CASE 3900: Appli. of CONTINENTAL for downhole commingling, Lea County, New Mexico.

Case Number

3900

Application

Transcripts.

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 23, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Continental Oil Company for downhole commingling, Lea County, New Mexico.

Case No. 3900

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order please. The next case will be Case 3900.

MR. HATCH: Application of Continental Oil Company for downhole commingling, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for the Applicant. We have one witness I would like to have sworn, please.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 12 marked for identification.)

* * * * *

V. T. L Y O N, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A V. T. Lyon, L-y-o-n.

Q By whom are you employed and in what position, Mr. Lyon?

A I'm employed by Continental Oil Company as Conservation Coordinator in the Hobbs Division Office, Hobbs, New Mexico.

Q Mr. Lyon, have you testified before the Oil Conservation Commission and made your qualifications as a

Petroleum Engineer a matter of record?

A I have.

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

MR. NUTTER: They are.

Q (By Mr. Kellahin) Mr. Lyon, are you familiar with the application of Continental Oil Company in Case 3900?

A Yes, sir.

Q What is proposed by Continental in this case?

A Case 3900 is the application of Continental Oil Company for authority to commingle in the well bore the production from the Abo and Wolfcamp Formations in the State H 35 Well No. 7, located 660 feet from the north line, 1780 feet from the east line, Section 35, Township 17 South, Range 34 East, Lea County, New Mexico.

Q Now, referring to what has been marked as Exhibit No. 1, would you identify that exhibit?

A Exhibit No. 1 is a location and ownership plat on a scale of 1 inch equals 2000 feet showing the Continental Oil Company's State H 35 lease in the Stippel area. The lease consists of the northeast quarter and the east half of the northwest quarter of Section 35, Township 17 South, Range 34 East. It shows the location of the wells on that lease and

the location and ownership of the wells in the immediately surrounding area. The well which is the subject of this application, State H 35 No. 7 is shown circled in red. Each of the wells is identified as to its producing formation by a letter symbol which is explained in the legend at the bottom of the exhibit.

Q Now, what formations are those wells producing from?

A On this lease, we have production from the Wolfcamp, the Abo, the Glorietta and the Grayburg-San Andres. The Wolfcamp, Abo and Glorietta are commingled at the tank battery, the Grayburg-San Andres is produced separately. There is no production from the Wolfcamp at this time.

Q Is that temporarily shut in at the present time?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit No. 2, would you identify that Exhibit?

A Exhibit No. 2, it is the location and ownership plat on a scale of 1 inch equals 4,000 feet, showing the outlines of the two reservoirs here involved as defined by the Oil Conservation Commission. We show the outlines of the North Vacuum Abo Pool in the green color and the outlines of the Vacuum Wolfcamp Pool in the red color. The wells which are completed in the North Vacuum Abo are colored in green and those which

which are completed in the Vacuum Wolfcamp are circled in red.

Q Now that again shows the subject well, does it not?

A Yes, sir.

Q And where is it located in reference to the Pool?

A The State H 35 No. 7 is located in the northwest quarter of the northeast quarter of Section 35 and it is on the westernmost row of wells in both of these reservoirs.

Q Now, referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

A Exhibit No. 3 is a structure map showing the structural configurations of the lower Wolfcamp pay zone, the contour interval is 50 feet and the Wolfcamp completions are shown circled in red. The reservoir is a relatively small sincline with three localized highs. The State H 35 No. 7 well is one of the lowest completions on the west flank of this structure. I think there are about three wells which are completed lower on the structure than our well is.

Q They will be the wells to the north and the south, is that right?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit No. 4, would you identify that exhibit?

A Exhibit No. 4 is a structure map showing the

configuration of the A-marker in the Abo formation. The contour interval on this map is 25 feet. The Abo completions are shown by the green color, and here again the State H 35 No. 7 is shown to be one of the lowest wells structurally on the west flank. The structure of the Abo is more regular but is about the same size as that of the Wolfcamp. I might mention that this map was prepared about 18 months ago when the structure at the south end of the reservoir was well defined. There has since been some development to the north, where the contours are shown dashed, and these contours no longer represent the structure in that portion of the reservoir.

Q Now, you say this is on the A-marker in the Abo formation, is the A-marker a distinct marker found on the logs in this pool?

A Yes, sir, this is a distinctive marker which our geologist selected as one which was representative of the -- and easily determinable so that it could be used as a marker in preparing a contour map.

Q Now, referring to what has been marked as Exhibit No. 5, would you identify that exhibit?

A Exhibit No. 5 is a schematic diagram showing the present completion of the State H 35 No. 7 on the left-hand side and proposed completion on the right-hand side. As

shown, the 13 and 3/8ths inch casing was set at 375 feet with 375 sacks of cement and the cement was circulated to the surface; 9 and 5/8ths inch casing was set at 4950 with 250 sacks and the cement top measured by temperature surveys at 3800 feet; 7 inch casing was set at 12,413 feet with 1900 sacks of cement and the top was measured by temperature survey at 5780 feet. Originally, the well was completed as a Wolfcamp-Abo dual completion. The initial potential in the Wolfcamp was taken May 27, 1963, and in the Abo on June 13, 1963. Subsequently, the Wolfcamp formation was isolated by setting a bridge plug, as shown, at 10,550 feet, and the well was dually completed in the Abo and the Glorietta formations. Initial potential on the Glorietta was taken October 1st, 1965, the Glorietta produced only 8,276 barrels of oil and production appeared to be no longer commercial. Consequently, the Glorietta perforations were squeezed on July 31, 1966. At this point, the well was produced as a single completion from the Abo and was equipped as shown on the leftOhand side of Exhibit No. 5.

Q Now, the well never was completed as a dual completion for Abo and Wolfcamp production, is that correct?

A Yes, it was, originally.

Q It was originally?

A Yes.

Q Now, at the present time, the Wolfcamp is isolated and you are producing only the Abo, is that correct?

A We are not producing the well at all, right now.

Q Not producing the well at all?

A The Abo, when the well was recompleted as a single producer, the Abo was left below a packer which is shown at 8,999 feet. Under this completion, power oil is pumped down the tubing and the combined power oil and Abo production was pumped up the annular surface. This required that the pump handle the gas production from the Abo, and we feel that this has severely curtailed the well's producing ability.

Q Now, how do you propose to complete the well in the event this application is approved?

Q Well, we propose to enter the well, pull the tubing, drill out and retrieve the production packer, and then drill out the cast iron bridge plug, run parallel strings of 2 and 3/8ths inch tubing and with bottom hole assembly set at 9650. The power oil will then be pumped down one string of tubing and the combined Abo, Wolfcamp and power oil will be returned through the other string of tubing, this will permit the gas to be vented through the casing tubing annulus.

Q You are utilizing power oil, I assume you are

talking about a Cobe or similar pump to be installed?

A Yes, sir, we propose to use hydraulic equipped equipment.

Q Referring to what has been marked as Exhibit 6, would you identify that exhibit?

A Exhibit 6 is a composite exhibit showing the performance of the Vacuum Abo or North Vacuum Abo in the State H 35 No. 7 at the top, and at the bottom the performance of the Vacuum Wolfcamp in this well. You can see that the Abo production has been interrupted three times, one time in about September of 1965, when the Wolfcamp was abandoned and the Glorietta was opened. Again, in about March of 1966, when the Glorietta was abandoned and the well was returned to production as a single completion in the Abo. Then production was interrupted again in March of 1967 when it appeared that producing rates were too small to continue operation of the well. On the right side of each section of this exhibit, we have extrapulated this decline curve to show the predicted producing rates when the well is returned to production.

Q Now, you are looking to an abandonment of, merging of 141 barrels of oil a month on the Abo and 150 barrels per month on the Vacuum Wolfcamp, is that correct?

A That's correct, we have an exhibit later which will show this, but this is the economic limit which we have

estimated for these two reservoirs.

Q And do you estimate the remaining life of the Abo at about 4 years?

A Approximately 4 years, yes, sir.

Q And the Wolfcamp, what do you estimate?

A Slightly over two years.

Q Now referring to what has been marked as Exhibit No. 7, would you identify that exhibit?

A Exhibit No. 7 is a composite of the two decline curves which we had extrapulated from Exhibit No. 6. It shows three diagonal lines on there, one is the Wolfcamp production which we estimate on a segregated basis, the next line up is the Abo production which we estimate on a segregated basis, the top line indicated or marked commingled is the combined production from the two formations. The cross-hatched area is the, represents the amount of oil which we estimate will be recovered, in addition, if this application is granted. Now, actually this exhibit assumes that both of these formations would be produced either on a segregated basis or on a commingled basis. But it is my opinion that the remaining reserves in the Wolfcamp are so small that the cost of completing the wells so that the production can be produced on a segregated basis is prohibitive. So that actually the

additional recovery from the granting of this application, rather than the 3700 barrels which is shown by the cross-hatched area, will be more on the order of 10,300 barrels.

A Is that for the reason that in your opinion the Wolfcamp would not be produced unless this application is approved, is that right?

A In my opinion, unless the application is approved, there will be no more Wolfcamp production from this well.

Q Now, refering to what has been marked as Exhibit No. 8, could you identify that exhibit?

A Exhibit No. 8 is a copy of the acoustic Gamma Ray logs run on this well during completion on May 4th, 1963. This is only a portion of the log. It shows the top of the Abo at 7930, the Abo perforations in the gross interval 9154 to 9256. The top of the Wolfcamp is shown at 9262 and the Wolfcamp perforations in the gross interval 9620 to 10,066 feet.

Q Referring to what has been marked as Exhibit No. 9, would you identify that Exhibit?

A Exhibit No. 9 is a composite exhibit showing the reservoir performance; the upper portion shows the North Vacuum Abo reservoir, the lower portion shows the Vacuum Wolfcamp Reservoir.

Q Do you have any further comment on that exhibit?

A You'll note that the number of wells in the Abo has been increasing in recent years. We have attempted to evaluate the relative decline curves in these two reservoirs, and when you subtract the production from the new wells so that the production only from the wells in existence at the end of 1966, are considered, the two reservoirs are declining at almost identical decline rates.

MR. NUTTER: Does that decline rate that was occurring through '65 and the first half of '66 on the Wolfcamp, would that represent the decline if you didn't have any new wells there?

A Yes, I believe that's very close.

Q (By Mr. Kellahin) But the Vacuum Wolfcamp is representative of the actual performance because of the lack of additional wells, is that not correct?

A Yes.

Q Now, referring to what has been marked as Exhibit No. 10, would you identify that exhibit?

A Exhibit No. 10 is a compilation of reservoir data on the two wells, I mean on the two completions in this well. It shows the latest test, that on the Abo was taken February 9, 1967, at which time it produced one barrel of oil, 17

barrels of water, 228 mcf of gas, for gas-oil ratio, 228,000. Now this well was producing below a packer at this time and we feel that this test is not representative of the wells producing ability without the packer, but we cannot provide a test without the packer at this time.

The latest test in the Wolfcamp was taken July 13, 1965 when it produced 22 barrels of oil, 2 barrels of water, 20.8 mcf of gas with a gas-oil ratio of 945. The field data on these two reservoirs are shown to be very comparable in the depth, the allowable, the spacing, the gas-oil ratio limit, the bottomhole pressure, which for the Abo is estimated to be 800 pounds, for the Wolfcamp is estimated to be 715 pounds.

Both reservoirs appeared to be producing by solution gas drive and accured gravity is probably the most inconsistent of the two. The gravity for the Abo is 34.6 degrees, that for the Wolfcamp is 39.2 degrees. The additional gas production for the Abo tends to make the total value of flood produced by the measured barrel of oil, of about the same value.

Q Now, your exhibit shows an estimated bottomhole pressure. Have you any bottomhole pressure data available at the present time?

A No, the latest bottomhole pressure was taken in 1966, and we have never had any pressures from this well. Now,

well No. 9, which is the diagonal southeast offset, had pressures measured in it, and its last pressure, let me find myself here, last pressure in the Wolfcamp in 1966 was 911 pounds. Well, this had to be 1965 because that's when the well was abandoned.

Q 1965 pressure?

A Yes, sir, was 911 pounds.

Q Now, would you anticipate that the reservoir pressure would be below that point at this time?

A Just slightly. Actually this pressure was the lowest pressure which was observed in the Wolfcamp Reservoir at that time, so we feel that there was a differential pressure favoring this well and it has been shut in since that time, so we think that the pressure is only slightly less than the last measured pressure in No. 9.

Q Now, have you extrapulated the bottomhole pressure plotted against cumulative production?

A Yes, I have done this for both reservoirs. To get an idea of the pressure which we could expect in there, and it comes out approximately what we have shown on Exhibit 10.

Q And you feel that that is as accurate a pressure estimate as you could give?

A Yes, sir, we feel the pressures are very close.

Q Is there any gascap in this reservoir?

A None to my knowledge.

Q Now, referring to what has been marked as Exhibit No. 11, can you identify that exhibit, please?

A Exhibit No. 11 is a tabulation of the economic limit calculations for the Abo and the Wolfcamp and for the commingled stream. It's very difficult to tie down operating expenses because we have adopted a lease accounting system. These are the best approximations which we can give. They do not include overhead, district expense and so forth, this is direct operating cost. We estimate the cost of the Abo at $350.00 per month, that of the Wolfcamp at $370.00 per month, that for the commingled stream at $420.00 per month. Then we have deducted from the sales value of the oil and gas, taxes and royalty, to arrive at a net value, which divided into the operating expense, gives us the economic limit, 141 barrels for the Abo, 150 barrels for the Wolfcamp, 170 barrels for the commingled stream.

Q Now, you have a note here, it says, "both zones, working interest is 100%", that's held by Continental Oil Company?

A Yes, it is.

Q Is the royalty interest the same in the two zones?

A Yes, sir, it is owned by the State of New Mexico.

Q And there are no overriding royalties outstanding, I would take it?

A None.

Q I am referring to what has been marked as Exhibit No. 12, would you identify that exhibit?

A Exhibit No. 12 is a comparison of oil recovery and revenue, with the well operated as a dual completion with the zone segregated and then as a single completion with the zones produced together. It shows that the Abo reserves are 15,750 barrels of oil, with a producing life of 3 years 10 months, a net value to Continental of $39,060.00, royalty and taxes to the State of $9,450.00. For theWolfcamp, the reserves are 6590 barrels of oil with a life of 2 years, 3 months, net value to Continental of $16,343.00, royalty and taxes to the State of $3,954.00. With the single completion, commingling the two zones the reserves are 26,050 barrels of oil for a producing life of 4 years and 8 months, a net value to Continental of $64,604.00, and the value to the State in royalty and taxes of $15,630.00. As I stated before, a better comparison of what I believe the actual comparison to be, would be to compare the commingled situation at the bottom with that of the Abo above, because I do not believe that the Wolfcamp will be produced again unless it's commingled.

Q Would you, as an engineer, recommend at this time that theWolfcamp be produced as a separate horizon?

A No, I would not.

Q Would it be possible, Mr. Lyon, to make an allocation of the production from these two zones, if the production is commingled as proposed?

A Well, of course it would be desirable to have an accurate allocation, as accurate as possible. This is very helpful in evaluating reservoir performance and secondary recovery possibilities. Testing of the individual zones is the most desirable means of allocation, but testing of these zones after the well is recompleted is entirely prohibitive. The next most desirable means would be to get a test of one or both zones before they are commingled. We have attempted to test the well prior to this hearing and we found that the standing valve is not holding, plus the fact that the packer is in place, which we believe would not give a representative indication of the Abo's producing ability. Consequently, we do not believe that any testing will be feasible. I might point out however, that on the decline curve, which we have submitted as Exhibit 6, the two reservoirs are declining at almost an identical rate, and the Abo production represents 66% of the estimated total production from the two zones. Consequently, we would propose that the well's production be allocated to the Abo, on the 66% and the 34% be allocated to the Wolfcamp.

Q Now, is it necessary to make an allocation in order to arrive at the allowable to be charged against each of the two zones, of the top allowable wells, in other words?

A No, the total production on a commingled basis is expected to be 36 and 1/2 barrels per day.

Q So the only purpose of making the allocation is to evaluate the reservoir performance and it has nothing to do with the allocation of the allowable, is this correct?

A That is correct.

Q Now, Mr. Lyon, referring back to your Exhibit No. 12, you stated that the reasonable comparison would be between the single completion as against the Abo produced alone, rather than attempting to prepare your single completion against Abo and Wolfcamp zones produced separately. Will the approval of this application, in your opinion, result in the production of oil that would not otherwise be recovered?

A Very definitely.

Q Would it be feasible to make a dual completion in this well, in your opinion?

A I do not believe that a dual completion where the zones are kept segregated, is feasible. I just don't believe that it's economically feasible.

Q Do you feel there is any possibility of secondary

recovery in this area, in either of these zones?

A Well, this is something that we can't rule out. There are no activities, to my knowledge, at this time where secondary recovery is being considered, but I might point out that in the event secondary recovery is begun in these reservoirs, the two zones can be resegregated at a reasonable expense.

Q Now, are the pressures of the two zones sufficiently similar that one zone would not operate say, as a deep zone against production from the other zone?

A As long as the well is produced, the pressure sink will be at the well bore and there should be no tendency for the crude to re-enter either of the other formations, and even if the well were shut in, for an extended period of time, I do not believe that the pressure differential is enough to cause any perceptible movement of oil from one formation to the other.

Q Would it have any adverse effect on either of the formations to commingle in the well bore?

A I can see no adverse effects involved at all.

Q And would you say that the approval of this application would result in the prevention of waste?

A Yes, sir.

Q And would additional oil be recovered?

A It certainly will.

Q And will the correlative rights of the other operators in the area be protected?

A I can see no impairment of correlative rights involved at all.

Q Were Exhibits 1 through 12 prepared by you or under your supervision?

A They were.

MR. KELLAHIN: At this time, we offer Exhibits 1 through 12, inclusive.

MR. NUTTER: Continental's Exhibits 1 through 12 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 12, offered and admitted in evidence.)

MR. KELLAHIN: That completes the examination of the witness.

MR. NUTTER: Does anyone have any questions of the witness?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lyon, as I understand it, the well was originally completed back around 1963?

A Yes, sir.

Q And it was dualled in the Abo and the Wolfcamp?

A Yes, sir.

Q And then along about 1965, you abandoned the Wolfcamp and dualled it as an Abo - Glorietta --

A Correct.

Q And one year later, you squeezed the Glorietta and had a single completion in the Abo, then?

A Yes, sir.

Q And that's the way it is today?

A That's correct.

Q On your Exhibit No. 10, you show a test, I presume it's a test, February the 9th, 1967, in which the well made 1 barrel of oil and 17 barrels of water from the Abo?

A Yes, sir.

Q How did you get this test, July 13, of '68, in the Wolfcamp?

A I didn't change that on that exhibit. This was a typo-graphical error, I must have changed all the rest of them and didn't change that one.

Q What is the date?

A All these others -- that's supposed to be '65.

Q '65. Now, that test showed the Wolfcamp made 22 barrels of oil and 2 barrels of water, so you have approximately

eight times the amount of water being produced from the Abo that you do from the Wolfcamp. Will there be any problem as far as the compatibility of that Abo water on the Wolfcamp formation?

A The test history on the Abo is very irratic, and the production, the water production, as well as the oil, varies considerably. I doubt really that the well will produce this much water, but in the event that it does, I don't foresee any problem, as to any contamination of the Wolfcamp because I don't believe that will accumulate at a rate that would cause any problem.

Q You would try to keep it pumped off, naturally?

A Correct.

Q But do you know whether Abo water is compatible with the Wolfcamp formation or not, as a general rule?

A I don't have that information; I don't have anything on which to base an evaluation.

Q Has any considerabion been given in this general field of production practice of commingling in the well bore, has any consideration been given to the use of these downhole commingling tools, Mr. Lyon?

A We have looked at this from just about every angle that we know of, with the assistance of the service companies

and we have looked at other equipment where the producing rates are such that they could justify more expensive equipment. In this case, we have ruled out the use of just about any kind of equipment which would segregate these zones even for testing because the expense is prohibitive.

Q Now, your company in the northwest part of this State, has used the Otis equipment for downhole commingling. They have used the Baker equipment and recently they discontinued the use of either one of those, and they have gone to some new tools that -- they have put together some, I don't know if they're Garrett or just what. They are using some gas lift valves and some special manvilles and chokes, seating metals and balls to segregate the production from each other, but it is commingled in that tubing and pumped through the tubing together.

A This is for testing purposes, isn't it, where they are segregated?

Q No, sir, they are actually kept segregated from each other in the tubing string. One enters into the tubing string from the annulus, the other production comes from below the packer, and into the tubing through a seat and a ball, so it can't, the production can't return from one zone into the other zone. I just wonder, we have had several applications from

the Southeast in recent months. I just wonder if the study has been given to the use of these dual-flow commingling installations, where the formations are kept segregated but the production is commingled in the tubing.

A We have looked at this quite closely and I think that ths situation is considerable different in that, and I may be mistaken about this, but it's my understanding that those zones flow, that there's considerable gas and that you can do this with flowing wells, but in this case, we're looking at artificial lift for both zones.

Q These are artificial lifts, also?

A Oh, they are, yes, sir.

Q I think it's an area that should be given some consideration. There's a possibility of damage to the reservoirs. We don't know what it is. But here we have got Abo water going down to theWolfcamp, we don't know what effect that might have. There's a differential in pressure here, even though it's only 85 pounds, but you have got an estimated pressure of 800 on one and 715 on the other and there is a possibility of damage to either one or both of the reservoirs, I think. I feel that no one in New Mexico has had much experience in this because we haven't done too many wells commingled in the well bore. I know they have been doing it in

some other places, but before we get too far gone on this, I would like to see some of these installations studied as far as downhole commingling equipment, to maintain the segregation of the reservoirs themselves.

Q We are studying this at the present time, have had it under study for some time, and we'll continue to evaluate these things, but as you are probably aware, the economic situation in Southeast New Mexico is changing quite drastically, and just as a matter of keeping these wells producing, it will be necessary for operators to consider commingling of these reservoirs in the well bore.

Q Well, we have recognized that this is going to be coming up more and more frequently. The first oil, oil-dual completion was authorized in this State in 1956 which is 12 years ago. Some of these dual completions are getting pretty old n and the economics are such it's going to be hard to keep two zones pumping separately.

A This is true.

Q And we expect to see more of it. We would like to see some additional study given to some of these commingling tools.

A We feel that conservation principles should not be sacrificed just purely for the sake of profit and Continental

Oil Company would not propose the commingling where conservation would be sacrificed, and we do not feel that it is in this case.

Q Well, you feel that you are going to recover some additional oil on this, I know.

A Yes, sir.

Q And some additional money, for Continental and the State?

A Right.

MR. NUTTER: Does anyone have any further questions of Mr. Lyon? You may be excused.

(Witness excused.)

MR. NUTTER: We have your exhibits, Mr. Kellahin, do you have anything further?

MR. KELLAHIN: That's all I have.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3900?

MR. HATCH: The Commission has received a telegram from Getty Oil Company in support of the Application.

MR. NUTTER: If there is nothing further, we'll take Case 3900 under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, MARIANNA MEIER, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my hand this 1st day of November, 1968.

Ida Kearnley
Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3900 heard by me on 10/23, 1968.

Examiner
New Mexico Oil Conservation Commission

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

November 5, 1968

Re: Case No. 3900
Order No. R-3552
Applicant:
Continental Oil Co.

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

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.
Secretary-Director

ALP/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. 3900
Order No. R-3552

APPLICATION OF CONTINENTAL OIL
COMPANY FOR DOWNHOLE COMMINGLING,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 4th day of November, 1968, 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 the applicant, Continental Oil Company, is the owner and operator of the State H-35 Well No. 7, located 660 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That by Administrative Order No. MC-1368, dated August 26, 1963, the subject well was authorized as a dual completion for the production of oil from the Abo and Wolfcamp formations through parallel strings of tubing.

(4) That subsequent to the issuance of said Order No. MC-1368 the Wolfcamp formation was isolated, and that by Administrative Order No. MC-1368-A, dated October 15, 1965, the

subject well was authorized as a dual completion for the production of oil from the Vacuum-Glorieta and North Vacuum-Abo Pools through parallel strings of tubing.

(5) That just prior to said isolation, the Wolfcamp zone was producing at a marginal rate.

(6) That subsequent to the issuance of said Order No. MC-1368-A, the Glorieta perforations have been squeezed.

(7) That the subject well is presently shut in as to the North Vacuum-Abo Pool; that just prior to said shutting in, the North Vacuum-Abo was producing at a marginal rate.

(8) That the applicant proposes to remove the cast iron bridge plug separating the Abo and Wolfcamp perforations, commingle the production from said zones, and to produce the marginal production from the subject zones through a single string of tubing by means of a hydraulic pump and bottom-hole assembly to be set in the proximity of the Wolfcamp perforations.

(9) That the proposed commingling may substantially extend the productive lives of the subject zones in the aforesaid well.

(10) That the reservoir characteristics of each of the two zones are such that underground waste would not be caused by the proposed commingling in the well-bore.

(11) That the proposed commingling may result in the recovery of additional oil from both of the subject pools, thereby preventing waste, and will not violate correlative rights.

(12) That the Abo zone in the subject well has an estimated present producing capacity of 24 barrels of oil per day and that the Wolfcamp zone has an estimated present producing capacity of 12 1/2 barrels of oil per day.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to complete its State H-35 Well No. 7, located 660 feet from the North line and 1780 feet from the East line of Section 35,

Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, in such a manner as to produce oil from the North Vacuum-Abo Pool through perforations from 9154 feet to 9526 feet and from the Vacuum-Wolfcamp Pool through perforations from 9620 feet to 10,066 feet, commingling the production from each of said sones in the well-bore;

PROVIDED HOWEVER, that future production shall be allocated to the Abo and Wolfcamp zones of the subject well in the proportion that the estimated present producing capacity of each zone bears to the combined production from both zones until further order of the Commission;

PROVIDED FURTHER, that commingling in the well-bore shall continue only so long as the commingled production does not exceed the top unit allowable for either of the zones in the subject well.

(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

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

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

esr/

Docket No. 31-68

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 23, 1968

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 3894: Application of Signal Oil and Gas Company for a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard oil proration unit comprising the W/2 NE/4 and the N/2 SE/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico, said unit to be dedicated to its State AP Well No. 1 located 1980 feet from the South line and 660 feet from the East line of said Section 17.

CASE 3895: Application of Sun Oil Company for a pressure maintenance project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its New Mexico State "H" Lease by the injection of water into the San Andres formation through its New Mexico State "H" Well No. 13 located in the SE/4 SE/4 of Section 16, Township 8 South, Range 30 East, Cato-San Andres Pool, Chaves County, New Mexico. Applicant further seeks the promulgation of special rules to govern operation of said pressure maintenance project.

CASE 3887: (Continued from the October 9, 1968, Examiner Hearing)

Application of Kersey & Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Premier sand of Grayburg formation through two wells to be located in Units E and K of Section 12, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico. Applicant further proposes to produce oil from the Upper Grayburg through parallel strings of tubing, if said zones are productive in the subject wells.

CASE 3896: Application of Kersey & Hanson, Yates Drilling Company, and John H. Trigg for several waterflood projects, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute several cooperative waterflood projects by the injection of water into the Queen and Grayburg formations through four injection wells located in Sections 21

CASE 3896 continued

and 28, Township 18 South, Range 29 East, Turkey Track Queen-Grayburg Pool, Eddy County, New Mexico

CASE 3897: Application of Kersey-Wittkopp and E. A. Hanson for two waterflood projects, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute two cooperative waterflood projects by the injection of water into the Queen formation through two injection wells located in the NW/4 SE/4 and the SW/4 SE/4 of Section 6, Township 19 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 3898: Application of Tenneco Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen formation in the open-hole interval from approximately 3258 feet to 3341 feet in its Ginsberg-Federal Well No. 6 located in Unit E of Section 31, Township 25 South, Range 38 East, Langlie-Mattix Field, Lea County, New Mexico.

CASE 3899: Application of Cities Service Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the interval from approximately 4087 feet to 4176 feet in its State AD Well No. 8 located in Unit J of Section 22, Township 10 South, Range 32 East, Mescalero-San Andres Pool, Lea County, New Mexico.

CASE 3900: Application of Continental Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Vacuum Wolfcamp Pool and the North Vacuum Abo Pool in the well-bore of its State H-35 Well No. 7 located 660 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, Lea County, New Mexico.

CASE 3901: Application of Continental Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates-Seven Rivers formations in the perforated interval from approximately 3330 feet to 3552 feet in its Lynn A-28 Well No. 6 located in Unit H of Section 28, Township

(CASE 3901 continued)

23 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3902: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Queen formation through its Stevens "B" Well No. 8 located in Unit A of Section 12, Township 23 South, Range 36 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 3903: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Delaware formation in the perforated intervals from approximately 4675 feet to 4765 feet in its Payne Well No. 11 and from 4666 feet to 4740 feet in its Payne Well No. 12 located 660 feet from the South line and 1650 feet from the West line of Section 30, 1935 feet from the North line and 2090 feet from the West line of Section 31, respectively, Township 26 South, Range 33 East, El Mar-Delaware Pool, Lea County, New Mexico.

CASE 3904: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Delaware formation through its Thompson Federal 19 Well No. 2 located in Unit F of Section 19, Township 26 South, Range 32 East, North Mason-Delaware Pool, Lea County, New Mexico.

CASE 3905: Application of Texas Pacific Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation in the open-hole interval from approximately 12,269 feet to 12,541 feet in its State "O" Well No. 1 located in Unit J of Section 15, Township 10 South, Range 36 East, South Crossroads-Devonian Pool, Lea County, New Mexico.

CASE 3906: Application of Skelly Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Queen formation through its Mattix "A" Well No. 4 located in Unit K of Section 2, Township 24 South, Range 37 East, Langlie-Mattix Oil Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.

CASE 3907: Application of Skelly Oil Company for a waterflood project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the San Andres formation through its Hobbs "W" Well No. 9 located in Unit F of Section 29, Township 7 South, Range 34 East, Chaveroo-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.

CASE 3908: Application of Pan American Petroleum Corporation for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from approximately 3932 feet to 4027 feet in its Miller Federal Well No. 4 located in Unit L of Section 35, Township 7 South, Range 31 East, Tom-Tom San Andres Pool, Chaves County, New Mexico.

CASE 3909: Application of Champlin Petroleum Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into San Andres formation, Chaveroo-San Andres Pool, Roosevelt County, New Mexico, through the following two wells located in Township 7 South, Range 33 East:

Champlin Lauck-Federal Well No. 12, Unit J of Section 29; Disposal Interval - 4202 feet to 4404 feet;

Champlin State 32-7-33 Well No. 5, Unit J of Section 32; Disposal Interval - 4303 feet to 4425 feet.

CASE 3910: Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SW/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico, Said acreage to be dedicated to a well located in the NE/4 SW/4 of said Section 17.

CASE 3911: Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SE/4 of Section 8, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool. Lea County, New Mexico. Said acreage to be dedicated to a well located in the NW/4 SE/4 of said Section 8. In the alternative applicant seeks approval of a non-standard oil proration unit comprising the E/2 SE/4 of said Section 8 and the W/2 SW/4 of Section 9, said Township and Range, said unit to be dedicated to a well to be drilled in the NE/4 SE/4 of said Section 8.

CASE 3882: (Continued from the October 9, 1968, Examiner Hearing) Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Teague Blinebry Pool, Lea County, New Mexico.

CASE 3883: (Continued from the October 9, 1968, Examiner Hearing) Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Imperial Tubb-Drinkard Pool, Lea County, New Mexico.

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

WESTERN UNION TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. McFALL
PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of (952) • ...ME at point of destination

LA050 NSC069

1968 OCT 22 AM 11 25

NS HSE040 PD=FAX HOUSTON TEX 22 940A CDT=
NEW MEXICO OIL CONSERVATION COMMISSION STATE LAND
OFFICE BLDG=COLLEGE AVE SANFA FE NMEX=

ATTENTION MR DAN S NUTTER CHIEF ENGINEER IN RE: CASE NO 3900, CONTINENTAL APPLICATION TO DOWNHOLE COMMINGLE IN ITS STATE H-35 WELL NO 7, VACUUM WOLFCAMP POOL AND NORTH VACUUM ABO POOL, LEA COUNTY, NEW MEXICO PLEASE BE ADVISED THAT GETTY OIL COMPANY SUPPORTS THIS APPLICATION AND URGES ITS APPROVAL PLEASE ENTER THIS IN THE RECORD OF THIS HEARING=

JOHN S CAMERON JR=

WU1201(R2-65) THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Mobil Oil Corporation

P.O. BOX 633
MIDLAND, TEXAS 79701

October 22, 1968

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

CASE NO 3900 - CONTINENTAL OIL COMPANY - DOWNHOLE COMMINGLING VACUUM WOLFCAMP AND NORTH VACUUM ABO POOLS

Gentlemen:

This is to advise that Mobil Oil Corporation has no objection to downhole commingling in Well No. 7 in this case and concurs completely in the feasibility of this proposal.

Yours very truly,

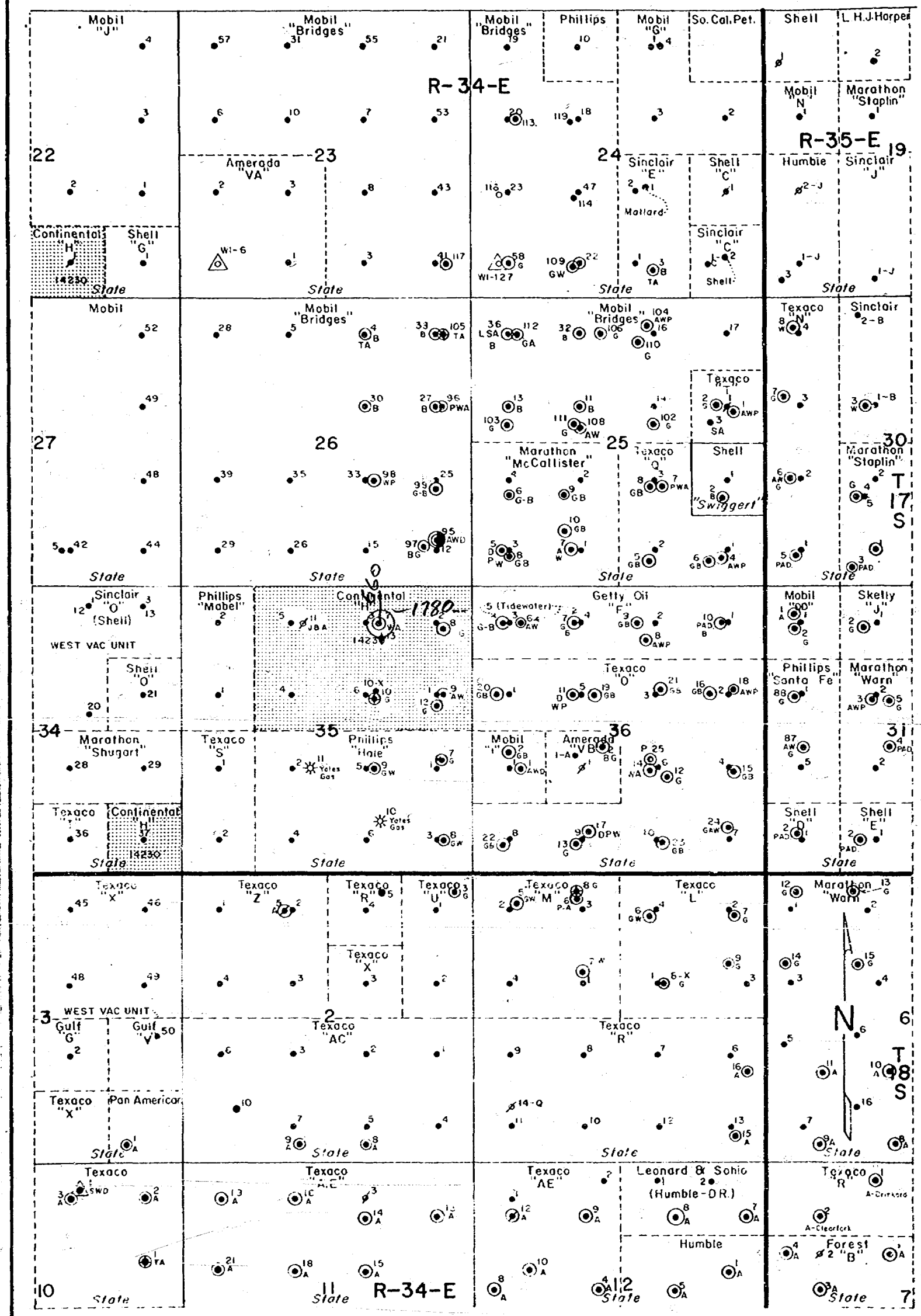
Ira B. Stitt

Ira B. Stitt
Division Operations Engineer

JLSanders:mw

cc:
Continental Oil Company
Post Office Box 460
Hobbs, New Mexico 88240

'68 Oct 23



BEFORE EXAMINER NUTTER

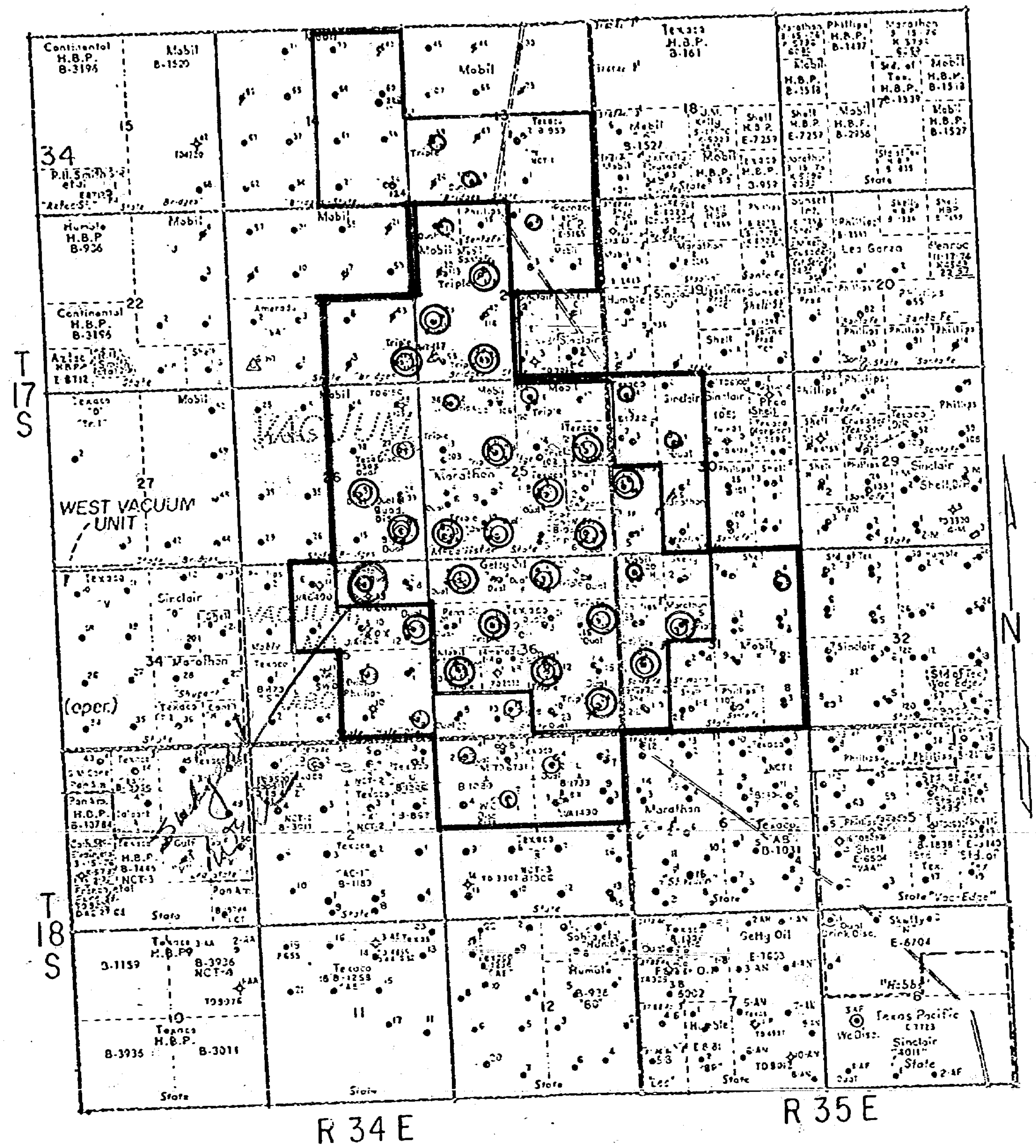
OIL CONSERVATION COMMISSION

Case No. 3900

LEGEND

- YATES
- DEVONIAN
- PENN
- BLINEBRY
- GLORIETA
- ABO

CONTINENTAL OIL COMPANY
PRODUCTION DEPARTMENT
HOBBS DISTRICT
VACUUM FIELD-LEA CO., NEW MEXICO



L E G E N D

- North Vacuum Abo Pool
- Vacuum Wolfcamp Pool
- O North Vacuum Abo Wells
- O Vacuum Wolfcamp Wells

CONTINENTAL OIL COMPANY
PRODUCTION DEPARTMENT
HOBBS DIVISION
LEA COUNTY, NEW MEXICO

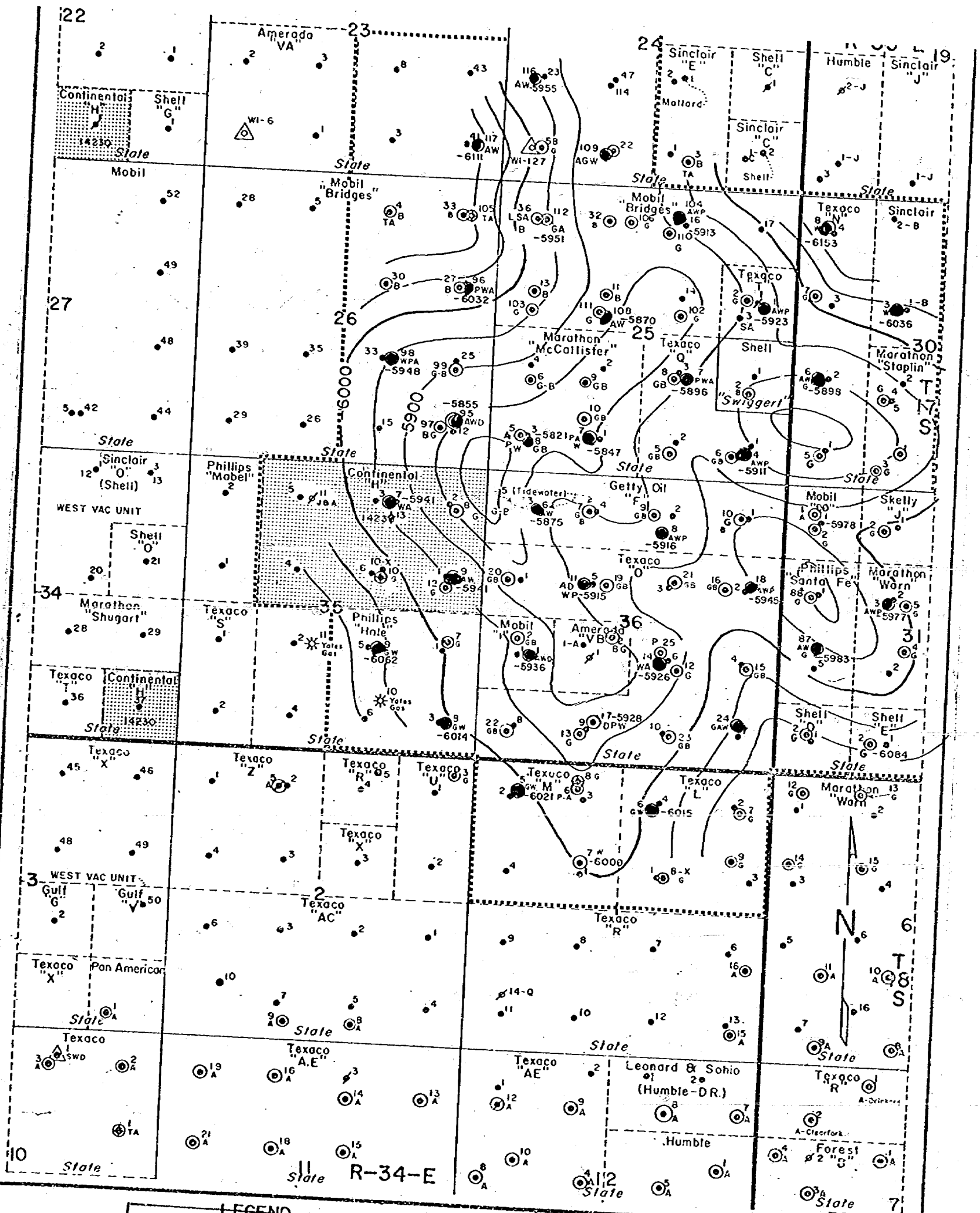
Scale: 1" = 4000'

BEFORE EXAMINER NUTTER

EXHIBIT NO. 2

CASE NO. 3900

EXHIBIT 2



LEGEND

YATES

DEVONIAN

PENN

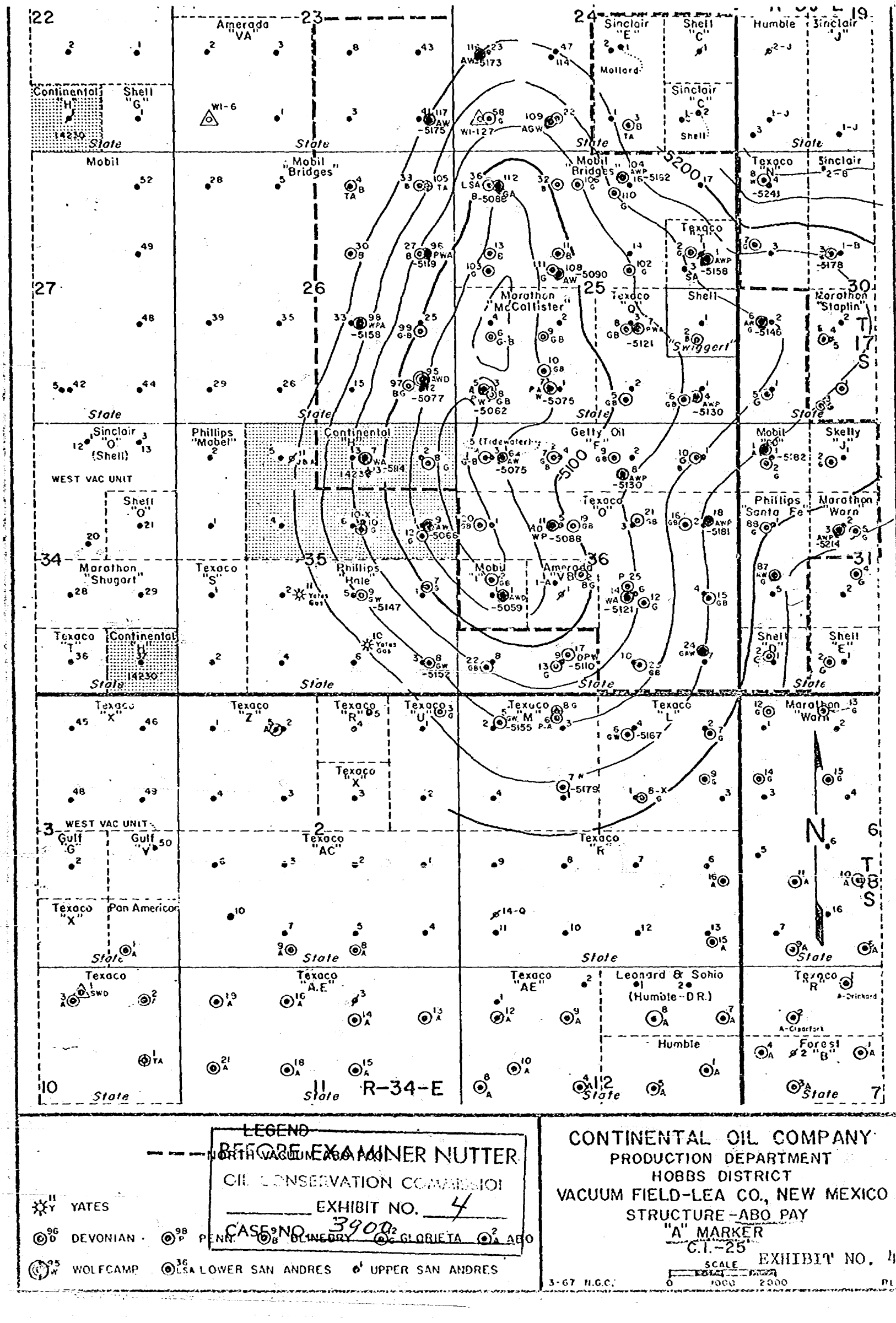
BLINEBRY

GLORIETA

ABO

BEFORE EXAMINER NUTTER
VACUUM WOLFCAMP POOL
OIL
CASE NO. 3900

CONTINENTAL OIL COMPANY
PRODUCTION DEPARTMENT
HOBBS DISTRICT
VACUUM FIELD-LEA CO., NEW MEXICO
STRUCTURE MAP
LOWER WOLFCAMP PAY ZONE



LEGEND

NORTH VACUUM ABO POOL

YATES

DEVONIAN · PENN · BLINEBRY · GLORIETA · ABO

WOLFCAMP · LOWER SAN ANDRES · UPPER SAN ANDRES

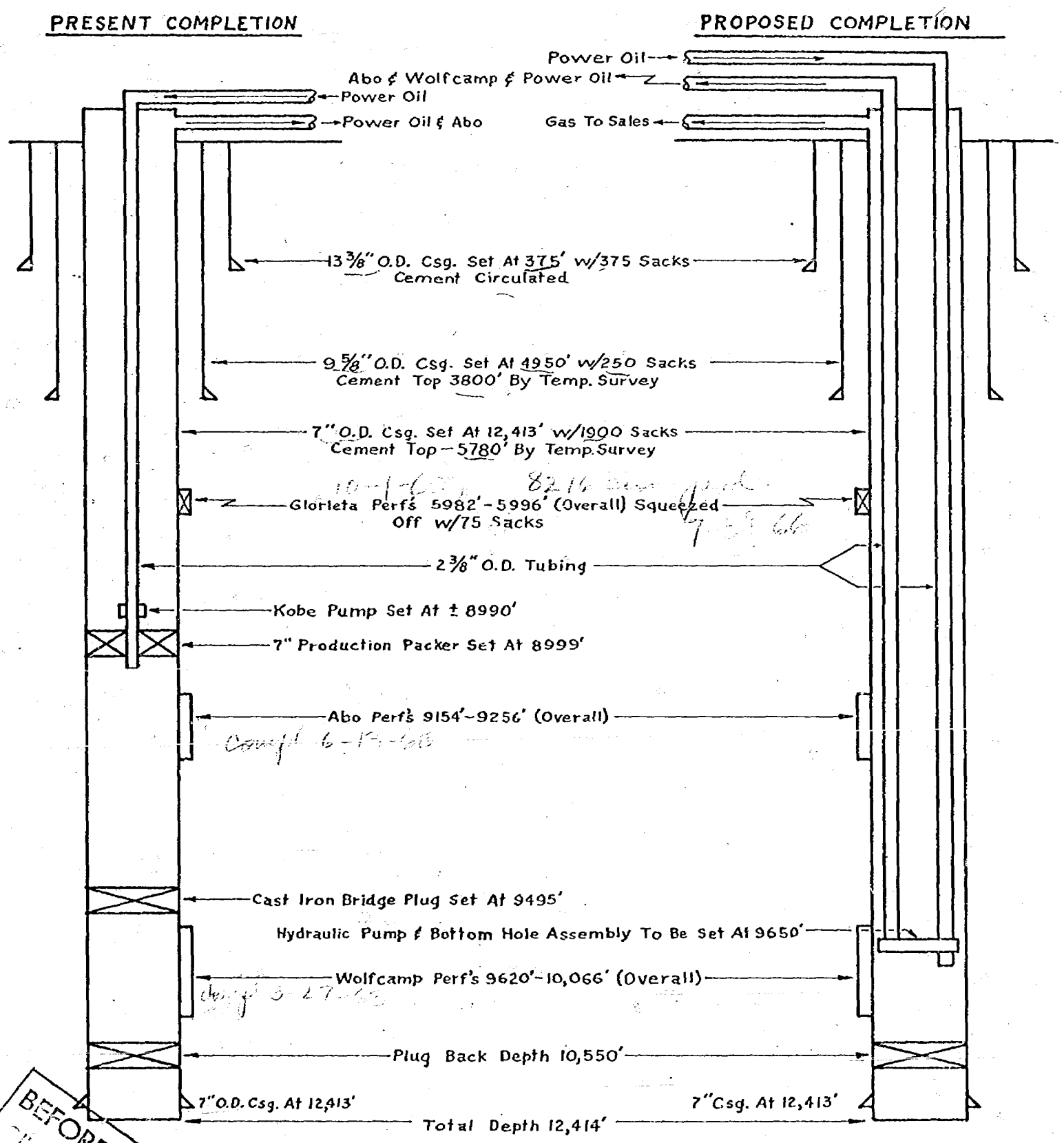
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3902

CONTINENTAL OIL COMPANY
PRODUCTION DEPARTMENT
HOBBS DISTRICT
VACUUM FIELD-LEA CO., NEW MEXICO
STRUCTURE-ABO PAY
"A" MARKER
C.I.-25

EXHIBIT NO. 4

SCALE 0 1000 2000

3-67 N.G.C.



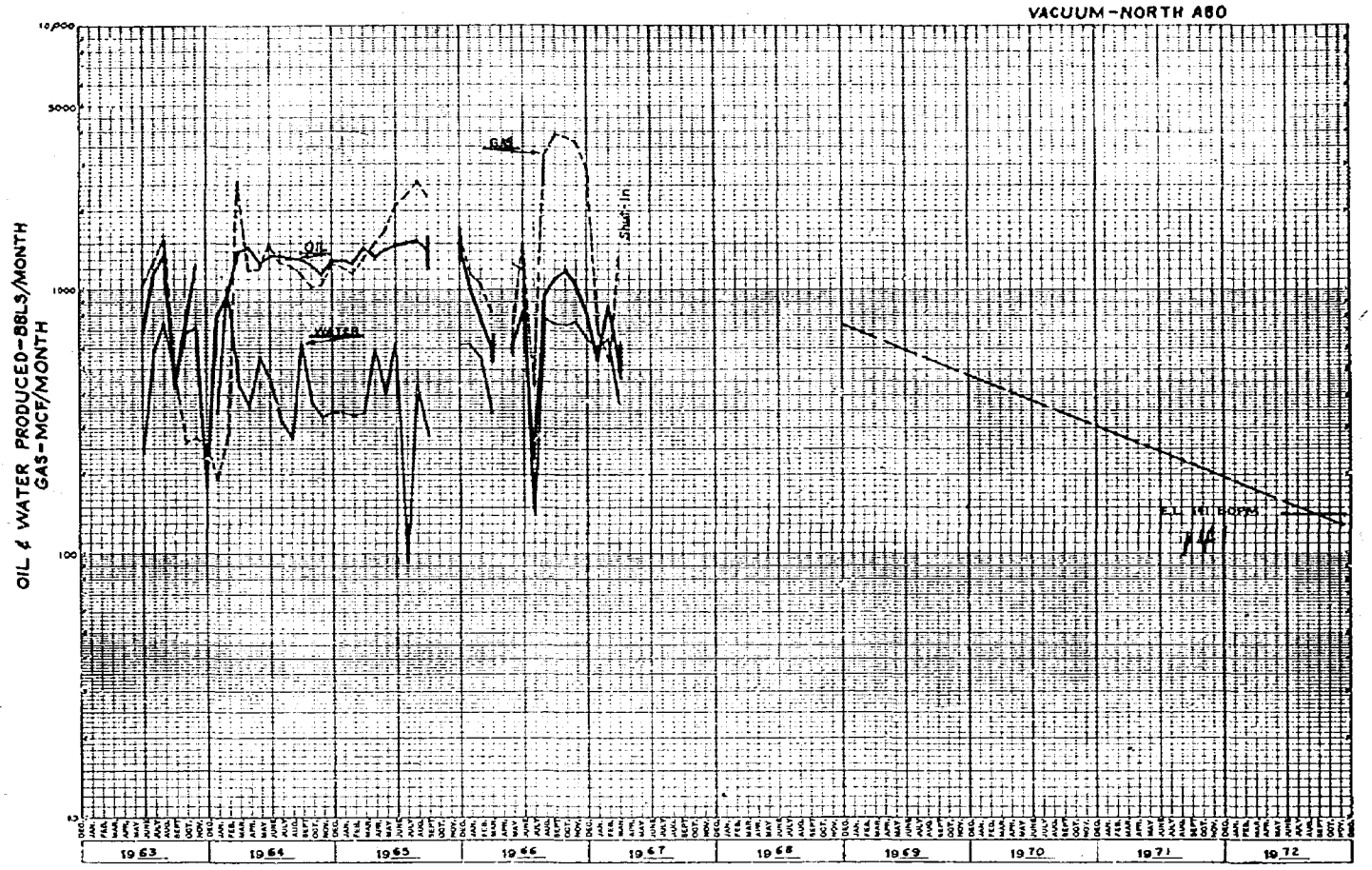
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
CASE NO. EXHIBIT NO. 5
3200

CONTINENTAL OIL COMPANY
STATE H-35 WELL NO. 7
VACUUM-NORTH ABO & WOLFCAMP POOLS
LEA COUNTY, NEW MEXICO

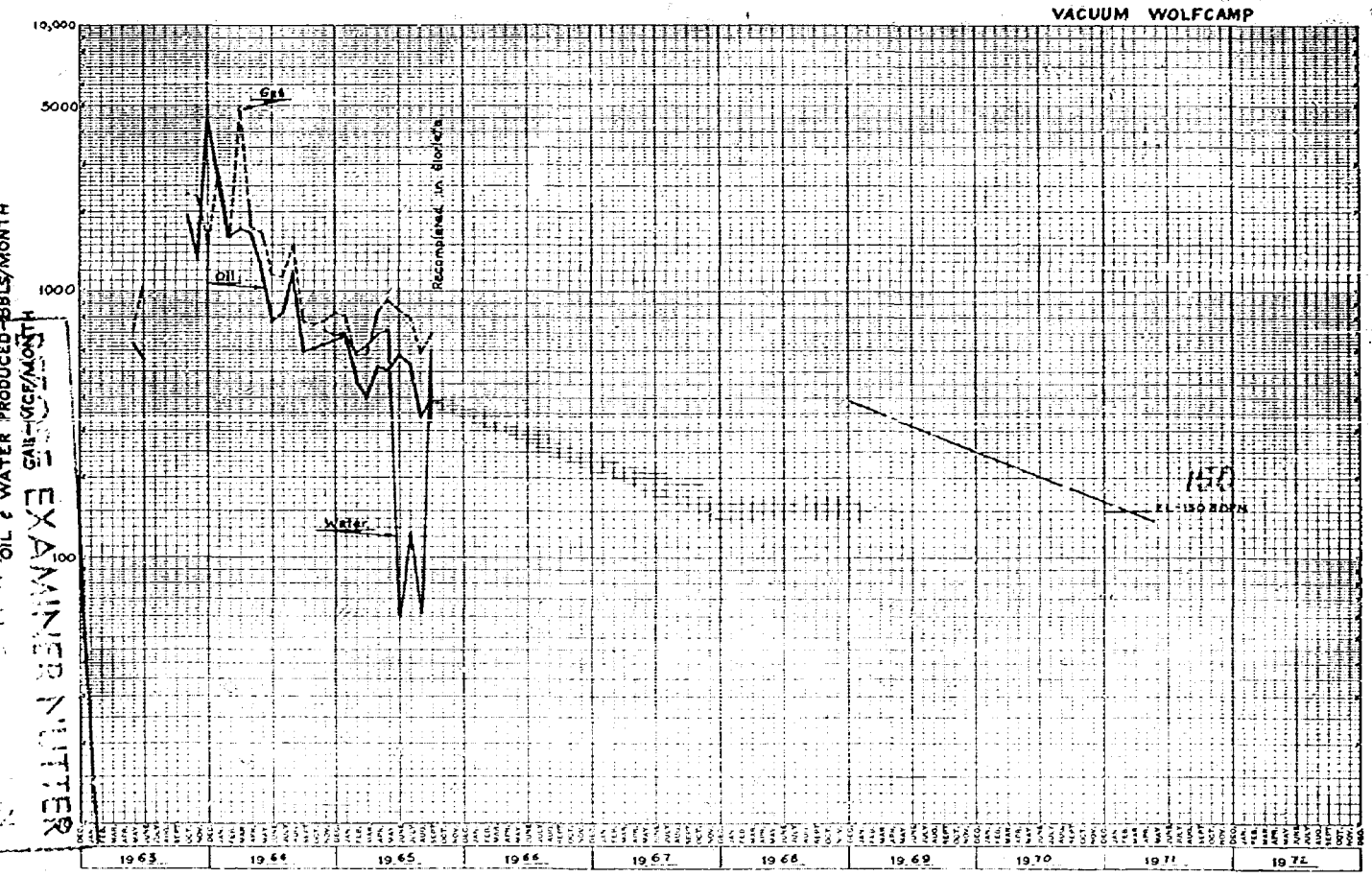
EXHIBIT NO. 5

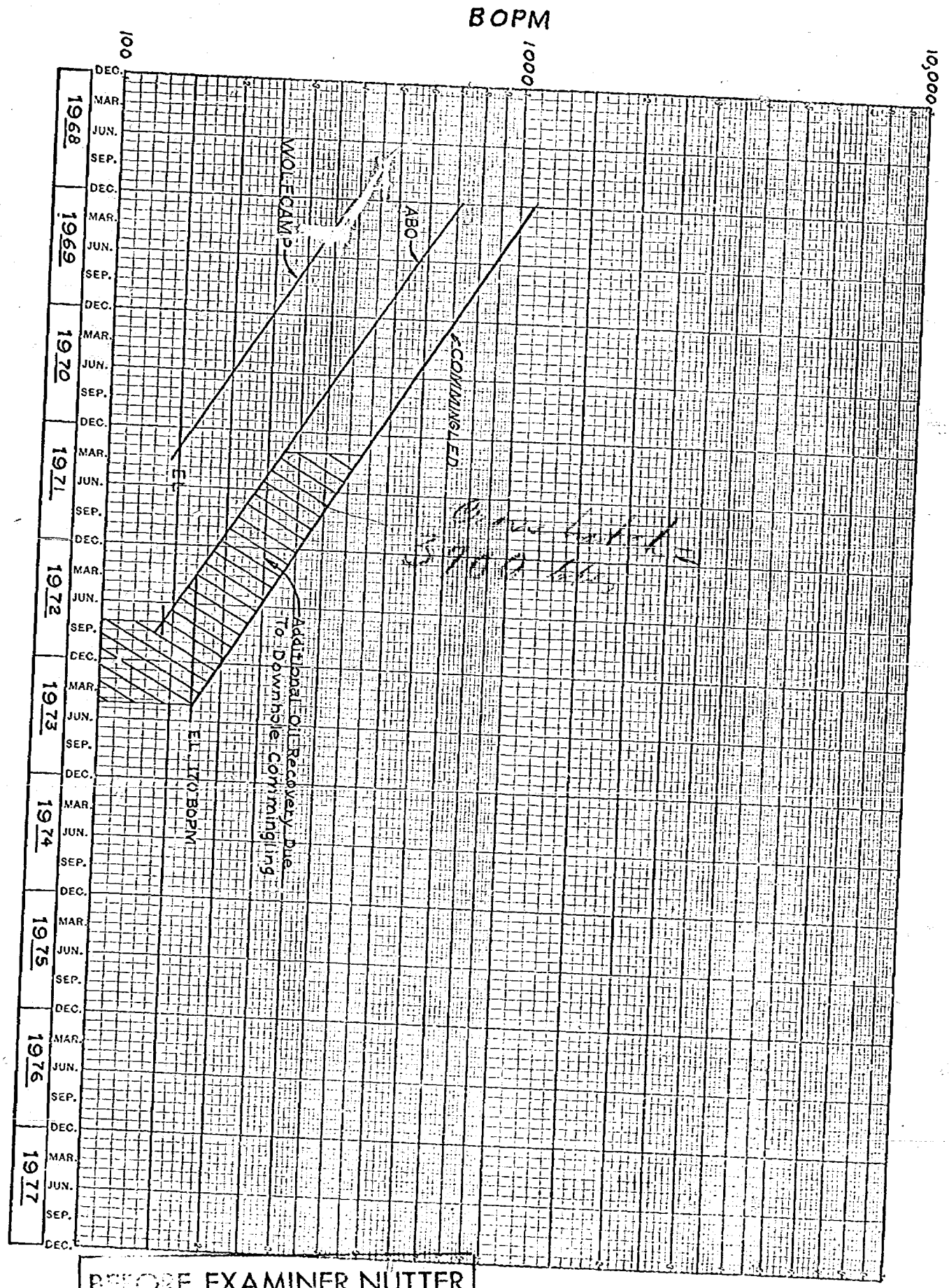
REL - 10-68

STATE H-35 NO. 7
VACUUM-NORTH ABO



STATE H-35 NO. 7
VACUUM WOLFCAMP





NO. 3157. TEN YEARS BY MONTHS X 2 3-INCH CYCLES RATIO RULING.

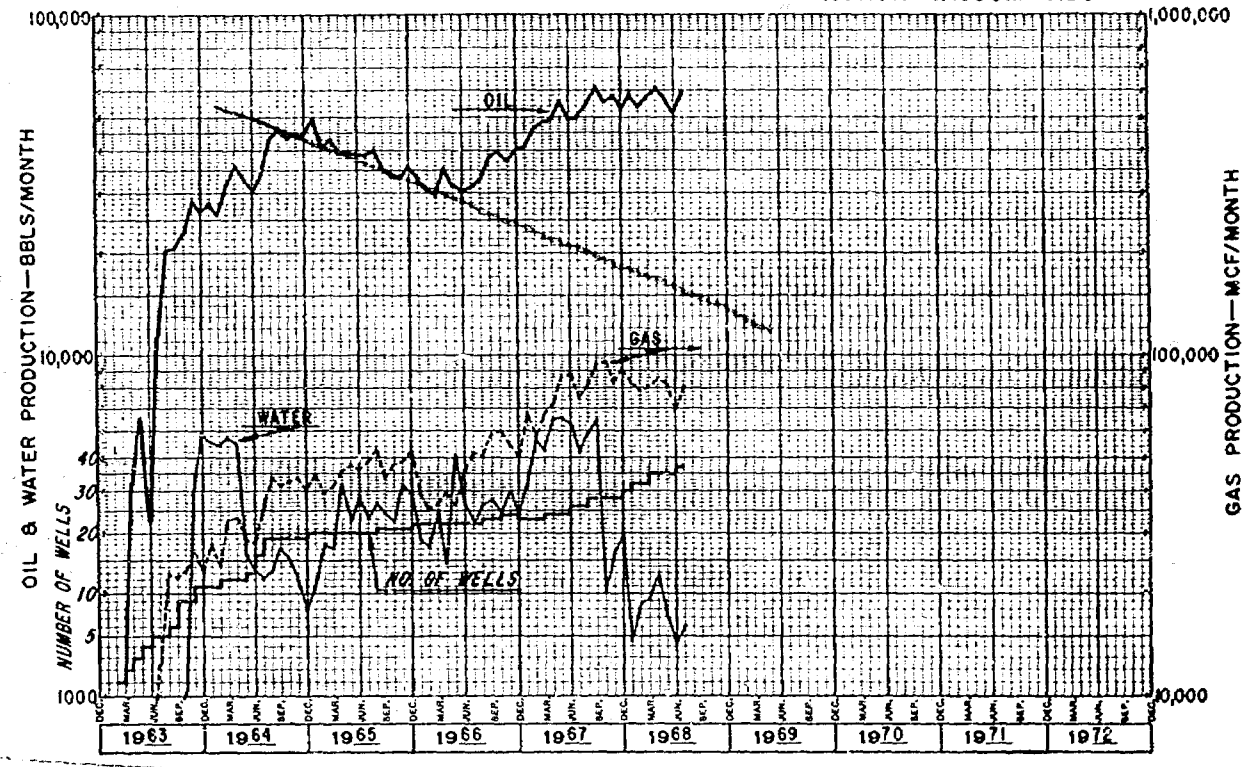
COOCX BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS.
PRINTED IN U.S.A.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 3900

EXHIBIT NO. 7

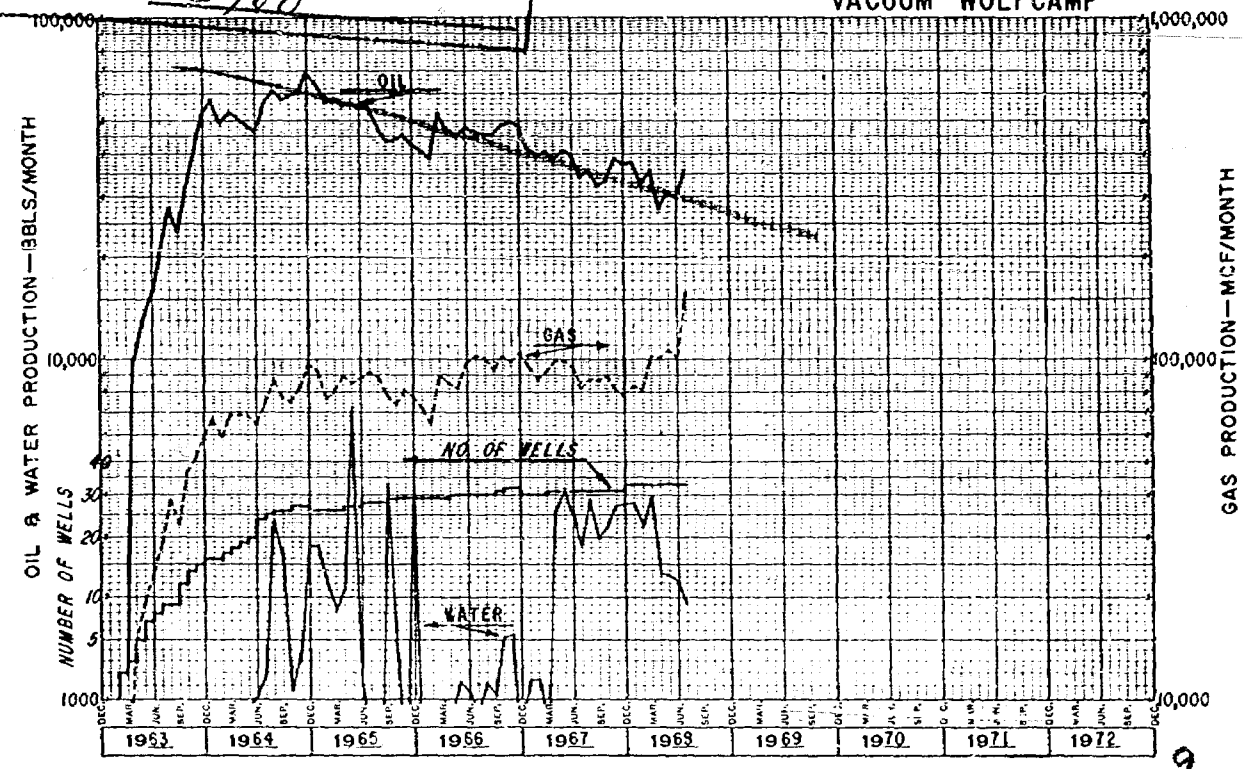
RESERVOIR PERFORMANCE CURVE

NORTH VACUUM ABO



RESERVOIR PERFORMANCE CURVE

VACUUM WOLFCAMP



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RESERVOIR DATA

State H-35 No. 7 — Lea County, N. M.

Pool Names	Vacuum-North Abo	Vacuum-Wolfcamp
Date of Latest Test	February 9, 1967	July 13, ~~1968~~ 1967
Test - Barrels Oil/Day	1*	22
- Barrels Water/Day	17	2
- MCF Gas/Day	228	20.8
- Gas-Oil Ratio	228000	945
Current Allowable	Shut In	Shut In

Field Data

Average Depth (Top of Pay)	9200	9600
Proportional Factor	4.77	4.77
Top Allowable (NUA-58 BOPD)	277	277
Proration Size	80 Ac.	80 Ac.
Gas-Oil Ratio Limit	2000	2000
Est. BHP - PSIA	800	715
Producing Mechanism	Solution Gas	Solution Gas
Crude Gravity	34.6°	39.2°

* Pumping from below a packer with subsurface hydraulic pump.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 10
CASE NO. 3900

EXHIBIT NO. 10

STATE H-35 WELL NO. 7

ECONOMIC LIMIT CALCULATION

ABO	
Operating Expense	$350
Sales Value per Barrel (including gas)	3.08
Taxes	.21
Royalty	.39
Net Value (after Taxes & Royalty)	2.48
Economic Limit	141 BOPM

WOLFCAMP	
Operating Expense	$370/month
Sales Value per Barrel (including gas)	3.08
Taxes	.21
Royalty	.39
Net Value (after taxes & royalty)	2.48
Economic Limit	150 BOPM

WELLBORE COMMINGLED CRUDE	
Operating Expense	$420/month
Sales Value per Barrel (including gas)	3.08
Taxes	.21
Royalty	.39
Net Value (After taxes & royalty)	2.48
Economic Limit	170 BOPM

Note: Both Zones: Working Interest 100%
Net Interest 87.5%

EXHIBIT NO. 11

COMPARISON OF OIL RECOVERY AND REVENUE

STATE H-35 NO. 7

VACUUM-NORTH ABO AND VACUUM-WOLFCAMP POOLS

OPERATED AS DUAL COMPLETION, THEN AS SINGLE COMPLETION

AFTER WOLFCAMP REACHES ITS ECONOMIC LIMIT

ABO

Reserves - 15,750 barrels oil
Prod. Rate - Initial - 24 BOPD Final - 4.7 BOPD
Life - 3 years 10 months at 36% decline rate
Net Value - $39,060 (Continental Revenue)
Royalty & Taxes - $9,450 (State Revenue)

WOLFCAMP

Reserves - 6,590 barrels oil
Prod. Rate - initial - 12.5 BOPD Final - 5 BOPD
Life - 2 years 3 months at 34% decline rate
Net Value - $16,343 (Continental Revenue)
Royalty & Taxes - $3,954 (State Revenue)

OPERATED AS SINGLE COMPLETION WITH WELLBORE COMMINGLING

Reserves - 26,050 barrels oil
Prod. Rate - Initial - 36.5 BOPD Final - 5.7 BOPD
Life - 4 years 8 months at 35% decline rate
Net Value - $64,604 (Continental Revenue)
Royalty & Taxes - $15,630 (State Revenue)

CONTINENTAL OIL COMPANY

P. O. Box 460
Hobbs, New Mexico 88240

1001 North Turner
Telephone 393-4141

Production Department
Hobbs Division
L. P. Thompson
Division Manager
G. C. Jamieson
Assistant Division Manager

Case 3900

September 27, 1968

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

Attention of Mr. A. L. Porter, Jr., Secretary-Director

Re: Application for Authority to
Commingle in the Well Bore
State H-35 Well No. 7

Gentlemen:

Forwarded herewith in triplicate is our application to commingle in the well bore production from the North Vacuum Abo and Vacuum Wolfcamp Pools in our State H-35 Well No. 7. It would be appreciated if you would set this matter for hearing on your October 23, 1968 Examiner docket.

Yours very truly,

L. P. Thompson

LPT-JS
cc: RLA JJB JWK
Attach

68 SEP 30 AM 8 1

DOCKET MAILED

Date 10-11-68

PIONEERING IN PETROLEUM PROGRESS SINCE 1875

BEFORE THE OIL CONSERVATION COMMISSION

OF THE

STATE OF NEW MEXICO

Case 3900

IN THE MATTER OF THE APPLICATION OF CONTINENTAL OIL COMPANY FOR AUTHORITY TO COMMINGLE IN THE WELL BORE THE PRODUCTION FROM THE ABO AND WOLFCAMP FORMATIONS IN ITS STATE H-35 WELL NO. 7 LOCATED IN SECTION 35, TOWNSHIP 17 SOUTH, RANGE 34 EAST, LEA COUNTY, NEW MEXICO

'80 Sep 30 AM 8 15

APPLICATION

Comes now Applicant, Continental Oil Company, and respectfully requests authority to commingle in the well bore the production from the Abo and Wolfcamp formations in its State H-35 Well No. 7 located in Section 35, Township 17 South, Range 34 East, Lea County, New Mexico, and in support thereof would show:

1. That Applicant is the owner of the State H-35 Lease consisting of the NE/4 and E/2 NW/4, Section 35, Township 17 South, Range 34 East, Lea County, New Mexico.
2. That Applicant drilled its State H-35 Well No. 7 located 660' from the north line, 1780' from the east line of Section 35, Township 17 South, Range 34 East, Lea County, New Mexico, to a total depth of 12,413 feet. Said well was completed in the Vacuum Wolfcamp Pool through perforations 9620-10,066' on May 27, 1963.
3. That under the provisions of Administrative Order No. MC-1368, said well was dually completed in the Wolfcamp zone described above and through perforations in the North Vacuum Abo Pool at 9154-9256 on June 13, 1963.
4. That the Wolfcamp formation was isolated by setting a drillable bridge plug and, under the authority of Administrative Order No. MC-1368-A, said well was dually completed in the North Vacuum Abo interval described above and the Vacuum Glorieta Pool through perforations 5982-5996' on October 1, 1965.

5. That, after producing 8,276 barrels of oil, the Glorieta perforations were squeezed with cement on July 31, 1966.

6. That the well is capable of producing marginal quantities of oil from both the Wolfcamp and Abo formations but the production from each zone separately is insufficient to justify continued operation on a segregated basis.

7. That substantial quantities of additional oil can be recovered by producing the contents of both zones commingled in the well bore and that waste will be prevented thereby without the impairment of correlative rights.

WHEREFOR, Applicant respectfully prays that this application be set for hearing before the Commission's duly appointed examiner and that upon hearing, an order be entered granting Applicant permission to commingle in the well bore the production from the Vacuum Wolfcamp and North Vacuum Abo Pools in its State H-35 Well No. 7 as described above.

Respectfully submitted,

L. P. THOMPSON
Division Manager
Hobbs Division

LPT-JS

DRAFT

GMH/esr
10-31-68

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. 3900

Order No. R-3552

APPLICATION OF CONTINENTAL OIL
COMPANY FOR DOWNHOLE COMMINGLING,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of November, 1968, 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 the applicant, Continental Oil Company, is the owner and operator of the State H-35 Well No. 7, located 660 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That by Administrative Order No. MC-1368, dated August 26, 1963, the subject well was authorized as a dual completion for the production of oil from the Abo and Wolfcamp formations through parallel strings of tubing.

(4) That subsequent to the issuance of said Order No. MC-1368, the Wolfcamp formation was isolated, and that by Administrative Order No./MC-1368-A, dated October 15, 1965,

the subject well was authorized as a dual completion for the production of oil from the Vacuum-Glorieta and North Vacuum-Abo Pools through parallel strings of tubing.

(5) That just prior to said isolation, the Wolfcamp ~~formation~~ zone was producing at a marginal rate. ~~approximately __________ barrels of oil per day.~~

(6) That subsequent to the issuance of said Order No. MC-1368-A, the Glorieta perforations have been squeezed.

(7) That the subject well is presently shut in as to the North Vacuum-Abo Pool; that just prior to said shutting in, the North Vacuum-Abo was producing at a marginal rate. ~~approximately __________ barrels of oil per day.~~

(8) That the applicant proposes to remove the cas[illegible] on bridge plug separating the Abo and Wolfcamp perforations, commingle the production from said ~~formations~~ zones, and to produce the ~~low~~ ~~marginal production from the subject formations~~ zones through a single string of tubing by means of a hydraulic pump and bottom-hole assembly to be set in the proximity of the Wolfcamp perforations.

(9) That the proposed commingling may substantially extend the productive lives of the subject zones in the aforesaid well.

(10) That the reservoir characteristics of each of the two zones are such that underground waste would not be caused by the proposed commingling in the well-bore.

(11) That the proposed commingling may result in the recovery of additional oil from both of the subject pools, thereby preventing waste, and will not violate correlative rights.

~~(12) That production tests should be conducted, prior to commingling, to determine the production from each zone.~~

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby

authorized to complete its State H-35 Well No. 7, located 660 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, in such a manner as to produce oil from the North Vacuum-Abo Pool through perforations from 9154 feet to 9256 feet and from the Vacuum-Wolfcamp Pool through perforations from 9620 feet to 10,066 feet, commingling the production from each of said zones in the well-bore;

PROVIDED HOWEVER, ~~that the production of each zone shall be established and~~ that future production shall be allocated to the Abo and Wolfcamp zones of the subject well in the proportion that the estimated ~~actual present~~ ~~production from~~ producing capacity of each zone bears to the combined production from both zones until further order of the Commission;

PROVIDED FURTHER, that commingling in the well-bore shall continue only so long as the commingled production does not exceed the top unit allowable for either of the zones in the subject well.

(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.