

BEFORE THE
OIL CONSERVATION COMMISSION
August 19, 1960
Santa Fe, New Mexico

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IN THE MATTER OF:)
)

Application of The Pure Oil Company for an order)
promulgating special rules and regulations govern-) Case
ing the drilling, spacing and production of wells) No. 1634
in the South Vacuum-Devonian Pool, Lea County,)
New Mexico, including the establishment of 80-acre)
proration units for wells in said pool.)
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BEFORE:

Honorable John Burroughs
Mr. A. L. Porter
Mr. Murray Morgan

TRANSCRIPT OF HEARING

MR. PORTER: Hearing come to order. Case to be considered this morning is Case 1634.

MR. PAYNE: 1634, application of Pure Oil for an order promulgating special rules and regulations governing the South Vacuum-Devonian Pool in Lea County, New Mexico.

MR. BRATTON: Howard Bratton, Roswell, New Mexico, appearing on behalf of Pure Oil.

MR. NEAL: Melvin Neal, Hobson, appearing on behalf of A. J. Reeves, Z. B. Reeves, and co-owners.

MR. ANDERSON: R. M. Anderson, Sinclair Oil and Gas.

MR. SETH: Oliver Seth, Shell Oil.

MR. BRATTON: I would like to state, first of all,

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briefly, the history of this matter and what we are requesting today. I believe this is actually the fourth hearing in connection with this pool. I think there have been, actually, two previous spacing hearings, one immediately after the pool was discovered, as best my memory serves me (I did not participate in that one), one 80-acre spacing application made approximately a year ago, a little over a year. That hearing was held in April, 1959, I believe. At that time Pure Oil asked for temporary 80-acre spacing and proration units in the pool and the right to shut in one well and take its allowable to an adjacent well in order to conduct interference tests. Commission denied that; a re-application for hearing was granted limited to the request as to whether a well should be shut in and allowable transferred for a year in order to conduct an interference test. The Commission granted that privilege, and that has been done during the past year. We now have made application for permanent 80-acre spacing and proration units in this pool on the basis of the developments to date, and the basis of the evidence obtained.

Our proposal is specifically -- it will be detailed more by our engineering witness -- however, generally, I think I can advise the Commission that our basic proposal is for 80-acre spacing and prorationing units. We would prefer, and we would request flexible 80-acre spacing units in the pool.

Secondly, if the Commission would feel better satisfied with



a fixed pattern we would suggest a pattern which might be adopted. The pool is, as shown, partly embraced in the South Vacuum unit and partly outside. Insofar as is material, all of the royalty in the entire pool is owned by the State of New Mexico, and all of the royalty in the South Vacuum unit is owned by the State of New Mexico except for two 40-acre tracts in the east half of the south-east quarter of Section 26. Those are the tracts owned by the Reeves Brothers and other royalty owners. We would propose as to those two tracts that they be excepted from the 80-acre spacing and proration units and that they be granted 40-acre allowables. In other words, the pool rules as to the rest of the pool would not apply to them.

This makes no difference to the State of New Mexico because it gets the same royalty off those tracts as it does off the others. This is just extra royalty coming out of the pocket of the working interest owners, but as will be developed, due to the development pattern that has been pursued, and in fairness to the Reeves Brothers, we would propose those exceptions. We think they would also ask their adjoining acreage immediately to the east be excepted, but we cannot, because it is not in the pool. We have no objection; just no interest.

Now, as I say, this matter has been before the Commission in full one time. I would say, actually, that hearing a year ago was, to my way of thinking, a rather major hearing. I would just detail



very, very briefly our theory of this case, because I feel it is truly a significant case. I know that to the Commission these spacing cases become old hat, and in each one it is impressed that it is a serious and important case. I am not exaggerating when I say I think this is a significant case, being watched by the entire oil industry.

We have here, and I believe we will prove, a case of excellent reservoir that all the engineering testimony that can be developed from any source will indicate can efficiently be drained on an 80-acre spacing pattern. This is not an economic distress application. We will show the Commission that on 40-acres some profit can be made. Of course, we will also show that a larger profit can be made on 80 acres, so we do not claim this is an economic distress application, but it certainly is, we feel, a very significant case as to whether this Commission is going to lay aside the economic distress necessity in a case where it is proven that one well will drain 80 acres.

We have two witnesses, and I ask that they be sworn.

(Witnesses sworn.)

GEORGE FISH

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, occupation, and address?



A I am George Fish; live in Houston, Texas. I am employed by the Pure Oil Company as division development geologist for the Southern Producing Division which has jurisdiction over the Permian Basin of West Texas and southeastern New Mexico.

Q You have been familiar with the development of the South Vacuum Pool?

A Yes, I have.

Q You have testified previously before this Commission as an expert witness in connection with this pool?

A Yes.

MR. BRATTON: Are the witness's qualifications acceptable?

MR. PORTER: They are.

Q (By Mr. Bratton) Will you refer to your Exhibit No. 1, which is a structure map of the pool, and explain what it shows with relation to the pool?

A Our Exhibit No. 1 is a structure map contoured on the top of the Devonian formation. The various color symbols I will explain. The green outline is the present South Vacuum Pool limit as defined by the Commission; the yellow outline is the South Vacuum unit. The various wells are color coded as explained in the legend down in the lower right hand portion of the map.

Briefly, this structure map shows a northwest-southeast trending anticline which is limited on the northeast flank by a major fault. We feel that the structure is very similar to the interpre-



tation presented in earlier hearings, and I will just briefly go over the changes that have occurred since the last hearing.

Since the last hearing there have been nine wells drilled in the South Vacuum Pool, seven of those producers; two were dry holes. There are now a total of 13 producers in the South Vacuum Pool. One former Devonian well, which was designated as being in the South Vacuum Pool, the Sinclair 401 No. 2, located in Section 21, Township 18 South, Range 35 East, has been plugged back and is now a Wolfcamp producer. My map indicates an abandoned Devonian producer, and I learned of the recompletion in the Wolfcamp only yesterday, so my map is not quite up-to-date in that respect.

The producing wells that were drilled in the South Vacuum Pool essentially confirmed our previous interpretation. The two dry holes caused some changes in the productive limit of the field. We have indicated by a dashed red line the oil-water contact, which is at minus 7880. The previous map, or interpretation, showed steep dip or possible faulting on the northeast flank of the structure. With the drilling of the Reeves Brothers No. 326, located in the southwest quarter of Section 26, we definitely know that there is a fault present there. That well encountered a reverse fault in the upper Mississippian line. The well was taken on down to the Devonian; the Devonian was encountered below the known oil-water contact, and we attempted there to make a completion in the Wolfcamp zone. However, that was unsuccessful, and at present I believe the



well is carried as being temporarily abandoned.

The other dry hole was the Pure State "I" No. 136, located in the southwest quarter, southwest quarter Section 36, 18 South, 35 East. That well, although it encountered the Devonian above the known oil-water contact, resulted in a dry hole. This can be explained by the occurrence of a relatively dense interval in the upper Devonian. This interval varies from 90 feet to about 146 feet. In this well we had 68 feet of Devonian above the water. However, there was insufficient porosity and permeability there to make a commercial completion.

MR. PORTER: Will you identify that well by number, please?

A Yes, sir. That is the Pure State "I", 136, and is located in the extreme southwest corner of Section 36.

Perhaps we can illustrate this problem of the dense zone a little bit better on our Exhibit No. 2.

Q (By Mr. Bratton) Before you leave Exhibit No. 1, what are the depths of these Devonian wells now?

A The straight depths, sir?

Q Yes, the total depth.

A Most of the wells were drilled to approximately 11,750 feet. Some wells were taken deeper, such as the Reeves Brothers 326, where it was necessary to go deeper to encounter the Devonian.

Q Your structure is pretty well defined except to the southwest flank; you have good control in most every direction,



don't you?

A Yes, that is true. On the southwest flank we do not have a well-established dip here. This dip was more or less projected from the formation dip which occurred in the northern and middle part of the South Devonian.

Q But your pool is relatively well defined in other areas?

A I feel that it is.

Q Therefore, it is not going to be a large pool, or it is not a large pool?

A I am afraid not. It is much smaller than we had hoped for.

Q Now, your exhibit shows all of the royalty in the pool to be owned by the State of New Mexico except for the two Reeves' wells in the southwest quarter of Section 26; is that correct?

A I would say all of the productive royalty. There are some others.

Q There is one 80-acre tract on the west end of the pool?

A It is a well below the oil-water contact, and it won't be productive.

Q All right, sir. Go to your Exhibit No. 2.

A Exhibit 2 is a northwest to southeast cross section which begins in the Sinclair 401 No. 2 well located in Section 21, and traverses the entire length of the pool, terminating in the Ralph Lowe No. 1 Ohio State in Section 1, Township 19 South, Range 35



East. This cross section was constructed using the neutron and sonic portion of the logs run on these various wells with the exception of the Ralph Lowe well where a neutron or sonic curve was not available. The neutron or sonic curve is commonly used in the industry to log the porosity in the well bore, and I have attempted to show by these curves the occurrence of the dense zone in the upper Devonian and the occurrence of a more porous zone immediately underlying that. The curve which pertains to the various wells is located on the right of the symbol of the straight line which indicates the position of the well. If you will direct your attention to the sonic curve to the right of the well symbol for the Pure 136 State I, you will notice that there is very little porosity occurring in that well until we get down to the extreme bottom of the well. Now, that fact is confirmed also by cores and drillstem testing. We cored the entire Devonian interval in this well. We have approximately 107 feet of dense interval in the upper Devonian here, with scattered dolomite porous streaks occurring haphazardly over that section. This ranged in thickness from a half a foot to three feet.

We tested this section with two drillstem tests, the first one recovering one-half gallon of oil and 25 feet of highly oil-cut mud. The second drillstem test recovered 92 feet of mud. The third drillstem test was taken after we topped the main dolomite porous zone and we recovered 4650 feet of salt water. This main



porous zone where we recovered the water in the 136 State I is the interval that is productive in the other wells, with the exception of the Sinclair 405 No. 1 which is located in the northeast quarter of the northwest quarter of section 27, 18 South, 35 East. This well is completed from one of the dolomite stringers which occurs in the upper, normally dense, interval.

The other wells in the field, and you can follow this main zone across the entire length of the field on either the neutron or the sonic curve, on the neutron curve you get a low neutron response, and on the sonic curve you get a low interval transit time. In both cases it causes the curve to deflect toward the well symbol, so that, beginning on the southeastern portion of the field you can see that the main porous zone occurs over the entire length of the pool, and we believe that establishes continuity of the reservoir.

I might add that this main porous zone is dolomite; it is vuggy, fractured; it has, in most places, very good porosity and permeability.

Q Mr. Fish, as a result of your examination of this pool, are you satisfied as to the continuity of the Devonian structure throughout the pool? Are you satisfied there is continuity?

A Yes, sir; there is continuity in the reservoir.

Q Are you satisfied that from a geological standpoint, from a standpoint of continuity, that wells drilled on 80 acres can



efficiently drain this reservoir?

A Yes, sir. With the permeability that has been exhibited by these wells, geologically speaking I think that one well will efficiently drain 80 acres.

Q It will drain at least 80 acres?

A At least 80 acres.

Q Is there anything further which you wish to add with reference to your exhibits, Mr. Fish?

A I might add that there is, of the 13 producers in the field, all of them are top allowable with the exception of two wells. Those two wells are the Sinclair well I pointed out previously, producing from one of the thin porous zones in the upper portion of the Devonian; the other well is the Reeves Brothers No. 426, which is located in the northeast quarter of the southwest quarter of Section 26. This well encountered the main porous dolomite section of the Devonian. However, it was not as well developed as in the previous wells, or the other wells in the field. We were able to make a completion there with acid stimulation. Normally these wells are productive after a 500-gallon mud-acid washing. That well we had to use 1500 gallons of regular acid in addition to the gallons of mud-acid. From the productivity of that well is also indicated that the main porous zone is not as well developed as in the other portions of the field.

Q Does this change your conclusion that one well will drain



in excess of 80 acres in this pool?

A No, sir, it does not. We will develop in other testimony in relation to the pressures that this well had suffered a pressure drop in this area at the time of completion. The main porous zone here can be correlated very well with the same zone in other wells. There is no question about the correlation there. It is just the fact that it is not quite as well developed as the average well.

Q Did you prepare Exhibits Nos. 1 and 2?

A Yes, I did.

Q Is there anything further which you care to state?

A I believe that concludes this portion of the testimony.

MR. BRATTON: I believe that is all from this witness. We will offer the Exhibits 1 and 2.

MR. PORTER: Any objection to the admission of these exhibits? They will be admitted to the record.

Anyone have any questions of Mr. Fish?

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Fish, I don't believe you gave the depth of the discovery well in the pool.

A No, sir; I didn't. I have the intervals that it is perforated. I will have to check a log.

Q Do you know whether it is in the 11,000 to 12,000 range?

A Yes, sir; it is in that range.



Q Do you have the top of the perforations?

A I have the subsea top. I don't have the straight depth top. I can get them off the log. It is between 11,700 and 11,800 in depth.

Q So the per well allowable in this pool would be 220 barrels a day on 80 acres?

A I assume that is correct, if you are multiplying with the 33 unit allowable.

Q What is the drive mechanism on this pool?

A Water-drive.

Q Do you feel that production of 220 barrels per day per well, that there would be any reasonable probability that would damage the reservoir?

A No, sir. I think it would not, and further, I feel that the pool as a whole will be depleted more evenly on 80-acre spacing rather than 40-acre spacing where the total field withdrawals would be greater.

Q Now, what portion of this pool is in the South Vacuum Unit?

A This portion outlined by the yellow outline.

Q And I take it the Pure Oil is the operator of the unit?

A Pure is the operator of the South Vacuum Unit.

Q And the two wells in which the Reeves Brothers have the royalty unit are in the South Vacuum Unit?



A Yes, sir; the working interest is in the South Vacuum Unit.

BY MR. NEAL:

Q The Reeves' royalty is not dedicated to the unit; is that correct?

A I believe that is correct.

Q Obviously it has been developed on the 40-acre basis?

A Yes, sir. Since we were operating under statewide rules and were obligated to protect our royalty owners from drainage in this area the Reeves Brothers' tract was developed on 40-acres.

Q As I understand it you are willing the Reeves Brothers' tract be left on a 40-acre basis?

A That is part of our proposal.

Q With the allowable it now has?

A Yes, sir.

Q In other words, there would be no reduction in the allowable because of the fact that each well was on 40 acres in the field?

A That is true.

MR..PAYNE: Mr. Bratton, do you feel the unit operator is able to waive the protection of correlative rights, so to speak, of the other operators in a unit?

MR. BRATTON: Mr. Payne, I rather doubt the unit operator could do that without their consent. I believe this matter has been proposed to all the unit operators and they are in agreement

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with the proposal that the two Reeves' tracts be left on 40 acres with a 40-acre proportional factor.

MR. PAYNE: The thing that is bothering me, Mr. Bratton, if the Commission saw fit to enter an 80-acre order for the pool as a whole, with the exception of these two 40-acre tracts, whether such order might be subject to attack at a later date by someone who said he hadn't waived protection of his correlative rights and he felt 40-acre ought to get only half of an 80-acre allowable?

MR. BRATTON: Certainly that is a question, Mr. Payne. The Commission has to protect correlative rights. As I pointed out to the royalty owner, there is no problem. The State is getting the same royalty off the Reeves tract or any tract in this pool. Any extra allowable that goes to those wells comes out of the pocket of the working interest owners directly, the South Vacuum Unit owners. This has been presented to all of the unit owners and, I believe if the Commission would feel better we could certainly get letters from each one of the unit operators that they are agreeable to this, each one of the unit owners. I think almost all of them are here today, and possibly we could get it verbally.

MR. MORGAN: While we are considering, consider the northwest southwest of Section 26, which is State acreage, which is immediately offset by Reeves 326; this acreage is offset by this, this well offsets that. Is it under your 80-acre spacing pattern there would be no well here; this would be on State acreage and this

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well would presumably withdraw that from this 40 here, and this well here would draw from it. How do you account for that?

MR. BRATTON: Because the State of New Mexico is going to get the same royalty whether all of the oil produced from this well or any well, whether it is the Reeves well or any other well, the State of New Mexico is going to get the same royalty.

MR. MORGAN: What portion of the royalty is the State going to get from 326?

MR. BRATTON: It will get the same proportion it would from a well drilled on the 40 acres as to which the Commissioner is concerned.

MR. NEAL: By reason of the unit agreement they have to pay royalty on production from the Reeves acreage just like it was on the State.

MR. MORGAN: This 80-acre pattern, how would you take care of this acreage up here? It is northeast of the fault, I understand that. It might be productive acreage. Do you count that as non-productive acreage?

MR. BRATTON: I believe it is east of the fault, and it would not be in the pool, but under any circumstances it is State acreage so the State would get its 1/8 royalty.

MR. PAYNE: As I understand it, Pure Oil is actually paying double royalty on these two 40-acre tracts?

MR. BRATTON: That is correct. This costs the State not



one cent. It costs the working owners in the unit some extra cost. Have I satisfied the Commissioner?

MR. MORGAN: I understand the answer.

MR. NEAL: It is not ascertained, of course, as I understand Mr. Bratton's statement, that it would be uneconomical from the standpoint of making a profit to drill on a 40-acre basis.

MR. PORTER: Does anyone have any further questions of Mr. Fish?

BY MR. PAYNE

Q Your application is based on the premise to develop this pool on the 40-acre pattern would cause the drilling of unnecessary wells?

A That is true.

MR. PORTER: If there are no further questions the witness may be excused.

JACK DUREE

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, by whom you are employed and in what capacity?

A Jack Duree, employed by Pure Oil Company in Houston, Texas, and the division petroleum engineer for the Southern Division



of Pure Oil Company, which encompasses our operations in New Mexico.

Q Have you been familiar with the development of the South Vacuum Pool?

A I have.

Q And have you testified previously before this Commission as an expert witness in connection with this pool?

A I have.

MR. PORTER: His qualifications are acceptable.

Q (By Mr. Bratton) Mr. Duree, you testified in a previous hearing in connection with this matter, and at that time presented certain engineering data?

A I did.

Q You testified with respect to the application of Pure Oil to conduct an interference test and gain additional data?

A I did.

Q Have you conducted that interference test?

A We have.

Q Refer to your Exhibit No. 3, please.

A Yes, sir.

Q Refer to your Exhibit No. 3, please, and explain what it is.

A It is entitled "Reservoir Data, South Vacuum-Devonian Pool." This is the same information that was presented previously.

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It lists physical properties of the reservoir rock, the lithology, the structural features of the reservoir and characteristics of the reservoir fluids. There is no change in this data. At the time it was presented previously it was based on core analyses from three wells in the unit, these wells being the 135, 235 and 335. We do have one additional core since that time on the 127. It does not change these figures. It was an area of relatively thin pay, but the weighted average is the same. The lithology, of course, is not changed. Structural features, as Mr. Fish has pointed out, have not changed appreciably. The characteristics of the reservoir fluid are the same.

Q Your permeability average is shown as 226 millidarcies?

A That is correct.

Q In your opinion is that more than excellent permeability?

A That is excellent permeability, particularly for limestone type of reservoir.

Q Your producing mechanism?

A Our producing mechanism is a water drive. I think that will be borne out better when we get into bottomhole pressure determinations that have been made.

Q Your oil has a low viscosity?

A Low viscosity and extremely low solution gas-oil ratio.

Q So that the physical properties of the rock here are excellent to support wide drainage?



A That's correct.

Q Is there anything further in connection with the physical properties which you care to bring out?

A No, I don't believe I have anything further. In the earlier presentation of this particular exhibit we listed some bottomhole pressures which we have on the other exhibits, and we did have reservoir temperature which is 164°.

Q Referring to your Exhibits Nos. 4 and 5; I believe 4 is a graphic production history and 5 is a tabular production history, showing the same information as is shown on Exhibit No. 4?

A That is correct.

Q Refer to Exhibit 4, then.

A Exhibit 4 is a graphic production history of the South Vacuum-Devonian Pool on which is plotted the number of wells, cumulative oil production, daily water production, daily oil production and bottomhole pressures through May of 1960.

There is nothing here other than the reflection of a very good pool in the comparatively early stages of depletion. The only thing I would point to that is of particular significance is the fact that we have, in the early days of the pool, a drawdown in bottomhole pressure. At the time it was discovered it was expected it would be a water-drive. To establish the influx of water into the reservoir a low pressure point had to be established. This was established by removing oil. After we had established sufficient



difference between that and the water to sustain the necessary pressure drop that the flow of water causes, we established the flow of water and, if you will note, since the early part of 1959 there has been very little drop in the overall pressure, which indicates that the water is moving into the reservoir replacing the major part of the withdrawals represented by production.

Q Your Exhibit No. 5 is just a tabular compilation of the same information reflected on Exhibit 4?

A That is correct.

Q Turn then to Exhibit No. 6.

A Exhibit No. 6 is a tabulation of the bottomhole pressures that have been made in the field for each well. Also tabulated is a cumulative production from each well at the time the bottomhole pressure determination was made. This information, of course, was the source information from which the bottomhole pressure curve on the previous exhibit was prepared.

Q Is there anything further which you care to state with regard to those pressures?

A Nothing further. I think perhaps later we will refer to it from the standpoint, if anyone is curious as to production, as to the date of the pressure determination, it is reflected on this exhibit.

Q Refer to your Exhibit No. 7 and explain that Exhibit, Mr. Duree?



A Exhibit No. 7 depicts several pieces of information. It reflects the bottomhole pressures of each well upon its initial completion in the field. It also reflects the average bottomhole pressure for each pressure determination made on the field basis. In addition, it also reflects the bottomhole pressure of the one well that was shut in for interference test purposes, and its immediate offset, which took double allowable during the period of the interference test.

Q Mr. Duree, will you show the Commission on the map those two wells before you proceed further?

A The well that was shut in was the South Vacuum Unit well No. 235, located in the northeast, southwest Section 35. Its allowable was transferred to South Vacuum well 135, a diagonal offset. During this period well 135 produced double normal allowable.

Q And that was for a period from August, 1959 until August of 1960?

A That is correct, for a one-year period.

MR. MORGAN: Did that change the oil-water contact in that vicinity in that time?

A There has been a general rise of the contact in the entire field. We had no evidence of this well being adversely affected, and I have another exhibit which reflects tests on that particular well.

Q (By Mr. Bratton) Now, if you will refer back to your



bottomhole pressure survey and continue.

A On Exhibit No. 7, which is a graphic plot of bottomhole pressures, the yellow line follows the average bottomhole pressure. Of necessity this curved portion on the extreme left end of the curve is an extrapolation because we only had one well in there at the start. At a later date when we had more wells, more pressures considered in the average, you will notice the points on the yellow line, there is a small number at each point which states the number of wells on which pressures were taken for this purpose. If you will also notice the individual pressure points that are plotted, colored blue, that gives you the first pressure taken on each well subsequently drilled in the field. If you will note, the South Vacuum 135, upon completion, had an initial reservoir pressure by bomb determination of 4836. The next well, Sinclair 405 No. 1, came in pressure 4759; South Vacuum Unit 235, the well shut in, had an initial pressure 4777. The Mobil State No. 1 had a pressure of 4810. I would like to point this one out on the map, if I might. This 4810 is some 28 pounds lower than the pressure that was initially recorded on the 135. The 135 is located in the unit; it is in the southwest of the northeast of Section 35. The Magnolia well, completed approximately 7 months later, showed a 28 pound lower pressure, and it is located in the northwest of the northeast of Section 27, a distance of something in excess of two miles from the 135.

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Continuing, we have successive pressures on new wells, which are labelled on the graph, pressures of 4796, 4792, 4787, 4757, 4747, 4748; these new wells, upon completion, have consistently exhibited lower pressures than were present in the reservoir initially. These pressures are determinations taken immediately upon the completion in most cases (I can't say for Mobil); for instance, immediately after the well had been potentialled and it had very minor fluid withdrawals.

Now, the second feature that is reflected on this exhibit is the interference test, the pressure performance of the well that was shut in, and the well that took the double allowable.

The Unit 235, the well shut in, at the time of shut-in, had approximately the same pressure the 135 had. It did show some increase initially, for there was a pressure differential from the well bore back into the formation. In a period of approximately three days it peaked. From then on it has shown, over-all, for the one-year period, an eight-pound loss. It has not been a constant drop. Neither has there been a constant drop in the field. Having taken pressures on these extremely short intervals we have reflected to a degree the variation in withdrawal rates as allowables have been going up and down, which we consider extremely significant in that we had, on our shut-in well, followed the same pattern of fluctuation which the field as a whole showed, and also showed a net drop for the year's period.



Q You would not expect a major drop at this point in the development of the pool; is that correct, Mr. Duree?

A That is correct. As pointed out, I believe it was on Exhibit 3, we have established enough pressure gradient to cause water to flow in the reservoir. Could we have conducted this test, started it a year sooner, during the period when we got the initial drawdown to establish water flow, it would have shown more drop.

Q While the entire reservoir has flattened out for pressure purposes, the shut-in well and the well carrying a double allowable, they have varied with the field in their pressure during this year?

A That is correct.

Q Those variations are small?

A Very small.

Q Within the accuracy of the bomb?

A That is correct; within the accuracy of the bomb, and on an individual measurement you could question them, but having repeated it, and if you will note, there have been eight pressure surveys in a period of one year, and by the very number of the pressure determinations we have had an averaging of any effect that the bomb accuracy would have caused.

Q In your opinion, does this Exhibit clearly demonstrate pressure interference between the two wells tested?

A Yes, sir. It shows very good interference between the two wells tested; shows very good correlation for the field as a whole and that, coupled with the successively lower pressures



determined for new wells indicate to me we have an excellently, very well connected reservoir and, of course, we must have connection if fluid is able to be shoved through the reservoir and out the well bore by the water encroaching.

Q In your opinion does the evidence reflected here conclusively show that one well in this pool will efficiently drain at least 80 acres?

A At least 80 acres.

Q Anything further you care to say with relation to this exhibit?

A I have nothing further. Exhibit 8, which follows it, is a tabulation of the pressure determination on the two wells and the average that was plotted on Exhibit 7. It is the same information.

Q Same information in a tabular form?

A That's correct.

Q Referring to Commissioner Morgan's inquiry as to possible damage by heavy production from one well, please refer to your Exhibit No. 9.

A Yes, sir. Exhibit 9 is a tabulation of monthly well tests taken on the well that was taking a double allowable, No. 135. The Commission, in their order, granting us authority to transfer allowable and shut the well in requested a monthly test. These have been filed with the Commission. Actually, the only thing I



can say, it shows the well stayed in there and produced with no troubles whatsoever, no water production; tubing pressure, with the exception of three months, absolutely constant, got suspicious and checked out a gauge, and, as you can see, the last month it was right back with the others. The only thing that is curious on it is the fact there is some variation in the oil production with a given choke. This particular well with an extremely low solution gas-oil ratio exhibits--will not stay constant on a given choke. We cannot use an adjustable choke on it. We have had to go to positive chokes, and there is some variation; it will vary from day to day. With it the well has performed beautifully.

Q No change in gas-oil ratio?

A No, sir. We are measuring gas volumes so small that they reflect some variation, but in my opinion, no variation at all considering the extremely small volume of gas.

Q Refer to your large exhibit, now, which is on the board; your bottomhole pressure map.

A Exhibit No. 10 is a contour map, isopach contour map prepared on pressure determinations taken during June of 1960. The outline of the field is indicated as the heavy red line which is the oil-water contact. This map, to get any character at all, had to be contoured on two-pound increments, which is extremely small. We have traced in red the two ten-pound increments which do appear, and, if you will notice, using a ten-pound increment you only have



two contour lines for the field. The lowest pressure recorded was 4749, the highest 4765, a total pressure variation across the field of 16 pounds. In the area of our interference test the well that had been shut in showed a pressure of 4765; the well taking double allowable 4758; the highest pressure in the field, 4765. Again, this merely illustrates that we have exceptionally good communication across this reservoir.

Q It is, just for all practical purposes, a flat pressure map; is that correct?

A For practical purposes it is flat.

Q Do you have anything else you care to state with reference to your Exhibit No. 10?

A No, I do not believe I do.

Q Mr. Duree, with respect to the development in this pool, will you express your opinion as to whether, the rate of encroachment of water would be greater on 40-acre spacing or on 80-acre?

A The rate of water encroachment will be greater on 40-acre spacing. The additional allowable granted an 80-acre well is one equivalent or basic allowable. If you will drill on 40's you will not have double the number of wells, of course, but you will have more wells and your total withdrawals from the field will be greater. Now, with a greater withdrawal rate the rate of encroachment of the water up the structure will be greater. Now, this is admittedly a dolomite limestone reservoir, and our experience with natural water



drives there is not as extensive as it is with sand, but I think it is pretty well accepted that in a natural water drive your efficiency of recovery is enhanced if you do not bring the water in too fast to permit the water, by virtue of its surface tension and viscosity, to penetrate into the tight sections and shove the oil out. There has been a lot of published data on this, and various criteria have been established. It is pretty widely accepted there is a practical limit beyond which you should not bring water into the structure. In this particular structure, these of necessity must be rough estimates because we can't forecast exactly how the withdrawal rates will vary with market demand and the like, but on a 40-acre allowable we would have, roughly half again faster encroachment of water than we would on 80.

Q Your 40-acre allowable factor is 5.67 and your 80-acre, 6.67?

A That's my understanding.

Q Actually you would have a slower rate of withdrawal on the 80's?

A That is correct.

Q This would not reduce ultimate recovery; it would increase it?

A It is in the direction that should improve the recovery.

Q Will you state, briefly, your economic analysis of this pool, Mr. Duree?



A The economic analysis of this pool, as was pointed out in the summary, we feel the reserve is such that we can pay out the wells on 40 or 80. The profit ratio, or ratio of profit to investment on 40-acre spacing is approximately 3.2 to 1; on 80-acre spacing it would be around $4\frac{1}{2}$. As I pointed out earlier, the 80-acre rule does not result in half the wells of a 40; it will be something more than half, so it is not a direct ratio.

Q In other words, you are not stating that 40 acres would recover more oil than 80 acres?

A I am not.

Q Your rate of return is diminished because, actually, you have some wells in effect drilled on the 40-acre pattern?

A In drilling under the existing land conditions and the rules we were working under we have some wells in effect that have been drilled on 40.

Q In your analysis you have not taken into account the dry holes?

A No, sir. This is strictly on the basis of the average recovery that a well in this field, that was a well, could expect.

Q This is not a discounted factor?

A This does not take any discount back to present day worth.

Q Anything further you care to state with regard to the economics of this pool?

A No, I have nothing further to state. That is simply it.



Q If there was 40-acre permanent spacing in this pool, and if competitive situations were to set off a 40-acre drilling program, approximately how many wells would you envision could be drilled in that pool, additional wells?

A I would envision that we would drill between seven and nine wells. I have to make a spread there because, as pointed out earlier, for the southwest flank there is no control on the dip yet.

Q What are the approximate costs of those wells?

A We are averaging out about \$240,000 a well; our initial wells, of course, were considerably higher. Others are coming a little under, but it looks like we will average that for the wells that will have to be drilled.

Q And, in your opinion, would the drilling of those wells result in any additional increase in production of oil, ultimately?

A I don't think it would result in any additional recovery of oil from this reservoir. We are dealing with water drive. The wells we have there have gotten into the top of the structure. Having gotten there you have got a straw at the point where the last oil will come out.

Q Mr. Duree, in your opinion would the drilling of these wells on 40-acres be the drilling of unnecessary wells within the meaning of our statutes?

A Yes, definitely.

Q Will you detail to the Commission what we are requesting



in this hearing?

A We are requesting the promulgation of an 80-acre spacing rule for the South Vacuum Pool. We would recommend that these be flexible rules as to well location and as to the formation of the 80-acre tract. On that point I would like to emphasize we are dealing with water drive reservoir, an edge water drive reservoir, and the oil produced from the field comes from the bottom of the field. In other words, a well on top of the field, under the natural functioning of a water drive, produces a barrel of oil, but due to migration up structure from the water coming in, that barrel is replaced. Consequently the flexible rule permits a man with an edge tract to get in and get oil from a high structural position. Even then he is going to suffer some migration, but that is the nature of the drive. The flexible -- as we have pointed out, if the Commission feels we should stay with fixed locations, in that event we would recommend that the locations be tied to the NE/4 and the SW/4 of the quarter section. As the field is now developed the South Vacuum Reeves 236 would require an exception to this. Following up the field, Mobil's Section 27, Wells 1 and 2, would both require exceptions; Sinclair 403 No. 3 would be an exception. With those four exceptions the wells that have been drilled would fit the pattern. In the event of that we would still suggest that some latitude as to how the 80's are formed be given. By doing that we could stick within the governmental sections as they have been

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laid out. We would recommend that the 80's allocated be within the pool limits. With respect to the Reeves' wells, the 226 is drilled on a 40-acre lease. We would recommend that this well be granted a 40-acre allowable, and an exception to the rule is needed to grant that. The Reeves 426 is drilled on a 120-acre tract. However, only 40 acres lie within the pool limit, and we would recommend it, too, be granted a 40-acre allowable.

Q Those are the suggestions?

A Those are our suggestions; yes, sir.

Q Mr. Duree, on the basis of your study of this pool, in your opinion would an 80-acre proration unit be an area that can be efficiently and economically drained and developed by one well?

A Yes, sir.

Q In your opinion would an 80-acre spacing and proration unit prevent the drilling of unnecessary wells?

A It definitely would.

Q Would the rules which you have proposed here today protect the correlative rights including those of royalty owners?

A Yes, sir.

Q Would they result in the prevention of waste and the avoidance of the augmentation of risk arising from the drilling of an excessive number of wells?

A Yes, sir.

Q Would they prevent the reduced recovery which might result from too few wells?



A We don't think there would be any reduced recovery from the standpoint of draining. We feel the 80 acres will take care of it very well.

Q Would the application to this pool of the statewide 40-acre proration and spacing unit rule, in your opinion, result in the drilling of unnecessary wells?

A It definitely would.

Q Is there anything further which you care to add?

A I question if it has a place here, because it is not specifically connected with this field. I think it is significant that we have seen some similar work in other states. I refer specifically to the Aneth case which has been going on for so long. We have not followed it ourselves, in that our operations there are covered from another office. We are struck with the similarity as to the reservoir rocks in the Aneth and in the Vacuum. We have a little lower porosity than they do. We have quite a bit higher permeability. The major difference is the fact we are dealing with a water drive mechanism where they have been dealing with solution gas drive. We think that a lot of the information there, particularly as to variations vertically in the reservoir, have borne out a lot of the things we have had in the industry as to the producing mechanism within these reservoirs, and the similarity there, we think that the main thing -- the comparison is good; we have just got a more efficient recovery mechanism in this instance



than they have.

Q Are you referring to an article which appeared in the Oil and Gas Journal of August 8, 1960, on page 75?

A That appeared there, and I have seen a number of other places. This is a pretty good summary of the testimony there, particularly the pertinent parts.

Q Did you prepare Pure's Exhibits Nos. 3 through 10, or were they prepared under your direction?

A I prepared them in part; the remainder were prepared under my direction.

Q Do you have anything further you care to offer?

A I have nothing further.

MR. BRATTON: We would offer in evidence Pure's Exhibits Nos. 3 through 10, and I would like to offer in evidence, Oil and Gas Journal, August 8, 1960, article appearing on Page 75, as Pure's Exhibit No. 11 as an article of a trade journal in the industry and a recognized scientific publication.

MR. PORTER: Any objection to the introduction of these exhibits? Exhibits will be admitted to the record. Any questions?

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Duree, do you believe the ultimate recovery of oil from this pool will be as great on a flexible pattern as it will be on a rigid pattern?



A Yes, sir. I think the only difference it would make would be a little difference in the time it would take to do it.

Q And the fact that, perhaps, the additional oil that presumably you would get if the pool was completely drilled up on a rigid pattern would be offset by the fact you might have some undrilled locations on the rigid pattern?

A I think you are going to get the same amount of oil on a rigid or flexible pattern. There are some edge leases which might produce a little longer if they had flexibility on the end of it to put the well; that would shorten the time, not increase the recovery.

Q Might you also have undrilled locations if you require an operator to drill to a particular 40?

A That is correct.

Q It is actually desirable in a water drive pool to have the water encroachment uniform, is it not?

A That is correct.

Q On a flexible pattern, where you bunched your wells, so to speak, do you still get a uniform water encroachment?

A Yes, you should get it unless you are fighting an extremely tight permeability which we don't have here.

Q Any present plan, or has there been any discussion relative to unitizing this entire pool?

A No, sir, there have not. I would say that would await



further observation of the pressure performance of this field. As I pointed out, we have a water drive. We have drawn the pressure down sufficiently to establish the flow of water into the reservoir. That is good. Now, the remaining question is one that only performance will answer for us: How big a body of water do we have to supply this water that is coming in? Most of your water drives operate from the expansion of water. If we have enough water connected into this reservoir we will deplete it under competitive operations under natural water drive. If this body of water is not sufficiently large we will have a period of level or extremely slow rate of pressure decline, and then when we have reached the end of it insofar as the expansion of water is concerned, the pressure curve will go back down at a steeper rate. When that date comes we would have to supplement the energy by injection. In that case I think unitization would be in order.

Q Does the South Vacuum unit agreement require that the unit be developed on whatever spacing pattern the Commission has in the pool?

A To the best of my knowledge I think it is silent on that. I have read it, but it has been a long time, and I can't say for sure.

Q I presume then at least one of the Reeves Brothers' wells was drilled prior to the formation of the unit?

A No, sir. It was drilled after the formation of the unit.



Q You understood it was drilled on a 40-acre pattern because of offset objections?

A That is correct. This is the unit area outlined in yellow. All of the working interest owners have joined the unit; all of the royalty interests have joined the unit, with the exception of -- it is 180 acres, made up of one 40-acre tract and one 120, owned in fee by the Reeves. They did not sign the unit agreement. As a consequence they look to the unit, as far as that tract is concerned, they look to the unit as if it were the only tract the unit had.

Q Inasmuch as you have developed the unit, with this exception on an 80-acre pattern, and you could continue to do so, I take it that what you really want here is an additional allowable an 80-acre unit gets?

A Yes, sir; we want the additional allowable an 80-acre unit will get. We think drilling on 40's is unnecessary. If we do not have an 80-acre allowable our rate of return changes, and we'd have to re-examine our picture, but we don't feel that, from the standpoint of getting the reserve this field represents, that those wells are needed.

Q An area outside might be developed on 40's in order to protect the unit; you would have to develop the edge wells of the unit on 40's?

A Yes, sir.

Q Inasmuch as the volume of casing head gas produced by



these wells is relatively small, is that being flared?

A No, sir; that is going to market. Phillips Petroleum has a low pressure gathering system and it is being marketed.

Q Do you feel interference tests are a good way to determine drainage?

A I feel that they are one very good tool. By themselves, I think no one tool is the answer, and I don't believe any of our engineering personnel would say that, but that, coupled with the repeated occurrence of lower pressure on the new wells as we discover them; that plus the over-all performance of the field, makes a very clear picture. Now, an interference test in a solution gas drive, where you do show quicker pressure declines, I think would be a more startling picture, perhaps, but would still be the same picture.

Q Have you compared this reservoir with any other Devonian pools in southeastern New Mexico?

A We have no operations. We have compared them only from the standpoint of published data available to us.

Q You haven't made a specific study comparing with any other Devonian pool on 80-acre proration units?

A I haven't from the standpoint of having the information to go through and saying, "Our porosity is 7% and theirs is $8\frac{1}{4}$." I have from the standpoint of looking at the way the pressure has performed and the way the information is reflected, have compared

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them to those, but haven't had an occasion to make a detailed study.

Q As a matter of administration, by the Commission, if you have an 80-acre spacing pattern in a pool you drill a well on either 40 and get a dry hole, how much acreage do you think should be considered dry?

A That is a question that occurs repeatedly, and from the Commission's standpoint I can see it is a complicated thing. It is obvious that only a portion of that 80-acre tract is underlain by oil. Now, in the case of this pool, I have recommended flexible because the man with that edge tract, if he went in the other end he still won't produce the oil that is under his tract of land. It is going up structure. In that case I feel, although actually only say 40, 50, 60 acres is underlain by oil, even if you give him the 80 he still isn't going to get the oil under his line. With the solution gas drive reservoir I think it is another problem.

Q No matter what you allow him to dedicate, it wouldn't impair correlative rights, then?

A In this particular instance; I am taking that on the fact we are dealing with water drive.

MR. PAYNE: Thank you.

MR. PORTER: Anyone else?

BY MR. RAMEY:

Q Mr. Duree, 40-acre spacing you said you would have to drill about seven or eight wells; is that correct?



A That's correct -- I believe I said seven to nine.

Q That would give you around 20 wells in the pool?

A That is correct.

Q On 80, how many would you have to drill?

A On 80's, I don't know. I do know we have the southwest flank wide open. I think definitely that question is still before us. You can't get any answer until you get one well out there. Once that is answered, then it is a new question once you have that information.

Q Assuming your water-oil contact is correct; would you say you had about two or three wells?

A That would be about right.

Q And with the rigid spacing, how many wells do you think you would have to drill?

A I think the problem is as I outlined it. We would have to see what the southwest flank looked like. With the rigid there would be less drilling than there would be with the flexible, probably, but until you know that one piece of information you are just speculating.

MR. PORTER: Any further questions? Witness may be excused.

MR. BRATTON: That is all the testimony. I would like to make a statement.

MR. PORTER: Does anyone have any further testimony?



MR. NEAL: I would like to move the inclusion in the record of the former hearings, reference to the former hearings relating to this 80-acre, so the whole information will be in the record.

MR. PORTER: Any objection to the counsel's motion?

MR. NEAL: And then I would like to make a statement of arbitration when the time comes.

MR. PORTER: Let the record show that the records from the previous hearings will be included in this case.

MR. NEAL: Perhaps I'd better state our position. Based on all of the evidence that has been taken, we would object to the 80-acre spacing in this field unless the Commission were to allow the exception of the Reeves acreage from that 80-acre spacing. We feel like if we leave the Reeves acreage on the 40-acre spacing, that is the acreage controlled by the field rules, we actually have no basis upon which to object to the spacing in the remainder of the field. We do, however, definitely feel that we have a valid objection to the creation of 80-acre spacing in the field unless the exception is made. The two wells that have been drilled on the Reeves' tract have been drilled under the orders of the Commission providing for 40-acre spacing. The allowables are established. We have no other acreage in the field which can be dedicated to those wells, and we feel like, to establish 80-acre spacing in the field without making an exception as to our acreage would be



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a denial of our property rights without due process of law, and in addition to that it would seriously affect the revenues to be obtained by the State of New Mexico by reason of the fact that if we were put in a situation where we had 80-acre spacing without an exception we would only have 40 acres, for example, in each of those wells to dedicate, and if that gave us only us only 40 acres of an 80-acre allowable, our royalties would be cut in half.

You have a rather peculiar situation, that the State also gets royalty on those wells, because under the unit agreement they are actually having to pay double royalty under the contract agreements on those two wells, so at the same time the Reeves boys were losing half of their royalty, the State would be losing almost an equivalent amount, 90 percent of it, and we think unless the exceptions are made that definitely we would be treated unfairly and probably our constitutional rights would be involved in it. We would be deprived of our property without due process in light of the fact they were drilled under rules and regulations which provided for 40-acre spacing.

MR. ANDERSON: R. M. Anderson, Sinclair; we are an operator in the field. We are also a working interest owner in the unit. We wish to concur with the conclusions drawn by Pure from its evidence. We wish to concur with the recommendations of Pure, and with regard to the two 40-acre wells on the Reeves property, we wish to concur that an exception be granted for those wells, and



we feel this is justified because the wells existed prior to the adoption of the proposed rules.

MR. SETH: Oliver Seth, Shell Oil. Shell Oil concurs in the application of Pure. We believe the testimony and the evidence supports the application. Shell has no objection to the allowance of 40-acre allowables to the two Reeves wells, the existing ones. We don't believe that should be precedent for any future action, and we don't necessarily concur in Mr. Neal's analysis of the royalty situation on that. We think it is just a practical problem, and we have no objection to that solution of it.

MR. BRATTON: If the Commission please, first of all, I would like to concur in Mr. Seth's statement. I believe it is a practical solution to a problem that presents itself, and certainly we do not concur in the analysis as to State royalty, which we think is unaffected. The State gets the same royalty out of this pool regardless.

Gentlemen, I don't propose to belabor this thing at length because I know you have been sitting here for two and a half days and your courtesy and attention is certainly appreciated. I do wish to say that this case is a very significant one and for that purpose you will pardon me if I refer to my notes, because I don't want to miss anything in connection with it.

Turning first to the physical properties of this reservoir, I will state briefly that I think it has been conclusively established

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that there is continuity, permeability, viscosity, pressures and a drive mechanism which are excellent and which will substantiate 80-acre spacing, and more. I know that in some quarters there is a theory that in some pools more wells, more ultimate recovery. That is just not the situation in this pool with this drive mechanism. I think it has been conclusively established that one well will efficiently and economically drain this pool.

Now, that is the first requirement of our statute, that a well efficiently drain the pool. Certainly if there was any question about a well in this pool efficiently draining 80 acres, or the development of this pool on 80 acres not efficiently draining the pool, we would be reluctant; we would not be here before the Commission.

However, there is no doubt at all but what a well will do it. Now, referring to the other features of our statutes pertaining to proration unit for a pool. The Commission has been through this so many times I hesitate to read it, but I think, in view of the fact that I do consider this to be a significant and a landmark case before this Commission, we should go ahead and analyze it with respect to this statute.

The proration unit, of course, is an area that can be efficiently and economically drained and developed by one well. That is what it is. Now, the statute goes on to say, "The factors that the Commission shall consider. . ." But first of all, the pro-



ration is such that can be efficiently and economically drained and developed by one well. Efficiently, we have proved; economically, we have stated that this pool can be economically developed on 40 acres if you consider solely the fact that it can be drilled and that a profit can be made on 40 acres. That does not dismiss for one moment the fact that the drilling of this pool on 40 acres results in the drilling of unnecessary wells. It is just sticking that much money down a hole in the ground over there; no purpose served by it.

We referred in our presentation to the article in the Oil and Gas Journal, which is headed, "Utah's Aneth May Halt Close Spacing Arguments." "Overwhelming volume of testimony convinced Utah Commissioners that 80-acre spacing was close enough"; "Attitude of many close spacers may be changed as a result." They are some of the articles presented on the Aneth hearing.

I know this Commission is tired, and I am tired. I sympathize with the sign on the desk of somebody of the staff, "I don't care how they do it in Texas." I sympathize; I don't care how they do it in Utah. We have a Commission, and they have kept abreast and ahead of the times. Nevertheless, in the Aneth case, over \$20 million went into that case. As a result of that they were convinced, in a hotly contested case, that 80-acre spacing was close enough in a reservoir without near the performance of this reservoir.

Now, this Commission, as I say, has done an excellent job.



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You have kept abreast and ahead of the times. I think I state the situation correctly when I state that this Commission has realized and has accepted the principle of economic distress in spacing; that is, when the operators can convince the Commission that it is an economic necessity to have wide spacing, that they cannot afford to drill on a nearer spacing. The Commission has realized that necessity and has gone to the wider spacing. Certainly we realize that in that type of situation the Commission will give the operator the benefit of the doubt, and, on the other hand, we realize full well that were you to come to the Commission with a case such as this one, where you do have a profitable reservoir, the burden of proof on the operator is heavier. We must convince the Commission beyond a shadow of doubt that drilling on 40 acres is unnecessary and will result in just sheer waste. We think we have done just exactly that. I don't think there is a member of the engineering staff of this Commission that will advise the Commission that the drilling of wells on 40 acres in this pool is necessary to prevent waste. Certainly there can be no question but what the additional \$2 million or so that would be spent would be wasted.

We have come before this Commission today; we have brought the results of an interference test, all the data that has been accumulated from this pool. We think that it is clearly and definitely established that a well will efficiently drain 80 acres; at least 80 acres in this pool. I don't think it is the policy of the



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Commission that, regardless of the overwhelming evidence, that the Commission is going to deny an application such as this simply because the pool is economic. I am just sure that is not the policy of this Commission. I certainly do believe that the Commission is aware that this case is being observed closely as to the policy of this Commission. Certainly it is to be reflected in the attitude of the oil operators of the country as to the risk involved in New Mexico, and the possibilities of return therefrom. Certainly land prices in this state have become decreased. We realize that; the results of the sale show that. The necessity of rejecting bids in Lea County, New Mexico, shows that we are in a competitive situation with these other states. We are in a competitive situation in the world market. If the operators are convinced that, regardless of the type of testimony, regardless of the volume and the fact that they can establish absolutely that a well will drain 80 acres at this depth, that they are going to be required to drill it on 40 acres, that cannot help but be reflected in their attitude and thinking towards New Mexico.

As I say, I appreciate the courtesy of this Commission in sitting here after two and a half days. I believe this is an important case, and appreciate your close attention. Our Commission has in the past, in this hearing, recognized the necessity of changing times. You have just heard testimony pertaining to changing the depth allowable. That was necessitated by the change of times



in the development of the industry. I think that the change in times and the development of the industry will be recognized by the Commission in this case by the granting of the application of Pure Oil Company. Thank you.

MR. PORTER: Any further statements to be offered in this case?

MR. PAYNE: We received two communications; one from Union Oil Company of California and one from Socony Mobil Oil, both supporting the application of Pure in this case.

Union Oil Company's communication was in the form of a telegram, dated August 15, 1960, sent from Midland, Texas, addressed to Mr. Porter, Director, Oil Conservation Commission:

"Union Oil Company of California, the owner of a working interest in the South Vacuum Unit, South Vacuum-Devonian Pool, Lea County, New Mexico, concurs with the application of the Pure Oil Company in Case Number One Six Three Four." Signed, "Union Oil Company of California, by J. S. McNulty, Division Superintendent."

A letter was received from Mobil Oil Company, A Division of Socony Mobil Oil Company, Inc., P.O. Box 2406, Hobbs, New Mexico, addressed to Mr. A. L. Porter, Jr., Secretary and Director, New Mexico Oil Conservation Commission, and dated August 16, 1960:

"Socony Mobil Oil Company, Inc., desires by this letter to enter their support in Case #1634 to Pure Oil Company's application for establishment of 80-acre proration units for the South Vacuum-

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Devonian Pool, Lea County, Texas. Socony Mobil is the operator of two wells of the twelve wells in the pool, and from our study of this pool we feel that one well can effectively drain 80-acres or more and that no reservoir damage will occur at the resulting higher proration rate.

"Therefore, Socony Mobil Oil Company, Inc. respectfully requests that the Commission adopt 80-acre proration units for this pool." Signed, "C. H. Samples, Producing Superintendent."

MR. PORTER: If there are no further statements to be offered in this case, we will take the case under advisement.

Hearing is adjourned.

(Whereupon, the hearing adjourned at 10:30 A.M., August 19, 1960.)

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STATE OF NEW MEXICO)
)
 COUNTY OF BERNALILLO) ss

I, JUNE PAIGE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 15th day of September, 1960.

June Paige

 Notary Public - Court Reporter

My Commission expires:

May 11, 1964.

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