BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 10, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Midwest Oil Corporation for the creation of a new oil pool and for the establishment of temporary special rules and regulations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks creation of a new oil pool for Pennsylvanian production in the vicinity of its LLE State Well No. 1, located in the NW/4 SW/4 of Section 14, Township 10 South, Range 33 East, Lea County, New Mexico. Applicant further seeks the promulgation of temporary special rules and regulations governing said pool to include provisions for 80-acre proration units and fixed well location requirements. CASE 2660

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 2660.

MR. DURRETT: Application of Midwest Oil Corporation for the creation of a new oil pool and for the establishment of temporary special rules and regulations, Lea County, New Mexico.

MR. NUTTER: We would like to announce that this will be the last case that will be heard today. The hearing will resume at 9:00 o'clock in the morning with Case 2661.

MR. MORRIS: If the Examiner please, I am Richard Morris of the firm of Seth, Montgomery, Federici and Andrews, Santa Fe, New Mexico, appearing on behalf of the Applicant,

Midwest Oil Corporation. We will have two witnesses, Mr. Norbert McIntyre and Mr. Frank Qualia. I ask that they both be sworn at this time, please.

(Witnesses sworn.)

(Whereupon, Applicant's Exhibits Nos. 1 and 2 marked for identification.)

MR. MORRIS: These exhibits are quite large. If you want several copies, we have got them. That's Exhibit 1 and 2.

At the outset, I would like to state that this is Midwest Oil Corporation's application for the creation of a new oil pool for Pennsylvanian production, lying midway, approximately, between the Lane and the South Lane Pools in Lea County. For lack of a better name we have come up with the suggested name of the Middle Lane Pool, and we'll refer to this pool by that designation throughout this hearing. If the Examiner wishes to come up with a name of his own, that will be perfectly satisfactory with us.

MR. NUTTER: I presume you are going to follow the middle of the lane policy here.

MR. MORRIS: In addition to the creation of the new pool, we are asking for temporary special rules and regulations on a one-year basis setting up 80-acre proration units; and further we're asking for fixed well location requirements which would require that the well on the 80-acre unit be either in the Northwest Quarter or the Southeast Quarter of the Quarter Section on

which the well is located.

NORBERT McINTYRE

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. McIntyre, will you state your name and position with Midwest Oil Corporation?

A My name is Norbert McIntyre. I am a geologist with Midwest Oil Corporation.

Q Where are you located?

A Out of Midland.

Q Would you briefly review your education and your experience in the oil business since then?

A I was graduated from Sul Ross State College with a B.S. degree in Geology, and in 1953. Since that time I have been associated with the U. S. Boundary and Water Commission for two years, working in Old Mexico, doing surface work. Then I scouted for a period of three years for Union Producing Company out of Midland. I had three years geological experience with Union Producing Company, and I have been with Midwest Oil Corporation approximately a year.

Q Are you generally familiar with the geology in the Lane-South Lane interlying areas?

A Yes, sir, I am.

Q Have you prepared an exhibit showing the subsurface situation in the Lane-South Lane and the area that we're going to call Middle Lane?

A Yes, sir, I have. I have here an Exhibit 1 which shows the subsurface geological interpretation which is contoured on the top of what Midwest chooses to call the Bough "A" zone, which is correlative to the pay zone, the upper pay zone in the Lane Field called Wolfcamp in that field, and which is also correlative to the pay zone in the South Lane Field which is called Bough "C" in that field.

Q So these are some variations that exist in the nomenclature of these formations in this area?

A Yes.

Q But as you'll show on your cross section, this is what we're referring to as Bough "A"?

A That is correct. This Exhibit 1 has shown here a north-south trending feature, or series of features or closures along a broad low relief structure, anticlinal structure, which according to the information we have is indicated that we have separation, vertical separation between the Middle Lane area, the Lane Pool proper, and the South Lane Field. This subsurface interpretation is further substantiated by geophysics.

Q Does this plat also show all of the wells in this area that have been completed in the Permo-Pennsylvanian?

A Yes, sir, it does. The only wells on the plat which

produce from zones other than the Bough "A" zone are the three structurally high wells in the Lane Pool, which are the Sunray No. 1-I, and would be in the Southeast of the Southwest of Section 36; the No. 2-F and the No. 1-F, which are in the Northwest Quarter of Section 1.

Q On the master exhibit which is before Mr. Nutter, some of the acreage is colored in yellow. Would you explain what that depicts?

A Yes, that acreage is Midwest acreage, acreage which Midwest has a mineral interest or an operating, or will be operating.

Q Will you point out the Midwest LL and E State Well No. 1?

A The Midwest LL and E State No. 1 is located in the Northwest of the Southwest Quarter of Section 14, 10 South, 33 East.

Q What is the footage description of that well from the boundary lines of the quarter section?

A It's located 2310 from the south, 660 from the west lines of the section.

Q What is your opinion concerning this well with respect to whether it is on the same or separate trends from the Lane and South Lane Pools?

A At the present time we have recently completed this well for 94.18 barrels of oil plus 368 barrels of salt water on

gas lift. Apparently we encountered approximately seven to eight feet of porosity in the Bough "A" zone. It appears also that we have a different water table than exists to the south, possibly, in that we are making such a large volume of water although we are 124 feet high to the Apache Midwest State Well in the north end of the South Lane Pool, which is located 1980 from the south and east lines of Section 23.

MR. NUTTER: Is that water-free production in the Apache Well?

A No, sir, it is not. The only gauge we have on it, it's on potential at the present time with 147 barrels of oil plus 20 percent water in 22 hours.

MR. NUTTER: That's 147 barrels of oil and 22 percent water, that's 22 percent of the total fluid?

A Right, 20 to 22 percent water.

MR. NUTTER: How about percentage-wise on the LL and E Well?

A It would be 20 percent oil and 80 percent water.

Q (By Mr. Morris) Then in answer to my question, Mr. McIntyre, you do believe that this LL and E State Well No. 1 is on a separate trend from the Lane?

A Yes, sir, I do.

Q And from the South Lane?

A That's true.

Q Would you state to the Examiner why you believe that the

Middle Lane area that you have depicted here on your Exhibit No. 1 is separate from the Lane area to the north?

A Well, to begin with, this subsurface interpretation is controlled or substantiated by geophysical work which we have done in the area before we drilled a well. In other words, we show that we have vertical separation to the south of the Midwest No. 1 LL and E State. We also show that we have vertical separation between the south edge of the Lane Pool and the Humble No. 1-AM State, which is classified as being in the Lane Pool, which appears to us to be on the north end of the structure which is roughly bounded by our well and the Humble AM State.

Q What is the situation with respect to the production of the wells in the Lane Pool at this time?

A Well, at this time only one well in the Lane Pool is on production.

Q Which one is that?

A That would be the No. 2-F, Sunray 2-F State which is in the Northeast of the Northwest of Section 1. The other wells in the pool have become depleted. Now another thing I might say in regard to this, this Humble AM State was the second well drilled in the field. However, it was next to the last well to become depleted, and it is indicated it has produced slightly over 71,000 barrels. If you will refer to the Cities Service No. 1-AY State, which is in the Northwest of the Southeast Quarter of Section 1, it produced slightly over 39,000 barrels from the same zone,

although it's 57 feet higher structurally, which also indicates, supports the theory that there is separation between those two wells.

Q Is the Humble State Well No. 11, or the Humble State Well in Section 11 producing at the present time?

A No, sir, it is not. It became depleted in about August, 1960.

Q In your opinion, why do you believe that separation exists between the Middle Lane area and the South Lane area as shown on your map?

A As shown on the map here, and this farther -- I will substantiate this statement with the cross section Exhibit 2 later on in the discussion. However, the T. F. Hodge No. 1 Humble State which is located 660 from the south and 1980 from the west lines of Section 26 in the South Lane Pool had a net porosity of 16 feet. Going north to the Hodge No. 2 Humble State, which is now in the process of being completed, we express north dip, and we lose porosity to approximately nine feet in that well. We've lost seven feet of porosity.

Continuing northward to the Apache Midwest State, which is 1980 south and east, Section 23, we've expressed increased dip or approximately 101, this well is approximately 101 feet low to the discovery well in the field and has, according to logs, only six feet of porosity. So we have indications of north dip here plus the fact that we are losing our porosity.

If you will refer to Hodge Tenneco State Well in the southeast corner of Section 22, which is immediately to the west of the Apache Midwest State, that well had no effective porosity in the Bough zone, which farther substantiates the fact that we are losing porosity and we are expressing north dip off of the South Lane Field.

Q Does your geophysical data confirm your opinion in this area?

A Yes, it does. We ran a line, after the discovery well in the South Lane Field, from the Lane Field through the area surrounding Midwest Louisiana Land and Exploration State No. 1, down to discovery well in the South Lane and on the basis of what we saw, we drilled LL and E State, which substantiated what we had seen.

Q Do you have any evidence of the lithologic change moving from your South Lane up to the Middle Lane area?

A Yes, sir, we do. We have in the Middle Lane area and in the Midwest LL and E State, we have a zone of porosity which we choose to call the Bough "D" zone which produces in the three crest wells in the Lane Field. It was dually completed from what they called Wolfcamp-Penn which we call the "A" zone in the "D" zone.

MR. NUTTER: The crest wells would be the 1-I and the 2-F?

A The 2-F and the 1-F. They produce somewhere in excess

of 50,000 barrels from that zone. That would be the "D" zone, which is present in our well but which is not present in any well south of our well in the Apache Midwest State, or any well in the field. So we do have a definite lithological change between our well and the Apache Midwest State, which further indicates that there is probably separation and different environmental conditions existing there.

Q (By Mr. Morris) Now the area that we're referring to as the Middle Lane area, would you say that that extended from the Midwest LL and E State Well primarily north and northeast, and possibly a little bit to the south?

A Yes, sir, I believe that's substantially what we have.

Q That's the general area that we are talking about?

A In other words, we feel that any anomaly or feature that we have is roughly bounded by the Humble 1-AM and the Midwest LL and E State.

Q You have structural control backed up by your geophysical data to give you your boundaries of the pool to the northeast and to the southwest?

A That's correct.

Q What about the western side, to the west of the subject well?

A Well, there again we have used geophysics to control our subsurface interpretation. However, approximately a mile and a half to the west and to the northwest, you'll see the Haskins

Land Ranch Unit No. 1 in Section 4, and a mile south of that well the Continental 9 Ranch No. 1, which is 19 East, Section 9. These wells encountered Bough lime, but had no porosity and no permeability and were plugged. We can start from the most northerly well in the Lane Pool, which is Skelly Hobbs, go over to Section 35, the Skelly Cross, which is 330, 1980 east of Section 35, include these two wells that I mentioned, the Haskins Land Ranch and Continental 9 Ranch, go south to Section 22 out of the southeast corner, the Hodge Tenneco State; in all of these wells they encountered no effective porosity or no pay, which indicates that we do have a permeability barrier which is at least partially responsible for our accumulation.

Q What about on the eastern side of this area?

A Well, there again we have no control outside of trendology and geophysics, which control this.

Q So we have to say that at the present time the extent of the pool to the east is indefinite?

A That's true. That's correct.

Q Whereas you do have fairly strong feelings about the western flank of the pool being cut off somewhere not too far west of your well?

A That's correct. In other words, we perforated four feet and we have about eight feet overall porosity, which is considerably less than existed in the Lane Pool or the structural high wells in the South Lane. We feel like we

are approaching porosity pinchout somewhere to the west. We feel like possibly within a half a mile, from what we see on geophysics.

Q Referring now to what has been marked Exhibit 2, being your cross section, would you explain what that shows?

A That's a north-south cross section extending from the most northerly well drilled in the Lane Pool, which was plugged and abandoned, through the Lane Pool, including the Sunray No. 1-I in the Southeast of the Southwest of 36; thence down into Section 1 to the Midstates, and it's later referred to as the Tenneco Lane Ranch Unit Well, which is 1980 from the south and west of Section 1. Thence to the Humble AM State which we have depicted as being on the north side of the feature or the Middle Lane feature. Thence down to Section 14 to the Midwest LL and E State. These things are not very clear on this small reproduction; however, that will continue on down to the Apache Midwest State Well; thence to the T. F. Hodge No. 1 Humble State, which is the discovery well in the South Lane. This will show the summation that we've attempted to give this Bough zone, and this is based on a section which was brought from the Allison Field down to Jenkin and down into this area. The original, I think Socony Mobil zoned this thing at the onset of this Bough, and that's what I've tried to keep in touch with.

Q Would you point out here what you have shown as the Bough "A" zone, which is called something else in the other two

pools?

A Yes. On the cross section, the No. 2 well on the section, the No. 1 State I, you will notice I have -- the upper pay zone, it was a dual well producing from what we called the Bough "A" and "D" zone. The upper pay zone is the Bough "A" zone and that will carry across and that is the producing horizon both in the Midwest LL and E State and the Middle Lane area, and also down to the south in the Apache Midwest State and T. F. Hodge Humble State, down in the South Lane Pool. You'll notice that as we approach these what we show to be low areas or synclinal areas or re-entrance, we lose a considerable amount of porosity.

Q Is that the lithology change you were talking about?

A No, sir. That was just thrown in to indicate that what appears to be in our lower, structural lower wells, we do lose porosity.

Q Point out, if it appears upon this exhibit, what you referred to as the change in lithology as you moved from the South Lane up into the Middle Lane area.

A On the cross section, the "D" zone as shown in your first four wells, actually the first five wells on the section, you will see in the "D" zone and especially in the Sunray No. 1 State I, which is the second well, on the section, a well-defined zone of porosity in this "D" zone and which in fact did produce in the Lane Pool. It continues on to the Midstates No. 1 Lane Unit, also had porosity in that zone as did the Humble State AM,

and also Midwest. Actually we perforated that zone and attempted a completion, but we got salt water, 52 barrels of salt water in 15 hours. On to the south in the Apache Midwest State and in the Hodge No. 1 Humble State, we had no porosity development in that correlative zone. In fact, it appears that we had a higher shale to lime ratio in the wells in the South Lane Pool than we encountered either in our well or in the wells in the Lane Pool.

Q Then would you say that the additional data shown on this cross section confirms your opinion with respect to separation existing between the Middle Lane and the Lane Pools on the north, and the Middle Lane and the South Lane on the south?

A Yes, sir, it does.

Q Also in this Exhibit 2, I believe you have the potentials on these wells shown at the top in red for reference, don't you?

A Yes, I do.

Q Do you have anything further you'd care to add to your testimony?

A No, I believe not.

MR. MORRIS: That's all we have of this witness, Mr. Nutter.

MR. NUTTER: Any questions of Mr. McIntyre?

CROSS EXAMINATION

BY MR. NUTTER:

Q In your opinion, Mr. McIntyre, I believe I understood

you correctly to say that you feel that Humble State AM Well was in a separate pay or producing section from the Lane Field?

A No, sir. I said it's separated by vertical separation from the field, although it's included in the field, I believe that it's producing from another reservoir.

Q That's what I meant.

A Yes, sir.

Q That the Humble State AM is producing from a separate reservoir than say the Tenneco Lane Unit well which is the nearest well to it from the Lane Pool?

A Yes, sir, that is correct.

Q Also do you feel that the lithological change or the structural change has occurred between the Hodges Humble State Well in the South Lane and the Apache Midwest State?

A No, sir.

Q Or has that change occurred north of the Apache?

A Yes.

Q So the Apache would go in the South Lane?

A Right.

Q And then rightfully, in your opinion, the Midwest LL and E and the Humble State AM would be the only two wells in this new pool?

A In the new pool at present, yes, sir.

Q They would just about be on the north limit and the south limit of the pool?

A Yes, we bounded it by that and our geophysics pretty well bears that out.

Q In other words, you are talking about running from the synclinal low between Well No. 5 and 6 on your cross section, the center of that synclinal low to the center of the synclinal low between the 3 and the 4?

A Yes, sir, that's correct. Production figures pretty well bear out the fact that the Humble State AM is likely producing from another reservoir, although the same formation, another reservoir, in that it did produce longer. It was the second longest well in the field, I believe.

Q What happens to those wells in the North Lane when they become depleted? Do they go to water?

A They go to water. Yes, water drive. In fact, they go to water over a period of a month.

Q And there are only three wells on the crest -- no.

A There's only one producing.

Q There's only one well?

A Right. That's the No. 2-F is producing at the present time.

Q That's probably the highest well in the pool, then?

A It's not as high as the 1-I. It's a few feet lower than the 1-I, I believe.

Q Seven feet, it looks like, as far as the top of the pay is concerned.

A They moved on down the hole and completed in another zone, but for our purposes here, for the Bough formation, why, it has all become depleted except in that one well.

Q In your opinion, Mr. McIntyre, would the orange contour line, being at 5500 feet, just about define the limits of the Middle Lane Pool?

A No, sir. That was put on there only to better express the subsurface there. It wasn't put on there -- actually these wells defy pinning them down as far as an oil-water contact. We are 124 feet higher than Apache's wells, yet we are making more water than they are. I think it's a trapped water, if you could call it that, below small or thin permeability barriers within the reservoir itself. Until you produce that water off, you will make a lot of water on these wells.

Q Does Midwest contemplate drilling some more wells in Sections 11 and 14?

A Yes, sir, we do.

Q As a geologist, what in your opinion should be, if we assume that the limits of the pool should be based on the LL and E Well on the south and the Humble State AM on the north, in your opinion geologically what should the limits of the pool at this time be, as far as the north and south limits are concerned?

A That would be about it. It's quite possible that we could move south from our well and make another well. However, we would be more inclined to go to the north and east.

Q Stay between those two?

A If we get approval, we can go ahead and develop this thing by stepping out to the north and east and evaluate our acreage as we go. In other words, right now we are not sure about our reservoir conditions, what we can expect to find. Quite possibly we could move downdip from that well and make another well. I don't believe we're having water table problems there. I believe it's water that is trapped within the formation there, that we will be able to produce oil in time.

Q It has been characteristic, I happen to know, of several cases --

A Yes, sir.

Q -- where production has cleared up the water in some of these zones similar to this.

A Along those lines, you will note there the Hodge No. 2 Humble State down to the south in the South Lane Field is not completed. It's making about 90 percent water, ten percent oil on tests right now, whereas the Apache Midwest State, which is 40 feet lower structurally was only making 20 percent water and 80 percent oil, 147 barrels of oil and 20 percent water.

Q Has the water-oil ratio changed on your LL and E Well?

A It's improving since our initial test. It was 95 percent initially.

Q Now it's down to 80. Over what cumulative production and what length of time?

A That's only been two weeks. See, we were swabbing it and we put it on gas lift so we could move a large volume of fluid and try to produce that water. We hope to repotential it.

Q So maybe that's been a couple or 3,000 barrels of oil?

A Yes, sir.

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

MR. MORRIS: I have a couple of questions I forgot to ask him.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q In this Middle Lane area, what is the ownership of the land in there, is it Federal, State?

A It's all State. It's all State, in fact, all the acreage, according to the latest maps that we can see, all the acreage in 10 South, 33 East is Federal. Possibly a few tracts.

Q Federal or State?

A State, pardon me.

Q I don't know whether you stated them or not, but would you give again the perforations of your LL and E Well?

A Yes, sir. It is 9650 to 54. That would be in the "A" zone. That would be the correlative zone which produces both in the north in the Lane and the South Lane Pool.

MR. MORRIS: That's all.

MR. NUTTER: If there's no further questions of the witness, he may be excused.

(Witness excused.)

MR. NUTTER: We'll recess the hearing until 9:00 o'clock in the morning.

(Whereupon, the hearing was recessed.)

* * * * *

MORNING SESSION
Thursday, October 11, 1962

(Whereupon, the hearing was resumed at 9:00 o'clock A.M.)

MR. NUTTER: The hearing will come to order, please. Mr. Morris, I believe we're in the midst of a case for Midwest.

MR. MORRIS: If the Examiner please, I believe Mr. Norbert McIntyre had just been excused, and at this time we will call our next witness, Mr. Frank Qualia, and I believe he's already been sworn.

FRANK QUALIA

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Qualia, will you state your name and position for the record, please?

A Frank Qualia, District Engineer for Midwest in Midland.

MR. NUTTER: How do you spell your name, please?

A Q-u-a-l-i-a.

Q (By Mr. Morris) Will you briefly state your education

and experience in the oil business?

A I was graduated from the University of Texas in 1949 with a Bachelor of Science in Petroleum Engineering, worked for the Texas Railroad Commission for two and a half years, worked for Slickerson Oil Company for two years, Sinclair Oil and Gas for two years, and then Midwest Oil Corporation.

Q How long have you been with Midwest Oil?

A For eight years.

Q Are you generally familiar with the Lane area of Lea County, New Mexico?

A Yes, sir.

Q You are familiar with Midwest's application in this case?

A Yes, sir.

MR. MORRIS: Are Mr. Qualia's qualifications acceptable?

MR. NUTTER: Yes, sir, they are. Please proceed.

Q (By Mr. Morris) Mr. Qualia, have you prepared a series of exhibits concerned with the Lane Pool from which you will draw certain similarities between that pool and the Middle Lane Pool?

A Yes, sir.

(Whereupon, Applicant's Exhibits 3 through 8 marked for identification.)

Q Referring to what has been marked as Exhibit No. 3, will you state to the Examiner what that is, please?

A Exhibit No. 3 is a tabulation of the performance history of the Lane Wolfcamp Pool. It was stated yesterday that the correlation of the zone producing in the Lane Wolfcamp Pool carries across to the Midwest LLE State No. 1, and that is the same zone from which Midwest is producing their LLE State No. 1. The performance history as tabulated here shows production by months of water, oil, and also the bottomhole pressure history of that pool.

Q Is there anything in particular that you can summarize from this exhibit?

A Yes, sir, I would like to point out that the Lane Wolfcamp Pool has declined in oil production, while the water production has risen considerably. This denotes one point that I would like to make, and that is the mechanism for production in the Lane Wolfcamp Pool is water drive.

Q Do you have anything further you would like to point out with respect to this exhibit?

A That's all.

Q Referring now to what has been marked as Exhibit No. 4, which is one of two performance curves, will you state what that shows?

A Yes. Exhibit No. 4 shows a plot of bottomhole pressure, oil production and water production, against time. You will note that the original bottomhole pressure in the Lane Wolfcamp Pool was 3516, that the latest bottomhole pressure taken, which was in

July of 1959, was 2960. I would also note the decrease in oil production accompanied by an increase in water production.

Q Do you have anything further you want to point out with respect to this exhibit?

A That's all.

Q Referring to Exhibit No. 5, which is the second of the performance curves, state what that shows.

A This is a plot of bottomhole pressure and oil production rate against cumulative oil production. Again we show -- this is merely another plot and again we show the decline in bottomhole pressure from 3516 at the beginning of production to 2960 at the later stages of depletion in the field.

Q Anything further with respect to Exhibit 5?

A No, sir.

Q Refer now to what has been marked as Exhibit 6, bottomhole pressure history of the Lane Pool. Would you summarize the information there?

A The data here is merely a tabulation of the bottomhole pressures that we were able to obtain from the operators in the Lane Wolfcamp Field.

Q Referring now to what has been marked as Exhibit No. 7, would you call this a summary sheet on the Lane Pool, drawing some conclusions from the Exhibits 3, 4, 5, and 6?

A Yes, sir.

Q Would you explain that, please?

A All right. The discovery well in the Lane Wolfcamp Pool was the Sunray Mid-Continent State of New Mexico "F" No. 1. Original bottomhole pressure, as stated before, is 3516; the bottomhole pressure at depletion was 2960. The bubble point of the crude oil was 3388. The formation volume factor was 1.828. The spacing was 80 acres. The relatively small decline in bottomhole pressure along with a decrease in oil production accompanied by an increase in water production indicates that water drive was the primary source of energy in this reservoir.

Nine wells were completed in this field and have produced an accumulated volume of 1,015,160 barrels of oil for an average of 112,800 barrels each. Examination of the logs of the productive wells in the pool showed an average porosity zone of 10.3 feet per well. Applying 80-acre drainage, the average well had 824 acre feet of net pay. This results in a recovery factor of 137 barrels per acre foot.

Q Why have you presented here this case history of the Lane Pool, when what we're here to talk about today is the Middle Lane area?

A Very little information is available in this new field, what we refer to as the Middle Lane Pool. Therefore, this case history, which is very closely related and is a field producing from the same zone in the same area, it is felt that this history can be applied to the Middle Lane Pool.

Q In other words, the same producing characteristics that

you've shown in the Lane Pool, you also expect to find in the Middle Lane?

A Yes, sir.

Q It's the same producing formation?

A That is correct.

Q Both of them are water drive pools?

A That is correct.

Q Now the Lane Pool is prorated on 80-acre units?

A That's right.

Q Then it would be normal to expect that this pool, the Middle Lane Pool, could also be efficiently drained and developed on 80-acre units?

A That's correct.

Q Referring now to what has been marked Exhibit 8, will you state what that shows?

A This is merely a summary of the information available on the Midwest LLE State No. 1. The location of that particular well is 660 feet from the west line and 2310 feet from the south line, Section 14, 10 South, 33 East, in Lea County, New Mexico. We set 5-1/2 inch casing at 9835, cemented with 265 sacks of Incore cement mixed with 265 sacks of Diamix "A". Completion was attempted in the Bough "D" Zone at 9782 to 86. The well was acidized with 250 gallons and swabbed 4-1/2 barrels of salt water per hour with no show of oil or gas. These perforations, 9782 to 86, were squeezed and the Bough "A" Zone 9650 to 54 was perforated

and tested 15 barrels of fluid per hour, 20 to 40 percent oil. The original bottomhole pressure of the Bough "A" Zone was 3334 PSI at a minus 5438, which is the midpoint of our perforations. The date of this pressure was September 28, 1962. If the pressure is extrapolated back to a minus 5387, which is the datum of the Lane Pool pressures, it would be 3310 PSI.

On October 8, 1962, the well was potentialed on gas lift for 94.18 plus 368 barrels of water in a 24-hour period. The gas-oil ratio was 1432, gravity was 45.0, corrected. The average porosity in the Bough "A" Zone in this well was 5.0 percent. This information was obtained from core analysis. The average permeability was 14.99 millidarcys, which was also obtained from core analysis.

What is called the Wolfcamp producing zone in the Lane Pool is correlative to what Midwest calls its Bough "A" Zone in its discovery well in Section 14. It is therefore felt a fair assumption that the reservoir from which Midwest's LLE State No. 1 is producing will perform similar to the Lane Wolfcamp Pool.

An average development well drilled to 9850 feet should cost approximately $162,000. Assuming the average well to have the same recovery as the average well in the Lane Wolfcamp Pool, that is, 112,800 barrels, the total income per average well would be $233,496. Subtracting the cost of the well, the net profit is $71,496. It is hoped that more pay and wise and prudent development in this area will result in better return per dollar invested.

Q Now you've given some figures there on what you expect or what the economics would be in this area on 80-acre spacing, based on information from the Lane Pool. If this area were developed on 40-acre spacing, what would your economics look like then?

A We can do that by merely dividing the income in half and the income would therefore be $116,000, approximately. That would leave a net loss of $46,000 per well.

Q Even on 80-acre development, the profit to investment ratio is not as large as would be desired, is it?

A That's correct.

Q Let's make some conclusions here if we can, Mr. Qualia. First let me ask you if you've heard Mr. McIntyre's testimony yesterday afternoon.

A Yes, sir.

Q Do you agree with his testimony that the acreage surrounding Midwest's LLE State Well No. 1, and what we have referred to as the Middle Lane area, that that is a separate pool from either the Lane or the South Lane?

A Yes, sir.

Q Is it also your opinion that the LLE State Well No. 1 is producing from the same formation as the producing formation in the Lane Pool?

A Yes, it is.

Q I think you've already stated that.

A Yes.

Q Now the Oil Conservation Commission, in setting up 80-acre units in the Lane Pool, found that the Lane Pool could be efficiently drained and developed on 80-acre proration units. Do you believe that the area around the LLE State Well No. 1 can also be efficiently drained and developed on 80-acre spacing?

A Yes, sir.

Q And economically it's your belief that the area has to be spaced on 80-acre?

A Yes, sir.

Q What rules do you propose for the Middle Lane Pool, Mr. Qualia?

A We have asked for temporary rules and those rules being the same as what applies in the South Lane Pool, with the exception of Rule 4.

MR. MORRIS: For the Commission's information, the South Lane Pool rules were established by Order No. R-2258.

Q (By Mr. Morris) You say with the exception of Rule 4. What does Rule 4 pertain to?

A Rule 4 pertains to the location of the well on 80-acre tracts.

Q Do you have something to offer as an alternative to that Rule 4?

A Yes, sir.

Q Would you read your proposal for the Rule 4 to be

substituted in the South Lane Pool Rules as applied to the Middle Lane Pool?

A We propose that the initial well on any 80-acre unit in said pool shall be located within either the Northwest Quarter or the Southeast Quarter of the Quarter Section on which the well is located, and shall not be closer than 330 feet to any quarter quarter section line.

Q Why do you make this proposal for what we might call fixed well location requirements in this pool?

A We believe that this will result in more orderly development of the oil pool and it will also prevent Midwest from having to protect itself with a line of wells or a row of wells along the west side of its acreage.

Q What would happen under a flexible pattern if a flexible pattern were adopted in this pool, Mr. Qualia? What are your fears in that regard?

A As I have just stated, it might result in Midwest having to protect itself with offset wells on the west side of its acreage.

Q Whereas otherwise what would the normal plan of development for Midwest be?

A As we stated, we would like to have the Rule 4 changed so that we would have a fixed pattern resulting in orderly development.

Q What I mean, Mr. Qualia, is let's assume for the moment

that the Commission grants our application here and sets up a fixed pattern adopting our Rule 4, what will be Midwest's development? Will it be to the north, to the northeast? What would Midwest do rather than having to go over and protect its west line?

A We will develop probably in a northeasterly direction.

Q Do you feel that that also will tend not only to more orderly development of the pool but more rapid development of the pool?

A Yes, sir, we do.

Q Let's talk a little bit more, Mr. Qualia, about why you believe you are going to have to go over to your west line and protect that against offset operators. Why do you believe that the offset operators along the west line of your leases will crowd in towards your acreage?

A Well, there are possibly two reasons. First of all, production has been established in our LLE State No. 1, and crowding in toward production is a common practice in the oil field. The other one is that the geological structural conditions as we know them in the area might be favorable so that an operator, an offset operator would or could drill a row of wells virtually on 40-acre spacing along the west line of our acreage.

Q In other words, not only would they be crowding in toward your proven production, but they would also be crowding the west line of your acreage for structural reasons?

A Yes, sir.

Q Which in turn would cause you to have to drill a line of offsetting wells right up the west side of your acreage?

A That is correct.

Q Were Exhibits 3 through 8 prepared by you or under your direction?

A Yes, sir.

MR. MORRIS: At this time, Mr. Examiner, we offer those exhibits. I'm not sure that I offered Exhibits 1 and 2 previously. If not, I also offer them at this time.

MR. NUTTER: Midwest's Exhibits 1 through 8 will be admitted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 8 entered in evidence.)

MR. MORRIS: That concludes the direct examination of Mr. Qualia.

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

MR. DURRETT: Yes, sir, I have one question.

CROSS EXAMINATION

BY MR. DURRETT:

Q Concerning this proposed Rule 4, I believe you stated on direct examination that you felt that if your rule was not adopted, an offset operator might come in and drill wells virtually on 40-acre spacing on your west side?

A Yes, sir.

Q Do you feel that would be economical for them to do that?

A Personally, I don't think it would.

Q You think there's a very good probability of them doing so if it would not be economical?

A I think there's a possibility that they would.

Q But if they did, you wouldn't think it would pay, probably?

A There are certain aspects in this pool that we don't know all the answers to. In other words, if we do have a water drive mechanism and the pool is efficiently drained with water drive, it is possible that a well could be an economical venture on 40 acres, provided that the water drive mechanism is in effect. In other words, if the particular well that we're talking about, hypothetical well we are talking about, the well on 40 acres on the west side of the pool is drilled and encounters enough pay to make a well, it is possible that it could drain quite an extensive area with water drive.

Q But you wouldn't feel that 40-acre spacing would be economical as far as your company is concerned, even on your west side?

A The economics, the economic picture doesn't look good on 40-acre spacing.

MR. DURRETT: Thank you.

BY MR. NUTTER:

Q You stated that this pool had certain characteristics that were similar to the Lane Pool, and that the Commission had found that the Lane Pool could be efficiently and economically developed on 80-acre proration units and spacing. Now, the pool has been depleted evidently; is there any evidence that this was an economic and efficient depletion of the pool?

A Yes, sir. If you will refer to Exhibit No. 4, you will notice that the oil production peaked in 1957 at approximately 38,000 barrels, and is now producing at the rate of approximately, oh, say two or three hundred barrels as an average, barrels per month is what we're talking about here; and that the water production has risen to a very high figure. As a matter of fact, the oil production in the pool now comes from only one well. That is the Sunray Mid-Continent State "F" No. 2. The pool has been drained and water has encroached on every well that had production in the Lane Field. Therefore, it is assumed and it is thought that the pool has been depleted and that it has been totally drained.

Q What about the individual cumulative productions for these various wells? Do you have those?

A No, sir, I don't have those figures with me.

Q Now the average has been 112,000, I believe you stated?

A Yes, sir.

Q That's for nine wells. That doesn't include the Humble State AM No. 1, I presume?

A Yes, sir, those figures do include the Humble.

Q Although Mr. McIntyre's testimony yesterday was that this well properly should not be included in the Lane Pool?

A That's correct.

Q Mr. McIntyre also mentioned that the Cities Service Well had a cumulative total of about 39,000, and that a couple of those Sunray wells had something like 300,000. Is there that much disparity between the high cumulative and low cumulative on these various wells?

A It's my recollection that no well in the pool produced 300,000 barrels.

Q I may have misunderstood Mr. McIntyre.

MR. NUTTER: Do you recall what that figure was, Mr. McIntyre?

MR. McINTYRE: Yes, sir, that was cumulative production in those three wells from both the "A" and "D" zones.

MR. NUTTER: That's for the two zones?

MR. McINTYRE: Yes. When I said in excess of 30,000 barrels, that is from the "D" zone. This Bough "A" zone or Wolfcamp, as I referred to it, these figures are based on that zone. Those figures I gave yesterday were for both zones.

MR. NUTTER: Do you know what the figures are for the single zone?

MR. McINTYRE: No, I don't have it with me. We have the cumulative production from these wells.

MR. NUTTER: Were these wells dually completed in the two zones?

MR. McINTYRE: Yes.

MR. NUTTER: It was classified as Lane-Wolfcamp and Lane-Pennsylvanian?

MR. McINTYRE: Yes.

Q (By Mr. Nutter) You do have a core in the zone that you are talking about here, the Bough "A" zone?

A Yes, we do.

Q It indicates a porosity of something like five percent, I believe one of your exhibits indicated?

A That's correct. Exhibit No. 8.

Q Have you made a volumetric estimate or computation of the oil in place--

A No, sir.

Q -- based on that porosity?

A I have not.

Q What is the water saturation from the core analysis?

A The core analysis water saturation seemed to be very unreliable; however, we turned to log analysis rather than a core analysis for our information there. The water saturation is approximately 45 percent, based on electrical log computations.

Q 45 percent?

A Yes, sir.

Q What about the formation volume factor? What would that

run in this pool?

A Again we do not have that information specifically on this well. However, we are assuming that we have a crude oil that is very akin to the crude oil in the Lane Wolfcamp Pool, and that formation volume factor is 1.828. We do not have a bottomhole sample analysis yet.

Q And you don't know the solution GOR, either?

A No, sir, we don't. We do plan to obtain all this information later after more development.

Q If the Commission should enter a temporary order, you would have that information available say a year later?

A Yes, sir.

Q With the additional wells being drilled?

A Yes, we do plan to take a bottomhole sample.

MR. NUTTER: Any further questions?

MR. MORRIS: I have a couple more.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Qualia, about how many wells do you plan to drill in the next year in this pool? Can you give an estimate?

A We would probably drill maybe three or four wells.

Q So you would have better information and calculations as to oil in place, and be able to substantiate one way or another the 80-acre proration units?

A Yes, sir.

Q I don't want to leave the state of the record in any confusion here with respect to our position with respect to the development along the west flank of our acreage. Where you stated that your offset operators along the west side would develop on a row of 40's going up the west side of your acreage, did you mean by that that they would actually develop on 40-acre proration units?

A No, sir, I didn't mean to imply that. I meant that if the 80-acre units are laid in a flat position --

Q Running east-west?

A -- running east and west, then it is possible to have a row of wells virtually on 40-acre spacing along the west line of our acreage.

Q In other words, laying the 80's in an east-west direction abutting the west flank of your acreage there, under a flexible pattern the wells could be drilled right along your west line, which would amount to development on 40-acre basis?

A Yes, sir.

Q You feel that this would be objectionable, one, because you would have to drill offset wells?

A Yes, sir, we would have to meet those offsets.

Q Is there also some question as to whether running the 80-acre units in an east-west direction, is there some question because of structure as to whether all of that 80 might be productive or not?

A Definitely there is some question there.

MR. MORRIS: I believe that's all.

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

(Witness excused.)

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

MR. MORRIS: That's all I have.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2660? We will take the case under advisement.

* * * * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing was reported by me in stenotype, and that the same is a true and correct record of said proceedings to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 29th day of October, 1962, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2660 heard by me on 10/31/62, Examiner New Mexico Oil Conservation Commission

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1963.