

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 11, 1964

EXAMINER HEARING

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IN THE MATTER OF: Application of R. C. Davoust)
for the expansion of a waterflood project,)
Eddy County, New Mexico. Applicant, in the)
above-styled cause, as successor to Stanton)
Oil Company, Ltd., seeks to expand the)
Turkey Track Pool Waterflood Project author-)
ized by Order No. R-1524. Said expansion)
would be effected by the drilling of 11 water)
injection wells to the Queen formation at)
certain unorthodox locations no nearer than)
5 feet distance from any 40-acre lot line in)
Section 34, Township 18 South, Range 29 East,)
and Section 3, Township 19 South, Range 29)
East, Eddy County, New Mexico.)

Case No. 3010

BEFORE: DANIEL S. NUTTER, EXAMINER.

TRANSCRIPT OF HEARING

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MR. NUTTER: We will call Case 3010.

MR. DURRETT: Application of R. C. Davoust for the expansion of a waterflood project, Eddy County, New Mexico.

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

MR. WATSON: I am Watson of Watson and Watson, Artesia, New Mexico appearing for Applicant R. C. Davoust. We have one witness, Mr. Frickert.

(Witness sworn.)

MR. WATSON: If I may summarize the previous history of this project a little bit. Case 1761 before this Commission resulted in Order No. R-1524, authorizing a pilot waterflood of the Queen sand in the Turkey Track Pool, Eddy County, New Mexico through four injection wells at unorthodox locations. Thereafter, by administrative order WFX-96, expansion was permitted by injection into two additional wells and then a subsequent administrative order WFX-166 expanded the flood for two more injection wells.

We would like for the hearing Examiner to take notice of these proceedings merely for reference purposes. Under the present application the Applicant seeks further expansion of the flood by the drilling of 11 wells for injection of water into the Queen formation at unorthodox locations. The application, as submitted, is to some extent in conflict with this hearing because there are



two wells which have already been authorized by administrative order WFX-166. They were inadvertently included in the application, but they were stricken from the notices published, as I understand it.

MR. NUTTER: All right.

MR. FRICKERT

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

DIRECT EXAMINATION

BY MR. WATSON:

Q Now, Mr. Frickert, I will ask you to refer to what is marked as Exhibit 1. I'll ask you to state what that exhibit depicts.

A This Exhibit 1 is just an area map.

MR. WATSON: Just a moment, I am not sure that the witness has testified before the Commission.

A No, I have not.

MR. NUTTER: Qualify the witness, please.

Q Where do you live?

A Midland, Texas.

Q By whom are you employed?

A Rider Scott Company, petroleum engineers.

Q How long have you been employed by Rider Scott?



A Since January, 1959.

Q What is your educational background?

A B. S. in petroleum engineering from the University of Texas.

Q Under your employment with Rider Scott Company have you worked upon any waterflood projects?

A Yes, sir.

Q Have you worked in particular upon any Queen waterflood projects in New Mexico?

A Yes, sir, in the Caprock-Queen field.

Q You have been with them since --

A January of 1959.

Q Is Rider Scott Company presently employed by R. C. Davoust?

A Yes. We are acting as an agent for R. C. Davoust Company.

Q You are a project engineer?

A Yes, sir.

Q On the project with which this application is concerned?

A Yes, sir.

MR. WATSON: Are the witness's qualifications acceptable?

MR. NUTTER: They are.

Q Now, referring to Exhibit No. 1, would you describe what this exhibit portrays?



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A This exhibit is an area map on which the leases under consideration here are shaded yellow.

Q This shows the surrounding and offsetting area?

A Yes, sir.

Q Now we'll refer to Exhibit 2. I'll ask you to describe Exhibit 2, please.

A Exhibit 2 is a project map showing first of all the pilot area which includes Wells 1-W, 2-W, 3-W and 4-W.

Q These are at the top of the project area?

A Yes, sir.

Q Section 34?

A Section 34.

Q These are authorized as a part of the pilot flood?

A Yes, sir.

Q Then administrative order WFX-96 authorized two additional injection wells. Are those shown on this map?

A Yes, sir, they are shown as 5-W and 6-W in the lower half of 34.

Q Then the latest administrative order WFX-166 authorized two additional wells?

A Yes, sir, 7-W and 8-W.

Q Does this map show your proposed wells for which we apply under this application?



A Yes, sir, in Section 3, the double circle.

Q This is Section 3, Township 19 South, Range 29 East?

A Yes. The double circles in the unorthodox location are the 11 proposed injection wells to be drilled.

Q The numbers are what?

A 10-W through 19-W and 9-W up in Section 34.

Q 9-W?

A Yes.

Q That's 34, 18, 29?

A Yes.

Q If you'll refer to what has been marked Exhibit No. 3, which is labeled "Oil Production Statistics", what does this exhibit purport to show?

A This exhibit purports to show the oil production during 1963 for the producing wells involved. Another column is Cumulative Production to the end of 1963 for each well, and two columns showing the daily average oil and water produced during December of 1963. The upper group of wells are in the waterflood area presently and the lower group of wells are in the proposed waterflood area and are not now being water flooded.

The daily average production for the waterflood wells ranges from 1.9 barrels per day to 29.6 barrels per day in the waterflood area, and outside the waterflood area the range is from one-tenth



barrels per day to four and a half barrels per day.

Q Referring to the upper group of wells, being the producing wells within the waterflood area, has the project ever exceeded the Rule 701 allowable?

A No, sir. Our largest Rule 701 allowable was near 350 barrels a day. The largest allowable we have used to date is right near 120 barrels per day. The maximum producing rate at any well has been 40 barrels per day.

Q Now, referring to your lower group of wells, being the wells outside the waterflood area on Exhibit No. 3, as to your average daily production in December of 1963, do these wells, have they reached an advanced stripper state where they're reaching the economic limit?

A Yes, sir, they have.

Q Now refer to the exhibit which has been marked Exhibit No. 4, please.

A Exhibit No. 4 consists of three curves. The upper curve purports to show the monthly oil production from the waterflood area which indicates that substantial response has been received from the flood to date. The second curve shows the declining production rate for the wells outside the waterflood area, and the lower curve, which is dashed, indicates the monthly water production from the waterflood area.



Q The significance of this is that you are receiving a response?

A Yes, sir, the waterflood has worked and is working right at this time.

Q If you'll refer to Exhibit No. 5, the injection performance graph.

A Figure 5 consists of four curves, the upper dotted curve is the injection pressure, which has recently been near 1650 pounds. The next lower curve is the daily average injection rate for all injection wells, which has averaged recently near 600 barrels per day. The next curve is a cumulative water injected to date, and the last curve shows the number of injection wells. We presently have six injection wells.

Q If you'll refer to Exhibit No. 6.

A Exhibit No. 6 is for information only. It shows the most recent water analysis of our injected water. This water is from the Rustler formation above 300 feet deep.

Q This exhibit is tendered for information only?

A Yes, sir.

Q Now, Exhibit No. 7.

A Exhibit No. 7 is a casing, proposed casing diagram which shows that we intend to set surface casing at least 15 feet into the salt formation, which in this area ranges from 400. Then we



intend to set $4\frac{1}{2}$ -inch production string, in this case on top of the Queen sand, but this is to be, may be revised if a geologic condition exists which we may want to set through the sand. The $4\frac{1}{2}$ -inch production string will be cemented back to 1500 feet.

Q Have you had an opportunity to check this with the State Engineer's office?

A Yes, sir. They feel that this program that we have suggested here without the use of tubing and a packer is okay with the Engineer's Office.

Q This diagram, casing diagram, is submitted for the 11 wells which are applied for at this time?

A Yes, sir.

Q Isn't it also a fact that the Applicant would like to follow this casing diagram or program as to the most recent two wells authorized by administrative Order WFX-166?

A Yes, sir. We would like to if possible. The first administrative approval order allowed us to set casing without using tubing and packer.

Q But the Order WFX-166?

A Said use tubing and packer. We had asked for that, but we have looked at the economics.

Q You would like, if possible, to have this casing program considered in a reconsideration for the two wells authorized under



Order WFX-166?

A Yes, sir.

MR. WATSON: If the Examiner please, I don't know if this is a matter which requires publication or not.

MR. NUTTER: Those two wells are not a subject matter of this hearing at all?

MR. WATSON: Yes, sir.

MR. NUTTER: So we don't have jurisdiction of those two wells in this hearing. However, if you submit for amendment to that order by normal routine channels together with a copy of the State Engineer's Office, we might revise the WFX-166 to eliminate the tubing.

MR. WATSON: In other words, this is submitted for the 11 wells in this hearing.

MR. NUTTER: All right.

Q (By Mr. Watson) Approximately how long has the pilot flood authorized by Order R-1524 been in operation?

A The pilot flood was instigated in March of 1960.

Q March of 1960. Have you been familiar with this project most of its life?

A We became involved in this project in January of 1961. We've been with it ever since.

Q Were you employed then in January of 1961 by Stanton



Oil Company, Limited, the predecessor to R. C. Davoust?

A Yes.

Q You have been with it since that time?

A Yes.

Q Have you yourself been familiar with it?

A Personally, yes.

Q What have you learned during your employment in this project about the characteristics of the Queen sand?

A Well, the characteristics of the Queen sand in this area is similar to the Queen sand in other areas. It is a lenticular in nature and in our particular area it varies from five to eight feet in thickness. Our injectivities are normal. They're in the range of ten barrels per foot per day, but due to the thin nature of the sand we are limited to 60 barrels average injection rates, which limit the amount of production we can get from the stimulating.

Q In other words, by reason of the characteristic of the sand, your productivity is not as high as if it were thicker?

A Well, we're limited to our injection, which limits our production, in other words.

Q Have you any cores or logs indicating this sand characteristics?

A Yes, sir. We can place in evidence a log and a core



on our most recently drilled injection well, Brainerd No. 5-W,
if you wish.

(Whereupon, Applicant's Exhibits
Nos. 8 and 9 were marked for
identification.)

Q You secured what has been marked as Exhibit 8 when you
were employed by Stanton Oil Company, Limited?

A Yes, Core Laboratory.

Q It is a core analysis from Core Laboratories?

A Yes.

Q For the Brainerd No. 5-W Well?

A Yes.

Q And also you secured the log?

A Yes, sir, from Western.

Q From the Western Company?

A Yes, sir. It has been marked as Applicant's Exhibit No.
9.

Q In line with the character of the sand and the other ex-
perience you had in this project, what have you noted about the
economics of the project?

A We have noted that although the Queen sand in this area
is floodable as proven by our pilot and recent extension, the
economics is hindered somewhat due to the fact that we have to
drill injection wells to decrease the pattern size, and also to



effect equal, or to protect equity of lease lines we feel that if we could develop this project in the near future, the whole project, and flood the reservoir at one time we could reduce the operating cost and effectively improve our economics.

Q How would this have the effect of improving your economics?

A Well, we would shorten the life of the project, and in drilling these wells we could get a drilling contract which we could get a lower per well drilling rate to move in and drill our wells for us.

Q And, of course, higher productivity?

A Yes, sir.

Q Referring for the moment to Exhibit No. 2, being the project map, the proposed locations of the injection wells applied for, do they, are they in a common pattern?

A Yes, sir. Generally they follow 40-acre five-spot pattern, which we have used in the past.

Q Which would give an effective sweep?

A Yes, this is a universally accepted pattern for water-flooding.

Q In the locations where you propose these wells, would they protect correlative rights?

A Yes, sir, they will protect correlative rights.



Q As to Exhibit 1 being the area map, 2 being the project map, 3 being the oil production statistics, 4 and 5 being the graphs as to production performance and injection performance, and Exhibit 7 being the casing diagram, were these prepared by you or under your supervision?

A Yes, sir, they were.

Q As to Exhibit 6, that was received by you when you were employed on the project?

A Yes, sir.

Q Your water analysis?

A Yes, sir.

Q I believe you testified that you were employed on the project when the core --

A Yes, sir.

Q -- and the log, Exhibits 8 and 9 were proposed?

A Yes, sir.

MR. WATSON: The Applicant offers Exhibits 1 through 9 for the record.

MR. NUTTER: Applicant's Exhibits 1 through 9 are admitted in evidence.

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

MR. NUTTER: Do you have any further questioning, Mr.



Watson?

MR. WATSON: No, sir, the Applicant rests.

MR. NUTTER: Does anyone have any questions?

CROSS EXAMINATION

BY MR. NUTTER:

Q On Exhibit 3 you show production for Brainerd No. 2 as 7.2, which of these Brainerd wells is this?

A It's 2, that is a water supply 2, the WSW.

Q So the No. 2 is the one over there in the Northwest of the Southwest?

A Yes.

MR. NUTTER: I believe that's all I have.

MR. WATSON: There is one question I would like to ask this witness.

REDIRECT EXAMINATION

BY MR. WATSON:

Q Do you know of any reason why an early decision in this case would be advantageous?

A Yes, sir. We would appreciate an early answer to this. We have a drilling rig drilling right at the present time on the well on 7-W for which we have received approval for injection and approval to drill by the United States Geological Survey. In the very near future he will be wanting to move to the next location,



otherwise we'll have to pay the day rate until we get permission to inject.

MR. NUTTER: Has 8 been drilled yet?

A No, sir.

MR. NUTTER: So he has to finish 7 and get on 8?

A Yes, sir. Well, we have a problem here. We have no information in Section 3 as to the thickness of the reservoir except for old driller's logs, and we would like, if we get an early approval in order to figure our economics a little closer, we would like to step down through that section and get us some core information and be able to say how much of that we are going to be able to actually drill up, because some of the locations Mr. Davoust feels like I have a couple of dry holes there. In other words, we need some information.

MR. NUTTER: So you want to step out south and get some information?

A Yes, sir. We need to do this to see how far we can carry this project out. That's one of our real problems.

MR. NUTTER: One other thing, I realize that you stated that you might amend this, but you would set your 4½ on top of the Queen and the pay is at approximately 2100 in the Queen. Where is the approximate top of the Queen?

A We'll set it at 2100 or in the top. I didn't quite



understand.

Q (By Mr. Watson) That's right, the pay is in the Queen 21, so what is the top of the Queen?

A The top of the Queen would be maybe ten feet higher.

MR. NUTTER: In other words, this pay is right up in the top of the Queen formation?

A No, it's in the lower half, but the actual Queen pay is possibly some ten feet down. In other words, we'll set it into the oil-bearing section.

Q (By Mr. Watson) In other words, your exhibit here where you say 4 $\frac{1}{2}$ production string set on top Queen sand, you mean the Queen sand pay?

A Queen sand pay.

MR. NUTTER: I see. Not the Queen formation?

A No, it will depend on our core analysis. When we pull our core we'll decide where the oil saturation is and set it there.

MR. NUTTER: Any other questions? Mr. Irby.

RECROSS EXAMINATION

BY MR. IRBY:

Q I have one question, Mr. Frickert, the water analysis which is your Exhibit 6, --

A Yes, sir.

Q -- the sample was taken from your No. 2-WSW Well in the



Southeast corner of the Northeast of the Southwest of 34?

A No, sir. Our water supply, we have two water supply wells, one, No. 1, is in the Southwest of the Southwest Quarter, and then we have the No. 2 in the Northeast of the Southwest Quarter. We are presently only using the No. 1 water supply well and this sample came from this well. It doesn't say on here, but they're both completed in the sand, but the No. 2 water supply well is not being used at the present time.

MR. IRBY: Thank you.

MR. NUTTER: Anything else, Mr. Irby?

MR. IRBY: That's all, thank you.

MR. NUTTER: If no further questions of the witness, he may be excused.

(Witness excused.)

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

MR. WATSON: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3010? We'll take the case under advisement and the hearing is adjourned.



STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal
this 6th day of April, 1964.

Ida Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiners hearing of Case No. 3010, heard by me on 2/11, 1964

Stamm, Examiner
New Mexico Oil Conservation Commission

DEARNLEY, MEIER, WILKINS *and* CROWNOVER

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