BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 26, 1963

EXAMINER HEARING

IN THE MATTER OF:	
Application of Ralph Lowe to create a new pool for Upper Pennsylvanian gas production, and for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new gas pool for Upper Pennsylvanian Gas production in Section 21, Township 21 South, Range 24 East, and the establishment of temporary pool rules therefor, including a provision for 640-acre spacing and a provision restricting well locations.	Case 2846

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The next case will be Case 2846.

MR. DURRETT: Application of Ralph Lowe to create a new pool for Upper Pennsylvanian gas production, and for special pool rules, Eddy County, New Mexico.

MR. BRATTON: Howard Bratton, appearing on behalf of the applicant. We have two witnesses.

MR. NUTTER: Have your witnesses stand and be sworn, please.

(Witnesses sworn.)

WILLIS F. AMMENTORP

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, please?

A Willis F. Ammentorp.

MR. NUTTER: How do you spell that?

A A-m-m-e-n-t-o-r-p.

MR. NUTTER: Thank you.

Q By whom are you employed and in what capacity?

A Ralph Lowe, geologist.

Q Will you state briefly your professional and educational background?

A I received a Bachelor's and Master's degrees in geology at the University of Wisconsin and have worked the past five years for Pan American, and the most recent, last year for Ralph Lowe as geologist.

Q Are you familiar with the Indian Hills Unit in Eddy County, New Mexico and the matters contained in this application?

A Yes, sir.

MR. BRATTON: Are the witness's qualifications

acceptable?

MR. NUTTER: Yes, sir.

Q Mr. Ammentorp, in this application is Ralph Lowe asking for the creation of a new pool for Upper Pennsylvanian production composed of Section 21, I can't spot the township --

A Township 21 South and Range 24 East.

Q -- and promulgation of temporary pool rules, including 640-acre spacing, is that correct?

A That is correct.

Q And specified well locations within the sections, those wells' locations to be 1650 to the section line or 330 to a quarter, quarter line?

A That is correct.

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

Q Refer to your Exhibit No. 1, Mr. Ammentorp; does this indicate the location of the well in question in that Section 21, is that correct?

A That is correct.

Q And this is in a Federal unit, Indian Hills Federal Unit, which is outlined?

A Yes, sir.

Q Would you indicate the reference between this well and

the Ralph Lowe Indian Basin wells there?

A Well, the well site is approximately four miles east of our three-well Indian Basin operating unit area, and was completed June 14 of 1963, when the initial, the calculated absolute open flow potential was filed.

Q The three Indian Basin wells are indicated here, what sections are those in?

A The first well, No. 1 in Section 23; the second well, the No. 1-A, Section 22; the third well, the No. 1-B in Section 14.

Q Those wells encountered the same Upper Pennsylvanian production, is that correct?

A That is correct.

Q And they have been designated as Upper Pennsylvanian Pool and have the identical rules that we're asking for in connection with this well, is that correct?

A Yes, sir.

Q Is there anything else you care to point out in connection with this?

A Well, only that the Marathon Oil Company is drilling the No. 1 North Indian Basin Unit which is approximately two miles north of our Indian Basin Area, and it has also encountered the same Upper Pennsylvanian dolomite pay zone.

Q Has it been completed as yet?

A No, sir.

Q Is there anything further you care to point out?

A No.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

Q Let's go to Exhibit No. 2. This contains substantially the same information we have been talking about with reference to location of wells on the right-hand side. Would you explain what is shown on it, please?

A This is a geological cross section or sample log showing the thickness of Upper Pennsylvanian dolomite we encountered in our No. 1 Indian Hills Unit well showing the section of the overlying shale and the underlying limestone. The amount of visual porosity logged by myself while sitting on the well is plotted on the well, and as you can see, it is a continuous, massive dolomite section with porosity throughout.

Q Did you get any cores of this well?

A No, sir, it was mechanically impossible.

Q How does this formation encountered here compare with what you encountered in your Indian Basin wells?

A Well, it is very much the same. The gross thickness is about 600 feet, which is 175 feet thicker, but the character

of the dolomite, the secondary crystals within the porosity, and the general nature of the rock itself is extremely similar.

Q How about your depths, were they approximately the same or did you have much differential?

A They were very much the same. There's a 200-foot difference in elevation, the Indian Hills being lower, and the top of the formation was encountered at approximately the same depths in each well, the same drilling depth.

Q Is there anything further you care to state with reference to this sample log?

A I don't think so.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

Q Turning then to your next exhibit which is Exhibit No. 3, is this a report from Schlumberger as to porosity?

A Yes, this is a sonic porosity determination report, and porosity was measured in two-foot intervals through our dolomite, Upper Pennsylvanian dolomite section, and these have been measured by George Horst, the Schlumberger engineer, and he gives the average porosity of this reservoir, 7.3%.

Q Is that all this reflects, Mr. Ammentorp?

A Yes, sir. We prepared that report in lieu of a core analysis, since we were unable to --

Q I believe our next four exhibits are four different types of logs, is that correct?

A Yes, sir.

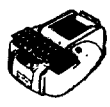
(Whereupon, Applicant's Exhibits 4, 5, 6 & 7 were marked for identification.)

Q Referring to your Exhibit No. 4, let's say sonic log, and with particular reference to the area in question, the Upper Penn, would you explain what it reflects?

A The curve on the right is a direct electrical measurement of porosity in the dolomite and the dark curve on the left indicates the amount of shale and the lighter curve is the caliper survey indicating the diameter of the hole. The dolomite section was penetrated approximately 20 feet during drilling, and on drill-stem test of this interval flowed a maximum of 2,830,000 cubic feet of gas per day. After completion of drilling operations the zones indicated were perforated, the results stated on the log.

Q What are those results, coming from the bottom up to the top?

A The first zone swabbed 45 barrels of sulphur water per hour with a trace of gas. That depth was from 7690 to 7740 feet. That was after an acid treatment of 1,000 gallons. The well was then plugged back, these perforations were squeezed with 150 sacks



and a new set of perforations were taken from 7590 to 7610. These perforations were acidized with 1,000 gallons and it flowed 65 barrels of sulphur water per hour plus 2,000 MCF gas. These perforations were cemented with 175 sacks of cement. The well was next perforated from 7536 to 48, acidized with 1,000 gallons, and it flowed 70 barrels of sulphur water per hour plus 2,250,000 cubic feet of gas per day, and the perforations were then cemented with 85 sacks.

Next the well was perforated from 7410 to 20, acidized with 1,000 gallons, and the well flowed 18,600,000 cubic feet of gas per day on a one-inch choke, the flowing tubing pressure was 475 pounds.

A bridge plug was then set at 7385 feet and the well was perforated from 7316 to 72, acidized with 1,000 gallons, the well flowed 1400 MCF. The well was then reacidized with 2,000 gallons and the well flowed 18,000,000 cubic feet of gas per day on a one-inch choke, flowing tubing pressure 475 pounds. The calculated absolute potential was taken from this last zone, which is open at the present time.

Q What does this indicate, Mr. Ammentorp, do you have water in the bottom portion of your reservoir?

A Yes, sir, this is similar to the Indian Basin where you have, on production tests you recover almost 100% water at the

base of our reservoir section, and as you test upward in it the amount of gas that is produced with the water increases until you approach what we are calling our water table, and above this point entirely gas is produced. This water table is roughly the same as Indian Basin.

Q The water table is approximately the same as in the Indian Basin?

A Yes, sir.

Q So the productive characteristics of the formation here are the same as in the Indian Basin?

A Yes.

Q Go then to your next Exhibit No. 5, what type of log is that?

A It's a dual induction laterolog.

Q Turn then to your zone of interest and explain what that log reflects.

A The main purpose of the dual induction laterolog is to enable us to calculate the resistivity of the formation logged and to determine where the gas-water contact may be, or intially the presence of hydrocarbons.

Q Does this log, in effect, confirm what you found from your actual production experience and your actual perforation experience?

A Yes, sir.

Q Turn to your next Exhibit No. 6. What type of log is that?

A This is what is called a fracture finder log, and the curve on the right has both a dotted curve and a solid curve. This is a sonic tool or a sound velocity tool, and where the dotted curve departs from the solid, indicates fracturing or fractured zones. This log is exhibited to show the large number of fractures that we have encountered in this reservoir which would indicate extremely good permeability.

Q You have one apparently cavern around 7350, is that correct?

A Yes, sir. This is a zone that around the well bore has infinite porosity and permeability.

Q But going on down, excellent fracturing or permeability is indicated clear down through the zone, is that correct?

A That is correct.

Q Turn to your next log, Mr. Ammentorp, what type of log is that?

A This is a microlaterolog, which is still another tool to measure permeability in our Upper Pennsylvanian dolomite. The curve on the right-hand side of the log shows many kicks to the left which indicate fractures and good permeability.

Q This confirms again what's shown in your fracture log?

A Yes, sir.

Q Were these Exhibits 1 through 7 prepared by you or under your supervision, or by the companies indicated?

A Yes, sir.

Q Mr. Ammentorp, from your study of the geology of this formation, and from the study of the available information, the logs and your sample analysis, what is your opinion of this reservoir insofar as the ability of one well to produce a specified area?

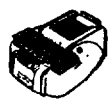
A I think the ability to produce over a large area is excellent due to the massive nature of the dolomite. There seems to be no vertical separation, and visual porosity in samples as well as all electrical logs indicate excellent permeability and porosity.

Q Based upon the evidence that you have, would it be your opinion that one well in this area would efficiently drain 640 acres?

A Yes, sir.

Q Is there anything further you care to state, Mr. Ammentorp?

A Oh, just that the dolomite section in this well seems very similar, or almost the same as all the characteristics



exhibited in our Indian Basin Area.

Q As a practical matter, Mr. Ammentorp, you can't tell whether it's the same reservoir at this time because of the distance?

A Yes, sir.

Q But it easily could be or couldn't be?

A We have a number of facts that suggest that it is the same. Of course, the first is the actual lithology of the rocks penetrated, type of gas that is in the reservoir, the age of the rocks as determined by paleontological methods.

Q Either it's the same reservoir, or if it isn't, does it have all of the same geologic characteristics?

A Yes, it does.

MR. BRATTON: I believe that's all we have of Mr. Ammentorp.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q A number of times during your testimony you have stated that in your opinion this is a very similar reservoir to the one to the west; however, you haven't presented anything here showing the similarity, have you? The similarity would have to be made by the Commission or determined by the Commission by

comparing what you have got here with the record in the other case, in the Indian Basin, I presume?

A Yes, sir. Additional data, pressure data will be presented by Mr. Landua showing the initial reservoir pressure to be the same, and it is too early to make an accurate map of this reservoir, and of course, we don't have proof by drilling that the reservoir is present between the two drilled areas.

Q Were you working for Ralph Lowe when the Indian Basin wells were drilled?

A Yes, sir.

Q You mentioned that you had sat on this Indian Hills well, did you sit on those wells out there?

A Yes, sir.

Q Is this Indian Hills well a dual completion with Upper Pennsylvanian and Lower Pennsylvanian?

A No, we have a Lower Pennsylvanian sand that produced a fair amount of gas on drill-stem test, but since there was no market available in the area at the time we have decided to not dually complete the well as a matter of economics.

Q Well, Exhibit No. 4 shows a drill-stem test down in the interval of 9160 to 9225, with some substantial flow rate indicated there. There is economic gas present in the Lower Pennsylvanian, isn't there?

A Yes, sir. The amount of sand we had delivered a large amount of gas, but the pressure data during the test did not look favorable, the pressures seemed to drop and the pay is actually only about ten feet thick. If we get a pipeline in the area eventually we would probably come back and dual complete the well at that time.

Q What size casing is this well equipped with?

A Five and a half inch.

Q Over in Indian Basin there were two pays established as pools with pool rules, and I believe there was a third pay up above that. Which does this correspond to, the one that you are asking for the rules today in this interval of 73 -- approximately 7300 to 7600, I guess, 7700?

A This corresponds to the Upper Pennsylvanian dolomite.

Q That's the middle pay over in the other area?

A No, it's the upper one.

Q The extreme top one?

A I believe it occurs at 7200 feet there, the top of it, so it would be within 100 feet drilling depthwise, as I say.

Q Considering subsea elevations here, is this approximately 200 feet lower on a subsea datum than the area to the west?

A No, sir. The dolomite in the Indian Hills is flat, with our third well over there subsea, the No. 1-B, the northern-

most well, so it is roughly 140 feet low to the first well.

Q And the No. 3 in the Indian Basin was low to the other two wells?

A Yes, sir.

Q This swings around on the same elevation with the No. 3 elevation up there?

A Yes, this is flat on the subsea datum with the third well.

Q Drill-stem testing in this well in the 7,000 foot range did recover sulphur water from 7690 to 7640. Recovered water from 7590 to 7610, during the drill-stem tests in the area to the west recovery water.

A Yes, sir, they did in the No. 1-A. The No. 1 formation did not give up large quantities of sulphur water on drill-stem test, but on subsequent production test they did, so there was a plugging of some nature of the reservoir during drilling that had to be broken with acid.

Q Are the two intervals here which you've tested and which made water here correlative to any two similar intervals in the wells to the west?

A Yes, sir. The perforated intervals are all below the known water table in that area. On an exact footage comparison I couldn't say. I do not know. The two upper water zones, I

would say are certainly on the same subsea horizon with general water zones determined in the first wells.

Q You actually perforated five intervals in this area, this 7,000-foot area, and then you ended up cementing the three lower ones because they all three made water?

A Yes, sir.

Q And you left two open?

A The one has a bridging plug between it, it's set there at --

Q Oh, that BP is a bridge plug between the two intervals?

A Yes.

MR. LANDUA: We chose not to squeeze it up but set a bridge plug.

Q So you have one perforated interval right in the top of the Pennsylvania dolomite?

A Yes.

Q On Exhibit No. 4, the sonic log, you have a very definit kick there at 7308, or something like that?

A 7308.

Q It shows very definitely on this log, does that same marked kick show on the logs of the other wells to the west?

A Yes.

Q Are those wells perforated in the very same top section

of the Pennsylvanian just under this kick like this?

A I believe the 1-B is essentially the same.

Q Now, the analysis of the sonic log which you obtained from Schlumberger, and which is Exhibit No. 3, is that normal service that Schlumberger offers or is it made only upon special request of analysis of a sonic log?

A It's made only on special request.

MR. LANDUA: Anyone can get it, it's available.

Q And he computes your porosity to be 7.3%?

A Right.

Q You haven't stated anything as to reserves and cost of the well, will the other witness testify as to that?

A Yes, sir.

MR. NUTTER: Are there any further questions of this witness? He may be excused.

(Witness excused.)

MARVIN L. LANDUA

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, please?

A Marvin L. Landua, L-a-n-d-u-a.

Q What is your position, Mr. Landua?

A Technical Administrator for Ralph Lowe.

Q Have you previously testified before this Commission as an expert witness?

A Yes, sir.

Q Are you familiar with the area in question and the matters contained in this application?

A Yes, sir.

(Whereupon, Applicant's Exhibit No. 8 was marked for identification.)

Q Mr. Landua, will you refer to Applicant's Exhibit No. 8 and explain what it is and what it reflects?

A Exhibit 8 is the calculated absolute open flow potential obtained on the Indian Hills No. 1 in line with the rules of the Commission. In general it indicates that we have calculated an absolute open flow of 21,500,000 cubic feet of gas per day, and in addition the tests indicate that the gas contains approximately ten barrels of condensate per million cubic feet of gas.

Q Would you explain anything unusual encountered in taking this test?

A By the rules of the Commission at least a 5% drawdown in shut-in pressure is required for flow rates for use in making this calculation. This well had such fine permeability that it

was difficult to obtain the 5% drawdown requirement so that we got flow rights high enough to make a calculation. At a flow rate of 5,774,000 cubic feet of gas per day, our drawdown was less than 4% from the original shut-in. It indicated extreme permeability in our opinion. That's the most unusual thing about our flow tests.

Q As a result of that, what was done, did you contact the Commission or what with relation to this test?

A Yes, this test was discussed with Mr. Utz. He indicated that by calculations for friction losses that extremely low rates of production, that errors may creep into calculations, and in this particular case he indicated that we could turn in a test based on this five million seven, assuming a slope of five-tenths, and that was the manner in which this open flow potential was obtained.

Q That comes from how much interval in this well?

A Just the 16 feet from 7316 to 32, which is located approximately at the top of this producing dolomite interval.

Q Refer to your other information shown on this exhibit, Mr. Landua, your gravity of your hydrocarbons and your other information shown under pressure calculations there. Do you have the information from the Indian Basin wells to give to the Commission to compare with these?

A Yes, by way of comparison, the Indian Basin No. 1, through perforations from 7376 to 7538, has calculated open flow of 16,100,000 cubic feet of gas per day, along with a condensate content of approximately ten barrels per million. The gravity of the condensate was 61 degrees, corrected to 60 degrees. On the No. 1-A Indian Basin, which was the second well for that area, through perforations at 7505 to 7572, we obtained a calculated open flow of 14,250,000 cubic feet of gas per day along with approximately the same condensate content. This condensate has measured gravity of 58.4 at 60 degrees Fahrenheit. By comparison the Indian Hills No. 1, located approximately four miles to the east, had a calculated open flow of 21,500,000 cubic feet per day along with approximately the same condensate content.

Q Mr. Landua, what is your pipeline situation in this area?

A Right now we have no connection to either of the two areas.

Q I believe there was a case here a short while ago on the Hackberry Hills, and this area is some ten or twelve miles to the west of it, is that correct?

A Correct.

Q What would be the effect on development, and on getting a pipeline into this area, of further development in the area on a

640-acre pattern, Mr. Landua?

A It is our opinion that by 640-acre spaced wells, greater reserves would be proven in a shorter period of time which would help pipeline people to see reserves of a large enough amount to be interested in these areas.

Q Surely if you step out on 640-acre spacing and develop a large area of reserves you are liable to get a pipeline in that much sooner, is that correct?

A That's our opinion.

Q Do you have any other information available other than what has been testified to here and what you have testified to from which you can determine the area one well will drain in this area? Is there any other information available at this time?

A At this time there's none, because we have no withdrawals in the area.

Q Based upon the information, the capability of this well, Mr. Landua, do you have any opinion as to whether or not this well will efficiently drain 640 acres?

A Yes, sir.

Q What is that opinion?

A I am of the opinion that of the reservoir material that we obtained in this well and the quality of this pay, that it would have no difficulty in draining areas perhaps in excess

of 640 acres. I'd also like to point out, Mr. Bratton, that the reason for not coring and not taking drill-stem tests in this dolomite was because of the drilling difficulty, after we drilled the top 25 feet we lost circulation, which indicates extreme permeability of a formation, and it was mechanically impossible to take drill-stem tests and cores, and that's why we had to rely on the route of logs and log calculations for indications of reservoir volume.

Q In your opinion, Mr. Landua, would economic waste occur if development were to take place at this time in this area on less than 640-acre pattern?

A Yes, sir. I think without question. This well will cost us in the neighborhood of $350,000. We have not obtained all of our cost information because invoices are still coming in. Drilling is rather difficult in this area.

Q In that connection, Mr. Landua, actually we ought to point out this well isn't drilled on the pattern that we are talking about. Would you explain why?

A We would like to have drilled this well on a 1650 pattern, but the topography of the area is such that a 1650 location here would have cost us approximately a hundred thousand dollars more just for dirt work, road work and surface work than the 660 location, so, since we were statewide we chose to go

ahead and drill the 660 location. Now that we have gas and have reserves in the area, we would not mind the additional expense of spacing these wells to a pattern.

Q This is right in the heart of what they call the Rocky Arroyos country, is that correct?

A That's my understanding.

Q And also at the time that you drilled this well, this was a wildcat well?

A Yes.

Q Mr. Landua, at this time have you made any economic calculations that you'd feel confident enough to give to the Commission?

A It's so early, but just based on reservoir volume, we believe that perhaps an estimate of 30 to 40 billion feet a section would be in place in this dolomite reservoir that we're talking about here at this hearing.

Q Until actual further development takes place in the area and you get a pipeline in the area and some production history, you won't have much firm in the way of economics?

A No, sir.

Q Is there anything further you'd care to state in connection with the application, Mr. Landua?

A We would like to request that the sections be included

in this field since the well is located 660 out of the south and west corners of Section 21, we would like to make the specific request that Sections 20, 29 and 28 be included in this field designation at this time. The thickness of the pay sections, the extreme fine quality certainly indicates that it should cover a wide area. Those sections are undoubtedly productive and we respectfully request that the Commission consider the four in their designation.

Q Mr. Landua, that would give you temporary development of this whole general area on a 640-acre pattern, which, as we've discussed before, would prove at an earlier date what area we're talking about?

A That's correct.

Q And how much reserves there are in the area?

A Yes, sir.

Q And which would tend to bring a pipeline in earlier if you develop extensive reserves?

A To the best **interest of the state and the federal government and all land owners in the area.**

Q Is there anything further you'd care to state in connection with this application, Mr. Landua?

A No, sir.

Q Was Exhibit No. 7 prepared under your supervision?

A Yes, No. 8.

Q Eight.

MR. BRATTON: We would offer in evidence Applicant's Exhibits 1 through 8.

MR. NUTTER: Exhibits 1 through 8 are admitted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 8 were offered and admitted in evidence.)

MR. NUTTER: Does anyone have a question of Mr. Landua?

MR. DURRETT: Yes, I have a question.

CROSS EXAMINATION

BY MR. DURRETT:

Q Would you have anything else to offer to the Commission other than your determination as to the permeability on this well to indicate that Sections 20, 28 and 29 might be productive of gas that should be included in this pool?

A Would you restate your question?

Q Yes, sir. Do you have anything other than just your determination that you have made concerning the permeability of your well, the subject well, to offer to the Commission to indicate that Sections 20, 28, and 29 should be included in this pool?

A Just the extreme permeability of the pay and the thickness indicated by our logs, indicates to us that it should cover

an appreciable area.

Q Well, and you would like to request that the Commission include it, even though the one mile rule would actually govern production in these three sections?

A Yes, sir, I would.

MR. BRATTON: Mr. Durret, I doubt if you could do that at this time on this hearing because all that's called for is Section 21. If the Commission should determine to grant the application in this case, then I believe Mr. Landau's request to the Commission would be that it considered at a subsequent nomenclature hearing, considering on the basis of this evidence and the location of this well right in the corner of those sections that they would be governed.

A We are going to try and get 360 spacing anyway.

Q You are suggesting that we should consider this at a subsequent nomenclature case?

A The mechanics of it.

MR. NUTTER: The ad here is restricted to Section 21?

A Yes, sir, we understand the petition, but we wanted to get the request in and, like I said, the mechanics, we would be delighted to come back up and testify at a proper hearing.

Q (By Mr. Durrett) I think that clears that up. Now, one other question. I don't understand that you want temporary

rules. Do you want temporary one-year rules, is that what you are proposing?

A In our Indian Basin Area, I think our rules were granted on the basis of one year from the time that we got pipeline connection.

Q Yes, that's the point I was making. Would you like the same thing in this case?

A That's the request we would like to make here also.

Q Would you have any estimate as to when you think you can get a connection here?

A We have had numerous inquiries. Most of them have been from people of a promoter type or nature. We don't know whether they actually have sales down the line. We have had absolutely no inquiry from a legitimate transmission company as to the extent of these reserves, and whether they're ready to come in, but our concept is to see how much we have and what we have and then build a line ourself to tap into somebody.

Q I see.

A Or really get someone interested in this area whenever we can show enough reserves.

Q You are tentatively --

A I would say that just from a judgment, that it would be at least two years before you could sell any gas in appreciable

quantities.

Q You are tentatively planning, if you can't get somebody to come in, to build your own line?

A If we see enough reserves, which we certainly can foresee that, we will take that under consideration.

MR. DURRETT: I think that's all.

BY MR. NUTTER:

Q Are there additional wells drilling in this general area at this present time?

A Right now in Section 10 north of the Indian Basin Area which shows up on Exhibit 1 is an active well.

Q That's the Marathon well?

A Marathon, yes, sir. Then we believe that immediately around the Indian Hills Federal Unit there's quite a bit of activity because of lease terminations, majors and independents as well. So I would say, Mr. Nutter, that before the end of the year there may be four or five rigs busy within this ten-mile radius.

Q Are there quite a few leases that have early expiration dates?

A I think so. I have not made a study myself, but in our company I understand, in fact, we are trying to make well deals ourselves.

Q This Exhibit No. 1 shows a location, J. H. Trigg location down in Section 6?

A Yes, sir. We don't know whether it's one of those deals where leases are terminating and he has a cable tool on it, I don't know just what type of location, but it's an active location.

Q It's an active location with a cable tool rig?

A Yes. We understand south of him three miles that Superior Oil Company has a unit together and probably has a location, but it's getting a little south of the area that we're discussing here.

Q Does Ralph Lowe plan any additional drilling in the immediate future in this area?

A Well, we will, under the terms of our Federal Unit, possibly drill another location say on the unit itself within six months, and we do anticipate additional wells around the unit if we can get our deals over. We are actively engaged in trying to make well deals.

Q This Well No. 1 here was completed when?

A June the 14th.

Q And I suppose the unit requires another well be started within six months after the completion date?

A I don't know if it would require a well under the

shut-in gas deal, but we have to report on some basis.

Q Is the status of the pipeline connection for this area, including the Indian Basin, any different than it was at the time that you were in here on Indian Basin?

A No, sir. About the same, we have had a few inquiries, but nothing firm has transpired.

Q You made a rough estimate of reserves and you figured it at 40 billion per square mile?

A Yes.

Q What is that estimate based on?

A Based on 150 feet of free gas dolomite pay with about 7% porosity, and using a water saturation of roughly 30%. This is just gas in place, this's not recoverable gas.

Q Are those reserves similar then to what you had west of here?

A They are better.

Q Better reserves than in the Basin?

A Yes, sir.

Q If I read this Exhibit No. 4 correctly, this perforated interval from 7410 to 7420 flowed 18,600 MCF a day. Why was the bridge plug set there and the zone isolated?

A Well, Mr. Nutter, from our producing characteristic we think this reservoir is going to have a water drive, so to

get the maximum recovery we thought it best to perforate in the extreme top and then let the water encroach up and produce water-free gas for a longer period of time.

Q So, actually, although you've got 16 feet of perforation here in your computation, you were talking about the 150 feet of dolomite?

A That's correct.

Q And you are expecting to gain this gas from down below here by vertical migration with the water drive?

A Yes. We think there's no question but there's extremely fine vertical communication.

Q And the water drive will get this gas up into the upper area?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Landua? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Bratton?

MR. BRATTON: I believe not.

MR. NUTTER: Mr. Bratton, several references have been made to the similarity of this area to the Indian Basin as far as permeability and reservoir characteristics, and we have considerable data in our files regarding that area. Was it your

intent to incorporate by reference the evidence that we have in that case in this one?

MR. BRATTON: We would request that the Commission take administrative notice of whatever is in that file.

MR. LANDUA: We did not request that you consider as one area right now, but I think eventually it will be.

MR. NUTTER: But we have your permission to look at our files some day?

MR. BRATTON: If the Examiner please, I suspect he might whether I requested him to or not.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2846?

MR. DURRETT: If the Examiner please, I believe we have some correspondence concerning this case. The Commission has received a communication in the form of a telegram from Manzano Chemical Company, Harry S. Lane, Regional Manager. They state in general that they are part interest owners in the unit and endorse the request in this case.

We also have received a communication from I believe Marathon Oil Company by I. G. Barell, Division Manager, stating that they support the application, and they state that they're joinders on the basis that the rules proposed by applicant are substantially the same as adopted for Indian Basin, Upper

Pennsylvanian Gas Pool in Case 2749.

We also have received a communication in the form of a telegram from International Oil and Gas Corporation. They state that they do not object to the application by Ralph Lowe, and that they request favorable consideration.

We also have received a communication from Sun Oil Company by Granville Dutton. This communication is in the form of a telegram, and I would like to read it in its entirety as it is somewhat unusual. It reads as follows: "Re Case 2846: Sun Oil Company, as an interest owner in the Indian Hills Unit, support application of Ralph Lowe to create new pool for Upper Pennsylvanian gas production and to establish temporary pool rules including 40-acre spacing and a one 1650 minimum distance from lease lines.

That is all the communications we received. I have a suspicion that last telegram might be in error.

MR. BRATTON: If the Examiner please, I would ask for confirmation from Western Union, or preferably from Mr. Dutton.

MR. DURRETT: These telegrams will be in the Commission file, if anyone would like to read them in their entirety.

MR. NUTTER: If nothing further in Case 2846, we will take the 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 5th day of July, 1963.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2846, heard by me on 6/26, 1963.

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