BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

PROCEEDINGS

The following matter came on for consideration before a hearing of the Oil Conservation Commission of the State of New Mexico, pursuant to legal notice, at Santa Fe, New Mexico, on March 21, 1950, at 10:00 A. M.

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the rules and regulations of said Commission promulgated thereunder, of the following public hearings to be held March 21, 1950, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico, in the Capitol (Hall of Representatives).

STATE OF NEW MEXICO TO:

The Northwestern New Mexico Nomenclature Committee, Mr. Paul Umbach, its Chairman, the Southeastern New Mexico Nomenclauture Committee, Mr. Dudley Sands, its Chairman, all operators in the areas, and notice to the public:

Case 214

In the matter of hearing upon motion of the Oil Conservation Commission upon the recommendation of the Northwestern New Mexico Nomenclature Committee that;

(1) Pool boundaries be set up around the following discovery well: Herbert Herff #1 Federal, NE NE Section 4, Twp. 27N, R. 8W.

(2) The following area in San Juan County be designated the Largo Pool - Mesaverde:
Twp. 27N, Rge. 8W: Section 3 & 4, All
Twp. 28N, Rge. 8W: Section 33 & 34, All.

(3) The following extension to the Fulcher Basin-Kutz Canyon Pool to be recommended for consideration:
Twp. 28N. Rge. 10W: Section 11, W/2; Section 14, W/2.

Case 215

In the matter of hearing upon motion of the Oil Conservation Commission upon the recommendation of the Southeastern New Mexico Nomenclature Committee that:

(1) A new pool be created to be designated as the "Saunders" pool to include S/2 Sec. 34, T 14S, R 33E and N/2 Sec. 3, T 15 S, R 33E, for Permo-Pennsylvanian production.

(2) A new pool be created to be designated as "House-San Andres" to include the E/2 Sec. 11 and W/2 Sec. 12, T 20S, R 38E, for San Andres production.

(3) A new pool be created to be named "Hightower-Permo-Pennsylvanian" to include Secs. 22, 23, 26 & 27, T 12S, R 33E, for Permo Pennsylvanian oil and gas production.

(4) A new pool be created to be named "Nadine" to include all Sec. 23, T 19S, R 38E, for lower Drinkard production.

(5) The Artesia pool be extended to include W/2 Sec. 25, T 18S, R 27E, for Grayburg production.

(6) The Hare pool be extended to include NE/4 Sec. 21 & N/2 & SE/4 Sec. 22, T 21S, R 37E, for McKee production.

(7) A new pool be created to be named "East Bough " to include SE/4 Sec. 7, SW/4 Sec. 8, NW/4 Sec. 17 & NE/4 Sec. 18, T 9S, R 36E, for Permo-Pennsylvanian production.

(8) The Empire pool be extended to include S/2 Sec. 7, T 17S R 28E, for Seven Rivers production.

(9) The West Wilson pool be extended to include W/2 Sec. 15, T 21S, R 34E, for Seven Rivers production.

(10) The Langlie-Mattix pool be extended to include W/2 Sec. 35, T 23S, R 37E, for Queen production.

(11) A new pool be created to be named "South Leonard" to include all Sec. 24, T 26S, R 37E, for Queen production.

(12) A new pool be created named "Teague-Ellenburger" to include S/2 Sec. 22 and N/2 Sec. 27, T 23S, R 37E, for Ellenburger production.

Case 216

In the matter of the application of Wilson Oil Company for an order granting it permission to drill an unorthodox location on its State B 6807 lease, located 2310 feet south of the north line and 1270 feet east of the west line (SW NW) Section 13, Twp. 21S, R 34E, N.M.P.M., in the Wilson pool of Lea County, New Mexico.

Case 204 (Rehearing)

In the matter of the Application of Amerada Petroleum Corporation for an order establishing proration units and uniform spacing of wells for the common source of supply discovered in the W. W. Hamilton #1 well, NE SW Section 35, Township 16 south, Range 38 east, N.M.P.M., Knowles pool, Lea County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on March 6, 1950.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
/t/ R. R. SPURRIER, SECRETARY

SEAL

BEFORE:

Hon. Thomas J. Mabry, Governor (2:05 p.m.)
Hon. R. R. Spurrier, Commissioner
Hon. Guy Shepard, Commissioner

REGISTER:

Dan McCormick, Attorney
Santa Fe, New Mexico
For the New Mexico Oil Conservation Commission

George Graham, Attorney
Santa Fe, New Mexico
For the New Mexico Oil Conservation Commission

Ray Andrew
Santa Fe, New Mexico
For the New Mexico Oil Conservation Commission

Weldon Brigauce
Ft. Worth, Texas
For Rowan Drilling Co., Inc.

R. G. Schuehle
Midland, Texas
For Texas Pacific Coal and Oil Company

E. T. Adair
Fort Worth, Texas
For Texas Pacific Coal & Oil Company

Raymond Lamb
Artesia, New Mexico
For Wilson Oil Company

Homer Dailey
Midland, Texas
For Continental Oil Company

E. E. Kinney
Artesia, New Mexico
For New Mexico Bureau of Mines

M. T. Smith
Midland, Texas
For Shell Oil Company

Wm. E. Bates
Midland, Texas
For The Texas Company

Ray O. Yarbrough
Hobbs, New Mexico
For the New Mexico Oil Conservation Commission

R. S. Christie
Ft. Worth, Texas
For Amerada Petroleum Company

E. Bain
For the New Mexico Oil Conservation Commission

I. R. Trujillo
For the New Mexico Oil Conservation Commission

Betty P. Wistrand
Santa Fe, New Mexico
For the New Mexico Oil Conservation Commission

Elvis A. Utz
Santa Fe, New Mexico
For the New Mexico Oil Conservation Commission

G. H. Gray
Midland, Texas
For Sinclair Oil & Gas Company

Cecil R. Buckles
Tulsa, Oklahoma
For Sinclair Oil & Gas Company

Mrs. Ralph Fitting, Jr.
Midland, Texas

W. R. Childers
Hobbs, New Mexico

Alice T. Childers
Hobbs, New Mexico

R. V. Fitting, Jr.
Midland, Texas

U. M. Rose
Hobbs, New Mexico

COMMISSIONER SHEPARD: The meeting will come to order. At this time I am going to introduce the new office manager, Ray Andrew. You will be dealing with him from now on.

This pertains to setting of allowable.

MR. McCORMICK: Mr. Utz and Mr. Kinney, will you come forward please?

(Witnesses sworn.)

DIRECT EXAMINATION BY MR. McCORMICK:

ELVIS A. UTZ, having been first duly sworn, testified as follows:

Q. You are Elvis A. Utz?

A. That is correct.

Q. What position do you now hold with the State Oil Conservation Commission?

A. Engineer.

Q. Have you made a study of the market demand for oil in the State of New Mexico for the month of April 1950?

A. Yes, sir, I have.

Q. Have you received nominations from purchasers?

A. Yes, sir, I have.

Q. And have you tabulated them?

A. Yes, sir.

Q. What is the total nominations of purchasers for the month of April 1950?

A. The total nominations is 131,647.

Q. That is barrels per day?

A. Yes, sir.

Q. How does that compare with nominations filed with the Commission the previous month?

A. That is an increase of 371 barrels over last month.

Q. Have you made further studies of market demand aside from nominations?

A. Yes, we have.

Q. Have you any opinion as to what the reasonable market demand for the state will be for the month of April?

A. My opinion is 138,000 barrels.

Q. How much of that demand will be met by production in unallocated pools in Rio Arriba, McKinley, and Sandoval Counties?

A. A thousand barrels a day.

Q. Then the balance of 137,000 would be met by those in southeastern New Mexico?

A. That is correct.

Q. I will ask if the production capacity of all the wells in southeastern New Mexico is greater than 137,000 barrels per day?

A. I am sure that it is.

Q. In order to prevent waste is it necessary that production of oil for April be limited in Southeastern New Mexico?

A. Yes, sir, I believe so.

Q. How much oil can the wells in Eddy, Lea and Chaves Counties produce in your opinion without waste?

A. Within the market demand--137,000 barrels.

Q. What would you recommend for total allowable production for Southeastern New Mexico?

A. 137,000 barrels per day.

Q. In your opinion how should that production be distributed?

A. It should be distributed according to the present rules and regulations of the Commission.

Q. Do you recommend a normal unit allowable which should prevail?

A. Yes, sir, 42 barrels.

Q. That is the same as prevails for the month of March?

A. That is right.

Q. In your opinion, would the distribution of production in the manner you recommend be reasonable, prevent waste, and protect correlative rights?

A. Yes, sir.

MR. McCORMICK: Any questions by anyone?

(Witness dismissed.)

E. E. KINNEY, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McCORMICK:

Q. Your name is E. E. Kinney?

A. Yes, sir.

Q. By whom are you employed?

A. New Mexico Bureau of Mines.

Q. In what capacity?

A. Petroleum Engineer.

Q. In the capacity as petroleum engineer of the Bureau of Mines have you made any study of market demand as to the State of New Mexico for the month of April?

A. I have.

Q. In your opinion what will be the market demand?

A. 138,000 barrels.

Q. Of that total what portion will be production in unallocated pools in northwestern New Mexico?

A. 1,000 per day.

Q. And the balance, 137,000, should be allocated to Southeastern New Mexico?

A. Yes, sir.

Q. That is your opinion and recommendation?

A. Yes, sir.

COMMISSIONER SHEPARD: Any questions? If there are no further questions, the witness will be excused.

(Witness excused.)

MR. SPURRIER: The question has come up in this matter of nominations whether the nominating company should nominate enough to insure that they will be able to purchase exactly what they want or nominate exactly the number of barrels they expect to get. I realize there is a problem there. In all instances actual production in New Mexico and allowable are two different figures. Production lags 7 to 10 per cent. If the nominating firm expects to purchase 30,000 barrels, it doesn't nominate 30,000, it adds 10 per cent so that it will come out with 30,000. We don't mean to work as a detriment against you, but we want the exact figure that you expect to buy. Are there any questions on that question. It was brought to me informally, and I bring it up at this time for clarification.

CHAIRMAN SHEPARD: At this time we will take up case 204.

(Mr. Graham read order of publication for Case 204.)

MR. McCORMICK: I would like to ask counsel as to what his desire is as to order of procedure.

MR. KELLOUGH: Our thought is that we make a very brief statement, not as argument of facts, but to bring the Commission up to date. Then we have a number of formal instruments we would like to introduce, then testimony. I suggest that at the close of the testimony, ours and that contrary to ours, that we all have the privilege to make statements or arguments. That is what we have in mind.

MR. McCORMICK: Is that agreeable, Mr. Aldrich?

MR. ALDRICH: Yes, sir.

MR. McCORMICK: You will go ahead.

MR. KELLOUGH: We will assume we are the applicants, which I assume we still are. I am Booth Kellough, Amerada Petroleum Corporation. On November 22, 1949, Amerada filed application for the establishment of 80 acre proration units, uniform spacing, in Knowles Pool of Lea County, New Mexico. In the application we requested the wells to be located in the center of the northwest and center of the southeast quarter sections. We also proposed a form of pattern of proration unit to consist of the south half and north half of each quarter. You will note that it gives lines east and west. The case came on for hearing November 22, 1949. I believe it was filed some time in July. At the hearing there was no opposition. There was no contest. Amerada introduced engineers' testimony. Exhibits were introduced. The testimony was uncontradicted in support of the application. At that time a representative of Magnolia Petroleum appeared on behalf of the applicant at the close of the hearing. On January 11, 1950, an order was entered denying Amerada's application on the ground of insufficient evidence. We have filed our petition for rehearing and the petition for rehearing

brief in support of it. The petition for rehearing was granted. This hearing is the hearing upon our petition to rehear the first case. That is about where we stand now. At this time I have a number of formal exhibits which I wish to offer in evidence. Before I do, I wish to call the Commission's attention to the joinders in the application for rehearing. Joinders have been filed by the Magnolia Petroleum Company, the Gulf Oil Corporation, the Sinclair Oil and Gas Company, and Mr. F. J. Danglade. The lease operators in this pool are Amerada, Sinclair, Mr. Danglade, and Magnolia. The Sinclair, I do not believe--yes, they have filed their application.

MR. McCORMICK: They should be filed and made part of the record probably.

MR. KELLOUGH: Yes, sir, these instruments constitute actual joinders. They all appear to be identical. (Reads)

"BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO. IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND UNIFROM SPACING OF WELLS IN THE KNOWLES POOL IN LEA COUNTY, NEW MEXICO. CASE NO. 204. ORDER NO. R-3. JOINDER IN APPLICATION FOR REHEARING. COMES, NOW, F. J. Danglade, being interested in the above styled case, and joins amicus curiae with Amerada Petroleum Corporation in its application for rehearing filed in said case, and requests the Commission to enter its order establishing eighty-acre proration units and unifrom spacing of wells in the Knowles Pool, Lea County, New Mexico, as requested by the application filed in this case. /s/ F. J. Danglade."

(Read joinders of Sinclair Oil and Gas Company, Gulf Oil Corporation, and Magnolia Petroleum Company, which were identical to the one above.)

MR. KELLOUGH: I also have a telegram addressed to the State of New Mexico Oil Conservation, Commission, Santa Fe, New Mexico, date March 20, 1950. "Reference Case #204 application of Amerada Petroleum Corporation for order establishing proration units and uniform well spacing for Knowles Pool. Regret the Texas Company can not be represented at hearing on March 21, 1950, and request that this wire be included in records of hearing. The Texas Company has no production in this pool at present time but has approximately 2560 acres leased immediately north and northwest of the present producing area. We are familiar with Amerada's application and are of the opinion that the adoption of their proposal will prevent the drilling of unnecessary wells and protect correlative rights. The Texas Company, C. B. Williams."

We now offer in evidence Applicant's Exhibit No. 1, in so far as it applies to case 204. This is a transcript of the hearing in this matter.

MR. McCORMICK: It will be accepted. Just a minute, Mr. U. M. Rose, attorney at law, Hobbs, New Mexico, is representing a number of royalty owners, so he may raise any objections.

MR. ROSE: No objections to any documents offered.

MR. KELLOUGH: We now offer in evidence Applicant's Exhibits 2, 3, 4, 5, which are the joinders; also Applicant's Exhibit 6, the telegram from the Texas Company.

CHAIRMAN SHEPARD: They will be accepted.

MR. KELLOUGH: We now offer into evidence Applicant's Exhibits 7, 8, and 9, which are Schlumbergers which were introduced at the original hearing and may technically transfer over, but we desire to reoffer them.

MR. ROSE: No objection.

CHAIRMAN SHEPARD: Admitted.

MR. KELLOUGH: We now offer Exhibit No. 10, which is a map of the Knowles Pool as prepared by Amerada. This exhibit also was introduced at the first hearing. It also may be considered as part of that transcript. We desire to reoffer it.

MR. ROSE: No objections.

CHAIRMAN SHEPARD: It will be admitted.

MR. KELLOUGH: I now offer Exhibit No. 11. It recites on its face, "Schedule of Leasehold and Mineral Ownership (Including over-riding Royalty Interests and Production Payment Interests), Knowles Pool, Lea County, New Mexico, as Shown by Abstracts, Together with Instruments Submitted to Amerada Petroleum Corporation, as of March 15, 1950." The purpose of this exhibit is in support of the suggested or proposed arrangements, proration units which are recommended by Amerada. The units as I explained have been outlined in the south half and north half of each quarter section with certain exceptions. The exceptions are recommended by reason of ownership to avoid unnecessary pooling of separately owned tracts that may fall within regular proration units in the south half and north half in every instance. This instrument represents the ownership as disclosed by the records of the applicant, Amerada. It pertains to the leases owned by Amerada. With this explanation, I offer No. 11 into evidence.

MR. ROSE: No objection.

CHAIRMAN SHEPARD: It will be admitted.

MR. McCORMICK: This is in accord with title opinions?

MR. KELLOUGH: This is in accord with title opinions made by New Mexico lawyers and supplemental opinions by other lawyers that have come into the records of Amerada. Of course, there probably has been some change of mineral ownership subsequent to the title opinions. This is as disclosed by Amerada's records.

(Recess.)

(Exhibits 12 through 18, maps, were marked for identification.)

CHAIRMAN SHEPARD: The meeting will come to order.

The following appearances were noted: Cecil R. Buckles, Attorney, Sinclair Oil & Gas Company; J. H. Crocker, Attorney, Mid Continent Petroleum Corporation Tulsa; C. D. Borland, Engineer, Gulf Oil Corporation, Hobbs; A. J. Monzingo, Magnolia Petroleum Company.

C. V. MILLIKAN, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. KELLOUGH:

Q. Will you please state your name.

A. C. V. Millikan.

Q. Where do you live?

A. Tulsa, Oklahoma.

Q. What is your profession, occupation?

A. Petroleum engineer.

CHAIRMAN SHEPARD: Please speak louder.

Q. By what company are you employed as a petroleum engineer?

A. Amerada Petroleum Corporation.

Q. How long have you been employed as a petroleum engineer?

A. Over twenty years.

Q. You are in charge of the engineering department?

A. That is right.

Q. Have you testified previously in the capacity of an engineer?

A. Yes, sir.

Q. Mr. Millikan, were you present at the first hearing in this matter?

A. Yes, sir.

Q. You are familiar with the evidence introduced at the first hearing?

A. Yes, sir.

Q. How many wells are now located in the Knowles Pool?

A. Three producing wells, one drilling, the same as at the time for the first hearing.

Q. What is the status of the drilling well?

A. The drilling well is drilling at 11,500 feet.

Q. What is the approximate depth of the completed wells?

A. The completed is around 12,500.

Q. All below 12,500?

A. Yes, sir, approximately, all three wells found top of pay are completed to a total depth of 12,000 and 13,000 feet.

Q. The exact depths of completed wells is disclosed in the transcript of the testimony at the previous hearing?

A. Yes, sir.

Q. At the previous hearing Mr. Veeder, geologist, testified as to that?

A. Yes, sir.

Q. And Mr. Christie testified at the previous hearing as engineer?

A. Yes, sir, both Mr. Veeder and Mr. Christie.

Q. They testified that one well in the Knowles Pool would drain effectively at least an area of 80 acres?

A. Yes, sir.

Q. Since that time do you have additional information bearing on that issue?

A. Well, we have a little additional information on the producing wells and the one drilling well is deep enough for more structural information, although it is not completed. It is about 500 feet off the Devonian on top of the Mississipian, substantially level with Rose Eaves No. 1. The Texas well referred to in the transcript is some three quarters of a mile or thereabouts northwest of the producing wells is something like 800 feet lower than the producing wells. I am not certain

whether it has been abandoned. I heard that they proposed to abandon it, and I also heard they proposed to carry it deeper.

Q. Have you taken any additional pressures?

A. We have some more pressure information. The Rose Eaves well at time of hearing, few days prior had been completed, had a productivity of .91, just a little lower than the discovery well Hamilton No. 1. And on the original discovery well taken in May was 5159 pounds, and average pressure in Hamilton and Eaves on March 15 was substantially the same, 5106, a decline of 53 pounds, and the total recovery up to date is approximately 167,000 barrels.

Q. Does the additional information which you now have tend to contradict the opinion previously expressed by Mr. Veeder and Mr. Christy as to the effective drainage area?

A. I feel that it fits in with what we could reasonably expect to happen in this interval of time.

Q. From your personal knowledge and study of the pool with the information which you have now, do you have an opinion of your own as to the effective drainage area?

A. I think the effective drainage area is considerably in excess of 80 acres. Fairly high productivity indicates, all indication of open type of porosity, some intermediate type perhaps due to a certain amount of secondary solution well, stratified, substantial area with amount of water for maintaining pressue and creating active water drive. That is more particularly been the experience of the Jones Ranch Field in which 80-acre spacing for which that field has been producing now for something over four years. And we had an additional decline on that for same amount of oil was a

little bit less than the decline here, but under higher rates of production. That is, the rates of decline increased until reconstruction in the first part of 1949. In the next six months, we got an increase of 65 pounds of pressure. During the next six months, I believe in January, we got another increase of about 5 pounds of pressure on average rate of production a little higher the last half of 1949 then the first half.

Q. In the Jones Ranch Field is the production also from the Devonian formation?

A. It is. Stratigraphically, it is exactly the same as the Knowles.

Q. Is the productivity record of the Jones Ranch Field comparable to that of the Knowles Pool?

A. They are quite comparable. There is not a great deal of variance in the Jones Ranch Field and the Knowles Pool. They are quite comparable to what they are in the Knowles Pool.

Q. It is your opinion that in the Knowles Pool one well would effectively, economically drain and develop an area of at least 80 acres, is that right?

A. Yes, sir.

Q. Mr. Millikan, let me ask you in the event that it should develop that for any reason an exception to the proposed spacing pattern should be requested for structural reasons, is it your recommendation that the Commission grant such an exception to the spacing pattern, or would you recommend that the spacing pattern be fixed?

A. No, sir, I think for good cause an exception should be granted.

Q. Do you have a recommendation to make in such instances as to the manner in which the correlative rights of the parties could best be protected in the event of an exception?

A. I think that should depend on the cause for which the exception is granted. If for structural advantage and nothing more, perhaps then they would give consideration to productive acreage within the identical economic limits of the pool and grant such exceptions as circumstances may justify based upon such information given in requests for exceptions.

Q. Then it is not your recommendation nor has it been the recommendation of the witnesses in behalf of Amerada's application that the spacing pattern be inflexible and should not under any circumstances be modified?

A. I think in any spacing pattern there may be conditions which would justify certain variances from precise locations of wells.

Q. In the first hearing Mr. Veeder testified as to his opinion what the probable productive limits of this pool were. It is your recommendation and has been the recommendation of the witnesses of Amerada, has it not, that the order which Amerada requested apply to the common source of supply even though it ultimately be determined to be beyond the particular limits testified to by Mr. Veeder?

A. I think it should apply to the common source of supply. You can't have one part under one form and another part under another.

Q. The area outlined in red on the map introduced in evidence represents Mr. Veeder's opinion as to the probable limits of the common source of supply based upon information which he has at this time, is that correct?

A. That is the testimony.

Q. Referring to the map, I will offer it in evidence now so that it may be in evidence as Exhibit No. 10. You will notice Amerada's Stella Rose Well, located in the southeast of the northwest of Section 35, 16S, 33E; that the discovery

well, the Hamilton, is located at the northwest of the southwest of the same section 35, and that the third, Rose Eaves, is located in the southeast of the southwest of section 35, that is correct, is it not?

A. Yes, sir.

Q. Will you please explain for the benefit of the Commission the reason for the location of those three wells?

A. The discovery well was located there believing that to be the best location. When they got to 6700 feet, there was a show of oil in the Paddock Zone.

Q. Approximately what depth?

A. About 6700--between 66 and 6800.

Q. Was a drill stem test made of the Paddock Zone?

A. Yes, sir.

Q. What did that indicate?

A. 1200 feet of oil and a little salt water.

Q. After making drill stem tests, did you continue to drill?

A. Yes, sir, it was eventually completed in the Devonian. After that kind of showing in the Paddock, we thought we might have a pool. We started Stella Rose No. 1 looking forward to 40 acre spacing. On that we drilled through the Paddock Zone to a total depth of a little below 6800 feet approximately. There was no oil at all.

Q. While still drilling the Hamilton well, before it was completed, you commenced Stella Rose No. 1 well?

A. Yes, sir, it was commenced to the Paddock.

Q. Then after you reached the formation where the Paddock Zone oil was or should have been, you found none, what did you do?

A. We temporarily abandoned it.

Q. And you continued drilling Hamilton No. 1, the discovery well, to the Devonian?

A. Yes, sir.

Q. After that time, you went back and deepened the Stella Rose?

A. That is correct.

Q. Had you not deepened the Stella Rose well, but on the other hand commenced a new well which would have been on the present recommended pattern with reference to Hamilton well, would that have resulted in financial loss to the company?

A. We would have lost 6700 feet of casing, approximately 6800 feet.

MR. SPURRIER: Worth how much?

A. About $70,000.00.

Q. The third, Rose Eaves No. 1, is some south of the discovery well. Referring to that well, was it commenced while the other Stella Rose well was drilling?

A. No, it was drilled after Stella Rose was completed.

Q. Was that location, the Rose Eaves well, was that made for the purpose of obtaining structural advantage which you knew about at that time?

A. Well, the Stella Rose was 100 feet lower than Hamilton, and then at that time we were looking at the possibility of 80-acre spacing. There was a choice of losing $70,000 investment in the Stella Rose or carrying on to the Devonian. After we reached the Devonian if we wanted 80-acre spacing, we had a choice of making the Stella Rose or the Hamilton No. 1 to be the one requested for the exception. I do not know why we would have taken one rather than the other for the exception, but we did. It defined the dip 100 feet between the high part of the structure to the south. We considered the Hamilton No. 1 to be the exception, and the well located directly to the south of the Hamilton be made the regular location, and requested that to be the

exception in the regular pattern,because the sequence of drilling brought about by exploratory drilling as to the Hamilton No. 1 being the exception to the spacing pattern.

Q. But you thought at this time that you contemplated 80-acre spacing and that this was a Devonian Pool?

A. Not until after a good test of Hamilton 1.

Q. In your opinion does the well spacing pattern which you recommend protect the correlative rights of the parties?

A. Yes, I think it does.

Q. Have you prepared some exhibits to explain to the Commission your recommendations with reference to the pattern, the well spacing pattern on 80 acres?

A. I think perhaps the exhibits I have maybe will give a little picture of the geometry of spacing, which I think can be clarified a little. In the first Exhibit No. 1 (indicates on exhibit on board.) shows the plain 40-acre spacing in which all wells are located in the center of each 40, this is a quarter section.

Q. That exhibit shows the normal 40-acre spacing?

A. We think when we speak of 40-acre spacing that each well is in the center of 40 acres, 1320 feet on each side--the well located 660 feet from each of the sides and 1320 feet between wells.

Q. The drainage pattern of each well on that basis is in the form of a square?

A. Yes, sir, that is the picture we normally think of when we think of 10-acre, 20-acre, 40-acre, or 80-acre spacing. We think of it in the form of a square and that the well will efficiently drain reservoirs equidistant to the total distance of a diagonal of a 40-acre tract, 933 feet (refers to Exhibit 13) the same as that of 80-acre spacing. We have just eliminated every alternate well to give one well to 80 acres instead of one well to 40 acres. That makes a

rectangular 80-acre tract, alternate ends of an 80-acre tract.

Q. Which exhibit is that?

A. That is Exhibit No. 13.

Q. And that shows the spacing pattern such as that which is recommended in this case?

A. That shows a spacing pattern such as that recommended here. Now, we put the 80 acres in the form of a square.

Q. Just for the purpose of the record, the exhibit which reflects 80-acre spacing is which one?

A. It is Exhibit No. 14.

Q. I see. Please proceed.

A. That shows 80-acre spacing in the form of a square, and geometrically that is no different from the 80-acre spacing. (Arranged Exhibits 13 and 14 on top of each other). I think it shows through. It still forms one well in the center of each 80 acres contained in the form of a square.

Q. At what angle?

A. At an angle of 45 degrees.

Q. Exhibit 14 represents the same pattern with reference to 80-acre spacing as 12 does to 40?

A. Yes, sir.

Q. Exhibit 14 is superimposed over Exhibit 13, will you explain the drainage area? To repeat the question, the 80-acre drainage area in the form of a square is represented by Exhibit No. 14 superimposed over Exhibit No. 13 consists of the form of a square plus 4 triangular tracts?

A. Eighty acres consists of one 40-acre in the form of a square included within the 80 being four triangles, each corner equal in area, ten acres. Wells in the two diagrams when one is superimposed upon the other are mathematically the same exact distance between in Exhibits 13 and 14.

Q. That does then reflect the pattern of drainage on the basis of 80 acre spacing which will result in the form of a square on the same basis as 40-acre spacing?

A. Both are in the form of a square with a well located in the center.

Q. In other words, in both the conception of the drainage pattern is still in the form of a square?

A. Yes, sir.

Q. Put up Exhibit 15. (Exhibit 15 is put on the board.)

A. Exhibit 15 also shows 40-acre spacing under pattern authorized by present statewide rules. That is, they provide that a well can be located anywhere on the 40-acre tract up to within 330 feet of the quarter section line, which location does permit such a spacing program as this, giving each shown location 330 feet out of each corner of each quarter section or 160 acres.

Q. Exhibit No. 15 shows location under present statewide 40-acre spacing regulations?

A. That is correct.

Q. Put up Exhibit 16. (Exhibit 16 is placed on the board.)

A. Now, when we speak of 40-acre spacing, we limit that to the actual 40 acres. In other words, going back to Exhibit No. 12, which shows 40-acre spacing, we consider then that the well in the center of the 40 acres will drain from its location only to the boundaries of that particular 40 acres, and then when locations are made in each corner of quarter quarter sections as shown in Exhibit 15, then there is shown in Exhibit 16 by the shaded area which represents the area in each quarter quarter which is not drained by a well if you assume that the well would drain only to the limits of that 40-acre tract. That is the statewide pattern which has been in effect fifteen years, I don't know of anybody that

has made any complaint about it, therefore, it must be fairly accepted by the Commission and by the industry that wells located in corners of quarter sections as shown by this exhibit will drain over to the limits of that particular 40-acre tract or a distance of 990 feet, and that is shown more distinctly here where there is shown in red, still referring to Exhibit 15, and the most left hand side colored in red, outlined in red dashed line a 40-acre tract the southeast corner of which the right quadrant colored in pink, that color only over part of the regular 40 acres, which would be some ten acres. That does not extend into the shaded area.

Q. That particular area designated by red is what?

A. It is the area which is the same in Exhibit 12 to be within the area of each well.

Q. Which would result if we assumed the well would drain 40 acres and that area only?

A. But in practice we do know that it will drain on beyond the boundaries of that 40-acre tract, which means for any particular quarter quarter of that two and a half times the acres, or the entire area that is drained by the well 330 feet out from the quarter quarter section. It does reflect drainage to a total area of 90 acres, which is colored pink.

Q. What area is marked in pink?

A. That is the area of 90 acres as a basis. The central red part, still referring to Exhibit 16, shows the greatest drainage area recognized in which a well is located in the corner of each 40-acre tract.

Q. Then the practice in the present statewide orders authorizes wells to drain 90 acres?

A. I don't know that it authorizes. I think it recognizes that a well will drain an area equal to 90 acres.

Q. Present 40-acre spacing patterns actually constitute 90-acre drainage?

A. As far as drainage of a well is concerned, that is true.

Q. Assuming that instead of 40 acre spacing you have a pattern such as Amerada's except that a well is permitted to be located every other 40, 330 feet from the line of a 40 acre tract? Assuming that set of facts, what drainage would that authorize?

A. It would be equal to 180-acre spacing.

Q. Such an order would authorize 180-acre spacing?

A. Rather than authorize, I say it would recognize that a well will drain an area equal to regular 180 acre spacing.

Q. It will be possible under that arrangement to have 180-acre spacing?

A. It will be possible under that arrangement to recognize that it will drain a distance which is equivalent to regular spacing of 180 acres. Actually it is a fine point. I don't want to be misunderstood. There are two things--40 acres usually, and under 40-acre spacing we get opposite corners, and we do place them in opposite corners, and if we get drainage of the area, and I believe we do. And I think many recognize, or at least no one complained, recognize that this 40-acre spacing which is authorized will drain equivalent to two and a half times that, or 90 acres. The same is true when this authorized 80-acre spacing with a well to be any place within 330 feet of the particular quarter section that would be recognizing that the drainage area of that will be equivalent to a distance of regular pattern of 180-acre spacing.

Q. But such a situation under the 80-acre spacing recommended by Amerada--

A. If that pattern were adopted with a tolerance of 100 feet out of the center, we would be getting a little beyond the

the exact distance of 80 acres.

Q. Only to the extent of 150 feet tolerance?

A. That is right.

Q. The possible results might be recognized under the present statewide order?

A. The possible results might be recognized under the present statewide order.

Q. Does that situation exist in any actual instances?

A. Yes, sir, it exists all over the southern part of New Mexico.

Q. Here is a map of the Hobbs Field which is colored in pink as Exhibit No. 17.

A. It has been colored pink all quarter quarter sections in which the well has not been located in the center. Some are located 330 feet of the corner in quarter quarter sections. In other cases, it is located within a few feet of the corner so that you have here wells which recognize substantially greater drainage than 40-acre drainage. This consists of 75 per cent of the wells in Hobbs.

Q. Now, you are referring to Exhibit 17.

A. That is not confined to the Hobbs map. The Monument area includes a few spots in the Eunice Field. But in the Monument area alone between 28 and 29 per cent of the wells are located in the corner of 40 acres, recognizing at Monument that drainage is in fact an area equivalent to 90 acres. So few are located in the center of the 40. It is all on one line or the other of the 40-acre tract. It is somewhat less than 90 but more than 80 acres.

Q. The Monument map is Exhibit 18?

A. Yes, sir.

MR. KELLOUGH: We offer in evidence Exhibits 12, 13, 14, 15, 16. 17. 18.

MR. ROSE: No objections.

CHAIRMAN SHEPARD: They will be admitted.

Q. The proposal which Amerada has made in this case will result in 80-acre spacing with the exception of the tolerance which you mentioned, is that your conclusion?

A. Yes, sir.

MR. KELLOUGH: That is all.

CHAIRMAN SHEPARD: We will be in recess until 1:30.

(Noon recess.)

CHAIRMAN SPURRIER: The meeting will come to order.

(Commissioner Shepard not present at afternoon session.)

CHAIRMAN SPURRIER: The Commission will take up where we left off before recess. In the absence of Commissioner Shepard no decisions will be rendered here at the hearing. I will sit for the purpose of taking the record only.

Mr. Rose has asked that Mr. Millikan and Mr. Christie be called for cross examination.

MR. ROSE: I would like to have Mr. Millikan first, the gentleman who testified this morning.

CHAIRMAN SPURRIER: In the absence of Mr. Millikan, we will have another five minute recess.

CROSS EXAMINATION BY MR. ROSE:

MR. ROSE: I would like to have my consultant over here with me.

MR. McCORMICK: Surely.

MR. ROSE: I am U. M. Rose, Hobbs, New Mexico.

CHAIRMAN SPURRIER: We will resume the hearing. Mr. Rose, will you please speak up. The accoustics are bad.

Q. Mr. Millikan, in the testimony this morning, you drew an analogy between the Knowles Field covered by this application and the Jones Ranch Field and all based on the fact that both

are water drive fields producing from the Devonian. Jones Ranch Field is in Texas, and we are in New Mexico. You referred to no other facts except those. Will you tell the Commission and tell us, and I would like full data. I believe there are eight producing wells in the Jones Ranch Field?

A. That is correct.

Q. Do you have a map of the Jones Ranch Field?

A. I think so.

Q. Spread it out where you and I can see and describe the locations to the Commission if that is necessary. Locate the eight wells in the Jones Ranch Field for us, please.

MR. KELLOUGH: Why not introduce it as an exhibit to show the locations. I think it would save quite a bit of time. I have no objection to its introduction.

MR. ROSE: Referring to this as Royalty Owners' Exhibit 1, I offer this map of Jones Ranch Field in evidence.

CHAIRMAN SPURRIER: It will be admitted.

Q. Mr. Millikan, what is the discovery well in the Jones Ranch Field?

A. It is Jones A-1.

Q. And when was it drilled, brought in?

A. In the later part of 1943, as I recall.

Q. And the other wells, when were they drilled?

A. During the next two years.

Q. You made a statement this morning, I believe, that you had a four-year production history of the Jones Ranch Field.

A. It is over four years.

Q. How many wells have you a four-year production history on, how many of the eight wells?

A. The last well was drilled, if I remember right, in 1946. That would make a four-year production history on that. I

may be wrong a few months.

Q. What was the PI on the discovery well?

A. It was approximately the same as Hamilton No. 1 in Knowles.

Q. What was the PI on the rest of the wells?

A. All except two of them ranged on an unusually narrow range varying from .7, I should say, up to one and a quarter.

Q. But only two below a PI of one.

A. That is my recollection.

Q. What changes, if any, have occurred since the drilling of the discovery well. That well was brought in in 1943 and found a PI of 1?

A. Not anything except a decline of reservoir pressure. I think the change is in B-2 which is producing a small amount of water. I think the others are substantially the same except for normal decline of pressure, if there be such a thing as normal decline of pressure.

Q. B-2 is the only one producing water?

A. I believe so unless one of Magnolia's is, I believe not.

Q. What is a small amount of water?

A. About 3 per cent.

Q. It is producing about 3 per cent of water?

A. Yes, sir.

Q. Where is the top of the pay in the discovery well?

A. It was a little above 11,000. I don't recall the exact depth, and I am not sure, about 11,100 and the pay is a little below 11,400, and then got some water, never should have, bottom part of water, only well that was a commercial well in that lower streak of pay.

Q. How many wells would you classify as high wells?

A. About four.

Q. Where was the top of the pay on the others?

A. It runs about two feet shallower than the discovery?

Q. How much pay?

A. Total pay almost 300 feet. The others are over 200 feet, as I recall. I am doing this by memory, but I think that gives the information, but as far as precise figures, don't hold that too close.

Q. What is the difference between the top of the pay in the highest well in the Jones Ranch Field, as well as you can tell, and water level?

A. About 300 feet.

Q. Have you done any coring in the Jones Ranch Field? Strike that question that I commenced, please. In view of the answers to those questions, do you consider that you have completely developed the area of the Jones Ranch Field?

A. Yes, sir.

Q. Have you done any coring in the Jones Ranch Field?

A. We cored one, and unfortunately got poor recovery.

Q. You haven't cored any others?

A. No.

Q. You have no information from cores whatever in the Jones Ranch Field?

A. We have got a few. Porosity 8 to 15 per cent with the exception of one, vuglar for most, Milli darcys run.

Q. In other words, from the core analyses you had made, I gather the cores did not show much permeability.

A. No, they didn't represent the reservoir at all. We don't consider they gave us any reliable reservoir information.

Q. Did they represent anything to you?

A. No, except some misinformation if interpreted literally.

Q. Has any faulting been indicated any where in the Jones Ranch Field?

A. No, sir.

Q. You haven't had very much water production in the Jones Ranch Field, haven't had coning or fingering?

A. I wouldn't call it coning or fingering.

Q. What would you call it?

A. I think normal water with bottom of hole in that B-2.

Q. How high is the bottom of B-2 above water level?

A. As I recall, some 40 or 50 feet higher than we had considered the water level, so whether it is actually the bottom water, there is some question. In my opinion, it hasn't increased fast enough to be conclusive. It may be intermediate water which frequently gets in.

Q. How long has it been making water?

A. As I recall, a little less than a year.

Q. This is a new development in the Jones Field, a well making water is a new development in the Jones Ranch Field?

A. Well, I don't call a year a new development.

Q. Do you know on that particular production how long--

A. About three years.

Q. I would like to call your attention to Mr. Christie's testimony on the Bagley Field at the hearing on December 20, 1949. (Read Mr. Christie's testimony on permeability.) Do you agree with Mr. Christie that the flow is greater in zones of higher permeability?

A. Yes, sir.

MR. SPURRIER: Will you talk lowder, please.

Q. When water is being produced, how do you know, Mr. Millikan, that oil is not being bypassed?

A. Is not?

Q. You testified that oil is not being by-passed?

A. No, I didn't say absolutely no oil is being by-passed.

Q. Is there not a greater likelihood of oil being by-passed on 80-acre spacing than on 40-acre spacing?

A. I don't think it will make much difference in that field.

Q. Now, let us get to the Knowles Field. We are somewhat lacking in technical information for the field. The only witnesses who appeared in the original hearing--there was no testimony offered on porosity in the Knowles Field. I am getting the Jones Ranch Field in here. Coming back to the Knowles Field--all questions are in relation to the Knowles Field. There was testimony about porosity in the case of the Knowles Field in the hearing of November 22, but no definite testimony about permeability. Permeability fair and good. They used those terms. Mr. Christie used those terms in regard to two. There was no testimony about permeability by Mr. Veeder at all about what he knew about permeability in the Knowles Field.

A. Any well with an index of one has got reasonable permeability.

Q. There is also testimony in that same hearing to the effect that they cored Rose Eaves No. 3?

A. Cored which? Rose Eaves No. 1.

Q. Rose Eaves No. 1 cored with practically 100 per cent recovery?

A. Yes, sir.

Q. Was a core analysis made?

A. No, sir, we didn't. We looked forward to coring one of the higher wells.

Q. Any other further PI's in the Knowles Pool in addition to that testified to on November 22?

A. In addition to what was testified to here this morning?

Q. That is correct. Have you made any more tests?

A. That is, three well have been completed.

Q. Have you PIs on the rates of flow from those testified to?

A. We had on Rose 1 two tests--one short and the other somewhat longer at slightly different rates of flow. It does show some decline.

Q. On November 22 in the testimony of Mr. Christie, he stated that in the SP Rose No. 1 found fair permeability. He used that word, do you remember?

A. I will accept that.

Q. Is that also your opinion?

A. Yes, sir.

Q. Is it still your opinion that there is fair permeability in that?

A. Yes, sir.

Q. Is it flowing its allowable?

A. No, sir, not at this time. I believe it was in November.

Q. Since the time for the former hearing, has that well been reacidized?

A. Yes, sir.

Q. When?

A. I knew it was acidized, but I didn't recall before.

Q. About what time?

A. About the time of the November hearing.

Q. With what results, did it flow its allowable after it was shot?

A. As I recall we were making a little more water, and we restricted its production somewhat.

Q. I would like to give you an opportunity to consult with persons in your company who are more familiar with the history of that, your answers don't indicate you are familiar with it at all.

MR. KELLOUGH: I don't want, if the Commission please, to restrict Mr. Rose, but we object to the conclusion and the

and the argumentative way of stating that this witness has no knowledge of Stella Rose No. 1. I think the testimony shows that he has.

CHAIRMAN SPURRIER: Sustained. This is all for the purpose of a clear record, and I think we are doing that.

MR. ROSE: I would like for the Commission to take judicial notice of its reports to the SP of Rose No. 1 for the months of October, November, and December in 1949 and the month of January 1950.

MR. McCORMICK: They will be considered.

MR. ROSE: I would like to submit to the Commission this way. On that well the allowable is 8804, production 7102; allowable for November 8520, production 8408; allowable for December 8804, production 5612; allowable for January 8804, production 7654.

Q. Mr. Millikan, do you desire to answer the question as to when the well was reacidized?

A. I think the record will speak. It is part of the Commission's records.

MR. McCORMICK: Judicial notice will be taken of the report of action taken on that well.

MR. ROSE: For the clarity of the record, I would just like to get this in. I hand you a copy marked original showing the file mark of the New Mexico Oil Conservation Commission applying for or rather reporting acidizing S.B. Rose No. 1 with 4,000 gallons of Dowell acid.

MR. McCORMICK: It is dated January 17, 1950, do you so identify it?

A. Well, it is so stamped.

Q. In other words, it was acidized January 17?

A. According to the report. I have no reason to question it.

Q. What date was it filed?

A. It is stamped there May 17, 1950.

Q. I believe we would like to have this in the record. I have a copy of the original which I would like to substitute.

CHAIRMAN SPURRIER: Let the record show that it is stamped March rather than May.

MR. MILLIKAN: Thank you, I am sorry.

MR. ROSE: I would like permission to withdraw the original and substitute a copy.

MR. KELLOUGH: No objection.

CHAIRMAN SPURRIER: You may do so.

Q. Do you think this particular well which has not been flowing its allowable would drain 80 acres?

A. I think so. We have had to restrict its flow to prevent excessive coning of water which it has been making for some time.

Q. When did it start producing water?

A. As I recall, it was completed making about 3 per cent.

Q. What is the history of its making water?

A. Slowly increasing to a current 7 per cent.

Q. If not restricted, speaking of coning, would you expect a rapid increase and fingering?

A. I don't know whether there would be fingering or not.

Q. In your opinion, will it require a longer period of time for that well to drain 80 acres than for Hamilton No. 1?

A. Assuming an equitable allowable, I assume about the same time.

Q. Do you know what it was producing on the interval on Stella Bennet Rose No. 1 on its former allowable?

A. You have it. You read it.

Q. Stella Bennet Rose No. 1 was producing from 47 foot interval.

In your opinion, does the fact that a well producing from a 41 foot interval can make its allowable, and a well producing from a 47 foot interval does not make allowable, does that in your opinion indicate variable permeability?

A. I don't think we ever contended that there was not variable permeability there.

Q. That is what I wanted.

GOVERNOR MABRY: Keep your seats, gentlemen. I am sorry I could not be here sooner. I had four other places which I had to attend.

Q. Do you have to have authority from the State of Texas for 80-acre spacing in the Jones Ranch Field?

A. By authority, do you mean spacing rules there, no.

Q. Have you applied for 80-acre spacing in Texas?

A. No, sir.

Q. Wells from that field have been producing since 1943, been in production almost seven years, and you have not applied in that state for 80-acre spacing, is that correct?

A. That is correct since 1945.

Q. You have had production since 1945 and have not made application?

A. That is right.

Q. In New Mexico in the Knowles Field which has less than one year's production, you are making this application on less than one year's production history?

A. Yes, sir.

Q. Now, in your testimony this morning you stated that you would contemplate in the event that recovery of oil appeared likely on the alternate 40 acres from the one on which the spacing pattern was, an application to drill on the alternate forty acres would be made. In other words, you desire, you have testified, I believe, that in the event geological information indicated that it was better, more likely, to

obtain oil from the alternate locations, you would expect application be made to drill, and the application should be granted, do I understand the position you are taking on the matter?

GOVERNOR MABRY: Could you state that in the form of a question?

Q. What is your position with reference to drilling on alternate 40 acres in the event recovery of oil seemed to be better?

A. A better chance of recovery of oil? I didn't intend to testify to that.

GOVERNOR MABRY: You mean northwest and southwest?

Q. This is clear in the Crossroads 80-acre spacing, and the pattern is the same as that, northwest and southwest. Is it true that in the event a dry hole has been drilled, would they not apply for the alternate 40 acres?

A. You mean the Santa Fe application, are you asking if they made application to drill on the other end of the 40 acres?

Q. Yes, sir.

A. When alternate 40 acres--perhaps that should be.

Q. All right. Is it your position that such an application would be made and should be granted?

A. Yes, sir.

Q. Does that not represent a change in position given in the earlier hearing when Mr. Veeder was apparently endeavoring to have the spacing pattern fixed as shown in this plan. I will read a portion of his testimony: "Chairman Shepard: What about royalty owners, will they be compensated? Mr. Veeder: It is set up so that problem wouldn't arise except for, in the north quarter, that 40 acres is separate ownership. We think that can be handled by agreement. Otherwise, all royalties are the same under each unit; that is one reason for the arrangement."

I would take that in support of a definite 80-acre pattern. Now, if you drill one dry hole where on 80-acre spacing well is supposed to be, would you expect to drill on the alternate 40?

MR. KELLOUGH: Counsel is asking a hypothetical question assuming an interpretation of testimony in the form of argument. He has misconstrued the testimony in a major premise.

MR. ROSE: This testimony is in the record. We have a right to use it.

MR. KELLOUGH: It is perfectly all right to ask for any facts which he has, but there has been a good deal of argument.

GOVERNOR MABRY: He may answer the question.

Q. If you left the pattern and drilled on alternate quarters--is it your position that you would have the right to do so?

A. If the question means we took one position on the original hearing that we wanted no exceptions to the spacing pattern locations as suggested in there--

GOVERNOR MABRY: I think I know what he means.

A. If that is what he means, I didn't feel that way at the other hearing. In the experience of hearing applications by this Commission, I am not quoting, in the experience of what I have seen in this and other things, the Commission has the right to consider exceptions to any part of the orders when conditions arise which make it right to ask for an exception.

GOVERNOR MABRY: I think counsel is not consistent in his question.

MR. ROSE: The witness has answered the question. Thank you, sir.

Q. In the event application is made for the alternate 40, might not that be unfair to some persons, to some royalty owners?

A. That is possible.

Q. And that might be unfair thinking. Might that not be resisted by royalty owners and lease owners?

A. Quite possible.

Q. This is a copy of Exhibit No. 10 which is in evidence. This shows three of Amerada's wells which are now in production, and another exhibit will show that Amerada owns certain royalty interests under these three wells. Will any other royalty owner who is not in that half section where these three wells are located have oil produced from his land?

A. Yes, I think so. I think there is so much oil that comes from other land.

Q. Will you explain how that could be under such a spacing pattern. We have 120 acres here, and we have three wells on it.

A. We have three wells as shown on Exhibit No. 10.

Q. Will there be three wells on any other 120 acres on your spacing plan?

A. On our spacing plan there will be one well on each 80.

Q. On each productive 80?

A. I don't know, there would be a lot more. I just know there are three 40 acre tracts on which wells are located.

Q. Here is one of the exhibits, Mr. Millikan, will you please identify it?

A. Exhibit 14.

Q. Exhibit 14 which is superimposed upon Exhibit No. 13, as I understand it, showing in squares the drainage area of the proposed wells, is that the purpose?

A. That is the purpose of showing the locations of the wells.

Q. . By what do you propose to show the drainage area of these wells?

A. Well, we have one well to each 80 acres of area, and the

the presumption is that it will drain more or less in all directions from each location.

GOVERNOR MABRY: I can't hear the witness.

Q. It does not contemplate cross line drainage across lines?

A. I think there is cross line drainage in almost any spacing pattern you put in there. In other words, we have never contended it runs up to some surface line without respect to the reservoir. So long as it is reasonably equidistant, the regular pattern afford reasonable opportunity to everyone to recover his share of oil in the reservoir.

Q. Will you come to the map so that you can see what I am pointing to, please. What on this map is the drainage area of this outline?

A. Well, looking at the 80 acre center of geometrical units that are square, then by the square shown there in Exhibit 14.

Q. This square here that is on top (indicating)?

A. Exhibit 14, is the center of overlay.

Q. It outlines outer drainage area, suppose that there is a fault within, occurs within those lines, will the owner under those circunstances recover his fair share.

MR. KELLOUGH: I wish to point out that this is supposing facts which have not been testified to. There is no evidence of a fault, no indication of a fault in this pool according to witnesses.

GOVERNOR MABRY: Doesn't it show drainage within that particular area?

MR. ROSE: The drainage,Governor, has been described in previous hearings as being circular. In this present hearing it was described as square this morning, and I am attempting to clarify the exhibits which have been introduced into evidence and testified to by Amerada.

Q. Is it not your theory that cross line drainage is fair only when compensatory one well to another?

A. That is correct whether square or circular. You indicated something about clarification. I did not contend that drainage occurs exactly within these lines. I used the square for certain geometrical illustration. In spacing patterns we think in terms of a square.

Q. Can you testify that there is no fault in Knowles Field?

A. No, sir.

Q. Going from an assumption, drainage from the area of this well would depend on whether there was a fault or not to interfere with compensatory drainage one well between that well and another?

A. If there was one fault or several, or edge of field, or what not, there is always an opportunity to come before the Commission and get an adjustment. Each operator should get his fair and equitable share of oil out of reservoir. When it is found that a reservoir has a fault, it is possible to come before the Commission with application for adjustment. That is always true regardless of what spacing whether 10 acre or 20 acre, 40 acre, or 80 acre.

Q. Now, if this were in 40-acre spacing instead of 80-acre spacing, would there be compensatory drainage?

A. Sure, each one would get his fair share. I think that is always present.

Q. Would it be present the same under any spacing pattern?

A. No, in any water driven field the up dip well will tend to get the greatest ultimate recovery. That is usually true regardless of the spacing.

Q. Let us assume a 40 acre tract on contemplated northwest southwest, and one cannot be drilled, there is an up drive dip, would there not be a loss to the lessor, to that owner as a result of drilling?

A. If there is one directly opposite to that pattern, it is certainly fair to come before the Commission and get an adjustment.

Q. You have your application, you might have resistance to the inequity of it?

MR. KELLOUGH: That is purely speculative and argumentative.

MR. ROSE: That is all.

CHAIRMAN SPURRIER: If there are no further questions, the witness is excused.

MR. KELLOUGH: Nothing further.

(Recess.)

MR. ROSE: I would like to make a statement as to the position of the Royalty Owners in Lea County. At the time the original hearing was held on the Knowles Field application, no royalty owner appeared to resist the same. Now it is the assertion of certain royalty owners who have signed the exhibit which I will hereafter seek to introduce into evidence to the effect that they did not appear for the reason they were under the impression that Amerada would be given double allowable on this proposed 80-acre spacing. The royalty owners did not know until the transcript came that Amerada was not seeking more than top unit allowable. Then the royalty owners came. That is why they were not here heretofore, at least not here to testify.

MR. ROSE: Have you any questions?

MR. KELLOUGH: I have a few questions to ask the witness.

W. R. CHILDERS, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. ROSE:

Q. Are you W. R. Childers?

A. Yes, sir.

Q. Did you circulate a petition?

A. I circulated part of it.

Q. At that time, did you know what area had been drawn by Amerada as the Knowles Field?

A. We took Amerada's leases. We never thought they would be spread out over anything else.

Q. You took Amerada's leases which were in the general area?

A. I don't know what the boundaries are going to cover.

MR. KELLOUGH: Are the signers of this petition owners of mineral rights in the Knowles Pool?

MR. ROSE: Not ownership of all persons. This exhibit is not introduced for the purpose of proving ownership. It is to represent people who would not otherwise have an opportunity to make a statement. Ownership has been proved by a certificate giving owners. This is introduced for the purpose of showing the position of these persons. Some are not owners in this field, and I desire that it so be understood.

MR. KELLOUGH: Simply state whether or not, if you know, Mr. Childers, if these persons are owners in the Knowles Pool.

MR. ROSE: Answer if you know.

A. They are owners in the Knowles area.

MR. KELLOUGH: I have one, at one time didn't you get the signatures of husband and wife regardless of whose name the record title may be in?

A. No, you see I was in kind of a rush. I called Guy if it was double allowable. He says, no. I asked if he would hold off the decision until I could get the petition. He said, yes, if I would rush it up right away. We got out and rushed it right up within a few days.

MR. KELLOUGH: Did you check whether they were mineral owners?

A. I knew most of the people.

GOVERNOR MABRY: This is under the protest of royalty holders who claim that they did not know that double allowable was not being sought at that first hearing. The protest will be considered for what it is worth--not too important.

MR. KELLOUGH: That is what we wanted to find out whether it was made by people who have an interest in this pool of record.

MR. ROSE: A wife's signature does not necessarily show ownership.

GOVERNOR MABRY: Mr. Kellough, do you question whether this represents a substantial part of the royalty men, or is that the question?

MR. KELLOUGH: That is the purpose of my question. I don't know whether it is a substantial part or whether in this area or out of this area. We have introduced into the record a statement of royalty, Amerada's leases. If it will be compared with that, we have no objection to that instrument.

MR. ROSE: That can be checked.

Q. Mr. Childers, did you obtain those signatures?

A. Not all of them?

Q. Did you obtain some of them?

A. Yes, I got all around town. Another man got those out in the country. Luther Cooper took it out to the farmers. He knew them better than I did.

Q. You yourself obtained those in town?

A. Yes, sir.

(Witness excused.)

MR. KELLOUGH: We admit it can be introduced into evidence. We have no objection.

MR. ROSE: We offer this petition in evidence as New Mexico Royalty Owners Exhibit No. 3.

GOVERNOR MABRY: Admitted.

MR. ROSE: We offer this certificate showing ownership, New Mexico Royalty Owners Exhibit No. 4.

MR. KELLOUGH: No objection.

GOVERNOR MABRY: Admitted.

MR. ROSE: If it please the Commission, I desire to interpose the statement that each and every signer who is actually a royalty owner under this application objects to it.

GOVERNOR MABRY: Does that purport to represent all the royalty owners?

MR. ROSE: It does not.

GOVERNOR MABRY: What proportion?

MR. ROSE: I couldn't say.

GOVERNOR MABRY: You don't know much about it.

RALPH U. FITTING, JR., having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. ROSE:

Q. You have testified before this Commission before?

A. Yes, sir.

Q. Will you give your name, where you reside, and your occupation.

A. My name is Ralph U. Fitting, Jr. I reside in Midland, Texas. I am consulting petroleum engineer and geologist. My studies in this occupation are confined to the field of West Texas and New Mexico.

Q. Are you a registered engineer?

A. Yes, sir, I am registered, under the law of the State of Texas. I am a graduate of Stanford University in 1932. I did post graduate work at the University of California in 1933.

MR. KELLOUGH: We admit his qualifications as an engineer.

Q. What has been your experience?

A. It has been in West Texas. I have been in Midland since 1938, and the first five years I was in the employ of the

Shell Oil Company as engineer and division production engineer, and with Shell Oil Company I was in charge of engineering in West Texas and New Mexico. When I left Shell in 1943 I was in charge of engineering for this area.

MR. ROSE: You have had experience in New Mexico?

A. Yes, sir.

GOVERNOR MABRY: That makes him qualified.

Q. Have you studied the Knowles Field and other Devonian Pools?

A. I have read the transcript of the prior hearing. I have made a study of the Fullerton Devonian, the TXL, the Dollarhide, the Ratliff and Bedford and Wheeler Fields. While most of these are depletion type and do not have water drive, knowledge of these concerns a fund of information contained in Devonian reservoirs.

Q. Is Knowles Field a water drive field?

A. I don't think the evidence is conclusive. I think it is reasonable to expect that such a water drive may occur as occurred in the Fullerton and the Jones Ranch Field?

Q. Assuming that the Knowles Field is water driving as several of Amerada's witnesses have testified, what will be later variations?

A. There are zones or layers of greater or lesser permeability, which occur in nearly all fields I am familiar with, particularly in fields producing from the Devonian. There will be a section where there is wide variation in permeability as the effect of layers or migrations of water in the field. There may be zones of low permeability and zones of high permeability in water drive reservoirs. The effect of various zones of uncertain permeability is that the rate of production from the individual well, ordinarily speaking, in a section with high

permeability, at first the rate of production is higher. This results in the flushing out of the less permeable layers, and it results that it will flow more rapidly in zones of high permeability than in zones of low permeability.

Q. Would this cause the by-passage of oil by water?

A. Yes, sir.

Q. Would the spacing pattern as set up by the statewide rules aggravate this by-passage?

A. In my opinion it would cause the coning of water. The greater the depth it would aggravate the coning of water.

Q. Coning and fingering of water tend to cause what?

A. By passing of oil in the lateral water oil ratios. You have to have a greater volume to secure the same volume of oil. This will result in the abandonment of oil which might otherwise be recovered.

Q. In your opinion, it would result in underground waste?

A. In my opinion, it would result in waste.

Q. Did you study this spacing pattern as a geologist?

A. Yes, sir.

Q. Would you say there would be cross line drainage?

A. There is cross line drainage in any spacing. In water drive fields cross line drainage is aggravated. If it is located in the center of the acreage, this drainage is compensated specifying alternate 40 acre tracts.

Q. Would correlative rights of royalty owners be taken care of?

A. It is not. Where there is cross line drainage in one well, and consequently one owner will secure more oil, and another owner will obviously secure less.

Q. What is the effect on the value of royalties in the field?

A. If the value of royalties is based on income per acre, in reducing the amount of oil, obviously the values of royalties will similarly be reduced.

Q. They are particularly affected this way assuming the testimony of the Amerada witnesses is correct that on 80-acre spacing they will ultimately recover all the recoverable oil, the royalty owners will receive their share if they live long enough. They would still get the same amount of royalty under 80-acre spacing with one unit as with two under 40-acre spacing if they lived long enough?

A. Based upon the assumption of the same ultimate recovery of oil, I assume they would be.

Q. You would have to live long enough in order to get it?

A. Yes, sir.

Q. In your opinion, does fixed spacing offer a greater possibility of getting a dry hole?

A. Yes, sir.

Q. Would this produce an incentive to step out?

A. It might. You certainly, you have to have available information concerning subsurface conditions to move locations which look like they are going to be dry. Frequently subsurface information and drilling of additional wells shows that the location is not dry and causes many fields to be extended. Dry hole hazards tend to result in incompletion of the productive area.

Q. Come over here, will you please. You followed the introduction of these exhibits this morning by Amerada, of Exhibit No. 17, which shows the spacing of the wells in the Hobbs area?

A. Yes, I did.

Q. In you opinion, does that exhibit support the conclusion as to drainage which the Amerada engineer drew from it?

A. No, I don't think it does.

Q. He concluded that from 330 feet from the corner that the

rules of the State of New Mexico permit or authorize, I believe that was the word, 330 foot location to the other corner in the Hobbs Field, which he has colored. He has concluded wide drainage from that data. You also observe Exhibit No. 18 of the Monument Pool. Would you affirm his conclusions concerning the area to be drained from these spacing patterns which Mr. Millikan made, would you affirm his conclusions?

A. I neither confirm or deny. I might mention that on it that some are not drilled.

Q. Is that correct now?

A. Yes, I believe it is. The Commission has approved "five-spot" drilling in the Grayburg area.

MR. ROSE: That is all.

CROSS EXAMINATION BY MR. KELLOUGH:

Q. Mr. Fitting, you testified in your opinion there is a water drive in the Knowles Field?

A. I didn't say that.

Q. Would you say reasonable to expect?

A. I said--

Q. You think it is not a water drive?

A. I said reasonable from what is known, it hasn't been proven.

Q. You testified, I believe, that the location of the wells, one to each 80 acres, there would be a tendency oil--water to cone or by-pass areas, is that right?

A. I said that it would aggravate it if it followed an 80-acre pattern.

Q. The same results would apply in 40-acre spacing?

A. To a lesser extent, yes.

Q. The same thing would occur in 20-acre or 10-acre?

A. Yes.

Q. Would the rate of production affect that rate any?

A. Yes, the rate of production would.

Q. If you produce wells faster, it will have more of a tendency to cone than if you produce them slower?

A. Yes, sir, they would.

Q. You also testified as to cross line drainage. That same situation exists in the case of 40 or 20 or 10?

A. My point was that in a great many locations having been in the geographical center of the tract assigned to the well cross line drainage is not present to the extent that it would be under the 80-acre spacing that has been proposed.

Q. Under the State rule permitting 330 foot corner locations in 40-acre tracts--under that ruling the same situation exists?

A. The same as what?

Q. Cross line drainage?

A. Yes, they would.

Q. You have cross line drainage even then?

A. Yes.

Q. You could not correct the objection you speak of by changing to 40?

A. You could by placing them equidistant around that, under that circumstance.

Q. What is the present allowable, the current per well per day for New Mexico?

A. I think it is 42 barrels.

Q. In otherwise the same pool producing from 5,000 feet rather than 12,500 each well is authorized to produce 42 barrels per day?

A. That is my understanding.

Q. Do you know the current authorized amount, is it now in excess--

A. I believe the figure is 264 barrels.

MR. McCORMICK: 284.

A. I submit 284 barrels.

Q. Now, normally the depth of the wells which are in the Ellenburger, Hobbs, and Monument are producing at a depth of 9,000 feet, is that correct?

A. Substantially, I don't know the Ellenburger wells which are in the Hobbs Pool.

Q. In the Brunson Pool, for example?

A. That is correct, about 9,000 feet.

Q. Do you know how many barrels per well per day can be produced in the Ellenburger wells in the Brunson Pool?

A. Not off hand,no.

Q. Can you state the number of barrels per well per day that can be produced from a well of 9,000 feet?

GOVERNOR MABRY: That is in the rules.

A. I will ask what the answer to that is offhand?

Q. Isn't it a fact that it is three times 42?

A. 126.

CHAIRMAN SPURRIER: 3.7.

Q. The allowable on a well in a pool that is producing from a depth of 8 to 9,000 feet is 3.7 times current allowable. Will you please state how many barrels per well per day could be produced from a well which is produced from a depth of 8 or 9,000 feet?

A. 126.

Q. That is currently authorized production for one well?

A. Yes, sir.

Q. The wells in the Knowles Pool have an allowable of more than two wells?

A. That is correct.

Q. You also testified, I believe, that if the spacing is established for 80-acres, there will be a tendency to drill dry holes, is that substantially your testimony?

A. Dry holes or incompleted depth of productive area.

Q. Would that same situation exist on 40-acre spacing?

A. The distance of the step out for 80 is 1866 feet, or 40, 1320, staggered center 40's.

Q. How much on 10 acres?

A. How much? 660 feet. I didn't know that part of the question was in this hearing. The distance from one is 660 feet.

Q. Of course, you are not denying also, there could be dry holes on 40-acre spacing as well as on 80. Is it your testimony there would be more dry holes on 80 acre spacing than there would be on 40?

A. That would be the tendency because of the greater distance in drilling, getting farther away from the information.

Q. You know the approximate cost of the wells in the Knowles Pool, do you not?

A. That was testified to, on the order of a quarter of a million dollars for subsequent wells to the first.

Q. I believe that you inferred that there would be more incentive or there would be less incentive on behalf of the company to drill on 80-acre spacing than on 40-acre, is that substantially correct?

A. There would be less on the part of the operators on the basis of 80 than on the basis of 40? No, as to incentive, they would make a great deal more in wider spacing and leaving oil. The incentive is there for the operator certainly.

Q. I believe you stated the leaving of oil was relative, did you not?

A. Yes, sir.

Q. That was not in response to my question, I believe. Do you believe that there would be more dry holes on 30 acres and the incentive would be lessened?

A. Because there would be greater steps--you have the alternative of not drilling if subsurface conditions indicate it would be close to the water level, which I submit is substantially the testimony of Mr. Millikan. The history of the well is 100 feet, the structural position of the lower wells is 200 feet above water level in those wells.

Q. I want to know whether or not your testimony before this Commission is that the incentive to drill and develop would be lessened on 80-acre spacing?

A. There would be incentive for the operators because of the greater profit which they make on each well.

Q. And, of course, the operator will anticipate enough additional recovery to get back the extra quarter of a million dollars it cost to drill that well.

A. That is correct.

Q. You mentioned the Grayburg Pool a while ago, is that a water drive pool?

A. No, it is not.

MR. KELLOUGH: I believe that is all.

REDIRECT EXAMINATION BY MR. ROSE:

Q. Mr. Fitting, I have outlined here in a rough sketch two east west 80-acre spacing--here you can draw on this for me, please. The proposed spacing pattern contemplates wells in the southeast of the quarter section. I have shown the northwest of one and the southeast quarter section and another in the northeast of quarter section. They make a triangular

design with the base of the triangle being that between the northernmost and the southernmost well. Assuming that wells are drilling in the center as they would be if there was no surface obstructions to cause them to be moved from the center, how far apart would the wells be?

A. The base of the triangle would be a half mile long, and the diagonals of the wells drilled would be 1866 feet apart.

Q. Now, if you put a well in what I have been calling throughout this hearing an alternate 40-acres, what is the maximum distance between two wells on that diagram?

A. A quarter of a mile or 1320 feet.

Q. The maximum is 1640 feet, is that not correct?

A. That is correct.

Q. In any step out, do you have a chance of leaving your field, of going across the edge of it, have you?

A. Yes, sir.

Q. Is that chance not greater the farther you step out?

A. That certainly would follow, yes, sir.

RECROSS EXMINATION BY MR. KELLOUGH:

Q. Are you offering this in evidence. You can put this in evidence. He has a piece of paper. He made some dots and drew a line. It depicts a triangle. Assuming that you locate another well which would make the diagram a square rather than a triangle, then what would the distance represent in 40 acre spacing?

A. The sides of the square, 1866 feet, be the diagonal distance of 1640.

Q. The sides of the square represent the distance between two wells on the diagram?

A. He depicted three.

Q. I am assuming four.

A. By assuming four, well, the north, 2640, and east and west 2640 feet apart.

Q. Or actually the distance diagonally between two on 80-acre spacing?

A. That is correct.

Q. Did you testify as to the difference diagonally between two wells on 40-acre spacing?

A. No.

Q. What would it be?

A. It would be 1866 feet.

Q. Normally speaking, you expect drainage in the form of a circle?

A. It would depend upon the direction in which the water drive would occur, yes, sir.

MR. KELLOUGH: That is all.

(Witness excused.)

MR. MILLIKAN: I would like to correct that. I said 100 feet structural position from water level in the Jones Ranch Field, I believe. I misunderstood that. The answer is about 200 feet, not 100.

MR. ROSE: We are agreeable to showing accurate testimony. If the Commission please, the royalty owners rest.

MR. KELLOUGH: We have no rebuttal. We have a number here who by formal joinder joined in this. We would like the privilege of having them join in making statements before we present our argument.

MR. McCORMICK: I would like to ask Mr. Millikan a few questions. How many months at the present rate of allowable does it take at the present prices to pay out a well in the Knowles Field?

MR. CHRISTIE: Assuming $2.00 net.

CHAIRMAN SPURRIER: Are you assuming net after royalties are paid. You can't operate for nothing.

MR. KELLOUGH: It takes too long.

GOVERNOR MABRY: It figures a few months over a year.

MR. MILLIKAN: Approximately a year and a half at current prices of $2.58.

MR. McCORMICK: 1.8 royalty?

MR. MILLIKAN: Yes, sir.

EXAMINATION BY MR. McCORMICK OF MR. MILLIKAN:

Q. Not counting any initial investment from lessees as such?

A. I would like clarification as to what is considered would be an offset well if the Commission should adopt 80-acre spacing in consideration of the implied covenant to reasonably develop and the covenant to protect from drainage.

Q. Take Exhibit No. 10 and tell the Commission what you consider it will have to have to drilled as an offset?

A. This is an engineering answer, not a legal answer. If you have a producing well on the offset unit, it would be the offset on the adjacent unit.

Q. If any 80 touched the 80 that was producing, that 80 would be the offset location?

A. That is from the legal standpoint.

Q. So, notwithstanding whether one well will drain 80 acres?

A. Do what?

Q. How do you account for drainage if one well drains only that 80?

A. I don't see your question.

Q. Now, Mr. Millikan, I don't want to treat you unfairly, would you not say that one well would drain only 80 acres; you say it would fully?

A. I said at least. I think it will drain considerably more than that.

Q. Any 80 which touched the producing 80 would be an offset in respect to development?

A. That is the engineering answer. I am giving only engineering answers.

Q. Regardless of whether or not the spacing pattern required that well to be drilled a half mile away from the producing well?

A. Yes, sir.

Q. Do you have Exhibit 10 before you there?

A. Is this the map?

Q. On your Stella Rose No. 1, which is located in the southeast of the northwest of Section 35, I presume you would consider that east half of the northwest of 34 to be an offset well?

A. An offset unit.

Q. And reasonably develop that 80 acres in Section 34 by stepping out a half mile to the west?

A. That is correct.

Q. Of the Stella Rose?

A. That is correct.

Q. Now, Exhibit 10 does not show the size of the lots in sections 1, 2, 3, do you have information as to what the size of those lots are?

A. I don't. I know approximately. I am not sure whether I have the precise information or not.

Q. The point I am trying to get out here, this territory of 80 acres along the north 1, 2, and 3, is it more or less than 80 acres?

A. They would be less than 80, as I recall, approximately 74 or 75 acres. Actually government measurement somewhat smaller than 80 acres.

Q. Under the present rules, the allowable in such cases is reduced proportionately?

A. It is not done. Is it not similar to 40 acres. Some are below 35 acres and so forth. There has been no adjustment for that. I think the allowable has been based on quarter quarter

sections and not on the precise area of each government unit.

Q. This rule of the first of the year, has not been actively applied to this literally as it was written?

A. It recognized, if I remember, irregular government units and fixed the allowable at normal quantities. Now if the government does not see fit to do that, that is something else.

Q. But if they did give you full allowable on a 75-acre tract, there would be a disturbance of correlative rights of offset 80 acres?

A. Yes, sir, but it would still be less off than what has been done in quite a number of producing tracts in Lea County units.

Q. In your opinion, would these wells in the Knowles Pool, these three wells now producing, would they be produced at greater rates than they are now producing without damaging the wells and causing underground waste?

A. I wish I could. I question it a little bit. It has been given only regular unit allowable. It is quite possible, to maintain pressure there and not do any damage or create waste, that is possible.

Q. Do you have an opinion as to whether or not you could produce double allowable and not create damage and cause waste?

A. I question whether it could. However, if it was necessary we would not object to giving it a try. I think it could be done for a reasonable time. If it proves to be unsatisfactory, we can apply for relief if it seems to be desirable to prevent waste.

Q. Which wells are producing 7 per cent water?

A. The north well, the Rose well.

Q. Is that water increasing currently?

A. I believe not, at least not very rapidly.

Q. That well probably couldn't be increased without unduly increasing water?

A. That is our feeling. Once it is increased it is pretty hard to get rid of.

Q. Do you have water information for the other wells?

A. Yes, I believe the Hamilton has 4 or 5 per cent.

Q. Doesn't it produce now as fast as it is practical to do so?

A. That is our feeling in the matter. That is the reason that we made this recommendation as to allowable. We could probably produce a little oil at higher rates. I don't know. My opinion is that is about the maximum rate.

Q. Have you any wells completed since November?

A. Yes, Texas well up to the northwest.

Q. In Section 27?

A. Yes, sir.

Q. And you state it is in 700 feet lower structure?

A. Almost 800.

Q. Does that indicate the pool will not go any farther north?

A. Yes.

CHAIRMAN SPURRIER: Anything further about that?

GOVERNOR MABRY: That won't go as far as that dry hole?

A. That is my interpretation of it.

Q. Is the Rose Eaves the highest well?

A. Yes, sir.

Q. Do you have any markers on the well?

A. On top of the Mississippian, substantially level where the Rose Eaves is still some 500 feet off the Devonian. At least that is our estimate.

MR. KELLOUGH: I would like to ask a question for clarification. I ask this question with reference to what an offset well is. Did you by your answer mean your understanding of an offset well to be a well which would be required in reasonable development

of the pool or protection against drainage from a well on a known unit?

A. I answer only from engineering answers.

Q. You did not take into consideration whether it was a paying well and other matters which may enter into it?

A. I considered only from an engineering angle.

Q. One further statement about step out one half mile under 80 acre pattern proposed, would the wells be one half mile apart?

A. Maybe in specific instances. I referred to that would be the case because he referred to the location one half mile west of Stella Rose. That was a specific question as I understood it.

Q. In that instance?

A. Yes, sir.

MR. ROSE: I would like to ask one question. In the Rose Eaves has production been encountered in any level except the Devonian?

A. No, sir.

MR. ROSE: Was a distillate encountered?

A. I don't recall of it. It hasn't come to my attention if it was.

CHAIRMAN SPURRIER: Do you agree with me that you do not have a stated porosity determined from core?

A. That is correct. We made an estimate of from 8 to 15 per cent.

CHAIRMAN SPURRIER: We do not have a stated permeability, is that correct?

A. By laboratory tests, no. We have the equivalent permeability from actual performance of the well.

CHAIRMAN SPURRIER: Do you believe because of indicated production that there is another type of porosity other than that you could measure. In other words, may there be crevassing?

A. You have got two, Mr. Spurrier, another porosity referred to as crevassing. In my opinion this is not a fractured reservoir.

CHAIRMAN SPURRIER: You spoke of vugs, was that from one of these wells or the Jones Ranch Field?

A. The Jones Ranch field.

CHAIRMAN SPURRIER: What is a vug, and what is its effect on permeability?

A. A literal definition, a vug is a cavity in a rock. It is used by geologists in this country merely as a solution cavity. They do extend for or cover a considerable area. It is open porosity, can be almost cavernous. In other cases the openings are quite small.

CHAIRMAN SPURRIER: Do you anticipate cutting cores?

A. We are looking forward to taking a complete core in Rose Eaves A-1.

MR. ROSE: The question of double allowable. It was stated, the reason it was not sought was not brought up in direct testimony It was introduced by Mr. McCormick of one of the engineer witnesses who testified whethere or not if these wells were produced at double allowable it would be likely to damage the wells. That witness answered that question. Shouldn't the other witness be given an opportunity to answer the question.

GOVERNOR MABRY: Is that being considered now?

MR. ROSE: We will wait.

GOVERNOR MABRY: Go ahead, Mr. Rose, if you want.

MR. ROSE: We have nothing more.

MR. McCORMICK: Anything from the companies who joined in this application?

MR. BUCKLES: My name is Cecil R. Buckles, lease attorney for the Sinclair Oil & Gas Company. I would like to get into the record the position of the Sinclair Oil and Gas Company. I have a copy of what I believe was previously designated as

Exhibit 10 introduced into evidence. But for the Sinclair Oil & Gas Company I have those colored in green and have added to it an extension to the west and south, the holdings of Sinclair, and we hope a part of the Knowles common source of supply. I would like permission to introduce this, if the Commission would like as Sinclair's Exhibit 1.

CHAIRMAN SPURRIER: It will be accepted.

MR. BUCKLES: From that exhibit you will notice at the present time the sections under discussion, and Sinclair has one tract in the Knowles Pool being the southeast of Section 2, 160 acres, and since there has been some discussion of royalty owners, we have royalty owners of six sections. I would like to have permission to submit the names of royalty owners under that as of August 2, 1949, last rental payment, People's Lease Security Company.

GOVERNOR MABRY: You want permission to submit this at another time?

MR. BUCKLES: Yes.

GOVERNOR MABRY: That will be permitted.

MR. BUCKLES: Sinclair is interested in this 80-acre spacing naturally for economic reasons. It costs money to build wells 12,500 to 13,000 feet as has been testified, and we think royalty owners are interested as well. After all their money is being spent. I just want to call to the attention of the Commission, if I may, to the facts as to the protection of correlative rights, the question of offset wells, and whether or not a well that has been completed as a paying producing well in considering the drilling of an offset well, as well as the case of the operator. In all states the criteria of offsets is pretty well determined--40,000,000 wells. You will be careful to drill 40-acre offsets which can be pretty

carefully determined to be paying. The trouble and cost of production as compared to 80 acre spacing is thought to go along with the protection of correlative rights. A lot of 40-acre tract offsets to one deep well where in reality any royalty that will bring or not bring should there be production from that well will not be sufficient to justify further drilling of offsets. Every royalty owner under that 40 participating in the 80 acre would be getting some benefit. Their correlative rights would be more greatly protected. If the Commission please, would it take judicial notice of the official magazine, the December issue of the Interstate Oil Packers Magazine, an article a portion of which applies to well spacing, which I would like to have placed in the record for such benefit as it may have. Panel discussion, page 42. (Read article.)

We think that article has considerable merit in the information for consideration in giving credence to testimony here with respect to 80-acre spacing. We have nothing from the experience as to physical facts, we have to rely on the evidence that has been presented and wells that have been drilled. As time goes along additional elements of any sort or method could be worked out easier than to go back. If it is found to be necessary, you can return to 40-acre spacing easier than to spend the additional money it would take to develop on the basis of 40 acres and find out that that wasn't necessary, which would result in increased costs, and therefore be an additional burden to correlative rights.

MR. MONZINGO: A. J. Monzingo, Magnolia Petroleum Company. I believe we have a lease on a small section of land, Twp. 17S, Section 1, Range 31E.

GOVERNOR MABRY: Speak a little louder.

MR. MONZINGO: Magnolia has Twp. 17S, Sec. 1, Range 31 E. We want to add our support for 80 acre spacing as it is purportedly a more economical basis for developing this pool. Other than that I don't think I have additional data. Magnolia joins in this application. I believe that is all.

MR. DANGLADE: F. J. Danglade, Southwest, New Mexico. I think as I am a royalty owner and an operator, I might state I am not in a position from a technical standpoint to join either side. But I would like to take a short time to discuss what I think might be the economical portion of the proposal. I don't think--maybe in this there might be a little more oil taken out in 40-acre spacing than 80-acre spacing perhaps. This would be economical certainly to the operator. Of course, it is up to the Commission to decide. Whether it is economical to develop the pool on 80-acre spacing or not is important, therefore, I am not against 80-acre spacing, but I do think the question of royalty holders is also a factor. When I signed the joinder in the application for 80-acre spacing, it never entered my mind that Amerada was not asking for double allowable, instead it was asking for 80-acre spacing with 40-acre allowable. I believe legitimately it is proper that that should be taken into consideration. It doesn't cut it in half, but it does reduce it to a great extend. If double allowable fails to meet conservation standards and hurts the wells, then perhaps the drainage theory fails. I submit that is not necessarily our position. In the second place, we must consider the people on the edge. A man with an 80-acre tract has a 40 which might produce, but because of the location set up by the 80-acre spacing, the well should be drilled on the 40 which is dry, therefore he is dealt out. By adjusting the locations, this could be handled without too much trouble. I think there should be a

clear understanding as to what constitutes offsetting to protect the rights of adjoining owners. If 80 acre spacing will drain any 80 surrounding it, they are entitled to get their share even though it is a half mile.

MR. CROCKER: J. H. Crocker, Mid Continent Petroleum Corporation. Our company has no acreage within the pool which is within this application. To that extent, we are an interloper in this proceeding. Our interest in general is only as lease owner and operator in the state. We feel in general with respect to the development in the state that in these areas where drilling is to the depth of 12 to 13,000 feet with the initial well costing probably $300,000.00 and other wells probably a quarter of a million dollars if the reservoir will lend itself to wide spacing that the Commission should indulge as wide as possible spacing because of the costs that are involved. I don't know the thinking from the engineering phases. Engineering thinking may differ if it be true that reservoir conditions are such that you can produce approximately as much oil from two wells on a quarter section as four. It is obviously apparent the operator has a half million whereas otherwise a million dollar investment, all simple arithmetic. Now this Commission has shown an equitable position we think in the matter when it gave 80-acre spacing in the Crossroads, in which the Santa Fe is interested. There was some reference to it. The Santa Fe went to an orthodox location. It drilled a dry hole. It came before the Commission for permission to drill on an unorthodox location. I think the Commission readily perceived the equity of their situation. It granted the exception. It is true that when they came, we appeared, we suggested that perhaps an adjusted allowable should be considered and given by the Commission. However, the quarter section tract was

charged with respect to the proration units by giving the Santa Fe its requested exception and by the same token made it the orthodox location for the northwest corner of the quarter section, which takes it a little farther away from the well that is now drilling. Whether it might retard development in the state if the Commission positively puts its foot down on 80-acre spacing, if engineers can show this Commission that you can effectively drain and prudently operate with two wells or three wells where otherwise you would have to drill four wells, we think royalty owners and the state and the operators all derive benefit from that policy. We concur with the Amerada on the basis of economic reasons.

MR. BORLAND: C. D. Borland, Gulf Oil Corporation. Although Gulf has no acreage within the area considered in this application for spacing, and no knowledge of the reservoir characteristics from drilling operations, we are interested in this case inasmuch as Gulf has acreage in the near vicinity which might ultimately be productive.

It is an established fact that wells drilled to the depth at which oil was encountered in the Knowles Pool cost a very substantial sum of money and therefore will necessarily require greater ultimate recoveries to pay out the investment.

In order to encourage the development of deep structures and thus establish reserves which would otherwise not be developed, it is necessary that an operator have some additional incentive to venture his capital in the drilling of these deep wells. Increasing the allowable for the deep wells is some incentive; however, unless the margin of ultimate profit to be expected from the high cost wells is economically attractive and somewhat comparable percentage-wise to the margin of profit to be anticipated from the shallower wells,

then the operator is hesitant to develop the deep seated structure. This is true because the drilling of a few dry holes could substantially or completely offset the profits from the productive wells.

In order to foster development and encourage the operator to risk the capital necessary for deep development, Gulf is of the opinion that the Commission should grant spacing orders wider than 40 acres in the deep reservoirs such as the Knowles Pool whenever reservoir conditions appear to justify this action.

MR. SETH: My name is Oliver Seth, representing the Stanolind Oil and Gas Company. I would like to read this letter into the record. "Oil Conservation Commission of New Mexico, Santa Fe, new Mexico. Gentlemen: This will have reference to Case No. 204, Order R-3, and to Order R-6 which granted Amerada Petroleum Corporation rehearing on their application for the establishment of 80-acre proration units in the Knowles Pool, Lea County.

We wish to respectfully point out, that even though we have no material interest in any leases which may produce from the Knowles Pool, we have keen interest in the outcome of the hearing. From rather wide experience obtained from a good many years of drilling for and producing crude oil, qualifies us, we believe, to make the following statements concerning the economics of drilling for and producing deep wells.

The Knowles Pool is producing from the Devonian formation at an approximate depth of 12,500 feet. Our records show that it costs approximately $294,000 to $300,000 to drill and equip a flowing well at comparable depths in the Permian Basin, and further that the overall lifting costs on such wells are very high over the producing life of the wells. An operator, at best, will do well to break even on such operation, and will in all probability lose money after deductions are made for

royalties, for State and Federal taxes, and for lifting costs. This then would not provide sufficient capital to enable an operator to invest in further exploration, with the result that many deep reserves may never be explored, and there would certainly be no incentive for deep-well exploration. We believe that economics is certainly pertinent to waste in that the leaving of oil in the ground, due to the fact that the cost of drilling and producing the same is economically prohibitive, is certainly waste.

We wish to respectfully call attention to the Commission's past policy, recognizing economics in considering Field Rules. We refer specifically to your findings published under Order 779, issued July 27, 1948, and having reference to 80-acre proration units in the Cross Roads Pool. We believe that in a reservoir with pay continuity one well will do as efficient a job of draining 80 acres as will two wells, and that the only practical difference in ultimate recovery lies in the time element. Under proration one well will recover essentially the same volume of oil, but will require twice the time to accomplish this as two wells. The Commission, therefore, is faced only with the time element, and not with the degree of ultimate recovery. We do, however, appreciate the position of the royalty owner. His economic picture may be such that he would prefer to obtain twice his present income for a shorter period of time. However, it is not reasonable to expect operators to take an overall ultimate loss under these conditions.

We, therefore, respectfully request that you give serious consideration to all factors involved when you act on the Case No. 204, as we feel that the outcome of this hearing is of extreme importance."

MR. KELLOUGH: I would like to have an opportunity to summarize.

MR. McCORMICK: I want to ask Mr. Millikan one question. Mr. Millikan, a very pertinent situation was brought out by Mr. Danglade. Suppose some operator or some lease owner has an 80-acre tract, and he drilled on the orthodox location according to the pattern and it proved to be dry, and he determined just as it occurred at Crossroads to drill on the other 40, would Amerada's position be that if he were allowed to drill on the other 40, having only the one 80, that he should only get half of an allowable?

MR. MILLIKAN: I would hesitate to say that would be our position. I think evidently not entitled to as much recovery as if the entire 80 were productive. Just a question of correlative rights, certainly consideration should be given. If circumstances justify half the amount, sure; if they justify three-fourths or whatever the evidence justified, I think the Commission, and in fact we would want the Commission to give it.

EXAMINATION OF MR. MILLIKAN BY MR. McCORMICK:

Q. Don't you think any operator would refuse to drill if he would only get half of an allowable at the cost of these wells?

A. No, I don't believe so. Not if they are going to be as productive as we hope Knowles will be. In other words, we have not at any time have we said we couldn't afford to drill more than one well, and we anticipate our recovery will produce more than enough on 40 acres to pay for that well. We contend, however, that the difference of recovery between one and two wells will by no means justify $270,000.00. We believe that if we are obligated to drill that on an 80-acre basis and develop it, we might use that money to develop some

other reservoir somewhere in the State of New Mexico.

Q. Getting back to the pattern, if you got a dry hole and believed you would get a producing well by going to the other 40, why should you be penalized by having already drilled a well, the same situation is probably true according to all of the engineering data, etc., in 80-acre spacing where the other 40 was productive and the unorthodox location not productive?

A. I don't see that it applies to all. There is a possibility it might apply to some of them.

Q. Now, maybe we should recognize those in order to establish the correlative rights?

A. I have no objection, if it means as I understand, if it is considered in its entirety or is reasonable. Maybe the pattern locations there should be so adjusted.

Q. In a location with the question of whether the mere fact that a person has a plot of ground big enough to drill 10 or 12 inch holes gives that man the full right to recover enough oil from that hole if he can to pay for that well as is the correlative opportunity to recover his share of the oil in the reservoir.

A. I have always taken the latter position, not the former.

Q. From your knowledge, that is true. It might be exactly the same in the spacing of the 80-acres, one of the 40's might not be productive and the other might be be productive. In the development of wells, you might find the same situation in all pools?

A. We can make a pretty reasonable estimate from the control of wells the probable limits of the economic production. I don't believe we have to have a dry hole to prove that. We have been fortunate enough to have sufficient information on structure, water, and so forth, to develop maybe without a dry hole, but unfortunately you can't always do that.

Q. Have you made an estimate of your per acre recovery in this pool?

A. No, I wouldn't call it an estimate.

Q. Do you have an opinion?

A. I think, well, in excess of 10,000 barrels per acre.

Q. It is your position that even though one well to a 40 would pay out that it is not economical to drill more than one well to 80 acres as it will drain oil from 80 acres?

A. That is certainly true. I see no reason, and I don't believe that we should take the position that merely because it will pay out that we should be obligated to drill more. There might be a producing well to one acre. Merely because they can pay for themselves--if it will pay out with one well to 40 acres, why should we be forced to drill one well to 20 acres. In other words, we think that reasonable development and recovery of oil should be done without undue expense.

MR. McCORMICK: No further questions.

(Witness excused.)

MR. KELLOUGH: I shall be brief. Since the question the engineer raised, I have one thought I wish to add. Mr. Millikan said it is not unreasonable to take the position in connection with correlative rights that an owner of an 80-acre tract which is entirely productive as a matter of right is entitled to a greater share of oil in the reservoir than an owner of 40 acres--an 80 half of which is non-productive. The illustration which was given was in the case where you know half of the 80-acre tract is non-productive. Then what do you do, certainly deny the right to drill an allowable well, have to be cut. The question of counterdrainage enters into the picture , not unreasonable to assume a situation where the tract underlying has more than half the amount, to some

extent it should be cut. The next problem seems to be what about exact information, maybe part is unknown, may be outside the pool. In those instances, Mr. Millikan believes that problem probably will not exist in many instances and is not the real answer to that. That man perhaps is recovering more oil than he is entitled to, that should be no reason to cause him--to prevent another from receiving more oil. It is a circumstance which might arise, but it is not a circumstance which is insurmountable. It has been met by other states. The same situation existed in Louisiana and Oklahoma. They have met the problem in one or two similar cases. If possible, readjust unit so that the owner may recover acres which is its proper proportion. That can be done if it arises. Does it not seem unreasonable that a man should get as much recovery as the man who owns a greater interest in the pool. You can point to no hard and fast rule. The matter can be solved by the Commission and has been solved by other Commissions, and by and large, has worked out very equitably to all persons.

Getting back to the evidence, I shall be brief. As to the evidence, I have in mind the first record. This first came to be heard November 22, 1949. No one appeared in opposition to the application. At that hearing geological and engineering information was given for Amerada. The geologist outlined, in his opinion, the probable productive limits of the pool, gave technical data on wells and formations. From the testimony all three of these wells are producing from a depth of below 12,500 feet. The proposed base spacing pattern locations of units were presented. All have been explained again here today. The geologist testified that it was producing from the Devonian, had a vugular and good vein porosity comparable to the Jones Ranch Pool. Engineer, Mr. Christie,

testified, in his opinion, the pool had an effective water drive, and based his opinion in part on the productivity. He said it indicated permeability productivity. Both engineer and the geologist testified that in their opinion one well would adequately drain an area of at least 80 acres. That record is in evidence of the first hearing. Mr. Millikan in this proceeding has expressed his opinion that one well would adequately drain at least 80 acres, and he has presented reasons for that opinion. He has further explained and presented information with reference to the Jones Ranch Pool, which is a comparable pool to the Knowles Pool, and is produced on 80-acre spacing and successfully. Data and details were brought out in cross examination. On that issue Mr. Fitting did not deny that one well would drain 80 acres. The substance of his testimony was that it would more effectively drain 40 acres than 80. He stated that it was a matter of degree. He stated that in some measure it was determined by the rate of production as well as spacing. At the first hearing, it was testified that the cost of the first well was $351,000.00. It was further testified that the estimated cost of future wells was $270,000.00.

Now, mention has been made by Mr. Millikan in the very recent discussion, he pointed out that merely because a well on every 40 acres can obtain sufficient production to pay for that well is no reason why that well should be drilled. Your legislature expressly stated the policy of this Commission on that point, and I don't want to read it as evidence. I do want to again call the Commission's attention to the Statute according to Sec. 13 (b), Chapter 168, 1949 law of New Mexico is as follows: (read to the Commission.) I would also like to call to the Commission's attention Section 10, Chapter 168, laws of 1949, provides that the Commission

is authorized to make orders (10) "To fix the spacing of wells." That is the law of New Mexico. When it appears that one well will drain an area of 80 acres, and there is nothing about the spacing pattern which destroys the correlative rights, fails to protect the correlative rights of parties then certainly an additional well at the cost of some $270,000.00 is, under your laws, it is waste. We think as a matter of law and under the evidence submitted in the first hearing and the evidence submitted here establishes the fact that one well will drain at least 80 acres. As a matter of law, under the statute, the Commission should grant the application for 80-acre proration units.

MR. McCORMICK: There has been nothing in the hearing as to acres, spacing--the point I am getting at is the disagreement right now. It is true, everyone knows in the oil and gas industry you develop leases according to covenants. The very reason for the existence of the oil conservation regulations is because to develop upon competitive efforts, implied covenants almost invariably result in waste. The reason for conservation and well spacing programs is to prevent waste.

MR. KELLOUGH: This Commission has been outstanding in conservation and prevention of waste both in what it has done and what it is continuing to do. It is our position that where an unnecessary well costs the sum of $270,000.00 that constitutes waste.

MR. McCORMICK: Does anybody require you to drill more wells?

MR. KELLOUGH: Under the implied covenant, you are required to drill as many wells as are reasonably prudent to drill. If a well results in a paying well, then the implied reasonable covenant, you have got to drill it. It may be wasteful drilling. That is the very reason we have well spacing

statutes. It is a situation which could only be controlled by a state regulatory body, it could not be controlled by the lessee. That type of waste has to be controlled by the state. Now, in that connection and looking at the matter not from what the Commission should do as a matter of law. The policy in keeping with the Commission's policy to prevent what we think fair, necessary and equitable, they ought to do that if it is true that one well will drain 80 acres. If the evidence indicates that is true. The only time that they can prevent waste of drilling unnecessary wells is in the early life of a pool. You can't wait until it is completed and find that it wasn't necessary to drill one to each 40 to the cost of a half of a million dollars or more in the Knowles Pool for every quarter section. You can always go back to 40 acres if it does develop that the testimony was not accurate and that one well to each 80 is not sufficient. It is true that there may be some pools that can survive the extra freight of a half million dollars unnecessarily, but there are going to be a lot of pools where there are deep wells not being drilled where the pay will not be sufficient. Considering the matter from another point of view along that same line. Every company large and small operates on a budget. They have so much money to spend, and whether large or small no individual can consider and do not consider $270,000.00 lightly. The companies must be ready to spend money on seismograph work and wildcat drilling if you look forward in deep pool development. I am talking about the period of development on the basis of 80-acre spacing, then they might be encouraged in their search of deep pools in New Mexico. But if they have to contemplate in addition to exploratory cost of drilling one deep well, which in their opinion will drain 80 acres, regulations making it necessary to drill many unnecessary wells and the possibility

of a dry hole or so and the tremendous cost, they will be slow to exploit deep pools in New Mexico. The are some of the broad aspects of this problem. It has been stated very sincerely, I believe that one well to 80 acres will adequately develop this pool. We firmly believe that if this pool has to be developed on a 40-acre basis, many millions of dollars will be spent in drilling unnecessary wells before that pool is finally drilled up. The question of double allowable in discussing our position has been explained by Mr. Millikan. His opinion is as an engineer that the present rate of production which is 184 barrels per well per day is adequate. I want to call the Commission's attention to that. Had it by chance been 5,000 feet instead of 12,500, there would have been 42 barrels per well per day from one well. Now 184, more than two wells in the Brunson Ellenburger. That is more per well than 99.44 per cent of the wells in Lea County under the present proration order that can be produced per well than any other pool in New Mexico unless four wells in the Crossroads wells, double approximately 500 hundred barrels. If I remember correctly. It is our position that if the Commission feels this should be double allowable, we have no quarrel with that. If the Commission wants to double, we would like to reserve the right if that should develop that the wells are being injured for a future hearing on the rate which they should be produced at. We ask the Commission that our application for this order be granted.

(Recess.)

MR. ROSE: It is unexpected when royalty owners, whom I represent, joined together to present evidence, feeling like to produce oil more cheaply, they be required to drill every 40 in the field covered by this application. I don't believe our legislature has gone so far as the opposing

operators claim in supporting the Oil Conservation Commission in making orders to enable the most oil recovery per dollar spent. No owner of property requires directly or even indirectly more than what is reasonably necessary to obtain his proportionate share of production. It looks to me as if the argument today is that these operators should get the most oil recovery per dollar spent if they can persuade the Commission to allow them to do that. Figures were put into the evidence as to the time it takes to pay off a well. I realize that things have to some extent be considered as to the time it takes to pay off, some demand for continued information, some continued explorations, etc., but just what a company will make on a quarter, how long is nowhere in the evidence, leave information for somebody else to figure out. Amerada drilled three expensive wells, and future wells will cost approximately a quarter of a million dollars. In the hearing of November 22, the testimony of Mr. Christie was that after drilling those wells, they found a better way of spacing, found that they preferred 80-acre spacing--better for whom? For a lot of people whom it will affect whether they have 80 or 40-acre spacing? For the State of New Mexico directly in Severance Tax? For the operators?

It has not been contradicted that one well will effectively drain 80 acres if given long enough. Amerada is a corporation with perpetual succession. Amerada should eventually receive all the benefits not being subject to human mortality. The royalty owners are going to have to use their royalty in one lifetime. A representative speaking for Sinclair has stated that the royalty owners in every instance would be benefited as well as the operators, might in some instances be better off with 80-acre spacing. Royalty owners with whom I have had the opportunity to talk relative to this do not agree.

They employed a qualified geologist to investigate and have taken the position that for royalty under Devonian production that they prefer that it be developed by 40-acre spacing pattern. The operator states that it can make more economical use of the money that would be required to drill wells on alternate 40 acres somewhere else. The people I represent don't know where else they would use that money. They want it used here. We assume we may at least argue it is the duty to offset. They want the amount used on their property. The operators give them no reason to assume that that money will be used elsewhere in New Mexico.

Mr. Christie testifies that this plan has been used elsewhere in New Mexico and is not willing to assume that this is a novel plan of spacing. It is backed by very little experience. It is new to New Mexico. Certainly, this being a new field on which less than a year of production history is available. The question hasn't arisen in the State of Texas in the Jones Ranch Field which has a production history of seven years. Since the map of the Jones Field is in evidence, it wasn't pointed out on the map that this map shows five dry holes in that field to eight producing wells. Another geologist and engineer produced by the royalty holders has testified to the danger of loss of wells in a water drive field. Now, we have one well out of three in the Knowles Field which is not producing its allowable, S. B. No. 1. It didn't produce its allowable in October or November. In the month of December with an allowable of 854 barrels, it produced approximately 600. In the month of January it was shot, and it still didn't produce its allowable. We don't know whether it will be an effective well, the Stella Bennett

Rose well, or other wells that may be drilled in the future int the Knowles Pool.

Now, this equal recovery for all owners which has occupied a lot of the testimony today. It appears to me it assumes that conditions are uniform everywhere under the Knowles Pool. Obviously, is it not a geological fact that conditions anywhere not being uniform, I don't know how you can actually protect all correlative rights. Mr. Crocker mentioned the fact of Santa Fe's getting permission to drill in the Crossroads Pool the northeast of the southwest quarter of Section 27. I take it they required an appearance before the Commission in order to get the exception. Under only the most compelling reasons is an exception granted, and it occurs to us that this pool is not defined to the north and east. It is quite probable that we might have the same problem as Santa Fe, and we would be exercising our rights to come before the Commission for the granting of an exception, which would necessitate the spending of large sums of money in obtaining the exception.

This application covers a great space. It has been sought to be expanded to include twelve sections. It is sought on information shown from the drilling of only three wells in approximately the center of twelve sections.

CHAIRMAN SPURRIER: The record will show six sections.

MR. ROSE: There is a request to include any acreage in the common source of supply. Not knowing how far that this would go in an effort to take it very far from the three wells, which are the only wells on which there is any history on this. This appears to me at this time to be very premature. We don't know what if we came back and found it advisable to drill a well on alternate 40 acres, my clients were hoping that that would be granted and not with any assurance.

CHAIRMAN SPURRIER: Does anyone have anything further to say in this case.? At the risk of prolonging this three minutes longer, I would like to make a few statements myself. In considering a case of this kind, the Commission is faced with upholding the statute and Commission rules and Commission policy over some fifteen years. We try to decide these cases on the evidence presented. That is the only way we can decide them. We are not sitting here to take a poll. In this case we will consider all the evidence that has been presented. It is my thought in view of the rather inconclusive evidence. I am speaking generally, that the Commission might better get some more evidence, and that we might have to get it after more wells have been drilled. We have no permeability figures, no porosity figures except those indicated by the P.I.'s of the wells. As just one member of the Commission, I think I would recommend to the Commission that the case be continued until we can gather more conclusive evidence supported by core analyses and any other information that may be brought to light as more wells are drilled. What I have said reflects on no one, is not intended to, but I hope you can realize the Commission's position in trying to decide this case.

Mr. Graham, will you read the notice of publication for Case 214.

(Mr. Graham reads notice of publication for Case 214.)

FRANK BARNES, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McCORMICK:

Q. Your name is Frank Barnes?

A. That is correct.

Q. Do you hold an official position with the New Mexico Oil Conservation Commission?

A. Geologist with the New Mexico Oil Conservation Commission.

Q. In your work with the Commission have you become familiar with the area in the San Juan County?

A. I am a member of the Northwestern Nomenclature Committee.

Q. According to the committee's report, which was filed, there was a new discovery well here, Herbert Herff No. 1 Federal, NE NE Sec. 4, Twp. 27N, Range 8W, is that correct?

A. Yes, sir.

Q. Are you familiar with that well?

A. Yes, sir, I am.

Q. Is it producing oil or gas?

A. So far it has been producing gas.

Q. From what?

A. Mesaverde formation.

Q. Your committee has recommended that pool, a gas pool, be designated Largo Pool of Mesaverde to include Twp. 27N, Range 8W, Section 3 and 4, all. Twp. 28N, Range 8W, Section 33 and 34, all?

A. Yes, sir.

Q. In your opinion, would the boundaries of the pool as recommended by the committee be reasonable on the basis of present information?

A. Yes, sir, those boundaries would be consistent with the policy of the Oil Commission towards naming of such pools in the past.

Q. Would that be a reasonable classification in your opinion?

A. Yes, sir.

CHAIRMAN SPURRIER: Any other questions?

Q. You recommend that it be designated Largo Gas Pool?

A. Yes, I do.

(Mr. Graham reads notice of publication of Case 215.)

E. E. KINNEY, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McCORMICK:

Q. Your name id Ed Kinney?

A. Yes, sir.

Q. Do you hold an official position with the State of New Mexico?

A. Petroleum engineer with the New Mexico Bureau of Mines.

Q. Are you a member of the Southeastern Nomenclature Committee?

A. Yes, sir.

Q. Are you familiar with the recommendations, the several recommendations made by that committee as set forth in this Case 215?

A. Yes, sir.

Q. Without questioning you about each separate pool, I will ask if all of those pools are oil pools?

A. On the basis of present information and procedure they are considered to be oil pools.

Q. In your opinion, would the classification and definition of those pools as recommended by the Nomenclature Committee be reasonable?

A. Yes, sir.

Q. You recommend to the Commission that the pools on Case 215 being twelve separate pools will be defined, named, and classified as oil pools with the boundaries as indicated?

A. Yes, sir.

Q. Any questions by anybody else?

CHAIRMAN SPURRIER: Any further questions or comments?

(Mr. Graham read notice of publication for Case 216.)

MR. LAMB: I am Raymond Lamb, representing the Wilson Oil Company in Case 216. This is a matter of permission for the Wilson Oil Company to drill an unorthodox location on its

State B 6807 lease located in the Sw/4 NW/4 of Section 13 Township 21 South, Range 34 East, N.M.P.M., in the Wilson Pool of Lea County, to be located 2310 feet south of the north line and 1270 feet east of the west line of said Section 13. From engineering and geological information, we think we can recover a considerable amount by drilling this well which would otherwise be lost. I think the application gives most of the information in detail. I am here to testify and to answer questions as a witness if you so desire.

CHAIRMAN SPURRIER: Would be sworn?

(Mr. Lamb sworn.)

CHAIRMAN SPURRIER: Mr. Lamb, you intend to testify, I take it you are qualified.

MR. LAMB: I have appeared at various times. I will give my qualifications. I am a registered engineer in the State of New Mexico.

Q. You have appeared as a geologist and engineer both?

A. Yes, sir.

CHAIRMAN SPURRIER: Your qualifications will be accepted.

MR. LAMB: This well will be drilled in the Wilson pay zone and completed along with other wells. The operator to the north has his property line 990 feet from the proposed location. The offset operator is Darrel Smith and Phillips Petroleum Company. They have been given notice, and no answer has been received from them as to their opinion in the case. As I stated, we think we would recover a lot of oil which would not otherwise be recovered. Our No. 11 was drilled in the center of this tract as a dry hole, and that is one of the reasons for the proposed location east of the west line of the 40-acre unit.

MR. McCORMICK: How many top allowable wells do you have, seven?

EXAMINATION BY MR. MCCORMICK:

A. Yes, sir.

Q. How old, 1942?

A. Fourteen completed in 1944.

Q. You have drilled half of the 40, and it will not produce?

A. That is No. 11. It is probably non-productive.

Q. Are you asking for top allowable?

A. In our application we requested full top allowable for that 40-acre unit.

Q. You think it is proper in view of the dry hole?

A. We take that on a 40-acre basis. We will have two wells to pay for on that unit instead of one. We already have a dry hole. We have to get a producer to pay for both out of one well.

CHAIRMAN SPURRIER: Is this well one of the so-called "five-spot" wells which the Commission has considered?

A. It is not unitized with any other 40-acre unit. It has an allowable of its own.

Q. Rule 104 requires ten-day written notice be given by registered mail to all adjoining lessees of the proposed application. That has not been complied with to our knowledge?

A. Mr. McCormick, I did not know it was the duty of the operator to notify an offset operator as I understand Rule 104.

Q. Did you obtain a waiver or consent from Mr. Darrel Smith and Phillips Petroleum Company?

A. I notified Darrel Smith, and the fact that Phillips Petroleum Company is not here and they have been notified would lead me to believe they have no objection to the case.

Q. You will be willing to accept the burden--according to the rules, I do not understand it that way.

CHAIRMAN SPURRIER: Will you read that rule?

(Rule 104 read by Mr. McCormick.)

MR. LAMB: Would you want me to obtain one and supply it to the Commission at another time?

MR. McCORMICK: I am just wondering in view of avoiding any difficulty whatever from two adjoining operators--we had an unfortunate experience about that a month or two ago.

CHAIRMAN SPURRIER: Speaking of that for the benefit of all, that was the first case of its kind to come before the Commission since the new rules and regulations had been in effect. We, the Commission, had been negligent in complying with this regulation in regard to offset operators.

MR. McCORMICK: I might say this case has been advertised under the proper time limit, but there was an unfortunate mistake in the advertisement. So as a matter of legality, Mr. Lamb, it might be better to postpone this if you are not in a hurry?

MR. LAMB: It will probably be a month or six weeks before we are ready to move on it.

MR. McCORMICK: I will recommend that we start over on this one.

CHAIRMAN SPURRIER: I was going to ask the Commission's counsel if probably for legal reasons it would be better to set the case for the next hearing if there is not any hurry. And in the absence of any objection, Mr. Lamb's testimony as he presented it might stand for the record.

MR. McCORMICK: I recommend that.

CHAIRMAN SPURRIER: I will recommend to the Commission to readvertize the case, and that your testimony stand. Any further

questions here from anyone?

MR. LAMB: One thing, Mr. McCormick, is it the burden of the operator to obtain waivers?

MR. McCORMICK: It is the duty of the Commission to send out notices. My suggestion is that you proceed under the state of the record now, readvertise, we will notify the offset operators.

CHAIRMAN SPURRIER: If there is nothing further, the cases and all will be taken under consideration and the setting of the allowable. The meeting will be adjourned.

STATE OF NEW MEXICO:
: SS
COUNTY OF BERNALILLO:

I HEREBY CERTIFY, that the foregoing is a true and correct transcript of the proceedings had at the time and place first above written to the best of my knowledge, skill, and ability.

DATED this 22d day of April, 1950, at Albuquerque, New Mexico.

Margaret Powell
Reporter