BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 23, 1968

EXAMINER HEARING

IN THE MATTER OF:

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

Case No. 3902

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Call case No. 3902.

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

MR. KELLAHIN: If the Examiner please, Jason Kellahin, appearing for the Applicant and we have the same witness who has been previously sworn, Mr. V. T. Lyon.

(Whereupon, Applicant's Exhibits 1 through 7 marked for identification)

* * * * *

V. T. L Y O N, called as a witness, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A V. T. Lyon.

Q Are you the same Mr. Lyon who testified in Case No. 3900?

A Yes, I am.

Q Mr. Lyon are you familiar with the application of Continental Oil Company in Case 3902?

A Yes, sir.

Q What is proposed by Continental in this case?

A Case 3902 is the application of Continental Oil Company for authority to install a pilot waterflood project

in the Langley-Mattix Pool by converting to water injection the Stevens B Well No. 8 which is located 660 feet from the north line and 660 feet from the east line of Section 12, Township 23 South, Range 36 East.

Q Referring to what has been marked as Exhibit No. 1, would you identify that exhibit?

A Exhibit No. 1 is a location and ownership plat showing the proposed injection well circled in red, the outlines of the Stevens B lease which is outlined in red, and described as the northeast quarter; the north half of the northwest quarter; the south half of the southwest quarter of Section 12, Township 23 South, Range 36 East; The south half and the south half of the north half of Section 7; the west half and the northwest quarter of the northeast quarter of Section 18, Township 23 South, Range 37 East. It also shows the location and ownership of wells and area at least two miles in each direction from the proposed injection well.

Q Does it also show the outline of the Skelly-Penrose B Unit?

A Yes, sir, it is shown by the dotted line over here to the northeast of our lease.

Q Now, referring to what has been marked as Exhibit No. 2, would you describe that exhibit?

A Exhibit No. 2 is a copy of the form C-108 which was filed with the application and we used this form because it contains information which is pertinent to an injection well. This is for use of our Stevens B No. 8 as an injection well. The surface casing is shown to have been set at 7 and 7/8ths inch, set at 336 feet with 200 sacks of cement, the cement was circulated to the surface; 4 and 1/2 inch casing was set at 3735 feet with 684 sacks of cement, top of the cement by temperature survey is 1405 feet.

It shows that the 2 and 3/8ths inch tubing will be set at 3600 feet in a packer set at that depth, that we propose to inject into the Queen formation in the intervals 3644 to 3662 and 3694 to 3706, 3712 to 3718.

Q Now referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

A Exhibit No. 3 is a schematic diagram showing essentially the same information which I have just described which was shown on Exhibit No. 2.

Q Now, will the casing tubing annulus, are you going to use a plastic-coated tubing?

A Yes, sir, we will.

Q Will the casing tubing annulus be filled with an inert fluid?

A Yes, sir.

Q And you propose to install a pressure gauge at the surface?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit No. 4, would you identify that exhibit?

A Exhibit No. 4 is a copy of a portion of the radioactivity log run on this well. It shows the top of the Queen formation at 3608, shows the perforations 3646 to 3664, 3696 to 3708, 3714 to 3720. I believe these differ by two feet from those shown on Exhibits 2 and 3. This is due to the fact that these are the measurements shown by the logging instrument, shows the collars and so forth, which we must find to perforate. The measurements shown on the other exhibits are Pilars measurements.

Q Now, would you give a brief history of the Stevens area in the Langlie-Mattix Pool?

A The initial production from this portion of the Stevens B lease, that portion described as the northeast quarter and the north half of the northwest quarter, was from Continental's Stevens B No. 3, which is located in the northwest quarter northwest quarter of the lease. It was completed November 19, 1959; the remaining wells in this area were completed during 1960, the last of which was the

Stevens B No. 10, completed July 20th, 1960. No. 10 is in the, well it's the well directly south of No. 8. All of the completions were through perforations from a minus 205 to a minus 337 feet subsea and were hydraulically fractured. Three of the wells are currently producing and three are shut in, including the proposed injection well. During the month of August, 1969, the three wells produced 127 barrels of oil, 150 barrels of water, 480 mcf gas, for an average gas-oil ratio of 3,780 cubic feet per barrel and an average daily rate of production 1.35 barrels per day per well.

Q Does this indicate that this particular reservoir is at an advanced stage of depletion?

A Yes, it does.

Q What's the cumulative production from the leases?

A The cumulative production as of September 1st, 1968, was 198,834 barrels.

Q And what is the reservoir producing mechanism on the primary recovery?

A At least in this portion of the Langley-Mattix Pool the driving mechanism is solution gas.

Q Now, referring to what has been marked as Exhibit No. 5, would you identify that exhibit?

A Exhibit No. 5 is a structure map on the Penrose Sand

which immediately underlies the portion of the Queen Formation which we are proposing to flood. The contour interval is 25 feet. The subject well is circled in red. The Stevens B Lease is situated on the south end of a broad north-south trending sincline, the Queen becomes more dolomitic and tighter to the east in the middle of Section 7. This facies change to the east forms the updip limit of the local Queen Sand Reservoir.

Q Now, referring to what has been marked as Exhibit No. 6, would you identify that exhibit?

A Exhibit No. 6, is a tabulation of data, it shows the porosity at 18%, initial oil saturation at 54%, residual oil saturation at 33%, formation volume factor of 1.09. The primary production as of September 1st, 1968, as I have previously testified for this Stevens B Lease, is 198,834. Considering a project area which would involve the quarter quarter section on which this well is located, and all direct and diagonal quarter quarter sections, the cumulative recovery is 259,918 barrels. This is to August 1st, 1968. We estimate the secondary recovery from the Stevens B Lease at 139,200 barrels and that from the project area, 181,300 barrels.

Q Is it your opinion that this area can be economically waterflooded?

A Yes, sir, after reviewing available data in regard to porosity, oil saturation, oil recovery under primary operations and calculations by accepted methods, as to anticipated performance, it is my opinion that this area can be economically and feasibly waterflooded.

Q Now, will waterflooding of the Stevens B Area result in the recovery of oil that would not otherwise be recovered?

A Yes, sir, it will. We estimate that we will recover 139,200 barrels of additional oil from our lease.

Q And how much water do you anticipate you will inject into this project?

A We expect to inject between 150 and 300 barrels per day into this injection well. The total water requirements for the flood will depend, of course, on the size of the waterflood that is ultimately developed.

Q Now, what is the source of the water you will use?

A We will use water which is produced on this lease and water which may be tendered to us from other leases of Continental and other operators in this area.

Q Do you have a chemical analysis of the water you propose to use?

A Yes, sir. Exhibit No. 7 is an analysis of the water which was sampled at our battery. I see that there's a

typographical error on this. It identifies the lease as Stevens B 21, it should be B 12, which is that portion of the Stevens B lease located in Section 12.

Q Is this water compatible with the Queens Seven Rivers formation water?

A It should be, it is the same water.

Q Now, what is the waterflood allowable which you would anticipate for this unit?

A There are two direct and one diagonal offset wells on our lease to the injection well, creating a four well project area. Based on the minimum waterflood allowable of 42 barrels per day, as provided in Rule 701 E, a minimum waterflood unit allowable of 168 barrels a day would be anticipated. Under the current allowables, 58 barrels per day, the project allowable would be 232 barrels per day.

Q You mean 323 barrels, do you not?

A No, that's a typographical error.

Q 232 barrels, then, correct?

A Yes, sir.

Q In your opinion, will the granting of this application result in the protection of correlative rights and prevention of waste?

A Yes, it will.

Q Were Exhibits 2 through 7 prepared by you or under your supervision?

A Yes, sir, they were.

Q And Exhibit No. 1 --

A Was prepared under my supervision, too.

Q -- was also prepared under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time, I'll offer in evidence Exhibits 1 through 7, inclusive.

MR. NUTTER: Applicant's Exhibits 1 through 7 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 7 offered and admitted in evidence.)

MR. KELLAHIN: That's all I have on direct examination.

MR. NUTTER: Does anyone have any questions of Mr. Lyon?

MR. PORTER: Yes, one general question. Mr. Lyon, do you have other waterfloods in the Langlie-Mattix?

THE WITNESS: Yes, sir. We are, just within the past month, we have placed the Langlie-Jack unit under waterflood.

MR. PORTER: But you haven't had experience with any where you have had a response, so far?

THE WITNESS: No, except as a non-operating working

interest owner, we are a working interest owner in the Langlie-Mattix Woolworth Flood where they have had excellent response.

MR. PORTER: And that's in the Queen?

THE WITNESS: Queen and there may be some Seven Rivers in it.

MR. PORTER: Thank you.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lyon, I would like to review just what you have got here as far as wells on this lease are concerned. Turn to your Exhibit No. 1, please.

A Yes, sir.

Q Now, the No. 3 over there in Unit G, is producing from the Langlie-Mattix now?

A Yes, sir.

Q The No. 7 is a shut in Langlie-Mattix?

A Yes, sir.

Q No. 6 is a shut in Langlie-Mattix well?

A Yes.

Q No. 9 and No. 10 are producing?

A Right.

Q And No. 8 at the present time is shut in?

A Yes, sir.

Q But it will be the injection well?

A Yes, sir.

Q And No. 13 over here in Section 7 is an abandoned producer?

A It's a dry hole.

Q It was a dry hole?

A Yes, sir.

Q So far as the project area on your Stevens B 12 lease, you would have four wells in that project area?

A Yes, sir.

Q The injection well and the No. 6, 9 and 10. Do you plan to reactivate the No. 6?

A We will monitor it and when there is a measureable flood level in it, we'll place it back on production.

Q So for the time being, the project area would consist of the No. 8 and the No. 9 and 10, correct?

A Well, I'm not sure that I understand how you --

Q Well, the project area, this is not unitized with any other lease?

A No.

Q So the project area would be limited to your lease?

A Just to the producing wells, you mean?

Q Well, the one injection well, the No. 8 and then the No. 9 and 10 are offsetting producing wells?

A Yes; the No. 6 also offsets.

Q Well, it's not producing at the present time, so it wouldn't receive allowable until such time as it was turned on.

A All right, I am with you.

Q So at the time being, our project area would be limited to three forty's and on reactivation of No. 6, it would be four forty's.

A I see.

Q Isn't that correct?

A I wasn't aware you figured it that way, but if this is the way you figure it, that's correct.

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

(Witness excused.)

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

MR. KELLAHIN: No, sir, that's all, Mr. Nutter.

MR. NUTTER: Does anyone have anything they would like to offer in Case No. 3902? We'll take the case under advisement and recess the hearing until 1:15.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, MARIANNA MEIER, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my hand this 1st day of November, 1968.

Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3902 heard by me on 10/23, 1968.

Examiner
New Mexico Oil Conservation Commission