

MR. PORTER: Case 4254.

MR. HATCH: Case 4254. Application of Kincaid & Watson Drilling Company for a unit agreement, Eddy County, New Mexico.

Are you planning on combining 4255?

MR. HINKLE: Yes.

MR. HATCH: Shall we call Case 4255 to save time?

MR. PORTER: Mr. Hinkle, before we get under way with that case, I would like to have just a moment here.

We will take about a five-minute recess.

(Whereupon, a short recess was taken.)

MR. PORTER: The hearing will come to order, please.

MR. HINKLE: Case No. 4254 has just been called, which is the application of Kincaid & Watson for approval of unit agreement. The next case, 4255, is a companion case in that it's an application of approval for a waterflood project which is co-extensive with the unit agreement.

I would like to move at this time that Case No. 4255 be consolidated with Case 4254 for purposes of

taking testimony.

MR. PORTER: Cases 4254 and 4255 will be consolidated for the purpose of taking testimony.

MR. HINKLE: We have one witness, Mr. Robert Fitting.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 3 were marked for identification.)

ROBERT FITTING

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name and your residence.

A My name is Robert D. Fitting. I live in Midland, Texas. I am a consulting petroleum engineer and geologist.

Q You are a graduate petroleum engineer?

A Yes, sir, from Stanford University.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A Yes, sir, I have.

Q Your qualifications as an engineer are a

matter of record with the Commission?

A Yes, sir.

MR. PORTER: The Commission accepts the witness as qualified.

Q (By Mr. Hinkle) Are you familiar with the application of Kincaid and Watson Drilling Company in Cases 4254 and 4255?

A Yes, sir, I am.

Q What is Kincaid and Watson Drilling Company seeking to accomplish with these applications?

A They are seeking to waterflood the northern part of the East Red Lake Queen Field.

Q And also for approval of the waterflood project?

A Approval of the waterflood project and also a unit agreement for the area.

Q Have you made a study of this area?

A Yes, sir, I have. The East Red Lake Queen Field is separated in two parts. There is a northern part that is separated from the southern part by two wells shown on Exhibit 1, the map.

They are Kincaid and Watson labeled Leonard Wells, that are certainly dry holes. The producing

wells to the north appear to be in the same separate reservoir.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A Yes, sir, there has. Exhibit 1 is an area map of the Red Lake East Field Area showing the unit outline with the proposed injection wells, the initial injection wells in red and the three additional wells that will be placed on injection shown as dashed triangles.

The unit outline is shown as well as the other wells drilled to the Queen Sand within a radius of two and one half miles from the center of the unit.

Q You made mention of the fact that the portion which is in the proposed unit area is separated from the other portion of the Red Lake Pool.

A Yes, sir.

Q Will you explain that?

A We made a study on Exhibit 2, which is a book of the material presented to the Commission on this hearing. On page thirty-one is a structure map of

the Queen horizon and it has very little characteristics other than being a monocline of limited area.

We attempted a net pay correlation and it was impossible with the information that we had to determine an equitable distribution of pay earth from the electric logs or from the sample logs of the wells that were drilled in the area.

Q Refer to the structural map, which is the last page of Exhibit No. 2, and explain that to the Commission.

A It's a Queen Sand structure map with all of the available points taken primarily from electric logs. It shows a monocline; no anticlinal structure. This, in my opinion, is a stratographic trap.

Q In other words, there's no structural condition to determine the boundaries of the unit particularly?

A No, sir. It appears to be controlled to the east by a change in facies from a sand to a shale and by permeability differences to the west.

Q Now, I believe you have testified to start with four injection wells?

A Yes, sir.

Q And you contemplate that there may be three

additional injection wells; is that right?

A That is correct.

Q Now, refer to the diagrammatic sketch, which is typical of the manner in which the injection wells will be completed, which is the third from the last of Exhibit 1.

A On page 29 is a diagrammatic sketch of the injection wells program. It shows the surface casing with the number of sacks of cement, where the oil string was set and the number of sacks used in each one of the initially proposed injection wells.

The two-inch tubing will be plastic lined and a packer set above the perforated interval. The intervals and the packer depths are shown on the diagrammatic sketch.

Q Now, the next exhibit in Exhibit No. 2 -- that is from the next to the last -- is a reduction decline curve. Would you explain that to the Commission?

A The production from all of the wells in the unit area were collected from the state records and each one of them -- the individual leases are shown from page 13 through 27.

These were combined into a field total on a

per well per month production basis starting with page ten and going through twelve is the field production. This field production was plotted with the left hand column, the oil production per well per month and time along the basis.

This decline graph clearly indicates that the field is in the last stages of primary depletion and that without real conservation as far as spending money, these are non-economic wells at the preset time.

Q Now, have the working interest owners who have acreage within the proposed unit area agreed upon a participating formula?

A Yes, sir. Several meetings were held and a study was made of the reservoir. It was decided that it was impossible to use any geological definitions of net pay and that the most factual basis that could be used was the number of wells with the estimated ultimate oil recovery if each of the tracts as determined from decline graph analysis, the cumulative oil recovery of the individual wells and the acres that were assigned to these individual wells.

From this study it was determined that the most equitable way to divide the unit participation was

on the basis of seventy-five percent of the cumulative oil recovery and twenty-five percent of the unit acres or wells which, of course, were the same so that they had complete agreement from all of the operators as to this participation formula.

Q Are you familiar with the formal unit agreement which is proposed to be used in this case and copies of which have been filed with the application?

A Yes, sir.

Q Who is designated as the unit operator?

A Kincaid and Watson Drilling Company.

Q Is the formal unit agreement substantially the same form as heretofore been used and approved where all state lands are involved?

A Yes, sir.

Q Do you know whether or not the Commission of public lands has approved the formal unit agreement in this case?

A Yes, sir. Exhibit 3 is a letter from Mr. Bilberry stating that he approved the form and content of the unit agreement.

Q Now, is Kincaid and Watson seeking approval of a project allowable in this case?

A Yes, sir. It would be much easier to operate and produce the unit if we did have a unit allowable and we so request.

Q That is in accord with Rule 701 of the Commission?

A Yes, sir.

Q What is the status of the execution of the unit agreement by the various working interest owners?

A As I understand from Mr. Watson this morning that at least seventy-five percent of the unit has already signed and agreed to it.

Q All of the working interest owners have, through your meetings you have testified to, formally agreed to commit their interest to the unit agreement?

A One hundred percent of the operators and interest owners have agreed to the proposal of the water injection and the unit by letter ballot.

The percentage signing that I spoke of was the signing of the formal agreement. We anticipate no trouble in getting all of the interest owners to sign.

Q Have you made any calculations as to the recovery you anticipate through water injection, secondary recovery?

A We attempted a volumetric study of the reservoir and tried to make a material balance, but it was extremely difficult to come up with figures we thought were accurate. We had but one core analysis that was of the pay zone and unfortunately this well was drilled at a later time in the life of the reservoir, which never proved to be a good producer; but, it did give us some basis for comparing. But, still, it was not considered good enough to use so that as an arbitrary figure, we used an amount equivalent to the primary oil recovery.

Q And that is shown in Exhibit No. 2 to be 222,500 barrels?

A Yes, sir. It's interesting to note that the field to date has produced 223,439 barrels -- not to date, this is to the end of June of 1969, 223,439. The differences in the 222,500 to that figure is that we assumed an economic limit in the primary production where we believe most of the operators are operating at a loss at the present time.

Q Do you know whether or not Kincaid and Watson is seeking administrative approval or would like to have the right by the order of approval to have administrative approval in the future of additional

injection wells?

A Yes, sir. We propose only the three additional and we believe that that should adequately waterflood the area.

Q In your opinion, if the unit agreement is approved will it be in the interest of conservation and prevention of waste?

A Yes, sir, it will.

Q Will it tend to protect correlative rights?

A Yes, sir.

MR. HINKLE: We would like to introduce into evidence Exhibits 1 through 3.

MR. PORTER: No objection? Exhibits 1, 2 and 3 will be admitted.

MR. HINKLE: That's all we have.

MR. PORTER: Does anyone have a question of Mr. Fitting?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Fitting, again, what was the percentage of working interest ownership that has been committed to the unit to date?

A The commitment by letter ballot was one hundred

percent on the creation of the unit and the participation formula. The agreements have only recently been circulated and I am told by Mr. Watson that seventy-five percent of the unit has been returned as of today.

Q But, the participation formula was stated in the letter of agreement to unitize?

A Yes, sir.

Q So, you do have one hundred percent of agreement to the formula?

A That is correct.

Q Now, with respect to the mechanical construction of the well as depicted on Exhibit 29, I see that each well would have a packer installed and that injection would be through tubing.

A Correct.

Q Is it your proposal to use plastic lined tubing on these wells?

A It will be plastic lined as shown on page three, item six. What we propose to do is clean them out and then circulate hot water and equip the tubing and the packer with plastic coating before we use it.

Q Now, the annulus then between the tubing and the casing can be loaded with an inert fluid, can it not?

A Yes, sir.

Q Would you be agreeable to equipping that annulus with a pressure gauge at the surface to detect leakage?

A I would prefer it that way; yes, sir.

Q And the primary production to date has been 223,400 barrels. I believe as you stated on page three of Exhibit No. 2, you estimate that approximately the same amount of secondary oil would be recovered from the waterflood?

A Correct.

MR. NUTTER: Thank you. That's all.

MR. PORTER: Does anyone else have a question of Mr. Fitting? He may be excused.

(Witness excused.)

MR. PORTER: Does anyone have any further testimony to offer or any comment on the case? Cases 4254 and 4255 will be taken under advisement.

Call Case 4256.

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