CASE 2975: Application of AMERADA for an unorthodox location, Lea County, New Mexico

CASE NO.
2975

Application,
Transcripts,
Small Exhibits
ETC.

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

February 4, 1964

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Box 1713
Santa Fe, New Mexico

Re: Case No. 2975
Order No. R-2646
Applicant:
Amerada Petroleum Corp.

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. Thomas W. Lynch and Mr. Booker Kelly

DRAFT
JMD/esr
January 29, 1964

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. 2975

Order No. R- 2646

APPLICATION OF AMERADA PETROLEUM
CORPORATION FOR AN UNORTHODOX
LOCATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on January 22, 1964, at Santa Fe, New Mexico, before Examiner 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 _____ day of ~~January~~ Feb., 1964, the Commission, a quorum being present, having considered the ~~application~~ testimony, the record, ~~and exhibits received~~ 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, Amerada Petroleum Corporation, seeks authority to drill a triple completion at an unorthodox location in the Vacuum-Devonian, Vacuum-Wolfcamp, and North Vacuum-Abo Pools within 200 feet of the center of the NE/4 SW/4 of Section 36, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the Special Rules and Regulations for each of the subject pools provide that the first well drilled on every standard or non-standard unit shall be located within 200 feet of the center of either the NW/4 or the SE/4 of a governmental quarter section; that no well has previously been drilled in any of the

subject pools in the NW/4 SW/4 of said Section 36; and that the applicant proposes to dedicate all or part of the N/2 SW/4 of said Section 36 to the subject well in all three pools.

(4) That approval of the subject application will impair the correlative rights of offset operators if the well is assigned more than one-half an 80-acre allowable in any of the three pools.

(5) That approval of the subject application will impair the correlative rights of offset operators if the applicant is permitted to drill the subject well in any portion of the E/2 of the NE/4 SW/4 of said Section 36.

(6) That a Devonian completion in the NE/4 SW/4 of said Section 36 will increase the total quantity of Devonian oil ultimately recovered from the NE/4 SW/4 of said section, thereby preventing waste.

(7) That in order to afford to the owner of each property in the three subject pools underlying said Section 36 the opportunity to produce his just and equitable share of the oil and to use his just and equitable share of the energy of the three reservoirs, and to otherwise prevent waste and protect correlative rights, the applicant should be authorized to drill the proposed well at an unorthodox location in the center of the NE/4 SW/4 of said Section 36 or within a tolerance of 200 feet west thereof, provided the well is not assigned more than one-half an 80-acre allowable in any of the three pools.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amerada Petroleum Corporation, is hereby authorized to drill a triple completion at an unorthodox location in the Vacuum-Devonian, Vacuum-Wolfcamp, and North Vacuum-Abo Pools in the center of the NE/4 SW/4 of Section 36 or within a tolerance of 200 feet west thereof, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico;

PROVIDED HOWEVER, That the subject well shall not be assigned more than one-half an 80-acre allowable in each of the three pools.

(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.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 22, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum Corporation for an unorthodox location, Lea County, New Mexico.

Case No. 2975

BEFORE: MR. ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 22, 1964

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EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum Corporation for an unorthodox location, Lea County, New Mexico.

CASE NO. 2975

BEFORE: MR. ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

MR. UTZ: CASE 2975.

MR. DURRETT: Application of Amerada Petroleum Corporation for an unorthodox location, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, of Kellahin & Fox, Santa Fe, appearing in behalf of the applicant, and in association with me is Mr. Thomas W. Lynch, a member of the Oklahoma Bar. Mr. Lynch will present the case.

MR. UTZ: Are there other appearances?

MR. KELLY: William B. Kelly, appearing on behalf of Texaco, Inc.

MR. UTZ: Are there other appearances? You may swear the witnesses, please.

(Witnesses sworn)

MR. LYNCH: Mr. Examiner, if I could, I would like to give a brief statement, opening statement, to put this case in context.

There are temporary field rules effective for one year from March 1, 1963, for the three pools which are the subject of this application, really. North Vacuum-Abo by Order No. R-2421, Vacuum-Wolfcamp, by Order No. R-2422, and the Vacuum-Devonian, by Order No. R-2423. Except for the proportional factors used in determining allowables, these field rules are identical.

Rule Two of each set of field rules provides for standard 80 acre proration units consisting of any half of a quarter section.

Rule Two also provides that wells may be drilled on both quarter-quarter sections in a unit. But, Rule Four provides that the first well in a proration unit has to be drilled on either the Northwest or the Southeast Quarter of a Quarter Section. So, for the proration unit consisting of the North Half of the Southwest Quarter of Section 36, which is the proration unit involved here, the first well, under these field rules, would have to be drilled inthe Northwest Quarter of the Southwest Quarter of the section.

MR. UTZ: Northwest Quarter of the what?

MR. LYNCH: Northwest Quarter of the Southwest Quarter of Section 36. We are going to be talking about the two 40 acre

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tracts within the unit. I think for ease of reference, it would be best for us to talk about the West Half of it and the East Half.

Amerada's evidence will show that a well drilled in the West Half of the proration unit would be non-productive in the Devonian, and so, in order to recover the oil from the Devonian underlying the East Half of the proration unit, it is going to be necessary to drill a well to the Devonian in the East Half, and since the West Half of the proration unit is essentially non-productive, it would be only fair to limit the allowable of this Devonian well to one-half of an 80 acre allowable.

Our evidence will also show, however, that the entire 80 acre proration unit is productive in both the Abo and the Wolfcamp, and although a productive Abo-Wolfcamp could be drilled any place in the 80 acre proration unit, a second well to those horizons would be unnecessary since a Devonian well would have already have been drilled in the East Half of the proration unit. This could be accomplished by multiply completing the Devonian well in the Abo-Wolfcamp.

Our evidence will also show no advantage from a geological or productivity standpoint from the orthodox location to the proposed location, insofar as the Abo and Wolfcamp are concerned. The disadvantage, of course, of drilling a second well is that that second well would be unnecessary and uneconomical. So, we are asking for permission here today for an unorthodox location with respect to the Abo-Wolfcamp and Devonian, the well to be

located in the Northeast Quarter of the Southwest Quarter of Section 36, Township 17 South, Range 34 East.

We are also asking for a full 80 acre allowable for the Abo, since the entire 80 acres is productive. We are asking for a full 80 acres for the Wolfcamp, allowable for the Wolfcamp, for the same reason, and we are asking for a half of an 80 acre allowable for the Devonian since nearly half the 80 is non-productive.

We will have two witnesses, Mr. Wallace W. Stewart, and Mr. R. L. Hocker. The first witness will be Mr. Stewart.

WALLACE W. STEWART,

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

DIRECT EXAMINATION

BY MR. LYNCH:

Q Mr. Stewart, would you state your name and your occupation by whom you are employed, and in what location?

A Wallace W. Stewart, I am employed by Amerada Petroleum Corporation as a Petroleum Geologist.

Q And where is your office?

A Our office, my current office is in Hobbs, New Mexico.

Q Have you testified previously before this Commission?

A No, I have not.

Q Are you familiar with the area which is the subject of

this application? Is this part of your jurisdiction as a geologist?

A Yes, sir, I am, and it is.

Q Where did you obtain your degree in geology?

A From the University of Kansas.

Q Did you get a BS degree?

A Bachelor of Science degree.

Q When did you obtain it?

A In 1951, October of that year.

Q How long have you been employed by Amerada?

A Approximately six and a half years.

Q As a geologist?

A As a geologist.

Q All right.

MR. LYNCH: Are his qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Lynch) Mr. Stewart, if you will examine first a map that should be marked Exhibit One, and would you describe very briefly what that map shows?

A This is a structure contour map of a portion of the Central Vacuum Field, contoured on the Devonian horizon with a contour interval of 50 feet. The wells designated with a large circle and colored in orange are producers from the Devonian formation. Also, on the map, we have indicated two lines, "A" prime, which is a line of sections showing the stratigraphic relationships

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of the three offset wells to Amerada's 40 acre lease, or the East Half of the proration unit. And Line "B" is a diagramatic cross section of the Devonian formation across the Amerada lease.

Q All right, sir. It shows, also, information on certain wells you may have situated there, perforated intervals, and initial potential?

A That is correct.

Q Turning now to Exhibit Two, what does this cross section show?

A On Exhibit Two, we have a line of sections with a reference datum on top of the Wolfcamp formation. This is to show the general stratigraphy of the Abo-Wolfcamp, and the Pennsylvanian section, and also the Devonian production horizon. This is the north offset, the east offset, and the south offset to the subject lease in the East Half of the proration unit.

Q All right, sir. Would you describe very briefly the character of the lithology of each of the pay intervals in the Abo-Wolfcamp and the Devonian?

A The Abo is a section primarily of a clean Dolomite in the lower part where it is productive. The Wolfcamp is normally, overall would be considered a lime with shaley sections imbeded, and also some dolomitization occurring in the limestone and carrying porosity, and also, there is some chert within the section.

The Devonian formation is also a carbonate section, and in many of the wells this is 100 percent Dolomite, although there

are many places where there are intervals of limestone rock imbeded or within the section that is known to be productive.

Q In any event, we are not talking about blanket intervals of porosity in any of these pools, that these are somewhat spotty. There are several lenses in some of these different pools, which may or may not be productive.

A There seemed to be in each horizon various porosity members within the section which have lateral extent and which may be separated one from another.

Q Have you been able to pick a water level in the Devonian?

A From our current information and referring again to Exhibit One, and the indicated structural relationship relative to Amerada's lease, the approximate water-oil contact at the present time would be at a minus 8,080 feet.

Q That water level was indicated in what well?

A That was indicated from the Texaco Number 11-O, which is located directly north of the subject lease.

Q Which is also shown on the cross section marked Exhibit Two; is that correct?

A That is correct.

Q All right, sir. So, the present indicated water level lies some place on Exhibit One, between your minus 8100 foot contour line and the next intermediate contour line, which would be 8050; is that correct?

A That is correct.

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Q All right, sir. Would you turn now to Amerada's Exhibit Three, what does that show?

A This is called a diagramatic cross section from north to south, showing the relationship of the various wells in the section, and the approximate position of Amerada's proposed test relative to the oil in the Devonian formation.

Q And what does the shaded area above the dark line near the middle of the exhibit show?

A This is the inferred accumulation of oil which will be undrained if Amerada's proposed location is left undrilled.

Q All right, sir. So, that there is a possibility then that there will be physical waste if a well is not drilled some place into this shaded area, so that it penetrates the shaded area shown in the cross section?

A If this interpretation is correct, there would be waste.

Q You believe it is correct?

A I believe it is correct.

Q Turning back just briefly to Exhibit One, you say that the oil-water contact line would fall some place between the minus 8100 foot contour line and the minus 8050 contour line, which would put that line some place over on the East Half of the West Half of the proration unit that we have been discussing?

A That is true.

Q Would a well drilled at the orthodox location be able to be productive in the Devonian?

A No, sir.

Q All right, sir.

MR. UTZ: By orthodox location, you mean the Northwest of the Southwest?

MR. LYNCH: Yes, sir, within 200 feet of the center.

Q (By Mr. Lynch) Then, just to summarize briefly on the Devonian, an unorthodox location,as Amerada has proposed here for a Devonian completion, would be necessary for Amerada to produce its recoverable oil in the Devonian underlying the East Half of the proration unit?

A Yes,sir.

Q And at the same time, it is possible that the well is also necessary to prevent leaving oil unrecovered in the reservoir?

A That is true.

Q All right, sir.

MR. UTZ: What are you considering a proration unit here?

MR. LYNCH: This 80 acres, this North Half of the Southwest Quarter, yes, sir. Just for ease of reference, we will continue to refer to the Quarter-Quarter section as East Half and West Half of the 80.

MR. UTZ: All right.

Q (By Mr. Lynch) Referring now to Amerada's Exhibit Four, would you briefly state what that exhibit shows?

A This exhibit is a structural contour map with a datum

on a point picked to be the top of the Wolfcamp. These wells with a large double circle colored in pink are those producers, presently completed and producing from the Wolfcamp formation.

Also, it shows Amerada's proposed location. The line "A" to "A" prime gives the perforated interval and the initial potential of each well completed.

Q You said that that structure is drawn on the top of the Wolfcamp formation. That would not be the Wolfcamp pay, whatever that is, is that correct?

A This is correct.

Q Why was the top of the Wolfcamp formation used instead of the pay?

A Well, the top, the exact top of the Wolfcamp pay, would be difficult to determine in every case. And so, a point of some reliable correlative means was used to give an interpretation to the structural relationship at an interval in the vicinity, at least, of the Wolfcamp production.

Q Does the top of the Wolfcamp, the structure on the top of the Wolfcamp formation generally reflect, in your opinion, the overall structure of the Wolfcamp?

A Yes, sir.

Q If it were possible to construct a map on the top of the Wolfcamp pay, picking one of the horizons, or a combination of several different intervals, would it be particularly meaningful?

A No, sir, it would not.

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Q All right, sir. Does the structure of the Wolfcamp appear to control production or productivity of the wells completed in the Wolfcamp?

A At the present time, we have really no indication of what is controlling the production. There are no dry holes, none of the wells are making any appreciable water and there are no problems with gas.

Q All right, sir. If structures were in fact the controlling factor in determining the productivity of the Wolfcamp, would the proposed location for Amerada's well have any structural advantage over the orthodox location?

A I don't believe it would, sir.

Q Referring now to a map marked Exhibit Six, or I am sorry, Exhibit Five, would you explain briefly what that shows?

A This is a map contoured on the same interval as we used in the previous map, or Exhibit Four, and this is also contoured on top of our pick of the Wolfcamp horizon. In this particular map we have circled the wells with a large circle and colored them green to indicate producing wells, from the Abo formation.

Q Why, again, was the top of the Wolfcamp formation used as the point on which to draw a structure rather than, say, the top of the Abo pay or some point in the Abo pay?

A Well, firstly, the Abo pay lies immediately above this point called the top of the Wolfcamp and it seems to give a fairly good indication of the general relationship between the wells

Also, the Abo pay would not be exactly easy to pick in every case, and would not give or necessarily show a true relationship between the wells.

Q All right, sir. What relationship does there appear to be between structure and productivity in the Abo?

A There does appear to be some relationship in structure since we do have several wells which have come into somewhat low, and they did produce water or principally water.

Q All right, sir. Now, with respect to the two 40 acre tracts that we are talking about here today, or more particularly, the two well locations we are talking about here today, one on the West Half of this 80 acre proration unit, and one on the East Half, would the proposed location have any structural advantage over the orthodox location?

A No, sir.

Q All right, sir. I would like to move that Amerada's Exhibits One through Five be admitted in evidence.

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

(Whereupon, the exhibits, One through Five, were admitted in evidence by the Commission)

MR. LYNCH: Our next witness will be Mr. R. L. Hocker. We don't care whether cross examination proceeds now, on this witness, or you would rather wait.

MR. UTZ: I think we may as well cross examine on the testimony that has been presented here, if anyone cares to ask any questions. He can always be recalled later if need be.

Are there any questions of the witness?

CROSS EXAMINATION

BY MR. KELLY:

Q Mr. Stewart, when did you come to work, or start working on this area as a geologist?

A I was transferred to New Mexico in August of this year, of last year.

Q Prior to August, you had no working experience with this area?

A Other than as a geologist working in New Mexico, but not living in New Mexico. I had general geologic experience.

Q But, the basis of your expert opinion has been gained since your work here from August, I take it?

A That is true.

Q Now, referring to your Exhibit One, I believe it is, you have drawn a line at your minus 8100 foot level. You have drawn a line between what you have marked as Tidewater State No. 6 and the Texaco State "O" No. 11. Doesn't actually the same levels continue all the way up and down, rather than- - I can't see why you have the lines drawn in those locations. I notice you have an 8100 circle up above, you also have your 8100 or 8104, actually,

down below, why don't those lines just continue right on up, in your opinion?

A I don't- - In other words, this is just a method of contouring, using a more or less consistent interval or spacing between contour lines. In other words, it is my interpretation that there is, or appears to be, some separation.

Q Well, your interpretation is not shown on this map or was not brought out in your testimony, though, and I don't see why based on just the map itself those lines are not connected from top to bottom. If you did connect those lines, you would see that it would bring out your possible production zone quite a bit farther to the west; is that not correct, in the Devonian?

A I don't understand what you mean. I don't see- - In other words, I couldn't move the 8100 line relative to our acreage or to the west half of the proration unit in discussion.

Q I will try one more time here. My point is that you have shown your 8100 line here, with a break and you have shown your 8100 line here with a break, why would not the 8100 feet follow down approximately in this manner and connect up with your 8100 line down below?

A The thing of it is that this points out by this interpretation that this well is in effect a low well, and we cannot get so far away from the low well with the next subsequent contour.

Q That is your interpretation of the evidence?

A That is true.

Q All right.

MR. UTZ: That is your entire control for showing a slight syncline between these two acres?

A Yes, sir.

MR. UTZ: These wells, 20 and One, over to the left side, to the west rather, of your Well Number 11, had no control point at all in which to bring that contour in?

A That is true, sir.

MR. KELLY: I have no further questions.

* * * *

REDIRECT EXAMINATION

BY MR. LYNCH:

Q In the absence of control, Mr. Stewart, isn't it true that you use established rates of dip and that it is generally accepted geological methods to take those established rates of dip, project them in other directions where there is no control, so over on the west side, the Northwest side of the South Half of the Devonian structure, you have shown on Exhibit One, where there is no direct control, you have nevertheless continued to use the established rate of dip as found, say, between Texaco's "O" No. 17 and the Texaco "O" No. 14, and the Texaco "M" No. 5, I believe that is, and so, having those control points and having thereby established a rate of dip and having no other evidence upon which to base a change inthat rate of dip, the accepted

geological practice is to continue at that same rate of dip; is that right?

A This is a method in which I follow, particularly in a close infield area.

MR. LYNCH: All right. That is all.

* * * * *

CROSS EXAMINATION

BY MR. UTZ:

Q Then, the control point on which you drew this entire structure for the Devonian wells, and in which you colored in orange, is the Texaco Number 14; isn't that true?

A No, sir. Also, in Section 25, well, we should start at the very top, in Section 26, the Socony Mobile Number 96 Bridges, which is located in the Southeast of the Northeast, is a control point. That is all in that section. And Section 25, we have the control point which is the Marathon No. 7 McCallister, which is located in the Southeast of the Southwest. Also, in Section 25, the Texaco Number 4-Q, which is located in the Southeast of the Southeast. Now, going to Section 35, the Continental Number 35-7-H State, which is located in the Northwest of the Northeast.

MR. UTZ: 35-3?

A No, 35-7, sir, just immediately east of that.

Q All right.

A And the next well with a control point would be immediately

east of that, to the east, would be the Northwest of the Northwest- -

Q All right.

A - -which is the Tidewater 7-F.

MR. LYNCH: Northwest of the Northwest of 36.

A Yes, excuse me, 36.

Q (By Mr. Utz) All right,sir.

A And then, I believe that is all. There is one- - You had the No. 14, which is also in 36. And then, immediately to the south in Section One of 18-34, there are three tests Northwest-Northwest, the Northwest-Northeast, and the Southeast-Northwest.

Q Those wells marked for the minus datum?

A Yes, sir.

MR. LYNCH: All of these wells establish a rather uniform rate of dip, don't they, for the entire structure?

A Yes, sir, a very- -. It indicates a reasonably steep structure and it shows apparently on all sides.

Q All right, sir. There is no question but what the Texaco No. 11 well is lower than the wells, say, the 95?

A The No. 95, it is lower than it.

Q The Number Five McCallister?

A Number Five McCallister?

Q It is lower than any of those wells.

A Number Seven doesn't have a datum.

Q Is the Number One the last datum then, or Number 10; have

you got a datum on minus 8081?

A On 8081, yes,sir. I was in the wrong section.

Q It is the Number Seven?

A It is the Number Seven, yes, sir.

Q So, those wells, three wells, definitely show datum higher than the Number 11?

A No,sir, The No. Seven does not show this. It shows it as lower.

Q Oh, yes.

A But, the other two wells are higher.

Q Yes, sir. So, there is some evidence of a syncline there?

A Yes, sir, there is.

Q But, your control on it is,particularly to the edges, is somewhat questionable?

A This is true, sir.

MR. UTZ: Are there any other questions of the witness?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Stewart, it appears to me that the Texaco No. 14 is actually lower than the No. 11; is that correct?

A Yes, sir, considerably lower.

Q You established the water-oil contact by the water cut in the No.11 well?

A That is true, sir.

Q At minus 8080?

A That is true, sir.

Q Now, do you consider that the No. 14 actually made water? It is not completed in the Devonian, is it?

A No, sir.

Q But, it did test the Devonian?

A Yes, sir.

Q Well, now, referring to your cross section here, if I can understand the symbols.

A Are you referring to which exhibit, sir?

MR. LYNCH: On Exhibit Two.

Q (By Mr. Nutter) As I understand it, it was perforated with two shots there, treated with 166 what, barrels of acid or gallons of acid, or what?

A I am not sure what that 166 applies to, but I believe we can bring that out. I do have it here, if I- -

Q Then, it was treated with 300 of acid. Well, you go through it and explain just what was done here.

A All right, fine. We are looking at the 14-O?

Q Right.

A My overall notes show that the interval of 12,114 to 155 were combined. In other words, in the overall completion attempt, were combined, treated with 11,966 gallons of acid, and the final gauge of the Devonian swabbed 77 barrels of formation water in seven hours.

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Q And how much oil?

A No oil.

Q Nc oil, just what?

A This is the final gauge.

Q So, that established that it was completely in the water then?

A Yes, sir.

Q And it is perforated at the top of the Devonian formation according to the cross section?

A Yes, sir.

Q Well, now, referring to your other little cross section, the dotted line that passes through the No. 11 and extends horizontally across the structure, is that the water-oil contact on that exhibit?

A Yes, sir. This is the current.

Q Are you of the opinion that the Devonian structure here would be under a water drive as a reservoir producing mechanism or what?

A I am not prepared to say.

MR. LYNCH: We are going to put on an engineer who will be able to answer that.

Q (By Mr. Nutter) As far as any geological information that is available at this time is concerned?

A It would seem to be making water.

Q There is some water present, you don't know whether it is

an active water drive or not; is that correct?

A I would not be able to say that conclusively myself.

Q Well, now, you have drawn another cross hachured area above another dotted line at the very top of the structure. I presume that that is the horizontal line that touches the top of the Devonian at the Number 17 well, then extends left. Was that the purpose of locating the thing at that point?

A Yes, sir.

Q And it is your estimate then that any oil that would be present above that dotted line in the cross hachured area would not be available to the No. 17 well?

A Yes, sir.

Q And would be lost if the location were not permitted here at the Northeast of the Southwest of the section?

A Yes, sir.

Q How much of that cross hachured area, or have you determined the volume of that cross hachured area?

A I have not, sir.

Q Have you made any attempt to determine how much of the cross hachured area is within the Amerada acreage and how much of it would lie in Texaco acreage.

A No, sir, I have not.

Q Do you know whether Texaco made any drillstem tests on their No. 17 well, the results of which they perforated the Devonian some 150 or 160 feet down in the Devonian?

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A There were no drillstem tests of the Devonian.

Q Do you know if they perforated any other portion there prior to completing the well at minus 7872 to 7882?

A No, sir, they did not.

Q Well, now, if you found it necessary to complete the well at your proposed location, as far as below the top of the Devonian, as Texaco found it necessary to complete their No. 17, you would be below the dotted line on your cross section here, wouldn't you?

A I couldn't determine that, sir, until we do drill the well, though. In other words, this is why Texaco completed down there. I don't know exactly.

Q For some reason or other, they completed 160 feet down in the Devonian, though.

A That is correct.

Q If you found it necessary to complete down, that far down in the Devonian, you wouldn't be obtaining any oil from the cross hachured area of your structure, you wouldn't have any perforation openings in the area, I mean?

A No, I just don't- - I didn't see that this is necessary. In other words, we are interpreting that we will be able to perforate per our structural- -

Q You don't have a log on your proposed well.

A In other words, Texaco had a problem here, which I don't know what was, and I can't explain it, because I don't have

that information.

Q As a matter of fact, referring to the two cross sections, there appears to be only one well which was ever perforated which was in the Devonian, and that was No. 14, which was on complete water production. Those perforations are in the very top of the Devonian, weren't they?

A Yes, sir.

Q But, it was low. And you wouldn't make any estimate at this time where you would be perforating your well?

A No, sir.

MR. NUTTER: Thank you. That is all.

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

* * * * * *

R. L. HOCKER,

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

DIRECT EXAMINATION

BY MR. LYNCH:

Q Mr. Hocker, would you state your name, your occupation, and by whom you are employed for the record?

A My name is R. L. Hocker, I am employed as a Petroleum Engineer by Amerada Petroleum Corporation.

Q And where is your office?

A In Tulsa, Oklahoma.

Q Have you testified previously before this Commission?

A Yes, sir.

Q And are you familiar with the area which is the subject of Amerada's application in this hearing?

A I am.

Q Mr. Hocker, would you refer first to Amerada's Exhibit Number Five, which is the Abo map with the green dots?

A Yes, sir.

Q How many wells have been completed in the Abo in this area?

A 11 completions in the Abo on this map, two of them are capable of making top allowable. There is a possibility Continental's "H" No. 9 is a brand new well completed in December, has a very good potential. I don't have enough production history to know whether it will make top allowable or not. An estimate at the present time is there are a maximum of three top allowable wells, wells that are capable of making top allowable in this formation.

Q In addition to Continental's well, which you mentioned as a new well, and appears to be capable of making top allowable, what are the other two wells?

A The other wells are Texaco's 11 and Texaco's "O" 14.

Q All right, sir. Which is immediately offsetting the proposed location here?

A Yes, sir.

Q All right, sir.

MR. UTZ: Where is the Continental well, is it over in Section 35?

A The Continental well is in Section 35, Southeast of the Northeast. It is the Number H-9

Q (By Mr. Lynch) What is the top allowable for the Abo?

A 187 barrels.

Q How about the other wells?

A There are five other wells that, according to the latest monthly production figures, are capable of making no more than 50 barrels of oil per day. If there are three top allowables and five not capable of making more than 50, that leaves three additional wells that make some place between 50 and top allowable of 187.

Q All right, sir. In your opinion, based on the production or productivity of the wells now producing from the Abo, you consider the Abo to be a good reservoir from an economic standpoint?

A No, sir.

Q Looking at the orthodox location in the West Half of the proration unit, as apposed to the proposed location in the East Half of the proration unit, does there appear to be any advantage from a standpoint of getting closer to highly productive wells in moving from the orthodox location to the proposed location in the Abo?

Q It would be my opinion that to drill on the West Half of the proration unit might yield a more highly productive well than

the location we are asking for. The only basis I really have for this, other than the fact they look like they are equal structure, is the fact that potential on H-9 indicates 320 barrels.

Q The Continental Well?

A Continental H-9, compared to the Texaco O-11, which potentialed 238 barrels on a 21/64ths choke.

Q All right.

A It is important to notice the completion dates. The completion date was 12-63 on the No. 9, which was in December, much later than the completion date on the O-11 Texaco well, which was in March of 1963, approximately.

Q So, there is no,certainly no advantage from the standpoint of productivity for moving from the orthodox location to the unorthodox location in the East Half of the proration unit?

A That is right.

Q Refer now, if you will, to Amerada's Exhibit Four, which was the Wolfcamp map with the pink circles, and will you give us some well data on the Wolfcamp producers?

A The Wolfcamp formation, the map here shows 16 wells completed in the Wolfcamp. There are four wells capable of making top allowable of 187 barrels. Those wells are the Tidewater F-6, Texaco O-11, Texaco O-14 and the Texaco O-18. There are three recently completed wells which give indication that they could possibly be top allowable wells. That is the Texaco M-5 down south of the proposed location, Continental H-9 to the west of

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our proration unit. And Mobil's State Bridges No. 98 is a brand new well up in Section 26 to the Northwest. This makes a maximum of seven top allowable wells,capable of making top allowable.

Q How about the remainder of the wells?

A There are three other wells in this field that are capable of making more - - no more than 50 barrels based on the latest production figures.

Q Based on the productivity which you have mentioned here, again is it your opinion, or in your opinion does this reservoir appear to be a good one from the standpoint of economics?

A No, sir.

Q And would there be any advantage from a production standpoint in moving from the- - a location to the west half of the proration unit to a location in the east half of the proration unit?

A No, there isn't. Again the same situation occurs,in my opinion, that possibly Amerada, if it needed just an Abo-Wolfcamp well to pay out, would be better off possibly with a Wolfcamp well in the west half of the proration unit, this being based upon the fact that the Texaco O-17 is capable of producing 39 barrels of oil a day, has an allowable of 37 barrels limited for January.

Q So, although we may be getting closer to the 11 and 14, which are top allowable wells, you are also getting closer to the 17 which is a poor well?

A Assuming we will be getting something in between.

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Q You are a long way from the Continental No. 9 which appears to be a top allowable well?

A Although it is new.

Q All right, sir. Refer now, if you will, to Amerada's Exhibit Number One, which is the Devonian map with the orange circles. Will you give us the well data on the Devonian?

A Well, there are four wells drilled on the map colored in orange. Of the four wells, there is only one well capable of making top allowable. This is the Texaco O-11. Texaco O-11 is the well that has been discussed previously here as perforated at the very top of the Devonian. There is some question about the water level. There is additional tests on the cross section that show immediately below where this well was completed, encountered water and plugged back to the very top of the Devonian, and this well is rapidly watering out. The last or latest report I had was November, and it shows it making 50 percent water. The water is increasing rapidly.

Q Although this well is a top allowable well at the present time, it is not likely to be much in the future?

A The estimated productive life would be limited, particularly at top allowable.

Q How about the other three wells in the Devonian?

A The other well that Texaco has on here, O-17, which is an offset, south offset, to our proposed location, is a limited well. It doesn't make any water as far as I can tell, and has no

low ratio. It made 242 barrels in December.

The other two wells to the north, if you will, we will call them North Dome and the other one down here the South Dome. The North Dome, State Bridges No. 95,made 36 barrels a day in January, and the other well, the Marathon McCallister State No. 5 made 52 barrels a day in December. The accumulative production on the North has been 25,000 barrels. These wells have been early wells in the life of the field. I think the recovery in the Devonian is going to be extremely disappointing.

Q The two wells to go?

A Counting both of them.

Q All right, sir. It was asked earlier of Mr. Stewart whether, or not he considers the Devonian reservoir to have a water drive,active water drive, and based on what we have been able to observe about the production of the wells to date, what is your opinion on that?

A Well, I don't have a lot of evidence. I certainly don't have any pressure information to answer that question. Seems the rapid influx of water in O-11 and the rapid rate of increase in water cut in this well would five you evidence or lead you to believe that there is a possibility of water drive in the Devonian.

Q All right, sir. Would you consider the Devonian Reservoir a good reservoir from an economic standpoint?

A No. The Devonian might be all right if it weren't so deep, but going to - - it is going to cost an awful lot of money

to drill this well. I think the economics are unfavorable for a single Devonian completion.

Q You stated that the Abo and Wolfcamp, that there would be no advantage from a production standpoint to move from a location in the west half to a location in the east half of the proration unit, but there would be as to- -

A I think there would be 100 percent improvement in this well.

Q Since you have testified as to all three of these pools, that all three of these pools do not appear to be very attractive from an economic standpoint, at least standing alone, in your opinion, are multiple completions necessary to make development of these pools attractive from an economic standpoint?

A There has been recent development in the industry. I think this is well taken, and I think this does help economics of this field.

Q Have you read the field rules for these three fields?

A Yes, sir.

Q In your opinion, since the field rules are identical, you consider them tailor made for multiple completion in these three?

A I notice the issuing dates are the same. The rules are identical, except for allowable, so I would assume that they were intended in this direction, yes, sir.

Q All right, sir. Now, as an alternative, to triple com-

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pleting a well in the east half of the proration unit, in the Abo, the Wolfcamp and the Devonian, it would be possible, would it not, to recover the hydrocarbons from the entire 80 acres in all three of those pools by drilling a single completion to the Devonian in the east half of the 80, and a dual completion to the Abo and the Wolfcamp in the west half of the 80?

A Yes, sir.

Q Having those alternatives in mind, how much would it cost to triple complete an Abo-Wolfcamp-Devonian well in this 80 acre proration unit?

A $301,000.00.

Q How much would it cost to drill a single completion to the Devonian?

A I don't have detailed figures, but about $220,000.00.

Q All right, sir. How much would it cost to drill a dual completion in the Abo and Wolfcamp?

A $192,000.00.

Q So, if one were required,in order to recover the hydrocarbons from the 80 acre proration unit, to drill two wells, a single completion in the Devonian and a dual completion to the Abo and Wolfcamp, the total cost would be in the neighborhood of $412,000.00; is that correct?

A Yes, sir.

Q And that is opposed to $301,000.00 for a triple completion in the Devonian on the east half of the proration unit, which would

mean in effect a savings of more than a hundred thousand dollars by triply completing the well rather than drilling two wells?

A The saving to Amerada of drilling one well and triply completing it over drilling two wells would be over a hundred thousand dollars.

Q All right, sir. Are you recommending that an unorthodox location be granted for an Abo-Wolfcamp-Devonian well in the Northeast Quarter of the Northwest Quarter of Section 36, Township 17 South, Range 34 East- - Northeast Quarter of the Southwest Quarter of Section 36, yes?

A Yes, sir.

Q And are you also recommending that that full 80 acre allowable be granted to this well for the Abo and for the Devonian, or for the Abo and Wolfcamp?

A Yes, sir.

Q This is on the basis that the Abo is productive throughout the 80 acre proration unit?

A Yes, sir.

Q The same being true for the Wolfcamp?

A Yes, sir.

Q Are you recommending a half 80 acre allowable be granted to the well for the Devonian on the basis that only about half of the 80 acre proration unit is productive?

A Yes, sir.

Q All right, sir.

A Half of an 80 acre allowable.

Q Yes, sir. Then, in your opinion, is the granting of Amerada's application in this hearing necessary to prevent waste and prevent the drilling of unnecessary and uneconomical wells and necessary to protect correlative rights?

A Yes, sir.

MR. LYNCH: That is all we have of this witness.

* * * *

MR. UTZ: Are there questions of the witness?

MR. KELLY: I prefer, Mr. Utz, that you went first unless you have some objection. You seem to be able to cover it better than I can.

MR. UTZ: Are there other questions?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Hocker, do you know why it was necessary for Texaco to perforate this well 160 feet down?

A No, sir.

Q Do you know if there were tests?

A The cards and information I have shows that this is the only test and only set of perforations that they made.

Q No drillstem tests taken in the interval?

A No, sir, not that I have any knowledge of.

MR. NUTTER: I believe that is all. Thank you.

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CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Hocker, the Texaco No. 11, No. 14 and the No. 17 are all standard locations in accordance with the orders, are they not?

A Yes, sir.

Q Your request to complete in the Abo and Wolfcamp does put you almost in the middle of those three wells, doesn't it?

A Practically equal distance, yes, sir.

Q Now, the purpose of a rigid pattern, or so-called rigid pattern, would you say, was to try to equalize the pressure production in it?

A This is a very admirable objective, yes, sir. The only thing I might add in this case, you might like to know, this almost follows the salt dome, pretty steep, as far as the Devonian goes. The only relief we ask is a chance to get our Devonian oil out economically.

Q Your only purpose in this is to save $112,000.00 it would take to drill the dual completion over in the Northwest of the Southwest?

A It aids our economics. In fact, it keeps it from being an extremely border line case.

Q But, it would create somewhat of a pressure sink with four wells clustered together there, would it not?

A I don't know whether it would, or not. Like I say, I

don't have any pressure information. I am not even sure that the two pressures are equalized. Are you talking about the Devonian--

Q Now, I am talking about the Wolfcamp and Abo.

A Well, of course, what applies here, I don't know the pressures on any of these wells. I don't have pressure information. If the reservoir is sufficient and equalized, well, then, perhaps it is no great disadvantage.

Q Do you know what the dedicated acreage is of the No. 14?

A No, sir, I don't.

Q All right.

MR. UTZ: Does Texaco know?

MR. KELLY: Well, could be possibly one of two ways, either north-south or east-west. In other words, I would assume that there could be three ways. I didn't check to see.

MR. LYNCH: I would guess that your proration unit coincides, wouldn't you?

MR. WEAVER: Probably run east and west, coincides with Amerada.

MR. UTZ: We will take administrative notice of the C-128 files in that regard.

Q (By Mr. Utz) You don't feel that Amerada should sacrifice any allowable at all in the Abo and Wolfcamp due to your unorthodox location request?

A That was our request, yes, sir. Seems to be fully productive and at least equally productive.

Q But, you do admit that you are crowding all three of Texaco's wells?

A I will admit we are closer, yes, sir.

MR. UTZ: Are there other questions of the witness?

* * * *

CROSS EXAMINATION

BY MR. KELLY:

Q Just one or two questions. Referring to whatever exhibit this one is, Wolfcamp exhibit- -

MR. LYNCH: Abo.

Q Doesn't make any difference. But, Texaco's 11 and 14 in the Abo are the top allowable wells, and are the best allowables in the field, aren't they?

A In the Abo, O-11 and O-14, I think, are the only two wells capable of making top allowable, except with the exception possibly of the Continental H-9.

Q They are the best two in the field?

A However, H-9 may be equally as good.

Q In the Wolfcamp, also, they are top allowable?

A Yes, sir.

Q You are disputing that you feel that you might be in a better position staying in the west half of the 80 acre tract?

A Yes, sir, I do. I think that if H-9 is a fair indication that it may be as good or equally better well than 11. We don't

think that we gain any structural position and that the fact is if we drill the well where we are here, perhaps Texaco has already lowered this pressure, has drained their 40 and we might be better off in the west half, if that were the only consideration.

Q You do admit that the fact that there is a possibility there is going to be interference of drainage of existing wells?

A I think there always is in a field, yes,sir.

Q Did Amerada participate in the original hearing setting up the 80 acre spacing?

A That, really, I don't know. We didn't have a well, so I assume we did not.

MR. LYNCH: I don't think so.

A We don't have one yet.

Q (By Mr. Kelly) Do you know whether Amerada plans on participating in the show cause order coming up in less than a month?

A I would assume we do. We do intend to. We will be here.

Q You do argue for the 80 acre spacing?

A Oh, yes, sir. We plan on drilling on an 80.

MR. UTZ: In violation of the 80 acre location?

MR. LYNCH: Exception sounds better than violation.

A Yes, sir.

Q (By Mr. Kelly) Are you aware of the fact that Amerada joined in Magnolia's application for change of location in the west half that was heard in November?

A I think that we sent a letter, some kind of communication, that to the effect that we would join in drilling the well, would support their location, yes, sir.

Q That was based on the reason that the surface location was undesirable; is that correct?

A We thought we would like to drill the well if they wouldn't do it, and if they wanted to drill the well, we felt we had to join them at that time.

Q At that time you raised no question?

A Well, we went along. I didn't know what their case was going to be, all we knew is what they had applied for, but we didn't know how they were going to present their case. I am not saying that we wouldn't have done the same thing, just that we didn't have prior knowledge.

Q You knew that they were, if that had been granted, the idea was to drill these three zones, right?

A Yes, sir.

Q You had no objection to the Devonian at that time, I take it?

A Well, as I remember, the location was very close to the center line between the two forties. I don't think the economics would have been as good. However, we asked for top allowable- - they did, excuse me, not we. Magnolia asked for top allowable for a well some 50 feet or less than that, I think, from the center line of the two forties, of the two 40 acre locations.

Q All right.

A They perhaps have a little more confidence in the Devonian than we do.

Q You do admit that the fact that there could be a reasonable disagreement as to the Devonian formation between these two 40 acre tracts?

A Yes, sir. That is why we have more than one geologist.

MR. KELLY: That is all.

* * * *

REDIRECT EXAMINATION

BY MR. LYNCH:

Q I would like to ask just a couple of questions in connection with Mobil's application to drill a well some 50 or 60 feet from the center line of the proration unit.

A On the west half of the proration unit.

Q Yes. Now, that location, even under Mr. Stewart's interpretation of the geology of the Devonian, that location has a possibility of being productive?

A I think even according to the structure map, the water level drawn on it, there is some productive acreage on the Magnolia tract. However, in my opinion, it wouldn't be economics.

Q This was, as far as you know, unbeknownst to Amerada as a basis of their application that that was a lake or something- -

A Yes, I wasn't aware of the nature of their testimony.

MR. LYNCH: That is all we have.

* * * *

MR. UTZ: Does Amerada own the interest in the 40 acre Magnolia tract or Abo-Wolfcamp?

A My understanding is that the unit will be formed of an 80 acre unit, and Amerada and Mobil will share equally in all horizons.

MR. LYNCH: Including the Devonian.

A Including half an allowable in the Devonian if it is granted, yes, sir.

MR. UTZ: Are there any questions?

RECROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Hocker, you mentioned several times the high potential on the Continental H-9 and the fact that it was considerably better than the Texaco O-11. Have you taken into consideration the fact that the H-9 has 180 feet of perforations and the O-11 only 104 feet of perforations?

A I don't know how to take that in account.

Q You would expect possibly that the greater perforated intervals, might yield more oil on the test?

A This always is true in this area. There are some of these formations in here which are relatively thick and you perforate most anything you think you have a chance on in order to

get more oil and I doubt that each foot in here is comparable as far as producing ability.

Q Assuming that the interval that Continental perforated was productive, you would expect more oil with more perforations than you would from fewer perforations on initial potential at least?

A Of course, maybe I don't know what the potential right now might be on O-11. My opinion is some of these wells have declined substantially in a nine month period.

Q This is the IP on this well, 251?

A Yes, sir, that is way back in March. The new potential for the H-9 was in December, and it may be- - However, I can very well assume that it is higher than 187 because it did make the allowable for December.

Q Is that flowing 320 plus 25A?

A My notes, as I had said, that is what it says on the report that I have.

Q That is before the well had cleared up?

A Like I say, it is a brand new well, all I really have is this information.

MR. NUTTER: Thank you.

* * * *

MR. UTZ: Are there other questions? The witness may be excused. Are there statements in this case?

MR. KELLY: We would like to put on some evidence.

JOHN WEAVER,

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

DIRECT EXAMINATION

BY MR. KELLY:

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

A My name is John Melvin Weaver, I am employed by Texaco, Inc., in the capacity of Petroleum Engineer.

Q Have you previously testified before this Commission?

A No, sir.

Q Could you give the Commission a brief statement on your educational and professional background?

A I was graduated from Texas Tech in 1953 with a Bachelor of Science degree in Petroleum Engineering, and I have been employed by Texaco for seven years.

Q What experience have you had in the subject field, the Vacuum Field?

A I have been or my duties, for the period that this field has been under development, have been supervision of the reservoir section of Texaco's Hobbs District office, which has jurisdiction over this field.

Q All right, sir.

MR. KELLY: Are the witness' qualifications satisfactory

to the Commission?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Kelly) Now, referring to what has been marked Exhibit One, could you state why Texaco is in opposition to this application?

A The location is not in accordance with field rules and we feel that a well completed at this location with an 80 acre allowable will interfere with the drainage area of currently completed offset wells, which have been located in compliance with the field rules, to a much greater extent than if the well was drilled at the location specified by the field rules. As a result, it is my opinion that the proposed well would reduce the effective drainage area of this well, and the offset wells to this well to less than 80 acres.

Q Now, have you prepared exhibits which show the extent of the interference with the various zones if this application were granted?

A Yes, sir, I have.

Q Would you refer to those, please?

A This exhibit is a map covering the area of these fields. I believe that Exhibits 2-A and B present a contrast between 80 acre drainage of the area in question. The "A" exhibit shows the drainage area as Amerada proposes to drill their wells in the Abo formation. It can be seen that it will interfere with the production from Texaco's State "O", or the drainage area of the Texaco

State 0-11 and 14, as indicated by the green colorations of the overlaping circles.

If you turn to Exhibit 2-B where the normal location is, or the field rules specify the well to be drilled, you will see that the interference of offset wells is greatly reduced, or the interference area that overlaps is greatly reduced.

Turning to the Exhibit 3-A and B, it presents the same situation for the case of the Wolfcamp zone, and in the Wolfcamp zone, it will interfere or overlap the drainage area of three wells of which are owned by Texaco. They are well No. 11, 14 and 17, and of course, the "B" portion of the exhibit indicates that this overlaping area is greatly reduced by drilling the well at the standard location, and covers additional area that would not be covered if the well were drilled at the unorthodox location.

Exhibit 4-A and B present the contrast between the unorthodox location and the orthodox location on the Devonian, which also indicates a greatly reduced overlapof drainage area.

Q Now, these exhibits were prepared taking into consideration the field rules and the 80 acre spacing and location requirements, right?

A Yes, sir.

Q And with the assumption that those field rules were based on evidence, proper evidence, of drainage?

A Yes, sir.

Q Now, referring to what has been marked Exhibit Five, the

testimony that has been brought up by the applicant in this case, their theory on the Devonian is it would not be productive if drilled on the west half of this 80 acre tract. Could you show by Exhibit Five why Texaco feels that this is not true?

A Exhibit Five is a structure map contoured on top of the Devonian, and all of the Devonian wells, or all of the wells, which penetrated the Devonian of sub "c" depth on the top of the Devonian indicated below the well. The map was contoured strictly from mechanical means of well control. Well control was honored in all cases, as can be seen between the contrast of this structure map and the structure map presented by Amerada, where they bring their 8100 foot contour between two wells which are higher than 8100 feet. The dip between each well was used to indicate the position of each contour interval. On the west side where well control is not as good as it is desired, the contour intervals were based on the wells that were available and the dip from those wells has been projected evenly and at the same rate as were the last wells. In other words, the dip between 95 and 7, 95 Bridges in Section 26 in the corner, and Continental's State H-7 in Section 35, and also the dip between the Continental H-7 and Tidewater's F-6, that dip has been carried through the western portion down to our next control point, which is between Texaco's State "O" No. 17 down at the bottom of your map and Texaco's State "M" No. 5. The dip there between those wells, those two wells, in the lower portion of the map has been carried at constant intervals

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up to the control point at the top portion of your map. We have evidence to indicate the water table is somewhat lower than had previously been testified to, but for all practical purposes, we will accept their oil-water contact. The Tidewater F-6, Section 36, indicated no water on a drillstem test down at minus 8092, and recovered 8,200 feet of oil from the Devonian, and no water reported. It also flowed from perforations in the Devonian 193 barrels of oil in 24 hours, which indicates the well to be productive, or that the interval in this well contains oil in the Devonian. However, due to an unfortunate situation, it appears that they have channeled into the water below, but we do feel if it hadn't been reacidized, this would be a Devonian producer.

With the explanation made for that well, all wells within the 8,050 foot contour,as shown on this map, are considered to be productive from the Devonian, and that this 8,050 foot contour includes 95 to 99 percent of the proration unit.

Now, this question that a well drilled at the location specified by the field rules would encounter a Devonian section equivalent to the Texaco State "O" No. 11, which performance has indicated is a good producing well and is producing at a rate better than any other Devonian well in this reservoir, we would like to point out one problem in that these wells, some of them, are close to water and there is a problem of breaking down into the water table on completion if you are not excessively careful. But, we do feel that the area within this 8,050 foot contour would

contain a commercial Devonian completion.

Q Well, would you go so far as to say,as a reservoir engineer for Texaco in this pool, would you recommend to Texaco that they drill in the Devonian in the west half of the subject 80 acre tract?

A I could recommend that they drill this well and might point out from the development that Texaco has done in this field that this location would probably be developed at this time if we owned that acreage.

Q You think you would get commercial production out of the Devonian?

A Yes, sir.

Q Now, how long have you been actually in this area as a reservoir engineer?

A I was transferred in this area in November of 1962.

Q When did drilling or production start in this area?

A The discovery well, initial production was reported in January or February of 1963.

Q So, you have been reservoir engineer for this area almost since it started?

A All the reservoir work for this field has been done by me or under my direct supervision as far as Texaco is concerned.

Q And what percentage does Texaco have, or what controls the lease of this field?

A Texaco owns in excess of 50 percent of the wells in each

of the three completions involved, or approximately 50 or better.

Q All right. Would it be fair to say just by the amount of work and the interest of Texaco in the field that you probably would be the most familiar of any reservoir engineers with this area?

A Yes, sir.

Q Now, there have been some remarks made about some of the Texaco wells, your No. 17, that it was incapable of production in the Wolfcamp. Could you give us some information on that?

A That is not incapable, it is limited capacity.

Q Oh, excuse me.

A Well, the well on completion in the Wolfcamp, Upper Pennsylvanian and Devonian, during completion of this well, Texaco experienced communication problems between the Wolfcamp and the Upper Penn which are relatively close together for dual completions. We had experienced this difficulty before and had corrected it. As a result, when we squeezed the well, and recompleted in the Wolfcamp and Upper Pennsylvanian, no communication was indicated. We took a sub or limited capacity allowable on the Wolfcamp rather than jeopardize our chances on the other zones.

Q Well, then, that being the fact, the proposed location of the Amerada well in the Wolfcamp zone would be right square in between three regularly good producers?

A Yes, sir, that is true. The No. 11 and the No. 14, as a matter of production history, have indicated that they can support

top allowable and have done so for several months, where some of the other wells may have potentialled for top allowable, but are now declining below top allowable.

Q Now, could you tell me the percentage of water problem and how long you have encountered it in the State "O" 11?

A The State "O" 11 in the Devonian on initial completion was completed water free, however, in approximately two months or less, we noticed that the water production was at 40 percent, and the well had been producing 40 to 50 percent since then, but it has been able to maintain top allowable production with that water cut for nearly a year.

Q There also was other Texaco wells that upon completion were potentialled for top allowable in the Abo Field and could you identify those?

A In the Abo Field, I believe Texaco's No. 11 and 14 possibly may have been the only one that were potentialled for top, however, several of the other operators have potentialled Abo completions for top allowable, but now, they are not capable of making top allowable, and as brought out before, Texaco's No. 11 and No. 14 on our State "F" New Mexico "O" lease are the only ones that have been sustaining this top allowable oil production.

Q Based on your experience with this field, in your opinion, would the granting of this application seriously impair Texaco's correlative rights by interfering with the proper drainage on State "O" 11, 17 and 14?

A Yes, sir, I believe it would.

Q Were Exhibits One through Five prepared by you or under your supervision?

A Yes, sir, they were all prepared by me or under my supervision.

MR. KELLY: I move for the introduction of Texaco's Exhibits One through Five.

MR. UTZ: Without objection, the exhibits, One through Five will be entered into the record of this case.

MR. KELLY: I would also like to ask the Commission, if it is necessary, to take administrative notice of Case No. 2944, heard November 20th, 1963, which this Commission denied Magnolia's right to move toward the east on their quarter section, and also to take administrative notice of field rules that are in Order R-2421, Order R-2422, and Order R-2423. That is all I have on direct. Oh, I would like just one more question.

Q (By Mr. Kelly) The other production in this field in these zones, are there any other unorthodox locations?

A There is one other unorthodox location. It is the Marathon McCallister State well No. 5, and the reason that this was drilled on an unorthodox location was that it was drilling at the time the field rules were inacted and provisions were made in the field rules for this well.

Q It was an initial exception to the rules because it was already in there?

A Yes, sir.

MR. KELLY: That is all.

MR. UTZ: Case No. 2944 that you mentioned, was that for a Devonian well?

MR. KELLY: It was to move the location toward the east, I believe for these three zones, yes. Their reason given at that time was that the surface conditions were- -

MR. UTZ: For topographic reasons rather than structural reasons.

MR. KELLY: However, in the case they bring out if the application was not granted, they would go ahead and drill it there.

MR. LYNCH: I believe the witness was a civil engineer, surveyor.

MR. KELLY: It was joined into by Amerada.

MR. UTZ: I doubt the case has any bearing on this case if the witness was a civil engineer, and had no knowledge of geology and the reason was for structural- - I mean surface topography. The Examiner will take notice of the three orders mentioned pertaining to the three pool rules. Do you have anything further, Mr. Kelly?

MR. KELLY: No, sir.

MR. UTZ: Any other questions?

MR. LYNCH: Yes, sir, I do.

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CROSS EXAMINATION

BY MR. LYNCH:

Q Mr. Weaver, your Exhibits 2-A and B, 3-A and B and 4-A and B all are roughly the same thing with respect to the three different horizons involved in this case, namely that the drilling of a well at Amerada's proposed location will cause interference with the drainage pattern of Texaco wells more quickly than it will if Amerada were to drill at its orthodox location; is that correct?

A They will interfere with the drainage area more than if they were drilled at the orthodox location.

Q More?

A Yes. My original statement stated if they were all granted 80 acre allowables.

Q If you will turn just for the sake of reference to your Exhibit 2-A and 2-B. Is there any way to tell from these exhibits the amount of interference which might occur, or to state it another way, in quantitative terms the effect on the production or productivity on Texaco's wells, which would occur if Amerada were to complete an Abo well in the location it proposed in this hearing?

A The productivity of the Texaco wells will be impaired by the amount covered by the green coloration on the map, which indicates the area of a theoretical 80 acre spacing that would be overlaping, and that they would possibly- - the reservoir

pressure has already been dropped at that location and they would be interfering immediately.

Q Do you believe that the drainage radius of one of these wells in the Abo is 80 acres or contains the circle which you have drawn representing the drainage radius of one of these Abo wells, containing 80 acres, that is where it is going to stop or it is going to decline?

A This theoretical drainage circle I have drawn contains 80 acres and presents in the case of homogeneous reservoirs the wells influenced at a radius that would encircle the well with 80 acres.

Q Is this a homogeneous reservoir?

A No, sir. I know of very few oil field that are strictly homogeneous.

Q As a matter of fact, between heterogeneous and homogeneous, you would classify it as heterogeneous, wouldn't you?

A Yes, sir.

Q Even if this pressure interference were to occur, what controls the movement, what controls the productivity of a well insofar as pressure is concerned? Permeability of surrounding rock, of course, affects it, but what affect does pressure have on the productivity of the well?

A The productivity of the well is determined by its bottom hole pressure at the extremity of the well's drainage area when the well is producing at the sand face.

Q Pressure in the reservoir versus the flowing bottom hole pressure in the well bore?

A No, sir.

Q There is no bottom hole pressure as such out in the reservoir, is there, it is reservoir pressure, isn't it?

A When I say- - You said bottom hole of the reservoir affects this well. That would have to be clarified to mean the bottom hole pressure of the reservoir at the extent or at the outer extremity of this well's drainage area, and these wells being spaced closer together than 80 acre spacing, that bottom hole pressure would be less than if the well was on an 80 acre spacing.

Q You are talking now about the pressure out away from the well bore?

A I am talking about now the pressure, bottom hole pressure, in the reservoir at the extreme limits of this well's drainage area. It will be less at the location Amerada proposes than it would be if drilled on the standard location as specified by the field rules.

Q All right. How about the bottom hole pressure in the well bore at the sand face?

A The bottom hole pressure in the well bore at the sand face is controlled by productivity.

Q Would it be effective?

A Would not be effective.

Q So, it is a pressure differential between a point at the

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extremity of the drainage area of the well, the pressure differential between that point and the well bore?

A The drainage radius and the well bore.

Q That influences the productivity of the well?

A Yes, sir.

Q All right. Now, what controls the pressure, the flowing bottom hole pressure, at the sand face?

A The withdrawals from the well bore.

Q That tends to reduce the bottom pressure, does it not, in the well bore?

A It reduces the differential between the sand face and the outer drainage radius.

Q Is there any pressure force acting to counteract that, does the movement of hydrocarbons from the reservoir into the well bore tend to work contrary to that?

A Well, if you are trying to put it this way, the more hydrocarbons that are taken out of the reservoir, the faster the reservoir pressure will drop, the faster the pressure will drop within the well's drainage radius.

Q The greater movement of the hydrocarbons from the reservoir into the well bore, the more tendency there will be for the bottom hole pressure in the well to be raised and this is shown when you shut a well in, it increases, isn't that right?

A Yes, sir.

Q All right, sir. So, you have two opposite forces here,

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one, the production of the well tending to reduce the flowing bottom hole pressure, and two, the rate of movement of fluids into the well bore from the formation, which tends to increase the flowing bottom hole pressure; is that correct?

A Would you repeat the question, please?

Q So, we have two counteracting effects here, one, by the production of the well, which tends to lower the flowing bottom hole pressure of the well, and two, the movement of the fluids from the reservoir into the well bore, which tends to increase the bottom hole, the flowing bottom hole pressure in the well bore?

A Yes, sir.

Q All right, sir. So, if you reduced the amount of fluids flowing or moving from the reservoir into the well bore, you would tend to reduce, or you would reduce that factor which tends to increase the flowing bottom hole pressure in the well bore because you have reduced the factor itself, namely, the flow of the hydrocarbons from the reservoir into the bottom of the well?

A But, you have not reduced the flow of hydrocarbons in the reservoir to the well bore, which builds up the pressure.

Q Say, you draw a line between Amerada's proposed location and say, the Texaco "O" No. 14, looking at your Exhibit Two-A, the movement of fluids along a line between Amerada's proposed location and Texaco's "O" No. 14 would be reduced if Amerada were to produce that well from the Abo; isn't that correct; is that what you have testified to here today, that you are going to reduce the

flow of fluids from the reservoir into the well bore by virtue of the fact that Amerada is also producing from the same area?

A That is right.

Q You have interference of the drainage pattern?

A That's right.

Q If you are, therefore, reducing the flow of fluids in the west into the well bore,in Texaco's "O" No. 14 well bore, you have tended to keep the flowing bottom hole pressure of the well to a minimum, hence increasing the pressure differential between the extreme east side of the drainage area of Well No. 14, the pressure differential between that point and the well bore; isn't that correct?

A That is true.

Q So, certainly not all, but some of this disadvantage of interference would be offset by movement of fluids from the opposite side of the well, Well No. 14, in this case, as long as there is not another well on the other side doing the same thing to it?

A That is correct. There probably would be another well on the other side draining that area that the oil would be moving to. You are assuming then that nothing is going to be on the other side.

Q There is nothing there now.

A There is a well drilling.

Q Is it at a standard location, or orthodox location?

A We don't have one on our acreage, but there is a Shell

well to the east.

Q Over into the next section?

A Yes, sir. That is drilling now, which indicates to me that this will be developed on eighties and that the 14 has to revert to the east to recover its reserves to the east. The wells to the east would lose reserves they would recover. It is all traced back to 14.

Q All right, sir. If you will look now at your Exhibit No. 5, which is the Devonian structure map. It is quite a small scale so that a little variation in the distance between contours can make quite a difference as to where it falls with respect to the well locations involved here, but first, I notice that you did not use, as Amerada did in its exhibit, Exhibit No. 1, you did not use a 7950 foot contour line. You have no control that you could have used to draw a 7950 foot contour line inside your 8,000 foot contour line?

A You have some cortrol. You can draw one in there.

Q All right, sir.

A Apparently, I have overlooked not drawing it. It would be with the same dip and the same general shape as 8,000 foot contour.

Q So, that does tend, does it not, to give you more control in order to establish the rate of dip in a given direction?

A The rate of dip that I used is controlled by well points as from the dip from 17, State "O" 17 to the State "M" 5.

Q Yes, sir. Let me ask it a different way. It is also apparent that the distance on your map between your 8,000 foot contour line and the 8,050 foot contour line is about twice as great on the west side of the structure as on the east side of the structure, why is that, why do you have this asymmetry in here?

A My well control from 14 to 17 indicates a steeper dip than does the control between the 17 and the State "M" 5. And also, to the west, looking at Tidewater's "F" No. 6, the dip from the Tidewater "F" No. 6 to the Continental State "F" No. 7 is not as steep as the dip to the east.

Q All right, sir. The rate of dip on the east side of the structure is controlled by the differences in dip as found in the Texaco 17 and the Texaco 14, and between the Texaco 11 and the Texaco 14, so you have three control points to enable you to draw two lines, one from the 11 to the 14 and one from the 17 to the 14, to establish a rate of dip; is that correct?

A That's right, but I would like to state that the amount of dip from the State "O" 11 to the "O" 14 is not near as great as from the "O" 17 to 14.

Q All right, sir.

A And in only one case is this steep dip brought about with well control we have, and that is between the "O" 14 and the "O" 17. In all other cases, the dip is not nearly as steep.

Q Now, your structure map shows that the axis of the

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structure is generally north by northwest. We will call it north just for the sake of symmetry. When you don't have any control on one side or the other of a structure, do you assume that it is asymmetrical or symmetrical when you draw an isopach or structure map?

A Well, in this case, I have control of the dip to the west.

Q To the southwest?

A To the southwest, and to the west, from Tidewater's "F" No. 6 to Continental's State "H" No. 7.

Q Yes, sir. You also have control,which you didn't use, directly to the south, Texaco's No. "M" 7 and Texaco's "L" No. 6, which indicates that the south extremity of this structure is at those locations, that you can't go south of that with any control, that the contours close at these points; is this right?

A Yes, sir. But, if you will also notice, the dip from the State "O" 17 to these southernmost wells is not as steep as it is to the east side.

Q That's right. But, that is looking at the structure from a different position with respect to the axis of the structure, and so, it wouldn't have anything to do with symmetry, the rate of dip, even if you used, as a general practice, or if you assumed that the structures in the absence of control were symmetrical, which normally is the case,'isn't it?

A Well, let me point this out, in the Vacuum-San Andres

Field, which overlies these fields, is not symmetrical, in that it dips steeply to the south and gently to the north.

Q Well, no, I agree with you, I don't think anyone would disagree with you that fields or reservoirs are very seldom perfectly symmetrical, but in the absence of any control, you have to assume that it is symmetrical just as you have to assume that the contours are equally spaced?

A The control that I have available here on the western portion of this indicates that the dip is not as steep on the western half of the structure as it is on the eastern half, therefore, I did not steep it as sharply.

Q Did you draw a line between Texaco's "O" No. 17 and Texaco's "O" No. 6, which is southeast of No. 17 well, and a line from the Texaco "O" 17 well to the Texaco "M" No. 5, which is about equal distance? Those wells are about equal distance, one being on the east side of the structure, and the other being on the west side of the structure,with respect to the Well No. 17, did you draw a line between those wells in order to determine whether, or not the rate of dip on the east is different than the rate of dip on the west?

A Yes, sir.

Q You don't show that on your map.

A No, sir, because it is not in the area of interest. We prefer not to present it. However, I did do it, you can subtract the Sub-C dip of No. 6, which is minus 8200, or subtract the

Sub-C dip from "O" 17 and from "L" 6, and points out the rate of dip of "O" 17 to "L" 6 is steeper than from the "O" 17 to the "M" 5.

Q How much steeper, is it twice as steep?

A No, sir, it is not twice as steep.

Q Then, on what basis did you assume that the dip is twice as steep on the east than it is on the west, except that you just simply continued the contours on the south end of the structure on up equally, an equal distance on the west side of the structure?

A Well, in the case where I have a field with the possibility of a dozen well control points, and I have a steep dip indicated only between two of those wells, I will honor the dip from the remaining wells before I will the steep dip between the one well, when in all other cases, it is- -

Q I think this simply points out that there are variations in geologists' interpretations. But, it also points out, I think you wouldn't bet your life on a productive Devonian well on that Mobil tract, would you?

A I don't imagine you would bet your life on the drilling of the Amerada tract.

Q No, I wouldn't bet my life on any of them. Mr. Weaver, do you have the percent water cut from time to time on the Texaco "O" 11, which you said, I believe, has sustained the top allowable, its top allowable?

A I don't have the information with me, however, I believe it will be pointed out, or can be found in the New Mexico Engineering

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Report for Southeast New Mexico. We have a test, which I, unfortunately, didn't bring with me, that the well would be cutting approximately 40 percent water.

Q Has it been cutting 40 percent from the beginning?

A It increased, in other words, from zero to 40 percent within a couple of months. It is gradually increasing now, say from 40 percent on up to 50, say, in a couple of months.

Q Would you check these figures and see if they are about right?

A These have been reported. The well commenced producing in February. I don't believe we have a specific record of a test. We did take three tests on the well to show the increase. It increased rapidly to this point, approximately where they started.

Q Just about doubled since then?

A That's right. It went from zero to 26 in one month, and has approximately doubled since then, according to these records, which possibly is within normal limits.

Q I might just read here the increase in water percentage contained in the Commission records, which might be incorporated by reference, but probably isn't worth it. The 4th month of 1963, no water.

MR. UTZ: Now, which well?

MR. LYNCH: This is Texaco's "O" No. 11.

MR. UTZ: All right, sir.

MR. LYNCH: In the 4th month of 1963, no water. 5th

month, 26 percent, 6th month, 24 percent, 7th month, 24 percent, 8th month, 38 percent, 9th month, 38 percent, 10th month, 50 percent, 11th month, 50 percent.

Q (By Mr. Lynch) Do you expect that this Texaco "O" No. 11, based on the increase in water cut, will continue to be a top allowable producer for, say, more than a year or two from now?

A Personally, when the well was completed, started making water, I didn't figure it would be here now, but at the present time, the well has a substantial accumulative production. I haven't added the figure up, but I believe somewhere in the 60 to 70,000 barrels range. It will produce probably as much oil as any well in the field, with the exception of our State "O" 17, and probably might approach it, which, I feel, would be a commercial producer, and should make 100,000 barrels unquestionably.

Q Do you consider it will have a life, though, of say, more than two years from now; do you think it will still be a commercial producer two years from now?

A It is difficult to say the way the well has been performing. It is still flowing top allowable. In fact, last month, it made nine thousand barrels of oil and nine thousand barrels of water.

Q Have you run any recent tests on this well to determine what it is capable of producing?

A To my knowledge, we have, but I don't have the specific test available.

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Q If it were capable of producing exactly the top allowable, which is 303 barrels, problably some more than that, the initial potential was 378 in 24 hours, this would represent a decline in the productivity of the well of 15 to 20 percent.

A You have to look at the potential and present capacity and take in consideration the choke size and the tubing pressures and they can't be taken out of context. You could have a very small choke size on potential or a large one now, or vice versa. It is hard to determine that without looking at the data. Then, if you know they are different size, it is still difficult to determine how much the productivity of a well has dropped without actually running a flow PI.

MR. LYNCH: That is all I have.

* * * *

MR. UTZ: Are there other questions of the witness?

CROSS EXAMINATION

BY MR. UTZ:

Q At any rate, your opinion is that the No. 11 had one too many acidizing treatments?

A The No. 11?

Q I believe that is the well you referred to.

A It did not. The one that I feel had too many acidizing treatments was possibly the Tidewater "F" 6, which was flowing 193 barrels a day and was reacidized, and apparently had some water

problem. On the McCallister State No. 5 in Section 25, only they did not acidize in the water, they completed water free, and the water came in on them as it did on our No. 11. Completion techniques in this field are difficult and must be taken on with care not to get into water. However, the No. 11 is lower structurally than several other wells that did not make near as good completions, but it has performed favorably.

Q Well, hen, is it your opinion that the water table is pretty close to the pay zone in the No. 11, that is why it is producing on such a heavy water cut?

A Well, it is hard to tell on initial completion. We perforated near the bottom of the hole and got 100 percent water and squeezed back, squeezed it off and came up and perforated somewhat below the top of the Devonian, made a completion out of it without any water, And this data,along with the problems encountered on the other two wells, is hard to tell how close you are to the water table, because the McCallister No. 5 is quite a bit higher than in the No. 11, yet it has water problems, also.

It could be there is a crack in the reservoir that is causing it, or something in that nature, that the water is encroaching on these fracture lines. It is difficult to tell at this time.

MR. UTZ: Are there other questions? The witness may be excused. Do you have anything further, Mr. Kelly?

MR. KELLY: Nothing further.

MR. UTZ: The case will be taken under advisement.

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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 7th day of February, 1964.

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. 2975, heard by me on Jan. 22, 1964.

New Mexico Oil Conservation Commission, Examiner

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION OF AMERADA PETROLEUM CORPORATION)
FOR APPROVAL OF A NONSTANDARD LOCATION FOR A)
WELL IN THE NE/4 SW/4 SECTION 36-17S-34E,) CASE NO. 3775
LEA COUNTY, NEW MEXICO, WITH RESPECT TO THE)
NORTH VACUUM-ABO, VACUUM-WOLFCAMP, AND)
VACUUM DEVONIAN POOLS.)

APPLICATION

Applicant Amerada Petroleum Corporation states that:

1. Applicant owns an oil and gas lease covering the NE/4 SW/4 Section 36-17S-34E, Lea County, New Mexico, which is believed to be underlain by productive portions of the North Vacuum-Abo, Vacuum-Wolfcamp, and Vacuum-Devonian Pools.

2. Temporary 80-acre spacing has been established for each of the above-named pools by Order Nos. R-2421, R-2422, and R-2423, respectively, to be effective from March 1, 1963 until February, 1964.

3. The standard location prescribed by such orders for a well located in an 80-acre unit consisting of the N/2 SW/4 Section 36-17S-34E would be within 200 feet of the center of the NW/4 SW/4 Section 36.

4. It will be necessary to drill a well in the NE/4 SW/4 Sec. 36 in order to prevent drainage and allow Applicant to recover its fair share of the recoverable hydrocarbons in the Vacuum-Devonian Pool thereunder.

5. A well drilled to the Vacuum-Devonian Pool could be multiply completed in the North Vacuum-Abo and Vacuum-Wolfcamp Pools, and other pools above the Devonian, thereby preventing the drilling of unnecessary wells.

6. In order to prevent waste, prevent the drilling of unnecessary wells, and protect correlative rights, a nonstandard location should be granted for a well within 200 feet of the center of the NE/4 SW/4 Section 36-17S-34E, Lea County, New Mexico, with respect to the North Vacuum-Abo, Vacuum-Wolfcamp, and Vacuum-Devonian Pools.

Applicant therefore requests that this matter be set for hearing before an examiner on the earliest available hearing date, that notice thereof be given as required by law, and that the Commission issue an order granting this application.

AMERADA PETROLEUM CORPORATION

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Santa Fe, New Mexico

DOCKET MAILED
Date 1-10-64

By Jason W. Kellahin

#7 to #2
221' - 1.8"

8150
8118
32
/221 = 13.9

50
/221 = .248 x 1.2 = 3.9

#3 ? to #11
- 8170 - 8156
134' = 13.0 ??

8160
8056
44
/134 = 32.8 x 38 = 12.4

50
/134 = ? x 38 = 14.1

#? to #?
- 8150 - 8182
177' = 1.?

32
/177 = .18 x 1? = 5.9

50
/177 = .28 x 1? = 5.3

#? to #4
?' - 8065
287' - 1.?

8151
8120
31
/287 = 11.1 x 1.? = 2.1

50
/287 = 17.4 x 1.? = 5.3

#12 to #7
-7918 - 8164
246' - 2.6"

7950
7918
32
/246 = 13 x 26 = 3.4

50
/246 = 20.3 x 2.6 = 5.3

#12 to 1 #6
7918 - 8164
186' - 1.6"

?
?
32
/186 = 17.2 x 1.6 = 2.7

50
/186 = 268 = 1.6 = 4.3

#11 to #6
8056 8164
48' 2.1

8056
8050
6
/48 = 12.2 x 2.1 = 2.6

8104
8100
4
/48 = 8.3 x 21 = 1.7

????
8?5?

#11 to #4
- 8?? - 8032
?' to 3.7

?
/? = 24.3 x 37 = 9.0

?
/? = 27.6 x 37 = 10.2

Docket No. 3-64

DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 22, 1964

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

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

CASE 2682: (Reopened and continued from January 8, 1964 Examiner Hearing.)

In the matter of Case 2682 being reopened pursuant to the provisions of Order No. R-2375, which order established temporary 80-acre oil proration units for the Simpson-Gallup Oil Pool, San Juan 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 2967: (Continued from the January 8th Examiner Hearing)

Application of Standard Oil Company of Texas for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Jurnegan Point Unit Area comprising 7680 acres, more or less, of State and Fee land in Township 24 South, Ranges 24 and 25 East, Eddy County, New Mexico.

CASE 2969: Application of H. N. Sweeney for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Good Hope Unit Area comprising 1919.72 acres, more or less, of State and fee land in Township 19 South, Range 23 East, Eddy County, New Mexico.

CASE 2970: Application of Cima Capitan Incorporated for an amendment of Order No. R-2395, Eddy County, New Mexico. Applicant, in the above styled cause, seeks amendment of Order No. R-2395 to delete the seven water injection wells authorized therein for its Artesia Pool Waterflood Project, Eddy County, New Mexico, and to substitute therefor the following four injection wells in Section 17, Township 18 South, Range 28 East:

Welch State No. 1-W, 1330 feet from the South and West lines;

Welch State No. 4-W, 2630 feet from the South line and 2230 feet from the West line;

Case 2970 continued from page 1

Adkins Williams State No. 1-W, 10 feet from the South line and 2630 feet from the East line;

Adkins Williams State No. 6-W, 1180 feet from the South line and 1595 feet from the East line.

CASE 2971: Application of Caulkins Oil Company for unorthodox locations, dual completions, and expansion of a waterflood project, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Breech C No. D-189 and Breech C No. D-248 wells to produce oil from the Tocito formation through 2½ inch tubing and gas from the Dakota formation through the casing-tubing annulus at unorthodox locations 1850 feet from the South line and 790 feet from the West line of Section 12 and 1140 feet from the North line and 900 feet from the East line of Section 13, Township 26 North, Range 6 West, Rio Arriba County, New Mexico. Applicant also seeks expansion of the South Blanco-Tocito Pressure Maintenance Project Area to include said wells.

CASE 2727: (Reopened)

In the matter of Case No. 2727 being reopened pursuant to the provisions of Order No. R-2408 which order established temporary 80-acre proration units for the Oil Center-Blinebry 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 2972: Application of Pan American Petroleum Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin Dakota Pool underlying the W/2 of Section 22, Township 29 North, Range 13 West, City of Farmington, San Juan County, New Mexico.

CASE 2973: Application of Pan American Petroleum Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin-Dakota Pool underlying the W/2 of Section 13, Township 30 North, Range 12 West, San Juan County, New Mexico.

CASE 2974: Application of Pan American Petroleum Corporation for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (conventional) of its South Mattix Unit Well No. 16, located in Unit O of Section 15, Township 24 South, Range 37 East, Lea County, New Mexico, to produce gas from the Fowler Paddock and Fowler Tubb Gas Pools and from an undesignated Lower Paddock through parallel strings of tubing.

CASE 2975: Application of Amerada Petroleum Corporation for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for a proposed triple completion in the Vacuum-Devonian, Vacuum-Wolfcamp, and North Vacuum-Abo Pools, Lea County, New Mexico, said well to be drilled at a point within 200 feet of the center of the NE/4 SW/4 of Section 36, Township 17 South, Range 34 East.

Case 2975
Heard 1-22-64
Rec. 1-24-64

1. Grant Amerada's request as follows:

(a) Allow them to drill a Devonian Vacuum well in the center of the NE/4, with a 200 tolerance to the west only in sec. 36-17S-34E.

It is my opinion that Amerada cannot drain that Dev. oil under their tract without such a location. Further I do not believe all the oil in the crest of the structure can be drained unless a well is drilled in this approx. location. Therefore a well not drilled here would leave oil in the ~~proven~~ reservoir. The allowable for this completion shall be ½ the 80 Ac allow. $\left(\frac{39 \times 0.75}{2}\right)$

(b) Allow Amerada to drill in accordance with the stipulation in (a) above the North Vacuum Abo and the Vacuum Wolfcamp. The allowable for ~~the~~ each of these completions shall be ½ the 80 Ac allow. $\left(\frac{39 \times 4.77}{2}\right)$.

It is my opinion ~~that~~ the allowable should be reduced as above as a penalty for drilling in the unorthodox location when their offsets are in orthodox locations.

I am suggesting these alternatives be approved so that should they want to drill a single Dev. they may

do so under the order.

[illegible signature]

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. 2975
Order No. R-2646

APPLICATION OF AMERADA PETROLEUM
CORPORATION FOR AN UNORTHODOX
LOCATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on January 22, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 3rd day of February, 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 the applicant, Amerada Petroleum Corporation, seeks authority to drill a triple completion at an unorthodox location in the Vacuum-Devonian, Vacuum-Wolfcamp, and North Vacuum-Abo Pools within 200 feet of the center of the NE/4 SW/4 of Section 36, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the Special Rules and Regulations for each of the subject pools provide that the first well drilled on every standard or non-standard unit shall be located within 200 feet of the center of either the NW/4 or the SE/4 of a governmental quarter section; that no well has previously been drilled in any of the subject pools in the NW/4 SW/4 of said Section 36; and that the applicant proposes to dedicate all or part of the N/2 SW/4 of said Section 36 to the subject well in all three pools.

(4) That approval of the subject application will impair the correlative rights of offset operators if the well is assigned more than one-half an 80-acre allowable in any of the three pools.

(5) That approval of the subject application will impair the correlative rights of offset operators if the applicant is permitted to drill the subject well in any portion of the E/2 of the NE/4 SW/4 of said Section 36.

(6) That a Devonian completion in the NE/4 SW/4 of said Section 36 will increase the total quantity of Devonian oil ultimately recovered from the NE/4 SW/4 of said section, thereby preventing waste.

(7) That in order to afford to the owner of each property in the three subject pools underlying said Section 36 the opportunity to produce his just and equitable share of the oil and to use his just and equitable share of the energy of the three reservoirs, and to otherwise prevent waste and protect correlative rights, the applicant should be authorized to drill the proposed well at an unorthodox location in the center of the NE/4 SW/4 of said Section 36 or within a tolerance of 200 feet west thereof, provided the well is not assigned more than one-half an 80-acre allowable in any of the three pools.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amerada Petroleum Corporation, is hereby authorized to drill a triple completion at an unorthodox location in the Vacuum-Devonian, Vacuum-Wolfcamp, and North Vacuum-Abo Pools in the center of the NE/4 SW/4 of Section 36 or within a tolerance of 200 feet west thereof, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico;

PROVIDED HOWEVER, That the subject well shall not be assigned more than one-half an 80-acre allowable in each of the three pools.

(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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

esr/

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon:
Contour Interval:
Drawn By: Date: 1-16-64
Scale: 2000'

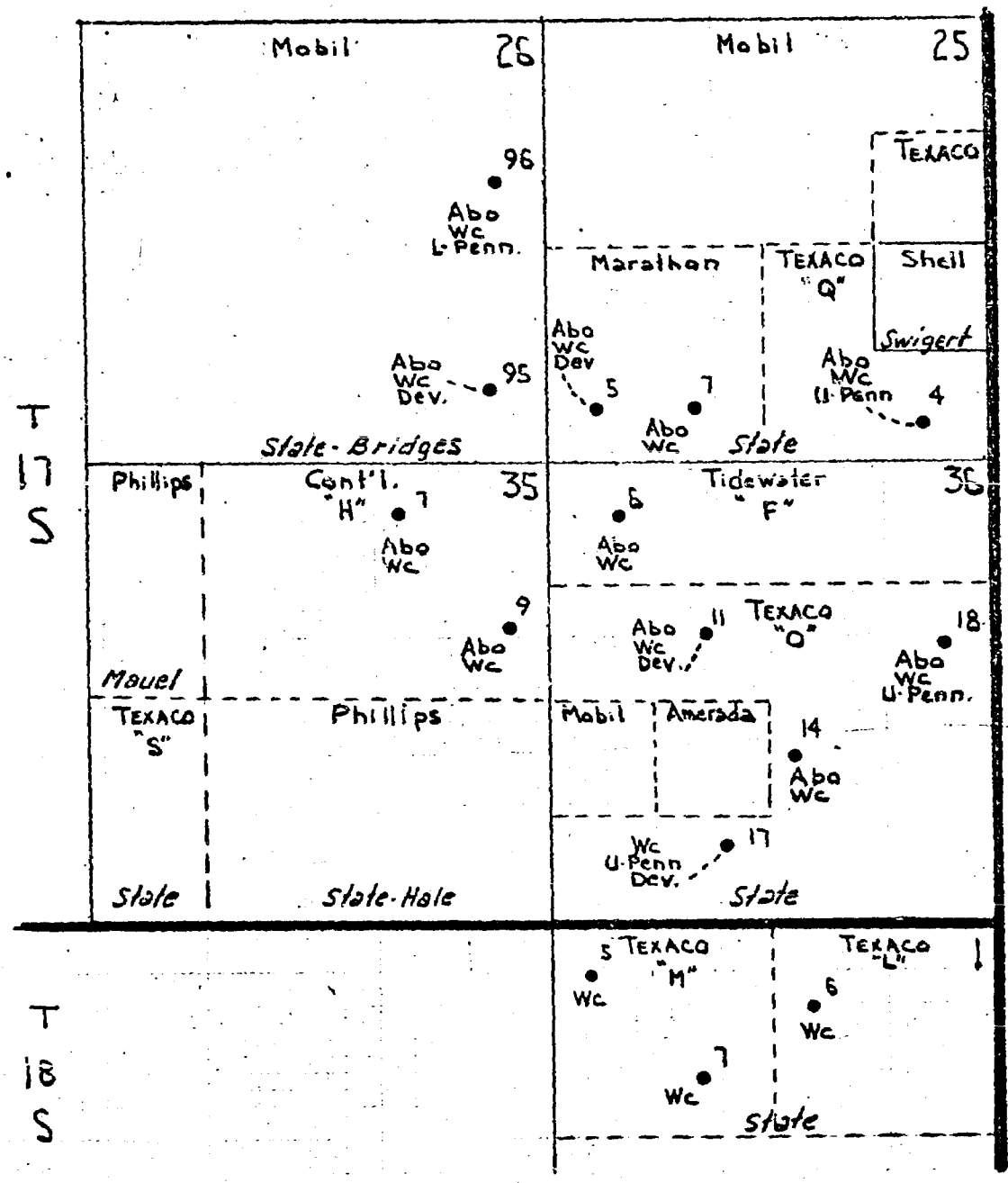


Exhibit II-A

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Abo, North
Contour Interval: 20-Foot Drainage Pattern
Drawn By: JAW/c Date: 2-16-64
Scale: 2000'

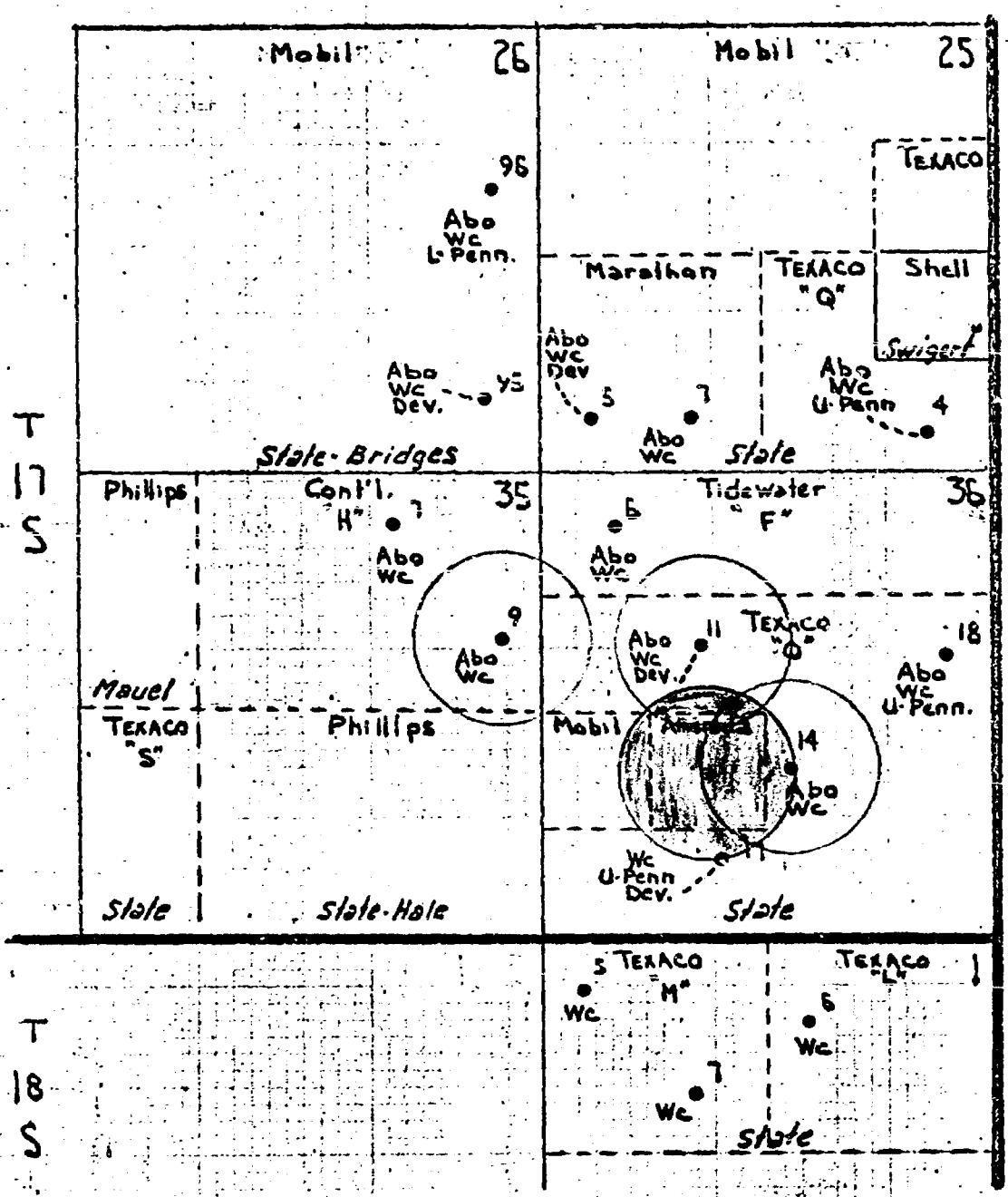


Exhibit I

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: _____
Contour Interval: _____
Drawn By: _____ Date: 1-16-64
Scale: 2000'

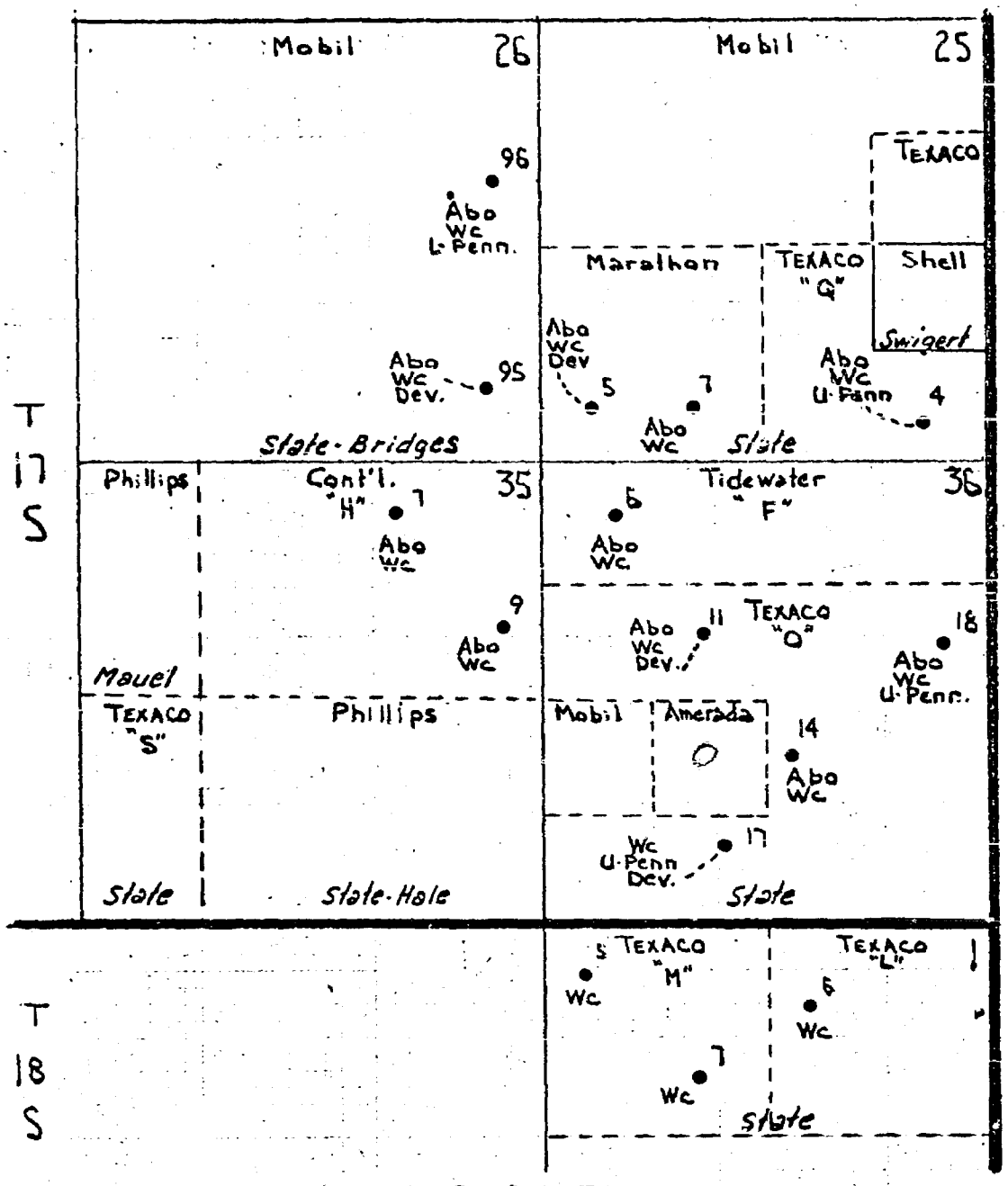
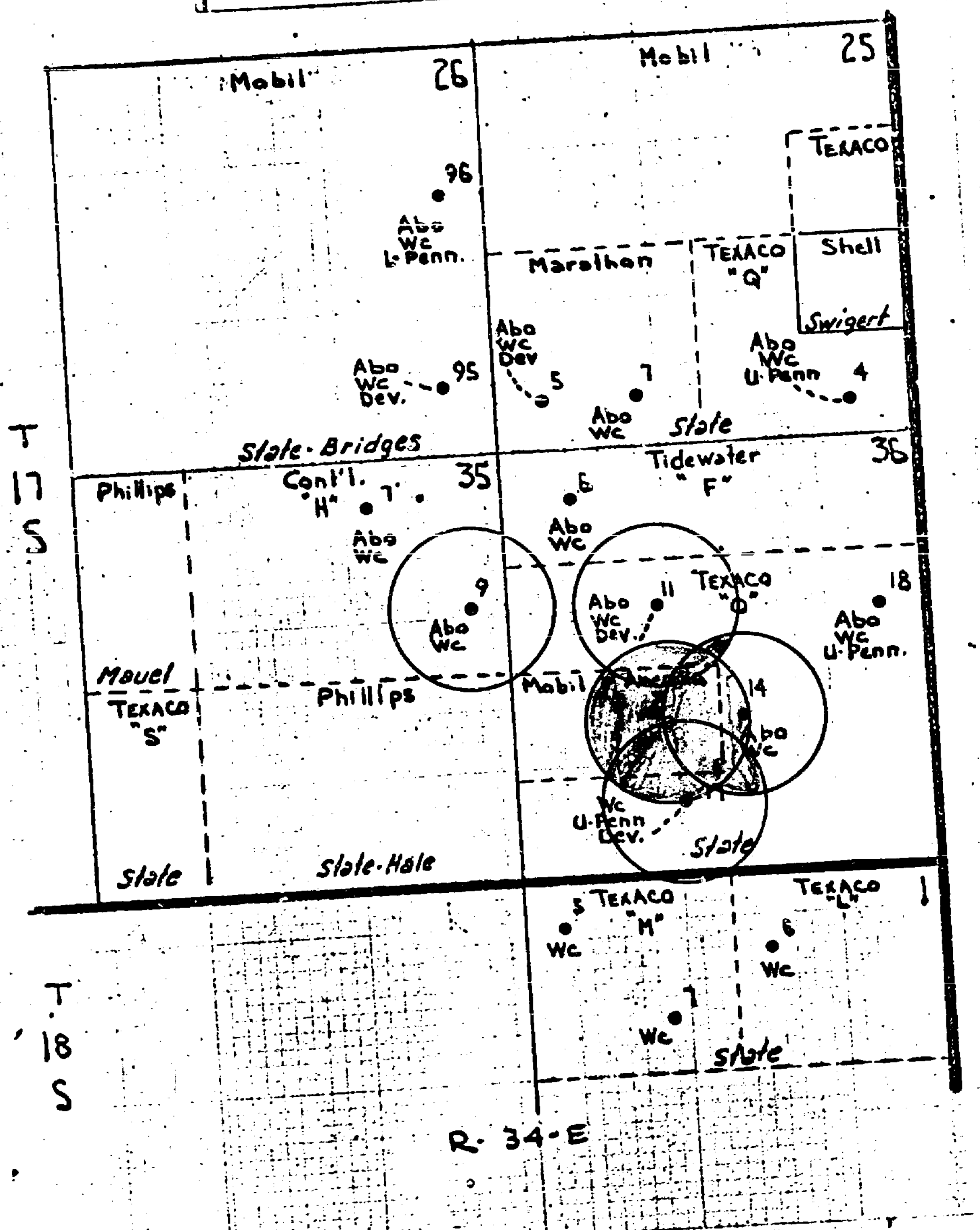


Exhibit III-A

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: *Wolfcamp*
Contour Interval: *20-Acre Drainage* *L. Penn*
Drawn By: *JMWc* Date: 1-16-84
Scale: 2000'



10 3645

Exhibit III-B

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Wolfcamp
Contour Interval: 80 Acre Drainage Pattern
Drawn By: C.M.W.C. Date: 1-16-64
Scale: 2000'

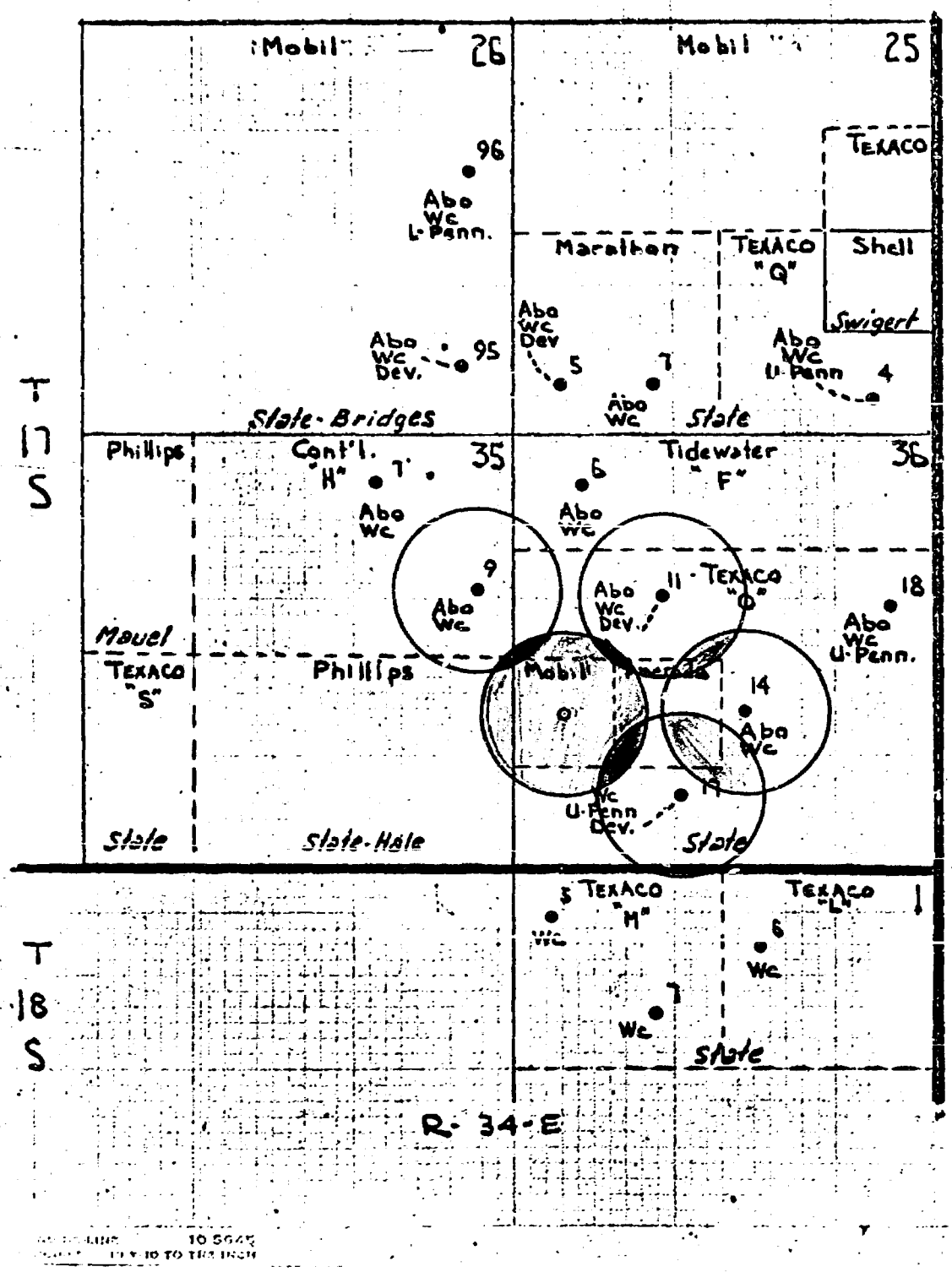


Exhibit E

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Devonian
Contour Interval: 50'
Drawn By: J.M.W.C. Date: 1-16-64
Scale: 2000'

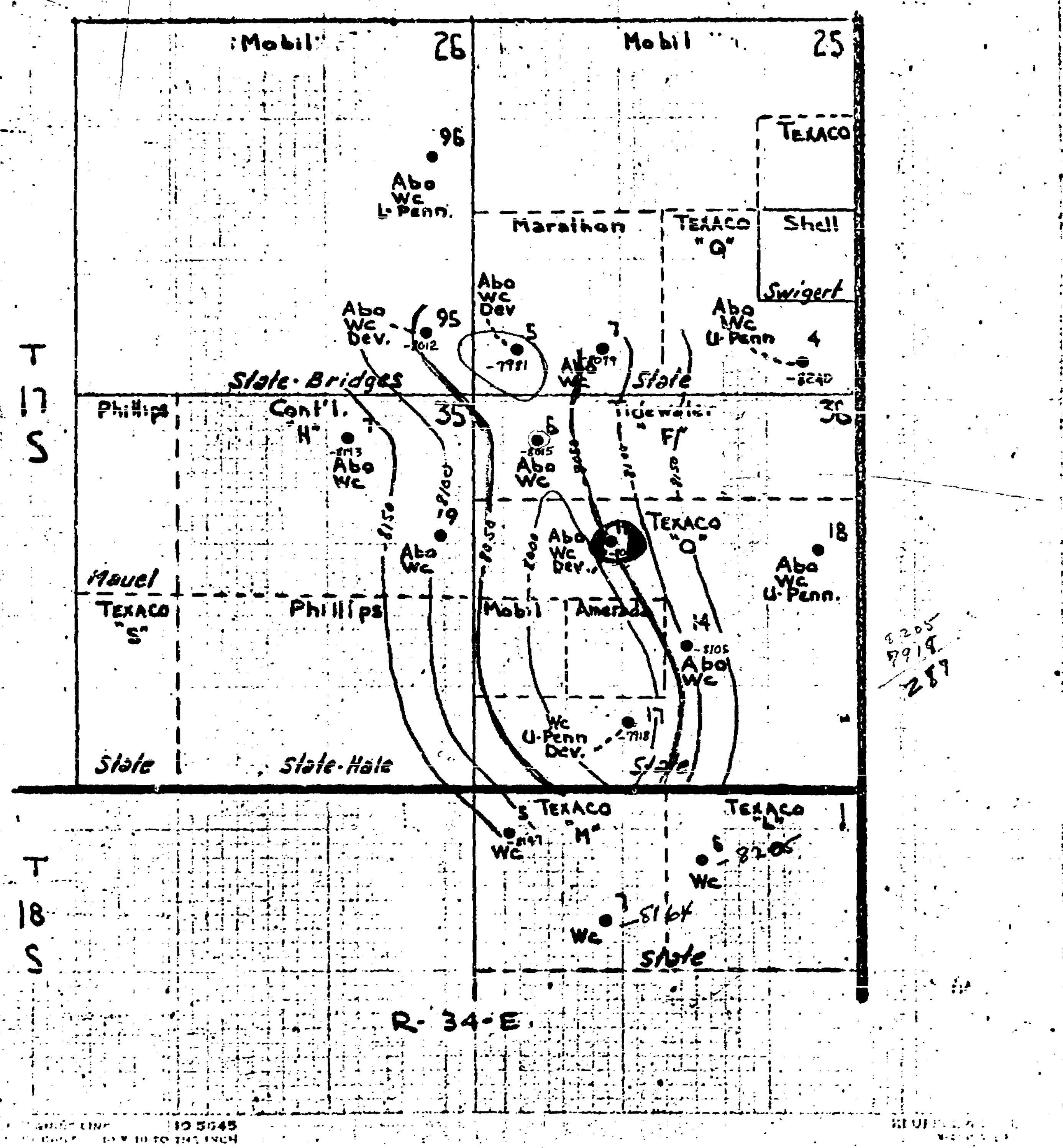
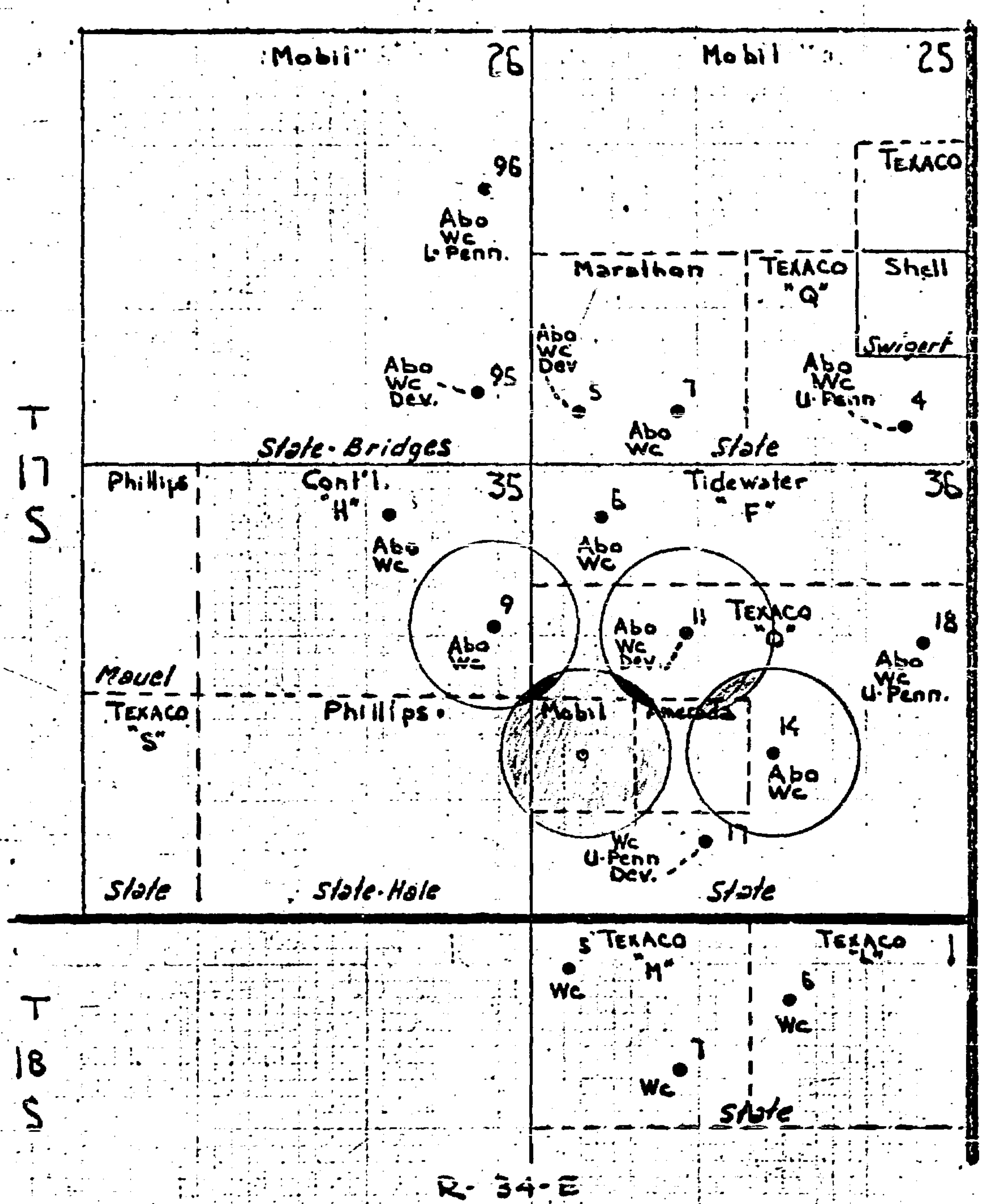


Exhibit II-B

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: *Abo North*
Contour Interval: *80-Acre Drainage Pattern*
Drawn By: *JMWc* Date: 1-16-64
Scale: 2000'



• Exhibit TC-4

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Devonian
Contour Interval: 10-Acre Drainage Pattern Date: 1-16-64
Drawn By: JMW
Scale: 2000'

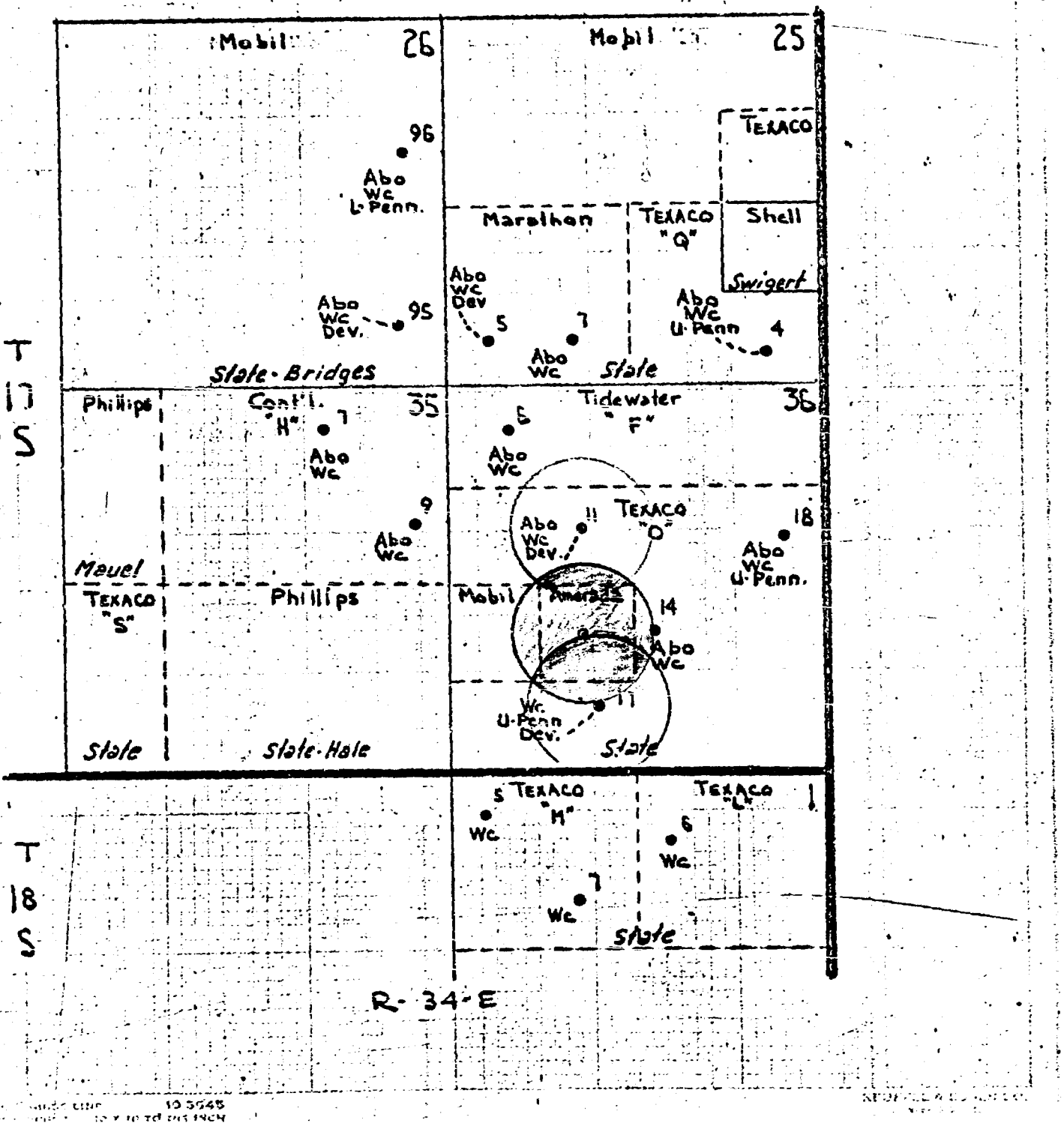
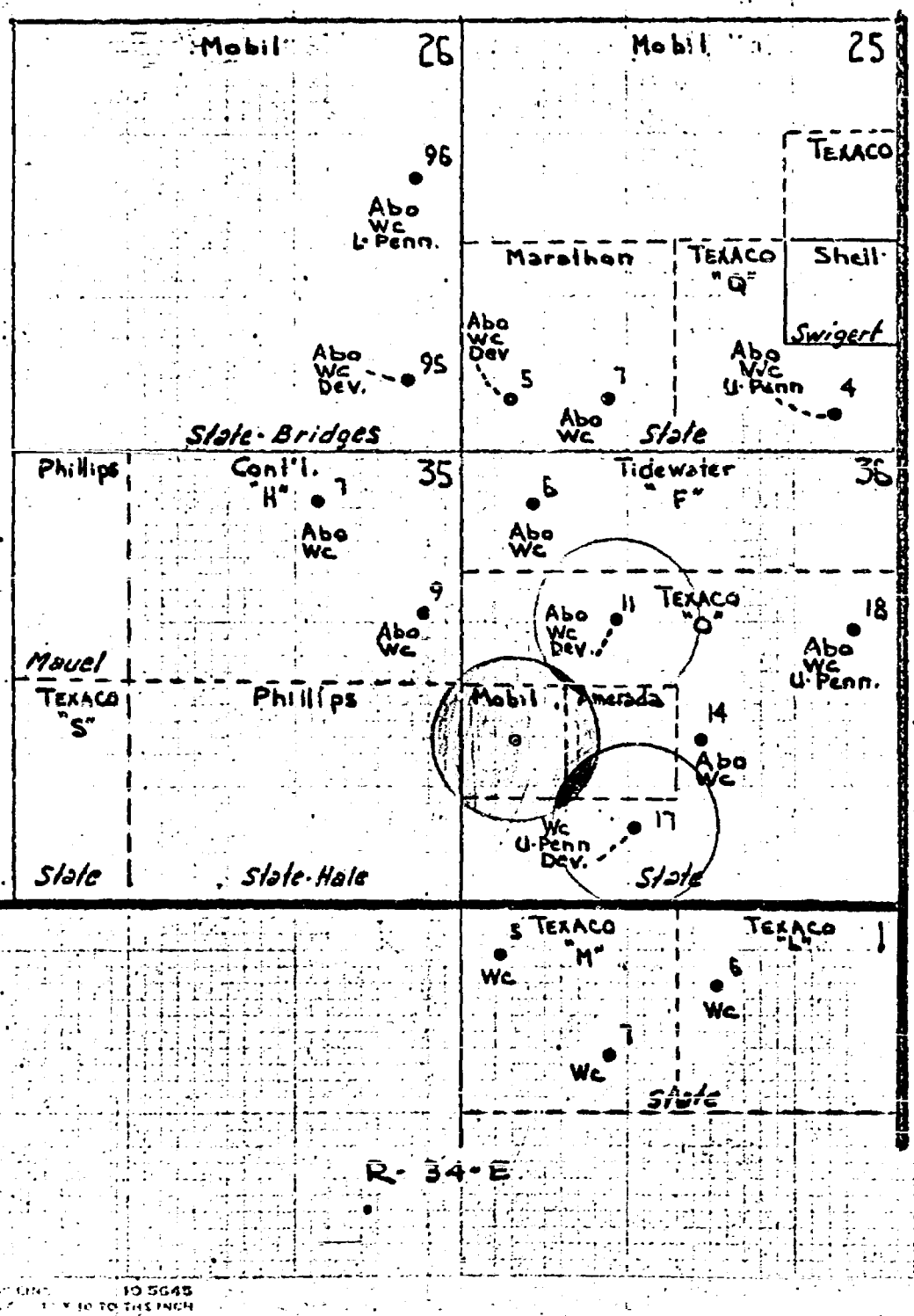


Exhibit IV-B

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Devonian
Contour Interval: 40-Acre Drainage Pattern
Drawn By: JAWe Date: 1-16-64
Scale: 2000'



10 SQUARES TO THE INCH

Exhibit III-A

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Wolfcamp
Contour Interval: 80-Acre Drainage Radius
Drawn By: JMW Date: 1-16-64
Scale: 2000'

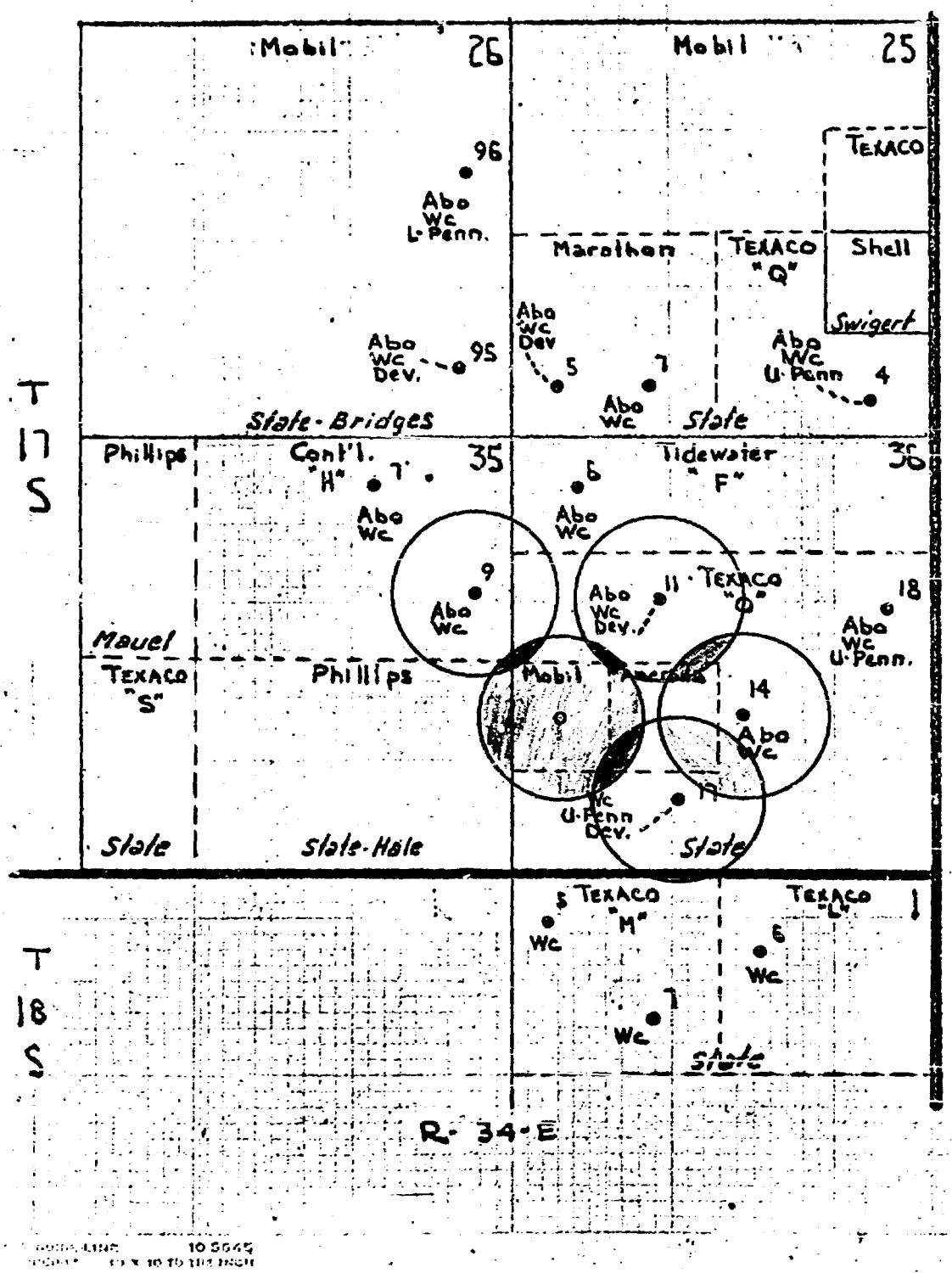


Exhibit III P

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: [illegible]
Contour Interval: [illegible]
Drawn By: [illegible] Date: 1-16-64
Scale: 2000'

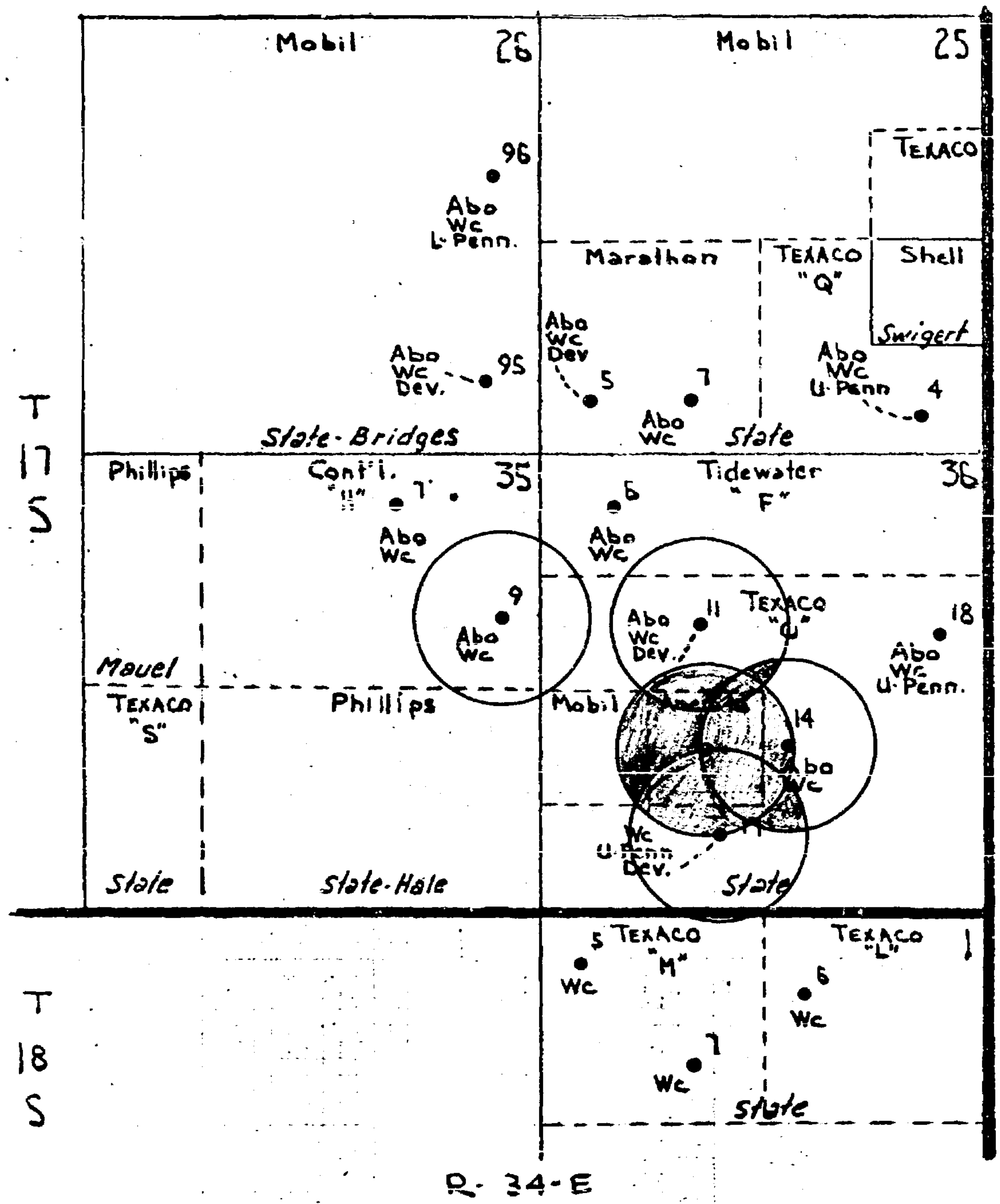
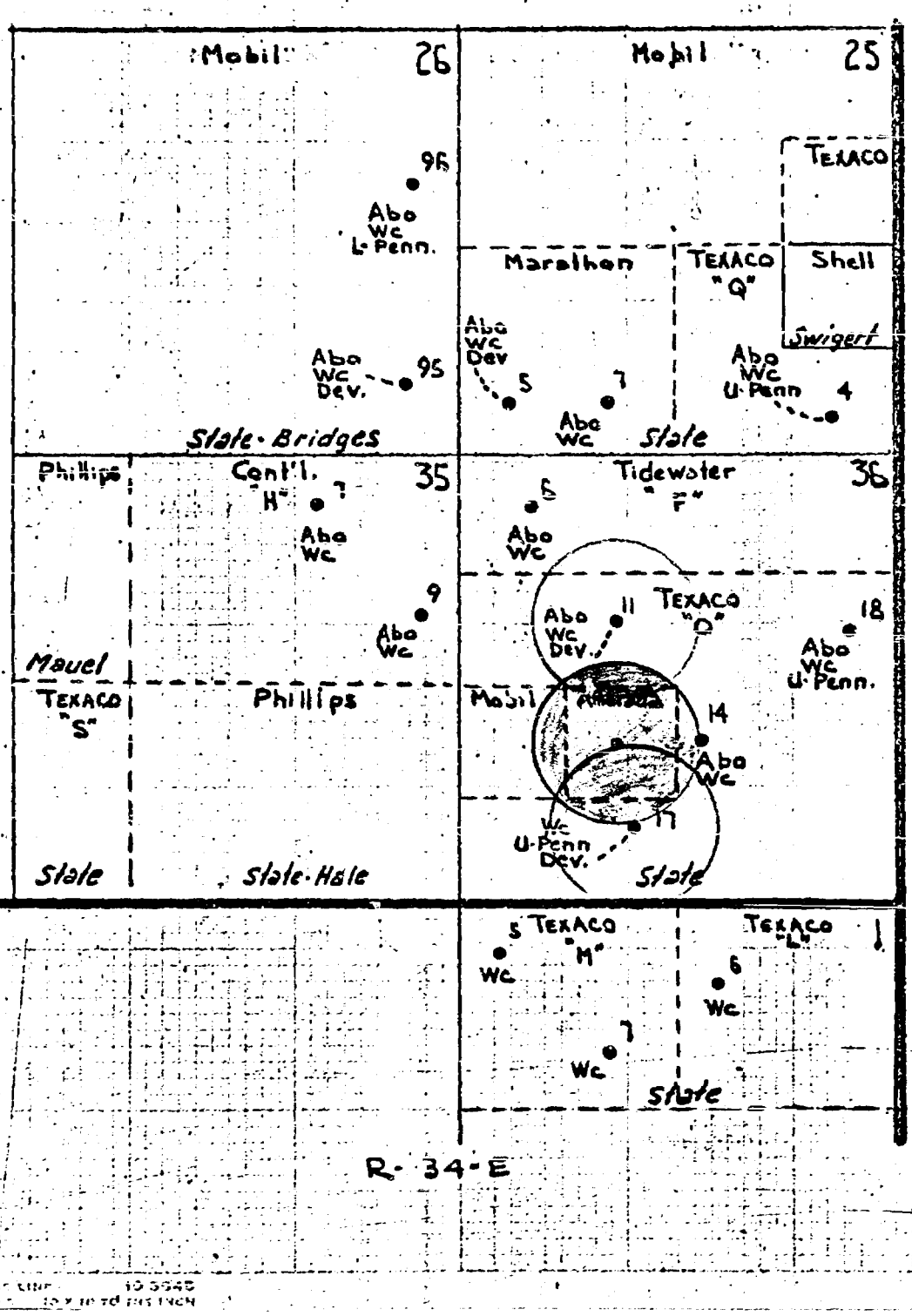


Exhibit IV #1

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon:
Contour Interval:
Drawn By: Date: 1-16-64
Scale: 2000'



TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: [illegible]
Contour Interval: [illegible] Date: 1-16-64
Drawn By: [illegible]
Scale: 2000'

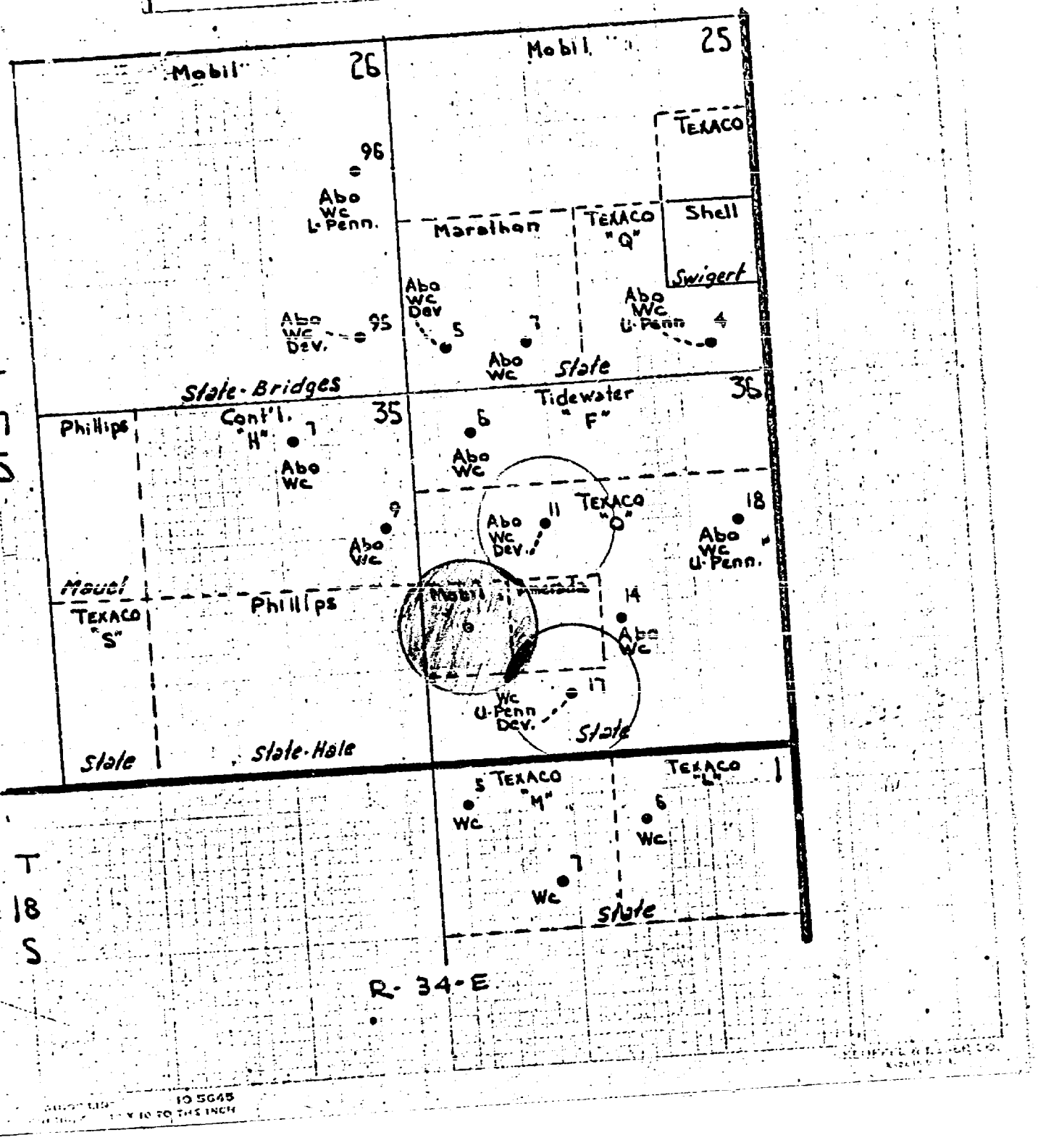


Exhibit IV

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon: Devonian
Contour Interval: 50'
Drawn By: J M Wc Date: 1-16-64
Scale: 2000'

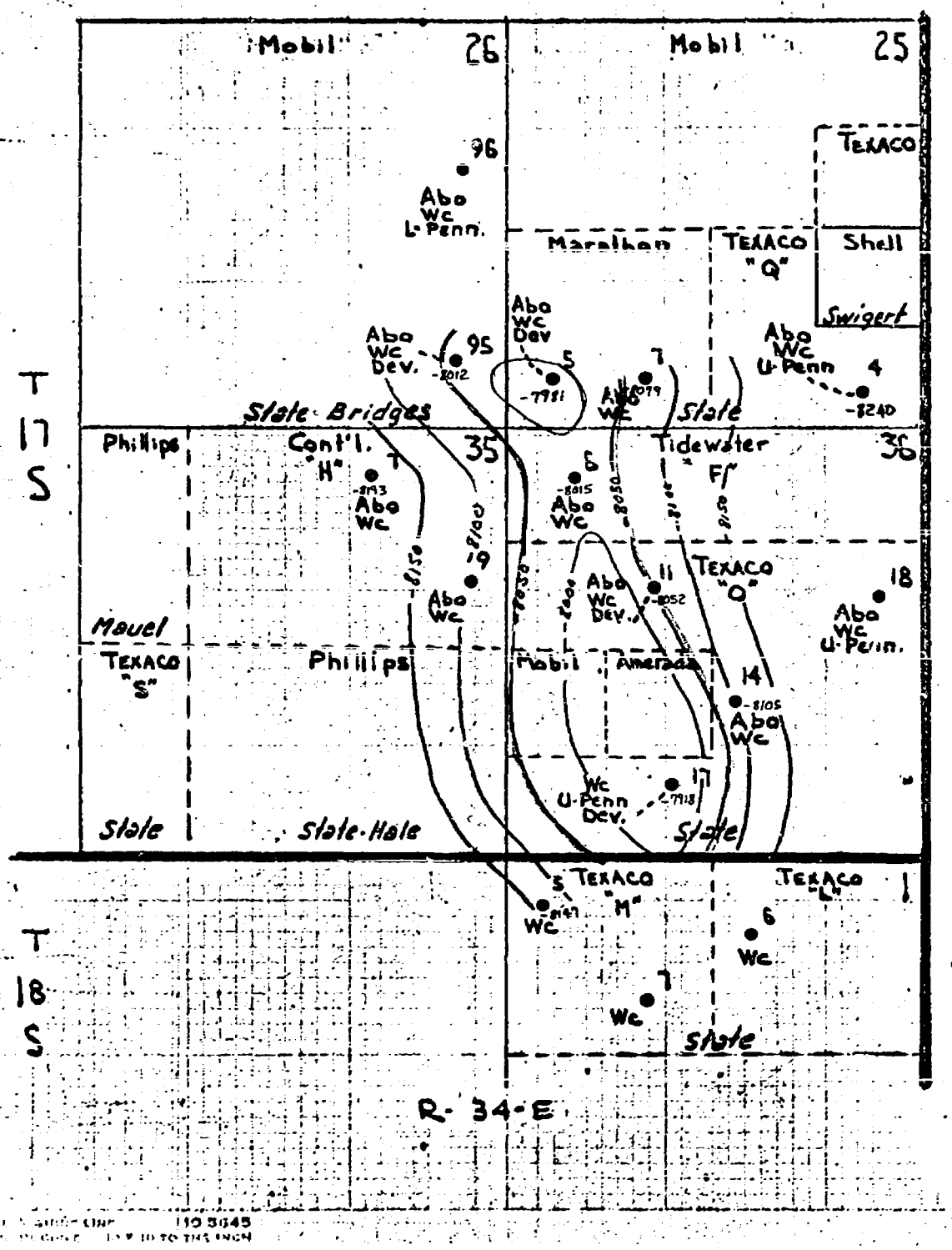
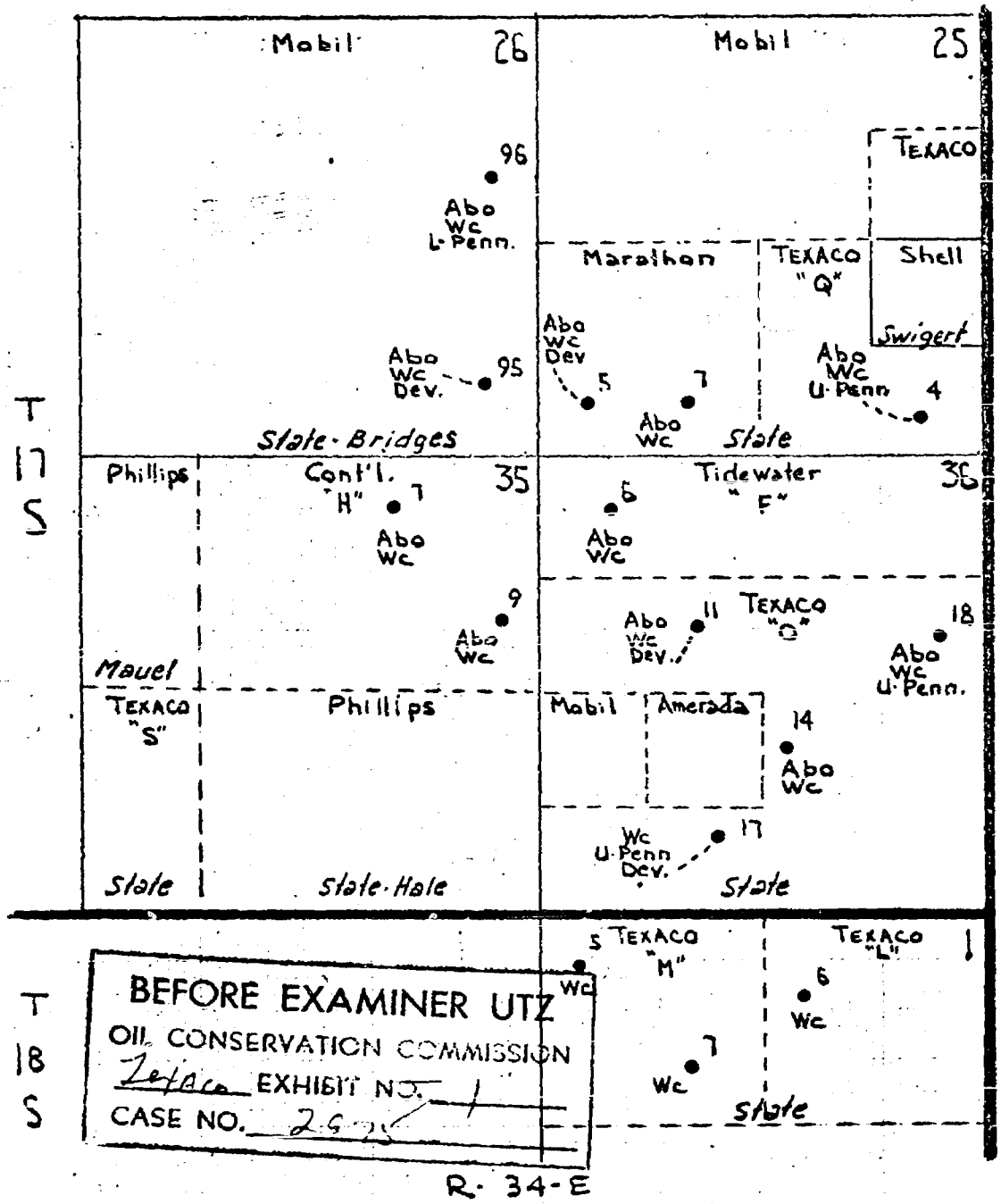


Exhibit I

TEXACO Inc.
Hobbs District

PORTION OF VACUUM FIELD
T-17-S & T-18-S; R-34-E
LEA COUNTY, NEW MEXICO

Contoured Horizon:
Contour Interval:
Drawn By: Date: 1-16-64
Scale: 2000'



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Texaco EXHIBIT NO. 1
CASE NO. 2925