BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 24, 1959

EXAMINER HEARING

IN THE MATTER OF:

Application of Leonard Latch for two water flood projects. Applicant, in the above-styled cause, seeks an order authorizing it to institute two water flood projects in the Empire Pool in Eddy County, New Mexico. In one project, applicant proposes to inject water into the Seven Rivers formation through ten wells located in the N/2 of Section 19, Township 17 South, Range 28 East. In the other project, applicant proposes to inject water into the Seven Rivers formation through seven wells located in the S/2 SE/4 of Section 12 and the NE/4 of Section 13, Township 17 South, Range 27 East.

Case 1814

BEFORE:
Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The next case will be Case 1814.

MR. PAYNE: "Application of Leonard Latch for two water flood projects."

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe, New Mexico, representing the Applicant. We have one witness, Mr. Porter.

(Marked Applicant's Exhibits 1 through 9, for identification.)

(Witness sworn.)

HAROLD C. PORTER

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Harold C. Porter.

Q What is your occupation, Mr. Porter?

A I'm a Petroleum Engineer employed by Water Flood Associates, Incorporated.

Q In connection with your position as Petroleum Engineer with Water Flood Associates, have you been employed by Leonard Latch in connection with the preparation of engineering information in Case 1814?

A Yes, sir.

Q Have you previously testified before this Commission and had your qualifications as a Petroleum Engineer accepted?

A Yes, sir.

MR. KELLAHIN: Are the witness' qualifications accepted?

MR. UTZ: Yes, sir.

Q Mr. Porter, are you familiar with the application in Case 1814?

A Yes, sir, I am.

Q Would you state briefly what is proposed in this

application?

A A water flood project is proposed on the Brooks Lease, which is the North Half of Section 19, Township 17 South, Range 28 East, and also on the Travis and Saunders A Leases which are in Sections 13 and 12 of Township 17 South, Range 27 East. Ten wells are applied for, injection wells on the Brooks Lease and seven on the Travis and Saunders Leases.

Q Now, has this area previously been approved as a water flood project?

A Yes, sir. Case No. 416 on October 15, 1952, Order No. R-200 authorized the water flood project on the Brooks Lease.

Q Now, referring to what has been marked as Exhibit No. 1, would you discuss the information shown on that exhibit, please?

A Exhibit No. 1 is a plat showing the well locations applied for and the ownership of the leases applied for and offset leases; the injection wells applied for are indicated by circles drawn around the injection wells.

Q That shows the lease ownership in the area in addition to that involved in this application, does it not?

A Yes.

Q Does it show the wells completed in the Empire Pool?

A Yes, sir, it shows the wells in this area which are completed in the Seven Rivers sand. The Empire Pool, however, I believe the wells shown as Wilson Oil Company are in another pay.

They're deeper wells I believe. I'm not certain about that.

Q What is the status of the formation in the southern part of your Brooks Lease insofar as the information obtained by the wells shown as dry holes?

A Well, you can see those three dry holes indicated on the plat in the southern part of the Brooks Lease indicating that the Seven Rivers pay is pinched out along the southeastern part of the producing area.

Q Then in your opinion would the water flood in the area involved have any effect to the south of the area?

A No, not inasmuch as it would affect the Wilson Oil Company. It appears there is a definite pinchout on the southeast side of our Brooks Lease.

Q The area to the west is owned by Leonard Latch?

A Yes, the area to the west of the Brooks Lease is Leonard Latch Lease.

Q Then the only operator in the area that might be possibly affected by the water flood is the Simms and Reese Lease, is that correct?

A Yes, sir, that is substantially correct.

Q Now, referring to what has been marked as Exhibit No. 2, would you discuss that exhibit, please?

A Exhibit No. 2 is a production graph showing the total production from the Leonard Latch Empire Field properties, the

Brooks, Berry, Spurck, Saunders and Travis Leases from 1953 up to 1958. This is shown in barrels per month the oil producing rate. As you can see, the current total lease production is on the order of somewhere around 500 barrels per months, which is approximately one-third of a barrel per day per producing well, showing that these properties are near the economic limit.

Q Do you have any top allowable wells in the area?

A No, sir, not in this pay.

Q That is from the Empire pay?

A No, sir.

MR. UTZ: This exhibit shows properties other than that which you are requesting for water flood?

A Yes, sir, these show the total Leonard Latch production. I have another curve showing the Brooks production.

Q Now, on the basis of the information contained on Exhibit No. 2, would you say that the area has been substantially depleted by primary methods?

A Yes, sir, it has.

Q Have you prepared a summary, or could you summarize the history of this Empire Field?

A Yes. The Empire Field, the Seven Rivers pay, Eddy County, New Mexico, is reported to have been discovered by the Empire Oil & Gas Company - State A #1 in 1926 with production of approximately 32° API gravity oil from the Seven Rivers formation

in the Guadalupe Series of the Permian System.

There are 79 pumping wells in the field which produced a total of 839,092 barrels of oil as of December, 1958. Total production for the year was 23,649 barrels from the entire field.

The average depth of the pay is approximately 450 feet below the surface. Oil has been produced from 4080 acres with a total recovery of approximately 205 barrels per acre.

Average net thickness of the producing horizon is estimated to be 3 feet. The pay has a fine grain, clean sand with slight lime cementation.

The Leonard Latch properties include the Brooks, Berry, Spurck, Travis & Saunders leases as shown on the plat, have produced a cumulative primary oil of 222,000 barrels. There are now 66 producing wells. The field is depleted by primary means of production inasmuch as the wells are now making approximately 1/3 of a barrel per day per well, and these leases are near their economic limit and unless secondary operations are begun, these wells will have to be plugged and abandoned in the near future.

It is calculated that 276,000 barrels of water flood oil will be recovered from the Leonard Latch properties by our water flood program.

Q Do you have an adequate water supply to carry on this program?

A There's a water supply well which is, water well which is

planned to be used on the west, or excuse me, on the east edge of the Brooks Lease. This well has been used for water injection into the Red Lake water flood by Kersey & Company and is reported to be capable of producing 750 barrels of brackish water per day.

Q Approximately what volumes of water do you expect will be injected in the project?

A Due to the shallow depth of this field and the relatively low permeabilities, it's anticipated that only around 25 barrels per well per day will be injected, which would mean the wells applied for would require somewhere around 425 barrels per day.

Q Do you have any other information on your water supply and requirements in connection with your summary of the field?

A Well, it is estimated that on the order of 6 barrels of water per barrel of oil will be required to recover secondary reserves under these leases, for a total requirement of 1,656,000 barrels.

Q Will the sand take the water, in your opinion?

A Yes, sir, we have a core from which was taken, a rotary core taken from Brooks No. 22, which recovered approximately 3 feet of net floodable sand. The average permeability was 27.1 milli-darcys ranging from 10.08 milli-darcys to 59.1 milli-darcys. Average porosity for these samples was 21.36%.

Flooding tests were made of samples of these cores, and it was possible in these tests to reduce the oil saturation of the

cores from 44.8% to 16.7% of pore space. This amounts to a theoretical recovery of 465.6 barrels per acre foot. However, due to vertical, areal, and microscopic inefficiencies of field operations, it is estimated that on the order of 100 barrels per acre foot will be recovered by water flood project.

Q You have already discussed this supply well. In your opinion will it be adequate to supply the water required for the entire project?

A Yes, sir, it will be adequate for the wells applied for under this application since they will require only anticipated volume of 425 barrels a day, and if the project is successful and expanded to the rest of Leonard Latch properties by the circling of produced water, this water should be ample for the entire project.

Q Do you have an analysis of the water?

A No, sir, I don't.

Q When an analysis is available, will you supply a copy of it to the Oil Conservation Commission and to the offices of the State Engineer?

A Yes, I will be glad to as soon as we put a pump in that well and get a sample of it.

Q Now, referring to Exhibits 3 and 4 pertaining to the well data, would you discuss those exhibits, please?

A Exhibits 3 and 4 shows well data, the casing, the amount

of cement, the calculated tops of the cement, the pay interval, initial potential, completion dates, elevations, top of the pay above sea level, and the total depths.

I might say right here that these elevations were run by assuming an elevation for one well and are not necessarily the exact elevation above sea level. However, they are accurate as far as determining the dip of the pay is concerned and so forth.

Q Does that, in your opinion, indicate that the formation is continuous and contiguous throughout the area involved?

A Yes, sir, it indicates that, the subsea data indicates that the pay is continuous across the various leases.

Q In your opinion is the casing and cementing program adequate to protect the zones encountered in these wells?

A Yes, sir, this casing was run and cemented at the bottom, and I assume tested for water, shut off after the cement set, according to the fillup of cement calculations there's an adequate cement plug in the annulus between the pipe and the hole, and assuming that there are no holes in the casing, this program should be sufficient to confine the injection water to the Seven Rivers formation.

Q In the event there were holes in the casing, Mr. Porter, and some of these wells are old wells, is that correct?

A Yes, sir, they are.

Q How would that become apparent?

A Well, if there were a hole in the casing we would be able to achieve very low injection pressures and would be able to put a large volume in at a specified pressure and should be able to circulate it to the surface and detect it by those measures.

Q Would it become immediately apparent?

A Yes.

Q What steps could be taken to prevent damage to any of the formation?

A In the event there were a hole in the casing, I would recommend that we would run a packer, set the packer below the hole and inject through tubing, with the packer set below the casing hole.

Q In that event, would that protect any zones above the cement?

A Yes, sir, that would isolate the water injection to the Seven Rivers pay.

Q How do you propose to inject water into these injection wells?

A Well, we propose to inject down the casing with no tubing in the hole.

Q Will hydrostatic head be sufficient to inject into the formation in your opinion, or will it require pressure?

A It will require pressure, I anticipate with the low permeabilities in order to get appreciable volume in the formation.

However, it's a relatively shallow formation. I anticipate that the maximum pressure we'll want to put on the formation will be 125 pounds to surface.

Q Now, referring to what has been marked as Exhibit No. 5, will you discuss that exhibit, please?

A Exhibit No. 5 is a laboratory core analysis on a rotary core taken from Brooks Well No. 22. It shows porosities, core saturations, oil and water, permeabilities and calculated oil content in barrels per acre foot.

Q That is the core analysis which you had previously discussed?

A Yes, that's it.

Q Does that indicate that the formation will take the water as you have previously testified?

A Yes, sir, it does. It indicates a fairly good permeability average 27.1 milli-darcys.

Q Now, referring to what has been marked as Exhibit No. 6, will you discuss that exhibit, please?

A Exhibit No. 6 is a result of laboratory flooding of samples of the core taken in Well No. 22, and the significance of this is in the lower right-hand side of the page the oil recovered from these cores calculated in barrels per acre foot, showing that, one, the sand will take water, and two, that the oil can be recovered by injecting water into the sand.

Q Now, referring to what has been marked as Exhibit No. 7, the production from the Brooks Lease, will you discuss that, please?

A Under this order that was made in 1952, Order No. R-200, water was injected into the Brooks Lease, this Seven Rivers pay, for a period which has been reported from April to November, 1953, that's the reports that I have.

I have marked here what I estimate might have been the period of total injection. Injection was started and a very high injection rate for this depth, pardon me, a very high wellhead pressure for this depth was put on the wells, and during the period of injection it was seen that water broke through to the producing wells almost immediately. I'll discuss that further in this next exhibit, but the significance of this exhibit I'm speaking of here, No. 5, shows that after injection was shut down, the oil production --

Q You mean Exhibit 7.

A Is that 7? Well, production on the Brooks Lease. Oil production did increase for a period of four or five months, indicating to me that probably the water was channeled directly through to these producing wells and lifting equipment was adequate to lift the entire amount of produced fluid, or fluid that could have been produced, and when they curtailed the injection, or shut it down, then this period of flush production was gained by being able to pump these wells down for a short period of time.

Q Now, referring to what has been marked as Exhibit No. 8,

will you discuss further the effect of the injection rates and pressures?

A Exhibit 8 shows the injection rate and injection pressures for the injection wells on the Brooks Lease and the injection pressure in pounds per square inch and water injected of thousands of barrels per month. The significance of this exhibit is the fact that the initial injection pressures were 350 pounds per square inch for the first two months and then perceptible dropdown to less than 200 pounds per square inch, while the volume either went up or remained relatively high. This indicates to me that the initial injection pressure was too great and that pressure parting occurred fracturing the formation with immediate water breakthrough to the producing wells.

Q Now, in your testimony you have indicated that one offset operator might possibly be affected by the flood. Have you received any waiver of protest?

A I have talked to Mr. R. L. Heinkch. He's a partner of the Simms-Reese Oil Company, and I have a letter which is marked as Exhibit 9 stating that he has no objection to this project.

Q Now, what do you estimate will be the life of this project, Mr. Porter?

A The life of this project should be somewhere on the order of five years.

Q What production do you estimate will be achieved at the

peak of the project?

A Well, the peak production, assuming this flood to be successful, should be somewhere around half the total water which will be injected which will be a little over 200 barrels per day.

Q Will that pose any problem in allowables under the provisions of the rules recently adopted by the Commission in regard to water flood allowables?

A No, sir.

Q Can the project successfully operate within the framework and provisions of that order?

A Yes, sir, I believe it can.

Q Do you feel that the project will have any adverse effect on offset operators?

A No, sir, if anything it will have a beneficial effect on offset operators inasmuch as it proves the floodability of this pay and thus enables them to begin secondary operation. In my opinion this project will promote the conservation of a natural resource and prevent its waste. It seems to me that this project is necessary to prevent the abandonment of secondary oil reserves and will serve a useful purpose to the operator, the State of New Mexico, and to the royalty owners.

Q In other words, you say that this project will result in the recovery of oil which would not otherwise be recovered?

A Yes, sir.

Q Were Exhibits 1 through 8 prepared by you or under your direction and supervision?

A Yes, sir, they were.

Q Is Exhibit 9 a letter which was received by you from the offset operator?

A Yes, sir.

MR. KELLAHIN: At this time we would like to offer in evidence Exhibits 1 through 9 inclusive.

MR. UTZ: Without objection they will be received.

MR. KELLAHIN: That's all the questions I have, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Porter, I notice that your injection pattern on both of these projects is somewhat unique, as injection patterns go, and with particular respect to the Brooks Lease. What type of flood are you planning there. Is that a line flood or --

A Yes, sir, we had planned to inject water on the low side. I had failed to bring out in my testimony that there's approximately 100 feet per mile of dip from the west to the east. We would like to inject water on the low side of this pinchout or along the pinchout and at the same time we have incorporated one five spot in there with injection into 9, 20 and 22.

Now, the one to the north, the pattern is not what you would call, well, it's not balanced, in other words, as far as the

surface is concerned, the surface geometry is concerned. However, we did not want to spend the money of drilling additional injection wells on this property, and we feel that this was as good a way as any to use the wells as they're presently located.

Q On your Travis and Saunders Lease, do you feel that your injection well is spaced as well as you can space them without drilling additional wells to have an effective and efficient sweep?

A Yes, sir. The other thing that we have to consider on this is trying to balance out injection across lease lines, and with that in consideration, I believe this is as good a pattern as could be worked out with the wells as they are presently located. If this flood proves successful, then I would recommend the drilling of some additional injection wells to complete the sweep of the entire leases.

Q If you were to recommend injection wells for the Travis wells, where would you recommend them?

A I would recommend injection wells on the west side of three and six in order to back those injection wells up.

Q The east side?

A Yes, the east side of three and six in order to back up the producers with injection on that side of the Guadalupe Series of the Permian System.

Q Isn't it possible that with No. 2 and 5 on the Travis Lease that you would actually drive oil off the lease?

A The only way it could be driven off would be to the north.

Q How about to the west?

A Well, we have producers 1 and 4 which should capture any amount of oil that were driven to the west.

Q In regard to your Brooks Lease, well, first before I ask that question, is the working interest and royalty interest on both the Travis and Saunders Lease the same?

A I believe they're different Federal leases now, I am not sure which ones are five percent and which are twelve and a half, but I know there is a difference, and I discussed this with the United States Geological Survey and they stated that while they wanted additional data presented to them or wanted data such as this presented to them, that they would not object to this application.

Q In other words, the Travis Lease is a different royalty interest than the Saunders Lease?

A Yes, sir, as far as the Federal royalty is concerned it is.

Q How about the other royalty? Any other outstanding royalties on this lease?

A I'm not sure, I would have to check and submit it to you.

MR. PAYNE: How do you allocate the production to the various royalty owners when you have no unitization and no plan or method of dividing the income between the various royalty

owners?

A We use a method of balancing injection across lease lines such as between the Travis and the Saunders. We inject in the 7 on Saunders and 2 on Travis, while certainly some oil is moved across lease lines, it balances out as well as can be done without unitization.

Q If you have an injection and producing on each of the leases?

A Yes, sir, offsetting each other. So you can see oil pushed by two to one very nearly approximates the oil pushed from 7 to 1 on the Travis.

Q Let's look at your proposed Brooks flood, while you have the project outlined in yellow as a practical matter, the East Half of the Northeast Quarter of 24 and the Northeast Quarter of the Southeast Quarter of 24 would actually, this acreage would actually figure in in computing the allowable of this project, wouldn't it, because these are direct or diagonal offsets to a 40 which have injection wells on them?

A Yes, sir, I believe that is correct.

Q Now, supposing, I realize you don't have a proposal to do so, but supposing you expanded your project and you made your No. 1 well on this Northeast Quarter of the Southeast Quarter, you turned that into an injection well.

A The Northeast of the Southeast?

Q Yes, sir.

MR. KELLAHIN: What section?

Q 24.

A Is Northeast of the Southeast.

Q Now, that would be the only well on that 40. How would the royalty owner of that particular tract share in the production?

A Well, sir, either that will have to be unitized or additional wells will have to be drilled to give you a balance across your lease lines. It can't be done with just one well on it.

Q You do anticipate these problems and take them into consideration?

A Yes, sir.

Q In setting up your pattern?

A Yes, sir, that's one of the most important things to consider, except for engineering, to determine a pattern for the existing wells.

Q Do you actually attempt to get approval from the various royalty owners of your proposed plans like you did with the United States Geological Survey?

A Yes, sir, I think it would be wise to discuss it with them.

Q Referring to your Exhibit No. 3, do you know of any

surface waters in this area?

A I know that there are surface waters, well water at 330 feet reported over here east of the Brooks No. 21 where the water supply well is completed, and in my conversations with people that drilled over in this other area, they say that there is shallow water around 300 some feet throughout this area.

Q Is there any shallow water above 200 feet?

A Not to my knowledge.

Q The completions on these wells are single string casing completions?

A Yes, sir, that's right.

Q The cement wasn't circulated?

A No, sir, I have the tops, calculated tops of the cement on this exhibit.

Q On Exhibit 4, the No. 1 well, I notice you haven't any known cement in that well at all.

A No, sir, it wasn't, it was apparently inadvertently left off the well records. I couldn't find it. Inasmuch as the rest of them are cemented, I assume that one is. It doesn't state that there was no cement, it just doesn't state how much.

Q It does state that it was cemented, though?

A No, sir, it doesn't say.

Q Well, there would be no way of knowing how that well was completed then?

A I can make a further search and try and find some additional records. If the casing is not cemented, then water should circulate to the surface as soon as we start putting it in around the bottom of the casing.

Q If you should determine that that well is not properly cemented, will you go ahead and cement it before you produce it or inject through it?

A Yes, sir, I would probably recommend that we set a formation type packer in the open hole below the bottom of the casing to confine the water to the Seven Rivers formation.

Q Then you would not cement?

A Well, that would serve the same purpose as cementing, it would confine the water to the proper strata.

Q Providing the packer holds?

A Yes, sir.

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

MR. PAYNE: Yes, sir.

BY MR. PAYNE:

Q You haven't pressure tested any of the casing on the wells, have you?

A No, sir, not to date, we haven't yet.

Q You say there are fresh waters in shallow intervals before you get to the producing horizon?

A These waters are purported to be brackish. As far as

I have been able to determine, the cattle won't drink it. It's below 300 feet.

Q They are below 300 feet? A Yes, sir.

MR. UTZ: There is no windmill water above 300 feet in this area?

A No, to my -- There's a windmill, I would estimate approximately half a mile to the west of this water well that we have on the east side of the Brooks Lease, and I'm not sure whether the cattle will drink that or not, but we have a pumper on this lease, it has a shallow well that he uses for gardening and so forth that he hauls water to water his stock. He has a donkey and a cow that he waters them from his water for his domestic use that we haul in to him.

MR. UTZ: This water that you intend to inject is brackish water?

A Yes, sir, that's what has been reported to me from the previous operator of that well.

BY MR. PAYNE:

Q Do you think it would be safer to either circulate the cement to the surface or to install a packer below the top of the cement and inject through a tubing?

A Safer in what way?

Q To the waters that might be in the area.

A Well, I don't believe that circulating cement to the

surface would improve the situation any since on most of these wells the calculated tops of the cement is up above 300 feet and over the water zone.

Q How much cement do you think it would take in here to effect an adequate seal, wells in this area, if you were drilling them now?

A I would say that the top of the cement should come up to at least 300 feet below the surface. However, if you have say 10 feet of cement, a 10 foot plug around the bottom of your casing, you are protected because your water is confined to your water strata and your oil is confined below by your cement and your casing.

Q That's assuming there is no fracturing and cement?

A Yes, that's assuming that you have a plug there. The casing isolates any water from your oil sand or oil from your water sand.

BY MR. UTZ:

Q That's also assuming that you have no casing leaks too, isn't it?

A Yes, sir, we discussed that and indicated that we would be able to detect them immediately if we did have.

Q That's the only manner in which you intend to test the casing on the old wells?

A Yes, sir.

Q By going ahead and injecting through the casing, and if you have water come to the surface, you know you have a leak, is that it?

A Not necessarily. To get an appreciable amount of water, 20 to 25 barrels a day in this sand, it's going to require some surface pressure. If we have, say we are able to get a hundred barrels a day in there with no pressure, we'll know that we have got a leak in that well somewhere, and we'll have to investigate and find out what the trouble is and repair it.

BY MR. PAYNE:

Q Do you have the casing weights, Mr. Porter?

A Casing weights?

Q Yes. A No, sir.

MR. UTZ: Any other questions? Mr. Irby.
MR. IRBY: Frank Irby, State Engineer's Office.

BY MR. IRBY:

Q This casing program, frankly doesn't look too good to me, and the No. 1 well that you have been questioned on, there's no evidence of any cement there. Your No. 2 well, the top of your cement is well below the water you are talking about, and I find roughly 10 or 11 wells here that the cement top is pretty low on. As I understand your testimony, there isn't anything definite about what you are going to do with this casing in case you find a casing leak or anything of that sort. It appears there is objection to injection through tubing and packer set within

the existing casing, and it's my opinion that as this thing exists now, and as I understand your testimony, that any water that may exist in this shallow zone will not be protected, and if your company is opposed to methods which will protect these waters, I think it will be necessary for the State Engineer to recommend to the Commission that this application be denied.

A We aren't opposed to any methods proposed to protect the water sand, Mr. Irby, and we will do our utmost to protect it. What I was trying to bring out was the fact that it should be protected now. If we discover it is not, we will take the utmost steps to make sure it is protected. What I would suggest, and ask your approval on, is that the wells that you have comments on as to the tops of the cement, and whether they're high enough to cover the water, I would recommend that with your approval we set a packer at the bottom of the casing and pressure that up to say three or four hundred pounds and let it set for a couple of hours to determine whether or not there is a leak in that casing.

MR. UTZ: Wouldn't you think in an old pool like this it would be a good practice on all these wells?

A Yes, sir, if the cement comes up above the water sand, I see no reason for it. However, if it does not, I believe it would be one way that you could detect before you start injection whether you have any leaks in your casing, and the ones where you and Mr. Irby think the casing does not come up high enough,

I would recommend that we inject through tubing with a packer set at the bottom of the casing.

Q (By Mr. Irby) At the bottom of the casing?

A Yes, set in the casing.

Q I believe your testimony was that there's only one string of casing in there, is that correct?

A Yes.

Q Is this column 2 the total casing that's in each of these holes in Exhibit 4?

A Yes, sir, as far as I know it is.

Q Then your open hole all the way down from there, is that right?

A Well, it's not too far down. For instance, well, the casing set around, looks somewhere around 500 feet and the bottoms are in the neighborhood of, oh, below five, fifty to, there's not --

Q Well, then, tell me what are these columns over here, elevation and top of pay, mean?

A That's above sea level, Mr. Irby. The top of the pay --

Q They have no relation to depth?

A No, the total depth is the last column.

MR. UTZ: I see.

A There's only about 150 of open hole in most of those wells. The pay is set right down, the pipe is set right down near the top of the pay.

Q What sort of formation is that pipe set in?

A It's set in a limestone, very hard limestone. It's very hard drilling in there I'm told.

Q This No. 3, that is a dry hole, was that plugged under regulations?

A Of course I wasn't familiar with the thing when it was plugged, but I assume it was since the operator posted bond and so forth to plug it correctly.

Q Well, there isn't any indication that it was plugged at all, No. 3 dry hole, and there isn't anything else in your report here, so it doesn't indicate that it was plugged or left open or what happened to it.

A Well, it was plugged and abandoned or else it would have been completed. I'm certain of that.

Q Does the report that you examined on it indicate that it was plugged?

A I'll have to look at them and find out. I'm sure it was, but I really don't know.

MR. PAYNE: We would have that in our well file, Mr. Irby.

A Most dry holes are plugged and abandoned.

MR. IRBY: Well, I would recommend to the Examiner and the Commission that in each case these wells be pressured up to determine the condition as it exists today, and any measures

necessary to protect fresh waters be taken prior to the time injection is made. I have no further questions.

MR. UTZ: Mr. Irby, maybe you know, are there any fresh waters in this area above 200 feet?

MR. IRBY: I'm not sure of the depth, Mr. Utz, but I know that there are waters used in this area, as the witness has stated, for this one garden and possibly others and for livestock purposes. I realize that it isn't the best quality water, but it is useable. Therefore, makes the surface of the land useable as grazing land, whereas if there were no water available for these uses, the lands would be useless except for oil production.

MR. UTZ: There's fresh waters above the brackish waters in this area that are potable?

MR. IRBY: Useable waters, let's say, rather than fresh.

MR. UTZ: If they weren't potable they wouldn't be useable. Mr. Porter, would you give me again, in case I missed it, your maximum injected pressure?

A 125 pounds per square inch on the surface.

MR. UTZ: 125 on the surface?

A Yes, sir.

MR. UTZ: So the bottom would be plus your hydrostatic head?

A Yes, plus 4.44, approximately, pounds per foot of depth.

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

MR. KELLAHIN: I have a question.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q In line with the questioning that has gone on, would you be adverse to an order that would require that the pressure tests indicated by Mr. Irby be made?

A No, sir, I would not.

Q In the event any leaks were found, would you use such wells for injection purposes until they had been repaired?

A No, sir. I would, of course, repair them and not use them until such repairs were made.

Q Mr. Leonard Latch, the operator, did not drill these wells, did he?

A No, sir, they were drilled by a previous operator.

Q In connection with your preparation of this case, what was available to you in the way of records?

A Very little data is available even in the Commission files on some of these wells since some of them were drilled way back in late 40's, it looks like, early 40's. Some of them were drilled in '38 and about the only information available was the well log.

MR. KELLAHIN: That's all the questions I have.

MR. UTZ: Any other questions? If not, the witness may be excused.

(Witness excused.)

MR. UTZ: Any other statements to be made in this case? If not, the case will be taken under advisement. We'll take a ten-minute recess.

(Whereupon a recess was taken.)

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 5th day of December, 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. 1814, heard by me on Nov. 24, 1959.

Examiner
New Mexico Oil Conservation Commission