BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1195

TRANSCRIPT OF HEARING

June 24, 1959

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I N D E X

WITNESS	DIRECT	CROSS	REDIRECT
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BEFORE THE
OIL CONSERVATION COMMISSION
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IN THE MATTER OF: Application of Graridge Corporation for capacity allowables for certain wells in a water flood project. Applicant, in the above-styled cause, seeks an order authorizing capacity allowables for three wells in the project area of its water flood in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico.	CASE NO. 1195

BEFORE:

ELVIS A. UTZ, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: The next case on the docket will be 1195.

MR. PAYNE: Case 1195. Application of Graridge Corporation for capacity allowable for certain wells and water flood projects.

MR. CAMPBELL: Mr. Examiner, I am Jack M. Campbell, Roswell, New Mexico, appearing on behalf of the applicant. We have one witness to be sworn.

MR. UTZ: Are there any other appearances to be made in this case?

(Witness sworn.)

B. G. HARRISON

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

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please?

A B. G. Harrison.

Q Where do you live, Mr. Harrison?

A Breckenridge, Texas.

Q By whom are you employed and in what capacity?

A By Graridge Corporation as Manager of Secondary Recovery.

Q Have you testified previously before the New Mexico Conservation Commission or one of its examiners?

A Yes, I have.

Q Are the witness' qualifications acceptable to the Examiner?

MR. UTZ: Yes, they are.

Q (By Mr. Campbell) Are you acquainted with the application of Graridge Corporation in Case No. 1195 relating to capacity allowable for three wells in the Caprock-Queen unit?

A Yes, I am.

Q I hand you what has been identified as Applicant's Exhibit No. 1 in Case No. 1195 at this hearing, and ask you to

State what that is?

A This is a plat depicting North Caprock-Queen Unit No. 1 which is operated by Graridge Corporation.

Q And state what the figures on the plat indicate.

A The red figures indicate the oil and water production by tests from each of the producing wells that have been affected or in the area of the water injection program. The upper figure being the oil production; the figure beneath the line being the water production.

Q And how have you identified the three wells for which you seek by this application capacity allowable?

A The three wells for which we seek capacity allowable have been circled in red, these being No. 2913, 3615 and 65.

Q Referring to Well No. 2913 in the Southwest quarter of the Southwest quarter of Section 29, Township 12 South, Range 32 East, would you state what the initial production was from that well prior to the effective water flood?

A We have just recently recompleted this well. It was a plugged or temporarily abandoned well, and was capable of making in the order of one barrel of oil per day with no water. Since our clean out operations, the production has increased to 6 barrels of oil and 17 barrels of water. This being in an area where no water is produced normally on primary production.

Q In your opinion is this increase in oil production

due directly to the injection of water under the water flood projects?

A Yes, it is.

Q Now, referring to Well No. 3615 in the Southwest quarter of Southeast quarter of Section 36, Township 12 South, Range 31 East, will you give the Examiner a history of that well?

A This well we feel like is beginning to increase in production in that it had been producing approximately one half to one quarter of a barrel of oil per day with no water, and is now producing 4 barrels of oil per day with no water. Well No. 3616, the injection well to the east of 3615, has had a total injected volume of approximately 90,000 barrels to this time. The well not shown on the plat, which directly offsets this well to the South, is Ambassador Oil Corporation's injection Well No. 2-1 in Caprock-Queen Unit No. 2. This well to date has an injection of approximately 68,000 barrels. With a two-way drive on 3615 and this volume of water having been injected with our other experiences in the area, we feel like this well is due to respond and feel that it has shown a slight response.

MR. UTZ: I understand you had an injection well directly offsetting 3616 to the South.

A 3615 a producing well which is No. 2-1 in Caprock-Queen Unit No. 2.

Q (By Mr. Campbell) It is then your opinion that

although Well 3615 has not shown any substantial increase in oil production, that based upon the volume of water injected in offset water injection wells, it will respond in the near future?

A We feel that it has shown some slight response at this time, Mr. Campbell, and that it will continue to increase in production.

Q Now, refer to your well No. 6-5 in the Southwest quarter of northwest quarter of Section 6, Township 13 South, Range 32 East, Mr. Harrison, and give the Examiner a history of that well.

A This is a relatively new well in that it was drilled, I believe, in April of this year and completed in May. The well was initially completed open hole with no work done to increase the producing capacity of the well. No stimulation treatment, and the well produced on the order of one half barrel per day by Baylor tests. The well was subsequently fracked and following the frack treatment, returned it's load oil at the rate of only some 3 to 4 barrels per day, up until about May 18 when the well -- well, it actually began to respond a few days before that, and was potentialled after recovery having all the load oil on May 18 at 34 barrels and on May 4th increased to 73 barrels and has remained at the 72 to 73 barrels per day range until this time. This 72 barrel test having been taken on June 22nd.

Q This, as I understand you, was a new well?

A Yes, Sir.

Q Would you State for the Examiner, if you have it, the approximate volume of water that has been injected in the well Surrounding it? You had the injection volume on 6-6 to the east.

Q Now, these figures will be as of June 1st. Well No. 64 had an injected volume of 57,000 barrels. Well No. 66 had 47,000 barrels. Well No. 612 had 80,000 barrels; and I do not have the figures on the injection well in Caprock-Queen Unit 2 which offests 65, but it would be on the order of 80 to 100,000 barrels.

Q There is an injection well immediately west of 6-5 in the Ambassador project?

A Yes, Sir.

Q Now, is it your opinion that approximately 72 barrels per day of oil production is due to Stimulation by virtue of the injection of water as a part of this water flood project?

A Yes, Sir, it is. The entire area Surrounding this particular location was in a depleted State in the wells producing 1 to 3 barrels per day in that particular area prior to the drilling of this well. And, of course, the well itself did not Show any indication of any primary production even after a frack treatment in that it was only running the frack load oil at the rate of 3 to 4 barrels per day.

Q Mr. Harrison, in your opinion will granting of

capacity allowables to the 3 wells requested enable you in the operation of this project to obtain the greatest ultimate recovery of oil?

A Yes, sir. We feel that this is water flood oil, and that in order to obtain the maximum volume of oil ultimately from these wells, that we must produce it as it is available at the producing well.

Q I hand you now what has been identified as Exhibit No. 2 in this hearing, and ask you to state what that is.

A Exhibit No. 2 is a series of curves depicting the overall North Caprock-Queen Unit No. 1 project. Here we have the accumulative oil production, the oil production barrels per month, the cumulative water injection and the water injection in barrels per day.

Q Have you offered similar exhibits in prior hearings in this case?

A Yes, we have, Mr. Campbell.

Q And this brings it down to your most recent information, is that correct?

A Yes, it does. This brings it down to June 1, 1959.

Q Mr. Harrison, were Exhibits No. 1 and 2 prepared by you or under your supervision?

A Yes, sir, they were.

MR. CAMPBELL: I would like to offer Applicant's

Exhibit No. and 2 in this hearing in evidence.

MR. UTZ: Without objection they will be accepted in evidence.

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

BY MR. UTZ:

Q Mr. Harrison, I believe that you stated you reworked 29-18?

A That is 29-13, yes, sir. The rework only consisted of a clean out. The well was temporarily abandoned.

Q And prior to rework it was producing 1 barrel of oil a day?

A No, that was immediately following the rework. The well was temporarily abandoned and had no production at the time of clean out.

Q Then the increase, 1 barrel after clean out to 6 barrels, you feel was due to influx of water?

A Yes, sir. Also the 17 barrels of water which is shown here is also some evidence of a slight water break through there in that the wells in this area produced apparently no water primarily.

Q Now, what did you say the production was on the 36-15 before you felt that it was affected by the influx of water?

A We had approximately a half to one quarter of a

barrel per day. This 4 barrel test was taken, I believe, on June 21st.

Q Now, on the 6-5, it has increased substantially?

A Yes, sir. Following the initial completion with no stimulation the well was only capable of producing a few gallons of oil per day. Following the stimulation, which was a frack treatment, the well produced some 3 to 4 barrels of load oil per day. After return of the load oil we had a response and the potential test turned in on May 18th, I believe, had some 34 barrels per day.

MR. UTZ: Are there any other questions of the witness?

MR. PAYNE: Yes, sir.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Harrison, I believe you testified that the production of some 17 barrels of water per day in the 29-13 well is some indication that the oil production out of that well was being affected by the water flood projects, is that right?

A We feel like the water being produced here is a result of the water injection program, Mr. Payne.

Q I wonder why the 36-15 well doesn't make any water?

A The 36-15?

Q Yes, sir.

A I think this can be attributed to difference in areas. If you will note in the northern part of the unit there we have several wells such as No. 3015 and No. 31-1, which are producing water, and these have produced water at an early stage; while in other areas, down in the area of 3615 we have No. 369 and No. 3113, both which have responded to the flood and neither of which are producing any water. It seems to be a characteristic of the area in the north part of the unit that we have a slight water breakthrough in the early stage of the flood.

Q Now, did you initially -- were you initially using fresh water in this injection project?

A Yes, we were.

Q And you recycle it, do you?

A Yes, sir. We have approximately 4,000 barrels per day of produced water at this time, and we are commingling it with the fresh water and reinjecting it.

Q Does the water ultimately become contaminated after this recycling, continuous recycling process?

A Do you mean when it is reproduced a second time?

Q Yes, or a third or fourth.

A No, in that it reaches a certain stage in most cases and is probably only recycled not more than three times to get -- until the project is usually abandoned, and we don't feel like it becomes saturated to an extent that it will be damaging to the

formation. We do have water analysis made periodically and water consultants who do make recommendations to us as to water treating programs. And through this method, why, we keep up with the situation, and in the event we have a situation develop where it appears that we might have some formation plugging or some undesirable characteristic in our water, then we either have to treat the water, make it suitable to reinject, or else we have to find a disposal source for the water.

Q Do you happen to know when your last analysis was run and what it indicated?

A It has probably been a period of three to four months since we have had a complete analysis of the water. At that time the only thing that we could see that would be in any way damaging to our flood was the iron content of the produced water. We felt that it might have some tendency to plug. However, since that time, why, we have arranged to comingle our waters prior to filtration and give it some settling time so that the iron from the produced water and the oxygen from the fresh water get together, form the iron oxide and it will drop out to a certain degree and our retention time, the remainder is filtered out.

MR. PAYNE: Thank you. I believe that is all.

MR. CAMPBELL: I have one other question. Mr. Harrison, in connection with the operation of these projects

have you been undertaking to anticipate on the basis of volume of water injected in offset wells the possibility of increase in production in producing wells in order to avoid the necessity for the issuance of emergency orders by the Commission?

A Yes, we have. In the very beginning we did not try to do this for the particular reason of avoiding emergency hearings. We did try to keep up with it, but due to the very rapid response we have had in some of these producing wells whereby it required an emergency hearing, rather than being able to set it up for a regular hearing, why, we have tried to project these things and come up with a program whereby we can set these wells up for regular hearing.

MR. CAMPBELL: That is all I have.

MR. UTZ: Mr. Harrison, your water analysis, periodic water analysis, is done in an effort to determine whether or not the waters are harmful to the oil formation in which you are flooding, are they not?

A Yes, sir.

MR. UTZ: Would you consider these waters that have been produced say twice, potable waters, or aren't they pretty well contaminated by the time they have gone through the formation a couple of times?

A They may have picked up some dissolved solid, but if the water is stable when it is injected we feel like it is in

suitable condition. That is, if it has no tendencies to give up any solids or to pick up any additional solids.

MR. UTZ: Doesn't the Caprock have quite a little bit of salt in the Caprock crude?

A Yes, the Queen formation in that area is noted for producing some salt.

MR. UTZ: So these waters would probably have quite a little bit of salt in them, would they not?

A Yes, sir, they are briney waters.

MR. UTZ: You wouldn't consider them to be potable waters then?

A No.

MR. UTZ: Any other questions. If there are none the case will be taken -- are there any other statements to be made in this case? The case will be taken under advisement. The witness may be excused.

(Witness excused.)

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, Ned A. Greenig, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of proceedings before the Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript by me and/or under my personal supervision and that the same is a true and correct record to the best of my knowledge, skill and ability.

Witness my hand and seal this the day of July, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

NOTARY PUBLIC

My Commission Expires:
May 5, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1195, heard by me on June 24, 1959.

New Mexico Oil Conservation Commission, Examiner