CASE 5569: YATES PET. CORP. FOR AMENDMENT OF GENERAL RULES & REGULATIONS, SOUTHEASTERN NEW MEXICO

CASE NO.

5569

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5569
Order No. R-5113

APPLICATION OF YATES PETROLEUM
CORPORATION FOR THE AMENDMENT OF
CERTAIN RULES.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 8, 1975, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 28th day of October, 1975, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks the amendment of Rules 104 B.I(a) and 104 C.II(a) of the Commission Rules and Regulations to include the Wolfcamp formation under standard 320-acre gas spacing and well location requirements for Southeastern New Mexico.

(3) In the alternative, the applicant seeks special rules for gas wells completed in the Wolfcamp formation in Township 17 South, Ranges 25 and 26 East, Township 18 South, Ranges 24, 25, and 26 East, and Township 19 South, Ranges 23, 24, and 25 East, Eddy County, New Mexico, providing for 320-acre spacing and well location requirements.

(4) That in Lea, Chaves, Eddy, and Roosevelt Counties, New Mexico, a gas well completed in the Wolfcamp formation will efficiently and economically drain and develop a 320-acre tract.

(5) That the amendment of Rule 104 as set out in Finding No. (2) above will prevent the economic loss caused by the drilling of unnecessary wells; will avoid the risks arising from the drilling of an excessive number of wells, will prevent reduced recovery which might result from the drilling of too few wells and will otherwise prevent waste and protect correlative rights.

(6) That the amendment of Rule 104 as set out in Finding No. (2) above should be approved.

(7) That the South Carlsbad-Wolfcamp Gas Pool in Eddy County, New Mexico, now covered by compatable temporary special pool rules, should be included within the 320-acre spacing and well location requirements proposed by the applicant.

IT IS THEREFORE ORDERED:

(1) That Rule 104 B.I(a) and Rule 104 C.II(a) of the Commission's Statewide Rules and Regulations are hereby amended to read in their entirety as follows:

RULE 104. WELL SPACING: ACREAGE REQUIREMENTS FOR DRILLING TRACTS.

B. ACREAGE AND WELL LOCATION REQUIREMENTS FOR WILDCATS

I. Lea, Chaves, Eddy and Roosevelt Counties

(a) Wildcat Gas Wells

In Lea, Chaves, Eddy, and Roosevelt Counties, a wildcat well which is projected as a gas well to a formation and in an area which, in the opinion of the engineer or supervisor approving the application to drill, may reasonably be presumed to be productive of gas rather than oil shall be located on a drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary.

Provided however, that any such wildcat gas well which is projected to the Wolfcamp or older formations shall be located on a drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such "deep" wildcat gas well to which is dedicated more than

160 acres shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, "side" boundary is defined as one of the outer boundaries running lengthwise to the tract's greatest overall dimensions; "end" boundary is defined as one of the outer boundaries perpendicular to a side boundary and closing the tract across its least overall dimension.)

C. ACREAGE AND WELL LOCATION REQUIREMENTS FOR DEVELOPMENT WELLS.

II. Gas Wells

(a) Lea, Chaves, Eddy, and Roosevelt Counties

"Unless otherwise provided in special pool rules, each development well for a defined gas pool in a formation younger than the Wolfcamp formation, or in the Wolfcamp formation which was created and defined by the Commission prior to November 1, 1975, or in a Pennsylvanian age or older formation which was created and defined by the Commission prior to June 1, 1964, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

"Unless otherwise provided in the special pool rules, each development well for a defined gas pool in the Wolfcamp formation which was created and defined by the Commission after November 1, 1975, or of Pennsylvanian age or older which was created and defined by the Commission after June 1, 1964, shall be located on a designated drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such well having more than 160 acres dedicated to it shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, 'side' boundary and 'end' boundary are as defined in Section B I(a) of this rule.)"

(2) That the South Carlsbad-Wolfcamp Gas Pool, Eddy County, New Mexico, as previously defined and described by Commission order shall be drilled and spaced under the provisions of Rule 104 C.II(a) of the Commission Rules and Regulations as set out in Order (1) of this Order.

(3) That the effective date of this order shall be November 1, 1975.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

S E A L

dr/

# OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

DIRECTOR
JOE D. RAMEY

LAND COMMISSIONER
PHIL R. LUCERO

STATE GEOLOGIST
EMERY C. ARNOLD

October 28, 1975

Re: CASE NO. 5569
ORDER NO. R-5113

A. J. Losee
Losee & Carson
Attorneys at Law
Post Office Box 239
Artesia, New Mexico 88210

Applicant:

Yates Petroleum Corporation

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 8, 1975

EXAMINER HEARING

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IN THE MATTER OF:

Application of Yates Petroleum Corporation for amendment of certain provisions of Rules 104 C.II.(a) of the General Rules and Regulations for acreage and well location requirements for gas development wells in Southeastern New Mexico.

CASE 5569

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BEFORE: Richard L. Stamets, Examiner.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Thomas Derryberry, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant: A. J. Losee, Esq.
LOSEE & CARSON
Attorneys at Law
300 American Home Building
Artesia, New Mexico

For Union Oil Company: Sumner Buell, Esq.
MONTGOMERY, FEDERICI, ANDREWS, HANNAHS & BUELL
Attorneys at Law
350 East Palace Avenue
Santa Fe, New Mexico

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MR. STAMETS: We will call the next Case, 5569.

MR. DERRYBERRY: Case 5569, application of Yates Petroleum Corporation for amendment of certain provisions of Rules 104 C.II.(a) of the General Rules and Regulations for acreage and well location requirements for gas development wells in Southeastern New Mexico.

MR. LOSEE: A. J. Losee, Losee and Carson, Artesia, New Mexico, appearing on behalf of the applicant and I have two witnesses.

MR. STAMETS: Are there any other appearances in Case 5569?

MR. S. BUELL: Mr. Examiner, Sumner Buell, Montgomery, Federici, Andrews, Hannahs and Buell appearing on behalf of Union Oil Company of California, we will have a statement.

MR. STAMETS: Any other appearances?

MR. G. BUELL: If it please, Mr. Examiner, my name is Guy Buell representing Amoco Production Company. I'm not making an appearance in this Case, we are interested in the Robert Cox application. It appears obvious now that you will not reach that until this afternoon. May I inquire, if you know at this time, when you will reconvene after the lunch recess.

MR. STAMETS: I don't know the exact time, but it will be no earlier than one fifteen.

MR. G. BUELL: Thank you, Mr. Examiner.

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MR. STAMETS: Will all of the witnesses in this Case please stand and be sworn?

(THEREUPON, the witnesses were duly sworn.)

PEYTON YATES

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q. Would you state your name, please?

A. Peyton Yates, Yates Drilling Corporation in Artesia, New Mexico.

Q. In what capacity?

A. Engineer.

Q. Et cetera?

A. Et cetera.

Q. Have you previously appeared before the Commission and had your qualifications as a petroleum engineer accepted?

A. Yes, sir.

MR. STAMETS: The Examiner considers the witness qualified.

Q. (Mr. Losee continuing.) Would you state the purpose of the application of Yates in Case 5569?

A. Yates Petroleum Corporation seeks to amend Rules 104 B.I.(a) and 104 C.II.(a) to include formations of

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the Wolfcamp series of the Permian system under the standard three hundred and twenty acre gas spacing and well location requirements of southeastern New Mexico. Or as an alternative, Yates requests special rules for gas wells completed in the Wolfcamp in Township 17 South, Range 25 and 26 East; Township 18 South, Ranges 24, 25 and 26 East; and Township 19 South, Ranges 23 East, 24 East and 25 East, Eddy County, New Mexico, providing for three hundred and twenty acre spacing and well location requirements.

The proposed effective date is October the first, 1975. All Wolfcamp gas pools designated after that date would come under the three hundred and twenty acre spacing.

In 1964 --

MR. LOSEE: Excuse me, let me make something clear to the Examiner. In our application, if the Examiner would note, we covered the amendment of 104 C.II.(a) for development wells, and I think the publication covers both development and wildcats. The proposal also includes the amendment of the similar portion of the wildcat, that is to say, B.I.(a).

Q. (Mr. Losee continuing.) Now, Mr. Yates, when did the Commission commence state-wide spacing of the Pennsylvanian and older age systems?

A. In 1964 under Order R-2707.

Q. Now, at the time of the '64 ruling were there any Wolfcamp fields?

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A. At that time there were three Wolfcamp fields, one of which, the Bluitt Wolfcamp, was given special rules to develop on three hundred and twenty acres. The other two fields were one-well fields.

Q. And so it really didn't make any difference to those other two wells?

A. No, apparently there was no effort to either develop on one sixty or to obtain three hundred and twenty acre spacing.

Q. Okay, since enlargement of the spacing rules in southeast New Mexico in 1964, how many Wolfcamp gas fields, gas pools, have been completed?

A. There are at least sixteen additional Wolfcamp gas fields designated by Commission order, and in addition, approximately seven wells are presently classified as undesignated Wolfcamp wells. The reason I say, "at least", and "approximately" is because some of these designated wells may have recently been designated as pools and I'm not sure whether or not some of those seven may have.

Q. Have any of these additional Wolfcamp pools had special field rules permitting three hundred and twenty acre spacing?

A. Yes, at present there are five Wolfcamp gas fields that received special field rules. Some of those fields are now abandoned, but there were either five that have been

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or are presently under three hundred and twenty acre spacing or more. In fact, there were two fields that are under six hundred and forty acre spacing.

Q Please refer to what has been marked as Exhibit Number One and show what data is shown on that exhibit?

A. Exhibit Number One is a list of southeast New Mexico gas fields that are spaced on three hundred and twenty acres or more. There are five fields, the Bluitt Wolfcamp, which is on three hundred and twenty acre spacing; the Red Hills Wolfcamp on six hundred and forty acre spacings; Carlsbad Wolfcamp on three hundred and twenty acre spacing; the North Burton Flats on three hundred and twenty acre spacing; and the Fairview Mills on six hundred and forty acre spacing.

We have listed also the case numbers and the order numbers and the year that the order was issued.

MR. STAMETS: Mr. Yates, I would like to clarify one thing. Now, the pool that you show here third, the Carlsbad Wolfcamp, is that the South Carlsbad Wolfcamp?

MR. YATES: Yes, it was referred to under the Barrons under the Carlsbad Wolfcamp. I didn't know exactly whether it was the South Carlsbad or not, but, yes, I believe it is those particular wellls, the C and K Petroleum well and Pennzoil wells are South Carlsbad Wolfcamp.

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MR. STAMETS: My recollection is that this South Carlsbad is on temporary three hundred spacing.

MR. YATES: You are correct, in fact, I was going to note that all of those, I believe in 1973 and the two in 1975 rulings are all temporary spacing, the last three, and are subject to review in the time allocated in those particular orders.

MR. STAMETS: For the record, perhaps you should state that should the Commission's decision in this Case be to go to a standard three hundred and twenty acre spacing, that any necessity for re-opening testimony relative to spacing these pools should be indicated.

MR. YATES: Thank you.

MR. LOSEE: Mr. Examiner, we would at this time ask the Commission to take administrative notice of the testimony and evidence presented in these six cases shown on Exhibit One.

MR. STAMETS: The Examiner will take that into account.

Q. (Mr. Losee continuing.) Now, let's talk about the remaining Wolfcamp gas fields, other than those that are spaced three twenty or greater on a temporary or permanent basis. How many of those have only one well?

A. It would be simpler to say that there are only three that have more than one well, the Lea Wolfcamp south-

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east has two wells which were drilled in 1968, initially, the discovery. The Winchester Wolfcamp with three wells drilled in 1973 and 1974; the Rocky Arroyo Wolfcamp with three wells, 1972 and '73.

Of those three fields, only the Winchester field actually has offset wells drilled on one hundred and sixty acre spacing. The other two fields have, for all practical purposes, been developed on three hundred and twenty acre spacing or more. What has happened in these particular areas, apparently the Wolfcamp, it's in the Lea and Rocky Arroyo, and even occasionally in the Winchester, I understand is the results of a dual completion, and only in the Winchester field have the results of hearings and economic and geologic decisions resulted in a one hundred and sixty acre development. The Lea Wolfcamp and Rocky Arroyo seem to be a hundred and acre spacing more by default than anything else, there just has been no actual development on a hundred and sixty acres.

We think this point is pertinent that when you look at all of the Wolfcamp wells, gas fields, rather, in southeast New Mexico that it amounts to only one that people really attempted to develop on one hundred and sixty acre spacing. The rest are either one-well fields, by far the majority are one-well fields and those that are more than one well where an effort has been made to develop the field

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on a Wolfcamp basis, it appears that nearly everyone has come to the Commission for three hundred and twenty spacing. The economics has dictated that they come and request that.

Q. Would you refer to what has been marked as Exhibit Two?

A. Exhibit Two is just a tabulation of data from five Wolfcamp gas fields and their production.

Q. Those are all of the fields that have more than one well in it, aren't they?

A. That is correct, but I believe the Carlsbad South is not listed here. The North Burton Flat is listed, but it apparently is not on production.

Q. You mean the South Carlsbad?

A. The South Carlsbad Wolfcamp is not listed here.

Q. How many wells do you know are in that field?

A. I'll check. Two wells, a Pennzoil well and a C and K Petroleum well.

Q. And that is on temporary three hundred and twenty acre spacing?

A. That is correct.

Q. And this exhibit has the location of each of the wells in the field?

A. That is correct. It has the location of each well, the cumulative production as of one, one, seventy-five from each well and I would like to read briefly what those

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total field productions would be.

The Bluitt Wolfcamp, approximately five point six billion cubic feet; the Lea Wolfcamp, one point six billion cubic feet; the Red Hills Wolfcamp, eighteen point six six billion cubic feet, it is on six hundred and forty acre spacing, by the way. The Rocky Arroyo Wolfcamp, point five two billion cubic feet; and the Winchester one point five seven billion cubic feet. The Winchester, of course, is still on one hundred and sixty acre spacing.

Q. And from an examination of the location of each of those well, you can determine that supports your statement outside of the Winchester, all of them -- there are no other fields really developed on a hundred and sixty, no other Wolfcamp fields in southeast New Mexico?

A. That's right, Wolfcamp gas fields.

It appears that in the future if there can be no change in rules that as drilling expands throughout southeast New Mexico, that there will be more and more requests for three hundred and twenty acre spacing if the present one hundred and sixty acre spacing is maintained for the Wolfcamp gas fields.

Q. Mr. Yates, have you made a study of the question of drainage and economics comparing one hundred and sixty's to three hundred and twenty's in the Wolfcamp?

A. Yes, we have.

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Q. And that is portrayed on your Exhibit Three?

A. Yes, sir.

Q. Does that cover all of southeast New Mexico?

A. No, the data that we have used in Exhibit Three is data that we have taken from several wells that Yates Petroleum Corporation has drilled in the Wolfcamp-Cisco zone located in Township 17, 18 and 19 South, Ranges 24, 25 and 26 East. Excuse me, also Range 23.

We have some good drill stem test information. I took the drill stem test information from six wells and attempted to reach some conclusions as to the capabilities of draining three hundred and twenty acre spacing with just one well in the Wolfcamp production zones found in these particular townships and ranges.

Q. Now, before you go on with this, Mr. Yates, is it an alternative proposal of Yates in this application, if the Commission does not see fit to amend the southeast New Mexico rules, that is Roosevelt, Chaves, Eddy and Lea, to amend the rules as to the Wolfcamp in those eight townships which you just named?

A. Yes, that is correct.

Q. Okay. Please refer to your Exhibit Three and explain your calculations with respect to drainage and economics that are shown there?

A. Using an average transmissibility, which is a

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millidarcy foot per centipoise number of fourteen hundred and fifty-three, is the number that represents the capability of the reservoir to transmit or gas through the reservoir rock. We have come up with some approximate times to give the Commission a feeling of what can be expeced to be achieved in an ideal situation, an ideal reservoir situation in the particular Wolfcamp sequence that we are talking about.

The calculations show under Part Two (a) of Exhibit Number Three that the time it would take for a pressure transient to reach a three hundred and twenty acre boundary would be approximately sixty days once the well is put on production. This means that we can reasonably expect that we can achieve some drainage throughout a three hundred and twenty acre area.

We have taken the three hundred and twenty acres and worked on a circular basis with it.

Q. Now, as far as that pressure transient, the data to make up that formula was taken from six of your wells' drill stem tests?

A. That is correct, and they are recently drilled wells that we have completed or as duals and we have established some kind of a Wolfcamp-Cisco production capability.

Q. Now, I notice your calculation under Two (b) refers to the flow rate, would you explain?

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A. This is just to show that we can expect a reasonable flow rate, using some average conditions that we find in these wells. It is not going to be the flow rate that we find in any one particular well unless that well happens to be sitting in the average range of the data that I have used, but we show that using a boundry of three hundred and twenty acres, that an initial pressure of twenty-three hundred and twenty psia, a bottom-hole flowing pressure of five hundred and fifty psia, that we should be able to establish a semi-steady state condition of draining one point four million cubic feet a day. This would be an initial flow rate once the pressure transient has reached the three hundred and twenty acre boundary.

We would expect over the life of the well, of course, that the flow rate would decline, but the purpose of this is to show that we could expect a reasonable flow rate, given the average conditions that we have found in these wells. The average conditions, the millidarcy feet per centipoise at fourteen hundred and fifty-three is not that high. I feel that a fairly good number to work with in the Wolfcamp-Cisco zone and also as far as southeast New Mexico is concerned it appears to me from looking at what data we could find on other Wolfcamp fields, the transmissibility as represented here would be a minimum as compared to most Wolfcamp gas wells.

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I would think that the flow rate of one point one and a half million cubic feet a day that we find here in deeper wells with higher pressures, more reservoir push, so to speak, and the flow rates would be higher. We could reasonably expect, if we apply these same formulas to data that we would take from deeper Wolfcamp wells, to achieve at least the same kind of flow rates, and I would expect quite a bit more.

The completion history of the other Wolfcamp wells in southeast New Mexico show that as a rule one point one and a half million cubic feet a day is a minimum number, that deeper wells prove to be more prolific than the wells that we have experienced out here in the eight townships that we are discussing under the alternate proposal.

Q. Mr. Yates, have you also compared on this sheet under your case 2(c), the economics of developing the Wolfcamp on a one well versus two wells on three hundred and twenty acres?

A. Yes, we have. I would like to point out under the economics in 2(c), that in order to feel confident about projecections in a well's performance, that we took a particular well that had been producing in this eight township area and tried to take its past performance at today's cost, today's gas prices and project its remaining reserves based on the data, the bottom-hole pressure decline

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data, rather than trying to go the volumetric route.

We used the Sun Oil Antelope Sink Unit Number 1 in Section 18, Township 19 South, Range 24 East. It was completed in the Wolfcamp and I believe in 1963 after a futile completion attempt in the Morrow. Production began in 1969. Its accumulative production as of eight, one, seventy-five was one point oh six billion cubic feet.

I felt that from an engineering standpoint it would be a lot better off to use actual production data rather than try to take volumetrics on the six wells that we presented in the cases (a) and (b) and try to project their production. Although it could have been done, I feel like the Antelope Sink comparison is going to be a much more reliable indicator.

Q. Now, tell me what you mean by "before tax profit"?

A. Well, under (c) what we show are comparing one well and two wells drilled on three hundred and twenty acres. Our completed well costs as of today's prices are about two hundred and thirty-five thousand dollars if all we drilled was a Wolfcamp well, a Wolfcamp-Cisco well. I have taken the recoverable reserves as estimated from pressure decline on the Sun Antelope Sink well and achieved about one point six billion cubic feet of reserves. It looks like the productive life will be somewhere around fourteen years. It has been producing since 1969 and it seems to be a very steady

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decline, but very small decline, producing approximately four hundred MCF a day right now.

I computed using the actual production that occurred the first six years and then projected production for the remainder of the fourteen years. I computed the revenue that would occur if we were able to sell the gas at today's prices. Now today's prices is probably my greatest unknown, but I used a sixty cent price because of the -- apparently it seems to be the Federal Power Commission is setting the price in southeast New Mexico, and the latest thing I could figure out that maybe sixty cents might be a price to figure out some eccnomics on.

I computed the operating profit, what I call "before tax profit". Now this is profit simply above operating costs. I then discounted it at twelve percent to account for the time value of money and achieved a value of four hundred and fifty thousand on a one-well basis. This is without taxes. If we then applied a forty-eight percent corporate tax rate, we received approximately two hundred and thirty four thousand dollars at today's value of money, discounted at twelve percent. The completed well costs were two hundred and thirty-five thousand, leaving a ratio before tax of operating profit to investment of one point nine and after taxes of point nine nine. In other words, at today's gas prices, today's well costs and using the recoverable

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reserves of estimated by comparison to the Antelope Sink well, we would break even on an after-tax basis on recovery of the gas.

If we had to drill two wells, of course, our well costs would double to four hundred and seventy thousand dollars. Recoverable reserves would increase, the difficulty is trying to estimate how much the recoverable reserves would increase. They may increase by only a small fraction, or they may increase by quite a bit more. To be optimistic as to what two wells might add in additional reserves, I just increased it to one point nine billion cubic feet. This amounts to a nineteen percent increase, which I think is a very optimistic increase that you may achieve with two wells over one. In addition, of course, when you have two wells you should be able to drain the reservoir quickly.

The before tax operating profit as a result of two wells amounts to six hundred and two thousand dollars because of the time value of money, again this is discounted at twelve percent, and also the fact that you recover a little bit more gas under the technique that I used. The after-tax profit is three hundred and thirteen thousand dollars. The trouble with the two-well approach, although you make a little more operating profit, is that you have invested over four hundred and seventy thousand dollars. Your ratio of operating profit to investment is one point three. Your before

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taxes, again a discounted figure, your ratio after taxes is only point six four, so that you would in effect, after-tax profit, you would only recover sixty-four percent of your investment with two wells.

The results of all of this shows that there would be economic waste if we were to be required to drill two wells on three hundred and twenty acres, rather than one.

The difficulty then comes in trying to go from the area that we have a considerable amount of data on to the statewide or southeast New Mexico wide area.

I would like to point out first of all that if you are going to drill about a seven thousand foot well or a seventy-eight hundred feet, pardon me, at two hundred and thirty-five thousand dollars, if you want to drill an eleven thousand foot well to get Wolfcamp, it is going to cost you in the neighborhood of five hundred thousand dollars or fourteen thousand foot of one point one million dollars, and these last two figures were given in cases that we have asked the Commission to take under advisement in the previous three hundred and twenty or six hundred and forty exemptions given to Wolfcamp spacing on other fields.

As I mentioned earlier, we feel that the permeability and higher bottom-hole pressure will result in a higher deliverability for deeper Wolfcamp wells. We feel that there will be adequate drainage on a three hundred and twenty

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acre basis. The testimony previously given in the cases preceding ours requesting exemptions for the Wolfcamp gas fields show that the economics are such, however, that they cannot justify drilling on a hundred and sixty acre spacing and in some cases couldn't justify drilling on three hundred and twenty acre spacing.

Q. Do you have anything further, Mr. Yates?

A. No.

MR. LOSEE: No further questions of this witness. We have another witness who will testify as to the geology.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Yates, would the fact that the Wolfcamp is down a hundred and sixty acres for some period of time and a number of Wolfcamp reservoirs have been discovered in deeper drilling, Pennsylvanian horizons and then a second well was not drilled on a three twenty, would the Wolfcamp be indicative that the economics that you portrayed here pretty well exist through the southeast part of the state?

A. Yes, sir, I think that is a very good point it certainly is the case in Yates' evaluation of what they should do. The Wolfcamp-Cisco delineation or formation which our geologist will discuss in a few minutes, that we have found the Wolfcamp zone is a result of drilling for deeper production. We have in every case established deeper production, and

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we have completed the Cisco or Wolfcamp-Cisco as an alternative or a second production zone. For us to go out, as these economics show, to try to drill another well simply for the Wolfcamp, we could not justify under the present pricing system of gas and the reserves we see under the performance of that one key well.

I would like to point out that the Wolfcamp, everything below the Wolfcamp as we know, is spaced on three twenty, so if we had to drill one hundred and sixty spacing for the Wolfcamp we would have no other targets below it because we would have already drilled the three twenty looking for the deeper production.

Q. The area that you have set out in your application as the alternative has the Wolfcamp as one of the shallower depths in southeast New Mexico, is that correct?

A. That is correct.

Q. So your well costs would be more in much of the rest of the southeast part of the state?

A. That's right. It accelerates rapidly.

Q. It makes the economics much more unfavorable?

A. That's correct.

MR. STAMETS: Are there any other questions of this witness? He may be excused.

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RAY BECK

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q. Would you state your name, please?

A. Ray Beck.

Q. Are you employed as a geologist by Yates Petroleum Corporation?

A. That's correct.

Q. Have your qualifications as a geologist been accepted by the Commission?

A. They have.

Q. Please refer to what has been marked as Exhibit Four and explain what is portrayed by this exhibit?

A. This exhibit is a map showing the following: Structural attitude of the Antelope Sink zone of the Permo-Penn in solid contours of a hundred foot contour intervals. It places these relationships from the northwest to the southeast, from tight shelf rocks, then two segments of more porous relatively long and narrow volumes of concentrated basin margin bioherms, and then farther to the southeast, basinal fill deposits of tight dirty sands, silts and carbonates.

MR. LOSEE: Mr. Beck, before you go on, can you

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follow on this map?

MR. STAMETS: Yes, sir.

MR. LOSEE: Okay.

A. To continue on with the description of what this exhibit shows, wells colored with red are completed in the Antelope Sink interval of the Permo-Penn age. The double-circled wells are dually completed in the Antelope Sink interval, this is Wolfcamp-Cisco which Mr. Yates referred to earlier, the older Pennsylvanian formation, such as Strawn, Atoka and Morrow. Wells enclosed in squares are Antelope Sink zone wells whose perferations are totally within the Pennsylvanian portion of the Antelope Sink interval according to correlations with the Pennsylvanian stratigraphic cross sections prepared for the NMOCC by an industry advisory committee on vertical nomenclature. I will point this out in more detail later with the cross section.

The location of a longitudinal cross section A to A prime, which includes all of the wells completed in the Antelope Sink Permo-Penn carbonates and the location of a transverse cross section B to B prime, further on down to the right there.

Exhibit Number One shows from an aerial viewpoint that the Antelope Sink Permo-Penn carbonates produce only from the basin margin bioherm facies, in the two wiener-shaped enclosures there.

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From the Yates Number 1 City of Artesia well in Section 24 of 17, 25, shown on the righthand side of your 24, 17, 25, and heading southwest along trend and updip, wells in the bioherm facies produce gas and condensate.

Two down-dip wells to the far right, the Coquina John State and the Yates Tidwell also in the bioherm facies produced gas cut water on their drill stem test for the down-dip well.

We have had a thin section analysis done from cuttings from these wells, all of the wells from the shelf deposits, from the basin margin gas producing deposits, and from the basinal fill deposits, and we have determined that the petrography of these cuttings shows that these are biohermal type banks.

Q. Who made that study for you?

A. Doctor A. D. Janka who is professor of geology at Texas Tech University.

Q. Do you want to refer now to your Exhibit Five?

This is your cross section A A prime that covers all of the wells in the area that you have just been referring to, is it not?

A. That is correct.

Q. Explain what is shown on this Exhibit?

A. This exhibit is a longitudinal cross section from southwest to northeast, including all of the wells completed

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in the Antelope Sink interval of Cisco and Wolfcamp age.

The stratigraphic section is hung on the top of the Wolfcamp-Rake cycles. The Wolfcamp cycle deposits from the A cycle at the top to the nine cycle down further below, and the top of the lower Canyon provides excellent markers throughout this area and help to frame and correlate the more complex facies in the lower Wolfcamp-Cisco age deposits.

Within the overall Antelope Sink interval it may be seen that the occluded concentrated bioherms interval thickens and thins in the two main carbonate segments, the two wiener-shaped areas on the previous exhibit.

However, we believe that wells within each segment has lateral continuity of reservoir. The two segments are separated, probably by a pass between the Marathon Anderson State well on the lefthand side and the Yates Federal AA well.

Now, correlating off of section D to D prime, prepared by the industry advisory committee, across the sections, the top of the Pennsylvanian has been correlated into this cross section from the Yates CR well, which is just north of this cross section and into the Yates Federal CY well which is on this cross section. We have taken this top of the Pennsylvanian and called it for convenience sake, NMOCC Penn. And it may be seen that this NMOCC Penn marker

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does coincide with or fall below the top of the biohermal gas producing facies.

Yates does not question the industry advisory committee's Pennsylvanian pick, but merely wishes to show that the biohermal gas productive facies which started to build up during the upper Pennsylvanian-Cisco series, continued in favored areas to build up into the Wolfcamp series of the Permian.

In addition to that observation, the biohermal producing facies began during the Pennsyvanian. We wish to point out that most of the biohermal gas producing facies is Pennsylvanian in age as shown by this cross section, and that the majority of the perforations also shown in this cross section are within the Pennsylvanian portion of the producing facies.

Q. Are there some wells producing above and below the NMOCC Pennsylvanian?

A. Yes, sir.

Q. What are those wells?

A. The Sun Antelope Sink well on the very lefthand side is partially in the Wolfcamp and partially in the Penn, and mostly in the Penn.

The Yates Petroleum State D Key made an attempt to complete totally within the Penn, however, this well has been abandoned.

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The next well is not completed. The Marathon Anderson State well is completed totally within the Pennsylvanian.

The Yates Petroleum EF is completed totally within the Pennsylvanian portion.

The Yates Federal CX is completed totally within the Pennsylvanian.

The Yates Petroleum CZ is largely within the Pennsylvanian.

The Yates Petroleum State CY is partially Wolfcamp and partially Penn.

The Yates Petroleum Monso EK is totally within the Pennsylvanian.

The Yates Petroleum Powell DG is partially in the Wolfcamp and partially in the Penn.

The Western Oil Flint is all in the Wolfcamp, the only one that is all in the Wolfcamp.

The Yates Petroleum City of Artesia is all in the Pennsylvanian.

The Yates Petroleum Jackson has not been completed, nor has the Yates Petroleum ARCO EC in the Pennsylvanian.

Q. Please refer to your Exhibit Six which is your cross section B B prime and explain what is portrayed on this exhibit?

A. This exhibit is a transverse cross section B to

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B prime cutting perpendicularly to the trend, the producing trend, showing cyclic shift deposits to the northwest merging southeastwardly into the basin margin biohermal facies which produces, which in turn, going southeastwardly, is overlapped by basinal fill tight deposits, silts and sands and tidal lines.

And this is just to add another dimension to the previous cross section.

Q. Mr. Beck, were Exhibits Four through Six prepared by you?

A. They were.

MR. LOSEE: We move their introduction.

MR. STAMETS: These exhibits will be admitted.

MR. LOSEE: Mr. Examiner, I think I neglected to ask Mr. Yates about his exhibits and introduce them. Can I ask him this question at this point?

MR. STAMETS: That will be just fine.

MR. LOSEE: Mr. Yates, were Exhibits One through Three prepared by you?

MR. YATES: Yes, sir.

MR. LOSEE: We move the introduction of Exhibits One through Three.

MR. STAMETS: Exhibits One through Three will be admitted also.

MR. YATES: That's our direct examination.

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CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Beck, the testimony of Mr. Yates was as to the need for a three hundred and twenty acre spacing in the Wolfcamp, generally, and I would gather that the thrust of your testimony here is to the need for and is the alternative set out in your application?

A. That is true, that is the main thrust of my testimony.

MR. STAMETS: Are there any other questions of the witness?

Q. (Mr. Stamets continuing.) Oh, Mr. Beck, have you had an opportunity to look at wells at various places throughout southeastern New Mexico in the Wolfcamp formation?

A. Yes, I have.

Q. Based on your experience would you say that the application of Yates in this Case for three hundred and twenty acre spacing in the Wolfcamp formation throughout southeastern New Mexico is an appropriate application and would result in not wasting oil and gas in the Wolfcamp formation and protect the rights of the interest owners?

A. Yes, sir, I would agree to all of that.

MR. STAMETS: Any other questions of the witness? He may be excused.

Anything further in this Case?

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MR. BUELL: Mr. Examiner, on behalf of Union Oil Company we would like to add our support to the Yates? application. We think the granting of the application would avoid the drilling of unnecessary wells and think the information before the Examiner at this time shows that one well can effectively drain three hundred and twenty acres.

MR. STAMETS: Anything further in this Case

We will take the case under advisement and recess the Hearing until one thirty.

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MR. STAMETS: The Hearing will please come to order.

We did receive a telegram relative to Case 5569, which I would like to have read into the record at this time.

MR. DERRYBERRY: This is from E. F. Motter, Cities Service Oil Company. It says: (Reading.) Cities Service Oil Company recommends approval of Yates Petroleum Corporation's application in Case 5569 to amend statewide rules, 104 B.I.(a) and 104 C.II.(a) to include the Wolfcamp formation under the standard three hundred and twenty acre gas spacing and well location requirement for southeastern New Mexico.

We request that testimony and data submitted in Case 5397 be considered in support of Yates' application.

(End of reading.)

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Phone (505) 982-9212

State of New Mexico )
) ss.
County of Santa Fe )

I, SIDNEY F. MORRISH, a court reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Sidney F. Morrish, Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 5569 heard by me on 10-8, 1975.

Richard L. Stamets, Examiner
New Mexico Oil Conservation Commission

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General Court Reporting Service
825 Calle Mejia, No. 122, Santa Fe, New Mexico 87501
Phone (505) 982-9212

RECEIVED
SEP 19 1975
OIL CONSERVATION COMM.
Santa Fe

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF YATES PETROLEUM CORPORATION FOR AN AMENDMENT OF RULE 104-C.II(a) FOR ACREAGE REQUIREMENTS FOR GAS DEVELOPMENT WELLS IN LEA, CHAVES, EDDY AND ROOSEVELT COUNTIES, NEW MEXICO.

CASE NO. 5569 ~~5561~~

APPLICATION

COMES YATES PETROLEUM CORPORATION, by its attorneys, and respectfully states:

1. Applicant is the owner of the gas rights in the Wolfcamp formation underlying portions of Lea, Chaves, Eddy and Roosevelt Counties, New Mexico.

2. Applicant proposes the amendment of Rule 104-C.II(a) as follows:

> "Unless otherwise provided in special pool rules, each development well for a defined gas pool (i) in a formation younger than the Wolfcamp formation, or (ii) in the Wolfcamp formation which was created and defined by the Commission prior to October 1, 1975, or (iii) in a Pennsylvanian age or older formation which was created and defined by the Commission prior to June 1, 1964, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.
>
> "Unless otherwise provided in the special pool rules, each development well for a defined gas pool (i) in the Wolfcamp formation which was created and defined by the Commission after

> October 1, 1975, or (ii) of the Pennsylvanian age or older which was created and defined by the Commission after June 1, 1964, shall be located on a designated drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such well having more than 160 acres dedicated to it shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, 'side' boundary and 'end' boundary are as defined in Section B I (a) of this rule.)"

The amendatory language is underlined.

3. In the alternative, applicant proposes that the amendment to Rule 104-C.II(a) proposed in 2 above, be limited to Township 17 South, Ranges 25 and 26 East, Township 18 South, Ranges 24, 25 and 26 East, and Township 19 South, Ranges 23, 24 and 25 Last, Eddy County, New Mexico.

4. A gas well located in the Wolfcamp formation in Lea, Chaves, Eddy and Roosevelt Counties, New Mexico, will drain a normal 320-acre spacing unit.

5. The approval of the proposed changes in Rule 104-C.II(a) will prevent economic loss to the operators in southeastern New Mexico caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells by said operators, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Commission enter its order amending Rule 104-C.II(a) as set forth in paragraph 2 above, or, in the alternative, amend Rule 104-C.II(a) as set forth in paragraph 3 above.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By: _____

LOSEE & CARSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

DOCKET MAILED
Date 9/26/75

SEP 19 1975
OIL CONSERVATION COMM.
Santa Fe

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

| | | |
|---|---|---|
| IN THE MATTER OF THE APPLICATION OF YATES PETROLEUM CORPORATION FOR AN AMENDMENT OF RULE 104-C.II(a) FOR ACREAGE REQUIREMENTS FOR GAS DEVELOPMENT WELLS IN LEA, CHAVES, EDDY AND ROOSEVELT COUNTIES, NEW MEXICO. | : | CASE NO. 5564 ~~5561~~ |

## APPLICATION

COMES YATES PETROLEUM CORPORATION, by its attorneys, and respectfully states:

1. Applicant is the owner of the gas rights in the Wolfcamp formation underlying portions of Lea, Chaves, Eddy and Roosevelt Counties, New Mexico.

2. Applicant proposes the amendment of Rule 104-C.II(a) as follows:

> "Unless otherwise provided in special pool rules, each development well for a defined gas pool (i) in a formation younger than the Wolfcamp formation, or (ii) in the Wolfcamp formation which was created and defined by the Commission prior to October 1, 1975, or (iii) in a Pennsylvanian age or older formation which was created and defined by the Commission prior to June 1, 1964, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.
>
> "Unless otherwise provided in the special pool rules, each development well for a defined gas pool (i) in the Wolfcamp formation which was created and defined by the Commission after

> October 1, 1975, or (ii) of the Pennsylvanian age or older which was created and defined by the Commission after June 1, 1964, shall be located on a designated drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such well having more than 160 acres dedicated to it shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, 'side' boundary and 'end' boundary are as defined in Section B I (a) of this rule.)"

The amendatory language is underlined.

3. In the alternative, applicant proposes that the amendment to Rule 104-C.II(a) proposed in 2 above, be limited to Township 17 South, Ranges 25 and 26 East, Township 18 South, Ranges 24, 25 and 26 East, and Township 19 South, Ranges 23, 24 and 25 East, Eddy County, New Mexico.

4. A gas well located in the Wolfcamp formation in Lea, Chaves, Eddy and Roosevelt Counties, New Mexico, will drain a normal 320-acre spacing unit.

5. The approval of the proposed changes in Rule 104-C.II(a) will prevent economic loss to the operators in southeastern New Mexico caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells by said operators, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Commission enter its order amending Rule 104-C.II(a) as set forth in paragraph 2 above, or, in the alternative, amend Rule 104-C.II(a) as set forth in paragraph 3 above.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By: _____

LOSEE & CARSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

1627'

CITIES SERVICE

BELCO

Southwestern Public Service Co.

124

123

129

LOT "E"
BLOCK 130

W/2
SECTION 5

T
22
S

1980'

Proposed
MEAD-4

660'

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 5567
Submitted by Belco
Hearing Date 10-8-75

BELCO PETROLEUM CORP.
CARLSBAD AREA
Eddy Co., New Mexico
MINERAL
LEASE OWNERSHIP PLAT
W 1/2 SECTION 5
T-22-S, R-27-E

BELCO
CITIES SERVICE
UNSIGNED

3089
%

Case 5397

~~North Burton Flats Wolfcamp Gas~~

466 1500 MCFD/limit

Case 5444

South Carlsbad-Wolfcamp Gas

403 OK

Case 5122

~~East Lusk Wolfcamp Dil~~

444

Western Union Telegram

RECEIVED
OCT 7 - 1974
OIL CONSERVATION COMMISSION

1975 OCT -7 AM 11:05

IPMFEKA SANA
2-017002280 10/07/75
ICS IPMBNGZ CSP
9156847131 TDBN MIDLAND TX 65 10-07 1146A EST
PMS NEW MEXICO OIL CONSERVATION COMMISSION ATTN JOE RAMEY, DLR
ASAP, DLR
NEW MEXICO STATE LAND OFFICE BLDG
SANTA FE NM 87501
CITIES SERVICE OIL COMPANY RECOMMENDS APPROVAL OF YATES PETROLEUM CORPORATION'S APPLICATION IN CASE NUMBER 5561 TO AMEND STATE WIDE RULES 104.B.I(A) AND 104C.II(A) TO INCLUDE THE WOLFCAMP FORMATION UNDER THE STANDARD 320 ACRE GAS SPACING AND WELL LOCATION REQUIREMENT FOR SOUTHEASTERN NEW MEXICO WE REQUEST TESTIMONY AND DATA SUBMITTED IN CASE NUMBER 5397 BE CONSIDERED IN SUPPORT OF YATES' APPLICATION
E F MOTTER CITIES SERVICE OIL COMPANY ENGINEERING MANAGER
SOUTHWEST REGION

1149 EST

IPMFEKA SANA

CASE #5561

SOUTHEAST NEW MEXICO
WOLFCAMP FIELDS
SPACED ON 320 ACRES OR MORE

| FIELD | SPACING | CASE# | ORDER # | YEAR |
|---|---|---|---|---|
| BLUITT WC | 320 | 2755 | 2051 | 1961 |
| RED HILLS WC | 640 | 3158 | 3073 | 1964 |
| CARLSBAD WC | 320 | 5099, 5444 | 4683, 4683B | 1973 ~~197-~~ |
| NORTH BURTON FLATS | 320 | 5397 | R4949 | 1975 ~~197~~ |
| FAIRVIEW MILLS | 640 | 5438 | R4996 | 1975 |

Wolfcamp Gas Fields with more than 1 loca

Blinebry Wc [Roosevelt Co] on 320 ac spacing

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 3,594,486 |
| H.L. Brown Jr #1-Fed | K | 33 | 7S-37E | | 59,772 |
| "1-Fed A | P | 33 | 7S-37E | | 1,377,156 |
| | | | | | 38,880 |
| Tex Pac. #1 Bush St. | I | 32 | 7S-37E | | 591,830 |
| | | | | | 12,498 |

Ave increase from 320 to subdivided area / acre, 1,200 ac unit

~~Special Rules Order~~ R-2051 (8-24-61) Case No. 2355

Lea Wc, SE [Lea Co] Dual with Morrow

(Amer Trading)

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 1,413,396 |
| Barber NM St. 26 #1 | J | 26 | 20S-35E | | 252,541 |
| | | | | | 156,673 |
| SE Lea Unit #2 | L | 25 | 20S-35E | | 13,824 |

Red Hills Wc [Lea Co] on 640 ac spcg

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 10,010,054 |
| Union Calif #1 Red Hills Unit | O | 32 | 25S-33E | | 375,340 |
| | | | | | 8,650,055 |
| #2 | B | 5 | 26S-33E | | 230,271 |

R 3073 (2-6-66) Case No. 3158 re-opened

Rocky Arroyo Wc [Eddy Co]

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 389,696 |
| El Paso #1 Robinson A Com | N | 20 | 22S-22E | All diff | 1,310 |
| | | | | | 24,504 |
| #1 Rocky Arroyo E | G | 7 | 22S-22E | Wc Lower records | |
| | | | | | 104,967 |
| #1 Rocky Arroyo Com | J | 8 | 22S-22E | to Mark Wilson | 96 |

Winchester Wc [Eddy Co]

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 559,814 |
| Dorchester #2 DWU Fed | F | 35 | 19S-28E | | 18,614 |
| | | | | | 341,834 |
| Penroc #1 Dero A Fed Com | N | 35 | 19S-28E | | 22,824 |
| | | | | | 619,850 |
| Penroc #2 Dero A Fed Com | J | 35 | 19S-28E | | 22,213 |

North Burton Flat Wc 320 ac spac. pool. rule R-49

? no wells

CASE #5561 Oct 1975



WOLFCAMP - CISCO
EDDY COUNTY

- T17S, R25 & 26E
- T 18S R24, 25 & 26E
- T19S R23, 24 & 25E

I. AVERAGE PARAMETERS

$\frac{kh}{\mu}$ = transmissibility $\frac{md\,ft}{cps}$ = 1453 $\frac{md\,ft}{cps}$

average DST's 6 wells

BHT = 135°F

OBHP = 2320 psia

$Z_i$ = .82 initial gas deviation factor

h = 10' pay

$\phi$ = .08 average porosity

II. 320 ACRE DRAINAGE

A. TIME FOR PRESSURE TRANSIENT TO REACH CIRCULAR 320 ACRE BOUNDARY

K in darcies

$$t = \frac{.08\,\mu\,\phi\,r_e^2}{K(p_i + p_w)}\left[1 - \frac{1}{2\ln r_e/r_w}\right]$$

(CRAFT & HAWKINS, APPLIED PETROLEUM RESERVOIR ENGINEERING, P329)

$t \cong$ 60 days

B. Initial Flow Rate at Semi-Steady State Conditions

PRESSURE AT 320 ACRE CIRCULAR BOUNDARY = INITIAL PRESSURE = 2320 psia

$P_w$ = 550 psia

K in darcies, q SCFD

$$q = \frac{703\ Kh\ (P_e^2 - P_w^2)}{\mu T z\ (\ln .61\ r_e/r_w)}$$

(CRAFT & HAWKINS p 333)

$Q$ = 1.48 MMCFD

C. ECONOMICS

ONE WELL VS TWO WELLS ON 320 ACRES

| | ONE WELL | TWO WELLS |
|---|---|---|
| COMPLETED WELL COSTS | $235,000 | $470,000 |
| RECOVERABLE RESERVES | 1.6 BSCF | 1.90 BSCF (19% increase) |
| PRODUCTIVE LIFE | 14 yrs | 9 yrs |
| BEFORE TAX PROFIT DISC @ 12% | $450,000 | $602,000 |
| AFTER TAX PROFIT DISC @ 12% | $234,000 | $313,000 |
| RATIO: | | |
| $\frac{\text{DISC BEFORE TAX PROFIT}}{\text{INVESTMENT}}$ | 1.9 | 1.3 |
| $\frac{\text{DISC AFTER TAX PROFIT}}{\text{INVESTMENT}}$ | .99 | .64 |

FIGURES DO NOT INCLUDE GATHERING SYSTEM COSTS OR COMPRESSOR PURCHASES.

B. Initial Flow Rate at Semi-Steady State Conditions:

PRESSURE AT 320 ACRE CIRCULAR BOUNDARY = INITIAL PRESSURE = 2320 psia

$P_w$ = 550 psia

K in darcies, q SCFD

$$q = \frac{703\ Kh\ (P_e^2 - P_w^2)}{\mu T z\ (\ln .61\ r_e/r_w)}$$

(CRAFT & HAWKINS p 333)

Q = 1.48 MMCFD

C. ECONOMICS

ONE WELL VS TWO WELLS ON 320 ACRES

Sun Antelope Sink Well estimates @ 60¢ MCF

| | ONE WELL | TWO WELLS |
|---|---|---|
| COMPLETED WELL COSTS | $235,000 | $470,000 |
| RECOVERABLE RESERVES | 1.6 BSCF | 1.90 BSCF (19% increase) |
| PRODUCTIVE LIFE | 14 yrs | 9 yrs |
| BEFORE TAX PROFIT DISC @ 12% | $1/50000 | $602000 |
| AFTER TAX PROFIT DISC @ 12% | $234000 | $313.000 |
| RATIO: DISC BEFORE TAX PROFIT / INVESTMENT | 1.9 | 1.3 |
| DISC AFTER TAX PROFIT / INVESTMENT | .99 | .64 |

FIGURES DO NOT INCLUDE GATHERING SYSTEM COSTS OR COMPRESSOR RUNNERS.

CASE #5561

Oct 1975



WOLFCAMP - CISCO
EDDY COUNTY

T17S, R25 & 26E
T18S R24, 25 & 26E
T19S R23, 24 & 25E

I. AVERAGE PARAMETERS:

$\frac{kh}{\mu}$ = transmissibility $\frac{md\,ft}{cps}$ = 1453 $\frac{md\,ft}{cps}$
Average DST's 6 wells

BHT = 135° F

OBHP = 2300 psia

$Z_i$ = .82 initial gas deviation factor

h = 10' pay

$\phi$ = .08 average porosity

II. 320 ACRE DRAINAGE

A. TIME FOR PRESSURE TRANSIENT TO REACH CIRCULAR 320 ACRE BOUNDARY
K in darcies

$$t = \frac{.08\,\mu\phi\,r_e^2}{K(p_i + p_w)}\left[1 - \frac{1}{2\ln r_e/r_w}\right]$$

(CRAFT & HAWKINS, APPLIED PETROLEUM RESERVOIR ENGINEERING, P329)

$t \cong 60$ days

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 5561
Submitted by
Hearing Date

CASE #5561

SOUTHEAST NEW MEXICO
WOLFCAMP FIELDS
SPACED ON 320 ACRES OR MORE

| FIELD | SPACING | CASE# | ORDER # | YEAR |
|---|---|---|---|---|
| BLUITT WC | 320 | 2255 | 2051 | 1961 |
| RED HILLS WC | 640 | 3158 | 3073 | 1964 |
| CARLSBAD WC | 320 | 5099, 5444 | 4683, 4683B | 1973 ~~197-~~ |
| NORTH BURTON FLATS | 320 | 5397 | R4949 | 1975 ~~197-~~ |
| FAIRVIEW MILLS | 640 | 5438 | R4996 | 1975 |

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 5569
Submitted by
Hearing Date

Wolfcamp Gas Fields with more than 1 locat

Bluitt Wc [Roosevelt Co] on 320 ac. spcg.

| | | | | |
|---|---|---|---|---|
| HL Brown Jr #1-Fed | K | 33 | 7S-37E | 3,579,466<br>69,[illegible] |
| #1-Fed A | P | 33 | 7S-37E | 1,377,156<br>38,830 |
| TexPac. #1 Bluitt St. | I | 32 | 7S-37E | 591,830<br>12,493 |

[illegible] 990 to [illegible] 320 ac unit
~~Special Rules Order~~ R-2051 (8-29-61) Case No. 2355

Lea Wc, SE [Lea Co] Dual'ed with Morrow
(Amer Trading)

| | | | | |
|---|---|---|---|---|
| Barber NM St. "26" #1 | J | 26 | 20S-35E | 1,413,396<br>252,541 |
| SE Lea Unit #2 | L | 25 | 20S-35E | 156,693<br>13,825 |

Red Hills Wc [Lea Co] on 640 ac spg

| | | | | |
|---|---|---|---|---|
| Union Calif #1 Red Hills Unit | O | 32 | 25S-33E | 10,010,054<br>375,340 |
| #2 | B | 5 | 26S-33E | 8,650,055<br>230,277 |

R 3073 (2-6-66) Case No. 3158 re-opened

Rocky Arroyo Wc [Eddy Co]

| | | | | | |
|---|---|---|---|---|---|
| El Paso #1 Patterson A Com | N | 20 | 22S-22E | All diff Wc zones, records to Mark Wilson | 389,696<br>1,310 |
| #1 Rocky Arroyo E | G | 7 | 22S-22E | | 26,574 |
| #1 Rocky Arroyo Com | J | 8 | 22S-22E | | 104,967<br>96 |

Winchester Wc [Eddy Co]

| | | | | |
|---|---|---|---|---|
| Dorchester #2 DWU Fed | F | 35 | 19S-28E | 559,814<br>18,814 |
| Penroc #1 Dero A Fed Com | N | 35 | 19S-28E | 341,834<br>32,824 |
| Penroc #2 Dero A Fed Com | J | 35 | 19S-28E | 619,850<br>33,813 |

North Burton Flat WC, 320 ac spec. pool rule R-494
? no wells

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 5569
Submitted by
Hearing Date

LAW OFFICES
LOSEE & CARSON, P.A.
300 AMERICAN HOME BUILDING
P. O. DRAWER 239
ARTESIA, NEW MEXICO 88210

A. J. LOSEE
JOEL M. CARSON
CHAD DICKERSON

AREA CODE 505
746-3508

18 September 1975

Mr. Bill Carr, Attorney
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Bill:

Enclosed for filing, please find three copies each of applications of Yates Petroleum Corporation for an amendment of Rule 104-C.II(a) for acreage requirements for gas development wells in southeast New Mexico, and for an unorthodox gas well location, West Atoka Morrow gas pool. I understand that these will be set for hearing before an examiner on October 8, 1975.

Very truly yours,

LOSEE & CARSON, P.A.

Jerry

A. J. Losee

AJL:jw
Enclosures

cc w/enclosures: Yates Petroleum Corporation

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Jerry

A. J. Losee

AJL:jw
Enclosures

cc w/enclosures: Yates Petroleum Corporation

RECEIVED
SEP 10 1975
OIL CONSERVATION COMM.

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF YATES PETROLEUM CORPORATION FOR AN AMENDMENT OF RULE 104-C.II(a) FOR ACREAGE REQUIREMENTS FOR GAS DEVELOPMENT WELLS IN LEA, CHAVES, EDDY AND ROOSEVELT COUNTIES, NEW MEXICO.

CASE NO. 5569 ~~5561~~

## APPLICATION

COMES YATES PETROLEUM CORPORATION, by its attorneys, and respectfully states:

1. Applicant is the owner of the gas rights in the Wolfcamp formation underlying portions of Lea, Chaves, Eddy and Roosevelt Counties, New Mexico.

2. Applicant proposes the amendment of Rule 104-C.II(a) as follows:

> "Unless otherwise provided in special pool rules, each development well for a defined gas pool (i) in a formation younger than the Wolfcamp formation, or (ii) in the Wolfcamp formation which was created and defined by the Commission prior to October 1, 1975, or (iii) in a Pennsylvanian age or older formation which was created and defined by the Commission prior to June 1, 1964, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.
>
> "Unless otherwise provided in the special pool rules, each development well for a defined gas pool (i) in the Wolfcamp formation which was created and defined by the Commission after

> October 1, 1975, or (ii) of the Pennsylvanian age or older which was created and defined by the Commission after June 1, 1964, shall be located on a designated drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such well having more than 160 acres dedicated to it shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, 'side' boundary and 'end' boundary are as defined in Section B I (a) of this rule.)"

The amendatory language is underlined.

3. In the alternative, applicant proposes that the amendment to Rule 104-C.II(a) proposed in 2 above, be limited to Township 17 South, Ranges 25 and 26 East, Township 18 South, Ranges 24, 25 and 26 East, and Township 19 South, Ranges 23, 24 and 25 East, Eddy County, New Mexico.

4. A gas well located in the Wolfcamp formation in Lea, Chaves, Eddy and Roosevelt Counties, New Mexico, will drain a normal 320-acre spacing unit.

5. The approval of the proposed changes in Rule 104-C.II(a) will prevent economic loss to the operators in southeastern New Mexico caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells by said operators, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Commission enter its order amending Rule 104-C.II(a) as set forth in paragraph 2 above, or, in the alternative, amend Rule 104-C.II(a) as set forth in paragraph 3 above.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By: _____

LOSEE & CARSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

# MWJ PRODUCING COMPANY

★ PETROLEUM PRODUCERS ★

413 First National Bank Building
Midland, Texas 79701
Telephone (915) 682-5216

September 29, 1975

RECEIVED
OCT - 1 1975
OIL CONSERVATION COMM.
Santa Fe

Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Re: Case 5569 - Set for October 8, 1975

Gentlemen:

This is to advise that we support the application of Yates Petroleum Corporation in the above case concerning the adoption of 320 acre spacing for Wolfcamp gas production and recommend its adoption.

MWJ PRODUCING COMPANY

R. Ken Williams

jim

cc: Yates Petroleum Corp.

DRAFT

dr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

CASE NO. 5569

Order No. R- 5113

APPLICATION OF YATES PETROLEUM CORPORATION FOR THE AMENDMENT OF CERTAIN RULES.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 8, 19 75, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this _____ day of October, 1975, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks the amendment of Rules 104 B.I(a) and 104 C.II(a) of the Commission Rules and Regulations to include the Wolfcamp formation under ~~the~~ standard 320-acre gas spacing and well location requirements for Southeastern New Mexico.

(3) In the alternative, the applicant seeks special rules for gas wells completed in the Wolfcamp formation in Township 17 South, Ranges 25 and 26 East, Township 18 South, Ranges 24, 25, and 26 East, and Township 19 South, Ranges 23, 24, and 25 East, Eddy County, New Mexico, providing for 320-acre spacing and well location requirements.

(6) That the amendment of Rule 104 as set out in Finding No. (2) above should be approved



(4) That in Lea, Chaves, Eddy, and Roosevelt Counties, New Mexico, a gas well completed in the Wolfcamp formation will efficiently and economically drain and develop a 320-acre tract.

(5) That the amendment of Rule 104 as set out in Finding No. (2) above will prevent the economic loss caused by the drilling of unnecessary wells; will avoid the risks arising from the drilling of an excessive number of wells, will prevent reduced recovery which might result from the drilling of too few wells and will otherwise prevent waste and protect correlative rights.

(6) That the South Carlsbad-Wolfcamp Gas Pool in Eddy County, New Mexico, now covered by compatable temporary special pool rules, should be included within the 320-acre spacing and well location requirements proposed by the applicant.

IT IS THEREFORE ORDERED:

(1) That Rule 104 B.I(a) and Rule 104 C.II(a) of the Commission's Statewide Rules and Regulations are hereby amended to read in their entirety as follows:

RULE 104. WELL SPACING: ACREAGE REQUIREMENTS FOR DRILLING TRACTS.

B. ACREAGE AND WELL LOCATION REQUIREMENTS FOR WILDCATS

I. Lea, Chaves, Eddy and Roosevelt Counties

(a) Wildcat Gas Wells

In Lea, Chaves, Eddy, and Roosevelt Counties, a wildcat well which is projected as a gas well to a formation and in an area which, in the opinion of the engineer or supervisor approving the application to drill, may reasonably be presumed to be productive of gas rather than oil shall be located on a drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary.

Provided however, that any such wildcat gas well which is projected to ~~a formation of Wolfcampian age~~ The Wolfcamp or older formations shall be located on a drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such "deep" wildcat gas well to which is dedicated more than 160 acres shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, "side" boundary is defined as one of the outer boundaries running lengthwise to the tract's greatest overall dimensions; "end" boundary is defined as one of the outer boundaries perpendicular to a side boundary and closing the tract across its least overall dimension.)

C. ACREAGE AND WELL LOCATION REQUIREMENTS FOR DEVELOPMENT WELLS.

II. Gas Wells

(a) Lea, Chaves, Eddy, and Roosevelt Counties

"Unless otherwise provided in special pool rules, each development well for a defined gas pool in a formation younger than the Wolfcamp formation, or in the Wolfcamp formation which was created and defined by the Commission prior to November 1, 1975, or in a Pennsylvanian age or older formation which was created and defined by the Commission prior to June 1, 1964, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

Take out Underlining

No underlining

Take out underlining

"Unless otherwise provided in the special pool rules, each development well for a defined gas pool ~~of~~ in the Wolfcamp~~ian age~~ formation which was created and defined by the Commission after November 1, 1975, or of Pennsylvanian age or older which was created and defined by the Commission after June 1, 1964, shall be located on a designated drilling tract consisting of 320 surface contiguous acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the U. S. Public Land Surveys. Any such well having more than 160 acres dedicated to it shall be located not closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary. (For the purpose of this rule, 'side' boundary and 'end' boundary are as defined in Section B I(a) of this rule.)"

(2) That the South Carlsbad-Wolfcamp Gas Pool, Eddy County, New Mexico, as previously defined and described by Commission order ~~Order~~ shall be drilled and spaced under the provisions of Rule 104 C.II(a) of the Commission Rules and Regulations as set out in Order (1) of this Order.

(3) That the effective date of this order shall be November 1, 1975.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.