



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

December 27, 1968

EXAMINER HEARING

IN THE MATTER OF:)

Application of Petroleum)
Corporation of Texas for)
waterflood project, Eddy)
County, New Mexico.)

Case No. 4006

BEFORE: Daniel S. Nutter,
Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 4006.

MR. HATCH: Case 4006, application of Petroleum Corporation of Texas for a waterflood project, Eddy County, New Mexico.

MR. CAMPBELL: Jack M. Campbell, of Stephenson, Campbell and Olmsted, Santa Fe, New Mexico, appearing for the applicant. We have one witness in this case, Mr. Harrison.

MR. NUTTER: You are still under oath.

(Whereupon, Applicant's Exhibits
Numbers 1, 2, and 3, inclusive,
were marked for identification.)

B. G. HARRISON

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

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please?

A B. G. Harrison.

Q By whom are you employed, and in what capacity, and where is your office located, Mr. Harrison?

A I am employed by Petroleum Corporation of Texas as Manager of Secondary Recovery. Our offices are in Breckenridge, Texas.

Q You are a petroleum engineer?

A Yes, sir.

Q Have you testified previously before this Commission, or its Examiners in that capacity?

A Yes, I have.

Q Are you acquainted with the application of Petroleum Corporation of Texas for a waterflood project in Eddy County, New Mexico, Case No. 4006 before the Commission?

A Yes, I am.

Q Will you state in general terms what you are seeking by this application?

A We seek authority to inject water into the San Andres Formation through Petroleum Corporation of Texas Paton Federal No. 2.

Q I hand you what has been identified as Applicant's Exhibit Number 1 in this case. Referring to this exhibit, will you identify the wells which you have shown in blue and red on this, including the proposed injection well which is also circled in dashed red lines.

A Yes. The plat shows outlined in the cross-hatched area, the Atlantic-Richfield West Red Lake Unit. The wells and well numbers which have red triangles around them are the initial four injection wells proposed by Atlantic-Richfield in their waterflood program, which involves both the Premier and

the San Andres zones. This unit has previously been approved by the Oil Conservation Commission.

The well numbers which are shown in blue triangles are the expansion program proposed by Atlantic within their unit.

Our Paton Federal No. 2, circled in red and also shown in a blue triangle, is located in the southwest quarter of the southwest -- pardon me, in the southeast quarter of the southwest quarter of Section 6. This well is proposed at this time to be used for salt water injection, which will have a little over 80 barrels per day; by then, at the time the Atlantic-Richfield flood is expanded to include the other wells shown in blue, then we propose to go to full scale injection on Paton Federal No. 2, as a cooperative measure with Atlantic-Richfield, and also to protect correlative rights across the lease boundaries.

Q Now, you have also shown on this plat a green outline north of the Atlantic-Richfield unit. What does that indicate?

A The leases outlined in green are the leases operated by Petroleum Corporation of Texas.

Q Then this includes all of that area to the north, except the Atlantic leases in the south half of Section 6 and the south half of Section 5, and the Atlantic leases on the northwest quarter of the northeast quarter, the southwest quarter

of the northeast quarter, and the northwest quarter of the southeast quarter of Section 6, is that correct?

A Yes. All of the leases operated in Sections 5 and 6 are either within the boundary of the unit operated by Atlantic-Richfield, with the exception of the Atlantic operated Malco Federal B.

Q Have you been in communication with Atlantic-Richfield about this matter?

A Yes, I have.

Q Is your proposal agreeable with Atlantic-Richfield, so far as you know?

A Yes, this particular well was chosen for injection, referring to the Paton Federal No. 2, in cooperation with Atlantic-Richfield, and we have a written agreement which had not been finalized, but the draft has been drawn which will provide for cooperation between the unit and the Paton Federal Lease.

Q Where will you obtain the water, the salt water which you intend to dispose of prior to the time you place this well on full injection?

A We propose to gather the produced water from all of our leases in Sections 5 and 6, to dispose of into the Paton Federal No. 2. This is in order that we may do away with our

present surface pits, and inject some 80 plus barrels per day of produced water, and enable us to continue with our oil production.

Q How long is it that it is anticipated before the expansion of the Atlantic-Richfield waterflood to require you to go to full injection?

A According to Atlantic engineering personnel, they expect to begin injection into their four initial wells as soon as water is available, and this should be very soon. They have the four wells prepared for injection. Then they feel that within six months they will expand into the second stage.

Q Where will you get the additional water necessary to complete your fillup and put this well on adequate injection, at adequate injection rates?

A Our agreement with Atlantic-Richfield provides for the purchase of pressured water from their injection plants.

Q That is water just to supplement the amount of water that you are injecting from salt water disposal, is that correct?

A Yes, sir.

Q I hand you what has been identified as Applicant's Exhibit Number 2, and ask you please to state what this is.

A This is a schematic diagram showing the casing program and the proposed tubing injection program, the well completion

of the Paton Federal No. 2.

Q Using this exhibit, would you identify for the Examiner how you intend to utilize this well, and what the injection area zone will be?

A At the present time, the well has a plugged back total depth of 1703 feet, with perforated intervals 1662 to 1667, and 1692 to 1699 in the San Andres Zone.

We propose to run cement-lined tubing with a tension packer, and set at approximately 1,650 feet, so that all injected water will be confined to the perforated interval of 1662 to 1699.

The lower set of perforations are indicated at 1712 to 1726, and which were squeezed off with cement in June of 1960, were water productive, and that is the reason they were squeezed off.

Q I hand you what has been identified as Applicant's Exhibit 3, and ask you to state what that is.

A This is a radioactive log, which was run by Halliburton Oil Well Cementing Company for the Ibex Company on 8-24-67, on completion of this well.

I have depicted on the log in blue the top of the San Andres; and in the red in intervals below 1650 feet are shown the two perforated intervals in the porous zones of the

San Andres. Also is shown the plugged back total depth of 1703 feet.

Q Can you give the Examiner some information about the production history and present status of the proposed injection well?

A This lease, the Paton Federal Lease is nearing the primary economic limit. This well is producing less than three barrels of oil per day, the Paton Federal No. 2 is that we propose to convert, so it is very rapidly approaching the economic limit.

Q Have you made any calculations as to the possible additional recovery that may be obtained from these leases in the Red Lake Field, in the event this waterflood project which has been commenced by Atlantic-Richfield is successful?

A Yes, the area outlined in green on the map, which are the leases operated by Petroleum Corporation of Texas, ultimately will produce about 740,000 barrels of oil. Our calculations would indicate that we can expect another 370,000 barrels through secondary recovery, should this flood prove successful.

Q Do you believe that if this application is granted, you will be able to prevent waste and provide for the recovery of additional oil, and that correlative rights of the owners in

the area will be protected?

A Yes, we believe this is the first step, and a necessary step in cooperation with Atlantic-Richfield. It also is a step toward protecting correlative rights, and in determining the proper injection pattern which will be necessary to successfully flood this reservoir.

Q It is your intention to continue to use this well for the disposal of whatever salt water may be produced from your leases in this area, is it not?

A Yes, that is true. Until such time as the program is expanded.

MR. CAMPBELL: I believe that is all the questions I have at this time, Mr. Examiner.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q As I understand, the well has eight and five-eighths-inch casing, it is 917 feet with cement circulated to the surface, is that correct?

A Yes.

Q Is that surface string of casing sufficient to penetrate and seal off all the fresh water zones in this area?

A To the best of our knowledge, Mr. Nutter, this string

of casing would protect all fresh waters.

Q And then there is no intermediate string, but you have five and a half-inch casing at 1756, and the top of the cement on the string is up in the eight and five-eighths surface pipe?

A That's right, the cement has been filled in the annulus so it overlaps into the surface pipe.

Q What would you do with the annulus in this particular case?

A The tubing casing annulus?

Q Yes.

A We propose to fill it with fresh water containing a corrosion inhibitor.

Q Inhibited water. It will be equipped with a gauge at the surface?

A Yes.

Q Now, has Atlantic already put the four wells on injection that you show with the red triangles around them, or are they about to?

A No, in my conversation with one of the Atlantic-Richfield engineers this last week, he told me that the wells were prepared for injection, and as soon as the water company laid their line into their plant, they would begin injection, which should be within the next few days.

Q And the Commission has already approved the unit and also the waterflood project?

A That is my understanding.

Q Now, your ultimate plans would call for more than this one well on your leases, is that correct?

A Yes.

Q Would it be your intent to unitize the leases, or consolidate them in some manner?

A We feel that would be necessary.

Q In order to transfer allowables, and so forth, across the lease lines?

A Yes, and also there are some one-well leases that would be difficult to protect properly.

Q But for the time being we are talking about the Paton Federal Lease, and that lease only?

A Yes, sir.

Q As far as the flood is concerned?

A We have made some plans toward injection on the other leases, but these are not final.

Q I see.

A We have made engineers calculations, and have worked up flood patterns, but these are subject to the actual operation and the developments of the Atlantic-Richfield and the Paton

Federal No. 2 flood.

Q Is there a particular name for this interval of the San Andres that you are going to be flooding in this well?

A No, we don't define it as anything but being just a lower porosity development within the San Andres interval.

Q There is no particular nomenclature applicable?

A No, I don't think so.

MR. NUTTER: Any further questions? You may be excused.

MR. CAMPBELL: I would like to offer Applicant's Exhibits 1, 2, and 3.

MR. NUTTER: Petroleum Corporation's Exhibits 1 through 3 will be admitted in evidence.

(Whereupon, Applicant's Exhibits
Numbers 1, 2, 3, inclusive,
were admitted in evidence.)

MR. NUTTER: Anything further?

MR. CAMPBELL: Nothing.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4006? We will take the case under advisement, and call Case 4007.

STATE OF NEW MEXICO)
)
 COUNTY OF BERNALILLO) ss.

I, SAMUEL MORTELETTE, 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.

Samuel Mortelette
 COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Bernalillo Hearing of Case No. 4006, heard by us on 12/27, 1968.

Wm. J. ..., Examiner
 New Mexico Oil Conservation Commission