

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 30, 1974

----- EXAMINER HEARING -----

IN THE MATTER OF:)

Application of Anadarko Production Company)
for a unit agreement, Eddy County, New Mexico.)

) CASES
) 5356
) &

Application of Anadarko Production Company)
for a waterflood project, Eddy County,)
New Mexico.)

) 5357
)
)
)

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil
Conservation Commission:

William Carr, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant:

Tom Kellahin, Esq.
KELLAHIN & FOX
500 Don Gaspar
Santa Fe, New Mexico

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DANIEL G. KERNAGHAN

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MR. NUTTER: The hearing will come to order, whatever hearing we have got.

We will call Case Number 5356.

MR. CARR: Case 5356, application of Anadarko Production Company for a unit agreement, Eddy County, New Mexico.

MR. NUTTER: Do you want to consolidate these cases?

MR. CARR: Yes, with the next one.

MR. NUTTER: We will also at this time call Case Number 5357.

MR. CARR: Case 5357, application of Anadarko Production Company for a waterflood project, Eddy County, New Mexico.

MR. NUTTER: For the purpose of hearing, Case Number 5356 and Number 5357 will be consolidated. Would you proceed, please?

MR. KELLAHIN: Tom Kellahin of Kellahin and Fox, Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness who is to be sworn.

(Whereupon, the witness was duly sworn.)

DANIEL G. KERNAGHAN

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you please state your name?

A Dan Kernaghan.

Q How do you spell that last name?

A K-E-R-N-A-G-H-A-N.

Q By whom are you employed, and in what capacity?

A By Anadarko Production Company as Division

Evaluation Engineer.

Q Mr. Kernaghan, have you previously testified before this Commission?

A Yes.

Q Are you familiar with the facts surrounding this particular application by Anadarko?

A Yes.

MR. KELLAHIN: If the Examiner please, are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

BY MR. KELLAHIN:

Q Mr. Kernaghan, would you refer to what has been

marked as Applicant Exhibit No. 1, identify it and state briefly what Anadarko is seeking.

A This is the proposed unit outline, and the outline of the waterflood project that we are asking for, showing the surrounding production and the location with respect to nearby fields.

Q Refer to Exhibit No. 2 and identify it?

A Exhibit No. 2 is a more detailed outline of the project, showing the proposed injection and producing wells which we would like to drill.

(Whereupon, a discussion was held
off the record.)

BY MR. KELLAHIN:

Q Would you continue by indicating for us your proposed injection wells for the waterflooding?

A The proposed injection wells are designated here with triangles colored red; there are six of them. There are little numbers by them too, but they are hard to see. The two wells circled and colored in blue are the proposed producing wells. The other wells within the injection area, within the outline of the red triangles will be plugged and abandoned. We wish to continue to produce three other wells within the unit.

MR. NUTTER: So inside the waterflood pattern you will only have the two blue-circled wells producing?

MR. KERNAGHAN: That's right.

BY MR. KELLAHIN:

Q What's the formation in consideration here?

A It is basically the Grayburg, though some Queen and San Andres is possible. There is only one log in the unit area, and that log, when we logged the well last year, we didn't get all the way to the bottom. It appears like the majority of the production there is from the Grayburg, but we would like to include at least Queen and San Andres also in the project.

Q Please refer to what has been marked as Exhibit No. 3 and identify it?

A Exhibit 3 is a schematic completion diagram for the injection wells we propose to drill. They would all be completed according to this program.

Q Do you intend to inject your water under pressure?

A Yes, we do.

Q What is that anticipated pressure?

A Two thousand pounds or less.

Q What is the source of your injection water?

A It would be fresh water purchased from Double

Eagle, the source will be the Ogallala formation.

Q What quantities do you anticipate injecting, Mr. Kernaghan?

A We anticipate 250 barrels a day per well, which will be 1500 a day for the project, although it may be slightly more than this to start with.

Q Are you presently producing any water?

A We're not producing any significant amount.

Q In the event that significant amounts of produced water are produced, what do you intend to do with it?

A We would mix it with the purchased water, and probably batch it, or also inject it.

Q Please refer to what has been marked as Exhibit 4 and identify it?

A Exhibit 4 is a copy of the one log from the unit area; we are submitting this in lieu of logs on the injection wells. The top of the Queen and the top of the Grayburg formations have been marked on this. Like I said the log does not go to the TD of the well and did not reach the San Andres.

Q I note that your six proposed injection wells are all at unorthodox locations?

A Yes.

Q The exact description for those locations is as it appears on Exhibit B attached to the application in this Case; are those distances still correct?

A That is correct.

Q And, you would seek approval of the unorthodox injection locations?

A Yes, we do.

Q You would also request permission from the Commission to set up an administrative procedure whereby you may modify or expand the unit, including the drilling of additional injections and/or producing wells at both orthodox and unorthodox well locations without notice and hearing?

A Well, we do because as you can see, there is approximately 160 acres to the north of our northernmost injection well that is not included in the initial phase of development, and depending on results of the first phase, we would like to have the opportunity to expand into that area.

Q Please refer to what has been marked as Applicant Exhibits 5 through 12, and summarize for me the information contained on those exhibits?

A These exhibits show the monthly production as

reported to the State from each 40-acre tract. A few of these tracts have multiple wells on them, but the production was pretty hard to separate out as to what came from each well, so in lieu of individual well production we're submitting it by 40-acre units.

Q Each of the Exhibits, 5 through 12, indicate that each producing unit has substantially declined in production?

A Yes, it has.

Q In your opinion, Mr. Kernaghan, has production declined to such a point that you would recommend the institution of secondary recovery by waterflood?

A It has, and I would.

Q Please refer now to what has been marked as Applicant Exhibit No. 13 and explain it?

A These are the graphical presentation of the data shown on Exhibit 12; it's the monthly production from individual 40-acre tracts. You can see the production has been marginal since a few years after the wells were drilled.

Q In your opinion can this unit area be successfully and economically waterflooded?

A Yes, in my opinion it can.

Q Will the proposed waterflood result in a recovery of oil that otherwise would not be recovered?

A Yes, it would.

Q Will the proposed waterflood area adversely affect the correlative rights of others?

A I don't believe that it will.

Q Please refer to what has now been marked as Applicant Exhibit No. 14, that's your unit agreement, and would you describe for us the source of your form?

A The source of our form is that approved by the State Land Office; it is a standard form that they have requested in the past.

Q And, the unit area pertaining to this unit agreement corresponds to the unit area as described on Exhibit No. 2?

A Yes, it does. The description of the unit area is shown on Exhibit B, also on Exhibit A attached to the agreement.

Q Is this all State acreage, Mr. Kernaghan?

A This is all State acreage.

Q What percentage of the unit area is controlled by Anadarko?

A One hundred percent.

Q Anadarko holds one hundred percent of the working interest?

A That's correct.

Q With regards to the royalty interests, what percentage have ratified the agreement?

A One hundred percent. The basic royalty is all the State of New Mexico, and the Land Office has agreed to the unit; the overrides have ratified in total.

Q Does the unit agreement also contain a unit-operating agreement?

A No, it does not.

Q Anadarko will be the operator of the unit?

A Anadarko will be the operator, and like I say, the owner of one hundred percent of the working interest, so an operating agreement is unnecessary.

Q Would you please refer to what has been marked Applicant Exhibit No. 15, that's a letter from the Land Commission. You have preliminary approval from the Land Office, do you?

A Yes, we do. We have a letter stating that the unit agreement is approved as a project and as to form and content.

Q In your opinion, Mr. Kernaghan, will approval of

the unit agreement be in the best interests of conservation, the prevention of waste, and the protection of correlative rights of others?

A Yes, I believe it will.

MR. KELLAHIN: If the Examiner please, we move the introduction of Exhibits 1 through 15.

MR. NUTTER: Exhibits 1 through 15 will be admitted into evidence.

(Whereupon, Applicant's Exhibits 1 through 15 were admitted into evidence.)

MR. KELLAHIN: That concludes our direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Kernaghan, the unitized formation, according to the unit agreement would be of those formations from 900 feet below the surface to 2000 feet below the surface?

A Yes, sir.

Q Now, that would include the Queen, the Grayburg, and the San Andres formations?

A That's right, and possibly some Seven Rivers.

Q Seven Rivers is at the top?

A Yes. Now, Seven Rivers is out of the bounds of the

Artesia field. The reason for including this in the unit is that we have almost no geologic information on this area, and in drilling these new wells we hope, you know, to gain enough information to improve the flood. In the event substantial portions of permeable formations are found in the Seven Rivers, we would like to come back at a later date and include, if possible, in the flood, but at the present time we are just asking for a flood of the Queens, Grayburg and San Andres which are within the field limits.

Q Now, Exhibit 4 doesn't show the top of the San Andres; what would the approximate top of the San Andres be in here?

A It would be about 2000 feet.

Q I see.

A The reason that the unit agreement of -- the definition of the unitized formation is given here by depth. It was essentially impossible to include any picked point on a log, and also the fact that our rights only go to 2000 feet on some of these leases.

Q I think Exhibit B to the unit agreement shows you've got 2100 feet?

A We have 2100 in some of them.

Q There is one here that only goes to 2000?

A Yes.

Q Now Exhibit No. 3, is it a typical injection well? You don't show the depth of the perforations or the setting depth of the packer; what would be the relationship between the packer and the uppermost perforation?

A The packer is set approximately 30 feet above the highest perf, we like to keep it a joint or less above the top of the perforation.

Q Okay, I had missed that on the exhibit.

A We don't know, like I say, definitely where the wells will be perforated.

Q Right, but the packer would be set 30 feet above the uppermost perf?

A Right.

MR.NUTTER: Are there any further questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything to offer in Case 5356 or 5357? We will take the cases under advisement.

