrose member of the Queen. And the Eumont consists of the Yates, Seven Rivers and Queen/Penrose. There have been -- besides the Lockhart B Number 9, which is currently producing, there have been three other wells that also produce from the Penrose. Those wells were --

Q. Within this spacing unit?

A. Within this spacing unit. Those wells are no longer producing for the Eumont. In 1986 they were turned over to Chevron's Eunice Monument South Unit, which is a unitized Grayburg/San Andres waterflood. So those are not available for any recompletion work for the Eumont.

Q. As part of your analysis, what have you concluded as a geologist is the next best opportunity to recover additional recoverable gas reserves for the owners of this spacing unit from this pool?

A. Okay. In order to make an economically commercial well in this proration unit, we need to recover reserves from both the Penrose member of the Queen Formation as well as the overlying Seven Rivers Formation. We have concluded that reserves from the Penrose member alone would not justify an economic well.

So what we would like to show in our exhibits is that, although the Penrose extends across the proration unit, or hydrocarbons in the Penrose extend across the proration unit, the pay decreases from west to east. But more importantly, in the upper part of the Seven Rivers Formation, which is part of our objective, it decreases even more dramatically from northwest to southeast. And so the only place that we can sufficiently recover reserves from both of those intervals is in -- at this unorthodox location in the northwest corner of the proration unit.

Q. Let's turn to Exhibit Number 2. Would you identify that exhibit for us?

A. Okay. This Exhibit Number 2 is a net pay

isopach map of the Queen and Penrose. It is on a contour interval of 25 feet. Basically, what it's showing is that the net effect of pay decreases from the western portion of the map to the eastern portion of the map. That is shown by -- in the northwestern corner of the map in Section 11, there is a Conoco State D Number 16 well, which has about 198 feet of net effective pay in this interval. And you move eastward across the map and east of our proration unit in Section 13, you can see Meridian has two wells, the Gutman Number 1 and 2, and the pay has decreased down to 64 feet. What we used for criteria for net effective pay in this area is six percent porosity cutoff.

Q. This display shows some other wells in open squares within the nonstandard proration unit.

A. Yes.

Q. Identify those for us.

A. Okay. Three of those four wells -- the two wells in the eastern half of the eastern half of Section 14, the Chevron EMSU 392, which is south of our proposed location, and the Chevron EMSU Number 432, both of those wells were producing from the Penrose Formation, the Penrose member of the Queen, and were turned over to Chevron EMSU Grayburg/San

Andres flood in 1986.

If you move to the next Section over to the east in the northwest corner of Section 13, there is a Chevron EMSU Number 352 well, which is northeast of our proposed location. That well also produced from the Penrose member of the Queen before it was turned over to the EMSU in 1986.

The only other well shown besides the past and present Eumont producers is in the very northwest corner of the proration unit, the Chevron EMSU 353 well. That well has never produced from the Eumont. It has always produced from the Grayburg/San Andres. The reason I included it on this map is because it is the closest offset to the proposed location, and we used the logs for that particular well to count net effective pay and feel that that would be the most similar in reservoir characteristics to our proposed location.

Q. On this map you also show the offsetting wells. Can you identify for us the offsetting operators towards which this well encroaches?

A. Yes. To the north is Lewis Burleson, Incorporated, with the Marshall Number 1 Well, and John Hendrix Corporation with the MS Berryman Number 1 Well. Both of those wells are currently producing

from the Penrose Formation, and both are currently making about 170 MCF a day. The other operator would be offsetting to the west in Section 14, which is Chevron.

Q. Let's turn now to Exhibit Number 3 and have you identify and describe that display.

A. Okay. Exhibit Number 3 is a net effective pay isopach map for the upper portion of the Seven Rivers, which is one of our targets. The contour interval here is five feet. And, again, the criteria for net effective pay is based on the six percent porosity cutoff. This map is similar to the Queen Penrose in that the effective pay decreases from west to east, or from northwest to southeast. If you go to the northwest corner of the map in Section 11, there is the Conoco State D Number 16 Well which shows 25 feet of pay in the upper part of the Seven Rivers. And as you go to the east, especially east of our proration unit to Meridian's two wells, the Gutman Number 1 and 2, you can see that the net effective pay is nearly gone; one foot in the Gutman Number 1, two feet of pay in the Gutman Number 2.

Q. Is it the custom and practice in the pool for the operators to have multiple wells in the pool within a given proration unit?

A. Yes. However, in this particular area, in this mapped area here, the only well which produces from the upper portion of the Seven Rivers is the Conoco State D Number 16 Well in the northwest corner of the map in Section 11. All the other wells have only produced from the Penrose member of the Queen.

The upper portion of the Seven Rivers is a relatively new pay to us, and we have proved that the State D Number 16 has been productive, or can be productive in the upper part of the Seven Rivers. And that is based on a recent recompletion to that interval in January of this year.

I think the most important part of this map is, if you just concentrate on the 480-acre proration unit, you can see in the northwest corner Chevron EMSU 353 has 25 feet of pay. That correlates very well with our Conoco State D Number 16 Well to the northwest of it. However, as you move east and south of that well, the Seven Rivers pay decreases very rapidly. As you move east of the proposed location in Section 13 in the northwest corner there, the EMSU Number 352 shows only four feet of pay in the upper portion of Seven Rivers.

Q. The only currently producing pool well is the Queen producer down in the center of the spacing

unit, the Lockhart B-9?

A. Yes, that's correct.

Q. Is there a reasonable opportunity for that well to adequately produce the hydrocarbons in the pool at that location?

A. No, it can't recover enough reserves from the upper Seven Rivers. You can see by this net effective pay map that it only has four feet of net effective pay in the upper portion of the Seven Rivers. It wouldn't be worth the recompletion for that.

Q. Can you help us describe your reasonings and conclusions why you couldn't take this location and move it 230 feet to the south and thereby be a standard location?

A. Well, you can see by these contours just moving any distance south of the proposed location would be a decrease in net effective pay. You're going from a 20-foot average net effective pay at the proposed location. Anything south would be less than that, going to 15 to ten. And, again, this is just based on the best interpretation of the data, contouring it. And you can see going south to Chevron's EMSU Number 392, in the eastern portion of Section 14, there's only ten feet of pay in the upper

portion of the Seven Rivers. So any distance to the south would be a decrease in Seven Rivers pay.

Q. Do you have a cross section that will help us illustrate how you have prepared your isopach on the upper Seven Rivers pay?

A. Yes. The cross section A-A prime, which is Exhibit Number 4, the location of this cross section is shown on the upper Seven Rivers net pay isopach, which is the exhibit we just looked at, Exhibit Number 3. The cross section goes from the northwest, from the Conoco State D Number 16 Well in Section 11. It heads to the southeast to Chevron EMSU Number 353 Well, which is in the northeast corner of Section 14, goes to our proposed location of the Lockhart B Number 11 Well, and ends up in the very northwest corner of Section 13, just east of our proposed location to the Chevron EMSU Number 352 Well.

This is a stratigraphic cross section. It's hung on the top of the Seven Rivers Formation. This is an easy marker to pick. What we're showing here is the Seven Rivers, Queen, and Penrose. The yellow that you see on the tract to the right of each depth column of these particular wells is porosity greater than six percent. So any porosity greater than six percent is shaded yellow. If you concentrate

on the upper part of the Seven Rivers, this is what -- the point I'm trying to illustrate.

In the Conoco State D Number 16 Well you can see the perforations. They're noted to the right of the depth column in black. Those are the intervals that we perforated in the Conoco State D Number 16 Well in January of this year. It came on showing at over a million cubic feet of gas a day. It is currently still making about a million cubic feet of gas a day. That porosity interval correlates very nicely to the northwest corner of our 480-acre proration unit. This next well, the Chevron EMSU Number 353 is just 400 feet northwest of our proposed location. You can see that that porosity correlates very well. And we also had a drilling shoal in the upper parts of the Seven Rivers when that well was drilling. As you move eastward to Section 13 in the northwest corner, EMSU Number 352, you can see the interval between those dashed lines. We are giving it four feet of net effective pay. The porosity is nearly gone at that point. So we need to stay as close as possible to this EMSU Number 353 Well, which is 400 feet northwest of our proposed location.

Q. Were Exhibits 1 through 4 prepared by you or compiled under your direction and supervision?

A. Yes, they were.

Q. And in your opinion, will the approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, it will.

MR. KELLAHIN: That concludes my examination of Miss Haycock. We move the introduction of her Exhibits 1 through 4.

EXAMINER CATANACH: Exhibits 1 through 4 will be admitted as evidence.

Miss Haycock, what is the significance of the six percent porosity cutoff?

THE WITNESS: That's the joint geologic study, geologic and reservoir engineering study that we have done in this area, not only includes this particular proration unit, but also a much larger area. And we have found that anything over six percent porosity tends to be productive, anything less than that is usually either marginal or not productive.

EXAMINER CATANACH: As I understand it, the real need for the unorthodox location would be the Seven Rivers interval.

THE WITNESS: Yes. We can't justify on the

Penrose alone. There's two wells just offsetting us to the north, as was shown in Exhibit Number 1, the Lewis Burleson Marshall Number 1 and the John Hendrix MS Berryman Number 1 in the southeast quarter of Section 11. Both those wells are completed in the Penrose, currently making 170 MCF a day. And we just feel that that wouldn't be economic for us to drill for that.

EXAMINER CATANACH: Will your proposed well be completed in the Penrose?

THE WITNESS: It will be completed in the Penrose and the upper Seven Rivers.

EXAMINER CATANACH: Moving south to a standard location, do you lose anything in the Penrose?

THE WITNESS: If you look at the Exhibit Number 2, moving to the south of the proposed location shows that you will lose a little bit of pay in the Penrose. And you can see to the north in EMSU 353 Well, in the northwest corner of the proration unit, there is 136 feet of pay. As you move south to the EMSU 392, there's 130 feet of pay. And as you move south from there to the northeast -- to the southeast corner of Section 14, EMSU 432, there's only 91 feet of pay. So every time you move a little bit south,

you're losing pay in the Penrose as well.

EXAMINER CATANACH: What's your estimate on how much pay you'd lose in the Seven Rivers at a standard location?

THE WITNESS: Well, let's see, in a standard location we'd probably lose at least six feet of pay.

EXAMINER CATANACH: Is that significant in terms of producing rate or ultimate recovery?

THE WITNESS: Well, in my reservoir engineer's testimony, he is going to go over what he used for pay and what reserves we came up with to make this well economic for us. I believe that it would be -- we need to get as much upper Seven Rivers pay as possible. We don't have any real assurance that even at that location we will get, you know, that much pay. Everything is just based on the best contouring information that we have at this time.

EXAMINER CATANACH: Besides the Conoco State D Number 16, are there any wells to the north there complete in the Seven Rivers?

THE WITNESS: In this map area there is not. There's a well to the north of the State D Number 16 that's not shown in this map. It's in the same township and range, but it's in Section 3 to the

north. And that well was produced or is producing from the upper Seven Rivers; it's completed in the same interval as our State D Number 16.

EXAMINER CATANACH: There's probably some potential for the Lewis Burleson Marshall Well to be completed in Seven Rivers?

THE WITNESS: Yes.

EXAMINER CATANACH: I believe that's all I have.

MR. KELLAHIN: Mr. Examiner, I call Mark McClelland. Mr. McClelland is a petroleum engineer.

MARK McCLELLAND

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

EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please state your name and occupation?

A. My name is Mark McClelland. I'm a petroleum engineer and a reservoir engineer with Conoco. My title is senior reservoir engineer. I've worked with them since 1973.

Q. On prior occasions have you testified as an engineer before the Division?

A. Yes, I have.

Q. Summarize for us what it is that you and Miss Haycock have done concerning additional Eumont gas potential within Conoco operating spacing units.

A. Miss Haycock and I have worked together approximately three years now in this area, trying to develop Conoco's interest in the Eumont Pool. This is just one of several studies that we have conducted in this area. The idea behind the studies is to optimize our acreage position in the Eumont Pool, pick up additional projects so we can develop further reserves.

Q. Based upon that study, do you have engineering opinions and conclusions concerning the location of what's identified as the Lockhart B Number 11 Well?

A. Yes, I do.

MR. KELLAHIN: We tender Mr. McClelland as an expert reservoir engineer.

EXAMINER CATANACH: Mr. McClelland is so qualified.

Q. (By Mr. Kellahin) Let's use any one of the displays you like, Mr. McClelland, to give us a point of reference and have you analyze for us from your perspective as a reservoir engineer what you think you will achieve if this location is approved that you

cannot obtain if you have to move to the closest standard location.

A. Let me speak from Exhibit Number 2, which is the Queen-Penrose net pay isopach map. As Miss Haycock previously testified, our proration unit has been developed through four previous Eumont completions. These wells have made over six BCF total from this proration unit. Currently, one well is still producing, the Lockhart B Number 9, making approximately 90 MCF per day. The other three producers were unitized into the EMSU. The Penrose is productive across this entire unit, and we could drill a well to try to justify just for Penrose production.

However, later completions in this reservoir -- not all four wells were completed at the same time. The first well was in 1956; the last well was in 1980. The producing rates and pressures of the successive wells in the Penrose decrease with time, showing depletion across this proration unit. Were we to try to justify drilling a well on the Penrose alone, we would not be able to do so. The remaining reserves in the Penrose do not justify drilling at this location. What makes this location attractive in the northwest corner is the addition of the Seven Rivers pay that we recently discovered in this Conoco

State D Number 16. Seven Rivers adds both reserves and attractive rate to this location which makes it an economical project to pursue.

Q. When you look at Miss Haycock's displays, Exhibit Number 3, the mapping of the upper Seven Rivers net pay, there is a difference in thickness that she has mapped between what would be the closest standard location and the proposed unorthodox location. What will that mean to you as a reservoir in terms of ultimate recovery from the well at that location?

A. We are attributing reserves to the Seven Rivers for this well in the amount of 450 million cubic feet, .45 BCF. That's based on approximately 20 feet of pay at this location. If we lose five feet of pay, that's 25 percent of our reserves in the Seven Rivers. It takes an economical project to a marginal or uneconomical project very quickly if we move further south from this location. Ideally, we would like to drill a twin to the EMSU 353, but we do observe some setback rules from the lease line.

Q. Do you concur in her conclusions that, as a reservoir engineer, that approval of this application is one that will afford the best opportunity to prevent waste?

A. Yes, sir, I do.

Q. And will it also protect correlative rights?

A. Yes, it will.

Q. It will afford the opportunity for the owners of this spacing unit to recover hydrocarbons from the pool that they might not otherwise recover?

A. That is correct.

Q. And if you are successful in your effort, do the offsetting interest owners and operators have a like opportunity to produce hydrocarbons from the upper Seven Rivers in a similar location?

A. Undoubtedly. Lewis Burleson has a well, the Marshall Number 1, located north of our lease that shows attractive pay development in the same location in the Seven Rivers. The John Hendrix well, the Berryman Number 1, does not have a log, but it most likely has the same type of development.

Q. Let me direct your attention to Exhibit 5. Would you identify that for us, please?

A. Exhibit 5 is a location plat showing the location of the proposed Lockhart B Number 11 and the proration unit.

Q. Do you have any opinion or knowledge concerning the status of the approval of this location

insofar as it complies with surface obligations?

A. We have surveyed the location and staked the location. We've had to move it twice for flow lines. The present location is acceptable, as far as service for corrections go. We also have cleared an archeological survey at this location. We are awaiting our final approval from the Bureau of Land Management.

Q. Direct your attention to Exhibit Number 6. Would you identify and describe Exhibit 6?

A. Exhibit 6 is just a sundry notice of remedial work that we have completed in the Conoco State D Number 16. It outlines the perforated interval, the stimulation treatment, and the resulting production obtained from the upper Seven Rivers. And that well is currently flowing over a million cubic feet per day.

MR. KELLAHIN: That concludes my examination of Mr. McClelland. We move the introduction of Exhibits 5 and 6. In addition, Exhibit 7 is our Certificate of Notice to the offsetting operators, and we would move its introduction at this time.

EXAMINER CATANACH: I'm sorry, Mr. Kellahin, 5, 6, and 7?

MR. KELLAHIN: Yes, sir.

EXAMINER CATANACH: Exhibits 5 through 7 will be admitted as evidence. I don't have any questions. This witness may be excused.

MR. KELLAHIN: That concludes our presentation.

EXAMINER CATANACH: There being nothing further, Case 10678 will be taken under advisement.

(The foregoing hearing was adjourned at the approximate hour of 11:35 a.m.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10678, heard by me on March 4 1993.

David R. Catanach, Examiner
Oil Conservation Division

STATE OF NEW MEXICO)
:
COUNTY OF SANTA FE)

I, FREDA DONICA, RPR, a Certified Court Reporter, DO HEREBY CERTIFY that I stenographically reported these proceedings before the Oil Conservation Division; and that the foregoing is a true, complete and accurate transcript of the proceedings of said hearing as appears from my stenographic notes so taken and transcribed under my personal supervision.

I FURTHER CERTIFY that I am not related to nor employed by any of the parties hereto, and have no interest in the outcome hereof.

DATED at Santa Fe, New Mexico, this 26th day of March, 1993.

Freda Donica
Certified Court Reporter
CCR No. 45