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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
October 22, 1969

EXAMINER HEARING

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IN THE MATTER OF: )

Application of Continental Oil )  
Company for a waterflood project, )  
Lea County, New Mexico. )

) CASE NO. 4236  
)  
)  
----- )

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We'll call Case Number 4236.

MR. HATCH: Case 4236. Application of Continental Oil Company for a waterflood project, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, let the record show the same appearances as in Case 4235 and reflect that the witness has been sworn.

(Whereupon, Applicant's Exhibits  
1 through 9 were marked for  
identification.)

VICTOR T. LYON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please, sir?

A Victor T. Lyon.

Q Are you the same Mr. Lyon who testified in the preceding case?

A I am.

Q Mr. Lyon, are you familiar with the application of Continental Oil Company in Case 4236?

A Yes, sir.

Q And briefly, what's proposed by Continental in this application?

A Case Number 4236 is the application of Continental

Oil Company for authority to install and operate a water-flood project in the Anderson Ranch-Wolfcamp Pool within the boundaries of the Anderson Ranch unit, which is located in Lea County, New Mexico.

Q Now, referring to what has been marked as Exhibit 1, would you identify that, please?

A Yes, sir. Exhibit Number 1 is a location and ownership map showing the proposed injection wells, the outline of the Anderson Ranch unit, and the ownership location of wells within an area two miles in each direction from the proposed injection wells. As shown, the Anderson Ranch unit consists of the southwest quarter of Section One, the south half of Section Two, all of Section 11, the west half of Section 12, the west half of the northwest quarter of Section 13, and the north half of Section 14, all in Township 16 south, range 32 east, Lea County, New Mexico.

The two proposed injection wells are shown with a red triangle inscribed around them. Well Number Four is located 660 feet from the north line, 1980 feet from the east line of Section 11, and Well Number Five is located 1980 feet from the south line and 1980 feet from the east line of Section 11. We also show by a letter symbol the formations from which each of the wells is producing or has produced.

Q The exhibit also appears to show a salt water disposal well in Section Two; is that correct?

A Yes, sir. Anderson Ranch unit Number 16, located in Unit T, is presently a salt water disposal well.

Q Will that be part of the water injection system in the waterflood project?

A No, we propose to maintain this well on a standby status, but injections into this well will be stopped except for emergency situations.

Q And your injection will be confined to the two injection wells shown on the exhibit, then?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit Number Two, could you identify that exhibit?

A Yes, sir. Exhibit Number Two is a schematic diagram showing the construction of Anderson Ranch Unit Number Four. The size and setting depth of the casing strings is shown, the perforations, the present condition of the well as far as tubing, packers, and so forth, are shown on the left hand side.

The right hand side shows how the well will be equipped when it is equipped for injection. The diagram shows a retrievable bridge plug at 9810. This bridge plug will be pulled. The cast iron bridge plug shown at 9845 will

remain in place so that injection will be into the interval from 9670 to 9828. There will be a packer and 2 7/8 inch tubing, to be plastic lined, set at approximately 9580. Then, we'll load the annular space above the packer with inhibited water and will install a pressure gauge at the surface.

Q Now, referring to what has been marked as Exhibit Number Three, would you identify that exhibit?

A Exhibit Number Three is a schematic diagram of Well Number Five, showing the same information on this well that was shown for Well Number Four on Exhibit Two. In this particular case 2 3/8 inch plastic lined tubing will be set on a retrievable packer at approximately 9650. Injection will be into the interval 9742 to 9884.

Q And, again, the well will be completed with the plastic lined tubing and the annular space will be filled with inhibited water?

A Yes, sir.

Q And the pressure gauge set at the surface?

A Yes, sir.

Q Now, referring to Exhibit Number Four, would you discuss the information shown on that exhibit?

A Exhibit Number Four is a copy of a portion of the radioactivity log on Well Number Four. It shows the top of the Wolfcamp at 8960, and it shows the perforated intervals

by the rectangular symbols to the left of the center of the log.

Q Now, is Exhibit Number Five the same information shown for the Anderson Ranch Unit Number Five Well?

A Yes, it is. And in this well, the top of Wolfcamp, it's shown at 8960, and the perforated intervals are shown by the rectangular symbols.

Q Now, referring to what has been marked as Exhibit Number Six, would you identify that exhibit?

A Exhibit Number Six is a structure map which shows the structural configurations of the Saunders Limestone in this particular area. As shown, the Wolfcamp structure here has three localized peaks or closures. There is one centered around Well Number Four, and a second one embracing Wells 14, 17, and Number Six, and a third one, which is north of the Anderson Ranch Unit. It seems that these get progressively higher as we move from south to north.

The Well Number Four is located at the peak of the south closure. Well Number Five is located at the southern extremity of this structure.

Q Now, referring, again, to your Well Number 16, you are presently injecting water into that well, are you not?

A Yes, sir. We are.

Q Is the injection interval the same as you propose to use in the waterflood project?

A No, it is not. The injection interval in Number 16 is below the oil water contact. The injection interval in Wells Number Four and Five is the intervals which have produced oil during their producing lives. Now, these two wells were chosen out of several considerations. First, because of their current producing rate. Number Five is shut in and Well Number Four is nearing its economic limit.

Secondly, the wells are more or less centrally located so that injection into them will affect the largest number of wells at the earliest time. Also, they are located in approximately the center of the Anderson Ranch Unit, so that there should be no impairment of correlative rights as a result of injecting into the pay in these wells.

Q Now, referring to what has been marked as Exhibit Number Seven, would you identify that exhibit?

A Exhibit Number Seven is a two-part exhibit. The top portion shows some of the reservoir data and the estimated primary recovery, to July 1, 1969. The bottom portion shows the production by well for the months of July and August, so that by adding the production in July and August to the production through July 1, we have production to September 1, accumulative from this portion of the

reservoir, which is 1,861,800 barrels.

Q Now, at the present stage of completion, would you consider this reservoir at a stripper stage?

A Yes, sir. It's very rapidly approaching its economic limit.

Q Referring to what has been marked as Exhibit Number Eight, would you identify that exhibit?

A Exhibit Number Eight is a decline curve showing the production from the Anderson Ranch-Wolfcamp Pool, or that portion which is within the Anderson Ranch Unit, beginning in 1964. Now, this was not the beginning of production, but this is just the part of production we have shown on this exhibit through June of 1969, and then we have shown by a dash line the projected primary production without water flooding.

At approximately the beginning of July -- excuse me -- at the beginning of 1971, there is a solid line, which departs from the projected decline, which shows our projected performance under secondary recovery as we propose in this application. The area between these two curves is the amount of additional oil which we expect to recover as a result of this waterflood project.

Q Now, what is the source of the water you propose to inject?



A We propose to inject the produced water from the Anderson Ranch-Wolfcamp and Anderson Ranch-Devonian reservoir, which are produced within the unit.

Q Now, what volume of water will you inject?

A We expect to average approximately 3,000 barrels per day. This is about the amount of water which is being injected at this time, and it appears that this will be a reasonable average in the future.

Q Now, referring to what has been marked as Exhibit Number Nine, would you identify that exhibit?

A Exhibit Number Nine is a three-page exhibit. Sheet Number One shows an analysis of the Wolfcamp reservoir or of the Wolfcamp water. Sheet Number Two is an analysis of the Devonian water, and Sheet Number Three is a report of a laboratory test showing the laboratory results of mixing the water and it indicates that the waters are compatible.

Now, each of the waters has some scaling characteristic, and we do plan to do whatever inhibitions and treatment with acid that is required to maintain proper injection.

Q Now, throughout your testimony, you have referred to this as the Anderson Ranch Unit. Is this area already unitized?

A Yes, sir. This was an exploratory unit and was -- the Devonian and Wolfcamp production was discovered in about

1953. And it has been producing from these two formations ever since then.

Q So, nothing further needs to be done in order to have a common ownership underlying your proposed waterflood project; is that correct?

A That is correct.

Q In your opinion, will the granting of this application result in the prevention of waste and recovery of oil that would not otherwise be recovered?

A Yes, it will.

Q Were Exhibits One through Nine prepared by you or under your supervision?

A Yes, sir.

Q At this time, I offer into evidence Exhibits One through Nine, inclusive.

MR. NUTTER: Exhibit Nine is the three-page deal, then?

MR. KELLAHIN: Yes, sir.

MR. NUTTER: Applicant's Exhibits One through Nine will be admitted into evidence.

(Whereupon, Applicant's Exhibits  
1 through 9 were offered and  
admitted in evidence.)

MR. NUTTER: Are there any questions of Mr. Lyon?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lyon, the Devonian and Wolfcamp Pools under the unit are presently producing about 3,000 barrels of water per day?

A Yes, sir.

Q And you expect that this rate of production will remain constant?

A Yes, we do. As we begin to have water break through the Devonian and abandonment of wells in the Devonian and so forth is expected to counterbalance this, so that we expect 3,000 barrels per day to be a pretty good average of what we will be injecting.

Q Do you suppose you are going to submit this 3,000 barrels pretty equally -- about five, ten barrels into each well?

A I would expect this to be the case. Of course, it will depend on how readily the two wells accept it.

Q And I presume you are expecting, then, about a one-year period of time to achieve fillup, because you showed on your estimate for secondary recovery, you showed that line taking off about one year after injection started?

A Right.

Q Now, as I understand it, the symbols on your

Exhibit 1, the Number Five well would have a Wolfcamp well directly west, one to the northwest, and one to the northeast. The Number Four well would have a Wolfcamp producer to the southwest, to the southeast, to the northeast, and to the northwest, then?

A Yes, sir. And there is under consideration at this time the plugging back of Number Two as a Wolfcamp producer.

Q It's shut in at the Devonian at the present time?

A Yes, sir. And it's quite possible that as Devonian wells are completed, they will be recompleted in the Wolfcamp.

Q I see. Particularly, if some of these existing wells show some response?

A Yes, sir.

Q I see.

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

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all, Mr. Examiner.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4236? We'll take the case under advisement and call Case 4237.

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STATE OF NEW MEXICO     )  
                                   )   ss  
 COUNTY OF BERNALILLO    )

I, DAVID BINGHAM, a Court Reporter 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 me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

David Bingham  
 COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4236 heard by me on 10/22, 19 69.

[Signature], Examiner  
 New Mexico Oil Conservation Commission