BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 20, 1959

EXAMINER HEARING

IN THE MATTER OF:

Case 1681

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IN THE MATTER OF:

Application of The Ibex Company for a capacity allowable for one well in a water flood project. Applicant, in the above-styled cause, seeks an order authorizing a capacity allowable for its Welch Duke State Well No. 18 in the project area of its Artesia Water Flood Project No. 2, Artesia Pool, Eddy County, New Mexico. Case 1681

BEFORE:

Mr. E. J. Fischer, Examiner.

TRANSCRIPT OF HEARING

MR. FISCHER: The hearing will come to order, please. The next case on the docket will be Case 1681.

MR. PAYNE: "Application of The Ibex Company for a capacity allowable for one well in a water flood project."

MR. CAMPBELL: Jack M. Campbell, Campbell and Russell, Roswell, New Mexico, appearing on behalf of the Applicant. I have one witness to be sworn.

(Witness sworn.)

(Marked The Ibex Company's Exhibits Nos. 1, 2, 3 and 4, for identifcation.)

MR. CAMPBELL: I would like the record to show that Graridge Corporation is now operating the project involved in this application, and appropriate C-110 forms have been filed indicating a change of operator.

MR. FISCHER: All right.

B. J. HARRISON

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

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please?

A B. J. Harrison.

Q Where do you live, Mr. Harrison?

A Breckenridge, Texas.

Q By whom are you employed?

A Graridge Corporation.

Q In what capacity?

A Manager of Secondary Recovery.

Q Have you testified previously before this Commission?

A Yes, I have.

Q What is your profession, are you an engineer?

A Yes, petroleum engineer.

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

MR. FISCHER: Yes, sir, they are.

Q In connection with your work, are you acquainted with a water flood project identified as Artesia Flood No. 2 in Eddy County, New Mexico?

A Yes, sir, I am.

Q Are you acquainted with the application filed in the name of Ibex Company in connection with this particular flood that's on hearing at this time?

A Yes, Mr. Campbell.

Q I refer you to what has been identified as Ibex Company Exhibit No. 1 and ask you to state what that is.

A This is a plat or map of the area of Artesia Pilot Flood No. 2.

Q What do the symbols indicate? First, what are the red symbols or red circles?

A The red circle wells indicate the present injection wells.

Q And the black dots indicate producing wells?

A Yes, sir.

Q Will you go ahead and explain what the figures shown on the Exhibit No. 1 indicate?

A The figures in blue beside each of the well numbers indicates the production of this well prior to effects of the water flood, the upper figure indicating the oil production, the lower the water production.

The red figures on the left of the well location indicate the present oil and present water production, the oil being the top figure, the water the lower figure in barrels per day.

Q Now, the well which is involved in this hearing is Well No. 18, is it not, shown in the approximate center of that section?

A Yes. It's located in Unit C of Section 28.

Q Your most recent test on that well shows, what is its producing capacity?

A This well has a producing capacity at the present time of 70 barrels of oil per day and no water.

Q Was that well recently drilled?

A Yes, this well was drilled, drilling operations were completed in the latter part of April. The well was completed at that time and a potential test of 72 barrels of oil per day was taken on May 1st.

Q I'm going to ask you to identify these exhibits and then referring to them I'm going to ask you what you base your application, indicating that this production is water flood production. First, I'll hand you what has been identified as Ibex Company Exhibit No. 2 and ask you to state what that is, please.

A This is a curve indicating the production, oil production in barrels per month from the entire Welch Duke State Lease which is a 160 acre lease.

Q I now hand you what has been identified as Ibex Company Exhibit No. 3 and ask you to state what that is.

A This is a curve depicting well tests on Welch Duke State Well No. 11, the curve indicating the oil production, barrels per day by test.

Q I hand you what has been identified as Ibex Company Exhibit No. 4 and ask you to state what that is, please.

A This is a curve depicting the oil and water production from Welch Duke State No. 9, the production being indicated in barrels per day by test.

Q Now, Mr. Harrison, you have obtained an emergency order authorizing the production of the well here involved at a rate in excess of the normal unit allowable, and in this application you are seeking to obtain an order authorizing you to continue that. Is it your opinion that the oil being produced from this

well is water flood oil?

A Yes, it is, Mr. Campbell.

Q Referring to Exhibits 2, 3 and 4, will you state to the Examiner on what you base that opinion?

A First I would like to refer to Exhibit No. 2, the production curve from the Welch Duke State Lease. We have some of the primary production history in 1955, 1956 which shows a rather steady decline from somewhere in the order of 500 barrels per day to about 120 barrels per day at the time Welch Duke State No. 17 was completed in January of 1957, this well being located in Unit E of Section 28, and lying approximately 900 feet Southwest of Welch Duke State No. 18.

At the time this well was drilled it had a natural production of one barrel per day. Shortly after it was completed it was fracture treated, which resulted in increasing the production from one barrel per day to initial production of 18 barrels per day, which declined rather rapdily. As can be seen from the lease production curve, the maximum production following completing that well was some 390 barrels per month, which would indicate that this well certainly had to be producing less than an average of 18 barrels per day.

This production then, the lease production steadily declined until it was in the order of 100 barrels per day at the time the water injection was initiated, and we had an increase in lease production in March of 1958, all of this increase being due to the water flood with no new drilling being involved.

This indicates that the area in which Welch Duke State No. 17 was drilled was easily a depleted area in that its production

rapidly declined to the normal two to three barrels per day that the other older wells were producing in the area.

Now I would like to refer to Exhibit No. 3 which is the oil production curve, or test curve, for Welch Duke State No. 11. It will be noted from this curve that the well was producing at the rate of two barrels per day in the early part of 1959 prior to being affected by the water injection program. Shortly after Welch Duke State Well No. 16 and 4 were placed on injection, this well received a water flood increase. At the time the curve was drawn, had reached a production of 42 barrels per day. Since that time we have a subsequent test which indicates the well to be producing 54 barrels of oil per day and one barrel of water.

This is one of the wells I had reference to being an old well in a depleted area producing at a normal rate for the area of two barrels per day prior to being stimulated by the water flood.

Exhibit No. 4 is a similar curve for Welch Duke State No. 9. Here we had a production of some one to two barrels per day prior to the increase caused by water flood in March of 1958. This well also indicates that the production for the area was low and in a depleted area. At the time the water injection program was initiated this well was peaked at some 165 barrels per day prior to a water breakthrough, and is now declining with a present producing rate of some 89 barrels of oil per day and 94 barrels of water.

We have run an interference test between Well No. 16 and Well No. 9 in that we shut injection Well No. 16 in for a short period of time, a period of three or four days, and took production

tests on Well No. 9 and determined that we were getting substantially less water production with the No. 16 shutin with approximately the same amount of oil production. We have, following the interference test, run an ice flow or radioactive tracer survey which indicates the zones of water entry into the producing formation in the injection well, and also gives an idea of the percentages of the total volume entering the various zones. In this particular well we determined that 75% of the water was entering a three foot interval in the water flood pay. We feel like that this thin zone being flooded has contributed somewhat to the water production in No. 9 and also has helped to stimulate the production we found that location of Welch Duke State Well No. 18.

Q Do you have any information in connection with No. 17 with reference to a core that was taken that would tend to confirm your opinion with regard to this production from Well No. 18?

A Yes. At the time Well No. 17 was drilled, a core of the first Grayburg was taken and some core analyses were run and we had an average porosity of 20% for this area; using this with a sand thickness found in Wells No. 10, 16 and No. 18, the volumetric analysis indicated we should have a water flood increase at the location of Well No. 18 with an injection of some 17,500 barrels into this particular five spot.

At the time we drilled No. 18 we had contributed some 19,000 barrels toward this five spot, and I feel like that this is well within the bounds of reasoning on this well that we should have a water flood kick.

Q So that all of this tends to confirm your opinion that

the production from Well No. 19 is water flood production?

A Yes, sir.

Q As a result of the water flood project?

A Yes, that is right.

Q In your opinion, if you aren't permitted to produce this well at capacity, might it result in waste?

A Yes, we believe that we should produce this well at capacity to obtain the maximum amount of ultimate production.

MR. CAMPBELL: I would like to offer Exhibits 1, 2, 3 and 4 in evidence.

MR. FISCHER: Without objection they will be accepted.

MR. CAMPBELL: That's all the questions I have at this time.

MR. FISCHER: Any questions of Mr. Harrison? Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Harrison, you stated that you used radioactive tracers, were those injected in Well No. 16?

A Yes, they were injected in Well No. 16.

Q Have you encountered any of those tracers in Well No. 18 to date?

A No, we have no water production in Well No. 18 to date. This radioactive material was injected with the injection water. We don't feel like we'll see any of the radioactive material at the producing well. It has a rather short life.

Q So you think the radioactivity will be spent by the time the water comes in at Well No. 18?

A Yes, we do.

Q Have you drilled any other wells in this area?

A Yes, we have drilled McNutt State Wells No. 9 and No. 10 which are in Section 21 --

Q What was the potential on these wells?

A Those wells have not been potentialized. Well No. 10 has been perforated and following the perforating we had no fluid entering the hole. Since that time the well has been given an acid treatment, but we don't have a test on the well.

Q Let me put it this way, have you taken potentials on any newly completed wells in this area except 18 and 17?

A No, we have not. Well No. 301, which is in the corner of Unit A in Section 28 was completed as a water injection well in accordance with the authorization from the Commission, but was not tested at the time it was completed. It was completed as a water injection well and water injection was commenced.

Q Now, No. 18, this 70 barrels of oil and no water, is that the initial potential on that well?

A We had an initial potential of 72 barrels with subsequent test of 68 and 70 barrels.

Q So, since the initial, it has come down slightly and gone back up slightly?

A That's right.

Q What do you think the future production from the well will be?

A We feel like that this well will peak out at somewhere in the order of 175 to 200 barrels of oil per day.

Q Do you think it will climb from this 70 up to that rate?

A Yes, sir.

MR. NUTTER: I believe that's all.

MR. FISCHER: Any other questions?

BY MR. PAYNE:

Q Does this emergency order expire today, Mr. Harrison?

MR. CAMPBELL: The 5th day of May, 1959, effective 7:00 A.M. May 5th, 1959.

A No, it does not expire today.

Q It should have expired at seven o'clock this morning, shouldn't it?

MR. CAMPBELL: What's the date, the 20th? 7:00 A. M. this morning would be the expiration hour on it. It was dated the 5th at 7:00 A. M. That's the case with both of these emergency orders.

MR. FISCHER: Is that all?

MR. PAYNE: Yes.

By MR. FISCHER:

Q Do you happen to know what the production on this No. 8 in Section 28, Unit C is, Mr. Harrison, which is surrounded by injection Wells 5, 7, 10 and 15?

A I don't recall specifically the production from that. I believe it's in the order of some 20 barrels per day.

Q Twenty barrels a day at this time?

A Yes.

Q Is that pumping or flowing?

A It's pumping. All of these wells are pumping.

Q This three foot section, did you tell us whereabouts it is or where you think it might be in this well?

A It is within a sand body. It evidently is a more

permeable sand stringer. It occurred in this particular well in the interval of 2,000, seventeen to two thousand and twenty.

Q And the acid treatment on the No. 9 or No. 10, was that an acid job or just an acid fract?

A It was what we term a ball acid job in order to be sure that we have all our perforations open we inject ball sealers along with the acid to seal off the first perforations that are opened so that we'll get acid into more perforations.

MR. FISCHER: Any other questions of Mr. Harrison? You may be excused.

(Witness excused.)

Any statements?

MR. CAMPBELL: No statements.

MR. FISCHER: The case will be taken under advisement and the hearing is adjourned.

(Whereupon the hearing was 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 3rd day of June, 1959.

Ada Dearnley
Notary Public - Court Reporter

My Commission Expires:
June 19, 1959.

BEFORE EXAMINER FISCHER
OIL CONSERVATION COMMISSION
Exhibit No. 1681
Case No. 69 Fischer