BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 28, 1959

EXAMINER HEARING

IN THE MATTER OF:

Application of Great Western Drilling Company for approval of a unit agreement and for approval of a pilot water flood project. Applicant, in the above-styled cause, seeks an order approving its Rock Queen Unit Agreement which unit comprises approximately 4940 acres in Township 13 South, Ranges 31 and 32 East, Chaves and Lea Counties, New Mexico. Applicant proposes to institute a pilot water flood project on said Rock Queen Unit in the Caprock-Queen Pool by the injection of water into the Queen formation through six injection wells located in Sections 22 and 27, Township 13 South, Range 31 East. Applicant further seeks the establishment of an administrative procedure whereby additional wells in the unit may be converted to water injection.) Case 1798

BEFORE:
Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The next case on the docket will be Case No. 1798.

MR. PAYNE: Application of Great Western Drilling Company for approval of a unit agreement and for approval of a pilot water flood project.

MR. CHRISTY: Sim Christy of Hervey, Dow & Hinkle, for the Applicant, Great Western Drilling Company. We have two witnesses. I call Mr. Snoddy first. (Witness sworn.)

SAM SNODDY

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

DIRECT EXAMINATION

BY MR. CHRISTY:

Q Would you please state your name and address?

A Sam Snoddy, 509 North Lorraine, Midland, Texas.

Q By whom are you employed and in what capacity?

A Great Western Drilling Company, Land Manager, six years.

Q Are you familiar with the matters contained in the application in this case, being No. 1798, before the New Mexico Oil Conservation Commission?

A Yes, sir.

Q Are you familiar with the area covered by the proposed unit agreement?

A Yes, sir, and it is marked as Exhibit 1.

Q Would you please tell us the unit area covered by the proposed agreement?

A The unit area covers some 4,939.77 acres of lands situated in Sections 22, 23, 24, 25, 26, 27, 34, 35, 36, in Township 13 South, Range 31 East, Chaves County, New Mexico and Sections 19, 30 and 31 in Township 13 South, Range 32 East, Lea County, New Mexico.

Q Who is designated as unit operator in the agreement?

A Great Western Drilling Company.

Q What is their address?

A Post Office Box 1659, Midland, Texas.

Q What was the purpose of the unit agreement?

A The unit agreement provides for secondary recovery operations and the installation of a water flood project in the Caprock-Queen Pool in Chaves and Lea County, New Mexico.

Q Mr. Smeddy, are you familiar with the other similar unit agreements previously approved by this Commission and the Commissioner of Public Lands of the State of New Mexico and the Director of the United States Geological Survey?

A Yes, sir.

Q Is the present unit in this application in substantially the same form and tenor as unit agreements heretofore approved by the Commission, the Commissioner and the Director?

A Yes, sir.

Q Has the unit agreement been submitted to the Public Lands of the State of New Mexico for approval, and if so, has such approval been obtained?

A Yes, sir. On September 24, 1959 the office of the Commissioner advised our attorneys that the proposed unit agreement was approved as to form and context subject to a few minor changes in wording, and these changes have been incorporated in the unit agreement.

Q Has the unit agreement been submitted to the Director of the United States Geological Survey for approval, and if so, has such approval been obtained?

A Yes, sir. On September 17, 1959 the office of the United States Geological Survey advised us that the proposed unit was approved as to form.

Q Has the Director's office since approved these minor changes made by the Commissioner?

A Yes, sir.

Q Have you obtained commitment or ratification of the unit agreement by working interest owners and royalty owners, and if so, would you tell us the approximate percentages of such commitments?

A Yes, sir. Various approvals and ratifications have been obtained, and we have approximately 53% of the working interest owners signed and commitment of informal nature from approximately 46%.

Q This gives a total of 99% of the working interest?

A Yes, sir.

Q All right, continue.

A As to the royalty interest, we obtained approval from the Director of the United States Geological Survey of the unit area and the terms and provisions of the unit agreement. As the Commission is aware, the formal approval by the Director will not be forthcoming until the unit agreement has been approved, signed or ratified by the Commissioner, this Commission and a substantial percent of working interest owners.

On the royalty interest the State of New Mexico, as I have previously mentioned, the informal approval by the Commissioner of Public Lands, and we anticipate formal approval of the proposed unit agreement if it is approved by this Commission.

I also might mention that under Section 23 of the agreement it does not become effective until it has been executed or ratified by at least 95% of the working interest owners and 75% of the combined overriding royalty owners and royalty owners.

Q How long have the agreements been in circulation for approval and commitment?

A They were mailed out about two weeks ago.

Q Now, Mr. Snoddy, do you understand if the proposed unit agreement is approved by the Commission that Great Western will still have to furnish the Commission counterparts of the fully executed unit agreement and all attendant ratifications?

A Yes, sir, I understand this and they will be furnished as soon as they are available.

Q I believe you are in charge of the Land Department of the proposed operator of Great Western?

A Yes, sir.

Q As the Manager of the Land Department, have you caused the various county records and state and federal records to be examined in connection with the unit agreement, and if so, does Exhibit B of the unit agreement faithfully reflect the ownership

of the various tracts as disclosed from such examination?

A Yes, sir. My office has checked the county records in Lea and Chaves Counties and also the state and federal acreage here in state and federal records here in Santa Fe, and Exhibit B does faithfully reflect the ownership of the various tracts disclosed by our examination. We have taken one or two unrecorded instruments in account when compiling Exhibit B.

Q Mr. Snoddy, what's the effective date of the unit agreement?

A Under Section 23 of the code unit agreement it becomes effective as of seven A. M. on the first day of the month following three events. The first event is the execution or ratification of the unit agreement by at least 95% of the working interest owners and 75% of the combined overriding royalty and royalty owners. The second event is the approval of the unit agreement by the Commissioner, the Director and this Commission. The third event is the recording of a counterpart of this agreement in the counties of Lea and Chaves County, New Mexico.

MR. CHRISTY: That's all the questions we have of this witness.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Snoddy, I note that there is another unit to the north of this unit and then there's an area of intervening acreage which will not be included in any unit. Apparently there are no producing wells in the intervening acreage?

A That is correct.

Q Is this acreage regarded as dry acreage and no plans to include it in either one of the two units?

A So far as I know.

Q I notice down here in the south end there is 240 acres indicated belonging to Texas Pacific Coal and Oil in Section 35. That's not a part of either unit. Do you know of any plans to include that acreage in either the Rock unit or the Drickey-Queen Unit to the south?

A Texas and Pacific was asked to join in the Rock agreement, and I imagine into the Cities Service agreement to the south, but they declined to go in at the present time. However, they have indicated that at a later date they will either join one of the units or cooperate across lines.

Q I also notice 160-acre tract in Section 34 that doesn't appear to be in any unit. What's the status of that?

A Is that John Trigga?

Q Has he been invited to join one of the two units, do you know?

A Yes.

Q And he has declined to join?

A As far as I know he has.

Q You stated that you had 53% of the working interest signed in this unit and 46% you had verbal commitments?

A Yes.

Q Of their acreage. Of those 46%, has that 46% agreed to the participation formula for the establishment of the unit?

A Yes, they have agreed to the formula and the contents of both the unit agreement and operating agreement.

Q You have one percent that has not either signed it nor given verbal commitment. Do you think that one percent will come into the unit?

A The reason I left the one percent, there were a few minor working interest owners that have never made any of the meetings or given any correspondence as to whether they will or won't. I'm sure they won't come in, but since I had no notice from them, I left the one percent in there.

Q Does their one percent cover any specific tract or just a portion of the interest in various tracts?

A Well, it's a portion, well, about two tracts of the small majority Landers tract has some nineteen interest working owners and there's one other tract, I believe Lee or Carter tract has about twelve to fourteen ownership.

Q How long do you think it will be before you have the

46% signed up?

A I hope to have it within a month.

MR. NUTTER: Any further questions of Mr. Sneddy?

MR. CHRISTY: I might ask one more question, if I might.

MR. NUTTER: Mr. Christy.

REDIRECT EXAMINATION

BY MR. CHRISTY:

Q When would you expect the agreement to be effective as you have related it, at what date?

A I would say it would either be December 1 of 1959 or January 1 of 1960.

Q Have you had several meetings with the working interest owners incident to the unit terms and to the formula?

A Yes, we have had several meetings and they have been approved by the attorneys of different companies and everyone seems to be in accord for the execution.

Q Were these meetings well attended?

A Yes, I would say we had, oh, 85 to 90% of the working interest owners.

MR. CHRISTY: That's all.

RECROSS EXAMINATION

BY MR. NUTTER:

Q Now, I understand that this unit is for the purpose of secondary recovery. You state that you don't think it would be

effective until the first of the year possibly. Would you plan to commence the injection of water prior to the time that the unit would become effective?

A I would say no to that.

Q I see.

MR. NUTTER: Any further questions? The witness may be excused.

MR. CHRISTY: Mr. Hampton, please.

(Witness sworn.)

JOHN HAMPTON

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

DIRECT EXAMINATION

BY MR. CHRISTY:

Q For the record, will you please state your name, address and occupation?

A John Hampton, 509 North Lorraine, Midland, Texas, Geologist and Engineer.

Q Mr. Hampton, by whom are you employed and in what capacity?

A By Great Western Drilling Company as a Special Projects Engineer.

Q Have you ever testified before this Commission previously as a geologist and engineer, and if so, have your qualifications

in these fields been previously accepted?

A Yes, sir, I have previously testified in such capacities and have previously had my qualifications accepted.

Q Are you familiar with the matters contained in the application involved in this case, being No. 1798, before the New Mexico Oil Conservation Commission?

A Yes, sir.

Q Are you familiar with the lands involved in the application, the wells within the proposed unit area, and the history of the Caprock-Queen Pool?

A Yes, sir. I am, and I'm also familiar with various water flood projects which are being conducted in the Caprock-Queen Pool.

MR. CHRISTY: Are the witness' qualifications accepted?

MR. NUTTER: Yes, sir. Proceed, Mr. Christy.

Q Do you have a map of the proposed unit area?

A Yes, sir, I do, it's a contour map. It shows several things and it's marked as Exhibit No. 2.

Q Would you please explain to the Examiner what is shown and depicted on the contour map?

A This Exhibit No. 2 shows several things. First, I have outlined in red on this exhibit the North Central Caprock-Queen Unit which borders the proposed unit on the north. This unit is operated by Great Western Drilling Company. I have outlined on the south of the proposed unit a unit operated by Cities Service,

I believe the Dricky Queen Sand Unit. It borders the Rock Unit on the south.

Q That's outlined in green?

A Outlined in green. I also have outlined the proposed unit in yellow on this map. In addition we have contoured this map on top of the Queen pay formation.

Q Is that the formation to be unitized in this agreement?

A Yes, sir, it is.

Q Please proceed.

A These contours indicate to me a very short bar type deposition with local variations both as to type rock deposited, porosity, cementing material and so forth. The only other thing about the contours is we might note in the area of the proposed unit the dip is just about due east about 70 to 90 feet per mile. Also on this map I have shown to the best of my knowledge all of the injection wells in the area, show the injection wells outlined in red, in the North Caprock-Queen Unit No. 1, the North Caprock-Queen Unit No. 2 and in the North Central Caprock-Queen Unit.

In addition, down in the southern portion of the map we have three wells outlined in yellow, in red, excuse me, outlined in red inside the City Service Unit, which to the best of my knowledge are presently injection wells. Also we have four wells which are being used for injection by John Trigg.

Q That would be over in the southwest corner of the map?

A Yes, sir.

Q I believe you have some red-circled wells in the proposed unit area also?

A Yes, sir, I have also circled in red our proposed injection wells in the Beck Unit, the approval of which is the subject of this application.

Q Does Exhibit 2 reflect the location of all oil and gas wells including dry holes and drilling wells of all the lessees within a mile of the unit area?

A Yes, sir, it also shows dry holes that have been drilled in and about the proposed area and all the producing wells in the area.

Q Now, I notice a small orange dot located in the southwest, southwest of Section 33, 13 South, 32 East which on Exhibit 2 is marked with S. W. No. 1. What does that refer to?

A This orange dot in Section 33 represents one of our water supply wells. This well is drilled and is ready to supply water to the project with the installation of supply line and pumping equipment. This well was drilled on a permit from the State Engineer, No. L-3777. We also have a commercial water lease from the State Land Commissioner on this land, No. W-100. We have another permit from the State Engineer, No. L-4056 to drill a water well in the Southwest Quarter of the Southwest Quarter of Section 21, Township 13 South, Range 32 East. That's represented

on Exhibit No. 2 by an orange dot, it says .S.W. No. 2. Also we have a water lease on this particular portion of land from the State Land Commissioner, No. W-164.

Water supplied by these wells will be fresh water from the Ogala formation. The base of the Ogala in Section 33 is at approximately 261 feet. In Section 21 the base of it is approximately 225 feet. We have supplied the State Engineer with an analysis of the water from Section 33, and simultaneously with the filing of this application we also filed with the office of the State Engineer a copy of our application. We also explained to the Engineer the geographical location of the water source, and further the name and depth of the formation from which we were to obtain water.

Q Now, in the initial pilot water flood operation, what are your proposed intake wells and give us the name of the well and the location by description.

A In the initial project area we propose to start with six wells, the first of these is the Geror Oil Corporation No. 7 State well, located in the Northwest Quarter of the Southwest Quarter of Section 22.

MR. NUTTER: Northwest, southeast?

A Northwest, southwest of Section 22. The Geror Oil Corporation No. 6 State located in the Southeast Quarter of the Southwest Quarter of Section 22, the Texas Pacific Coal and Oil

Well No. 1 State located in the Northwest Quarter of the Southeast Quarter of Section 22, the George Williams No. 1 Werner State located in the Southeast Quarter of the Southeast Quarter of Section 22, the Skelly No. 2 "A" Las Cruces Well located in the Southeast Quarter of the Northwest Quarter of Section 27, and Antweil's No. 3 Malco Federal Well located in the Northwest Quarter of the Northeast Quarter of Section 27.

All of these wells are located in Township 13 South, Range 31 East, Chaves County, New Mexico, and as I have said before, are circled in red on Exhibit 2.

Q What is the approximate producing depth of the six wells you just mentioned?

A About 3,000 feet, just a little in excess maybe.

Q Do you have any logs available on those wells?

A Yes, sir, I was able to locate logs for the Geror No. 7 State, the Skelly No. 2"A" Las Cruces and the Antweil No. 3 Malco Federal which are all injection wells. I marked those Exhibits 3-A and 3-B. I also located a log of the Skelly No. 1 "A" Las Cruces Well which is a producing well, but it's located in the pilot area.

Q That's Exhibit 3-C?

A That's Exhibit 3-C, yes. On each of the logs I have marked the top of the pay on them, and I believe all of the logs except the 2 "A" Skelly Well show the full pay section. The 2 "A"

Skelly was logged only to the top of the pay.

We might note here that the pay in these wells is 11 to 16 feet as exhibited on the logs. I suspect that this thickness of pay will hold fairly true for the unit area as a whole.

Q This pay, again, is the Queen Sand formation?

A It is, yes, sir.

Q Are those all the available logs on the intake wells?

A Yes, these are all the logs I was able to locate on the initial well.

Q Would you tell the Examiner, Mr. Hampton, why you chose these particular six wells for your initial injection pilot project?

A Yes, sir. First, in looking at the history of the proposed unit area it became apparent that the wells in this area and in general on the western side of the unit are high gas-oil ratio wells. Therefore we felt that by injecting water into this gassy area and filling it with fluid we might not be as likely to bypass our trap oil. A second consideration was that this project area is lower in productive capacity than most of the rest of the unit area. Consequently we could convert these six wells to injection with a small loss of production. We also felt that we should probably locate the initial injection wells in the area in which we did so expansion could take place in three directions without forcing offsets from one of the other unit areas.

Q Let me refer you to Exhibit 4 which I believe is the data sheet, and I will ask you will you please explain that to the Examiner?

A Exhibit 4 is a data sheet on which I have listed each of the wells in the unit area; for each of these wells I have listed the company which operates them or owns them, the well name and number, the completion date of the wells and the initial potential in barrels of oil per day and also the last column to the right is the present production of the wells, which I took from the August New Mexico Engineering, Oil and Gas Engineering Report. That was the latest that I had access to.

I think probably the importance of this exhibit is that it shows the area is far below what would be considered the top unit allowable for the field, and also it is far below its former productive capacity. You might note that the average production per well for the month of August was 438 barrels of oil or a daily average of 14 barrels of oil per day per well.

Q Now, Mr. Hampton, let's turn to Exhibit 5, which I believe is a production curve, and I would ask that you please identify and explain this to the Examiner.

A Yes, sir. Exhibit 5 is a production curve of the Rock-Queen Unit which I also compiled from New Mexico Engineering Report data. I think it's rather obvious from looking at this exhibit that the production is declining rather rapidly. I might

point out here that the solid line on Exhibit 5 represents the actual production data and the dotted line is extended on straight, on down from it is an extrapolation of this same data.

As you can see from where we are here, if a secondary recovery project of some type is not instituted soon, I believe the capacity of many of the wells will be reaching their economic limit in a very short time.

Q I assume by that statement that you are of the opinion it is time to institute some kind of secondary recovery on this area?

A I definitely do. As you can gather from where we are, a lot of the wells are already at the point of their economic limit. I believe if the flood were delayed any considerable length of time, that some of these wells would undoubtedly be plugged and the area might degenerate to the state where the unit would just not be practical to form.

Q Now, returning back to the input wells, I believe the application in this case states that the operator proposes to inject 600 barrels of water per day per injection well until fillup, and thereafter a decreasing amount of water sufficient to maintain an effective and efficient second recovery operation. Would you explain why such quantities of water are necessary or advisable in this case?

A Yes, sir, as I stated before, in connection with Exhibit 3,

which is the leg, the pay formation in this area is 11 to 16 feet thick. Thus if we inject approximately 600 barrels per day per injection well we would be injecting about one-half of a barrel per acre foot per day in the project here. We think this is a satisfactory rate for a front buildup. Of course it is possible, and I think our experience tells us so, that it could be possible that we cannot attain or retain this rate on some of the injection wells. However, due to the experience in the other parts of the Caprock Field, I believe that this rate would be satisfactory, and in the interest of conservation.

Q Would you explain the casing program on the injection wells to the Examiner?

A These injection wells, as we have outlined here, are all producing wells and, of course, the casing is already set in it. The casing throughout the unit area varies from 4½ to 7 inch casing. I believe in all cases it is set at or near the top of the Queen pay formation. Those wells whose casing is not set to the top of the pay zone will have a liner run to the top of the pay zone and then the liner will be cemented with a sufficient amount of cement to form an effective seal so that the injected water will enter only the intended zone.

Q What is your proposed method for testing this casing?

A We plan to follow Rule 107 of the Commission Rules which is the casing test rule in Case No. 1369 of January, 1958.

Q When would you expect to get a stimulisation from this injection with water?

A Based on the other floods in the Caprock-Queen Pool, I would expect such a stimulation in four to six months.

Q Could you give us an estimate as to the amount of oil you believe will ultimately be recovered from this water flood project?

A We expect to recover just over 13,000,000 barrels of oil from the project. Of course part of this is the primary which still remains, and the remainder of the 13,000,000 barrels is water flood oil. These calculations in our participation formula is based on water flood recovery of 150% of primary production.

Q Do the lands embraced in the proposed unit area cover all or substantially all of the available lands necessary for an effective and efficient institution of a secondary recovery operation by the institution of a water flood project?

A Yes, sir.

Q In your opinion will the proposed water flood operation, as you have explained them here today and as it's incorporated in that unit agreement, permit the producing area, which is this unit area, to be developed and operated in the interest of conservation, the prevention of waste and the protection of the correlative rights of all interested parties?

A Yes, sir.

Q In your opinion can the field or area involved in the proposed unit agreement be developed more economically and efficiently under the terms of the unit agreement to the end that maximum recovery can be obtained?

A Yes, sir.

Q Now, Mr. Hampton, I believe that the application of Great Western also includes a request for administrative approval of the expansion of this water flood project?

A Yes, sir, it does.

Q Are you familiar with this proposal and have you had experience with similar procedures in water flood operations?

A Yes, sir, Great Western's application for administrative approval of the expansion of the pilot water flood project is for all practical purposes identical to the administrative approval procedures authorized by the Commission in Order No. R-1311, Case No. 1564, which concerned the North Central Caprock-Queen Unit. This water flood project lying immediately to the north. Great Western is the operator of this unit and we have had considerable experience with the workings of the administrative approval procedures on the unit.

I am of the opinion that the proposals of Great Western in this regard which are contained in our application in this case are fair and just and are reasonably workable. The only suggestion I would have to the Commission is that it would be preferable

from the operator's standpoint that the local offices of the Commission handled it rather than obtaining it from the Secretary-Director in each instance. However, I would say that this is not a major stumbling block to an operator, but we have run into some difficulty with it in the past.

Q Does this proposed administrative approval procedure, did it provide for notice to offset operators and the State Engineer?

A Yes, it does, and this is set forth in full on page 4 of our application in this case.

Q Were Exhibits 2 to 5 inclusive, except for the logs, prepared by you or under your direction and supervision?

A Yes, sir.

MR. CHRISTY: We have no further questions of this witness.

MR. NUTTER: Are there any questions of this witness?

CROSS EXAMINATION

BY MR. NUTTER:

Q It appears just from a casual inspection of the production from the wells that in 1959 these wells are pretty good wells yet.

A Yes.

Q Is there any general correlation between the good wells and their location as far as the unit is concerned?

A I have noticed a number of correlations. Where the

good wells are located, one of them is the Carper Drilling Company Superior "A" No. 1 located in the Northeast Quarter of the Southwest Quarter of Section 32, 13 South, 32 East. I attribute that well's still good production to the recent date at which it was drilled. It is a newer well than most any of the other wells in the unit. These other wells that seem to have relatively good production are in the area of the northern portion of Section 25, well, you might say just in the area of Section 25, 13 South, Range 31 East. They all seem to fit right in this area. I think it probably is just a little bit better area than any other part of the unit.

Q Well, now, you are proposing to put the Malco No. 3 on water injection, aren't you?

A Yes, sir.

Q What did that well make in August?

A That well made 706 barrels.

Q You wouldn't exactly call that a marginal well would you, Mr. Hampton?

A No, sir.

Q How about the other wells in this western part of the unit, what's the general producing characteristics of most of them?

A Well, as I have said, it's rather low. The Geror No. 7 State Well, I don't believe has been produced for quite awhile. The Texas Pacific Well made no oil, no reported oil in August,

the Skelly well I don't believe reported any production in August; I'm sorry, it did. It reported 132 barrels in August.

Q How many 40-acre tracts are in the unit, Mr. Hampton?

A I believe there are 122.

Q It appears to me that of the 122 wells of which we have production here that at least 68 of them averaged more than 10 barrels per day during the month of August. It's been called to my attention that in some places water floods are regarded as water floods if they're used for the stimulation of production of oil from stripper areas or areas that are practically depleted. Now, do you think that this could be called a stripper area if 68 of the 122 have averaged 20 barrels a day?

A Like I said a moment ago, the project area is not averaging anything like that 15 or whatever barrels of oil a day. I believe you could certainly call it a stripper area.

Q Even if the Malco No. 3 Antweil well made 700 barrels per month?

A That is a rather high capacity well.

Q Do you have any idea what the Malco well made in June or July?

A Yes, sir, in July it was producing less than 400 barrels. I have the report if you would like.

Q It went from 400 in July to 700 in August?

A That is correct, yes, sir.

Q How long do you think it will be, Mr. Hampton, before the water flood would be expanded under your proposed system of expansion into the area where the productive capacity is relatively a --

A You mean over into the area of Section 25?

Q Yes, sir.

A I can take a guess and say two and a half years maybe.

Q Do you think that the productive capacity of the wells in that area will be less then than it is at the present time?

A Yes, sir, I think this exhibits it very well.

Q You don't have any individual well decline curves, do you? This is the decline of the production in the entire proposed unit?

A Yes, sir.

Q How much water do you think it's going to take to operate this water flood, Mr. Hampton? How much new water, I don't mean water, to maintain the operation after you start receiving water back from the producing well, I presume you will reinject it, won't you?

A Yes, sir.

Q How much original water source do you think you are going to have in terms of barrels?

A I think approximately 26,000,000 barrels of new water.

Q Do you think you have a water supply that will meet

those needs?

A Yes, sir, we are pretty positive we do have. We have about 32,000 barrels a day appropriated.

Q This first well you said has been drilled, the water supply well?

A Yes, sir.

Q What is the potential on that well?

A Well, of course, we could only pump it for five days under the permit that we drilled it, and at the end of those five days I believe it was on the order of 190 gallons a minute.

Q Did it experience any drawdown or anything that was appreciable?

A Not appreciable, it was cleaning up all the time. We were getting sand out of it and it was improving.

Q It was improving at the end of five days?

A Yes, sir.

Q Does Great Western consider using a line drive type of flood along the west flank of the pool rather than the five-spot pattern?

A We did, Mr. Nutter, and the operators as a whole, or the working interest owners, considered it. We feel that a five-spot pattern here in this particular instance would be more efficient than would be a line drive.

Q You believe you will get more satisfactory results?

A Yes, sir, we feel we will ultimately recover more oil by using it.

Q What will be the ultimate pattern of water injection wells in the project area or in the unit area?

A It will fit this pattern that has been established.

Q It will be the standard five-spot pattern, with every other well being put on injection?

A Yes, sir, as we see it now.

MR. NUTTER: Any further questions of Mr. Hampton?

MR. IRBY: May I ask a question? Frank Irby, State Engineer's Office.

BY MR. IRBY:

Q Mr. Hampton, in the discussion of your pumping of your water supply well, what type of power unit did you use?

A We used a test pump supplied by Smith Machinery. It was a large industrial.

Q Combustion engine? A Yes, sir.

Q Was it operated at a uniform rate in revolutions per minute?

A I believe it was, Mr. Irby, I'm not certain. It's been quite awhile.

Q At the end of the five day pumping test you were still pumping solids, sand and so forth?

A Yes, sir. We were.

Q And you feel that the well wasn't completely developed?

A Yes, sir, we did. We feel it should be developed further.

Q Were you refused permission to continue with the developing?

A No, sir, we didn't ask for permission to continue. We felt that we had a fine water well and when we could get our unit to where we needed the water we could develop it at that time. But we did not ask for permission to pump it longer.

Q Do you feel that this rate of production from this water well will suffice for this unit of your water flood project?

A This well in Section 33, Mr. Irby, will suffice for this project area. These two wells, the water injection 21 and the one in 33, I'm pretty sure will be enough for the whole project, when we start producing water also and start using the reinjected, the produced water.

Q I would like for you to explain in a little more detail this casing program on the injection well with regard to the casing that's already there and the casing you intend to put in along with the cementing program. I'm not sure that that's clear in my mind.

A The wells that will be converted to injection wells are old producing wells and they, of course, already have the casing set in them. Now in most cases, I couldn't speak for all 122 wells, but in most cases the casing is set right into the top of the pay zone and cemented with varying amounts of cement of

course. There are several operators and they use different amounts, I believe in no case would there be less than 100 sacks of cement used around the production string of casing. I am sure in some of the wells that casing will be a little off the top of the pay zone. In those cases we will run a liner in the well and cement the liner into the top of the pay zone so as to contain the water to the Queen formation.

Q You probably know the thing I'm most interested in is the upper part of the casing program down into the Red Beds below the Ogala. Would you tell me what was there in these six proposed wells?

A Yes, sir, I believe they all have 300 feet of surface casing in them with the cement circulated.

Q That penetrates into the Red Bed?

A Yes, sir, quite a ways, about a hundred feet or more.

MR. IRBY: Thank you.

BY MR. NUTTER:

Q Would your injection as a standard policy be through tubing or down the casing?

A Well, we have to, we change that from time to time or from well to well to fit the conditions of the well. Normally we inject down the casing.

Q But if the casing, for some reason deems casing injection then advisable, you install tubing and a packer?

A We use tubing and a packer, yes, sir.

MR. NUTTER: Are there any further questions of Mr. Hampton?

BY MR. PAYNE:

Q Is there any salt water available in the area which could be used almost as economically as fresh water?

A Not as economically, no, sir.

Q Would the difference be substantially the difference in cost?

A Very substantial.

MR. PAYNE: Thank you.

MR. NUTTER: Any further questions? Mr. Christy.

REDIRECT EXAMINATION

BY MR. CHRISTY:

Q Mr. Hampton, I believe there's initially six injection wells. Will you refer to Exhibit 4 again, please? I believe one of them is the Malco Federal No. 3. If you will jot down the figure, it's present production is 706. Another one is your Geror "B" 6 which has 127. The next is Geror "B" 7, it has zero, the next one is your, on page 3 is your Las Cruces "A" 2, and it has 119, your next one is your Texas Pacific No. 1 and it has zero. Your next one is your Werner State No. 1, it has 180. That's monthly production I believe, is that correct?

A Yes, sir.

Q Does that give you 1132 barrels per month for those six wells?

A If you say so.

Q Which is an average of about 37 barrels for the six wells per day, 37 per day?

A Right.

Q And dividing the six wells into the 37 barrels we come up with approximately five barrels per day per well on those six wells?

A Approximately six.

Q Is that correct? A Yes, sir.

MR. CHRISTY: That's all.

RECROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Hampton, those two zeros helped to bring that 706 down considerably, didn't they?

A They sure did.

Q Do you know if any attempt was made to produce the wells during the month of August?

A No, I really don't. I don't know at all why there wasn't any oil. No. 7 has not been produced, the Geror No. 7, for many years and the Texas Pacific well has been a very low producer for a number of years also.

MR. NUTTER: Thank you. With no further questions of

Mr. Hampton he may be excused.

(Witness excused.)

MR. CHRISTY: We would like to offer in evidence Applicant's Exhibits 1 through 5 inclusive.

MR. NUTTER: Great Western Exhibits 1 through 5 will be introduced in evidence.

MR. CHRISTY: That's all for the Applicant.

MR. HOOVER: John Hoover with Gulf. Gulf Oil Corporation has executed the Rock-Queen Unit Agreement. Therefore we will have a working interest in the amount of 22.23%. We concur with this application and urge approval by the Commission. Thank you.

MR. NUTTER: Thank you, Mr. Hoover. Are there any further statements in Case No. 1798? If not, we'll take that case under advisement.

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 15th day of November, 1959.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1798, heard by me on 10-28, 1959.

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