

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 29, 1970

EXAMINER HEARING

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IN THE MATTER OF:

Application of Yates Drilling Company  
for a unit agreement, Lea County, New  
Mexico.

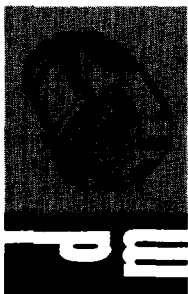
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Application of Yates Drilling Company  
for a waterflood project, Lea County,  
New Mexico.

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) Case No. 4348  
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BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING



MR. UTZ: Case 4347.

MR. HATCH: Case 4347. Application of Yates Drilling Company for a unit agreement, Lea County, New Mexico. Do you want Case 4348 called at the same time?

MR. UTZ: Might as well since he said he was going to combine them.

MR. HATCH: Case 4348. Application of Yates Drilling Company for a waterflood project, Lea County, New Mexico.

MR. LOSEE: Let the record show the same appearance and the same witness in the two previous cases.

MR. UTZ: Are you going to move for consolidation?

MR. LOSEE: And move for consolidation of the two cases, 4347 and 4348.

MR. UTZ: Case 4347 and 4348 will be consolidated for purposes of testimony and separate orders will be written.

(Whereupon, Applicant's Exhibits 1 through 5 were marked for identification.)

EDDIE MAHFOOD

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q Mr. Mahfood, do these two cases have two purposes, one to approve the Yates Drilling Company North Vacuum (San Andres) Unit --

A That is correct.

Q -- and to approve the institution of a waterflood project within that unit area?

A That is correct.

Q Are all of the lands within this unit area owned by the State of New Mexico?

A That is correct.

Q Has your unit agreement been submitted to the State Land Office?

A Yes, sir, it has been submitted and approved in content and form.

Q Please refer to what has been marked as Exhibit 1.

A Exhibit 1 is a plat of the North Vacuum area with the unit area designated in red. Proposed injection wells are in red triangles.

Q Now, it's noted that there are also some red triangles offsetting it to the south and west.

A This is correct. These are lease line agreements with Mobil and Gulf.

Q Have they converted those wells to injection at

this time?

A No, sir. We will all convert ours at approximately the same time.

Q And does the unit have written lease line agreements with these offset operators for the conversion of these wells?

A Yes, sir, we do.

Q How many tracts are within the unit area?

A There are six tracts in the unit area.

Q Please refer to what has been marked Exhibit 2, being a copy of your unit agreement --

A Yes, sir.

Q -- and from this document, would you tell the examiner what formation is proposed to be unitized?

A We propose to unitize the upper 200 feet of the San Andres formation.

Q Now, in the unit agreement, do you refer to the log in any particular well, and, if so, would you point out the interval?

A Yes, sir. One of the exhibits that we will present later will present this log. It's in the Marathon State Bridges B No. 3. This will be tract 2, well number 3.

Q At what depth?

A The depth will be -- the top of the San Andres is at 4658 and we are unitizing the 200 feet interval from 4658 to 4858 in this well.

Q All right. What is the tract participation proposed by this form of unit agreement? It's on page 8.

What's your formula for allocating production among the tract?

A The formula is based on ultimate oil production, which is cumulative primary production plus projected remaining primary reserves.

Q All right. Now, you say by projected remaining primary reserves. How did you determine what the remaining primary reserves were under each tract?

A We took the production decline curves for each tract and extrapolated to a terminal point of 60 barrels of oil per month per lease and evaluated them on the amount of oil that would be recovered to that point.

Q Now, the resulting calculations are shown on Exhibit B to the unit for each tract, are they not --

A That is correct.

Q -- converted into a percentage of total unit production?

A That is correct.

Q What other possible perimeters did the operators consider before arriving at ultimate primary oil production?

A We considered several others; productive acres, productive acre feet, usable wells, current production, remaining primary.

Q Would you explain to the examiner why each of these other perimeters were discounted?

A It was considered that the ultimate primary would be the most representative of the ownership of this oil in place, the oil that would be recovered in the secondary operations.

Q Do you feel like this formula allocates the production among the various tracts in the unit in conformity with the oil that will actually be recovered from those tracts during secondary recovery operations?

A Yes. I think that this formula we came up with is representative, it's fair and for the protection of each tract's correlative rights.

Q Now, when is this unit effective by the terms of it which are --

A The unit will be effective the first of the month following the date that it is approved by this Commission.

Q You really mean by the Commissioner of Public

Lands, do you not, approved the first day of the month following approval by the Commissioner of Public Lands?

A I suppose so.

Q Yes.

A Yes.

Q All right. Now, with respect to commitment to the tract. Have all the working interest owners under each tract within the unit area ratified the document or executed the original?

A Yes, sir. We have 100 percent ratification of working interests.

Q All right. What about the over-ride or production interest owners?

A We have ratification from everybody but Cities Service, and they have told us they are going to ratify it. We just have not received it from them yet.

Q And they hold only an over-riding royalty interest of 9375 percent under tract number 3 --

A Correct.

Q -- and no other interest?

A That's right.

Q And, with the exception of Cities Service, everyone has ratified the unit?

A That is correct.

O Please refer to what has been marked Exhibit 3.

MR. UTZ: Does that conclude your unit testimony?

MR. LOSEE: Yes.

MR. UTZ: Why don't we take a lunch break at this point and finish up? There will be several questions, I'm sure, on the waterflood project.

(Whereupon, a break for lunch was taken until 1:30 P.M.)

MR. UTZ: The hearing will come to order, please. You may continue with your consolidated cases.

O (By Mr. Losee) Mr. Mahfood, please refer to what has been marked as Exhibit 3, being the diagrammatic sketches of the nine proposed injection wells in this proposed waterflood project, and generally explain what is portrayed by these sketches.

A In all instances, we had the surface casing cemented to the surface. In many cases cemented at approximately 339 in Tract 1, Number 1; 638 in Tract 2, Number 1; 654 in Tract 2, Number 4; 334 in Tract 3, Number 2; 1664 in Tract 3, Number 4; 298 in Tract 4, Number 2; 342 in Tract 4, Number 4; 338 in Tract 5, Number 2, and 1656 in Tract 6, Number 2.



This big variation here is due to change in regulations back in 1958, when they required more surface casing to be set.

Q Does it also show the production string in each instance?

A Production string in each instance had been either set all the way through the pay or to the top of the pay and with sufficient cement to cover approximately a thousand feet or more.

Q Above the --

A Above the pay.

Q All right. The only two wells, proposed injection wells, in which the pipe is set through the pay is this Tract 2 Well, Number 1, Tract 2 Well, Number 4?

A Correct.

Q The rest of it will be open hole injection?

A That's correct.

Q Is the injection proposed through tubing and packer in every instance?

A Yes, sir; through tubing and packer with inhibited water in the casing annulus, surface gauge, pressure gauge on the surface casing.

Q Is that going to be plastic coated tubing?

A The tubing will be plastic coated.

Q What's the source of your fresh water?

A The Ogallala formation on the Caprock approximately a mile and a quarter from the project area.

Q Was my question right? Is it fresh water?

A It is correct. It's fresh water, very good drinking water.

Q Will you treat the water at all?

A Yes, sir. We will treat it definitely to inhibit bacteria growth and possibly to scavenge oxygen.

Q Now, let me refer you to two wells that appear to be dual. One of them is the second one Tract 2, Well Number 1, and the other is Tract 4 Well Number 2, in which perforations are shown in the Queen Gas Sand. Referring to the first one, explain how you propose to produce gas, if such is the case, out of this zone.

A We propose to produce the gas of the casing annulus in both wells. In Tract 2, Well Number 1, the unit is purchasing this gas zone and the gas would be so directed transmission nine would start forming into place.

Q And this Gas Sand is actually not unitized by the terms of the unit agreement?

A That is correct. It is not unitized. There are no

overriding royalties on this.

Q So that settlement for the gas produced from this well will be based upon the unit working interest?

A That's correct.

Q And the royalty to the State of New Mexico?

A That is correct.

Q What about the second well, Tract 4 Well Number 2?

A Tract 4 Well Number 2, that gas will be so directed to transmission nine and there will be no comingling. There are overrides and the ownership is retained by the original owner.

Q Under that tract?

A Under that tract.

Q And settlement will be made to the owners of the lease?

A That is correct, by its original owner.

Q Refer now, if you will, to what has been marked as Exhibit 4, being certain logs of some of these injection wells, and explain what is shown by these logs.

Q I have shown the relationship between the Queen and the San Andres pay on these logs. I'm showing continuity of formation from one well to another, and also showing the relationship of the pay to the unitized area, unitized interval, pardon me.

Q It's noted that there are only four -- I'm sorry, there are eight logs here, are there not?

A There's seven.

Q I'm sorry, there's seven logs.

A Seven logs, you're right.

Q And actually, the logs --

A Two wells were not logged, proposing nine conversions, right.

Q Please refer to the tabulation shown on Exhibit 5, being the cumulative production from each well or each tract within the unit and give the total cumulative for each tract.

A The cumulative total for Tract Number 6 would be 97,872 through -- I think this should be through the first of, 1169, rather than 7168, as is shown here.

Q So that actually, your 97,872 barrels is through --

A 1169.

Q All right. What about Tract Number 5?

A Tract Number 5 through 1169, 165,321, and Tract 4 through 1169 is 215,726. Tract 3 and 3A through 1169 would be the sum of 33,641, and 64,015. Tract 2 through 1169 is 125,464. Tract 1 through 1169 would be 31,583.

Q What is the total cumulative from all six of the tracts within the project to 1169?

A 744,593.

Q All right. What is the present average rate of production from the wells within this field?

A From the twenty wells we are producing approximately twenty-five barrels per day. The January figures on Exhibit 4; is that right? --

Q Exhibit 5.

A -- Exhibit 5 was twenty-three barrels per day.

Q And that's for all the twenty wells in the unit?

A That's for all the twenty wells in the unit.

Q What's the maximum any well in that unit is producing?

A I think we have one well that's making approximately nine barrels a day.

Q And the rest of them are less than a barrel?

A Yes.

Q In your opinion, have the wells in this field reached an advanced or stripper state of depletion?

A Yes, I believe that I can answer that in the affirmative.

Q You can answer it?

A I can answer it in the affirmative.

Q Have you made a study of this field to determine the amount of oil that might be recovered by waterflooding?

A Yes, sir.

Q Do you have an estimate as to the volume of oil?

A We estimate we can recover 497,000 barrels in eight years. This is approximately fifty percent of the cumulative.

Q All right. What rate and what pressure do you propose to institute in these injection wells?

A Approximately two to three hundred barrels a day at twenty-five hundred pounds pressure.

MR. UTZ: 225?

THE WITNESS: Two hundred to three hundred barrels a day at 2500 pounds pressure.

MR. LOSEE: Were Exhibits 1 through 5 prepared by you or under your direction?

THE WITNESS: Yes, sir.

MR. LOSEE: We move the introduction of Exhibits 1 through 5.

MR. UTZ: Without objection, Exhibits 1 through 5 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits 1 through 5 were admitted into evidence.)

MR. LOSEE: I have no further direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Now, let's see. You'll have nine injection wells?

A Nine injection wells are proposed at the present

time.

Q And two of those will be injection gas duals?

A That's correct.

Q Now, will those duals also have plastic-coated tubing?

A Yes, sir.

Q So then the only difference between the duals and the others will be that the annulus will not be filled with fluid?

A That is correct. We also ask that provisions be made for this Commission to grant administratively additional conversions at a later date.

Q Now, the well name and location at the top of each one of your diagrammatic sketches is correct as to the location name and number?

A That is correct.

MR. UTZ: Any other questions?

Statements?

The case will be taken under advisement.

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STATE OF NEW MEXICO     )  
                                   ) ss  
 COUNTY OF BERNALILLO    )

We, GLENDA BURKS and DAVID BINGHAM, Court Reporters  
 in and for the County of Bernalillo, State of New Mexico,  
 do hereby certify that the foregoing and attached Transcript  
 of Hearing before the New Mexico Oil Conservation Commission  
 was reported by us; and that the same is a true and correct  
 record of the said proceedings, to the best of our knowledge,  
 skill and ability.

Glenda Burks  
 COURT REPORTER

David Bingham  
 COURT REPORTER

I do hereby certify that the foregoing is  
 a complete record of the proceedings of  
 the Bernalillo hearing of case No. 4348-44  
 heard by us on April 24, 1970  
Shirley L. [Signature], Secretary  
 New Mexico Oil Conservation Commission