BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

Case No. 1420

TRANSCRIPT OF HEARING

APRIL 8, 1959

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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

Case No. 1420	Application of Caulkins Oil Company and El Paso Natural Gas Products Company for an amendment of Order No. R-1191, for approval to convert two wells to water injection, for establishment of an administrative procedure for extending the South Blanco water injection project and for including new wells in said project, for an unorthodox gas well location and for a dual completion. Applicants, in the above-styled cause, seek an order amending Order No. R-1191 to extend the project area of the South Blanco water injection project to include acreage in Sections 6,7, and 8, Township 26 North, Range 6 West, Rio Arriba County, New Mexico, and for the establishment of an administrative procedure whereby the project area may be extended and new wells included without notice and hearing. Applicants further seek permission to convert two wells located in said Sections 6 and 7 to water injection, and to dually complete the Caulkins Well No. T-123 located in the NW/4 NE/4 of said Section 7 in such a manner as to permit production from the Dakota formation and production from, or water injection into, the Tocito formation, and for approval of an unorthodox gas well location for said well.

Room 109
Santa Fe, New Mexico
April 8, 1959

BEFORE:
E. J. Fischer, Examiner.

TRANSCRIPT OF HEARING

MR. FISCHER: The next case will be 1420.

Mr. PAYNE: Case 1420, "Application of Caulkins Oil Company and El Paso Natural Gas Products Company for an amendment of Order No. R-1191, for approval to convert two wells to water injection,

for establishment of an administrative procedure for extending the South Blanco water injection project and for including new wells in said project, for an unorthodox gas well location and for a dual completion."

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe New Mexico, representing the applicant in this case. Before we get into it, Mr. Examiner, I would like to make just a brief statement. According to the Rincon Unit Agreement of the El Paso Natural Gas Products Company, most of the approval of the additional five per cent of the net working interest above the net working interest is held by the El Paso Natural Gas Products Company. Before entering into a project such as the South Blanco Water Flood Project, in order to obtain the additional five per cent, it is necessary to have the approval of the Delhi-Taylor Corporation. Delhi-Taylor has not yet given their approval, we expect the decision within a short period of time. When this decision is received, the Oil Conservation Commission will be notified. The problem presented then is this: A portion of the acreage involved in this extension is held by El Paso Natural Gas Products Company and the approval of Delhi-Taylor will be required before the extension can be actually made. Now, is it the desire of the examiner that we proceed with our testimony or would you prefer to continue the case?

MR. FISCHER: I would just as soon proceed.

MR. KELLAHIN: We would just as soon proceed, too.

MR. FISCHER: If there is no objection to it.

MR. KELLAHIN: With that understanding.

MR. FISCHER: All right.

MR. KELLAHIN: We will have one witness, Mr. Frank Gray.

MR. FISCHER: Are there any other appearances to be made in this besides Mr. Gray?

(Witness sworn in.)

FRANK GRAY

a witness, having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please.

A Frank Gray.

Q By whom are you employed, Mr. Gray?

A Caulkins Oil Company.

Q In what position?

A Field Superintendant.

Q Have you previously testified before this Commission and had your qualifications accepted?

A Yes sir, I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. FISCHER: They are.

Q (By Mr. Kellahin) Mr. Gray, are you familiar with the application before the Commission in Case 1420?

A Yes, sir.

Q Would you state briefly what is proposed in this application?

A The extension, or rather it is proposed to extend the South Blanco Tocito water injection project, convert two producers, the Caulkins T-123 and the El Paso Natural Gas Products Company Rincon No. 11 to water injection, deepen the 123 well to the Dakota and to complete it as a combination water injection well and Tocito producer.

MR. FISCHER: Do you have any exhibits that you could give us to follow, please, while you are reading that off?

(Thereupon, the documents were marked as applicant's Exhibit, 1, 2, and 3 for Identification)

MR. KELLAHIN: Just hand them all out if you want to.

MR. FISCHER: Thank you.

A This is Exhibit 1, a black--

MR. KELLAHIN: Mr. Gray, you can just hand them all the exhibits.

A I would like to keep one for myself.

MR. KELLAHIN: I mean the other exhibits.

A All right, Exhibit No. 2 and 3--

Q (By Mr. Kellahin) Mr. Gray, referring to what has been marked as Exhibit No. 1, would you state what that shows?

A The acreage outlined in red is that part of the South Blanco-Tocito Pool that is considered as the water injection project at this time. The acreage outlined in blue is the acreage that we propose to include in the water injection project.

Q Now, does the exhibit reflect the wells within this area and the ownership of the leases?

A Yes sir, it does.

Q Now, how are the subject wells shown, that is, the T-123 and the Rincon No. 11?

A The T-123 and the Rincon 11 are circled with an orange pencil.

Q Have you indicated on the exhibit the present injection wells?

A The present injection wells are indicated by circling the dots that would normally indicate a producing well with a small circle.

Q Why do you consider it necessary to expand the present project area?

A One of the reasons that we desire to expand is one of correlative rights. We don't feel that we can continue to pump water into the eastern end of the field indefinitely without moving oil from that area up into the proposed expansion of the area. We

also propose to use the T-123 and the No. 11 Well, both of which has extremely high gas-oil ratios, by including this area in the project and operating those wells under the same rules and conditions as the remainder of the field. The oil now produced by those two wells could be produced by wells having a lower gas-oil ratio, more efficient wells. There is still a--we still have a declining bottomhole pressure and we believe that by reducing the gas production and replacing the phase voided by the production of oil and gas by injecting water in those two wells, that will assist in stabilizing or reducing the decline in this bottomhole pressure, which is our desire.

Q Does that have the effect of conserving gas in the reservoir?

A Yes sir, I think it would.

Q In your opinion, would it increase the ultimate recovery of oil from the reservoir?

A Yes, sir, I believe it would.

Q Is there anything in your experience in this reservoir performance that would support these conclusions? Referring to Exhibit Number Two, Mr. Gray, would you state what that indicates?

A Exhibit Number Two is a summary of the production of oil, gas, and water production and water injection, gas produced and gas-oil ratio for the period March, 1958 through February, 1959, and it shows how the effect of higher ratio production and increased water injection has affected the pool during the past twelve months.

Q Would you give a copy of that to Mr. Nutter, please?

A Yes, sir.

MR. NUTTER: Do you have any extra copies?

A Yes, sir. The high point of gas production and probably the most efficient, the most inefficient operation was experienced during the month of August. We had an increase in allowable and the wells were capable of making it all right and it was produced with the results that the gas-oil ratio increased from 2700 to 4400 in one months time. Now, that continued rather high until October, the date that the no flare order from the Oil Conservation Commission took effect and at that time, there was an immediate reduction in the oil-oil ratio and there was also a cut back on our production in order to comply with this order. At the same time when the increased allowable was vented, we did increase the amount of water injected per day, but any change in the amount of water injected does not become immediately apparent, it takes quite a long time for any change in the rate of injection to become noticeable. However, the gas-oil ratio during the month of February had dropped from a high of 4400 down to 3600 in February of this year. The latest reports we have of that is that we have had a further decrease that we won't have the monthly figures on this for another--well, over two--

Q Then you anticipate a further decrease for the month of March?

A We have already measured a further decrease in it.

Q Now, in your opinion, will approval of the proposed injection wells be of benefit to these operations?

A Yes sir, I think so.

Q Will it lower the gas-oil ratios?

A It would immediately lower the gas-oil ratios of the field as a whole because it would be producing the allowable at a high ratio from more efficient wells.

Q What effect would it have on the possible movement of oil in the reservoir?

A Both of the proposed injection wells are located near what we believe was the limit of the original gas cap area and the injection of water would tend to stop, in part at least, any movement of oil into the dry gas sand due to water injection in the lower part of the field.

Q How much water do you intend to inject in each well?

A The amount of water we would inject in the well would have to be based more on just a trial and error procedure. We would recommend or suggest starting with an injection of three hundred and five hundred barrels per day. The factors that would determine whether we would continue to inject water or stop it or increase the rate of injection would be the amount of pressure that we find necessary to inject the water and the performance of the wells around it. We have had our troubles before now and we know that a high rate of injection immediately after putting a well into injection service may cause a break through. However, there has been

no permanent ill effect from those break throughs. We have had wells that were affected adversely by certain injection wells that came back to normal production when the water injection was discontinued. And from that experience, we feel that it would have to be a trial and error procedure, but from our experience in the past, we would approach it with a small rate of injection to begin with and then step it up if conditions appeared to justify it.

Q Now, the application before the Commission also includes the application of dual completion of the T-123 well. Referring to what has been marked as Exhibit No. 3, would you state what that shows?

A Exhibit No. 3 is a schematic drawing of the proposed mechanical arrangement of the equipment in this T-123 well if and when it is deepened to the Dakota. It shows the present Tocito perforations from 6797 to 6812 with a liner, a five and a half inch liner to be hung at 6814 to extend to the Dakota section and that would be cemented from top to bottom, that liner will be cemented from top to bottom. The Dakota zone would then be fractured, perforated and fractured, that is, water fractured, in a manner that we feel would get the best results and after which a baker packer would be set between the Dakota perforations and the Tocito perforations with a single string of tubing set in the baker packer to permit the production of Dakota gas and distillate through the tubing and at the same time, we would propose, or we do propose to inject water

into the tubing casing and this is to be injected to the Tocito.

Q What pressures do you anticipate in the Dakota formation?

A Well, the shut in pressures would be somewhere between 2700 and 3000 lbs, tne operating pressure would be approximately 500 pounds plus or minus a hundred pounds.

Q What pressures would you have in the Tocito injection portion of the well?

A That is difficult to state or to predict; however, the sand in this particular well has good permeability and the well should take water readily. I don't believe the injection pressures at the rate we would use would probably ever exceed fifteen hundred pounds at the surface.

Q What would your hydrostatic head amount to?

A The hydrostatic pressure at the Tocito sand would be approximately 2900 pounds, a little over 2900 pounds.

Q That would make a pressure differential between the Tocito and the Dakota, would it not?

A Yes, it would at all times.

Q In your opinion, is the type of completion you are proposing adequate to protect against communication between the two zones with that pressure differential?

A Yes, the matter has been discussed a number of times with the manufacturer of the baker packer and they don't hesitate at all to recommend it for differential pressure of that magnitude.

Actually, the hydrostatic pressures plus the maximum injection pressures that we anticipate will give us a pressure at the Tocito sand phase of approximately 4500 pounds and as far as the tubing is concerned that we propose to use, it would be four hundred pounds, seven and three eighths OD upset four hundred seven J 55 stainless tubing. The manufacturers recommended setting depth, as far as collapse is concerned, as twelve hundred, seven hundred sixty pounds. That setting depth would be equivalent to an external pressure of 5525, five hundred twenty five pounds, which would be more than the differential pressure that we expect from the hydrostatic pressure plus the required injection pressure to get water into the Tocito sand.

Q Now, have you any problem of corrosion in the water which is injected, Mr. Gray?

A The corrosion has been almost nil. We have a system or a plan for checking the effects of corrosion, we use coupons at the strategic points in the injection system which are measured regularly or pooled and measured at regular intervals to check the amount of corrosion present. We have not had to do any repair work of any kind on the blow lines or the injection lines, well casing or anything else in any of the equipment used in the injection operation. The first well, or rather the well selected for the first mill on the project was the T-134 and we started injecting water in it on October 7, 1953 and it is still in operation and

there is no indication that we have any trouble down hole.

Q Will you use the same water in the two proposed wells that you are using in the present injection well, is that correct, same source?

A The water would be from the same source.

Q Now, do you use inhibitors in that water?

A We use an inhibitor manufactured by the Tretolite Corporation. I believe that they have made a number of them for the WF-1.

Q What pressure do you use in regards to electrostatic--

A All of the flow lines and water lines, water injection lines, gas lines and all of the equipment is protected with insulated cupings at the well head and also at the main flow line. We have insulated the flow lines as much as possible from the other equipment.

Q In the event that there was packer leaking or failure of the tubing, how would that be protected?

A Well, if there was a tubing leak, it would be immediately apparent in the Dakota production.

Q Would any water getting into the Dakota, even temporarily, cause any damage?

A No, we have been, since we water fraced the Dakota well recently, using the same water that we are injecting into this injection well. The results from sand fracing the two wells were

very good.

Q Do you propose to use the same method of completion in this well in the event this dual completion is approved?

A Yes sir, it would be water fraced with the same water that is injected into the Tocito.

Q Mr. Gray, have you considered using packer and two strings of tubing in this completion?

A Yes sir, we have considered that plan, but since we have experienced no trouble in our T-134 well which has been in continuous injection service for more than six years, we don't really think that we would be justified in going to the extra expense of running an extra packer and an extra string of tubing. It can be done and it would work, as far as the end results are concerned, it would be just the same as we propose to do. It would cost more money and if we have trouble down hole, the cost of the remedial work would be more if we had two strings than it would if we had one.

Q Now, the application also asks for an exception to the spacing rules for the Dakota formation. Would you explain that, please?

A The Dakota spacing requires that the Dakota wells be spaced a minimum of seven hundred and sixty feet from the lease line and--

Q Seven hundred and ninety feet, is it not, sir?

A Excuse me, seven hundred and ninety feet from the lease line and one hundred and thirty feet from the quarter quarter line of the section. This well is located eighteen hundred feet from the east line and seven hundred feet from the north line of Section 7, 26 North, 6 West.

Q In that location, would it be possible to drill at seven hundred and ninety feet from the north line?

A The topography of the land would not allow us to drill at seven hundred and ninety feet from the north line. It would be extremely difficult to drill a well in that location, it is rocky and actually there are some large rocks that would have to be moved away before we could even get into it.

Q Now, has El Paso Natural Gas Company indicated any reaction to the proposed dual completion?

A Yes sir, Exhibit Number Four is a letter from Caulkins Oil Company to El Paso Natural Gas Products Company, also the reply from El Paso Natural Gas Company to Caulkins Oil Company in which they voice no objection to the deepening and producing of this well from the Dakota zone.

Q Is the original of El Paso Natural Gas Products Company's letter in Caulkins Oil Company's files?

A Yes, sir.

Q Would it be made available to the Commission if they request it?

A Yes, sir.

Q Now, federal acreage is involved in this application, is it not?

A Yes, all of the acreage involved is federal acreage.

Q Has the proposed extension of the project area and the dual completion been discussed with the United States Geological Survey?

A Yes sir, verbal permission was obtained from the Farmington office of the USGS to make the dual completion of the T-123, also to inject water into the T-123 and Rincon 11 and to extend or expand the project as outlined. This verbal permission is subject to the approval of the Oil Conservation Commission.

Q Now, the application also asks for an administrative procedure for extension of the project area and the inclusion of new wells in the area either as injection wells or producing wells under the provision of the project rules. Why is that necessary, Mr. Gray?

A The area is not entirely drilled up. We may find it necessary to drill additional wells and it is also quite possible that El Paso Natural Gas Products will also find it necessary to drill additional wells and it would just appear to be desirable to have the mechanics set up for administrative approval of the inclusion of more acreage as long as the acreage involved was--as long as there was no question but what it was part of the South

NEW MEXICO OIL CONSERVATION COMMISSION

Mabry Hall

Santa Fe, NEW MEXICO

REGISTER

HEARING DATE Examiner April 8, 1959 TIME: 9:00 a.m.

NAME:	REPRESENTING:	LOCATION:
Everell N Walsh	El Paso Natural Gas Products Co	Farmington, N.M.
Frank Bray	Caudkin Oil Co.	" "
Elmo Hubble	" " "	" "
Jason Kellahin	Kellahin & Fox	Santa Fe, N. M.
L N Miller	Tidewater Oil Co.	Hobbs N. M.
SAM F. HARRILL	HUMBLE OIL & REF. CO.	HOBBS, N.M.
Alvin Seth	Tidewater	Santa Fe, N.M.
Charles R Marshall	Pan American	Farmington
H C Butler	Humble	Roswell
John Mason	EPNG	El Paso
D Kearney	El Paso Natural	El Paso
Kirk Newman	Pan American	Roswell

Blanco Tocito Pool, as long as the tracts to be added were direct offsets and proof could be furnished that the wells were producing from the same reservoir. It would seem desirable to have the mechanics set up so that the company could include this with the least possible time of the Commission and the operator.

MR. KELLAHIN: At this time, we would like to offer in evidence Exhibits 1 through 4 inclusive.

MR. FISCHER: Without objection, they will be so admitted.

MR. KELLAHIN: That completes our testimony, if the Commission pleases. There is one other point that appears in the application under four asking for exception to the provision of Commission's Rule 502. We have presented nothing on that and do not intend to do so for the reason that the present project rules as set out in the order for the South Blanco Tocito Pool, Order R-1191, adequately covers that point and we don't feel that anything further is necessary on it. That's all the questions I have.

MR. FISCHER: Any questions of Mr. Gray?

MR. PAYNE: Yes sir.

MR FISCHER: Mr. Payne?

CROSS EXAMINATION

BY MR. PAYNE:

Q The T-123 well that produces from the Tocito is now producing, Mr. Gray?

A Yes, sir.

Q Well, do I understand your application right, do you propose to inject water into the Tocito only after production has ceased from the formation?

A Yes, we plan to inject as soon as we can obtain permission from the Oil Conservation Commission.

Q I see. Now, what kind of water are you using in this water injection project, is that fresh water or salt water?

A A mixture of fresh water and produced water. We have been producing roughly four hundred barrels of water a day with the oil production. That water is returned along with the make up water from a water well.

Q Now, if I understand your testimony correctly, it is your feeling that there is no danger to the Dakota formation in the event of a tubing leak because you have used the same type water in water fracturing other wells in the area, is that right?

A Yes sir, our D-204 would be a good case where we water fraced with the same water to the extent of a hundred thousand gallons.

Q A hundred thousand gallons?

A Yes, sir.

Q Is there any possibility that more water would get into the Dakota formation in the event of a tubing leak than say a hundred thousand gallons?

A It is possible that more than that would get into the Dakota sand.

Q Would you care to say what amount, what particular amount of water that got into the Dakota sand would damage the reservoir, do you have any points at which you would say it was safe or where it wasn't safe?

A I think there would be little chance of enough water getting into the Dakota sand during any reasonable remedial, period of remedial work to do any permanent harm. As a matter of fact, I doubt if you could inject enough to do any permanent harm. In fact, the result of a water frac, the water fracs that we have done, we seldom get all the water back that we put in, anyway.

MR. PAYNE: Thank you, I believe that's all I have right now.

MR. FISCHER: Mr. Nutter?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Gray, as I understand it, you are making application here today for conversion of two wells?

A Yes, sir.

Q One on El Paso's property and the other on Caulkins' property?

A Yes, sir.

Q What is the producing characteristic of each of those

two wells at the present time, what's the capacity?

A Both of the wells are capable of making, I believe both of them will be capable now of making top allowable of 447 barrels per day but to produce that, we also would produce a large amount of gas.

Q What is the GOR of the El Paso Rincon No. 11?

A I can't tell you exactly, but it's around eighteen, nineteen thousand.

Q How about your T-123?

A It's approximately ten thousand.

Q Now, will these wells, when converted to water injections, be so computed that the injection will be in the gas cap or will it be in the oil saturated sand or twilight zone between the two or just where?

A We believe that the wells are located in the twilight zone and it would be hard to predict which way it would go, but as long as we get it in and replaced, or rather fill out the space in the reservoir, that would accomplish what we set out to do.

Q Isn't the injection of water into the twilight ground going to drive the water higher into the formation, drive the oil higher into the formation?

A It is possible that it will, but we believe that there would be less oil driven into the gas cap if we use these wells now than would be the case if we did not use them and continue to inject

water in the well that is presently being used for water injection purposes. There would be no problem at all if we continue it on the same program that we are proposing here.

Q Have you ever considered the injection of gas into the gas cap?

A Yes, we have considered the injection of gas.

Q That would prevent the migration of oil up to the dryer sand, wouldn't it?

A It would.

Q And if the injection of water in this area would drive oil up into the gas cap and these sands are dry or not oil saturated, a certain amount of that oil would be lost in wetting those sands, would it not?

A Yes, sir, it is possible that it will. However, the amount , or rather the fact that the wells are producing with an extremely high gas-oil ratio would be so evident that the gas cap was very close to the well and the amount of oil that we would lose would be negligible. The cost of gas injection would probably be prohibitive at this time.

Q Why would that be, Mr. Gray?

A Well, it would just cost an awful lot of money to buy compressors and to lay field distribution lines and put the gas back in.

Q You are probably also considering the loss of the

immediate market for the gas?

A No, we are not, we wouldn't be concerned with the loss of the immediate market for the gas at this time. We feel that the gas will still be there at some later date. The production of gas will not be lost, we do not--at least we don't think so.

Q That's what I meant, the immediate market for the gas?

A The immediate market for the gas, actually, we would prefer to leave the gas in the ground at this time if we can.

Q But not to inject it into the ground?

A Well, it is cheaper to leave it than it is to inject it.

Q How many Dakota wells are presently producing in this area, Mr. Gray?

A We have three, our D-83 and the D-204, D-268, -- to the north of us, the El Paso Natural Gas Company has their Rincon No. 1, Rincon No. 57, we have near completion our P and D-224.

Q What's the location of that, please?

A The P and D-224 is in Section 13, 16, 7. We also have casing set on another one in section 34, 27, 6. Those locations are not shown on this plaque.

Q Now, those two El Paso wells that you mentioned, Dakota wells, are they shown on this exhibit?

A No sir, they are to the north of the area outlined here.

Q When you mentioned that the shut in pressure in the

Dakota would be 2700 to 3000, you also stated that there would be about a five hundred operating pressure, that the bottom hole operating pressure--

A Well, that would be--I said plus or minus a hundred pounds. That would be the bottom hole, the approximate bottom hole operating pressure.

Q So you would have a differential then on that packer from 4400 or 4500 pounds at the top of it to maybe five hundred pounds at the bottom of it?

A Yes, sir.

Q What size hole would you be able to drill down to this seven inch casing which is presently set in the hole?

A Six and a quarter.

Q And then the outside diameter in the liner would be five and a half then?

A Five and a half OD. We would use special clearance couplings on the liner and they would be five and seven eighths.

Q What would be the thickness of the cement sheath around that liner then, Mr. Gray?

A About three sixteenths of an inch. That's assuming that the liner is centered perfectly in the six and one quarter hole. It would be less than that in the coupling.

Q Is that the maximum thickness of it?

A Yes, sir.

MR. NUTTER: I believe that's all, thank you.

MR. FISCHER: Any more questions of Mr. Gray?

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Gray, are there any producing oil wells in the Tocito that are up structure from the proposed injection wells?

A The only other well we have that is higher structurally is the D-204.

Q Where is that located?

A In the southeast of Section 9. Permission of the Oil Conservation Commission was obtained to make a dual completion of this well so that it would produce from the Tocito and Dakota simultaneously some time ago. The well has been completed, just completed, in fact, to operate in that fashion.

Q That well is located at some distance from the proposed injection wells, is it not?

A It would be in excess of two miles.

Q Then any migration of oil resulting from injection from the proposed injection wells would be down structure, or would it?

A Would you repeat the question?

Q I say, would the migration of oil resulting from injection in the proposed injection wells be down structure or up structure?

A Well, the normal tendency of the water movement would

be in that direction because in the gas cap area, there are higher pressures now than exist in the part of the field that is included in the water flood project at this time. That is borne out by the fact that the higher pressures in the wells are in the T-123, No. 11 and also the Rincon No. 6.

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

MR. FISCHER: Any other questions of Mr. Gray?

Mr. Gray, I have some questions here.

RECROSS EXAMINATION

BY MR. FISCHER:

Q You mentioned that some of your wells were hurt in there, I don't recall which ones they were. Talking about how they were hurt, was there an increase in the GOR or what was it?

A No, when we started producing water, there was an immediate increase in--or rather decrease in the oil productivity of the well. One classic example is the T-129 in Section 9 in the northwest of 9. When we injected the T-86 and the T-87 at the same time at a fairly high rate, some four thousand barrels a day, as I recall, there was an immediate oil bank that moved into the 129, but it was followed very shortly with a water bank and then the production of the well declined to forty or fifty barrels a day and water injection in those two wells was discontinued and the well has now come back to make one hundred and forty or one hundred and fifty barrels.

Q It still makes water?

A It still makes water but I think the water per cent now is something like ten per cent.

Q What was the--

A It got up to seventy or eighty per cent.

Q Did it cone in there or--

A I think it channeled.

Q You just pumped it up and channelled it off?

A We were pumping water at too high a rate into--in particular into the T-85.

Q Well, Exhibit No. 3, the diagramatic sketch, you have a pretty close tolerance in there to bring your bottom at 6812 and the proposed hanging of five and a half inch liner. Is there a collar in there somewhere from the base of the seven inch?

A That collar is normally, or rather I think that it would hang to the pipe without actually checking the joints and that would be about thirty feet long.

Q You have got about thirty five feet in there, I believe, is that right, 6, 18, 12, and you propose to hang your liner at 6814, which would be above the liner, I think.

A It would have the shoe of the seven inch casing below it.

Q Below that collar?

A Below the perforations. I don't think it's critical at

this point. If there was any chance for error, I think we would still have sufficient room to move down a little ways to stay within the perforations and still be able to tie the two strings together all right with the cement job.

Q Could you put a four and a half inch liner in there as well as you could put your five and a half inch liner?

A Yes, it could be done.

Q Would you have to use a lot of homemade equipment, however?

A No, we could get four and a half inch that's standard, would be standard for--I mean it's standard equipment, you can get a liner like that, they have that in stock in that size. The only objection that we have to using the four and a half inch is that the smaller the pipe the more difficult it is to work inside it.

Q This baker Model D Packer will be set on an electric line or tubing?

A It will be set on an electric line.

Q And will you also have a safety joint in there where you could go in and get right to--

A We had not planned to run a safety joint; we can do so if the Commission desires.

Q You don't feel then that there is any need to ever put any side door choke, say, or Garrett sleeves or something like that on your tubing, that you could work to your tubing from your Tocito

zone if need be?

A We don't think so, we think that retrieving the tubing from a model D packer is a farily simple job. If we did have work to do on it, we don't feel that the water or oil either one would do any harm to the Dakota sands. If the tubing should stick and necessitate a work over it would be easy enough to run an acid gun and cut it off at most any point in the hole that we would like to cut it off, and if we run side door chokes and sleeves and one thing and another, they just represent more avenues for leaks.

Q So you are going to have one continuous string of tubing?

A Yes, sir.

Q Will this water that you will inject, will you try to take up for any sand or do you think there is any chance of sand getting into the water that you would inject into the Tocito?

A There has been no evidence of any build up of sand in any of the injection wells.

Q And if you had to kill your tubing, casing in the Tocito zone, what would you kill it with, water?

A Water.

Q Now, you have to have a packer leakage test at least once a year--

A Yes, sir.

Q --according to our rules?

A Yes, sir.

Q And how would you propose to that, could you tell us how you propose to take a packer leakage test on this well.

A In this particular case, I think we would be making a continuous packer leakage test. As far as bottom hole pressure is concerned, we would be in position mechanically to take any kind of down hole pressure test that anyone would want and as far as the leakage test is concerned, the minute the packer begins to leak, it would have to leak to the outside and it would be apparent in the production from the Dakota zone.

MR. FISCHER: That's all I have. Are there any other questions?

The witness may be excused.

(Witness excused)

MR. FISCHER: Any statements to be made?

We will take the case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JERRY MARTINEZ, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing were reported by me in Stenotype, and that the same was reduced to typewritten transcript by me and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

DATED this 15th day of April, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Notary Public

My Commission Expires:

January 24, 1962

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1420, heard by me on Apr. 8, 1959.

E. J. Fischer, Examiner
New Mexico Oil Conservation Commission