Memo

From

JAMES M. DURRETT JR.
GENERAL COUNSEL

Case no. 2678

To T F Jim Sperling

East Dawson

Permo Penn for 9th

Kern County Land

Co. Applicants

originally + operators

interference tests now

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CASE 2678: Application of KERN COUNTY LAND CO. for special rules for EAST SAUNDERS PERMO-PENN POOL.

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-plication, Transcript,
-mall Exhibits, Etc.

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 24, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Kern County Land Company for an order establishing special rules and regulations for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order establishing special rules and regulations for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, to include provisions for 160 acre drilling and proration units therein. CASE 2678

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2678.

MR. DURRETT: Application of Kern County Land Company for an order establishing special rules and regulations for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico.

MR. SPERLING: I.am J. E. Sperling, appearing for Kern County Land Company. We have two witnesses, Mr. Cook and Mr. Burtchaell.

(Witnesses sworn.)

MR. SELINGER: We would like to enter an appearance, George W. Selinger for Skelly Oil Company, in support of the application.

MR. UTZ: Are there other appearances? You may proceed.

DONALD G. COOK

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Would you state your name, please, and your place of residence?

A Donald G. Cook, Midland, Texas.

Q By whom are you employed, Mr. Cook?

A Kern County Land Company.

Q In what capacity?

A District Manager.

Q How long have you held that position?

A Two years.

Q Have you previously testified before this Commission?

A I have not.

Q We'll go into your educational and experience background to some extent. Would you give us a resume of your academic training?

A I'm a graduate of Oklahoma State University, Stillwater, Oklahoma, Bachelor of Science Degree, major in Geology, in 1950. I was employed by Cities Service Oil Company through their initial training program in Midland, Texas, through scouting development geology and into exploration geology, covering a period of four years or until 1954. From 1954 until '58, I was employed by

Mid-States Oil Company as an exploration geologist. In 1958 I was employed by Kern County Land Company as District Geologist, had that position for two years and then named as District Manager in the Midland office.

Q During the course of your duties with Kern County in Midland, Texas, have you had occasion to make a study of the area which has been designated by the Commission as the East Saunders Permo-Penn Pool area?

A I have, yes, sir.

(Whereupon, Applicant's Exhibits Nos. 1 through 16 marked for identification.)

Q Mr. Cook, if you'll now step up there to the wall and refer to what has been marked as Kern County's Exhibit No. 1, which is the exhibit on the left as you face it, and tell us what that exhibit is designed to portray.

A Exhibit No. 1 is a composite map of the leasehold interest along with the subsurface structural interpretation of the East Saunders Permo-Pennsylvanian Pool area. The yellow area is put on primarily to designate the leasehold unit as pooled to justify the drilling of an exploratory test. The participation in this exploratory test is based upon the leasehold interest, with minor variations.

Superimposed on this map are subsurface contour lines representing an interval of ten feet, with our interpretation of conditions at or near the present productive zone. This map was

built basically from geophysical information tied back and into recent development work. The red outline cross-hatched area represents what we feel with present data to be the limits of the pool as we now see it.

Q Before we get into the geology of the particular area, Mr. Cook, is the so-called Etcheverry Unit, as designated in yellow on the exhibit that you are referring to, a unit in the usual sense of that word? In other words, is the royalty pooled insofar as that unit is concerned?

A Well, it is not a State approved unit as such. It is merely a working interest unit. Fortunately, it is all State royalty.

Q In other words, it is a partnership deal among the companies which are listed in the lower right-hand corner of the exhibit, is that correct?

A That is correct.

Q Proceed with your explanation of your geological interpretation of this area. As I understand it, the pool designated as the Saunders Pool lies to the west of the area with which we are concerned today, is that correct?

A That is correct. In order that this particular area be productive from the Saunders member which we are calling the Lower Saunders equivalent, we must show separation between the immediate productive area and the older production in the Saunders Field. We think this has been established by the drilling of a

well by Baskin, their No. 1 Tidewater State, approximately one and three-quarters miles west of our discovery well.

Q Would you proceed with your explanation upon which you base your conclusions as to separation between these two pools?

A In this particular map, we show the indication of a saddle or separation between the two fields. May I go to Exhibit 2?

Q Please do.

A Exhibit No. 2 was prepared to show our interpretation of the separation between the East Saunders Permo-Penn Pool and the Saunders Permo-Penn Pool, or correctly stated the Saunders Pool. This low or saddle area coincides with the low or saddle area as demonstrated on Exhibit 1.

MR. UTZ: Excuse me again, Mr. Cook. That appears to be a cross section based upon logs of two wells. Would you locate on Exhibit 1 the location of those two wells?

A The log on the left is a gamma ray sonic of the Baskin No. 1 Tidewater State on the west. Log No. 2 is Kern County No. 1 State 17, also a gamma log.

Q (By Mr. Sperling) That is located within the yellow area as designated on Exhibit 1. Is that the top well as shown there?

A It is the lower well.

Q Based upon the correlation and comparison that you have

made between those two logs, you have determined that the saddle that you spoke of previously exists as between the two areas that we have been discussing, is that right?

A That is correct.

Q And it is your feeling that this exhibit demonstrates that quite clearly?

A That's right. May I elaborate?

Q Please.

A The colors connecting the two logs are shown primarily to mark correlative points on both wells. These are based on gamma ray correlations which we feel are good throughout the immediate productive area. The zones colored in red on this map represent, on this log of the Kern County Land Company No. 1 State, represents the perforated zone or the productive interval of the well. The red lines on the dry hole represent correlative porosity zones that show by core analysis to be water bearing. It is our contention that the saddle or depression separating the two wells has by some means separated the permeability and porosity conditions of these two holes. Without this separation, this zone would not be productive.

Q Do you feel that that is substantiated by the contours which you have shown on Exhibit No. 1?

A I think that they tie in very well, yes.

Q I want to call your attention, Mr. Cook, to what we have designated as Kern County's Exhibit No. 3, which is now to

your left, also appears to be a cross section. Would you elaborate on that exhibit and tell us what it shows?

A Exhibit No. 3 is a cross section of the two producing wells on the unit property as designated in Exhibit 1, Wells No. 1 and 2. This cross section again has been marked with the identical correlation points as set out on cross section number two, or Exhibit No. 2.

The purpose of these correlative points are to establish the relative structural positions of the two wells. In red we have shown the porosity zones as perforated on the two producing wells, showing that we can find equivalent zones in both wells.

Q Is it your conclusion from that exhibit and the other study that you have made of the area that these wells are connected insofar as productive zones are concerned?

A I think our evidence indicates that they are connected, yes, sir.

Q Referring you to the log which is shown on the left, which I believe is the No. 1 State Kern County, as I understand it, indicated by red circles are the perforations in that well?

A That is correct.

Q There appear to be considerably more perforations in that well than are shown on the log No. 2 on the right-hand side of the exhibit. Is there a reason for that?

A We did not have the benefit of core analysis for the

No. 1 Well to refine our perforated interval. In that case we had to make sure that we blanketed each zone, in effect, to complete completion.

Q So your perforated intervals were selected from the sonic log alone in the No. 1, and you had the benefit of cores in the No. 2?

A That is correct.

Q Do you have anything to add insofar as the three exhibits are concerned?

A No, sir.

MR. SPERLING: I think that's all I have of this witness, at this time, Mr. Examiner.

MR. UTZ: What is the nature of the testimony of your other witness?

MR. SPERLING: Reservoir engineering.

MR. UTZ: He'll have the core data available?

MR. SPERLING: Yes, sir.

CROSS EXAMINATION

BY MR. UTZ:

Q This structure is on top of the correlation point at or near the Pennsylvanian?

A At what we're calling the Permo-Penn pick, yes, sir.

Q And the seismic information?

A Exhibit 1 is a map based on seismic information. It is a subsurface map.

MR. UTZ: Any other questions of this witness?

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

BY MR. DURRETT:

Q Mr. Cook, referring to your Exhibit 1 where you were speaking of the area marked in yellow, the working interest unit area, is that a common beneficiary unit?

A I don't understand.

MR. SPERLING: One royalty owner.

A One royalty owner, yes, sir. It is State land.

Q (By Mr. Durrett) All State land?

A Yes, sir.

Q Let me clarify my question a little bit, Mr. Cook. As far as the beneficiary of the royalty interest, is it all one or is it divided?

A You mean are the royalty funds divided into different groups?

Q Yes.

A That is correct.

Q Would you state for the purpose of the record what groups that would be? Do you have that information?

A I will give you my interpretation of the information.

Q All right.

A I am not a landman. It is my understanding that the West Half of the West Half of the unit area, the royalty goes into the Portales School Land Fund, whereas the remainder of the

acreage goes into Common School Land Fund.

MR. DURRETT: Thank you. I believe that will do it.

A That's to the best of my information.

MR. DURRETT: Thank you. That's all I have.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused.)

E. P. BURTCHAELL

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q State your name, please.

A E. P. Burtchaell.

Q Would you spell your last name?

A B-u-r-t-c-h-a-e-l-l.

Q Where do you live, Mr. Burtchaell?

A San Francisco, California.

Q By whom are you employed?

A Kern County Land Company.

Q In what capacity?

A Manager of Oil Production and Engineering.

Q Have you previously testified before this Commission?

A No, sir, I have not.

Q Would you give us a resume of your educational and

experience background in the occupation that you are now pursuing?

A I graduated from the University of California at Berkeley, California, in 1942, with a B.S. Degree in Petroleum Engineering; employed by the Stanolind Oil and Gas Company, now Pan American, in their West Texas-New Mexico Division from 1942 to 1945. I transferred to Tulsa, Oklahoma, as a Reservoir Engineer in 1945 to 1946; employed by the Honolulu Oil Corporation as a Reservoir Engineer from 1946 to 1952; employed by the Kern County Land Company from 1952 to the present time, with my present position being Manager of Oil Production and Engineering, covering operation from Australia, Canada, West Texas, Louisiana. Registered Petroleum Engineer from the State of Texas and from the State of California.

Q You are, of course, familiar, in your capacity as Production Manager and Engineer, with the area designated as the East Saunders Permo-Penn Pool in Lea County, New Mexico, are you not?

A Yes, sir, I am.

Q You are also familiar, I take it, with the exhibits which have been previously referred to here, Exhibits 1 through 3, and which of course are made a part of Kern County's case?

A Yes.

Q I will direct your attention, Mr. Burtchaell, to what we have marked as Exhibit No. 4, Kern County, which appears to be a sheet that contains considerable amount of information. Would

you tell the Examiner what that information is and how it was collected, and explain to the extent that you think necessary the information that appears on that exhibit?

A Exhibit 4 is a summary of the physical data on the two wells that have been completed in the East Saunders Pool. They're designated as Well No. 1 and 2. We have listed the completion date, total depth, top of pay, net pay, initial potential, and current production on each well. It's a factual summary on the present conditions of the well.

I might point out in total depth, Well No. 1 was taken to 12,520, that was to fulfill a drilling obligation in order to earn our interest. It was taken to the mid Pennsylvanian and plugged back to 10,366 feet.

Q This is a question which I might well have asked Mr. Cook. I will ask you. Kern County is the operator of the Etcheverry Unit which is shown on Exhibit 1, is it not?

A Yes, we are the operator.

Q I assume you have an operating agreement which sets forth the respective obligations and duties of the operating and non-operating parties to the agreement?

A Yes, sir, we do.

Q And your operations are conducted and will be conducted in the future in accordance with the provisions of that agreement?

A Yes, sir.

Q Is there anything that you would like to add insofar as

Exhibit No. 4 is concerned, Mr. Burtchaell?

A No. The only thing that is of possible significance is the Item No. 10, Current Production, which we have shown on data available October 5th, 1962, that both wells are easily capable of producing their allowable; their ratio is low and there's no water showing in the well as yet.

Q I'll refer you to Exhibit No. 5. This is headed as Core Analysis. I assume this is a resume of core analysis at the State, Kern County No. 2 State?

A Yes, sir. Exhibit 5 is the presentation of the core analysis obtained when we completely cored the entire pay section in Well No. 2. We have listed on there our interpretation of what we considered productive feet, using a cut-off point of four percent porosity and one-tenth millidarcy as our point.

We have tabulated a total of 18 feet which we considered to be pay, all fitting these conditions that we have listed below. We have also listed on there our averages, 10.7, 8.1 percent, 33.4 percent for water saturation. These are the only cores that we have in the field at the present time.

Q I will ask you to refer to Exhibit No. 6, Mr. Burtchaell. Tell us what that is.

A Exhibit 6 in the upper portion contains a summary of the information presented in Exhibits 4 and 5, in which we have given the pool average net pay, being a numerical average of the two wells, 21 feet in No. 1 and 18 feet in No. 2, for an average

of 19.5 feet. It lists the average porosity that we presented in Exhibit 5, the average permeability was 10.7; it lists the water saturation as 33.4 percent, which came from Exhibit 5. It lists the reservoir temperature and the original reservoir pressure which we obtained with a bottom hole pressure two days after Well No. 1 was completed.

The second half is the summary of the information we obtained when we took the bottom hole sample from the producing zone on Well No. 1. It lists saturation pressure, formation volume factor, and so forth.

Q Does the information which is reflected on Exhibits 5 and 6 actually form the basis for conclusions which you will testify concerning at a later point in the presentation of the case?

A Yes, sir.

Q This is basic data, in other words, upon which you have made subsequent calculations?

A Yes, sir. It's the only information that we have available.

Q The summary of fluid properties is a result of actual bottom hole fluid samples?

A Yes. We had them taken by Core Laboratories, analyzed, and this is a summary of the pertinent information.

Q Would you please now refer to Exhibit No. 7; tell us what that is designed to show?

A Exhibit 7 summarizes again some of the information on Exhibits 5 and 6, in which we just for a matter of information listed the average porosity, net pay, water saturation, formation volume factor, and it has the additional information of a recovery factor which we have calculated to be 25.2 percent of the initial oil in place. This was done on a standard material type balance, and then we had taken that information and applied it back with our core data to obtain a recovery in terms of barrels per acre of 1346 barrels per acre, which was our estimate of the recoverable oil from the field.

Q I notice that considerable of the information that we referred to in Exhibits 5 and 6 is picked up again and fed into the calculations that you have made as reflected by Exhibit No. 7?

A That is correct. We thought it would read easier if we kept repeating the information that went into each calculation at the time we presented it.

Q Now, Mr. Burtchaell, please refer to Exhibit 8 in our packet.

A Exhibit 8 is a presentation on a graphical form of our Schilthius form material balance, showing the results of our calculations to obtain the 25.2 percent recovery factor. It plots our calculation as pressure versus cumulative recovery, which we have expressed as a fraction of the original oil in place, and expresses the instantaneous oil-gas ratio as a

refraction of the initial oil in place. It's a standard form of calculation as we have presented our calculations here.

Q Do I understand that this is a graphic portrayal of what information is contained in Exhibit 7?

A The end point, the 25.2 percent recovery factor we show at the top of Exhibit 7, was obtained from an abandonment pressure of 250 pounds on Exhibit 8. That's the basis of our use of the number 25.2 percent.

Q What prompted the selection of 250 pounds?

A It was an estimate of what we thought the abandonment pressure would be in the reservoir of this character.

Q Have you had experience with reservoirs of this character previously?

A Yes, sir. I think 250 pounds is reasonable.

Q Would you please refer to Kern County's Exhibit 9 and tell us in some detail what that portrays?

A Exhibit 9 is the exhibit which led us to file for the hearing we have today. What it portrays is a plot of the individual well bottom hole pressures versus the time they were taken, and also shown is a plot of the lease per oil rate that we produced since the No. 1 Well was completed.

Now if I may go in chronological order, what led into this story. At the time we completed Well No. 1, you will note at the end of March, approximately, we had an initial pressure of 3914 pounds. Within a matter of several weeks, the time it

took to prepare a drilling contract and so forth, we started drilling Well No. 2. At the time we completed Well No. 1, based on our log interpretation, we saw that we only had 21 feet of net pay, so obviously we were concerned that it would not justify closer spacing, so we spaced the well on 160-acre spacing.

We commenced drilling Well No. 2, but approximately 30 days after the completion of Well No. 1 we ran a second bottom hole pressure in Well No. 1. At that time the pressure was 3815 pounds, which is approximately 99 pounds pressure drop in a period of about 30 days. We made reservoir calculations at that time, just assuming this two point problem as to what the indicated drainage area might be, and of course we found out it was in excess of 40 acres per well, so we continued, of course, drilling Well No. 2, and we completed Well No. 2. We ran a bottom hole pressure on that well which is shown in the black circle, and just previous to that by a matter of two days, we ran a bottom hole pressure in Well No. 1 which has been producing steadily at its allowable of 165 barrels per day since it was completed.

We found that the two pressures, even though the wells were one-half a mile apart, were essentially the same. In other words, the production that has been obtained in the approximate two and a half months' period between the completion of Well No. 1 and the Well No. 2 was sufficient to draw the pressure down in the Well No. 2 area.

We, of course, did not drill, start to drill a third well because we were concerned at just what our drainage radius might be, so we ran a second set of pressures about two weeks after this, and again we found that the two pressures this time were just a matter of several pounds apart. We then produced both wells at the allowable rate down until about the end of July. At that time we ran pressures again in both wells and they still were the same, so we started an interference test which is presented, if I may jump an exhibit, in Exhibit 11.

Not to confuse the issue, Exhibit 10 is merely a plot of all the pressure information we have obtained to date. Instead of plotting it versus time, it's plotted versus cumulative recovery, and as you can see, it's approximately a very straight line.

Then going to Exhibit 11, if I may jump ahead, having this information that two wells completed in this limestone a half a mile apart were showing the same pressure performance, why, we decided to run an interference test to see if we could verify completely to our satisfaction that there was drainage occurring from one well to the other. We shut both wells in, as shown on the period July 31, 1962, and we ran a bottom hole pressure in each well. There was a 15-pound difference in the two pressures. Then we left the bottom hole pressure bomb in the No. 2 Well and produced the No. 1 Well at a 200-barrel per day rate, and we produced that well for one, two, three, four days, at which time we shut both wells in. We went back and

pulled the bomb out of the No. 2 Well, and as you can see from Exhibit 11, we showed that a 9-pound pressure drop had occurred in the No. 2 Well, even though it was shut in and the No. 1 Well was producing. On shutting in the No. 1 Well, the pressure in the No. 2 Well built up to within one pound of the then shut-in pressure on the No. 1 Well. So this to us was fairly complete evidence that the two wells were in communication and that one well -- or that our drainage radius was in the vicinity of 160 acres.

Q In the insert on Exhibit 11, on the left-hand side, I assume that that is designed to show the distance, the measured distance between these wells?

A Yes, sir. That's 2640 feet, which is the actual surface distance between these two wells; and during the drilling of these wells we have no data at all to indicate that the bottom hole location is any great difference.

Q As I understand your testimony, to date, Mr. Burtchaell, the first indication that you had that you might have a reservoir of limited, we'll say, productive capacity, was when first you determined that you had a limited net pay thickness; and secondly, when you determined that there was a rather substantial and sharp pressure decline following a period of somewhat limited production, is that right?

A This is essentially correct. At the time we completed the No. 1 Well, of course, we had no knowledge whatsoever as to

the drainage area. The factor that led us to the 160-acre spacing was the relatively thin interval of pay, 21 feet of pay, so we didn't know at that time what that 21 feet would drain. It was the time 30 days hence, approximately, that we ran the second pressure survey in Well No. 1 that began to verify that the drainage radius was in excess of 40 acres.

Q In other words, you associate rapid pressure decline as being indicative of a drainage area of some distance?

A That is true.

Q And you feel that Exhibit 11 confirmed the suspicions that you had concerning the reservoir and the ability of one well to drain in excess of standard spacing?

A Yes, sir. We had pretty strong evidence from Exhibit 9, of course, that as we ran pressure surveys at approximately six weeks intervals during the history of these wells, that the pressures would come in within a matter of a few pounds apart, and the decline was substantial, as you say. As recently as October 1, 1962, we ran our last pressure survey, and here again the pressures were just a pound apart. Then that led us to really nail it down why we thought that we should run the interference test, and so we ran Exhibit 11 as shown here.

Q Let me ask you about Exhibit 9 one more time. There appears to be in the graphic portrayal here some difference in pressures. In other words, your No. 2 Well, which I think is the black dot --

A It is the black one, yes, sir.

Q -- appears at the second point for it to be higher than the pressure appears to be, higher than the No. 1, is that what you actually found?

A Without attempting to weaken our testimony, there is a little bit of bad draftsmanship in this information. I will read you the points that I have written down myself. Starting with the first pressure, Well No. 1, we have initial pressure 3914 pounds. The second pressure shown is 3815 pounds. It's not quite plotted that way. The third pressure in the Well No. 1 is 3742 pounds. Right below it is the initial pressure in Well No. 2, and it's 3699 pounds. Again you can see that the draftsman is a little bit off on his plotting there.

Q Just didn't have room?

A Coming on down on the second pressure run in Well No. 2, the second black dot is actually 3680 pounds, as compared to a pressure of 3699 initially, so there is a 19-pound drop, which is very hard to see in this plot. Directly below it is the fourth pressure taken in Well No. 1, which is 3677 pounds or 3 pounds difference in the pressure in Well No. 2. There is some confusion, I believe, in trying to plot very small differences so they're understandable.

Q In summary then, I assume that this graph which is based, of course, upon actual figures and limited only mechanically, does indicate as supported by actual measured tests that these

wells, the pressures in these wells were within three or four pounds of each other during this entire period?

A That is correct. They may vary as much as 10, 11 pounds, but they just go up and down. I think it's mechanical variation in bombing.

Q All right.

A We have a problem in Exhibit 11. You notice that while the bomb was in the well, in Well No. 2, the clock stopped, and of course we didn't know that until we pulled it, and we have taken the liberty to extrapolate an extra day drawdown and build it up,back up as we show it on Exhibit 11. This bomb reads by a clock mechanism, which runs a chart, and you see we left it in the hole one, two, three, four days, and it stopped.

Q Do I understand that the pressures at the end of that test period went,with both wells shut in, that the pressures equalized?

A That is correct. There was one pound difference in Well No. 1 and Well No. 2 in pressures following interference tests.

Q I assume that having completed these tests and having proven to your company's satisfaction that you were draining in excess of 40 acres, you began to consider some other matters in connection with the development of this field, is that right?

A That is correct.

Q Would you please refer to Exhibit 12? Tell us what that

is?

A Exhibit 12 is a summary of the economics which we have prepared, illustrating the profit or loss that the operator would realize from developing on 40, 80 acres, and 160-acre spacing. We have used actual information on the leases; for instance, the oil value is what we are getting; we are selling the gas, the gas price of 10.8 cents is an average of August -- July, August and September data that we have obtained from Warren Petroleum Corporation. We have our royalty, taxes, lifting costs, our well costs of $213,000 per well; and we have gone through a rather standard economic calculation to show that under 40-acre spacing we would suffer a loss of about 70, $80,000. Under 80-acre spacing we would have a profit of $53,000, and under 160-acre spacing, we have a profit of $319,000.

Q Let me ask you, Mr. Burtchaell, under your basic data at the top of the sheet, you've told us that these are actual figures that are applicable to the conditions that you are experiencing in this field. Is the Number 8 item, the well investment, an actual investment cost of the Kern County?

A Yes, sir. The Well No. 2, which we feel is more representative of cost because Well No. 1 was carried at 12,500 feet, cost us $186,804. We have an estimated cost of a pump unit which will be installed eventually, and we have split the tank battery cost between the two wells as 6,000 to each, giving us a total cost of $212,873 against $213,000.

Q What was the cost of the No. 1 Well?

A The No. 1 Well cost us $226,000, pumping unit again would make $20,000, the tank battery split would be 6,000, making a total of $252,229.

Q But it isn't representative in view of the fact it was drilled to a deeper test?

A No, sir, it was drilled to 12,520 feet.

Q Having done your engineering studies with reference to this pool, and having made these economic calculations, what conclusion has your company reached with reference to the development of this field?

A It was our conclusion that one well would efficiently drain 160 acres, and that if we spaced our development wells on 160-acre spacing, we could return the reasonable profit on our investment.

Q In connection with proposing 160-acre spacing as an economically feasible spacing plan for a development of this field, you have proposed, as I understand it, rules which you wish to have the Commission consider in connection with the establishment of spacing and rules in this pool. Although Exhibit 14 does not appear to indicate it, are you asking that these rules be on a permanent basis, a temporary basis, or what kind of a basis?

A We are asking for a temporary basis for one year.

Q For what interim of time?

A One year.

Q One year?

A Yes, sir.

Q Now the rules that your company is suggesting for adoption at this hearing are set forth on Exhibit 14, are they not?

A Yes, sir, they are.

Q Would you in general summarize the provisions of these rules that are being proposed?

A In general, Rule No. 1 just specifies that any well completed or recompleted in the East Saunders or Permo-Penn formation within one mile of said pool and not nearer to nor within the limits of another designated Permo-Penn pool, shall be spaced, drilled, operated and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

"Rule 2. Each well completed or recompleted in the East Saunders Pool shall be located on a unit containing 160 acres, more or less, which consists of a single governmental quarter section.

"Rule 3. Each well on any 160 acre unit in said pool shall be located within 150 feet of either the Northeast Quarter or the Southwest Quarter of the quarter section on which the well is located.

"Rule 4. For good cause shown, the Secretary-Director of the Commission may grant exception to the requirements of Rule

2 without notice and hearing when the application is for a non-standard unit comprising less than 160 acres. All operators offsetting the proposed non-standard unit shall be notified of the application by registered mail, and the application shall state that such notice has been furnished. The Secretary-Director of the Commission may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

"The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the East Saunders Pool as the acreage in such non-standard unit bears to 160 acres.

"Rule 5. A 160-acre proration unit (158 through 162 acres) in the East Saunders Pool shall be assigned a proportional factor of 7.67 for allowable purposes, and in the event there is more than one well on a 160-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion."

Q I understand that the proportional factor suggested in Rule 5 is based upon the so-called depth factor applicable to an interval between 10 and 11,000 feet plus three standard unit allowables?

A That is correct. The depth factor is 4.67, and the three 40-acre factors would be 7.67.

Q May I refer you back now to what we've marked as

Exhibit 13, Mr. Burtchaell, and ask you what that information shows?

A Exhibit 13 is an example that if the allowable of 269 barrels per day, which is based on the 7.67 factor, is granted, that the two wells as completed today indicate that they can produce that allowable within a minimum of pressure drawdown. We have run three productivity tests, two on the No. 1 Well, one on the No. 2 Well. The minimum productivity index is 4.97 barrels per day per pound, so a 269 barrel per day allowable divided by a 4.97 p.i. would give us a 54 pound pressure drawdown in the well, which we do not consider excessive.

MR. UTZ: What was that, 4.9 --

A 4.97. We exactly had p.i. as shown, 10.12, 4.97 and 5.81.

Q (By Mr. Sperling) From the study that you have made, I assume that you have drawn a conclusion as to whether or not a well spaced on 160-acre drilling units would efficiently and economically drain the spacing area. Would you state what that opinion is?

A In our opinion, a well drilled on 160-acre spacing would economically and efficiently drain the productive area contained within that 160-acre unit.

Q Do you have anything else to add, Mr. Burtchaell?

A No, sir.

MR. SPERLING: If the Examiner please, I would like to

offer the exhibits that we have referred to, that is, 1 through 14; and in addition I would like to have Mr. Burtchaell identify a telefax copy of a wire addressed to him, Kern County Land Company, in San Francisco, and ask him if this was received and from whom and what its content is.

A Yes, sir, this was received by me and it is from the Shell Oil Company. Do you care for me to read it?

Q (By Mr. Sperling) Please.

A "E. P. Burtchaell, Kern County Land Company, 600 California Street, San Francisco: Re proposed field rules East Saunders Pool, Lea County, New Mexico, as a non operating working interest owner in the East Saunders Pool we wish to support the proposed special rules and regulations as applied for by Kern County Land Company, operator. Shell Oil Company, Division Production Manager, Shell Oil Company."

Q Although it is shown on Exhibit No. 1, would you tell us again who your partners are in this unit, this working interest venture?

A Our partners are Shell Oil Company, Humble Oil Company, Pure Oil Company, and Skelly Oil.

MR. SPERLING: Mr. Examiner, we have a letter here from The Pure Oil Company addressed to the Commission, which was left with me, I don't know why particularly, except that Mr. Murphey, who was here with Pure this morning, had to leave, and I would like to have that made a part of the record in this case,

along with the wire that Mr. Burtchaell has identified, and along with the exhibits that we have offered here, 1 through 14.

MR. DURRETT: Why don't you have it marked as an exhibit?

MR. SPERLING: Shall I do the same with the wire?

(Whereupon, Applicant's Exhibits Nos. 15 and 16 marked for identification.)

MR. UTZ: Without objection, Exhibits 1 through 16 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits Nos. 1 through 16 admitted in evidence.)

MR. SPERLING: That's all we have at this time, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Referring to your Exhibit No. -- it isn't marked, your interference test --

A Exhibit 11.

Q Prior to the beginning of this interference test, how long were these two wells shut in?

A Well No. 1 was shut in 44 hours. Well No. 2 was shut in 16 hours, or 164 hours.

Q At the end of your test, between the time that your clock stopped -- well, between the time that your No. 2 Well was shut in, how much time lapse did we have?

A Both wells at the time we ran the final shut-in pressures were shut in approximately 24 hours.

Q Do you have any information as to the rate of pressure build-up; in other words, were these 24-hour pressures stabilized?

A Based on a pressure build-up test run on Well No. 1 on March 30, 1962, we found that the maximum pressure, the pressure was within two pounds of maximum after a four-hour build-up. In Well No. 2 we ran a build-up test on June 20th, we found that the pressure was within two pounds of maximum within six hours after shut-in.

Q In other words, you feel that these pressures, shut-in pressures shown on Exhibit 11 were stabilized pressures?

A Yes, sir, we do.

Q Likewise on Exhibit 9, the shut-in pressures shown there were stabilized pressures?

A Yes, sir. They varied up to 49 hours, the least one we have is 7 hours, and that was on the initial pressure on Well No. 2.

Q On your Exhibit No. 12, you listed lifting costs, 25 cents per barrel. How much production is that based on?

A How much information?

Q Well, how much production, 25 cents a barrel; now if you are only producing ten barrels a day --

A Well, it's our estimate of the overall average lifting cost over the life of a well. It's not based on any instantaneous

Q It's not based on monthly cost?

A No, sir.

Q Do you have any estimate as to what the monthly operating cost is?

A No, sir, we do not. I am sorry. These wells were completed in June, and our information has not come down to that state. Since we have completed both wells, we have been running so much additional information that our costs, we do not feel that we would get, are too indicative of what would happen in the future. We took bottom hole samples, put against the operating costs, we have been running pressures pretty regularly, put against the operating cost; it was an estimate that over the life of the well that 25 cents would be reasonable.

Q In other words, it was based on your recoverable reserves?

A Yes. We know that our direct operating costs at the present time are under the vicinity of 10 cents a barrel.

Q Now the $213,000 investment, is that the actual cost of your No. 2 Well?

A No, sir. The well cost was $186,804. We have added to that $20,000 for anticipated pumping unit, and we have split the actual cost of our tank battery on the lease between the two wells, and splitting $6,069 to each well, which gave us an actual cost plus an estimated pumping unit of $212,873.

Q Does Kern County have any plans for drilling other wells

on this unit?

A I believe so, yes. Our information at the present time is if we are successful on 160-acre spacing, that our economics would be such that we could drill on the East Half. We have not discussed this matter yet with our partners as to final approval.

Q How about the North Half of Section 20, at this point do you have conjecture as to the productivity of that area?

A Our supposition at the present time is that it would not pay us to drill there.

MR. UTZ: Any other questions of the witness?

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

BY MR. DURRETT:

Q Mr. Burtchaell, assuming that the Commission approves or would approve this application, would you please state for me which 160 acres you propose to dedicate to each well --

A Well --

Q -- that you have operating now?

A Well, it would be my current thinking that we would dedicate the Northwest Quarter to the No. 2 Well and the Southwest Quarter to the No. 1 Well.

MR. DURRETT: Thank you. That's all I have.

MR. UTZ: That would be in conformance with Rule 2 of your proposed rules, would it not?

A Yes.

MR. UTZ: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. UTZ: Any other statements in this case?

MR. DURRETT: Yes, sir. I have a letter in the Commission files from Howard C. Bratton. He requests that I read this into the record, and I would like to do so at this time. This letter was received October 22, 1962, and it reads as follows:

"Gentlemen: Humble Oil and Refining Company supports the Application of Kern County Land Company in the above case, and urges the adoption of rules presented by Kern County Land Company. It is the understanding of Humble Oil & Refining Company that these rules include the following:

"1. Application of these rules to any well completed within one mile of said pool.

"2. Proration units consisting of 160-acre governmental quarter sections.

"3. Location of each well to be within 150 feet of the center of either the NE¼ or the SW¼ of the quarter section.

"4. A provision for obtaining exception to the rules for non-standard units and corresponding decreased acreage-prorated allowables.

"5. A 160-acre proportional factor of 7.67 for allowable purposes with a provision that a unit allowable may be produced in any proportion from the wells on a unit in the event there is more than one well on a 160-acre unit.

"It is respectfully requested that this letter be made a

part of the record in the case." Signed Howard C. Bratton, Hervey, Dow and Hinkle.

MR. UTZ: Let the letter be made a part of the record in this case.

Any other statements? I have one additional question which I neglected to ask Mr. Burtchaell. Do you have any opinion at the present time as to what type of drive you have in this pool?

MR. BURTCHAELL: Our current information indicates a solution gas drive.

MR. UTZ: Solution gas?

MR. BURTCHAELL: Yes, sir. We have no water production, our pressure is declining, our ratio is remaining constant.

MR. UTZ: Thank you. No further statements? The case will be taken under advisement.

* * * * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 24th day of November, 1962, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2626, heard by me on Oct. 24, 1962.

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

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 30, 1963

EXAMINER HEARING

IN THE MATTER OF: (Reopened and continued from the October 9, 1963, examiner hearing) In the matter of Case No. 2678 being reopened pursuant to provisions of Order No. R-2359, which order established temporary 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

Case No. 2678

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

'64 NOV 20 AM

KERN COUNTY LAND COMPANY

600 CALIFORNIA STREET
SAN FRANCISCO 8
TELEPHONE EXBROOK 7-4100

November 17, 1964

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Gentlemen:

We should like to make the following corrections to the official transcript of Case No. 2678, heard by Daniel S. Nutter, Examiner, on October 28, 1964.

Page 8 Line 11 - Fourth word should read 42.2 percent instead of 4.42 percent.

Page 8 Line 12 - Fifth word should read 300 instead of 30.

Yours very truly,

E P Burtchaell

E. P. Burtchaell
Manager, Production
and Engineering

cc: Dearnley-Meier Reporting Service Inc.
P. O. Box 1092
Albuquerque, New Mexico

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE OCTOBER 30, 1963 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Ronald J. Jacobs	Skelly Oil Co.	Tulsa, Okla.
William Singley	Skelly Oil	Farmington, N.M.
J E Sperling	Modrall Seymour Sperling et al	Albuquerque
J. Tindall	Kern County Land Co.	San Francisco
C. Staton	Coastal States Gas Prod Co	Roswell
Perry N Barham	Coastal States Gas Prod Co	Abilene Texas
R M Anderson	Sinclair	Midland
Richard S. Morris	Seth, Montgomery, Federici & Andrews	Santa Fe
Robert G. Hanagan	Hanagan & Hanagan	Roswell
Hugh E. Hanagan	" "	"
William R. Loan	Sunray DX	Tulsa
Virgil R. Mayabb	"	Hobbs
Paul J. Beaver	"	Midland
E P Burtchaell	Kern County Land	San Francisco
[illegible]	"	Midland

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE OCTOBER 30, 1963 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Seeros S. Forman	Consolidated Oil & Gas	Denver Colo
Jason Kellahin	Kellahin & Fox	Santa Fe
W. A. Dutton	Humble	Midland, Texas
A. L. Porter, Jr.	OCC	Santa Fe
E. J. Motter	Cities Service Oil Co	Hobbs, N. M.
L. O. White	[illegible]	Santa Fe
Joe Gordon	Socony Mobil	Hobbs
John Kennedy	Socony Mobil	Hobbs
C. R. Block	Texaco Inc.	Midland
Frank E. Irby	State Engr. Office	Santa Fe
Marshall Smith	R. W. Byram	Santa Fe

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General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

MR. NUTTER: The hearing will come to order, please. The first case this morning will be Case 2678.

MR. DURRETT: In the matter of Case No. 2678 being re-opened pursuant to provisions of Order No. R-2359, which order established temporary 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

(Whereupon, Applicant's Exhibits Nos. 1 through 9, both inclusive, marked for identification.)

MR. SPERLING: Jim Sperling appearing for Kern County Land Company. We have one witness, Mr. Examiner.

MR. NUTTER: Please proceed, Mr. Sperling.

MR. SPERLING: May we have the witness sworn?

(Witness sworn.)

MR. SPERLING: Mr. Examiner, we have a number of exhibits which have been marked 1 through 9 for identification. They will be referred to in numerical order. I might say that in several instances these exhibits have been expanded or the data which has been gathered since the last hearing has been incorporated in a number of these exhibits. We have available, if the Examiner wishes us to make them available, the exhibits which were introduced at the last hearing; so that for the purpose of convenience, reference could be made for comparison purposes to the two as they are introduced.

MR. NUTTER: We have the case file here for the previous

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hearing --

MR. SPERLING: I'm aware of that.

MR. NUTTER: -- so we can refer to these exhibits. However, to avoid confusion between these exhibits and the previous hearing, mark them 1, 2, 3, 4 followed by the suffix "R" because it does have the same case number.

MR. SPERLING: Yes, sir, in all instances where the exhibits have been revised they have been marked on the exhibit itself. I think the confusion can be eliminated in that manner. Actually they are, by reason of the fact that this is a continuation of the original hearing, the exhibits that were introduced at that time have been revised in accordance with the new data.

MR. NUTTER: I see.

E. P. BURTCHAELL

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Would you state your name, please?

A E. P. Burtchaell.

Q Mr. Burtchaell, you testified on behalf of the applicant, Kern County Land Company, at the last hearing which was held in October, 1962, is that right?

A Yes, sir.

Q At that time you qualified as an expert witness?

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A Yes, sir.

Q Would you please now refer to what has been marked as Exhibit 1, Revised, for the purposes of this hearing and tell us what that is designed to show?

A Exhibit 1 is a structure map on top of the Permo-Pennsylvanian East Saunders Pool. We have revised Exhibit 1 from that presented a year ago, based on the drilling of Well No. 3 which is located in Section 20, and also there has been a dry hole drilled down south of that well which caused some change in the contour maps.

As a matter of illustration, our Well No. 3 came in about eight feet lower than what we had shown on Exhibit 1 last year. So we feel that the changes we made are insignificant.

Q This contour map has been revised based upon the information gained as a result of drilling Well No. 3?

A Well No. 3 and the Trainer Well down to the south of it.

MR. PORTER: Is Well No. 3 in Section 20?

A Yes, sir, in the North Half. Otherwise Exhibit 1 presented today is the same as Exhibit 1 presented a year ago, with minor changes in structural contour.

Q (By Mr. Sperling) Would you please refer to Exhibit No. 2, Revised?

A Exhibit 2 is not presented at this time because Exhibit 2 is a cross section through the field and it uses the same points as we had last time; there's no new control. Exhibit 2 is an

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east-west cross section through the field in which there were no new wells added, so we did not revise Exhibit 2.

Q It remains the same as it was a year ago?

A Yes, everything the same as it was a year ago.

Q What about Exhibit 3?

A Exhibit 3 is the north-south cross section through the field, and it is the same as presented a year ago, and we have now added Well No. 3 which has been added. It shows the correlation from the top of the pay, the different porous zones that are present on all three wells in the field. You can see from Exhibit 3 that the third well we drilled south, the points correlate very nicely with the previous two wells.

Q Then Exhibit 3 is a duplication of the previous exhibit except the log and correlation points have been shown for Well No. 3?

A That is correct. We have added the Well No. 3 onto what we presented in Exhibit 3 the last time, and drawn the same correlation points across. We had no trouble in correlating, as you can see.

Q Refer to Exhibit No. 4, Revised, and tell us what that exhibit is intended to indicate.

A Exhibit 4 is the same as Exhibit 4 presented a year ago, except that we have added all the physical data pertaining to Well No. 3. It was completed on May 24, 1963, which was after the hearing in October, 1962. We show the total depth, top of

the pay, the net feet of pay, the perforated interval, the initial potential. The well was completed for 391 barrels per day with GOR of 977.

We also show as Item No. 10 the current production rates from all three wells in the field. This information was taken in September of 1963, showing that Well No. 1 was producing 370 barrels a day, Well No. 2, 335, and Well No. 3, 310 barrels a day.

Q Now, Mr. Burtchaell, would you please refer to Exhibit No. 5?

A Exhibit 5 of last year's hearing was a summary of the core analysis taken on Well No. 2. The Exhibit 5-R which we are presenting today is a summary of the core analysis that we obtained on Well No. 3. It just lists the footage cored, the permeability by feet, the porosity and the water saturation; and down at the bottom we show the weighted average data, average porosity, 8-1/2 percent; average permeability, 86.2 millidarcies; average water saturation, 30.6 percent.

Q Now, Mr. Burtchaell, refer to Exhibit No. 6, Revised.

A Exhibit 6 has been revised to include the information obtained from Well No. 3,with the previous information we had on Wells 1 and 2. The top half of Exhibit 6 shows the information that we used in our reservoir calculations.

The average pay for the pool is 18.3 feet. This was obtained by numerical averaging of the net feet of pay in each of

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the three wells. Average porosity is 8.3 percent; this is a weighted average based on the core obtained in Wells 2 and 3. Average permeability, 46.2 millidarcies; again this is a weighted average of the cores obtained in Wells 2 and 3. Average water saturation being 32.1 percent, which is the weighted average of the cores in Wells 2 and 3. Reservoir temperature of 155 degrees and the original reservoir pressure is 3914 pounds.

The bottom half of the Exhibit 6 has not been changed from that presented a year ago, in that it is the summary of the bottom hole conditions that we obtained from a sample.

MR. NUTTER: This is actually made from a fluid analysis?

A Yes, sir. We ran a bottom hole sample. We had this information a year ago.

Q (By Mr. Sperling) Mr. Burtchaell, did the information which you gained as a result of drilling Well No. 3 change to any great extent your evaluation or analysis of the reservoir characteristics --

A No.

Q -- based upon the information that you had gained from drilling Wells 1 and 2?

A No, the changes were very minor. The net feet of pay is now 18.3 feet, and a year ago I believe we had 19.5. It was a very minor change. The porosity changed about .2 percent permeability changed slightly. In general I'd say it was very close agreement.

Q Please refer to Exhibit No. 7 as revised for this hearing.

A Exhibit 7 is our calculation of recovery from the field. The top half of Exhibit 7 repeats the information presented on Exhibit 6 in which we show again the average physical characteristics of the reservoir, the porosity being 8.3 percent, the net pay 18.3 feet, water saturation 32.1 percent, formation volume factor 1.527; and we have added at this time our recovery factor which we had calculated from a Schilthius material balance at 25.2 percent. This recovery factor was the same as we used last year. We did not calculate this factor.

The bottom half, then, we have gone through a pore volume calculation for the pay thickness. We have come out with a weighted recovery of 1319 barrels per acre. I believe this is very close to what we presented last year, slightly lower due to the change in footage that we have.

Q Your net pay footage was reduced?

A Reduced about one foot, I believe. I'm not sure, but it was around 19 feet last year.

MR. NUTTER: Reduced 1.2 feet.

A 1.2, thank you.

Q (By Mr. Sperling) Anything else you want to comment on so far as Exhibit No. 7 is concerned?

A No, sir.

MR. SPERLING: I might at this point say that these

have been marked consecutively but they do not in all cases correspond directly with the exhibit numbers in the previous hearing. What would have been Exhibit No. 8 is an identical reproduction of Exhibit No. 8 in the previous hearing. I don't want to make this confusing, but we have revised only those exhibits upon which, or which required revision as a result of the additional information.

A Exhibit 8 is the calculations on the material balance and where we got the 25.2 percent. We did not repeat those calculations.

Q (By Mr. Sperling) Because, as you stated before, the calculations were identical with the ones made previously?

A That's correct.

Q Now would you please refer to the exhibit which is the pressure production graph, and I believe for the purposes of this hearing has been marked as Exhibit 8. Explain to us what that exhibit shows.

A Exhibit 8 in our mind is the key exhibit that we have to offer at this time. Exhibit 8 is a plot of the reservoir pressures that we have measured in all three wells. We have shown the individual pressures in each of the three wells. These pressures are plotted versus time. We've also shown on this same plot a plot of the oil production from the field versus time.

If you'll note that as of October, 1962, approximately,

the left-hand portion of the graph, that was all the information we had at the time of the last hearing. Since October of '62 we have run four pressure surveys in that year's interval, approximately three months apart, to verify the pressure performance of the pool.

You can readily see that the pressure decline of the pool has followed very well with what we had presented previously, with the very important point being that when Well No. 3 was completed in May of '63, that the initial bottom hole pressure that we measured in that well on completion was some 1500 pounds lower than the initial pressure in the reservoir. So we felt positively that we were causing drainage at least one-half a mile from our wells.

Also note that as we continued to obtain pressure information on all three wells, that all of the three wells follow the same apparent pressure decline. There is some variation in the specific pressures between the wells, but in general they had the same slope between time periods.

Q As I understand your explanation of the exhibit, it picks up in point of time an interval which was covered by the well performances which had occurred prior to the last hearing, and has continued that information into the present time and up to October of 1963?

A That is correct.

Q How does the information which appears on Exhibit No.

8, that is,actual information based upon production and time, compare with your projections which were made at the time of the hearing last year?

A I think if I may go to Exhibit 9 it shows up very nicely.

Q Please do.

A Exhibit 9 is the plot of pressure information versus cumulative oil production from the pool, and note again that at about 50,000 barrels production we had pressure information dated September 29, 1962, which was just prior to the hearing of last year. That was all the information we had at that hearing, and notice that the pressure points gave a very good straight line down to that point.

Now since October, '62, we have taken these four additional surveys, one in January, one in June, and one in September and one in October again; and notice that we can extrapolate very nicely the straight line portion of the pressure curve down to the indicated bubble point that we have from our P.V.T. sample.

We are now below the bubble point and we have three good pressure points that lie in a good line. I would say that the pressure information that we have obtained since last year fits very nicely with what we had predicted.

Q As a matter of fact, Mr. Burtchaell, the performance of this reservoir is almost a textbook classic, is it not, as far as reservoir performance?

A That's the way we feel about it. It's a pleasure to work with it.

Q Please refer to the next exhibit, which I believe is Exhibit No. 9, Revised.

A Exhibit 9 was the one which we were just discussing, which shows the pressure versus the cumulative oil production.

Q Right. Then the following exhibits numerically are actually duplications of those which appear as a result of the testimony presented at the previous hearing, is that correct?

A Yes. I think if I may I would like to make one point. Exhibit 11 that we presented a year ago is a plot of the well interference test we had made. At that time we had completed two wells in the field. We had evidence to indicate that we were suffering drainage a half a mile away, so we shut one well in and produced a second well, and we left the pressure bomb in the second well while we produced the first well; and as you can see from Exhibit 11, which is what we presented a year ago, we suffered pressure decline in the shut-in well while the producing well was producing. We shut both wells in, they both built up to about the same point in bottom hole pressure.

We did not duplicate this information this time, primarily because when we completed Well No. 3 in the field in May of '63, the initial bottom hole pressure had dropped 1500 pounds, so to us it was clear evidence that we had suffered drainage clear from Well No. 1 over to Well No. 3 and it didn't seem

important to run an interference test.

Q What is the lateral separation between Well 1 and Well 3?

A One-half mile between all wells. They are in a straight line a half a mile apart.

Q You feel that the decline in bottom hole pressure, that is, initial pressure, as between Wells No. 1 and 2 and that measured in Well No. 3 at the time of its completion is clearly indicative of drainage?

A Yes, sir. Refer back to Exhibit 8 in which we plot the initial or the pressure in Well No. 3. We also at the same time ran pressures in Wells 1 and 2. You can see on Exhibit 8 that the three pressures we obtained were within 100, 200 pounds of each other, and they continued in that same relationship right on down up to the present time. It's fairly or definitely clear to us that drainage is occurring at a distance greater than one-half mile.

Q I assume from what has been said and from the additional data that you have presented here that it's Kern County's position that the present rules should be continued in effect pending the further order of this Commission?

A Yes, sir.

Q Would you please refer to your next exhibit there, which I think would be No. 10, and explain to us what that is designed to portray?

(Whereupon, Applicant's Exhibit No. 10 marked for identification.)

A Exhibit 10 is a repeat of Exhibit 12 of a year ago, but here again we have added the information obtained on Well No. 3. It is an economic comparison of the profit to the Kern County Land Company and our partners for drilling on 40 acres, 80 acres, and 160-acre pattern.

At the top part of Exhibit 10 we have presented the basic data we have used in our evaluation. All of this information is actual data that we have obtained since the field was discovered. The oil value is what we are receiving, the gas value is what we are receiving. The operating costs are what it is costing us, based on our accounting records; the investment is the average of the last two wells in the field.

We have left off the cost of Well No. 1 from this appraisal, because Well No. 1 was initially drilled to over 12,000 feet and so we thought that the costs of that well are not indicative of what it costs to drill in the East Saunders Field; so we have averaged the actual costs of Wells 2 and 3; included in that are the lease facilities which are the tax and an LACT unit, to come up with our average cost.

To go through the straight economic calculations, showing the recoverable oil for each of these spacing units, the gas, the oil and gas revenue, our costs and our profit at the bottom, and coming down to Item No. 12 with the profit-to-

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investment ratio that we would receive under these various spacing patterns. This information indicates that 40-acre development would result in a loss to the operator; 80-acre spacing would result in a profit of .43 to 1; and 160-acre would show a profit of 1.85 to 1. Obviously we feel that a profit-to-investment ratio of .43 is less than we would desire. The 1.85 to 1 is acceptable.

Q You mentioned earlier that you are past the bubble point so far as production in this field is concerned. Assuming the continuation of the present rules, what additional information do you expect to obtain so far as this reservoir is concerned on the basis of present development?

A I believe the main information we are seeking now is to be able to calculate the recoverable oil from the entire pool, and we feel that as pressure decline continues that our information will become more accurate and allow more precise calculations of the initial oil in place and the recoverable oil.

We have every reason to believe now that we are draining more than 160 acres. We are anxious to find out just how much oil is in the pool so that we can determine whether or not it would be economical to do additional drilling, or we can determine that we are now draining sufficiently all the oil in the pool; obviously there would be no point in doing additional drilling.

Q How long would you expect it would take for you to

gain this information?

A Well, based on the apparent performance that we see today, I feel confident that within one year we will have the information we require.

Q Do you have any other comment concerning performance of this reservoir and your expectations so far as its performance is concerned, which I gather has been pretty well borne out in actual fact in confirmation of your predictions as presented a year ago?

A Yes. The only comment I might make is that the apparent calculations we run now indicate that the pool is small, the recoverable oil is obviously less than a million barrels. We would like to verify just how much it is. We have every indication that our drainage pattern exceeds 160 acres, but at this time with the information available we are not in a position to make any strong claims. It's just what the drainage pattern is, except that it is obviously greater than 160 acres.

MR. SPERLING: I believe that's all at this time, Mr. Examiner.

MR. NUTTER: Any questions of the witness?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Burtchaell, as you stated, these pressure points appear to be in line with each other very closely. Who measures the pressures for you?

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

A We have an outside service. They're a contract service.

Q When the pressure was made on Well No. 3 in May or June of 1963, was that a drillstem test pressure?

A No, sir.

Q Or was that an actual bomb pressure?

A It was an actual bomb pressure.

Q Conducted by an independent service company?

A Yes, sir. I believe they operate out of Hobbs, Hanson Company.

Q And they measure the pressures for you and compute them and calculate the gradient and determine the bottom hole pressure at the datum?

A Yes, sir.

Q What is the datum?

A Minus 6300 feet.

Q What has been the cumulative production from each of the wells, Mr. Burtchaell?

A I don't believe I have that information by wells.

Q From Exhibit 9, I would estimate that the cumulative production for the three wells as a whole by October 1st, 1963, has been about 280,000 barrels, is that correct?

A That is correct.

Q Is Well No. 1 still capable of making its top allowable?

A Oh, yes, sir. On Exhibit 4 we show the September, 1963, production rates that we actually tested by wells, showing that

Well No. 1 was capable of producing 370 barrels a day on a 25/64 choke, GOR 1124, flowing tubing pressure 280 pounds, no water.

Well No. 2 produced 335 barrels per day on a 27/64 choke, GOR 1130, flowing tubing pressure, 200 pounds, no water. Well No. 3, 310 barrels, gas-oil ratio 1234.

Q And the top allowable for the pool is what?

A 297, I believe.

Q That's current?

A Yes, sir.

MR. PORTER: You were testing the wells within the 25 percent tolerance?

A Yes, sir.

MR. NUTTER: Are there any other questions of Mr. Burtchaell? He may be excused.

(Witness excused.)

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

MR. SPERLING: No.

MR. NUTTER: Does anyone have anything else to offer?

MR. JACOBS: Yes, I am Ronald Jacobs appearing on behalf of Skelly. Skelly Oil Company as an interested owner and operator in this pool concurs in the application in this case and urges that the 160 be continued.

MR. BRATTON: Howard Bratton appearing on behalf of Humble. Humble is a part owner in the wells operated by Kern

County Land Company. The pressure data presented demonstrates communication between the wells sufficient to drain 160 acres, and therefore we believe waste will not result from this spacing. The evidence presented shows that spacing on less than 160 acres would result in economic waste. Humble urges that the 160-acre spacing order be continued.

MR. SPERLING: Mr. Examiner, I neglected to offer the exhibits that have been produced and testified about. We offer them at this time.

MR. NUTTER: What are their numbers?

MR. SPERLING: 1 through 10, Revised.

MR. NUTTER: You are offering these exhibits, the ones clipped together?

MR. SPERLING: Yes, the ones that you have in your hand.

MR. NUTTER: They're all dated, anyway.

MR. SPERLING: Yes.

MR. NUTTER: Exhibits 1 through 10 will be accepted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 10, Revised, admitted in evidence.)

MR. DURRETT: If the Examiner please, I would like to state that the Commission has received a communication in the form of a telegram from Shell Oil Company stating they support the continuation of 160-acre spacing.

MR. NUTTER: We will take the case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 5th day of November, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2678, heard by me on 10/30, 1963.

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

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 28, 1964

EXAMINER HEARING

IN THE MATTER OF: (Reopened)

In the matter of Case No. 2678 being reopened pursuant to the provisions of Order No. R-2359-A, which continued the original order establishing 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for an additional year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

Case No. 2678

BEFORE: DANIEL S. NUTTER, EXAMINER.

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 2678.

MR. DURRETT: In the matter of Case No. 2678 being reopened pursuant to the provisions of Order No. R-2359-A, which continued the original order establishing 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for an additional year.

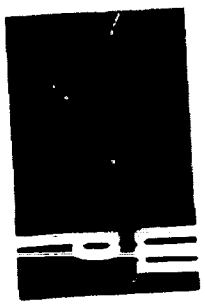
MR. SPERLING: Jim Sperling, appearing on behalf of Kern County Land Company. We have one witness.

(Whereupon, Applicant's Exhibits Nos. 1 through 10 were marked for identification.)

(Witness sworn.)

MR. SPERLING: If the Examiner please, this is the third hearing with reference to this particular pool that the Commission has held in this particular case. The initial application was heard in October of 1962, which resulted in temporary rules providing for 160-acre spacing in the Etchevery Unit Area. That was followed one year later by subsequent hearing, and then, of course, this is the third hearing.

It will be the intention of Kern County Land Company, as the principal operator in the area, to request as a part of this record that these rules be made permanent following the presentation of the testimony to be presented at this particular hearing.



With that very short introductory statement, we'll proceed, if the Examiner please, with the presentation of this case.

EDWARD P. BURTCHAELL

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Would you state your name, please?

A My name is Edward P. Burtchaell, B-u-r-t-c-h-a-e-l-l.

Q Where do you live, Mr. Burtchaell?

A San Francisco, California.

Q By whom are you employed and in what capacity?

A I'm Manager of Oil Production and Engineering for the Kern County Land Company.

Q Did you appear before and testify at the previous hearings which have been held in this case?

A Yes, sir.

Q At both of the prior hearings?

A Yes, sir.

Q Would you please refer to what we have marked as Exhibit 1 in this case and explain the information contained on the exhibit?

A Exhibit 1 is a structural contour map of the East

Saunders Pool. It is very similar to our Exhibit 1 that we have previously presented. Since the three producing wells in the field were drilled there have been two wells drilled during 1964 which we have added to this Exhibit 1 here. One well is the Skelly well to the south, and the other well is the Gose well to the west in Section 18.

The Gose well in Section 18 was a dry hole and abandoned. The Skelly well to the south was completed as a 60-barrel a day pumping well. It produced slightly over 1,000 barrels of oil and suspended.

MR. NUTTER: What was that again?

A It produced slightly over 1,000 barrels of oil and suspended. They pulled tubing and it is shut-in.

MR. NUTTER: Temporarily abandoned?

A Yes. The difference between this exhibit and the one we previously presented is minor. The Skelly well came in lower than we predicted and made a steeper contour to the south. The Gose well to the west came in slightly higher than we have previously shown. Other than that the structure is the same.

Q What does the yellow line in the center of the exhibit indicate?

A The yellow line is the outline of the drilling unit that Kern County operates for Shell, Skelly, Pure and Humble.

Q Does the information contained on the lower

right-hand corner of the exhibit indicate the ownership within the yellow area?

A Yes, it does.

Q And the lease ownership is reflected on the plat itself as to surrounding areas?

A Yes, sir, it does.

Q Will you please refer to Exhibit No. 2?

A Exhibit 2 is an east-west cross section. It goes from the Kern County Land Company No. 1 State through the recently abandoned Gose well, to the Faskin Tidewater State well further to the west. The main purpose of this cross section is to demonstrate that to the west of our State No. 1 well we have a definite indication of permeability barrier.

The Gose well is the same Gose interval that we have in our producing wells, there is no porosity or permeability. The Faskin well, which is updip from the Gose well and updip from our producing wells, tested water in this same interval that we are producing oil. The abandonment of the Gose well definitely substantiates the permeability barrier to the west of the field.

Q Then this is in effect an east-west cross section, is that right, across the area map that you have shown here as Exhibit 1?

A Yes, sir, it goes from our State 1 to the Faskin

well on the west.

Q Would you refer to Exhibit 3, please?

A Exhibit 3 is a north-south cross section. What we have shown here as we go from our State 2 to the extreme north through the State 1 to the State 3, these are the three producing wells in the field we have added to this section, the Skelly well to the south, which was completed as a 60-barrel a day pumping well, and subsequently suspended. As you can see from the logs here, that there appears to be practically no permeable zone in the Skelly well to the south.

Q Any other significant features so far as this exhibit is concerned?

A No, I don't believe so. It's a repeat of what we've previously shown. We are able to correlate the porous zones throughout the producing area of the field. We can actually pick the same porous intervals in the Skelly well, but in this characteristic the character of the log and the production performance of the well certainly indicates that they are no good.

Q If you'll refer to Exhibit 4, which appears to be a collection of data, and explain the information contained thereon and whether or not it is supplemental to or in what respects it differs from the information which was presented on a similar exhibit at the prior hearings.

A Exhibit 4 is a tabulation of the physical data on the completed wells in the East Saunders Field. The first three columns are identical to that which was previously presented. We have added to the right the information on the Skelly Hobbs well, which is the well that was completed for 60 barrels a day on the pump and subsequently abandoned. The only difference is Item 10 at the bottom, and in this case we have shown there the most recent production tests on the three completed wells in the field.

Well No. 1, producing 334 barrels a day. Well No. 2, 354 barrels, and Well No. 3, 323 barrels. Incidentally, this information presented in Item 10 is what was found on our GO-2 test. Other than that the information is the same as we previously presented.

We have shown on the Skelly well no feet of net pay. We believe that the performance of the well indicates that it has practically no pay in it.

Q If you'll refer to Exhibit No. 5 and explain what that indicates.

A Exhibit 5 is a graph which illustrates the results of our material balance calculations which we have been performing on this pool. We have now calculated that the indicated recovery factor will be 42.2%. In previous testimony given last year we had used a factor of 25.2%. So

obviously we are now anticipating a substantial increase in the ultimate recovery from this field. The reason for the difference in calculated recovery factor is based on our change in the use of our KGKO curve.

At the first two hearings why we used information presented by Arps and Roberts for limestones, and now we are using actual field performance data which we have available. Bottom hole pressures, gas-oil ratios and have recalculated a field performance KGKO and shows a much improved performance for the East Saunders Pool over that we used. Corrected our information up to ~~1.42~~ 42.2 percent performance, which is at an abandonment pressure of about ~~30~~ 300 pounds.

Q Now if you will refer to Exhibit 6 and give us a resume of the information collected there and in what respects, if any, the information there differs from the information presented at previous hearings.

A Exhibit 6 is a summary of our calculation of reserves. The first half of Exhibit 6 down to the recovery factor is identical to what we have previously used. The recovery factor, as I showed in Exhibit 5, we have now changed to 42.2%. The balance of Exhibit 6 is just to apply the 42.2% factor into our core information to come out now with a new oil recovery of 2211 barrels per acre. Last year we used a figure of 1319 barrels. It's changed, based on our change

in recovery factor.

MR. NUTTER: You went up from 1300 to 2200?

A Yes, sir.

Q (By Mr. Sperling) But there has been no change in net pay calculation or porosity averages and so forth?

A No. The only well that could have changed it was the Skelly well, and like I said, we did not believe that we should use the information on the Skelly well on this sort of calculation, so we have ignored that well. There have been no other completed wells in the pool.

Q If you'll please refer to Exhibit 7.

A Exhibit 7 is a continuation of information we have been presenting every year. It shows the bottom hole pressure history of each well plotted versus time. We have also shown the monthly oil production from the lease on the same graph.

I think the significant thing to comment on here is that the bottom hole pressures continue to decline, the decline for each of the producing wells is approximately the same. However, we are now seeing a spread in the individual bottom hole pressures, as you go back last year at this time we had a very small spread, and previous to that we had no spread, and it is also interesting to point out that the spread is exactly from north to south. That the No. 2 well is the most northerly well, the No. 1 is the middle and the No. 3 well

which offsets the Skelly well, that is a dry hole, is the well to the south.

The highest pressure is in the north and the lowest pressure in the south, but the slopes are approximately equal, as you can see, and it leads to our conclusion that we are draining the field as we now see it. We have not run any additional well interference tests over that previously presented because we felt that we definitely have established communication between the wells. Each well, when it was completed, came in with essentially the reservoir pressure that then existed in the field and the decline has existed in each well since that time.

Q What is the reason for the spread that is beginning to occur as between the pressures?

A Well, it is our conclusion that the No. 2 well is benefiting by migration of fluid into its drainage area. What we have shown, if I may jump to Exhibit 8 --

Q Yes.

Q -- which ties this in together.

Q Please.

A The Exhibit 8 is a blow-up of our material balance calculations which we have presented on Exhibit 8, the actual measured pressure point versus cumulative oil, and shown on the graph are calculated points which we previously have shown

in Exhibit 5. As you can see, we are getting excellent agreement between our calculations and actual. The combination of Exhibit 7 and Exhibit 8 lead us to the conclusion that the three wells presently completed in the pool are draining the entire pool. The calculated initial oil content has not changed since the initial start of the pool.

We keep coming back with the same answer for oil in place, so when we go back and talk about the spread in pressures here we now believe that the area slightly to the north and probably to the east of Well No. 2 is feeding into the No. 2 well, the No. 3 well being to the extreme south has a drainage area that is apparently fixed, and the No. 1 well is obviously between 2 and 3. It's fixed.

MR. NUTTER: Mr. Burtchaell, I would like to get this numbering system straight on this. You have Wells No. 1, 2 and 3 on Exhibit 7?

A Yes.

MR. NUTTER: Your bottom hole pressure declines. Now, the No. 1 is the first well that was drilled and that's this, I am referring to Exhibit No. 1, that's Well No. 1 in the northeast of the southwest?

A Correct.

MR. NUTTER: Then Well No. 2, it was brought in, or the first pressure was in '62, and that's the well that's in

the northeast of the northwest of Section 17?

A Correct.

MR. NUTTER: Well No. 3 --

A Is now called 1-20.

MR. NUTTER: It's 1-20?

A Yes, I am sorry.

MR. NUTTER: The first pressure at least was taken in June of '63, is that correct?

A That is correct. We have taken pressures immediately following the completion of the well in all three wells.

MR. NUTTER: I see. Well, I wanted to be sure which well No. 3 was on this plat.

A I might just repeat that it is our conclusion, based on our material balance calculations and our pressure performance, that we believe we have postivie evidence that we are draining the entire oil pool from the three wells we have.

Q (By Mr. Sperling) As I understood it, the reservoir, that is the oil in place in the reservoir has not changed in either your data collected as a result of actual field performance or in the course of material balance calculations?

A That is correct. Through the undersaturated portion of the pool, why we were able to calculate the initial oil in place of around 3.1 million barrels. The subsequent pressure history indicates the same thing. We are between 3.1 and 3.4

million barrels in place, which does indicate that we are draining what we see in the pool.

Q And your pressure studies confirm that, in your opinion?

A That is correct. The pressure studies indicate that.

Q Now, that leads us to Exhibit No. 9, which contains some of the information that we've already talked about here. Would you care to comment further on Exhibit 9?

A Exhibit 9 presents our calculations of oil recoveries, oil in place and indicated drainage area. The basic data at the top we have previously presented. We have gone through our calculations of ultimate oil recovery and oil in place and we come out with 3.360 million barrels of oil in place and indicated oil recovery of 1.418 million barrels, indicated drainage area of 642 acres.

Q That's from the three wells?

A That is correct.

Q The 642 acres?

A That is correct.

Q Now, if you'll refer to Exhibit No. 10 and explain what that shows and in what respects it differs from information previously presented to the Commission.

A Exhibit 10 is practically a repeat of information presented last year, except that we have changed our

recoverable oil for each of the spacing cases considered here. Other than that the information is the same. We have updated our gas value, our operating costs during the year 1964, we've invested over $60,000 in compression facilities. We are now gas lifting the wells. Other than that everything is the same as we have presented.

This is a factual presentation of our cost and income for various spacing patterns. Of course, it ends up with a conclusion in Item 12 that our profit to investment ratio under the present situation is 3.56 to 1. Last year we had a factor of 1.85 to 1. We still believe that the 80-acre spacing pattern is on the marginal side and that its profit to investment ratio is only 1.28 to 1.

Q Well, your economics have changed then, largely as a result of the change in your recovery factor that you spoke of earlier?

A That is correct. That is the only reason for the change.

Q Did you say that these wells were being gas lifted now?

A Yes, sir. We've installed compression and we are injecting gas in all three wells. The pressure had dropped to the point that we had trouble flowing the wells, but we have had no trouble yet in gas lifting. The wells are still

capable of producing top allowable, as we indicated in Exhibit 4. Our gas-oil ratio performance is excellent, it's low, we have no water production shown up in the field to speak of. It's a nice operation.

Q I believe the previous testimony showed that the gas that is being produced was being marketed to Warren?

A Yes, that is correct. They are still buying our gas. The gas is recycled and surplus goes to Warren for sales.

Q Mr. Burtchaell, is it your opinion that this field, as developed under the temporary rules providing for 160-acre spacing, has resulted and is resulting in the maximum efficient recovery of oil in place?

A Yes, sir. I think the indication of the recovery factor of 42.2 from a limestone to us is good indication of efficient drainage from the field. There's absolutely no waste at all. In fact, to our knowledge this is a rather high recovery factor from a limestone of this type, but we certainly are getting it, and the wells are still producing top allowable.

The cumulative oil is about 600,000 barrels to date, and no indication of decline from the wells; pressure is coming down but not alarmingly so. We see no indication that we are not draining the pool efficiently with the minimum number of wells.

Q Is it your recommendation, then, on behalf of your company, that the present rules providing for 160-acre spacing in the East Saunders Pool be continued in effect on a permanent basis?

A Yes, sir. We believe that we have provided and collected all the information that we're going to get into the future to lead to the solution of this problem.

MR. SPERLING: That's all I have, Mr. Nutter, on direct.

MR. NUTTER: Are there any questions of Mr. Burtchaell?

MR. SPERLING: I would like to offer -- I will ask him one more question.

Q (By Mr. Sperling) Were these exhibits prepared by you or under your supervision?

A Yes, sir.

MR. SPERLING: I would like to offer Exhibits 1 through 10. I believe they are all marked by date so that there should be no confusion so far as previous exhibits are concerned.

MR. NUTTER: Applicant's Exhibits 1 through 10 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 10 were offered and admitted in evidence.)

MR. NUTTER: Any questions of Mr. Burtchaell?

CROSS EXAMINATION

BY MR. NUTTER:

Q What is the total cumulative recovery so far from each of the wells, Mr. Burtchaell?

A Just happen to have that. No. 1 has recovered 236,402 barrels. This is as of October 1, 1964. It has recovered 221,102 MCF of gas. Well No. 2 has recovered 216,710 barrels, and 202,283 MCF of gas. Well No. 3 has recovered 143,801 barrels and 135,004 MCF of gas. The Skelly 1-P well has recovered 1,075 barrels of oil and no gas.

The cumulative oil recovery from the entire pool will be 597,988 barrels of oil, 558,469 MCF of gas.

MR. NUTTER: That's all I have. The witness may be excused.

(Witness excused.)

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

MR. SPERLING: No, sir.

MR. NUTTER: If there's nothing further in this case we will take the case under advisement.

MR. DURRETT: Before you call the next case, I would like to state for the record that the Commission has received communication from Skelly Oil Company, Pure Oil

Company, Humble and Shell, supporting the application and requesting that the rules be made permanent.

MR. NUTTER: Thank you. Anything further in this case? We will take the case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

Witness my Hand and Seal this 10th day of November.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2678, heard by me on 10/28, 1964.

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

I N D E X

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico

Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

November 13, 1963

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl
and Harris
Attorneys at Law
Simms Building
Albuquerque, New Mexico

Re: Case No. 2678
Order No. R-2359-A
Applicant:
Kern County Land Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC ___x___
Artesia OCC_____
Aztec OCC _____
OTHER_____
_____

Case No. 2678
Exhibit No. 4 (Rev.)
10/30/63

WELL DATA
EAST SAUNDERS PERMO-PENN POOL
LEA COUNTY, NEW MEXICO

		1.	2.	3.
1.	Well Number			
2.	Completion Date	3/23/62	6/7/62	5/24/63
3.	Total Depth	12,520	10,589	10,550
4.	Top of Saunders Zone	10,308 (-6142)	10,304 (-6136)	10,332 (-6173)
5.	Top of Pay	10,366 (-6200)	10,369 (-6201)	10,396 (-6237)
6.	Net Pay	21 (Sonic)	18 (Cores)	16 (Cores)
7.	Perforated Interval	10,363-388, 396-403, 408-414, 424-443	10,367-373, 401-415, 423-436	10,378-380 396-404, 446-451, 462-465
8.	Treatment (Completion)	500 gal. MCA 4000 gal. regular	1000 gal. mud acid 3000 gal. regular	1000 gal. MCA 3000 gal. regular
9.	Initial Potential			
	a) Oil Production	1772	577	391
	b) Gas-Oil Ratio	875	973	977
	c) Choke Size	32/64	18/64	28/64
	d) Tubing Pressure	250	825	150
	e) Water Cut	none	none	6.5
10.	Current tests (September, 1963)			
	a) Oil Production	370	335	310
	b) Gas-Oil Ratio	1124	1130	1224
	c) Choke Size	25/64	27/64	32/64
	d) Tubing Pressure	280	200	125
	e) Water Cut	none	none	none

297 current top allow

10/30/63

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 2678

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 9, 1963

EXAMINER **HEARING**

IN THE MATTER OF:

Reopened pursuant to provisions of Order No. R-2359, which order established temporary 160 acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

Case No. 2678

BEFORE: MR. ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 9, 1963

EXAMINER HEARING

IN THE MATTER OF: Reopened pursuant to provisions of Order No. R-2359, which order established temporary 160 acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

CASE NO. 2678

BEFORE: MR. ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

MR. UTZ: Case 2678.

MR. DURRETT: In the matter of Case No. 2678 being reopened pursuant to provisions of Order No. R-2359, which order established temporary 160 acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. If the Examiner please, I would like to move that this case be continued to the last examiner hearing in October, and state for the examiner as a basis for this motion, that I received a telephone call from Mr. Jim Sperling who represents the applicant when this case orginally came up for hearing, and he stated that his clients are conducting interference tests at this time,

and thatthey are not yet ready to come forward with the results as the tests have not been completed, but that they will be completed by the last examiner hearing in October; that they would be prepared to come forward at that time. For this reason, I would request the Examiner to continue the case to the last hearing in October.

MR. UTZ: Case 2678 will be continued to the last examiner hearing October 30, 1963.

* * * * * *

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal of Office, this 4th day of December, 1963.

NOTARY PUBLIC

My Commission Expires:
September 6, 1967

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2678, heard by me on Oct 30, 1963.

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

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF KERN COUNTY LAND COMPANY FOR ADOPTION OF SPECIAL POOL RULES FOR THE EAST SAUNDERS PERMO-PENN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 160 ACRE DRILLING AND SPACING UNITS AND FOR OIL ALLOWABLES BASED ON SUCH SPACING.

CASE NO. 2678

A P P L I C A T I O N

Comes now KERN COUNTY LAND COMPANY, a corporation, authorized to do business in the State of New Mexico, hereinafter called "Applicant", and states as follows:

I

Applicant is the operator of wells producing oil from the East Saunders Permo-Penn Pool in Lea County, New Mexico, said pool as presently designated consists of the SW/4 of Section 17, Township 14 South, Range 34 East, NMPM, and is governed by statewide rules of this Commission.

II

Special pool rules and regulations should be adopted by this Commission concerning the drilling of oil wells in said pool and the production therefrom, including, but not limited to, provisions for drilling and proration units. A proration unit should be a governmental quarter section of the U. S. Public Lands Survey and containing 160 acres, more or less.

III

The horizontal limits of the East Saunders Permo-Penn Pool constitutes a common oil reservoir and the geological and engineering data available pertaining to the Permo-Penn Formation indicates that one well will efficiently and economically drain the recoverable oil in place in said formation underlying an area in excess of 160 acres. A drilling and spacing unit for oil wells drilled to the Permo-Penn Formation should be composed of a quarter section according to U. S. Public Land Survey containing approximately 160 acres. No oil well should be drilled on such drilling unit on which another oil well has been completed or approved for completion in said pool. Allowables for said pool should be based on 160 acre spacing.

IV

Each well on any 160 acre unit in said pool should be located within 150 feet of the center of either the NE/4 or the SW/4 of the quarter section on which the well is located.

V

It is economically impractical and wasteful to drill wells to the Permo-Penn Formation within the East Saunders Permo-Penn Pool on drilling units containing less than 160 acres, and the drilling of wells under normal statewide spacing rules would create waste by compelling the drilling of unnecessary wells.

VI

The establishment of drilling and spacing units as herein requested is necessary for the orderly development of a common source of supply in said East Saunders Permo-Penn Pool as the same is now constituted or may

later be extended. The establishment of such drilling and spacing units will protect the correlative rights of all parties affected, will prevent both physical and economic waste, will eliminate the drilling of unnecessary wells, and will promote the recovery of oil from said pool in an efficient and economical manner.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing, after due notice as prescribed by law, and upon such notice and hearing, Applicant requests that the Commission issue its order establishing special pool rules for the East Saunders Permo-Penn Pool providing for 160 acre drilling and spacing units and for oil allowables based on such spacing and that the order provide such other and further relief to Applicant as it may show itself entitled to receive in the premises.

DATED this 26th day of September, 1962.

KERN COUNTY LAND COMPANY, a corporation, Applicant

By its attorneys:

MODRALL SEYMOUR SPERLING ROEHL & HARRIS

BY James E. Sperling

Attorneys for Applicant
P. O. Box 466
Albuquerque, New Mexico

J. M. HERVEY 1874-1953
HIRAM M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. HUNKER, JR.
HOWARD C. BRATTON
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.

LAW OFFICES
HERVEY, DOW & HINKLE
HINKLE BUILDING
ROSWELL, NEW MEXICO

TELEPHONE 622-6510
AREA CODE 505
POST OFFICE BOX 10

October 19, 1962

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Case No. 2678 - East Saunders ~~Permo-Penn~~ Pool, Lea County

Gentlemen:

Humble Oil & Refining Company supports the Application of Kern County Land Company in the above case, and urges the adoption of rules presented by Kern County Land Company. It is the understanding of Humble Oil & Refining Company that these rules include the following:

1. Application of these rules to any well completed within one mile of said pool.

2. Proration units consisting of 160-acre governmental quarter sections.

3. Location of each well to be within 150 feet of the center of either the NE¼ or the SW¼ of the quarter section.

4. A provision for obtaining exception to the rules for non-standard units and corresponding decreased acreage-prorated allowables.

5. A 160-acre proprational factor of 7.67 for allowable purposes with a provision that a unit allowable may be produced in any proportion from the wells on a unit in the event there is more than one well on a 160-acre unit.

It is respectfully requested that this letter be made a partof the record in the case.

Very truly yours,

HERVEY, DOW & HINKLE

Howard C. Bratton

HCB:lm

Case 2675
Heard 10-24-62
Rec. 10-25-62

1. Grant Kerr Co's request for 160 Ac. spacing in the E. Saunders-Permo-Permo. Oil Pool.

Use the Lusk-Strawn Rules. order R-2175-B except except that no exception for wells drilled prior to this order is needed. Also the depth & Acreage factor 7.67, Also Rule 3 is 150' from center of either NE/4 or SW/4 of the quarter section.

2. Order shall be for a period of 1 yr. & shall be ordered for an examiner hearing in October 1963 to show why the pool should not revert to 40 Ac.

3. Reservoir characteristics - data submitted at the hearing indicates that well may be able to drain 160 Ac.

Elvis A. Utz

LAW OFFICES OF
MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS
SIMMS BUILDING
P. O. BOX 466
ALBUQUERQUE, NEW MEXICO
TELEPHONE CHAPEL 3-4511

J. R. MODRALL
AUGUSTUS T. SEYMOUR
JAMES E. SPERLING
JOSEPH E. ROEHL
GEORGE T. HARRIS
DANIEL A. SISK

LELAND S. SEDBERRY
ALLEN C. DEWEY
FRANK H. ALLEN
JAMES A. BORLAND
JAMES P. SAUNDERS

JOHN F. SIMMS (1885-1954)

Case 2678

September 26, 1962

Mr. James Durett
Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Application of Kern County Land Co.

Gentlemen:

Enclosed herewith is the application, in triplicate, of Kern County Land Company requesting special rules and allowables pertaining to the East Saunders Permo-Penn Pool, Lea County, New Mexico.

It is requested that this matter be set for hearing for an examiner at the Examiners Hearing, which we understand will be some time in the early part of November, 1962.

Very truly yours,

MODRALL SEYMOUR SPERLING ROEHL & HARRIS

BY James E. Sperling

JAMES E. SPERLING

ch
encls

DOCKET MAILED

Date 10-11-62

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 871
SANTA FE

November 6, 1962

DOCKET MAILED
Date 10-15-63

Mr. James Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Attorneys at Law
Post Office Box 466
Albuquerque, New Mexico

Re: Case No. 2678
Order No. R-2359
Applicant:
Kern County Land Company

DOCKET MAILED
Date 9-27-63

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
OTHER Mr. George Selinger

DOCKET MAILED
Date 9-27-63

Docket No. 30-63
Docket No. 31-63

DOCKET: EXAMINER HEARINGS OCTOBER 18, 1963, AND OCTOBER 30, 1963

BOTH HEARINGS 9:00 A.M. OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

Examiner: Daniel S. Nutter; Alternate Examiner: Elvis A. Utz

DOCKET NO. 30-63 - OCTOBER 18, 1963:

CASE 2910: (Continued from the October 9, 1963, examiner hearing)

Application of Big (6) Drilling Company for extension of an existing oil pool and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the extension of the Scharb Bone Spring Oil Pool to comprise the W/2 of Section 5, all of Section 6, and the N/2 of Section 7, Township 19 South, Range 35 East, Lea County, New Mexico, and for special rules therefor, including 80-acre spacing and proration units to comprise any two contiguous 40-acre tracts, and for fixed well locations.

DOCKET NO. 31-63 - OCTOBER 30, 1963:

CASE 2678: (Reopened and continued from the October 9, 1963, examiner hearing)

In the matter of Case No. 2678 being reopened pursuant to provisions of Order No. R-2359, which order established temporary 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

CASE 2903: (Continued from the October 9, 1963, examiner hearing)

Application of Coastal States Gas Producing Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Gulf State Well No. 1, located in Unit F of Section 20, Township 17 South, Range 36 East, Lea County, New Mexico, to produce oil from the Double-A Abo Pool and an undesignated Lower Leonard pool through parallel strings of tubing.

CASE 2921:

Application of Robert G. Hanagan for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard gas proration unit comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, Four Lakes-Devonian Gas Pool, Lea County, New Mexico, to be dedicated to a well to be drilled 660 feet from the South and West lines of said Section 1.

CASE 2922:

Application of Consolidated Oil & Gas, Inc. for an unorthodox location and a dual completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Jicarilla No. C-1-11 to produce gas from the Blanco Mesaverde and Basin Dakota Gas Pools. Said well is at an unorthodox Blanco Mesaverde Pool location 890 feet from the South line and 990 feet from the East line of Section 11, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

CASE 2923:

Application of Cities Service Oil Company for a special gas-lift gas allocation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce Blinebry gas from its State "S" Well No. 1 located in Unit E of Section 15, Township 21 South, Range 37 East, Lea County, New Mexico, and to utilize said gas for Hare Pool gas-lift operations on its State "S" Well No. 4 located in said Unit E. Gas produced from said State "S" Well No. 1 would be metered and charged to the Blinebry Oil Pool casinghead gas production from applicant's State "S" Well No. 6 also located in the said Unit E.

CASE 2924:

Application of Socony Mobil Oil Company for a dual completion and for a tubing exception, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State Bridges No. 58-DD in Unit M of Section 24, Township 17 South, Range 34 East, Lea County, New Mexico, to produce oil from the Vacuum Glorieta and Vacuum Blinebry Oil Pools through parallel strings of tubing. Applicant further seeks an exception to Commission Rule 107(d)4 to produce the Glorieta formation through the casing-tubing annulus from perforations at approximately 6000 feet up to 2 3/8-inch tubing landed in a dual packer at approximately 4020 feet.

CASE 2925:

Application of Sunray DX Oil Company for the creation of a Strawn Gas Pool and for Special Temporary Pool Rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn Gas Pool for its New Mexico State "AH" Well No. 1, located in Unit K of Section 30, Township 18 South, Range 23 East, Eddy County, New Mexico, and the establishment of temporary pool rules therefor, including a provision for 640-acre proration units and for fixed well locations.

Docket No. 30-63
Docket No. 31-63

CASE 2926:

Application of Sinclair Oil & Gas Company for an exception to Order No. R-1670, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order permitting its Barber Gas Unit Well No. 1, located in Unit E of Section 8, Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, to produce 600 MCF of gas per month in exception to the shut-in provisions of Rule 15(A) of Order No. R-1670, Southeast New Mexico Gas Pool Rules, said gas to be utilized in the oil well gas-lift system on applicant's B. J. Barber Lease.

CASE 2927:

Application of Skelly Oil Company for gas commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 21(A) of Order No. R-1670, Northwest New Mexico Gas Pool Rules, to permit the commingling of gas produced from its Jicarilla "C" Wells Nos. 3, 7, 4, 8 and 6, located in Units M and P of Section 21, Unit A of Section 28 and Units E and J of Section 27 respectively, Township 25 North, Range 5 West, South Blanco-Pictured Cliffs Pool, Rio Arriba County, New Mexico, allocating said gas to the individual wells on the basis of periodic testing. Applicant further proposes to meter said commingled gas and to commingle it with commingled casinghead gas produced from seven Otero-Gallup oil wells on its Jicarilla "C" lease.

CASE 2928:

Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (combination) of its State of New Mexico "O" NCT-1 Well No. 14, located in Unit J of Section 36, Township 17 South, Range 34 East, Lea County, New Mexico, to produce oil from the Vacuum-Wolfcamp and North Vacuum-Abo Pools through parallel strings of 2-7/8 inch casing and to produce oil from the Vacuum-Blinebry Pool through 1-1/2 inch tubing run inside 3-1/2 inch casing, all casing strings to be cemented in a common well bore.

CASE 2929:

Application of Texaco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Basal San Andres formation through its State of New Mexico "O" NCT-1 Well No. 12 located in Unit J of Section 36, Township 17 South, Range 34 East, Vacuum Field, Lea County, New Mexico.

CASE 2930:

Application of William G. Ross for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Wilson Deep Unit Area comprising 3,920 acres, more or less, of State and Fee lands in Township 21 South, Range 34 East, Lea County, New Mexico.

State of New Mexico
Oil Conservation Commission

ir/

CASE 2926:

Application of Sinclair Oil & Gas Company for an exception to Order No. R-1670, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order permitting its Barber Gas Unit Well No. 1, located in Unit E of Section 8, Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, to produce 600 MCF of gas per month in exception to the shut-in provisions of Rule 15(A) of Order No. R-1670, Southeast New Mexico Gas Pool Rules, said gas to be utilized in the oil well gas-lift system on applicant's B. J. Barber Lease.

CASE 2927:

Application of Skelly Oil Company for gas commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 21(A) of Order No. R-1670, Northwest New Mexico Gas Pool Rules, to permit the commingling of gas produced from its Jicarilla "C" Wells Nos. 3, 7, 4, 8 and 6, located in Units M and P of Section 21, Unit A of Section 28 and Units E and J of Section 27 respectively, Township 25 North, Range 5 West, South Blanco-Pictured Cliffs Pool, Rio Arriba County, New Mexico, allocating said gas to the individual wells on the basis of periodic testing. Applicant further proposes to meter said commingled gas and to commingle it with commingled casinghead gas produced from seven Otero-Gallup oil wells on its Jicarilla "C" lease.

CASE 2928:

Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (combination) of its State of New Mexico "O" NCT-1 Well No. 14, located in Unit J of Section 36, Township 17 South, Range 34 East, Lea County, New Mexico, to produce oil from the Vacuum-Wolfcamp and North Vacuum-Abo Pools through parallel strings of 2-7/8 inch casing and to produce oil from the Vacuum-Blinebry Pool through 1-1/2 inch tubing run inside 3-1/2 inch casing, all casing strings to be cemented in a common well bore.

CASE 2929:

Application of Texaco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Basal San Andres formation through its State of New Mexico "O" NCT-1 Well No. 12 located in Unit J of Section 36, Township 17 South, Range 34 East, Vacuum Field, Lea County, New Mexico.

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WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1220 (R 11-54)

SYMBOLS
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NEW MEXICO OIL CONSERVATION COMMISSION=
STATE LAND BLDG SANTA FE NMEX=

RE CASE NO 2678 EAST SAUNDERS PERMO-PENN FIELD LEA COUNTY NEW MEXICO=

SHELL OIL COMPANY AS A NONOPERATING WORKING INTEREST OWNER IN THE EAST SAUNDERS FIELD WISHES TO SUPPORT THE CONTINUATION OF THE 160 ACRE SPACING IN THE SUBJECT FIELD AS GRANTED ON A TEMPORARY BASIS BY COMMISSION ORDER NO 2359 ALL EXISTING DATA SUPPORTS THE HIGHLY COMMUNICATED NATURE OF THIS RESERVOIR WITH OPTIMUM FIELD RECOVERY ANTICIPATED AT A SPACING PATTERN IN EXCESS OF 160 ACRES THERE FORE IN VIEW OF PREVENTING ECONOMIC WASTE ASSOCIATED WITH SMALLER SPACING WE URGE THE COMMISSIONS CONTINUANCE OF THE EXISTING FIELD SPACING=

J M DWYER DIV PRODUCTION MGR SHELL OIL CO
P O BOX 1858 ROSWELL NMEX=

MAIN OFFICE OCC
1963 OCT 28 PM 2:11

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

LAW OFFICES OF
MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS
SIMMS BUILDING
P. O. BOX 466
ALBUQUERQUE, NEW MEXICO
TELEPHONE CHAPEL 3-4511

J. R. MODRALL
AUGUSTUS T. SEYMOUR
JAMES E. SPERLING
JOSEPH E. ROEHL
GEORGE T. HARRIS
DANIEL A. SISK

LELAND S. SEDBERRY
ALLEN C. DEWEY
FRANK H. ALLEN
JAMES A. BORLAND
JAMES P. SAUNDERS

JOHN F. SIMMS (1885-1954)

September 28, 1962

Mr. A. L. Porter, Jr.
Secretary, Director
Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Ida Rodriguez

Dear Mr. Porter:

I have Ida's letter of September 27th advising that the Kern County Land Company's application recently filed by this office may be heard by one of your examiners on October 24, 1962. I believe that this date will be satisfactory and have written to our client asking for confirmation. Unless you hear to the contrary within the coming week, I would appreciate your docketing the application for hearing on the suggested date.

With kindest regards, I am

Very truly yours,

MODRALL SEYMOUR SPERLING ROEHL & HARRIS

BY James E. Sperling
JAMES E. SPERLING

ch

Oct 30th docket — Oct #8

Be sure with Pure

THE PURE OIL COMPANY
SOUTHERN PRODUCING DIVISION • MIDLAND DISTRICT OPERATIONS
P. O. BOX 671 • MIDLAND, TEXAS • AREA CODE 915—MU 2-3725

November 1, 1963

Oil Conservation Commission
State of New Mexico
P. O. Box 871
Santa Fe, New Mexico

RE: Case 2678 - East Saunders
~~Permo-Penn~~ Pool
Lea County, New Mexico

Gentlemen:

The Pure Oil Company supports the request of Kern County Land Company to continue 160-acre proration units in the East Saunders Permo-Penn Pool.

We believe no waste will occur and correlative rights will be preserved by continuation of the present spacing pattern. Also, we feel that spacing patterns less than 160 acres do not provide an adequate return on the required investment for development wells in this pool.

Through an oversight on our part, we did not prepare this letter in time for presentation at the examiner hearing on October 30, 1963. We respectfully request that it now be considered as The Pure Oil Company's concurrence with the testimony presented by Kern County Land Company at that hearing.

Yours very truly,

J. R. Weyler
District Superintendent

GEF/abs

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 11/4/63

CASE 3678 Hearing Date 9am 10/30/63
DSN@SE

My recommendations for an order in the above numbered cases are as follows:

Enter an order extending the present temporary rules for the East Saunders Permo-Pennsylvanian Pool for an additional one year period. (Order No R-2359)

Call another hearing in October 1964

Staff Member

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

CLASS OF SERVICE
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SYMBOLS
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1964 OCT 23 PM

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NEW MEXICO OIL CONSERVATION COMMISSION=

PO BOX 871 SANTA FE NMEX=

ATTN: MR. A. L. PORTER

IN REFERENCE TO THE REOPENING OF CASE 2678 AT THE OCTOBER 28 HEARING, HUMBLE RECOMMENDS CONTINUATION OF 160=ACRE SPACING FOR THE EAST SAUNDERS PERMO=PENNSYLVANIAN POOL ON A PERMANENT BASIS=

HUMBLE OIL AND REFINING CO R R MCCARTY

BY H L HENSLEY==

2678 28 160=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

12-60
R-4-60

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L RWA010 LONG PD=ROSWELL NMEX 23 918A MST 1964 OCT 23 AM 9 39
NMEX OIL CONSERVATION COMM=
STATE LAND BLDG SANTA FE NMEX=

RE CASE NO 2678 EAST SAUNDERS PERMO-PENN POOL LEA COUNTY
NMEX SHELL OIL CO AS A NONOPERATING WORKING INTEREST
OWNER IN THE EAST SAUNDERS FIELD WISHES TO SUPPORT THE
CONTINUATION OF THE 160 ACRE SPACING IN THE SUBJECT FIELD
AS GRANTED ON A TEMPORARY BASIS BY COMMISSION ORDER
NO 2359-A THE ANALYSIS OF ALL PERFORMANCE DATA OVER THE
APPROXIMATE 2 1/2 YEAR FIELD LIFE CONFIRMS THE HIGHLY
COMMUNICATED NATURE OF THIS PENNSYLVANIAN RESERVOIR WITH
OPTIMUM RECOVERY TO BE REALIZED AT A SPACING IN EXCESS OF
160 ACRES THEREFORE IN VIEW OF PREVENTING ECONOMIC WASTE
ASSOCIATED WITH SMALLER SPACING WE URGE THE COMMISSIONS
CONTINUANCE OF THE EXISTING FIELD SPACING=
T H DWYER DIVISION PRODUCTION MANAGER
SHELL OIL COMPANY HINKLE BLDG ROSWELL NMEX==

2678 160 2359-A 2 1/2 160=

SKELLY OIL COMPANY

P. O. Box 1650
TULSA 2, OKLAHOMA

PRODUCTION DEPARTMENT
C. L. BLACKSHER, VICE PRESIDENT
W. P. WHITMORE, MGR. PRODUCTION
W. D. CARSON, MGR. TECHNICAL SERVICES
ROBERT G. HILTZ, MGR. JOINT OPERATIONS
GEORGE W. SELINGER, MGR. CONSERVATION

October 20, 1964

Copy file

Re: Case No. 2678

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Gentlemen:

We understand that you have scheduled for hearing on Wednesday, October 28, 1964, Case No. 2678 which is being reopened pursuant to provisions of Order No. R-2359-A, which continued the original order establishing 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool.

This is to advise that Skelly Oil Company, as a working interest owner within this area, supports Kern County Land Company in their request for continued 160-acre spacing for this pool.

Yours very truly,

George W. Selinger

RJJ:br

cc-Kern County Land Co.
Attn: Mr. E. P. Burtchaell
600 California St.
San Francisco 8, California

50th YEAR PURE THE PURE OIL COMPANY
SOUTHERN PRODUCING DIVISION • MIDLAND DISTRICT OPERATIONS
P. O. BOX 671 • MIDLAND, TEXAS 79701 • AREA CODE 915—MU 2-3725

October 20, 1964

New Mexico Oil Conservation Commission
Santa Fe, New Mexico

RE: Case No. 2678

Gentlemen:

As a working interest owner in the Etcheverry Unit in the East Saunders Permo Penn Pool, Lea County, New Mexico, we urge the continuation of 160 acre proration units for this field. We further urge that the present rules be made permanent for this field.

Yours very truly,

J. R. Murphey, Jr.
District Petroleum Engineer

JRM/cs

cc: Kern County Land Company
V & J Tower
Midland, Texas

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

CASE 2678 Date 11/2/64

Hearing Date 9am 10/28 DSN @ SF

My recommendations for an order in the above numbered cases are as follows:

Enter an order making the East Saunders Permo-Penn Rules, as promulgated by Order R-2359 (11-9-62) and extended by Order R-2359-A (11-13-63), permanent.

Applicant has shown good drainage characteristics and efficiency of flow under 160 acre spacing. This should be continued till further order of the Commission.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

August 25, 1964

Mr. James E. Sperling
Attorney at Law
Simms Building
P. O. Box 466
Albuquerque, New Mexico

DOCKET MAILED
Date 10-15-64

Re: East Saunders Permo-Penn Pool
Lea County, New Mexico, Order
No. R-2359-A

Dear Jim:

We have your letter of August 24, 1964, concerning the above case.

We are tentatively docketing the case for the last examiner hearing in October.

Very truly yours,

J. M. DURRETT, Jr.
Attorney

JMD/esr

COPY

Case 2678

LAW OFFICES OF

MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS

SIMMS BUILDING
P. O. BOX 466
ALBUQUERQUE, NEW MEXICO 87103

AREA CODE 505
TELEPHONE 243-4511

JOHN F. SIMMS (1885-1954)

J. R. MODRALL
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JOSEPH E. ROEHL
GEORGE T. HARRIS, JR.
DANIEL A. SISK
LELAND S. SEDBERRY, JR.
ALLEN C. DEWEY, JR.
FRANK H. ALLEN, JR.
JAMES P. SAUNDERS, JR.

JAMES A. PARKER

1964 AUG 25 AM 7 53

August 24, 1964

Mr. J. M. Durrett, Jr.
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Re: East Saunders Permo-Penn Pool
Lea County, New Mexico, Order
No. R-2359A

Dear Jim:

I represent Kern County Land Company, principal operator in this field. Under the terms of the order, a hearing is due to be scheduled in October for the purpose of reviewing the temporary rules. Due to a conflict in the early part of October, I have been requested by Kern County to ask that the Commission set the matter for hearing in the latter part of October at the examiner hearing. Considerable additional reservoir information has been and is being collected.

If you can accomodate us by putting the matter on the last examiner hearing date, it would certainly be appreciated.

Very truly yours,

James E. Sperling

JES/sd

CASE 2910 (Reopened):

In the matter of Case No. 2910 being reopened pursuant to the provisions of Order No. R-2589, which order established 80-acre spacing units for the Scharb-Bone Springs Oil Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 2659 (Reopened):

In the matter of Case No. 2659 being reopened pursuant to the provisions of Order No. R-2347-A, which continued the original order establishing 80-acre proration units for the North Bagley-Wolfcamp Pool, Lea County, New Mexico, for an additional year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

CASE 2904 (Reopened):

In the matter of Case No. 2904 being reopened pursuant to the provisions of Order No. R-2576, which order established temporary 80-acre spacing units for the Flying "M" Abo Oil Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 2678 (Reopened):

In the matter of Case No. 2678 being reopened pursuant to the provisions of Order No. R-2359-A, which continued the original order establishing 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for an additional year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

CASE 3136: Application of William A. and Edward R. Hudson for expansion of a waterflood project and for certain unorthodox locations, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to expand their Maljamar Grayburg-San Andres Waterflood Project by the drilling of three injection wells at unorthodox locations not more than 100 feet nor closer than 25 feet to the Northeast corner of Units H, M and P of Section 24, Township 17 South, Range 31 East, Eddy County, New Mexico. Applicants further seek authority to convert from oil production to water injection their Puckett "A" Well No. 26 located in the Southeast corner of Unit D and Wells Nos. 27 and 28 located in the Northwest corners of Units K and C, respectively, all in said Section 24.

CASE 3137: Application of Southern Union Production Company for an unorthodox location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its Navajo Indian Well No. 6 at an unorthodox location in the Blanco Mesaverde Pool 1700 feet from the North line and 910 feet from the West line of Section 6, Township 26 North, Range 8 West, San Juan County, New Mexico.

CASE 2660 (Reopened):

In the matter of Case No. 2660 being reopened pursuant to the provisions of Order No. R-2348-A, which continued the original order establishing 80-acre proration units for the Middle Lane-Pennsylvanian Pool, Lea County, New Mexico, for an additional year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

Docket No. 29-64

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 28, 1964

9 A. M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner:

CASE 3113: (Continued from the September 30, 1964 Examiner Hearing). Application of BCO, Inc. for a unit agreement, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks approval of the Escrito Gallup Pool Unit Area comprising 3123.88 acres, more or less, of State and Federal lands in Township 24 North, Ranges 7 and 8 West, San Juan and Rio Arriba Counties, New Mexico.

CASE 3114: (Continued from the September 30, 1964 Examiner Hearing). Application of BCO, Inc. for a waterflood project, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Escrito Gallup Oil Pool in its Escrito Unit Area by the injection of water into the Gallup formation through three wells located in Sections 17 and 18, Township 24 North, Range 7 West, and Section 12, Township 24 North, Range 8 West, San Juan and Rio Arriba Counties, New Mexico.

CASE 3131: Application of Texstar Petroleum Company for a unit agreement, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Hospah Unit Area comprising 1160 acres, more or less, of State and Fee lands in Townships 17 and 18 North, Ranges 8 and 9 West, Hospah Pool, McKinley County, New Mexico.

CASE 3132: Application of Texstar Petroleum Company for a waterflood project, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Hospah Pool in its Hospah Unit Area, by the injection of water into the Hospah Sand through 8 wells located in Section 1, Township 17 North, Range 9 West, and Section 36, Township 18 North, Range 9 West, McKinley County, New Mexico.

CASE 3133: Application of George W. Strake for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Hackberry Deep Unit Area comprising 3,832.60 acres, more or less, of Federal and State lands in Townships 19 and 20 South, Ranges 30 and 31 East, Eddy County, New Mexico.

CASE 3134: Application of Lone Star Producing Company for a non-standard location, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to deepen its Federal Well No. 1-D and complete same in the South Prairie-Atoka Gas Pool. Said well is 660 feet from the North and East lines of Section 29, Township 8 South, Range 36 East, Roosevelt County, New Mexico, at a non-standard location for said gas pool.

CASE 3135: Application of Lone Star Producing Company for a non-standard unit and a non-standard location, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard gas proration unit comprising the SW/4 of Section 21, Township 8 South, Range 36 East, South Prairie Atoka Gas Pool, Roosevelt County, New Mexico. Said unit to be dedicated to applicant's Federal Well No. 1-B at a non-standard location for said pool 660 feet from the South and West lines of said Section 21.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2678
Order No. R-2359-B

APPLICATION OF KERN COUNTY LAND COMPANY
FOR AN ORDER ESTABLISHING SPECIAL RULES
AND REGULATIONS FOR THE EAST SAUNDERS
PERMO-PENNSYLVANIAN POOL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 28, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 10th day of November, 1964, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That by Order No. R-2359, dated November 6, 1962, temporary Special Rules and Regulations were promulgated for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico.

(3) That by Order No. R-2359-A, dated November 13, 1963, said temporary Special Rules and Regulations were continued in full force and effect for an additional one-year period.

(4) That pursuant to the provisions of Order No. R-2359-A, this case was reopened to allow the operators in the subject pool to appear and show cause why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

(5) That the evidence establishes that one well in the East Saunders Permo-Pennsylvanian Pool can efficiently and economically drain and develop 160 acres.

(6) That the Special Rules and Regulations promulgated by Order No. R-2359 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

(7) That to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-2359 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the East Saunders Permo-Pennsylvanian Pool promulgated by Order No. R-2359 are hereby continued in full force and effect until further order of the Commission.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

A. L. PORTER, Jr., Member & Secretary

esr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2678
Order No. R-2359-A

APPLICATION OF KERN COUNTY LAND COMPANY
FOR AN ORDER ESTABLISHING SPECIAL RULES
AND REGULATIONS FOR THE EAST SAUNDERS
PERMO-PENNSYLVANIAN POOL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 30, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 13th day of November, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That Order No. R-2359 dated November 6, 1962, promulgated Special Rules and Regulations for the East Saunders Permo-Pennsylvanian Pool establishing temporary 160-acre proration units in said pool.

(3) That this case was reopened pursuant to the provisions of Order No. R-2359 to permit the applicant and all interested parties to appear and show cause why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

(4) That the temporary Special Rules and Regulations for the East Saunders Permo-Pennsylvanian Pool promulgated by Order No. R-2359 should be continued in effect for an additional one-year period in order to allow the operators in the subject pool sufficient time to gather additional information concerning the reservoir characteristics of the pool.

(5) That this case should be reopened at an examiner hearing in October, 1964, at which time the applicant and all interested parties should appear and show cause why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations for the East Saunders Permo-Pennsylvanian Pool promulgated by Order No. R-2359 shall be continued in full force and effect until further order of the Commission.

(2) That this case shall be reopened at an examiner hearing in October, 1964, at which time the applicant and all interested parties may appear and show cause why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell

JACK M. CAMPBELL, Chairman

E Walker

E. S. WALKER, Member

A. L. Porter, Jr.

A. L. PORTER, Jr., Member & Secretary

esr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2469
Order No. R-2175-B

APPLICATION OF EL PASO NATURAL GAS
COMPANY FOR THE ESTABLISHMENT OF
SPECIAL RULES AND REGULATIONS FOR
THE LUSK-STRAWN POOL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 14, 1962, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 4th day of April, 1962, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, El Paso Natural Gas Company, on rehearing, seeks a modification of the Special Rules and Regulations for the Lusk-Strawn Pool as contained in Order No. R-2175 entered in Case No. 2469 on January 30, 1962, to provide for the development of said pool on 160-acre proration units.

(3) That the present testimony of the applicant indicates that one well can efficiently drain 160-acres.

(4) That the present testimony of the applicant relative to the economics of drilling in the subject pool indicates that development on less than 160-acre oil proration units would be uneconomical.

(5) That the Special Rules and Regulations for the Lusk-Strawn Pool as contained in Order No. R-2175 should be modified to provide for 160-acre oil proration units.

IT IS THEREFORE ORDERED:

(1) That Special Rules and Regulations for the Lusk-Strawn Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE LUSK-STRAWN POOL

RULE 1. Each well completed or recompleted in the Lusk-Strawn Pool or in the Strawn formation within one mile of the Lusk-Strawn Pool, and not nearer to nor within the limits of another designated Strawn pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Lusk-Strawn Pool shall be located on a unit containing 160 acres, more or less, substantially in the form of a square, which is a quarter section being a legal subdivision of the United States Public Lands Survey.

RULE 3. Each well completed or recompleted in said pool shall not be drilled closer than 660 feet to any quarter section line nor closer than 330 feet to any quarter-quarter section line. Any well which was drilling to or recompleted in the Lusk-Strawn Pool prior to January 4, 1962, is granted an exception to the well location requirements of this Rule.

RULE 4. For good cause shown, the Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising less than 160 acres. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director of the Commission may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the Lusk-Strawn Pool as the acreage in such non-standard unit bears to 160 acres.

RULE 5. A 160-acre proration unit (158 through 162 acres) in the Lusk-Strawn Pool shall be assigned a 160-acre proportional factor of 8.67 for allowable purposes, and in the event there is more than one well on a 160-acre proration unit, the operator may produce the allowable assigned to the unit in any proportion.

RULE 6. The limiting gas-oil ratio in the Lusk-Strawn Pool shall be 4000 : 1.

PROVIDED HOWEVER, That the provisions of Rules 5 and 6 shall not become effective until such time as all wells presently completed in the subject pool are connected to a casinghead gas gathering system.

(2) That Order No. R-2175 entered in Case No. 2469 on January 30, 1962, is hereby superseded.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER, Member

S E A L

A. L. PORTER, Jr., Member & Secretary

esr/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

November 10, 1964

Mr. James E. Sperling
Attorney at Law
Simms Building
Post Office Box 466
Albuquerque, New Mexico

Re: CASE NO. 2678
ORDER NO. R-2359-B
APPLICANT Kern County Land Co.

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC

OTHER

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2678
Order No. R-2359

APPLICATION OF KERN COUNTY LAND COMPANY
FOR AN ORDER ESTABLISHING SPECIAL RULES
AND REGULATIONS FOR THE EAST SAUNDERS
PERMO-PENNSYLVANIAN POOL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 24, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 6th day of November, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Kern County Land Company, is the owner and operator of wells in the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico.

(3) That the applicant seeks establishment of special rules and regulations for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, including provisions for 160-acre drilling and proration units.

(4) That the evidence indicates that the East Saunders Permo-Pennsylvanian Pool can presently be efficiently and economically drained on 160-acre proration units.

(5) That the evidence concerning the reservoir characteristics of the East Saunders Permo-Pennsylvanian Pool justifies the establishment of 160-acre proration units in said pool for a temporary one-year period.

(6) That during the one-year period in which this order will be in effect, the operators in the subject pool should gather all available information relative to drainage and recoverable reserves.

(7) That this case should be reopened at an examiner hearing in October, 1963, at which time the operators in the subject pool should be prepared to appear and show by a preponderance of the evidence why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

IT IS THEREFORE ORDERED:

(1) That Special Rules and Regulations for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EAST SAUNDERS PERMO-PENNSYLVANIAN POOL

RULE 1. Each well completed or recompleted in the East Saunders Permo-Pennsylvanian Pool or in the Pennsylvanian formation within one mile of the East Saunders Permo-Pennsylvanian Pool, and not nearer to or within the limits of another designated Pennsylvanian pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the East Saunders Permo-Pennsylvanian Pool shall be located on a standard proration unit containing 158 through 162 acres substantially in the form of a square, which is a governmental quarter section.

RULE 3. Each well completed or recompleted in said pool shall be located within 150 feet of the center of either the northeast quarter or the southwest quarter of the governmental quarter section on which the well is located.

RULE 4. For good cause shown, the Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application is filed in due form and the non-standard unit comprises less than 160 acres or the unorthodox size or shape of the tract is due to a variation in the legal subdivision of the United States Public Land Surveys. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director of the Commission may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the East Saunders Permo-Pennsylvanian Pool as the acreage in such non-standard unit bears to 160 acres.

RULE 5. A standard proration unit in the East Saunders Permo-Pennsylvanian Pool shall be assigned a 160-acre proportional factor of 7.67 for allowable purposes, and in the event there is more than one well on a 160-acre proration unit, the operator may produce the allowable assigned to the unit in any proportion.

(2) That this case shall be reopened at an examiner hearing in October, 1963, at which time the operators in the subject pool may appear and show cause why the East Saunders Permo-Pennsylvanian Pool should not be developed on 40-acre proration units.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER, Member

A. L. PORTER, Jr., Member & Secretary

esr/

ECONOMIC FOR VARIOUS SPACING SCHEMES
E. Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 10
10/28/64

BASIC DATA:

1.	Oil Value	$3.01/bbl.
2.	Oil Purchaser	Indiana Oil Purchasing Company
3.	Gas Value	$0.10/Mcf
4.	Gas Purchaser	Warren Petroleum Corporation
5.	Net Interest	87.5%
6.	Production Taxes	6.2% of net revenue
7.	Lifting Costs	$0.10/bbl.
8.	Investment (Well lease facilities and Pumping unit)	$195,200

ECONOMICS:

Item		WELL SPACING 40 Acre	80 Acre	160 Acre
1.	Recoverable oil, bbl.	88,400	176,900	353,800
2.	Recoverable gas, Mcf	155,500	311,000	622,000
3.	Oil Revenue, $3.01 X (1)	266,100	532,500	1,064,900
4.	Gas Revenue, $0.10 X (2)	15,600	31,100	62,200
5.	Total Revenue, $ (3) + (4)	281,700	563,600	1,127,100
6.	Total Net Revenue after Royalty, $0.875 X (5)	246,500	493,200	986,200
7.	Operating Costs, $.10 X (1)	8,800	17,700	35,400
8.	Production Taxes, $.062 X (6)	15,300	30,600	61,100
9.	Net Income, $ (6)-(7)-(8)	222,400	444,900	889,700
10.	Investment, $	195,200	195,200	195,200
11.	Profit, $ (9)-(10)	27,200	249,700	694,500
12.	Profit-to-Investment Ratio (11) ÷ (10)	0.14:1	1.28:1	3.56:1

ESTIMATED RESERVES
(Material Balance Method)
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 9
10/28/64

BASIC DATA:

Oil Reserves ~~1318~~ 2211 bbl./acre (Volumetric Method)

Compressibility of reservoir fluid, connate water and formation, 24.4×10^{-6} psi $^{-1}$ in pressure range 3914-2631 psig

Reservoir pressure decline to 1/25/63, 1283 psi

Oil production to 1/25/63, 103,100 ST bbl.

Formation volume factor at 1/25/63 pressure, 1.557 bbl./bbl.

Formation volume factor at original pressure, 1.527 bbl./bbl.

Recovery factor 42.2 (Material Balance - Schilthius Method)

CALCULATION:

$$\text{Original Oil in Place} = \frac{(Np)\ (Bo)}{(Ce)\ (\Delta P)\ (Boi)}$$

$$\text{Original Oil in Place} = \frac{(103,100)\ (1.557)}{(24.4 \times 10^{-6})\ (1283)\ (1.527)}$$

Original Oil in Place = 3,360,000 ST bbls.

Where:
- Np = Stock-tank oil production
- Ce = Compressibility of reservoir fluid, connate water and formation
- ΔP = Pressure decline accompanying production
- Bo = Formation volume factor at final pressure.
- Boi = Formation volume factor at original pressure

Ultimate Oil Recovery = (3,360,000 St bbl.) (0.422) = 1,418,000 ST bbl.

Indicated Drainage Area = $\frac{1,418,000 \text{ ST bbl.}}{2211 \text{ ST bbl./acre}}$ = 642 acres

Ultimate Gas Recovery = 3,360 X .939 X .79 = 2,490 MMcf

KERN COUNTY LAND COMPANY

PRESSURE - CUMULATIVE CURVE

E. Saunders Permo - Penn Pool

Lea County, New Mexico

Case No. 2678
Exhibit No. 8
10/28/64

× PREDICTED FROM MATERIAL BALANCE

○ ACTUAL PERFORMANCE

Original to 10/1

#1 236,402

#2 216,710

#3 143,801

Shelby 1075

597,188

557,159

4000

3000

2000

1000

0

Pi 3914 psig

10-1-62

Pi 2546

10-1-63

10-1-64

100 200 300 400 500 600

CUMULATIVE PRODUCTION M.S.T.B.

RESERVOIR PRESSURE psig at -6233'

KEUFFEL & ESSER CO. MADE IN U.S.A. 328-2 10 X 10 TO THE INCH

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 8
CASE NO. 2678

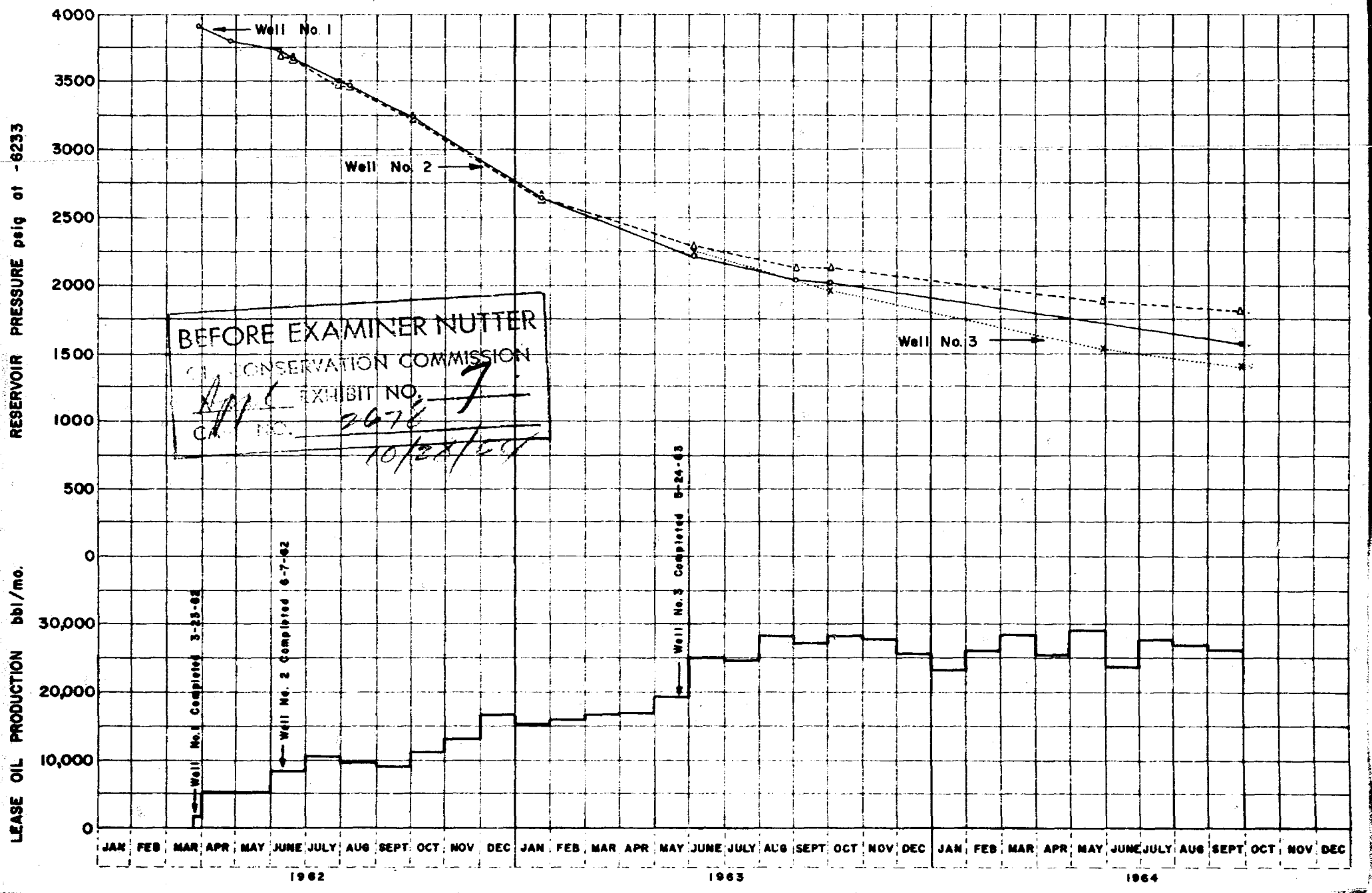
KERN COUNTY LAND COMPANY

PRESSURE - PRODUCTION GRAPH

E. Saunders Permo-Penn Pool

Lea County, New Mexico

Case No. 2678
Exhibit No. 7
10/28/64



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 2678
10/28/64

ESTIMATES OF OIL RESERVES
(Volumetric Method)
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 6
10/28/64

BASIC DATA:

Porosity	8.3% (Average of cores in #2 and #3 wells)
Net Pay	18.3 ft. (Average of pay in #1, #2 and #3 wells)
Water Saturation	32.1% (Average of cores in #2 and #3 wells)
Formation Volume Factor	1.527 bbl. of reservoir oil/bbl. of stock-tank oil (reservoir fluid analysis)
Recovery Factor	42.2% (Material balance - Schilthius Method)

CALCULATIONS:

Ultimate Oil Recovery = $\frac{(7758)\ (\emptyset)\ (1-Sw)\ (R)}{Boi}$

Ultimate Oil Recovery = $\frac{(7758)\ (0.083)\ (0.679)\ (0.422)}{1.527}$

Ultimate Oil Recovery = 120.8 bbl./acre foot

Where: 7758 bbl. = equivalent of 1 acre foot
$\emptyset$ = porosity as a fraction of bulk volume
Sw = water saturation as a fraction of pore volume
R = recovery factor as a fraction of original oil in place
Boi = formation volume factor

For a net thickness of 18.3' -

Ultimate Oil Recovery = (120.8 bbl./acre foot) (18.3 feet) = 2211 bbl./acre

KERN COUNTY LAND COMPANY
PREDICTED RESERVOIR PERFORMANCE
E. Saunders Permo - Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 5
10/28/54

RESERVOIR PRESSURE, psig at -6233'

4000
3000
2000
1000
0

0
.10
.20
.30
.40
.50

OIL PRODUCTION, FRACTION OF ORIGINAL OIL IN PLACE

4
3
2
1
0

GAS-OIL RATIO, MCF of 50 psig Separator Gas Per Bbl of Stock Tank Oil

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 2678

Case No. 2678
Exhibit No. 4
10/28/64

WELL DATA
EAST SAUNDERS PERMO-PENN POOL
LEA COUNTY, NEW MEXICO

1.	Well Number	1-17	2-17	3-20	1-P Hobbs
2.	Completion Date	3/23/62	6/7/62	5/24/63	5/1/64
3.	Total Depth	12,520	10,589	10,550	10,531
4.	Top of Saunders Zone	10,308 (-6162)	10,304 (-6136)	10,332 (-6173)	10,370 (-6213)
5.	Top of Pay	10,366 (-6200)	10,369 (-6201)	10,396 (-6237)	10,421 (-6264)
6.	Net Pay	21 (Sonic)	18 (Cores)	16 (Cores)	-
7.	Perforated Interval	10,363-388, 396-403, 408-414, 424-443	10,367-373, 401-415, 423-436	10,378-380 396-404, 446-451, 462-465	10,421-429
8.	Treatment (Completion)	500 gal. MCA 4000 gal. regular	1000 gal. mud acid 3000 gal. regular	1000 gal. MCA 3000 gal. regular	4000 gal. regular
9.	Initial Potential				60
	a) Oil Production	1772	577	391	1011
	b) Gas-Oil Ratio	875	973	977	-
	c) Choke Size	32/64	18/64	28/64	Pump
	d) Tubing Pressure	250	825	150	0
	e) Water Cut	none	none	6.5	
10.	Current Tests (Sept. '64)				Suspended
	a) Oil Production	334	354	323	
	b) Gas-Oil Ratio	1108	893	1851	
	c) Choke Size	36/64	64/64	64/64	
	d) Tubing Pressure	Gas Lift	Gas Lift	Gas Lift	
	e) Water Cut	0.6%	0.6%	0.9%	

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Appl. EXHIBIT NO. 4
Case No. 2678 10/28/64

CORE ANALYSIS*
KCL et al No. 3 State "20"
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No.5A
10/30/63

Porous Interval (Sonic Log) 10,396-10,465
Cored Interval 10,355-10,502
Perforated Interval 10,378-80, 10,396-404, 10,446-51, 10,462-65

Depth** Interval	Footage	Permeability	Porosity	Water Saturation % of Pore Space
10,396-97	1.0	27.6	6.3	27.5
97-98	1.0	29.4	9.2	22.8
98-99	1.0	23.2	8.5	26.5
99-00	1.0	44.1	9.6	22.9
400-01	1.0	346	11.6	24.1
01-02	1.0	338	11.1	40.5
02-03	1.0	164	11.0	29.1
03-04	1.0	51.0	10.1	30.8
10,447-48	1.0	130	7.5	37.3
48-49	1.0	6.7	5.6	42.9
49-50	1.0	32	7.9	35.3
50-51	1.0	1.9	5.2	39.2
10,455-56	1.0	1.9	5.9	33.7
10,463-64	1.0	34	8.7	24.9
64-65	1.0	5.0	7.4	27.6
65-66	1.0	144	9.8	23.9
Net Pay (Core)	16.0			
Net Pay (Sonic)	16.0			
Weighted Averages		86.2	8.5	30.6

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5A
CASE NO. 2678

*Only those analyses showing over 4% porosity and over 0.1 md permeability are listed.

**Core depth Corrected -5 to correspond to log depth

RESERVOIR CHARACTERISTICS
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 6 (Rev.)
10/30/63

FORMATION

1.	Net Pay, feet	18.3
2.	Porosity, %	8.3
3.	Permeability, md	46.2
4.	Water Saturation, %	32.1
5.	Reservoir Temperature, F	155
6.	Original Reservoir Pressure, psig @ -6233	3914

FLUID

1.	Saturation Pressure, psig	2346
2.	Original Formation Volume Factor bbl/bbl	1.527
3.	Original Solution Gas-Oil Ratio, cu. ft./bbl	939
4.	Reservoir Fluid Viscosity at Original Pressure, cp	0.295
5.	Stock-Tank Oil Gravity, API	44.4

From Fluid analysis

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 2678

ESTIMATES OF OIL RESERVES
(Volumetric Method)
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No.7 (Rev.)
10/30/63

BASIC DATA:

Porosity	8.3% (Average of cores in #2 and #3 wells)
Net Pay	18.3 ft. (Average of pay in #1, #2 and #3 wells)
Water Saturation	32.1% (Average of cores in #2 and #3 wells)
Formation Volume Factor	1.527 bbl. of reservoir oil/bbl. of stock-tank oil (reservoir fluid analysis)
Recovery Factor	25.2% (Material balance - Schilthius Method)

CALCULATIONS:

$$\text{Ultimate Oil Recovery} = \frac{(7758)\ (\emptyset)\ (1-Sw)\ (R)}{Boi}$$

$$\text{Ultimate Oil Recovery} = \frac{(7758)\ (0.083)\ (0.679)\ (0.252)}{1.527}$$

Ultimate Oil Recovery = 72.1 bbl/acre foot

Where: 7758 bbl = equivalent of 1 acre foot
$\emptyset$ = porosity as a fraction of bulk volume
Sw = water saturation as a fraction of pore volume
R = recovery factor as a fraction of original oil in place
Boi = formation volume factor

For a net thickness of 18.3 feet -

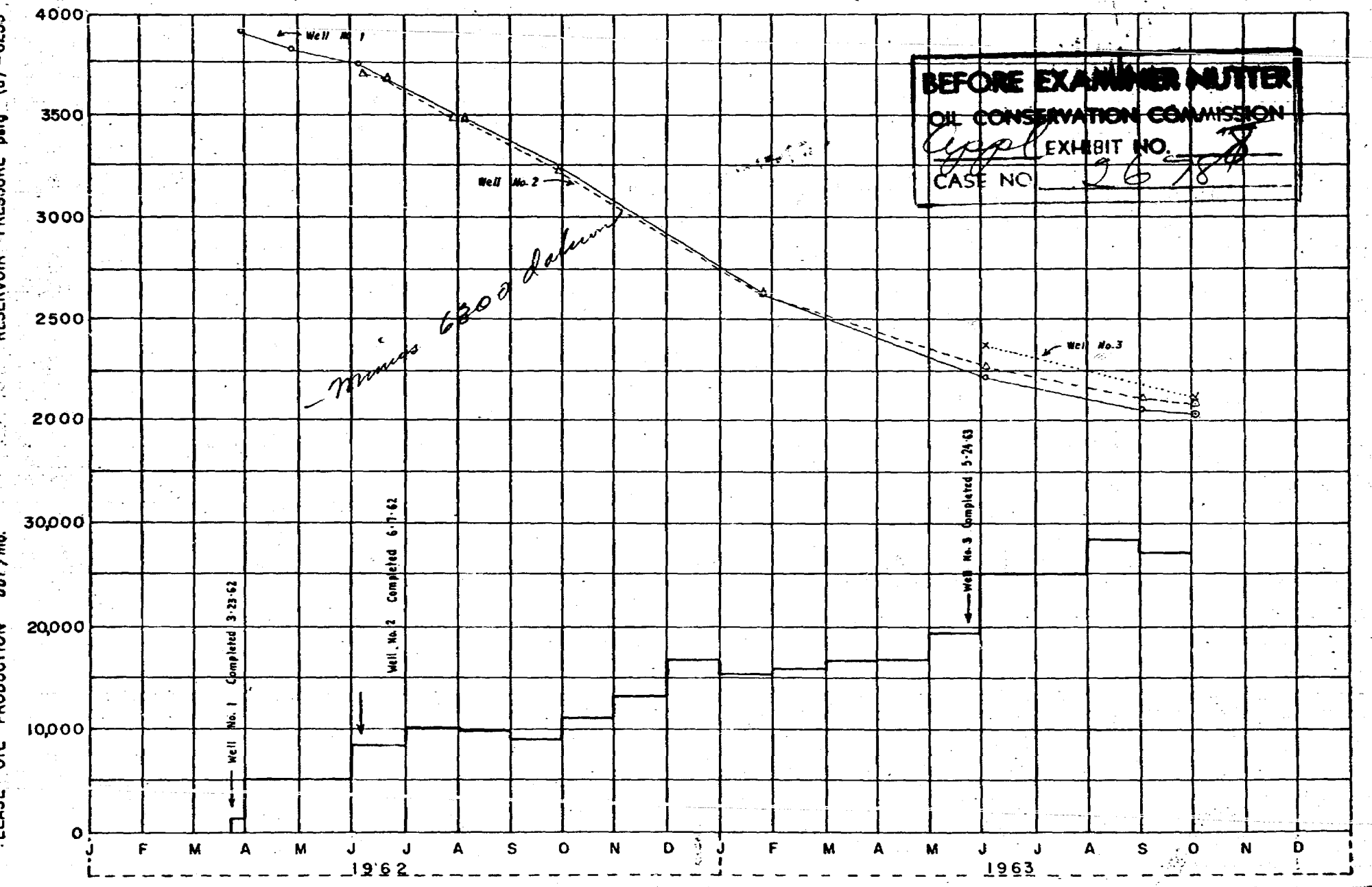
Ultimate Oil Recovery = (72.1 bbl/acre foot) (18.3 feet) = 1319 bbl/acre

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7-R
CASE NO. 2678

Kern County Land Company
PRESSURE - PRODUCTION GRAPH
E. Saunders Permo-Penn Pool
Lea County, New Mexico

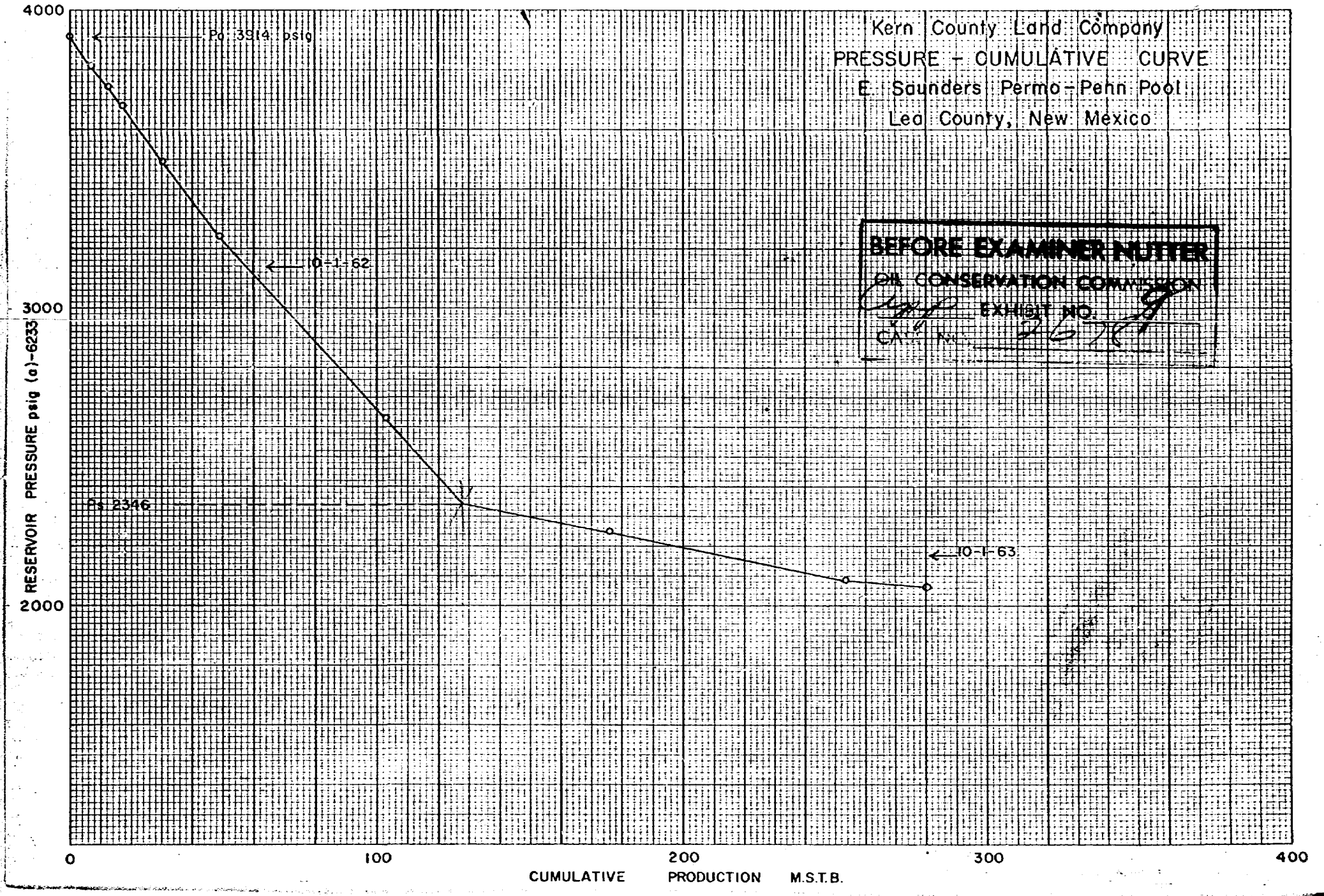
Case 2678
Exhibit No. 9 (Rev.)
10/30/63

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 8
CASE NO. 2678



Case No. 2678
Exhibit No. 10 (Rev.)
10/30/63

Kern County Land Company
PRESSURE - CUMULATIVE CURVE
E. Saunders Permo-Penn Pool
Lea County, New Mexico



ECONOMIC FOR VARIOUS SPACING SCHEMES
E. Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No.12 (Rev.)
10/30/63

BASIC DATA:

1.	Oil Value	$ 3.01/bbl
2.	Oil Purchaser	Indiana Oil Purchasing Company
3.	Gas Value	$ 0.118/MCF
4.	Gas Purchaser	Warren Petroleum Corporation
5.	Net Interest	87.5%
6.	Production Taxes	6.2% of net revenue
7.	Lifting Costs	$ 0.10/bbl
8.	Investment (Well lease facilities and pumping unit)	$ 195,200

ECONOMICS:

Item	WELL SPACING 40 acre	80 acre	160 acre
1. Recoverable oil, bbl.	52,800	105,500	211,000
2. Recoverable gas, MCF	145,600	290,900	581,700
3. Oil Revenue, $ 3.01 X (1)	158,900	317,600	635,100
4. Gas Revenue, $ 0.118 X (2)	17,200	34,300	68,600
5. Total Revenue, $ (3) + (4)	176,100	351,900	703,700
6. Total Net Revenue after Royalty, $ 0.875 X (5)	154,100	307,900	615,700
7. Operating Costs, $ .10 X (1)	5,300	10,600	21,100
8. Production Taxes, $ .062 X (6)	9,600	19,100	38,200
9. Net Income, $ (6)-(7)-(8)	139,200	278,200	556,400
10. Investment, $	195,200	195,200	195,200
11. Profit, $ (9)-(10)	(56,000)	83,000	361,200
12. Profit-to-Investment Ratio (11) ÷ (10)	Loss	0.43:1	1.85:1

BEFORE EXAMINER UTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 10
CASE NO. 2678

Kern County Land Company
PREDICTED RESERVOIR PERFORMANCE
E. Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 8
10/30/63

RESERVOIR PRESSURE, psig at -6233'

GAS-OIL RATIO, MCF of 50 psig Separator gas per bbl. of Stock tank oil

PRODUCTION, FRACTION OF ORIGINAL OIL IN PLACE

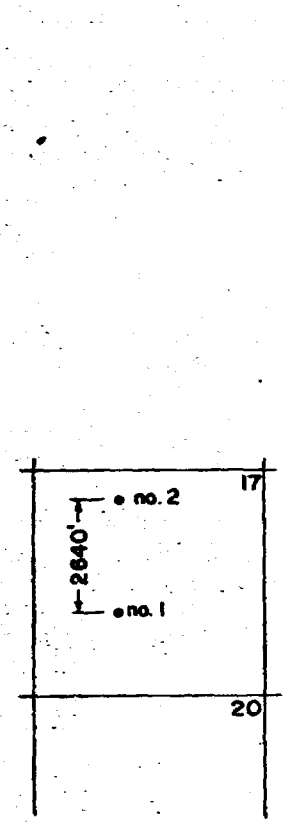
4000
3000
2000
1000
0

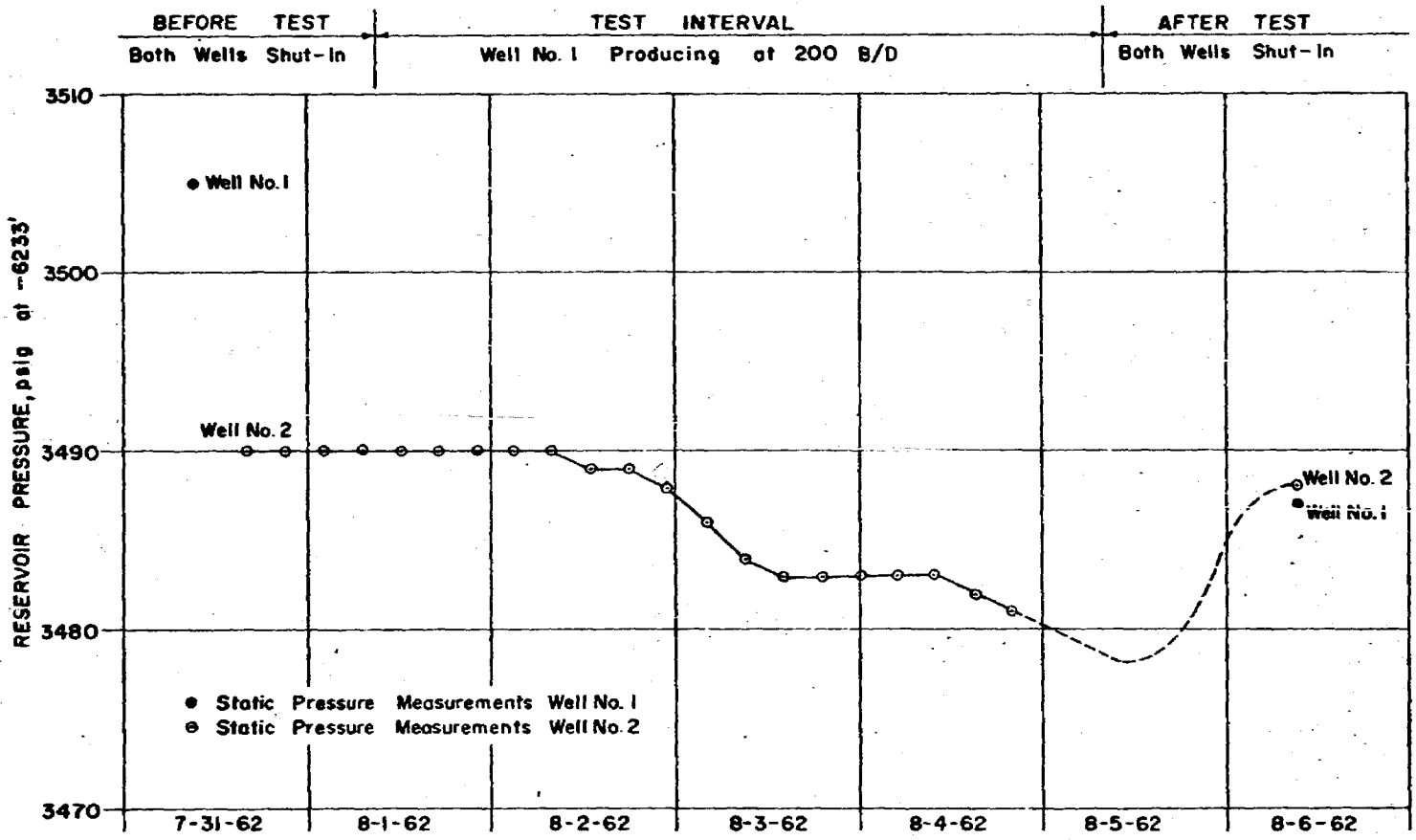
15
10
5
0

0 0.02 0.04 0.06 0.08 0.10 0.12 0.14 0.16 0.18 0.20 0.22 0.24 0.26 0.28

Case 2678
Exhibit No. 11
10/30/63

Kern County Land Company
PRESSURE INTERFERENCE TEST
E. Saunders Permo-Penn Pool
Lea County, New Mexico





WELL DATA

E. Saunders Permo-Penn Pool
Lea County, New Mexico

		1	2
1.	Well Number		
2.	Completion Date	3/23/62	6/7/62
3.	Total Depth	12,520	10,589
4.	Top of Saunders Zone	10,308 (-6142)	10,304 (-6136)
5.	Top of Pay	10,366 (-6200)	10,369 (-6201)
6.	Net Pay	21 (sonic)	18 (cores)
7.	Perforated Interval	10,363-388, 396-403, 408-414, 424-443	10,367-373, 401-415, 423-436
8.	Treatment	500 gal. MCA 4000 gal. regular	1000 gal. mud acid 3000 gal. regular
9.	Initial Potential:		
	a) Oil Production	1772	577
	b) Gas-Oil Ratio	875	973
	c) Choke Size	32/64	18/64
	d) Tubing Pressure	250	825
	e) Water Cut	none	none
10.	Current Production Test	(10/5/62)	
	a) Oil Production	195	173
	b) Gas-Oil Ratio	810	896
	c) Choke Size	11/64	11/64
	d) Tubing Pressure	650	625
	e) Water Cut	none	none

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Gyrol EXHIBIT NO. 4
CASE NO. 2678

4

WELL DATA

E. Saunders Permo-Penn Pool
Lea County, New Mexico

		1	2
1.	Well Number		
2.	Completion Date	3/23/62	6/7/62
3.	Total Depth	12,520	10,589
4.	Top of Saunders Zone	10,308 (-6142)	10,304 (-6136)
5.	Top of Pay	10,366 (-6200)	10,369 (-6201)
6.	Net Pay	21 (sonic)	18 (cores)
7.	Perforated Interval	10,363-388, 396-403, 408-414, 424-443	10,367-373, 401-415, 423-436
8.	Treatment	500 gal. MCA 4000 gal. regular	1000 gal. mud acid 3000 gal. regular
9.	Initial Potential:		
	a) Oil Production	1772	577
	b) Gas-Oil Ratio	875	973
	c) Choke Size	32/64	18/64
	d) Tubing Pressure	250	825
	e) Water Cut	none	none
10.	Current Production Test (10/5/62)		
	a) Oil Production	195	173
	b) Gas-Oil Ratio	810	896
	c) Choke Size	11/64	11/64
	d) Tubing Pressure	650	625
	e) Water Cut	none	none

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Gyal EXHIBIT NO. 4
CASE NO. 2678

4

CORE ANALYSIS*
KCL et al No. 2 State "17"
E.Saunders Permo-Penn Pool
Lea County, New Mexico

Porous interval (sonic log) 10,368 - 10,432
Cored interval 10,300 - 10,448
Perforated interval 10,367-73, 10,401-415, 10,423-36

Depth Interval	Footage	Permeability	Porosity	Water Saturation % of Pore Space
10,370-71	1.0	4.6	6.2	38.9
371-72	1.0	0.4	4.1	44.4
10,402-03	1.0	0.2	7.5	30.0
403-04	1.0	0.1	5.8	38.9
404-05	1.0	0.3	5.1	35.5
405-06	1.0	0.1	4.9	32.7
406-07	1.0	-	7.4	35.1
407-08	1.0	-	12.4	47.2
10,411-12	1.0	0.3	4.3	28.6
10,413-14	1.0	3.1	6.3	29.1
414-15	1.0	2.8	9.1	27.4
10,425-26	1.0	31.0	9.4	30.9
426-27	1.0	2.0	7.9	32.5
427-28	1.0	31.0	9.9	27.9
428-29	1.0	72.0	13.3	28.3
429-30	1.0	4.2	9.2	33.8
430-31	1.0	5.2	10.3	30.1
431-32	1.0	14.0	12.8	29.4
Net Pay (core)	18.0			
Net Pay (sonic)	19.0			
Weighted Averages		10.7	8.1	33.4

*Only those analyses showing over 4% porosity and over 0.1 md permeability are listed.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appl. EXHIBIT NO. 5
CASE NO. 2678

5

RESERVOIR CHARACTERISTICS
E. Saunders Permo-Penn Pool
Lea County, New Mexico

FORMATION

1.	Net pay, feet.	19.5
2.	Porosity, %	8.1
3.	Permeability, md	10.7
4.	Water saturation, %.	33.4
5.	Reservoir temperature, F	155
6.	Original reservoir pressure, psig @ -6233.	3914

FLUID

1.	Saturation pressure, psig.	2346
2.	Original formation volume factor bbl/bbl	1.527
3.	Original solution gas-oil ratio, cu.ft./bbl. . . .	939
4.	Reservoir fluid viscosity at original pressure, cp.	0.295
5.	Stock-tank oil gravity, API.	44.4

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 2678

6

ESTIMATES OF OIL RESERVES
(Volumetric Method)
E. Saunders Permo-Penn Pool
Lea County, New Mexico

BASIC DATA:

Porosity	8.1% (Average of cores in #2 well)
Net Pay	19.5 ft. (Average of pay in #1 and #2 well)
Water Saturation	33.4% (Average of cores in #2 well)
Formation Volume Factor	1.527 bbl. of reservoir oil/bbl. of stock-tank oil (reservoir fluid analysis)
Recovery Factor	25.2% (Material balance - Schilthius Method)

CALCULATIONS:

$$\text{Ultimate Oil Recovery} = \frac{(7758)\ (\emptyset)\ (1-Sw)\ (R)}{Boi}$$

$$\text{Ultimate Oil Recovery} = \frac{(7758)\ (0.081)\ (0.666)\ (0.252)}{1.527}$$

Ultimate Oil Recovery = 69 bbl/acre foot

Where:
- 7758 bbl = equivalent of 1 acre foot
- $\emptyset$ = porosity as a fraction of bulk volume
- Sw = water saturation as a fraction of pore volume
- R = recovery factor as a fraction of original oil in place
- Boi = formation volume factor

For a net thickness of 19.5 feet

Ultimate Oil Recovery = (69 bbl/acre foot) (19.5 feet) = 1346 bbl/acre

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appl. EXHIBIT NO. 7
CASE NO. 3668

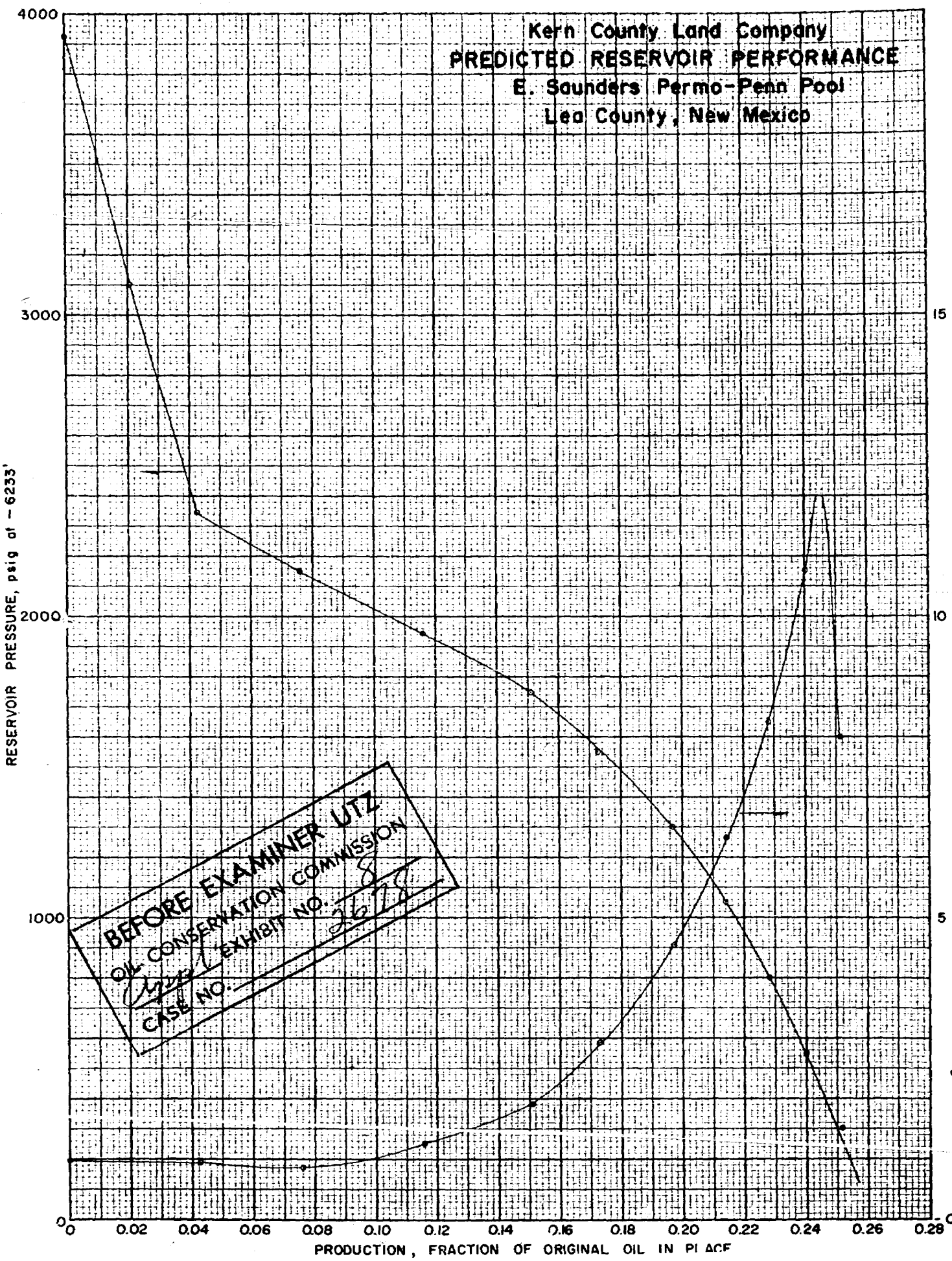
7

Kern County Land Company

PREDICTED RESERVOIR PERFORMANCE

E. Saunders Permo-Penn Pool

Lea County, New Mexico



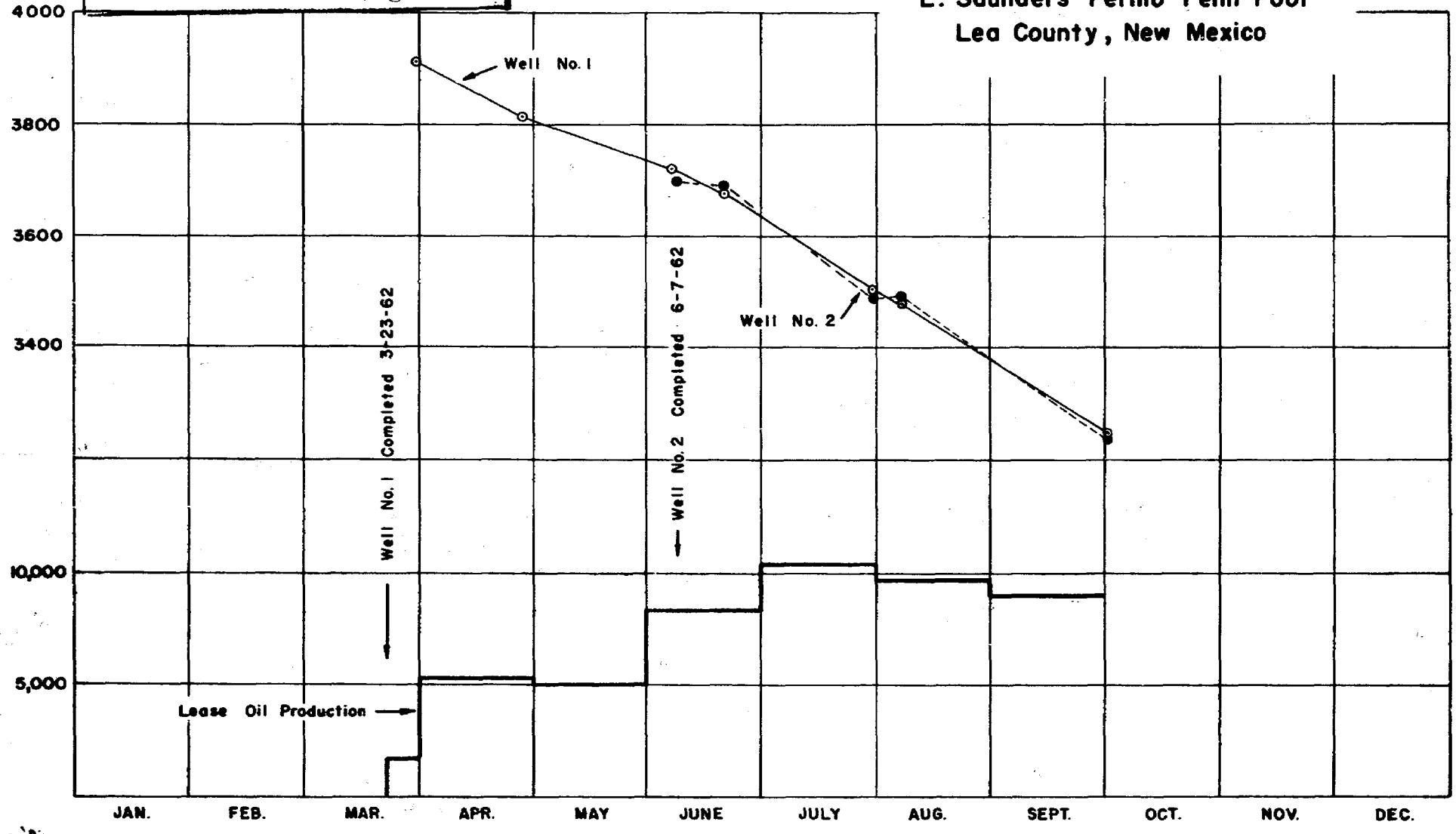
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 8
CASE NO. 3674

8

10 X 10 TO THE ½ INCH 359-11

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 2678

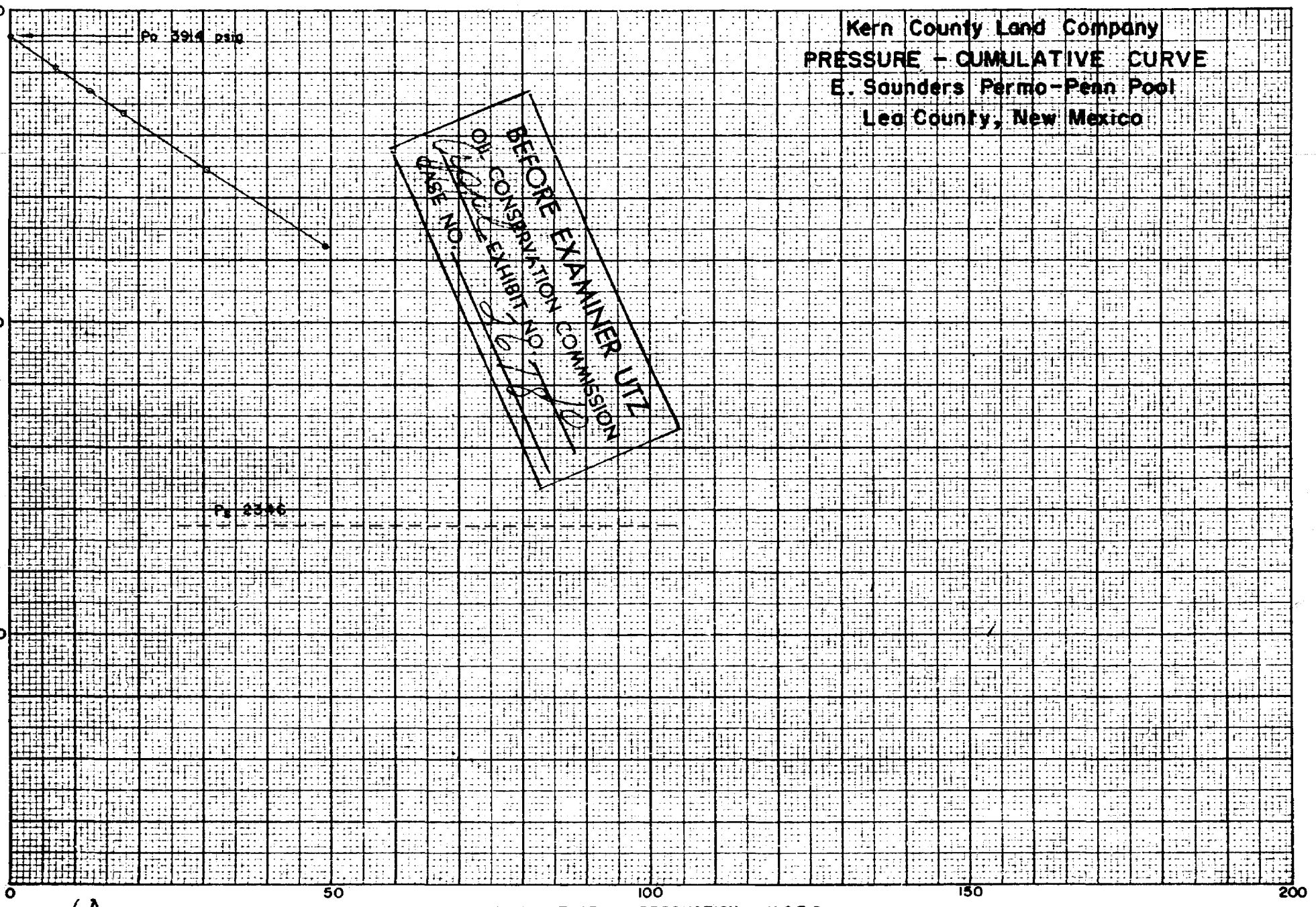
Kern County Land Company
PRESSURE - PRODUCTION GRAPH
E. Saunders Permo-Penn Pool
Lea County, New Mexico



9

10 X 10 TO THE INCH 359-11

Kern County Land Company
PRESSURE - CUMULATIVE CURVE
E. Saunders Permo-Penn Pool
Lea County, New Mexico

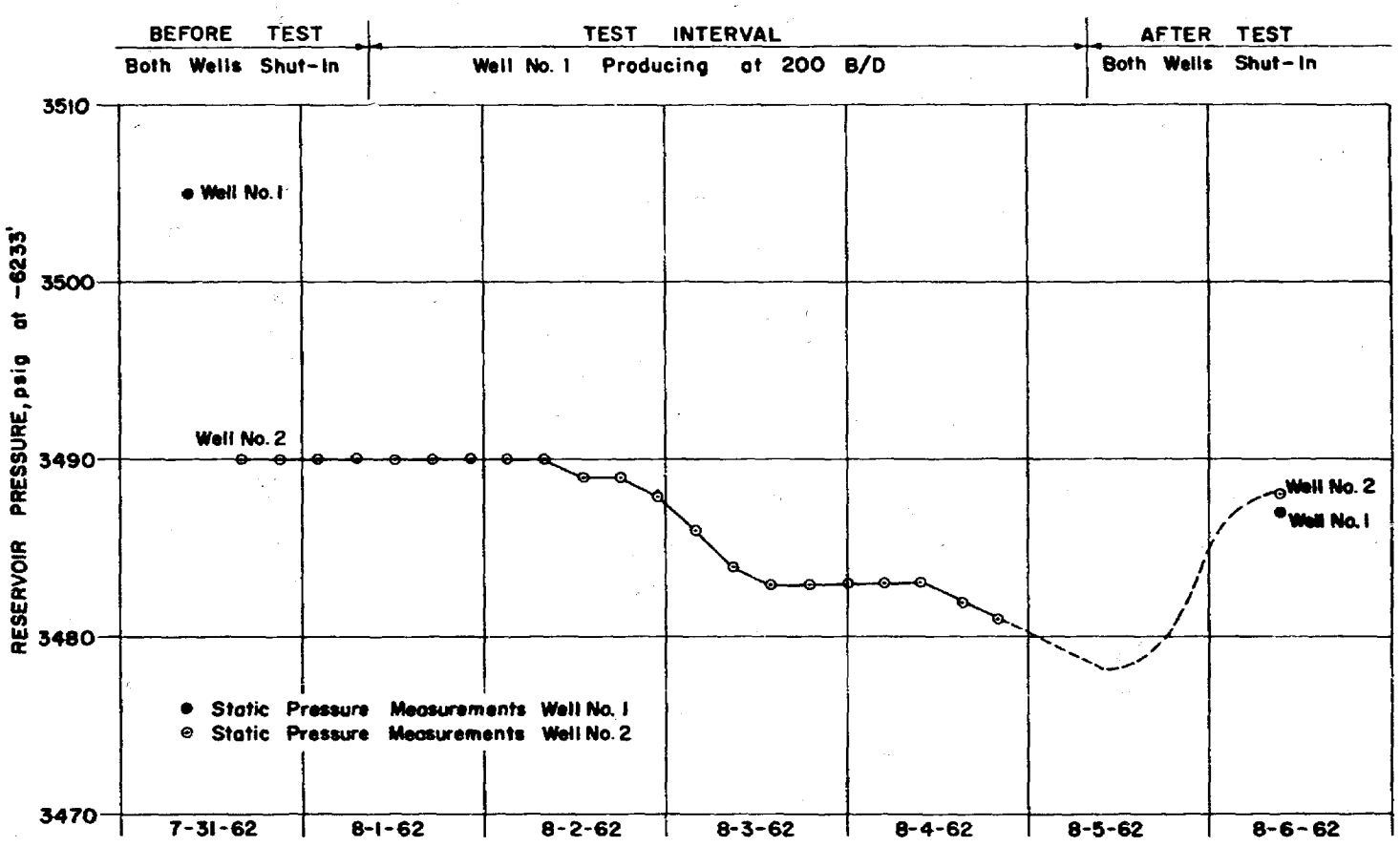


BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 10
CASE NO. 2612

10

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
CASE NO. _____ EXHIBIT NO. _____

Kern County Land Company
PRESSURE INTERFERENCE TEST
E. Saunders Permo-Penn Pool
Lea County, New Mexico



ECONOMIC FOR VARIOUS SPACING SCHEMES
E. Saunders Permo-Penn Pool
Lea County, New Mexico

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 12
CASE NO. 2797

BASIC DATA:

1. Oil Value	$ 3.01/bbl.
2. Oil Purchaser	Indiana Oil Purchasing Company
3. Gas Value	$ 0.108/MCF
4. Gas Purchaser	Warren Petroleum Corporation
5. Net Interest	87.5%
6. Production Taxes	6.1%
7. Lifting Costs	$ 0.25/bbl.
8. Well Investment	$ 213,000

ECONOMICS:

Item	Well Spacing 40 acre	80 acre	160 acre
1. Recoverable oil, bbl.	53,900	107,800	215,600
2. Recoverable gas, MMCF	149,000	298,000	596,000
3. Oil Revenue, $ 3.01 x (1)	162,239	324,478	648,956
4. Gas Revenue, $ 0.108 x (2)	16,092	32,184	64,368
5. Total Revenue, $ (3) + (4)	178,331	356,662	713,324
6. Total Net Revenue after Royalty, $ 0.875 x (5)	156,040	312,079	624,158
7. Operating Costs, $ .25 x (1)	13,475	26,950	53,900
8. Production Taxes, $ .061 x (6)	9,518	19,037	38,074
9. Net Income, $ (6)-(7)-(8)	133,047	266,092	532,184
10. Investment, $	213,000	213,000	213,000
11. Profit, $ (9)-(10)	(79,953)	53,092	319,184
12. Profit-to-Investment Ratio (11) ÷ (10)	Loss	0.25:1	1.50:1

12

PRODUCTIVITY TESTS
E. Saunders Permo-Penn Pool
Lea County, New Mexico

BASIC DATA:

Well No.	Date	Oil Production Rate B/D	Pressure Drawdown Psig	Productivity Index B/D/Psi
1	3/30/62	81	8	10.12
1	6/6/62	184	37	4.97
2	6/20/62	250	43	5.81

Minimum Productivity Index = 4.97 B/D/psi

CALCULATIONS:

160-acre proration unit allowable

35 B/D x (4.67 + 3.00) = 269 B/D

Maximum pressure drawdown in well bore at 160-acre allowable

269 B/D ÷ 4.97 B/D/psi = 54. psi

14

SPECIAL RULES AND REGULATIONS FOR THE EAST SAUNDERS POOL

RULE 1. Each well completed or recompleted in the East Saunders Pool or in the Permo-Penn formation within one mile of said pool and not nearer to nor within the limits of another designated Permo-Penn pool, shall be spaced, drilled, operated and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the East Saunders Pool shall be located on a unit containing 160 acres, more or less, which consists of a single governmental quarter section.

RULE 3. Each well on any 160 acre unit in said pool shall be located within 150 feet of either the NE/4 or the SW/4 of the quarter section on which the well is located.

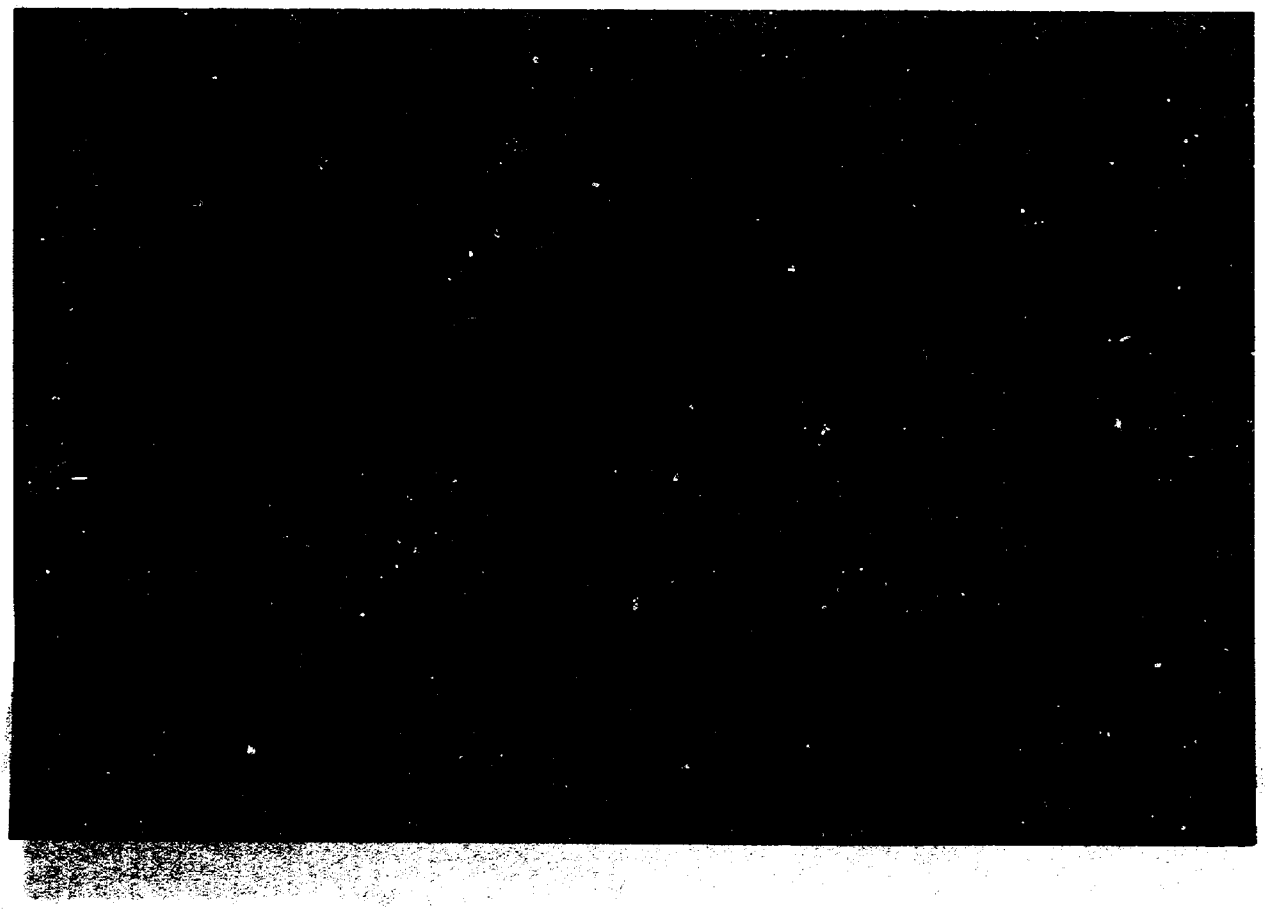
RULE 4. For good cause shown, the Secretary-Director of the Commission may grant exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising less than 160 acres. All operators offsetting the proposed non-standard unit shall be notified of the application by registered mail, and the application shall state that such notice has been furnished. The Secretary-Director of the Commission may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the East Saunders Pool as the acreage in such non-standard unit bears to 160 acres.

RULE 5. A 160-acre proration unit (158 through 162 acres) in the East Saunders Pool shall be assigned a proportional factor of 7.67 for allowable purposes, and in the event there is more than one well on a 160-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

RULE 6. During the interim period that these special rules and regulations are in effect the limiting gas-oil ratio shall be 2000:1.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 14
CASE NO. 2618



Be sure with Pure
PURE
THE PURE OIL COMPANY
SOUTHERN PRODUCING DIVISION • MIDLAND DISTRICT
P. O. BOX 671 • MIDLAND, TEXAS • MUTUAL 2-3725

October 23, 1962

New Mexico Oil and Gas Conservation Commission
Santa Fe, New Mexico

Re: Case No. 2678 - East Sanders
(Permo-Penn) Field Rules Hearing

Gentlemen:

The Pure Oil Company, as a working interest owner in the Etcheverry Unit, approves and supports the proposed Field Rules for the East Sanders (Permo-Penn) Field, Lea County, New Mexico.

It is the opinion of The Pure Oil Company that such rules are justified both upon an economic and conservative standpoint and that promulgation of such rules will insure the orderly development of this field.

Yours very truly,

J. R. Murphey, Jr.
District Petroleum Engineer

JRM/cs